Health Economics and Health Technology Assessment (HEHTA)
Annual Report 2015
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From the Director

It is with great pleasure that I get to introduce the 2015 Annual Report for HEHTA. It is now 10 years since I joined the University of Glasgow, back in June 2005. During that time I have had the pleasure of steering the development of the fledgling Health Economics & Health Technology Assessment team into the thriving Research Group that it is today. Many colleagues have been instrumental in contributing to the success of HEHTA at University of Glasgow, but none more than Professor Olivia Wu, with whom I have collaborated closely for all of those 10 years. So it is also with great pleasure that I can announce that Professor Wu has taken over the leadership of the team with effect from 1st October 2015. It is time for new blood and Olivia’s tireless enthusiasm will surely mean that HEHTA will continue to thrive for the next 10 years – ably supported by her deputy, Dr Emma McIntosh.

In addition to taking over the leadership of the team, Professor Wu also was successful in 2015 in securing one of the largest and most prestigious grants that HEHTA has held. As detailed in the report, Professor Wu will lead the NIHR funded ‘Complex Reviews Support Unit’ with £2M of funding over the next five years.

The other important highlight for 2015 was the move to make the MSc HTA, led by Dr Jim Lewsey, a 100% online offering. We are hoping this will increase the reach of our MSc HTA and provide further support for the team going forwards.

[Signature]
Meet the HEHTA Team
In 2015 we welcomed to the team:

**Moira Aitken** joined HEHTA in December 2015 as Research Coordinator, to provide project support to the NIHR Complex Reviews Support Unit (CRSU) and HEHTA’s European Commission projects. Moira has an LLB (Hons) and LLM (medical law and healthcare ethics) from the University of Liverpool as well as a background in Nursing. Since 2009, she has worked within the NHS and the Universities of Glasgow and Aberdeen as researcher and clinical trial manager on healthcare randomised controlled trials.

**Janet Bouttell** joined HEHTA as a Research Assistant in August 2015. She spent six months working with Jim Lewsey and Danny Mackay evaluating the Alcohol Act and other interventions for NHS Health Scotland and is now completing her MSc HTA research project using synthetic controls to evaluate natural experiments. She has also started working on a three year project using Value of Information analysis to prioritise research in Precision Medicine as part of the Glasgow Molecular Pathology Node project.

**Jennie Clark** joined the team full-time as an Administrative Assistant in October 2015, having been with us part-time for the past few summers. Jennie completed her undergraduate studies at Glasgow University in French and Portuguese in 2013, and then completed an MSc in Translation at Glasgow University in the summer of 2015. With a background in linguistics, she is quickly learning the language of the health economics field. Her hobbies include studying Chinese, hula hooping and hillwalking.
Hannah Hesselgreaves joined us as the new lead on our Incorporating Perspectives and Experiences theme. Lecturer in Qualitative Methods for Health Research and programme leader for the Incorporating Perspectives and Experiences programme. Prior to joining HEHTA, Hannah was an Associate Director of the Centre for Medical Education at Durham University. As part of her role in HEHTA, Hannah leads the Masters in Public Health and Masters in Health Technology Assessment Qualitative courses.

Nicola McMeekin joined HEHTA as a Research Assistant in October 2015. She completed HEHTA’s MSc in HTA in August 2015, whilst studying she also worked in the Health Economics Group at Newcastle University as a Research Assistant. Her research interests lie in economic evaluation alongside clinical trials and decision analytic modelling. Currently Nicola is working on three NIHR funded clinical trials.

Minnie Parmiter has a background in epidemiology and is currently completing her PhD on infectious disease modelling, specifically mathematical modelling of malaria, at Glasgow University. Minnie is working part-time with Eleanor Grieve on economic evaluations within the Global HTA theme.

Mohsen Rezaeihemami joined HEHTA as a Research Associate, having previously worked as Assistant Professor at Rasul Akram Hospital, Iran University of Medical Sciences. He is a medical doctor and has PhD in Epidemiology from Tehran University of Medical Sciences. His PhD thesis was about the cost-effectiveness of interventions in the malaria elimination phase in Iran. Before joining HEHTA he was advisor in several cost-effectiveness theses for PhD students in Iran. Mohsen works on economic evaluations alongside RCTs. Current projects include using a new algorithm following an abnormal liver function test and comparing myomectomy with uterine artery embolization for treatment of uterine fibroids. Mohsen’s research interests are decision science and disease modelling; cost-effectiveness analysis, systematic review and meta-analysis; dynamic models in health and RCT.

Left to right, Nicola, Ping, Janet, Hannah, Jennie.

Grace Antony worked as a Research Associate in HEHTA between February 2014 and May 2015. Prior to joining HEHTA, she worked on various projects in public health, epidemiology, nutrition, human development and poverty. She received her PhD in Statistics from Osmania University (India) and an MSc in Statistics from Cochin University of Science and Technology, India. During her time with HEHTA, Grace contributed to the evaluation of Keep-Well and SCALE. Her research interests include managing observational and interventional studies in drug development and medical statistics in general. She has 22 scientific publication and has authored many technical reports.

Lindsay Govan spent several years working at HEHTA. Lindsay held an MRC Fellowship and worked on a number of projects investigating the costs and complications of diabetes, and NHS weight management strategies.

Julian Nam spent two years with HEHTA, working on modelling for various projects including BEAT-IT Individual Therapy Trial, and Comparison of close contact cast (CCC) technique to open surgical internal fixation (ORIF) in the treatment of unstable ankle fractures in patients over 60 years. Julian planned to enjoy some travelling before focusing on his career in health economics back in Canada.

....and we said goodbye to:

Diana Carstens was part of the admin team at HEHTA for 18 months, focussing mainly on the organisation and administration of our CPD short courses. Diana left us to pursue a new career in Baltimore, USA.
Visiting Researchers

Bruno Salgado Riveros

is a visiting postgraduate research student from Brazil. He has a Masters in Health Technology Assessment and is currently undertaking his PhD in Health Economics at Federal University of Parana (Brazil). Over the last five years, Bruno has been involved in systematic reviews, mixed treatment comparisons and cost-effectiveness analysis comprising biologic agents, medical devices and hospital clinical services. He is focused on statistical methods for cost-effectiveness analysis including cost-effectiveness analysis alongside clinical trials. He also has a general interest in dynamic models and techniques to report health economic findings to stakeholders and decision makers.

Ping Hsuan Hsieh

joined the University in October 2015 as a visiting researcher with HEHTA for 6 months. He has an MSc in Transdisciplinary Long Term Care from Fu Jen Catholic University and a BSc in Pharmacy from National Defense Medical Center, Taiwan. Prior to take his role as a visiting researcher, Ping Hsuan worked as an administrative pharmacist in Tri-Service General Hospital in Taipei. Besides clinical pharmacy activities, he has also worked on evaluation for investing or applying new medical instruments and materials in the hospital. During the visit, he will learn various methodological approaches to HTA.
PhD Students

Awarded in 2015

**Sultan Al-Suhaim** –
*The use of evidence based pharmacotherapy for cardiovascular disease in Scotland*
Supervisors: Jim Lewsey, John McMurray (external)

**Current students**

**Yulia Anopa** –
‘Economic evaluation of Childsmile’
Supervisors: Emma McIntosh, Lorna McPherson (external)

**Camilla Baba** –
‘Valuing the health and wellbeing aspects of community empowerment using economic evaluation techniques’.
Supervisors: Emma McIntosh, Carol Tannahill (external)

**Willings Botha** –
‘Economics of forestry based health interventions’
Supervisors: Andrew Briggs, Richard Mitchell (external)

**Nicki Boyer** –
‘Economic evaluation of population health interventions’
Supervisors: Emma McIntosh, Kathleen Boyd

**Giorgio Ciminata** –
‘Cost-effectiveness of new anticoagulant drugs using real world data within the Scottish population’
Supervisors: Olivia Wu, Claudia Geue

**Shadrach Dare** –
‘A retrospective cohort study of the risk factors for neonatal sepsis and other pregnancy related adverse outcomes in Ghana.’
Supervisors: Danny Mackay (external), Jill Pell (external), Hannah Hesselgreaves

**Karl Ferguson** –
‘Diagram based analysis of causal systems for understanding the causes of alcohol problems.’
Supervisors: Jim Lewsey, Mark McCann (external), Danny Smith (external)

**Ben Fulton** –
‘Quantitative research of patient preferences and perceptions of precision medicine in Oncology’
Supervisors: Robert Jones (external), Emma McIntosh, James Paul (external)

**Tadesse Gebrye** –
‘Cost-effectiveness analysis and modelling the lifetime costs and benefits of health behaviour interventions on Diabetes (Type 2)’
Supervisors: Emma McIntosh, Kathleen Boyd

**Ciaran Kohli-Lynch** –
‘Primary prevention of cardiovascular disease in disadvantaged populations : a comparison of modelling methods in the UK and the US’
Supervisors: Andrew Briggs, Kathleen Boyd

**Pattara Leelahavarong** –
‘Development of surrogate indicators for alcohol prevention and control programmes in Thailand’
Supervisors: Andrew Briggs, Jim Lewsey

**Ana Cristina Perez** –
‘Symptoms, signs, quality of life and hospital admission in heart failure’
Supervisors: Jim Lewsey, John McMurray (external)

**Claire Williams** –
‘Demonstrating the potential of multi-state survival models for enhancing epidemiological and health economic modelling’
Supervisors: Jim Lewsey, Andrew Briggs, Danny Mackay (external)

**Yiqiao Xin** –
‘Impact of variation of economic evaluation methods on the cost-effectiveness result: a case study of deep brain stimulation (DBS) in Parkinson’s’
Supervisors: Emma McIntosh, Jim Lewsey
Tell us a little about your background

My name is Ciaran Kohli-Lynch and I am a Health Economics PhD student working with Prof Andy Briggs and Dr Kathleen Boyd, researching primary care intervention in cardiovascular disease.

I studied at the Illinois Institute of Technology, graduating in 2013 with a BSc in Applied Math with a minor in philosophy, and a BSc in Humanities. Following this, I started an MSc in Health Economics at the University of York; Health Economics appealed to me as it was an interesting subject area in which I could use both qualitative and quantitative skills. Finally, I spent the summer of 2014 at the University of Southern Denmark in Odense, where I wrote my Master’s thesis which focussed on reimbursement and incentivisation of living kidney donation.

What attracted you to undertake your PhD at Glasgow University?

I really enjoyed the course in York, and was particularly interested in the modules which involved Health Technology Assessment. I was also aware that Andy Briggs was the director of HEHTA at the University of Glasgow, and that they did a lot of interesting work in the area of HTA.

Around the time I was thinking of applying for post-MSc positions, I became aware of a Medical Research Council-funded PhD in Health Economics. Andy would be the primary supervisor for the project and it would involve a year abroad, studying at Columbia University in New York.

I was interested in the proposed research question, which focused on the modelling of primary interventions in CVD, and felt my background was suited to the area of research. The opportunity to spend a year in New York at Columbia University also appealed to me…as did the thought of being able to once more regularly attend football matches at Celtic Park.

What skills are you learning that you think will help your future career?

The PhD has developed a lot of skills that will help in my future career. I have had opportunity to perform research for two exciting projects: one with the Scottish Intercollegiate Guidelines Network researching statin policy and one with an EU-funded project called EU-MASCARA. These projects have allowed me to develop generic skills like meeting deadlines for reports and presenting research to experts in the field.

More specifically, these projects have developed my ability as an independent researcher and have given me a thorough understanding of health care decision-making processes in Scotland.

Do you feel you have received the support required to develop your skills?

HEHTA has a very supportive atmosphere. Other PhD students are always on hand to help with any problems, as are all members of the research and administrative staff. The department is very social, and after work pints in Ashton Lane are a regular and welcome departure from PhD-related stress!

While both of my supervisors are happy for me to determine the direction of my research, they have both been extremely supportive in terms of providing advice and constructive criticism. They have pushed me to pursue all areas of research I believe to be relevant to my thesis and to present my research whenever possible.

This support has continued during my time in New York, where I have worked under the supervision of Dr Andrew Moran. Andy Briggs is also on sabbatical at Memorial Sloan Kettering Hospital in New York and I have maintained regular contact with him. This has made settling into New York comfortable, and has provided a useful degree of continuity with my Glasgow-based projects.

Do you enjoy Glasgow as a place to live and study?

Glasgow is a great place to live and study. It is easy to get around the city, Glaswegians are friendly and have a great sense of humour, and there is always something to do. The area around Glasgow University is surrounded by nice parks, restaurants, and cafes. There is a vibrant nightlife, with a decent line-up of DJs and bands playing every week, and a lot of good drinking spots around the city. Most importantly, you are also unlikely to find a better curry anywhere in the world.

While Glasgow is a big city with a lot going on, you are never far from nature. Loch Lomond and the Trossachs are a short drive away and Edinburgh can be reached by train in less than an hour.

Can you see how you will transfer the skills learned here to your own setting?

I will easily be able to transfer the skills I have learned during my PhD to other settings. I have had the opportunity to work with people from many different fields and have presented my work widely.

The generic project-management skills I have developed have made me an efficient researcher. Moreover, I intend to work in health care policy-making in the future and working with decision-makers at the Scottish Intercollegiate Guidelines Network has been a particularly useful experience in this regard.
Highlights of 2015

January
Launch of HEHTA’s new Global HTA research theme.

February
Comic Relief Bake Off: HEHTA joined forces with Public Health staff to consume vast quantities of cake and coffee, and managed to raise the healthy sum of £230 for Comic Relief.

March
Emma McIntosh delivered the first of a series of Action Learning Sets to public health practitioners.

Olivia Wu and Neil Hawkins were commissioned by Health Improvement Scotland to deliver a training workshop on ‘Current challenges in assessing evidence from network meta-analysis’. Over 30 colleagues from the Scottish Intercollegiate Guidelines Network and the Scottish Medicines Consortium attended this one-day workshop, during which Olivia and Neil discussed current opinions and guidance, and methodological challenges in mixed treatment comparisons.

April
Kathleen Boyd and Ciaran Kohli-Lynch hosted MRC Doctoral Training Programme Patient Engagement event in Wolfson Medical School Building, University of Glasgow.

Final run of our ‘Systematic review and meta-analysis of direct, indirect and mixed treatment evidence’ course. This annual CPD course started in 2009 and has been extremely well-received. While we have enjoyed running this course and meeting participants from many countries, we have a goal for our teaching to reach a wider audience. Therefore this course will return in an online format in 2017!

May
Pattara Leelahavarong presented at HTAsialink in Taiwan on ‘A policy model of alcohol-related harms to predict life years and quality adjusted life years’ and was awarded best presentation in the ‘Economic evaluation’ category.

Norah Palmateer (supervisor Olivia Wu) was awarded the Joseph Black Medal and Hird Prize for her PhD thesis ‘Epidemiological methods to assess and monitor the effectiveness of Hepatitis C prevention initiatives in Scotland’.

We welcomed Bruno Riveros, who spent six months with us as a visiting postgraduate research student. His PhD project is based on assessing the efficiency of different strategies for treating obesity / excessive weight gain.

June

Hannah Hesselgreaves joined HEHTA as theme leader for Incorporating Perspectives and Experiences.

The team enjoyed an Away Day at House for an Art Lover.
July

Emma McIntosh delivered a cost-benefit analysis workshop for PhD students at the University of Lucerne, Switzerland.

A consortium of researchers from around the UK, led by HEHTA’s w, were awarded £2million to establish the NIHR Complex Review Support Unit (CRSU) which will provide support in areas of research that require complex methodological approaches.

Eleanor Grieve and Olivia Wu presented findings from their work that were funded by the International Decision Support Initiative (iDSO) at iHEA Milan.

August

Claudia Geue presented at the Farr Institute International Conference in St Andrews, her presentation entitled 'Geographic variation of inpatient care costs at the end of life'.

September

Launch of the online MSc in HTA.

Kathleen Boyd and Emma McIntosh presented research results from the BIDS study at ERS International Congress.

Decision Analytic Modelling Methods for Economic Evaluation courses took place at Hilton Glasgow Grosvenor.

Staff boosted the coffers of Macmillan Cancer Care by once again enjoying some home baking, raising in excess of £500.

October

Olivia Wu delivered her inaugural lecture entitled “Evidence Synthesis – the art of seeing the wood and the trees”.

Andy Briggs departed on sabbatical to Memorial Sloan Kettering Cancer Center, New York. Olivia Wu takes over as Director of HEHTA.

Neil Hawkins, LSHTM, ran a workshop for HEHTA staff covering the key steps in developing conceptual models in the early stages of economic evaluations.

November

Emma McIntosh presentation at iCafe, Glasgow to increase public awareness and engagement in Parkinson’s.

GhESS seminar – Sarah Schaffer ‘Local health care expenditure plans and their opportunity costs’.

December

We welcomed back Moira Aitken in her new role of Research Co-ordinator.
HEHTA’s work is centred around seven core and interconnected research themes. Five of the themes provide innovative and methodological foundations for our work, and reflect our commitment to the development of the field of HTA. This year, HEHTA initiated a new research theme of Global Health Technology Assessment (HTA). Through this theme, we will devise methodological and applied research in the international context, with a particular focus on low and middle income countries.

The use of HTA continues to grow internationally. Whilst resources are finite in every setting, there is much diversity in the role and application of HTA. Such differences reflect not only differences between health systems and their financing but also how well-developed country-specific HTA agencies and processes are, and other wider contextual issues. Whilst developed countries may have led the way, low- and middle-income countries (LMICs) are increasingly beginning to develop HTA processes to assist in their healthcare decision-making. Given LMICs face particularly limited resources and as cost-effectiveness is an integral part of healthcare decision-making, the value of HTA to help make better resource allocation decisions is being recognised. This new Global HTA theme will draw upon HEHTA’s research from a global perspective, working in particular with major stakeholders including NICE International and the Gates Foundation as well as utilising staff members’ expertise in delivering training in HTA beyond the UK. Given the global reach of HTA, methodological implications are also considered with a particular focus on LMICs.

We will also be offering a course on HTA in a global context as part of our MSc. Our research-led teaching will equip students with the necessary skills to critique HTA in different contexts, exploring geographical variation between high-income countries as well as looking more in-depth as to how and why decision-making in healthcare may differ amongst LMICs.
Global HTA (GHTA)
The use of Health Technology Assessment (HTA) continues to grow internationally. Whilst resources are finite in every setting, there is much diversity in the role and application of HTA. The Global HTA programme critiques HTA in different contexts, exploring variation between high-income countries as well as looking in-depth as to how and why decision-making in healthcare may differ amongst low- and middle-income countries (LMICs). Given the global reach of HTA, methodological implications are also considered with a particular focus on LMICs. The theme will draw upon HEHTA’s research from a global perspective, working with major stakeholders and as part of the International Decision Support Initiative as well as utilising staff members’ expertise in delivering training in HTA beyond the UK.

Economic Evaluation alongside Clinical Trials (EEACT)
The Economic Evaluation in Clinical Trials Programme encompasses all research work associated with conducting an economic appraisal as part of a clinical trial. Although modelling methods may still be required to provide a comprehensive appraisal, the characterising feature is the inclusion of an economic component to the trial and the availability of experimental data on both costs and effects of treatment.

Evidence Synthesis (ES)
The There is an indisputable need for evidence-based clinical practice and healthcare policies. Evidence synthesis, including systematic review and meta-analysis of relevant data, comprises an important set of tools to ensure healthcare decisions are informed by a systematic evaluation of available evidence. The Evidence Synthesis Programme at HEHTA encompasses all research work associated with combining multiple sources of evidence for clinical and economic evaluations. Alongside the newly formed NIHR Complex Reviews Support Unit (CRSU), this Programme will explore challenges in combining complex data types and structure, through both methodological and applied work.

Incorporating Perspectives and Experiences (IPE)
Within the ‘Incorporating Perspectives and Experiences’ Programme, research focuses on the application of qualitative methods of data collection and analysis (including conversation analysis) to the evaluation of interventions to improve health, to exploring people’s health and illness experiences across a range of clinical areas and to examining interactions and communication between health professionals and patients.

Economics of Population Health (EPH)
Population health is concerned with the study of social and environmental influences on physical and mental health and well-being. It is widely acknowledged that ‘up-stream’ influences such as early life experiences, the social and economic conditions in which people live and environmental exposures affect wellbeing. Population health research aims to improve the health of the public through clinical or public health interventions including those that may be delivered outside conventional health services. The Economics of Population Health (EPH) programme at HEHTA is concerned with the development of methods and related empirical work associated with the economic evaluation of such ‘up-stream’ population health interventions.

Analysis of Linked Health Data (ALDA)
The ALDA programme encompasses all research work in HEHTA that is associated with statistical, epidemiological and economic analysis of linked health data sets. Growth in the number, variety, complexity and availability of linked data sets has led to an increase in the range of research questions that can be answered using such sources. Our team has a wealth of expertise and experience in this field – for example data manipulation and identifying cohorts within linked data sets; regression modelling of panel data sets; outcome measurement, costing and developing decision analytic models using linked data sets.

Decision Analytic Modelling and Simulation for Evaluation in Health (DAMSEL)
The DAMSEl Programme encompasses research work associated with conducting an evaluation using modelling or simulation methods. Modelling can be used as the whole framework for an evaluation, such as exploring the potential impact of a new, untested methodology. Alternatively, modelling could be used as part of a clinical trial-based evaluation to extrapolate intermediate trial endpoints to final health economic outcomes. The DAMSEl programme cuts across and interacts with many of the other programmatic themes of HEHTA.
# Projects Awarded in 2015

<table>
<thead>
<tr>
<th>Project title</th>
<th>Funder</th>
<th>Duration</th>
<th>Total project value</th>
<th>HEHTA Share of Total Project Value</th>
<th>HEHTA PI</th>
<th>Research Theme</th>
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<tbody>
<tr>
<td>Glasgow molecular pathology Node (GMP)</td>
<td>MRC</td>
<td>2015-2017</td>
<td>3481464</td>
<td>227440</td>
<td>Andrew Biggs</td>
<td>DAMSEL</td>
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<tr>
<td>Early signs monitoring to prevent relapse and promote wellbeing, engagement and recovery in schizophrenia</td>
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<td>2015-2018</td>
<td>406505</td>
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<td>Caring together</td>
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<td>2015-2016</td>
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<td>DAMSEL</td>
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<td>Evaluation of New Orleans Intervention model BEST 2</td>
<td>NIHR</td>
<td>2015-2020</td>
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<td>8113</td>
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<td>EPH</td>
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<td>University of York</td>
<td>2015</td>
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<td>35000</td>
<td>Olivia Wu</td>
<td>ES</td>
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<td>Establishing priority-setting institutions in developing countries:International Decision Support Initiative</td>
<td>Bill and Melinda Gates Foundation</td>
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<td>35000</td>
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<td>GHTA</td>
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<td>ADScAN-A Randomised Phase II study of Accelerated, Dose escalated, Sequential Chemo-radiotherapy in Non Small Cell Lung Cancer</td>
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<td>A pilot evaluation of an intelligent liver diagnostic pathway</td>
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## Projects completed in 2015

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<th>Project title</th>
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<th>Duration</th>
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<th>HEHTA Share of Total Project Value (£)</th>
<th>HEHTA PI</th>
<th>Research Program</th>
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<td>Gates Evidence Working Group</td>
<td>University of York</td>
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<td>New Orleans Project (BEST)</td>
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<td>EACT &amp; DAMSEL</td>
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<td>Three-Arm Randomised Control Trial for Mothers Identified as Vulnerable in Pregnancy and their Babies who are at high risk of maltreatment</td>
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<td>BEAT-IT: A randomised controlled trial comparing a behavioural activation treatment for depression in adults with learning disabilities with an attention control.</td>
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<td>Cost-effectiveness of Theophyllin for the treatment of COPD TWICS</td>
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<td>AVERT Multi Centre RCT expansion</td>
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<td>Cardiac biomarkers and CVD risk screening: a cost-effective public health measure?</td>
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<td>ADScan-A Randomised Phase II study of Accelerated, Dose escalated, Sequential Chemoradiotherapy in Non Small Cell Lung Cancer</td>
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<td>CULPRIT SHOCK Multivessel versus culprit lesion only percutaneous revascularization in patients with acute myocardial infarction complicated by cardiogenic shock'</td>
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# Projects current in 2015

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<th>Total project value (£)</th>
<th>HEHTA Share of Total Project Value (£)</th>
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Project Highlights of 2015

SCALE

The Scottish Alcoholic Liver disease Evaluation of epidemiology and costs of first and subsequent hospital admissions (SCALE) project was a 2 year grant funded by the CSO. Jim Lewsey was principal investigator with Andy Briggs as one of the co-investigators. Claudia Geue, Grace Antony and Janet Bouttell all worked on this project. The final report was submitted to the CSO in 2015 and was rated 'good'. These investigations, and the findings from them, helped inform and reassure decisions made by the Monitoring and Evaluating Scotland’s Alcohol Strategy (MESAS) team around reporting of alcoholic liver disease (ALD) and alcohol related “new patients” hospitalisations in their 4th annual report (http://www.healthscotland.com/documents/24485.aspx). We showed that in Scotland the risk of dying during a first ALD hospitalisation reduced between 1991 and 2011. However, the risk of dying after discharge did not change over the study period while readmission rates increased. Therefore we need to do more to care for ALD patients after they have been discharged. Our study also showed that any intervention that could prevent ALD occurrence or slow progression of the disease is likely to provide good value for money. We are liaising with Scottish Health Action on Alcohol Problems (SHAAP) and it is likely in 2016 our findings will inform meetings to consult on a national ALD action plan.

Population health economic evaluation of the school-based Roots of Empathy programme in Northern Ireland

With a growing consensus in academic and policy circles of the importance of young children’s social and emotional wellbeing, the National Institute for Health and Care Excellence (NICE) published a comprehensive set of public health guidelines in 2008 aimed at encouraging the promotion of social and emotional wellbeing in primary school children. Against this background, the main objective of this research was to conduct an economic evaluation of a school-based cluster randomised controlled trial of Roots of Empathy (RoE) for pupils aged 8-10 in Northern Ireland. RoE is an evidence-based charitable organisation aimed at promoting prosocial behaviour and decreasing aggressive behaviour. Economic evaluations of such school-based population health interventions are relatively uncommon; this is the first of its kind in RoE.

Resource use and outcome data are available from P5 pupils from 66 schools in Northern Ireland. Resource use data identified and measured were deliberately broad-ranging including: health and social service use, medication, police contacts, and personal costs. Resources were valued using UK national unit costs and reported in 2014GBP. The primary outcome was the Child Health Utility-9D to which allows the calculation of Quality Adjusted Life Years (QALYs). Costs/outcomes were discounted at 1.5%. Missing data on costs and QALYs were handled using multiple imputation. Regression methods were used to obtain incremental cost and effect estimates with robust standard errors to adjust for cluster effects within schools. Incremental cost-effectiveness ratios (ICER) were calculated and uncertainty explored through ‘bootstrapping.’ Cost-effectiveness acceptability curves were also presented. Detailed sensitivity analyses will be carried out.

Mean incremental costs for RoE were £185 (95% CI: £41 to £329) and mean incremental QALYs were 0.0166 (95% CI: -0.0477 to 0.0144), resulting in an ICER of £11,121 (95%CI: -£119,923 to £92,626) per incremental QALY for RoE. The probability of RoE being cost-effective at a £20,000 per QALY threshold was 82.1% and rising to 89.7% with a £30,000 threshold. Missing health and social care resource use data were prevalent due to retrospective data collection from parents.

RoE is likely to be a cost-effective school based population health intervention. However additional analyses relating to the total budgetary impact of rolling out this intervention, assumptions about RoE intervention life span and longer term quality of life benefits are required to draw conclusions relating to longer term cost-effectiveness. In addition, future studies are needed to compare RoE interventions with alternative interventions aiming to achieve the same social and emotional wellbeing gains.
There is an indisputable need for evidence-based clinical practice and healthcare policies. In order to achieve this, there is often a need for complex evaluation and synthesis of existing evidence. These require novel and sophisticated methodological approaches in synthesising different types of data, in evaluating multidisciplinary and complex interventions, and in synthesising appropriate data for further analysis. However, the lack of methodological expertise and researcher capacity in this area is a recognised major barrier to completing such complex reviews.

In July, a consortium of researchers, led by Olivia Wu, was awarded £2 million to provide support in areas of research that require complex evidence synthesis. The National Institute of Health Research (NIHR) Complex Reviews Support Unit (CRSU) is collaboration between the University of Glasgow, University of Leicester and London School of Hygiene and Tropical Medicine. The aim of the CRSU is to provide flexible, timely and appropriate support for the successful delivery of complex reviews that are funded and/or supported by the NIHR. These include reviews funded by the Systematic Review Programme and other NIHR programmes, Cochrane Collaboration, and other NHS and NHS supported sources. The CRSU will also work closely with the NIHR to support scoping and prioritising of future complex reviews, and build capacity and capability within the research community.

Within the CRSU, the key areas of expertise include: diagnostic test accuracy reviews, network meta-analysis, individual participant data meta-analysis, economic evaluation, and realist synthesis and qualitative reviews. In the first six months, the CRSU has successfully supported the development and undertaking of multiple Cochrane reviews that require meta-analyses of diagnostic test accuracy data, and of direct, indirect and mixed treatment evidence. In the months ahead, the CRSU will also develop workshops to raise awareness on current challenges in complex evidence synthesis and to provide training in these areas.

More information can be found at www.nihrcrsu.org or follow us @NIHRCRSU.
MSc in Health Technology Assessment
MSc HTA
– online distance learning programme

In 2015 the MSc HTA switched from being a face-to-face teaching programme to being delivered online. The reason for doing so was to increase the chances of individuals from all over the world (HTA agencies exist in Europe, Asia/Pacific, South America, and increasingly governments world-wide are establishing HTA programmes and agencies), either currently employed or find the costs of studying in Glasgow prohibitive, to apply and participate in the programme. In our 2015 cohort we have students from the UK, Czech Republic, Egypt, Montserrat, Singapore and China. Many of our students have negotiated study leave with their employers and so continue to work when studying with us. The online delivery of the programme facilitates such flexibility.

The MSc HTA is designed as ideal training for a 21st Century HTA practitioner. It is strongly vocational and graduating students are well equipped to return to their workplace with an enhanced skill set, or to find employment within the wide HTA arena (industry, governmental agencies, academia, etc.). We offer our online distance learning programme as both full-time (12 months) or part-time (24 or 36 months).

The online delivery includes video presentations by teaching faculty, live lectures over the internet, weekly exercises, directed readings and student/faculty interaction on discussion forums. It comprises three core courses:

- HTA: policy and principles
- Statistical methods for HTA and evidence based medicine
- Health economics for HTA

Students may then select from a range of optional courses:

- Outcome measurement and valuation for HTA
- Qualitative methods
- HTA in a global context
- Survival analysis for HTA
- Foundations of decision analytic modelling
- Evidence synthesis
- Analysis of linked health data
- Decision analytic modelling methods for economic evaluation (not online - delivered face-to-face in Glasgow)

Students can study to Certificate, Diploma or Masters (includes a research project) level. For full details please visit www.glasgow.ac.uk/hta
Interview with MSc HTA students

Tell us a little about your background

Janet: I’ve had a very varied career – I’ve been a chartered accountant, a primary teacher and I’ve run a café!

Lana: I am 25 years old and I’m from Greece, my bachelor degree was about Health Care Management. When I graduated I realised I needed a change in my career, and after searching a lot, I realised that Glasgow University would provide me with the best chance with the MSc in Health Technology Assessment.

Nicola: I trained as an accountant and worked in finance for about 20 years, including public sector, charity sector, industry

What attracted you to the Masters in Health Technology Assessment at Glasgow University?

Janet: I’ve always been interested in health, so I was looking for a course in Health Economics, and when I searched I found the Health Technology Assessment Masters at Glasgow that actually has Health Economics included in it, but it’s wider than that – it looks at all the evidence assessing health evidence, so it sounded very interesting.

Lana: I wanted to solve greater problems…..this MSc can provide me with this change in my career.

Nicola: I chose the MSc in HTA at Glasgow University because it was flexible and I could do it part-time and fit it around my other commitments. I also liked the look of all the different choices, the modules and the fact that there was a practical element to it.

Are there any aspects of the course which you have found particularly useful, and which will help you in your future career?

Janet: The skills that you learn on the MSc kind of fall into two categories; so one is that you learn a lot about assessing the medical evidence that’s out there, and the second set of skills help you do your own research, so you learn to bring the evidence together from existing literature, but then you also learn statistics, you learn cost-effectiveness analysis, you learn decision modelling, all of which you can use to do your own piece of research.

Lana: All the courses we have been taught so far have been really useful. I really find the Health Economics useful, because in this course we were provided with step by step guidelines on how to evaluate published articles. I think that was really good, and that’s what I’m going to do in my future job.

Nicola: The skills that I found really useful are the theoretical background, including the epidemiology and the statistics, but also what I think has been really important is the practical element like STATA and learning how to do literature searches.

Can you see how you will transfer the skills learned here to your own country / setting?

Janet: The skills that you learn here you can use pretty much all over the world. HTA is a real growing field and there are lots of jobs available, so who knows where I might end up!

Lana: My country right now is in a crisis, so there are few available resources to fund the health sector. My MSc provides me with the ability to give them the right information in order not to make mistakes in the future.

Nicola: The skills that I have learned on the MSc have been really useful, and they’ve got me a three month contract at Newcastle University working as a research assistant. I’m hoping to use them to go on to do a research assistant job at another university, and hopefully go on to do a PhD.
In addition to teaching on the MSc in HTA, members of HEHTA contribute to a variety of courses, both postgraduate and continuing professional development.

**Health Economics module**
*Economic Evaluation in Health Care*
Kathleen Boyd

*Healthcare systems: financing*
Claudia Geue

**PG Certificate in Paediatric Public Health**
*Health Economic Considerations for Smoking Cessation*
Kathleen Boyd

*Interventions in Pregnancy*
Kathleen Boyd

**Masters in Public Health**
*Health Economics*
Julian Nam

*Healthcare Systems*
Claudia Geue

*Cost and Costing*
Claudia Geue

*Health care systems: healthcare decision-making*
Eleanor Grieve

*Introduction to Survival Analysis*
Claudia Geue

**MSc in Human Nutrition**
*Economic Evaluation of Weight Management*
Claudia Geue

**MSc in Global Mental Health**
*Global Mental Health and Economic Evaluation*
Zahidul Quayyum

**MSc Cancer Sciences**
*Drug Development & Clinical Trials*
Kathleen Boyd

**MBChB**
*Translational Public Health Academic Day*
Claudia Geue

*Stats and SIGN lecture*
Jim Lewsey

**Institute of Applied Health Sciences, University of Aberdeen**
*Global Health Systems: Economics Perspectives*
Zahidul Quayyum

**Bangor University short course ‘Health Economics for Public Health Practice and Research’**
*Cost Benefit Analysis lecture*
Emma McIntosh
# Project Supervision

<table>
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<th>Project</th>
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<td>Daniel Loyo Juaregui</td>
<td>Methods for estimating the cost of diabetes: a systematic review.</td>
<td>MSc HTA</td>
<td>Lindsay Govan</td>
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<td>Nicola McMeekin</td>
<td>A cost-utility analysis of Ex-vivo lung perfusion compared to standard lung transplantation in an adult UK population - a decision analytic model.</td>
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<td>Andy Briggs</td>
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<td>Ben Morison</td>
<td>A Systematic Review and Critical Appraisal of Economic Evaluation of Community Level Health Interventions for Improving Maternal and Child Health in Low and Middle Income Countries</td>
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<td>Zahidul Quayyum</td>
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<td>Joanna Targosz</td>
<td>Evaluation of diagnostic methods for Trichomonas Vaginalis in Scotland.</td>
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<td>Jillian Thomson</td>
<td>An evaluation of the cost effectiveness of the rotavirus immunisation programme within NHS Forth Valley.</td>
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<tr>
<td>Yufang Wang</td>
<td>Measuring the costs and benefits of an overnight response service to help people maximise their independence at home</td>
<td>MSc HTA</td>
<td>Eleanor Grieve</td>
</tr>
<tr>
<td>Mei Jie</td>
<td>The cost-effectiveness of financial incentive programs to reduce or prevent obesity in the workplace: a systematic review.</td>
<td>MPH</td>
<td>Kathleen Boyd / Nicki Boyer</td>
</tr>
<tr>
<td>Zhanar Mamiyeva</td>
<td>Systematic review of the association between population ageing, long term care costs and remaining time to death.</td>
<td>MPH</td>
<td>Kathleen Boyd / Claudia Geue</td>
</tr>
</tbody>
</table>
Decision Analytic Modelling Methods for Economic Evaluation

First run in 2007 this course has proved extremely popular, with numbers increasing year on year. In 2013 we extended the course to include a two-day foundation level course which ran 28 – 29 September in 2015, followed by the advanced level course which took place from 30 September to 2 October 2015.

The Foundations course is aimed at health economists and those health professionals with experience of health economics who wish to develop skills and knowledge in decision analysis for purposes of cost effectiveness analysis. It is designed for participants who are familiar with the basic principles of economic evaluation who wish to build, interpret and appraise decision models.

The advanced course is aimed at health economists and those health professionals with experience of health economics who wish to learn about recent methodological developments in cost-effectiveness analysis. It is designed for participants who are familiar with basic decision modelling who wish to learn how to use more advanced modelling methods, and is particularly suitable for those who have attended our Introduction to Modelling Methods for Health Economic Evaluation.

Foundations
‘A fantastic introduction to modelling and making it seem much less complex than I first thought’
‘Excellent through introduction to HEOR’
‘...gives you a great overview about different modelling techniques’
‘Top notch course on economic modelling’

Advanced
‘…very useful and insightful course’
‘The best health economics course I have attended, made even better by the team’s friendly approach throughout’
‘Learn essential modelling skills from the leading analysts in the field on a course that balances technical training with insights into the evidence development and its relevance for the policy process.’
Systematic Review and Meta-Analysis of Direct, Indirect and Mixed Treatment Evidence

Systematic review and meta-analysis are key inputs to healthcare decision-making. They provide important insight into the comparative effectiveness of health technologies based on a systematic appraisal of evidence. These methods have become an integral part of health technology appraisals in many jurisdictions.

Our seventh annual course was held from 15th – 17th April 2015, and attracted participants from governmental bodies, academia and industry, within and outwith the UK.

Introduction to Stata

Originally offered as an optional short session at the start of our Systematic Review and Meta Analysis course, it was decided in 2011 to run the Introduction to Stata as a one-day course. This has proved very popular, with the majority of participants also attending the Introduction to Stata which was held on 14 April, immediately prior to the Systematic Review and Meta-Analysis course. Several participants also attended the Introduction to Stata as a standalone course.

Workshops

‘Impact of the Alcohol Act on off-trade alcohol sales in Scotland’
Dental School, University of Glasgow, 2 February 2015
Claudia Geue

‘Bariatric Support Education Training Scotland (BEST) and Surgical Obesity Treatment Study (SCOT) joint meeting’
Stirling University, 20 March 2015
Eleanor Grieve

‘Current challenges in assessing evidence from network meta-analysis’
University of Glasgow, 24 March 2015
Olivia Wu

‘Introduction to the basics of STATA’
University of Glasgow, 27 March 2015, 14 April 2015
Claudia Geue

Health economics training to public health practitioners in Scotland (funded by Health Economics Network Scotland)
Emma McIntosh

‘Cost-benefit analysis workshop for PhD students’
University of Lucerne, Switzerland, 19 July 2015
Emma McIntosh

“Great tutors...overall a great course.”
“...the course was very good, informative and useful.”
“Everything was excellent - content and pace”
Publications


Boyd KA, Balogun MO, Minnis H. Development of a radical foster care intervention in Glasgow, Scotland. Health Promotion International. 2015


Presentations

Camilla Baba ‘Valuing the health and wellbeing aspects of Community Empowerment (CE) in Urban Regeneration programmes using economic evaluation techniques; a discrete choice experiment (DCE)’, HESG winter conference, Leeds, 7-9 January 2015

Emma McIntosh ‘Asset based approaches and health economics: What do we value and how can we capture it?’, The Lighthouse, Glasgow, 7-9 January 2015


Lindsay Govan, poster presentation ‘Changes in HbA1c over time the Scottish type 2 diabetes population’, European Diabetes Epidemiology Group, Les Fontaines, Chantilly, France, 7-9 January 2015


Eleanor Grieve ‘Methods for assessing the impact of HTA’ iDSI methods working group workshop, York, 26-27 May 2015

Emma McIntosh ‘Mapping from the Parkinson’s Disease Questionnaire 39-item version to the EQ-5D using multinomial logistic regression’, HE facility Birmingham University guest lecture series, Birmingham, 14 May 2015


Pattara Leelahavarong ‘A policy model of alcohol-related harms to predict life years and quality-adjusted life years’, HESG summer 2015 conference, Lancaster University, 22-24 June 2015


Olivia Wu, iDSI evidence working group, iHEA World Congress, Milan, Italy, 12-15 July 2015


Eleanor Grieve iDSI Impact Assessment in the session ‘International Decision Support Initiative (iDSI): prioritising and producing policymaker-relevant economic evaluation, and measuring the impact of better decisions’, iHEA World Congress, Milan, Italy, 12-15 July 2015


Claudia Geue ‘Geographic variation of inpatient care costs at end of life’, Farr Institute International Conference, St Andrews, 26-28 August 2015
Pattara Leelahavarong ‘A policy model of alcohol-related harms to predict life years, quality adjusted life years and lifetime costs’, Farr Institute International Conference, St Andrews, 26-28 August 2015

Kathleen Boyd ‘Counting the costs: complexities, challenges and interim outcomes of the economic analysis in BeST?’, Infant Mental Health for Children in Foster Care Conference, Royal College of Physicians & Surgeons of Glasgow, 28 August 2015

Hannah Hesselgreaves ‘Predictive validity of the UK Clinical Aptitude Test cognitive scale scores: Preliminary findings from a national study’, AMEE, Glasgow, 5-9 September 2015

Kathleen Boyd, Emma McIntosh ‘Cost-effective management of bronchiolitis in infants: 90% versus 94% oxygen saturation’, European Respiratory Society International Congress 2015, Amsterdam, Netherlands, 28 September 2015

Claudia Geue ‘Population ageing and proximity to death: what are the implications for healthcare expenditure?’, seminar presentation, Max Planck Institute for Demographic Research, Rostock, Germany, 21-23 September 2015


Andrew Briggs ‘Statistical Methods for Pharmacoeconomics & Outcomes Research’, ISPOR 18th Annual European Conference, Milan, Italy, 7-11 November 2015


Andrew Briggs, panel discussion ‘Partitioned survival versus state transition modelling in oncology: a case study with Nivolumab in advanced melanoma’, ISPOR 18th Annual European Conference, Milan, Italy, 7-11 November 2015


Andrew Briggs, panel discussion ‘IP7: are current ICER thresholds outdated? Does MCDA offer a more holistic approach to assessing the value of innovative technologies?’, ISPOR 18th Annual European Conference, Milan, Italy, 7-11 November 2015

Bruno Riveros ‘Is a new pharmacoeconomic model demanded for obesity’s pharmacotherapy assessment?’, 7-11 November 2015, ISPOR 18th Annual European Conference, Milan, Italy


Eleanor Grieve, MRC - FFIT Steering Committee, Glasgow, 30 November 2015

Emma McIntosh, Camilla Baba, Eleanor Grieve ‘Contingent Valuation Study: survey results,’ Delivering Innovation for Health and Wealth Conference, Strathclyde University, Glasgow, 9 December 2015.

Membership of Expert Bodies

Kathleen Boyd
Advisory Board Member, Beatson West of Scotland Cancer Care, Clinical Trials Unit:
In-house Trials Advisory Board

Andrew Briggs
Editor, Health Economics
Associate Editor, Value in Health
Trial Steering Committee: NOSH
Trial Steering Committee: DISCHARGE

Jim Lewsey
Chartered Statistician, Royal Statistical Society
Chartered Scientist, The Science Council
Member of Evidence Review Committee for Scottish Health Technologies Group/ Healthcare Improvement Scotland

Emma McIntosh
Member of Editorial Board for BMC Medical Research Methodology
Advisory Board Member, CSO National Burden of Disease, Injuries and risk Factors (ScotPHO)
Advisory Board Member, Scottish Immunisation Programme (SIP) - Epidemiology & Surveillance Reference Group
Advisory Board Member, Multiple Sclerosis Trust: Generating Evidence in MS Services (GEMSS)
Advisory Board Member, Evaluation of the impact of tobacco control mass media campaigns on quitting behaviour, smoking prevalence and smoking-related health outcomes
Board Member, Glasgow Centre for Population Health (2014-current)
Data monitoring Committee 2011-2015: NIHR Paces Trial
National Health Economists Interest Group: Economics of Population Health
Trial Steering committee: Randomised Controlled Trial of Comprehensive Geriatric Assessment in a Hospital at Home setting; Funder: NIHR HSDR project number 12/209/66

Olivia Wu
Member of the Scottish Chief Scientist Office’s Health Service and Population Health Research Committee
Member of the NIHR Systematic Reviews Programme Advisory Group (SRPAG)
Member of the NIHR HTA Evidence Synthesis Board
Member of the National Institute of Health and Care Excellence (NICE) Technology Appraisal Committee