



2017 ANNUAL REPORT

INFORMING POLICY AND PRACTICE
ECONOMIC ANALYSIS OF WORLDWIDE REPUTE

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WELCOME TO THE 2017 ANNUAL REPORT FOR THE CENTRE FOR HEALTH ECONOMICS



This year CHE started new research projects with a wide range of European partners in academia, the healthcare sector, regulators, not for profit groups and industry. This includes a project using a 'big data' approach to identify faster and cost-effective care for people with haematological cancer and another that is investigating chronic bone malignancies in the elderly. We also launched a Marie Skłodowska-Curie Innovative Training Network on improving quality of care in Europe. The network involves colleagues in six European countries. These new projects add to our portfolio of ongoing and recently-completed work across Europe.

We have made significant progress in extending our global health economics research agenda, winning three major grants which will build on CHE's strengths in both methods-based and applied research to inform policy. We have further expanded our collaborations with international partners by building on relationships forged through a wide range of successful research partnerships and grants; by participating in training activities with the Overseas Development Institute, World Bank and many other groups; and by hosting research fellows and visitors from across the world.

Our national and local research agenda has addressed issues relevant to healthcare, social care and public health, across a vast range of clinical and care areas. Research addressing the causes and consequences of physical and mental ill-health, health inequalities and interventions to promote good health and wellbeing, has been a focus of many diverse projects over the year, attracting funding from the NIHR, MRC, ESRC, Health Foundation, Department of Health and a range of local NHS funders.

Whatever the focus of our research, we aim to inform policy and practice with the goal of improving health and well-being. We have worked closely with decision-makers at international, national and local levels to ensure our research is addressing their needs and priorities. For example, over the past year our research has informed the design of a new payment method for specialised mental health services.

Methods-based research has always played an important role in CHE's portfolio, ensuring that our applied research is built on firm foundations. In the past year we have considered methods issues relating to a large number of research areas, including: grading and integrating cost-effectiveness evidence into clinical practice guidelines internationally, framing and cognitive effects in eliciting judgements on health inequality aversion, extrapolation methods for cost-effectiveness

analysis, issues in assessing regenerative medicines and cell therapy products, methods for assessing provider performance, the influence of time horizon in evaluation, frameworks for reflecting the opportunity costs of funding decisions, challenges of assessing medical devices, and the mapping of health state utilities.

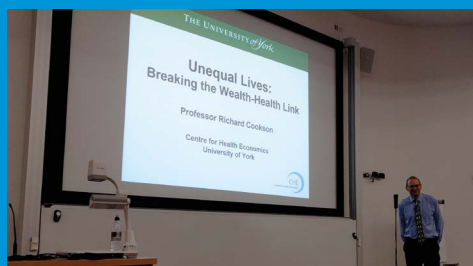
This report provides more in-depth information on some of our current and recently completed research projects. We also celebrate the achievements and activities of staff and students, some of which are reflected in over 100 new publications, a large number of new and ongoing research projects, prizes and PhD successes. We welcomed 16 new members of staff to CHE this year, as well as 15 visitors from all over the world, including our Alan Williams Fellowship holder from Canada. Over 300 people from 39 countries attended our short courses in York to learn about our research.

In January 2019, we will host the Health Economics Study Group meeting here at York. We look forward to seeing many of our friends, colleagues and students at this event.

Finally, I ended my introduction to the last Annual Report with a tribute to the unique contribution of Professor Alan Maynard, the founding director of CHE, noting the publication in December 2016 of our edited book "Maynard Matters", written as a celebration of his work. Very sadly, Alan passed away in February 2018. He will be missed enormously by us all, as a friend, a colleague and a source of inspiration. We have gathered the obituaries and accolades published since Alan's death and details of these can be found on *our website*. We will be working throughout the coming year on ways in which we can commemorate and celebrate Alan's immense contribution to the world of health economics and health policy.

Maria Feddard

HIGHLIGHTS 2017



Richard Cookson gave his Inaugural lecture entitled 'Unequal lives: breaking the wealth-health link' in May 2017. Richard is at the forefront of efforts to develop new analytical tools to enable 'equity-informative' economic evaluation and quality assurance of health services, and the NHS recently adopted his methods for detailed monitoring of local progress in tackling health inequality.



Frances Sharp retired after 32 years of service. Frances's significant contribution included managing the Health Economics journal as well as being CHE's publication manager.

Successful appointments took place for researchers wanting to work in CHE at the cutting-edge of health economics, on projects that will make an original and significant contribution through the Marie Skłodowska-Curie Innovative Training Network "Improving Quality of Care in Europe (ICQE)" within the Horizon 2020 programme of the European Commission. **Laurie Rachet Jacquet** and **Luis Fernandes** joined CHE and the network as PhD training fellows.



Maria Goddard, Panagiotis Kasteridis, Rowena Jacobs, Rita Santos and Anne Mason were authors of the

paper 'Bridging the gap: The impact of quality of primary care on duration of hospital stay for people with dementia' published in the Journal of Integrated Care which was selected by the journal's editorial team as the Outstanding Paper in the 2017 Emerald Literati Network Awards for Excellence.



CHE organised a training day in Health Economics for

new Overseas Development Institute (ODI) Fellows being posted to Malawi, Thailand, Sierra Leone and Zanzibar. This is the third time CHE has hosted the ODI, in what has become an annual training event. **Mathilde Peron, Maria Goddard, Martin Chalkley, Jessica Ochalek, Susan Griffin and Andrew Mirelman** presented to the group.

Major awards

During the course of the year CHE was awarded £3.6 million in new research funding, including new awards from:

- The Health Foundation to examine efficiency, cost and quality of mental healthcare provision. CHE was selected by the Health Foundation, an independent health care charity, to be part of its £1.5 million Efficiency Research Programme focussing on efficiency, cost and quality of mental healthcare provision.
- The EU Horizon 2020 IMI2 fund to identify faster, more effective and cost-effective care for patients with haematological malignancies.
- The NIHR to evaluate several large-scale health policies in Brazil, South Africa and Indonesia and fill a critical evidence gap by applying and developing methods to estimate the impact of such interventions, and assess their value-for-money (see feature pages for full details).
- The Global Challenges Research Fund (GCRF) to tackle global health challenges (see feature pages for full details).
- The Medical Research Council to explore the consequences of the Colombian conflict and 2016 peace deal upon population health (see feature pages for full details).

HIGHLIGHTS 2017

STAFF ACHIEVEMENTS



Karl Claxton, Stephen Palmer, Louise Longworth, Laura Bojke, Susan Griffin, Marta Soares, Eldon Spackman and Claire Rothery (pictured receiving the award) were awarded the International Society for Pharmacoeconomics and Outcomes Research's (ISPOR) 2017 Excellence in Methodology in Pharmacoeconomics and Health Outcomes Research Award for the paper "A comprehensive algorithm for approval of health technologies with, without, or only in research: The key principles for informing coverage decisions" which was published in Value in Health.



Gerry Richardson was appointed as the University representative on the Council of Governors for the York Teaching Hospital NHS Foundation Trust. Governors ensure that the best interests of the community are met by the hospital Trust. In addition to this formal role, Gerry will advocate a more integrated

research environment in which the University of York is more embedded in local evaluation of health interventions.

PHD success for:

- **Miqdad Asaria**
- **Chen Chen**
- **Christoph Kronenberg**
- **Francesco Longo**
- **Mathilde Peron**
- **Marta Soares**

And

Vanessa King on obtaining a BA (Hons) degree in Leadership and Management from the Open University.



Marc Suhrcke was appointed by NHS Health Scotland to be part of the Evaluation Advisory Group, tasked to evaluate the operation and effect of the Minimum Unit Pricing as it was passed in the Alcohol (Minimum Pricing) (Scotland) Act in June 2012.

Promotion success for:

- **Gerry Richardson**
- **Adriana Castelli**
- **Beth Woods**
- **Seb Hinde**
- **Andrew Mirelman**
- **Miqdad Asaria**



Pedro Saramago Goncalves and **Beth Woods** have been given appointments as Honorary (Consultant) Assistant Professors at the University of Nottingham, School

of Medicine, Division of Primary Care.



FINANCIAL INCENTIVES AND HARMFUL TREATMENT: THE CASE OF DENTAL X-RAYS

Many forms of medical treatment have potential risks for patients. Hence there are guidelines and advice to clinicians regarding how treatment should be justified and these require that the likely benefit to the patient should exceed any risk. The decision should be entirely focused on the patient. Dental X-rays are low risk – the dose of radiation is small – but like any form of radiation the effects accumulate over a person's lifetime and there is no safe level of exposure. For that reason X-rays are subject to particular and stringent advice. Again, the focus is on the patient and making sure that any exposure to X-rays has a benefit in terms of better treatment.

PROJECT TEAM



Martin Chalkley
(CHE)

Economists have long held that financial incentives will influence decisions and in the realm of potentially harmful treatments that is problematic because it suggests that it may be the benefit to the doctor (their payment) that is influencing their decision to treat. However, untangling the effect of financial incentives is often difficult because we do not have randomised trials. Clinicians can be subject to different payment systems but they are not assigned to them randomly and patients are similarly distributed across doctors in a non-random way.



Stefan Listl
(University of Radboud, Netherlands)

Work undertaken by Martin Chalkley and Stefan Listl published in the *Journal of Health Economics*¹ aims to untangle the pure effect of financial incentives on dentists' decisions to X-ray their patients. Building on their earlier study², they establish that a dentist being switched from a salary payment to fee-for-service (which gives a separate payment for X-rays) significantly increases the chance that their patient will receive an X-ray. That goes against the requirement to ensure that only the patient's benefit, balanced against the risk to them, should influence the decision.

The research utilised a highly detailed data set gathered between 1998 and 2007 by NHS

Scotland on Scottish dentists and their patients. Scotland employs a mixture of 'fee-for-service' and salaried dentists. The presence of the two payment methods and observing dentists moving between different systems and following the treatment of the same patients over time, makes these data very powerful for identifying and measuring the effects of financial incentives.

The research also identifies other factors that influence the delivery of X-rays but probably should not. For example patients are much more likely to receive X-rays if they are new patients to a particular dentist – even though they may have received X-rays recently by another dentist. The research also establishes that whether or not the patient pays for their treatment influences the chances of them receiving X-rays. Patients who are exempt from charges receive more X-rays.

Taken together, these findings indicate that the advice and regulations concerning dental X-rays may need to be strengthened and improved.

¹ Chalkley M, Listl S. First do no harm: the impact of financial incentives on dental X-rays. *Journal of Health Economics* 2018;58:1-9.

² Listl S, Chalkley M. Provider payment bares teeth: Dentist reimbursement and the use of check-up examinations. *Social Science & Medicine* 2014;111:110-116.

RESEARCH PROJECTS

CHE FUNDERS

Research projects are arranged in themes to reflect the cross-cutting nature of CHE research. CHE has a broad funding base and a list of funders follows:

- **Bill and Melinda Gates Foundation**
- **British Heart Foundation**
- **Department of Health (DH)**
 - Policy Research Unit in Economic Evaluation of Health and Care Interventions (EEPRU)
 - Economics of Social and Health Care Research Unit (ESHCRU)
 - Public Health Research Consortium (PHRC)
- **Economic & Social Research Council (ESRC)**
- **Engineering and Physical Sciences Research Council (EPSRC)**
- **European & Developing Countries Clinical Trials Partnership (EDCTP)**
- **European Commission**
 - Innovative Medicines Initiative (IMI) H2020 programme
 - Marie Skłodowska-Curie Actions Innovative Training Networks
- **EuroQol Research Foundation**
- **German Ministry for Education and Research**
- **Harrogate and District NHS Foundation**
- **Health Foundation**
- **Inter-American Development Bank**
- **London Mental Health Transformation Programme**
- **Luxembourg Institute of Health**
- **Medical Research Council (MRC)**
- **Clinical Trials Unit (CTU)**
- **National Institute for Health Research (NIHR)**
 - Central Commissioning Facility (CCF)
 - Collaboration for Leadership in Applied Health Research and Care Yorkshire and Humber (CLAHRC YH)
 - Global Health Research
 - Health Services & Delivery Research (HS & DR)
 - Health Technology Assessment (HTA)
 - NIHR Evaluation Trials and Studies Coordinating Centre (NETSCC)
 - Policy Research Programme (PRP)
 - Public Health Research (PHR)
 - Research and Development (R&D) Programme
 - Research Capability Funding (RCF)
 - School for Social Care Research (SSCR)
 - Technology Assessment Reviews (TARS)
- **National Institute for Health and Care Excellence (NICE)**
- **NHS England**
- **Patented Medicine Prices Review Board – Government of Canada (PMPRB)**
- **Research Councils UK**
 - GCRF
- **Riksbanken Jubileumsfond: the Swedish Foundation for Humanities and Social Sciences**
- **The World Bank**
- **University of York**
 - Centre for Chronic Diseases and Disorders (C2D2)
 - Centre for Future Health
 - Impact Acceleration Accounts (IAA)
 - ReCSS Interdisciplinary Research Groups Funding Scheme
- **Yorkshire Cancer Research (YCR)**
- **Yeovil District Hospital**
- **York Trust**

RESEARCH PROJECTS

In progress and completed in 2017

ECONOMIC EVALUATION

A scoping review on the production of different aspects of quality of health care

Simon Walker, Mark Sculpher, Nils Gutacker
Funder: DH PRP EEPURU

ARREST – Adjunctive Rifampicin to reduce early mortality from staphylococcus aureus bacteraemia: a multi-centre, randomised, blinded, placebo trial

Marta Soares, Pedro Saramago Goncalves, Edward Cox
Funder: NIHR HTA

Assessing a brief Value of Information (VoI) method for its potential use in assisting panel and board decision making

Claire Rothery, Karl Claxton, David Glynn
Funder: NIHR HTA

Canadian CE Threshold to inform price setting

Jessica Ochalek, James Lomas, Karl Claxton (CHE), Chris McCabe (University of Alberta)
Funder: PMPRB (Patented Medicine Prices Review Board – Gov of Canada)

Cost-effectiveness analysis of CEMARC II (Clinical Evaluation of Magnetic Resonance imaging in Coronary heart disease II)

Simon Walker, Mark Sculpher (CHE), John Greenwood (University of Leeds)
Funder: British Heart Foundation

De-linking reimbursement of antimicrobials from volumes sold: assessing alternative arrangements and implications for NICE appraisal

Claire Rothery, Beth Woods, Mark Sculpher, Laetitia Schmitt, Stephen Palmer, Karl Claxton
Funder: DH PRP EEPURU

Developing a reference protocol for expert elicitation in health care decision making

Laura Bojke, Marta Soares, Eleftherios Sideris, Karl Claxton, Aimee Fox, Dina Jankovic
Funder: MRC

Economic evaluation of public health programmes with costs and effects falling outside the NHS and local authority

Mark Sculpher, Susan Griffin, Simon Walker
Funder: DH PHRC

Economic evaluation of the Accelerate, Coordinate and Evaluate (ACE) programme for the early diagnosis of cancer

Sebastian Hinde, Susan Griffin, Mark Sculpher
Funder: DH PRP EEPURU

ELFIN: A multi-centre randomised placebo-controlled trial of prophylactic enteral supplementation with bovine lactoferrin

Gerry Richardson, Francesco Fusco
Funder: NIHR HTA

Enhancing social-emotional health and wellbeing in early years trial (E-SEE)

Simon Walker, Gerry Richardson
Funder: NIHR PHR

Estimating health opportunity costs (the cost-effectiveness threshold) for the NHS

Karl Claxton, James Lomas, Marta Soares, Mark Sculpher (CHE), Steve Martin (Department of Economics and Related Studies, University of York)
Funder: DH PRP EEPURU

Facilitating patient choice in haemato-oncology

Andrea Manca, Hyacinthe Kankeu
Funder: NIHR Prog Grant

FAST Forward – a randomised clinical trial testing a 1-week course of curative whole breast radiotherapy against a standard 3-week schedule in terms of local cancer control and late adverse effects in women with early breast cancer

Susan Griffin, Mark Sculpher
Funder: NIHR HTA

Global cost effectiveness thresholds for Bill and Melinda Gates Foundation

Karl Claxton, Paul Revill, Claire Rothery, James Lomas, Jessica Ochalek
Funder: Bill and Melinda Gates Foundation

Healthcare Alliance for resourceful medicines offensive against Neoplasms in Haematology (HARMONY)

Andrea Manca
Funder: European Commission IMI H2020 programme

Health economics of personalised medicine

Andrea Manca (CHE), Cynthia Iglesias (Department of Health Sciences, University of York)
Funder: Luxembourg Institute of Health

Health economics and outcomes measurement

Laura Bojke, Gerry Richardson, Sebastian Hinde, James Lomas, Mark Sculpher (CHE), Tracey Young, John Brazier (University of Sheffield)
Funder: NIHR CLAHRC YH

High priority Cochrane Reviews in wound prevention and treatment

Marta Soares
Funder: NIHR NETSCC

Improving the Wellbeing of people with Opioid Treated CHronic pain (I-WOTCH)

Andrea Manca (CHE), Cynthia Iglesias (Department of Health Sciences, University of York)
Funder: NIHR HTA R&D Programme

RESEARCH PROJECTS

In progress and completed in 2017

MDS-RIGHT: providing the right care to the right patient with MyeloDysplastic Syndrome at the right time

Andrea Manca, Thomas Patton (CHE), Cynthia Iglesias, Alexandra Smith, Simon Crouch, Tom Johnston, Ge Yu, (Department of Health Sciences, University of York)
Funder: European Commission

Mind the risk

Andrea Manca
Funder: Riksbanken Jubileumsfond: the Swedish Foundation for Humanities and Social Sciences

Modelling generic preference based outcome measures – development and comparison

Andrea Manca
Funder: MRC

Multiple versus staged stenting for elective PCI

Laura Bojke, Gerry Richardson, Nils Gutacker, Miqdad Asaria, Katja Grašič, Alessandro Grosso (CHE), Patrick Doherty, Alex Harrison (Department of Health Sciences, University of York)
Funder: NIHR RCF

NETSCC: TARS – Production of Technology Assessment Reviews for the NIHR

Laura Bojke, Susan Griffin, Stephen Palmer, Claire Rothery, Mark Sculpher, Marta Soares, Simon Walker, Beth Woods, Ana Duarte, Rita Faria, Sebastian Hinde, Eleftherios Sideris, James Lomas, Mathilde Peron, Pedro Saramago Goncalves
Funder: NIHR TARS

NICE Economic and Methodological Unit

Helen Weatherly, Susan Griffin, Simon Walker, Rita Faria, Mark Sculpher (With York Health Economics Consortium)
Funder: NICE

Opioids in heart failure

Gerry Richardson (With Miriam Johnson, University of Hull)
Funder: British Heart Foundation

PREVAIL – PREVenting infection using Antibiotic Impregnated Long lines

Laura Bojke, Rita Faria, Alessandro Grosso (CHE), Ruth Gilbert (UCL)
Funder: NIHR HTA NETSCC

Partnerships between deaf people and hearing dogs: a mixed methods realist evaluation?

Bryony Beresford (SPRU, University of York), Catherine Hewitt (Department of Health Sciences, University of York), Helen Weatherly, Simon Walker (CHE)
Funder: NIHR SSCR

Prevalence and economic burden of medication errors in the NHS in England

Rita Faria, Mark Sculpher, Dina Jankowic (CHE), Rachel Elliott, Elizabeth Camacho (University of Manchester), Fiona Campbell, Marissa Martyn St James, Ruth Wong, Eva Kaltenthaler (University of Sheffield)
Funder: DH PRP EEPRU

Prevention of progression to cirrhosis in hepatitis C with fibrosis; effectiveness and cost effectiveness of sequential therapy

Rita Faria, Beth Woods, Susan Griffin, Steve Palmer, Mark Sculpher
Funder: DH PRP EEPRU

Revived – REVascularisation OF Ischaemic Ventricular Dysfunction: a randomised comparison of percutaneous coronary intervention (with optimal medical therapy) versus optimal medical therapy alone for heart failure secondary to coronary

Mark Sculpher
Funder: NIHR HTA

Systematic review of the cost-effectiveness of alternative follow-up arrangements in cancer and interviews with clinicians

Gerry Richardson, Mark Sculpher (CHE), Marco Barbieri (Honorary Visiting Fellow CHE)
Funder: DH PRP EEPRU

SWIFFT – Scaphoid waist internal fixation for fractures trial: cast treatment versus surgical fixation of fractures of the scaphoid waist in adults: a multi-centre randomised controlled trial

Stephen Brealey (Department of Health Sciences, University of York), Gerry Richardson (CHE)
Funder: NIHR HTA

The cost-effectiveness of cascade testing for familial hypercholesterolaemia

Mark Sculpher, Beth Woods, Pedro Saramago Goncalves, Rita Faria, Susan Griffin
Funder: NIHR HTA

The Wearable Clinic for Digital Care Services

Andrea Manca
Funder: EPSRC

UK FROST – Multi-centre randomised controlled trial with economic evaluation and nested qualitative study comparing early structured physiotherapy versus manipulation under anaesthesia versus arthroscopic capsular release for patients referred to secondary care with a frozen shoulder (adhesive capsulitis)

Gerry Richardson (With Amar Rangan, The James Cook University Hospital)
Funder: NIHR HTA

RESEARCH PROJECTS

In progress and completed in 2017

HEALTH POLICY

Competition policy in other health systems and what can be learned for UK health policy

Luigi Siciliani (Department of Economics and Related Studies, University of York), Martin Chalkley, Hugh Gravelle (CHE)

Funder: The Health Foundation

Does commuting affect health and well being?

Nigel Rice, Nikita Jacobs

Funder: ESRC

European Training Network: Improving Quality of Care in Europe (IQCE)

Martin Chalkley, Luigi Siciliani in collaboration with Universität Hamburg (Lead), Universidade de Lisboa, University of Southern Denmark, Bocconi University, Erasmus University Rotterdam.

Funder: European Commission Marie Skłodowska-Curie Actions Innovative Training Networks

Evaluating the cost-effectiveness of the Best Practice Tariff for hip fracture

Andrew Street, Katja Grašič, Nils Gutacker, James Gaughan

Funder: NHS England

Evaluating the intended and unintended consequences of best practice tariffs on patient health outcomes and provider behaviour

Nils Gutacker, James Gaughan, Katja Grašič,

Luigi Siciliani, Andrew Street

Funder: DH

Fast response analytical facility

Karen Bloor, Tim Doran (Department of Health Sciences, University of York), Yvonne Birks (SPRU, University of York), Andrew Street (CHE)

Funder: NIHR PRP CCF

Health care expenditures, proximity to death and changes over time

Nigel Rice, Maria Jose Aragon

Funder: DH

Hospital service reconfiguration, small hospitals and closure

Luigi Siciliani, Hugh Gravelle, Giuseppe Moscelli, James Gaughan

Funder: DH

Incentive schemes to increase the number of people diagnosed with dementia: an evaluation of the effects, costs and unintended consequences

Anne Mason, Maria Goddard, Rowena Jacobs, Panos Kasteridis, Dan Liu (CHE), (Raphael Wittenberg, LSE, London)

Funder: DH

Locally Priced Services – establishing an efficiency frontier

Martin Chalkley, Rowena Jacobs

Funder: NHS England

Market structure, patient choice and the effect on responsiveness and efficiency

Luigi Siciliani, Hugh Gravelle, Giuseppe Moscelli

Funder: DH

Market structure and general practice quality

Hugh Gravelle, Dan Liu, Rita Santos (CHE), Carol Propper (Imperial)

Funder: DH

Measuring and explaining variations in general practice performance

Rita Santos

Funder: NIHR CCF (Doctoral Research Fellowship)

Production of evidence syntheses for the HS&DR programme

Andrew Street (With Alison Eastwood, CRD, University of York)

Funder: NIHR HS&DR NETSCC

Providers' response on the pay for performance incentives

Katja Grašič

Funder: NIHR CCF (Doctoral Research Fellowship)

The effect of public and private ownership and management on healthcare quality

Luigi Siciliani, Hugh Gravelle, Giuseppe Moscelli, Nils Gutacker

Funder: DH

The role of EQ-5D value sets based on patient preferences in the context of hospital choice in the national PROM Programme in England

Nils Gutacker, Thomas Patton

Funder: EuroQol Research Foundation

Understanding the relationship between clinical quality of primary care and patient self-reported health in England

Hugh Gravelle with Yan Feng, Nancy Devlin (OHE)

Funder: EuroQoL Research Foundation

HEALTH CARE EXPENDITURES AND END-OF-LIFE CARE

The real-terms increase in health care expenditure observed in England over the last 20 years raises the spectre of health care spending becoming an ever-greater proportion of GDP, placing an increasing burden on government revenues at a time when financial constraints are particularly tight. In a series of papers, Maria José Aragon, Martin Chalkley and Nigel Rice examine the drivers of health care expenditures over time with a particular focus on expenditure in proximity to death.

In the first in the series the authors used detailed administrative data to explore the growth in expenditure and activity in hospital inpatient care in England over a 15 year period to 2012-13¹. They investigate how expenditure reflects trends in activity and changes in morbidity and the age and gender characteristics of the population over the period. They find: (i) expenditure for both elective and emergency inpatient care broadly follows activity, so that expenditure is mostly driven by activity rather than unit costs; (ii) expenditure is concentrated in individuals with multiple diseases, so that the prevalence and identification of complex medical conditions are important drivers of expenditure; and (iii) health care activity rises dramatically for individuals in the period before death so that expenditures are driven substantially by morbidity in the population.

A second paper focuses on expenditure at the end of life (EOL) by considering evidence across nine developed countries². Although EOL medical spending is often viewed as a major component of aggregate medical expenditure, accurate measures are surprisingly scarce. In all countries EOL medical spending is high relative to spending at other ages. Spending in the last 12 months of life as a share of aggregate health care spending ranges from 8.5% in the United States to 11.2% in Taiwan. Spending is high well before death, with up to 24.5% of the health budget spent on those in the last three

years of life. This suggests that the problem is not exorbitant spending on last-ditch efforts to save lives, but that caring for chronically ill people, many of whom die, is costly.

In a final paper, Howdon and Rice draw on a panel data of inpatient activity observed over a seven-year period, to consider proximity to death in models of health care expenditures³. They find that health care expenditures are principally determined by proximity to death rather than age, but importantly that proximity to death is itself a proxy for morbidity. Their findings support other literature that it is not age per se, but time-to-death (TTD), particularly the final year of life, that is a strong driver of health care expenditures. By including morbidity characteristics, they extend this literature by showing that TTD in large part proxies for underlying health status. This is important to allow the planning of future resource requirements and in developing appropriate models for budgets to be allocated equitably across providers of care in response to population health care need.

1 Aragon M-J, Chalkley M, Rice N. Medical spending and hospital inpatient care in England: an analysis over time. *Fiscal Studies* 2016;37(3-4):405-432.

2 French E, McCauley J, Aragon J, Bakx P, et al. End-of-life medical spending in last twelve months of life is lower than previously reported. *Health Affairs* 2017;36(7):1211-1217.

3 Howdon D, Rice N. Health care expenditures, age, proximity to death and morbidity: implications for an ageing population. *Journal of Health Economics* 2018;57:60-74.

PROJECT TEAM



Maria José Aragon



Martin Chalkley



Nigel Rice

RESEARCH PROJECTS

In progress and completed in 2017

MENTAL HEALTH

A feasibility study to examine the suitability of the new funding approach, Payment by Results (PbR), to improve mental health services in England

Rowena Jacobs, Maria Jose Aragon, Martin Chalkley (CHE), Jan Boehnke (Hull York Medical School), Simon Gilbody (Department of Health Sciences, University of York), Mike Clark (LSE, London), Valerie Moran (LSHTM, London)

Funder: University of York C2D2

Addressing mental & physical health comorbidity in Low and Middle Income countries in South Asia: establishing the York Mental and Physical Comorbidity Global Health Research Group

Rowena Jacobs (CHE), with colleagues across University of York

Funder: University of York Centre For Future Health

Commissioning secure mental health services and complex care pathways

Martin Chalkley, Rowena Jacobs, Maria Jose Aragon

Funder: DH PRP EEPUR

Does better quality of primary care improve outcomes for patients with serious mental illness (SMI)? An analysis of the relationship between SMI management and outcomes using the first linked data on the full patient care pathway

Rowena Jacobs, Maria Goddard, Hugh Gravelle, Nils Gutacker, Panos Kasteridis, Anne Mason, Nigel Rice, Jemimah Ride (CHE), Tim Doran, Najma Siddiqi, Simon Gilbody (Department of Health Sciences, University of York), Tony Kendrick (University of Southampton), Ceri Owen, Lauren Aylott (Service Users) Christoph Kronenberg (University of Duisburg-Essen)

Funder: NIHR HS&DR

Efficiency, cost and quality of mental healthcare provision

Rowena Jacobs, Adriana Castelli, Maria Goddard, Hugh Gravelle, Nils Gutacker, Anne Mason (CHE) with colleagues from University of Sheffield and University of Birmingham

Funder: Health Foundation

Improving diabetes outcomes for people with severe mental illness: a longitudinal observational and qualitative study of patients in England

Rowena Jacobs (CHE), with colleagues across University of York

Funder: NIHR HS&DR

Mental health outcomes in London: Clinical engagement with HoNOS

Rowena Jacobs, Jemimah Ride

Funder: The London Mental Health Transformation Programme

NHS York: Evaluating psychiatric liaison service

Laura Bojke, Gerry Richardson, Seb Hinde

Funder: York Trust

Variations in costs and outcomes under the National Tariff Payment System for mental health services in England

Rowena Jacobs, Giuseppe Moscelli, Nils Gutacker, Anne Mason

Funder: DH

Wellbeing at Work: integrating management, health, economic and social policy perspectives

Rowena Jacobs (CHE), with colleagues across University of York

Funder: University of York ReCSS Interdisciplinary Research Groups Funding Scheme

EQUITY IN HEALTH AND HEALTH CARE

Health equity impacts: evaluating the impacts of organisations and interventions on social inequalities in health

Richard Cookson

Funder: NIHR, Senior Research Fellowship



CHE CONTINUES TO DEVELOP RESEARCH IN GLOBAL HEALTH ECONOMICS

This has been an exciting year for CHE with new grants to expand our work in global health economics. Awarded under various funding streams, including the Grand Challenges Research Fund (GCRF) – the UK government's new and ambitious development research initiative – the grants build upon CHE's strengths in both methods research and applied research to inform policy.

WRITTEN BY



Paul Revill

GLOBAL HEALTH ECONOMICS AND ECONOMETRICS (GHE2) GROUP: EVALUATING POPULATION- AND HEALTH SYSTEM-LEVEL INTERVENTIONS, USING OBSERVATIONAL DATA

GHE2 was awarded by GCRF, through the National Institute for Health Research (NIHR). It involves collaboration with researchers in Brazil, South Africa and Indonesia to evaluate the average and distributional impact of large-scale population- and health system-level interventions, using advanced econometric methods. The work will complement an impact evaluation with an assessment of the value-for-money offered by the interventions.



Marc Suhrcke

THANZI LA ONSSE (HEALTH OF ALL); DEVELOPING AND APPLYING METHODS OF ECONOMIC ANALYSIS TO INFORM HEALTH POLICIES IN EAST AND SOUTHERN AFRICA

In the *Thanzi la Onse* programme, CHE researchers will work closely with collaborators and policy-makers in Malawi, Uganda and East Africa. Methods and data produced by the study will inform the setting of health care budgets, resource allocation and other health policies. Funding was received by GCRF through the Research Councils UK Grow award scheme.



Rodrigo Moreno-Serra

WAR AND PEACE: EXPLORING THE HEALTH AND HEALTH SYSTEM CONSEQUENCES OF CONFLICT IN COLOMBIA

The goal of the *War and Peace* project is to examine the impacts of long-term internal

conflict for population health, the health system and post-conflict health policymaking through an in-depth study of the experience of conflict and peace agreement in Colombia. CHE has been awarded funding through the Joint Health Systems Research Initiative (MRC/ESRC/DFID/Wellcome Trust) to work in partnership with academics and policymakers in Colombia and the UK.

EXPANDED COLLABORATIONS WITH THE HIV MODELLING CONSORTIUM AND THE MRC CLINICAL TRIALS UNIT

In addition to the three new grants, we have continued our collaborations with existing partners and long term collaborators. In an expansion of our partnership with the HIV Modelling Consortium, an award was received to explore the application of value-of-information analyses to guide the prioritization of research and evidence generation activities in HIV and other disease areas. With colleagues at the MRC trials unit at UCL, we have been awarded a number of new grants and have published papers from completed studies.

GCRF and other development research funding aims for research to be "challenge led", "innovative" and "responsive". The premise being that the lives of poor people across the world can be improved not just through traditional development assistance, but also through new knowledge and activities to support the uptake of research into policy and practice. The task now facing CHE investigators and our partners is to demonstrate that this ambition can be realised.

RESEARCH PROJECTS

In progress and completed in 2017

GLOBAL HEALTH

Characterising patterns and changes in physical activity in older people and their determinants and consequences

Marc Suhrcke
Funder: MRC

Children with HIV in Africa – pharmacokinetics and acceptability of simple antiretroviral regimens (CHAPAS 4)

Paul Revill, Jessica Ochalek, Beth Woods, Alex Rollinger
Funder: EDTCP

Development of a new paradigm in differentiated care for HIV Patients

Paul Revill, Simon Walker
Funder: MRC

Estimating cost-effectiveness thresholds: a case study on Indonesia

Marc Suhrcke, Mark Sculpher, Karl Claxton, Paul Revill, Andrew Mirelman, Noemi Krief, Rodrigo Moreno-Serra, Alex Rollinger
Funder: Gates Foundation via International Decision Support Initiative

Evaluating the role of fiscal policy in improving diets and preventing chronic disease in Chile

Marc Suhrcke, Andrew Mirelman
Funder: MRC

Extension to economic analysis of the REALITY trial

Simon Walker, Paul Revill, Marta Soares, Edward Cox
Funder: MRC CTU

Health expenditure efficiency in Latin America and the Caribbean

Rodrigo Moreno-Serra
Funder: Inter-American Development Bank

HIV modelling consortium: four year programme grant

Mark Sculpher, Paul Revill, Claire Rothery, Karl Claxton, Beth Woods
Funder: Bill and Melinda Gates Foundation

Implementation of COPD case finding and self-management action plans in low and middle income countries

Andrew Mirelman, Marta Soares
Funder: MRC

Improving statistical methods to address confounding in the economic evaluation of health interventions

Noemi Kreif
Funder: MRC

LeishPathNet: Towards a research network for the molecular pathological stratification of leishmaniasis

Paul Revill, Mark Sculpher, Rita Santos
Funder: MRC, GCRF Foundation Award

Macroeconomic and welfare consequences of road traffic injuries in low and middle income countries

Marc Suhrcke, Andrew Mirelman
Funder: The World Bank

NIHR global health research group on Global Health Econometrics and Economics (GHE2)

Marc Suhrcke, Rodrigo Moreno-Serra, Noemi Kreif, Andrew Mirelman, Mark Sculpher, Paul Revill, Stephen Palmer, Martin Chalkley, Nigel Rice, Richard Cookson (CHE). (With PRICELESS SA, Wits University School of Public Health (South Africa). Foundation Economic Research Institute (FIPE), University of São Paulo (Brazil). Center for Health Economics and Policy Studies (CHEPS), Universitas Indonesia (Indonesia)).
Funder: NIHR – Global Health Research

Supporting the uptake of methods developments in economic evaluation for use in low- and middle-income countries

Paul Revill, Jessica Ochalek, Karl Claxton, Mark Sculpher
Funder: University of York IAA

Thanzi la Onse (Health of All): Frameworks and analysis to ensure value for money health care – developing theory, changing practice

Mark Sculpher, Paul Revill, Martin Chalkley, Alex Rollinger, Laure Bedecarrax, Beth Woods, Simon Walker, Peter C Smith, Susan Griffin, Marc Suhrcke (CHE). (With Department of Politics, University of York. Department of Health Sciences, University of York. Overseas Development Institute (ODI). Center for Global Development (CGD). Imperial College London. University College London. College of Medicine, University of Malawi. MRC/UVRI & LSHTM Uganda Research Unit on AIDS).
Funder: GCRF, RCUK

SUPPORTING DECISIONS IN THE USA WITH ECONOMIC EVALUATION – CHE'S CONTRIBUTIONS

Economic evaluation is now being used extensively internationally to inform health care decisions, particularly regarding health systems' funding of branded pharmaceuticals and other medical technologies. One country where these methods have been less impactful is the USA. In part, this reflects health care in the USA being fragmented, with many different payers and providers from the private and public sectors, as well as legal restrictions on the use of these methods by some organisations.

This mixed picture of uptake of economic evaluation is against the backdrop of some major policy challenges. There are concerns about the prices of new branded pharmaceuticals, particularly for cancer, and their implications for the co-payments facing patients. The USA has a large research community with an interest in developing the methods of economic evaluation and in using these tools to support decisions. Two recent initiatives sought to promote economic evaluation in the USA, and CHE has made important contributions to each.

The first was the 2nd Panel on Cost-Effectiveness Analysis in Health and Medicine, which published its recommendations in late 2016¹. Together with two researchers based in Canada, Mark Sculpher contributed a non-US perspective to the Panel's deliberations. The second initiative was a Special Task Force on US Value Frameworks established by ISPOR, a professional society for health economics and outcomes research². Mike Drummond was a member of the Task Force and Mark Sculpher was part of its Stakeholder Advisory Panel³.

There are important differences between these initiatives. The Panel's contributions focused on defining a Reference Case for cost-effectiveness analysis and key elements of good practice. In contrast, a key aim of the Task Force was to challenge existing methods, in particular with respect to aspects of value generally excluded. Some recommendations are similar, including that quality-adjusted life-years (QALYs) should be central to economic analysis informing health plan coverage and reimbursement decisions.

The QALY is also an important element of NICE's methods guidelines for economic evaluation to support technology appraisal decisions, but the recommendations of the US initiatives differ from NICE's in several ways. For example, the Panel recommend some form of 'societal' perspective for cost-effectiveness analysis as part of its Reference Case. The ISPOR Task Force recommends the consideration of more comprehensive aspects of value in economic evaluation, which could include 'real option value' and the 'value of hope'.

Although the Panel also recommends the use of a 'health system perspective' and the ISPOR Task Force acknowledges the existence of budget constraints, both contrast with NICE's approach, which focuses on health gain, expressed in QALYs, using the NHS and personal social services budget. Whether these differences in approach can be explained by social and cultural differences between the two countries is an interesting question.

It remains to be seen whether these recent US initiatives increase the uptake of economic evaluation in policy. Health systems internationally face acute challenges in allocating resources and questions remain regarding the extent to which economic evaluation should be used to guide decisions.

WRITTEN BY



Mark Sculpher



Mike Drummond

¹ Sanders GD, et al. Recommendations for conduct, methodological practices, and reporting of cost-effectiveness analyses. Second Panel on Cost-Effectiveness in Health and Medicine. *Journal of the American Medical Association* 2016;316:1093-1103.

² Garrison LP, et al. A health economics approach to US value assessment frameworks-summary and recommendations of ISPOR Special Task Force Report. *Value in Health* 2018;21:161-5.

³ Sculpher M. ISPOR's initiative on US value assessment frameworks: seeking a role for health economics. *Value in Health* 2018;21:171-2.

RESEARCH PROJECTS

In progress and completed in 2017

HEALTH AND SOCIAL CARE

Evaluation of South Somerset's complex care and enhanced primary care arrangements (Vanguard)

Panos Kasteridis, Anne Mason, Andrew Street (Led by NHS South, Central and West Commissioning Support Unit)

Funder: Yeovil District Hospital

Evaluation of specialist nursing support for carers of people with dementia

Gillian Parker, Kate Gridley (SPRU, University of York), Helen Weatherly, Rita Faria, Francesco Longo (CHE)

Funder: NIHR HS&DR

Evaluation of the intergrated personal commissioning programme

Helen Weatherly, Rita Faria, Francesco Longo

Funder: DoH PRP

General practitioners and emergency department (GPED)

Nils Gutacker

Funder: NIHR HS & DR

Harrogate Vanguard 1

Gerry Richardson, Laura Bojke, Seb Hinde

Funder: Harrogate and District NHS Foundation

Higher quality primary care for dementia: the effects on risk of care home placement

Anne Mason, Maria Goddard, Rowena Jacobs, Panos Kasteridis, Dan Liu (CHE), Dan Howdon (University of Groningen), Raphael Wittenberg (LSE, London)

Funder: DH

Interdependency and coordination of health and care services: using economic methods to define target groups and care pathways

Andrew Street, Panos Kasteridis, James Gaughan, Anne Mason (with LSE and University of Kent)

Funder: DH

MORE – Models Of Reablement Evaluation: a mixed methods evaluation of a complex intervention

Parvaneh Rabiee, Gillian Parker, Bryony Beresford, Fiona Aspinall (SPRU, University of York), Helen Weatherly, Rita Faria, Ana Duarte (CHE)

Funder: NIHR HS&DR

PACT – Partnerships at Care Transition: Improving patient experience and safety

Gerry Richardson

Funder: NIHR Prog Grant

Vision rehabilitation services: investigating the impacts of two service models

Helen Weatherly, Pedro Saramago Goncalves

Funder: NIHR SSCr

York CCG collaboration

Rehabilitation: Ana Duarte, Laura Bojke,

Gerry Richardson

Care hubs: Ana Duarte, Laura Bojke, Gerry Richardson (CHE), Chris Bojke (University of Leeds)

Health checks: Seb Hinde, Gerry Richardson, Laura Bojke

Funder: NIHR

Yorkshire Lung Cancer Screening

Mark Sculpher

Funder: YCR

PUBLIC HEALTH

CAPITAL4HEALTH – Capabilities for active lifestyle

Marc Suhrcke

Funder: German Ministry for Education and Research

CLAHRC II – health economics and outcomes measurement

Mark Sculpher, Laura Bojke, Susan Griffin (CHE),

Karen Bloor (Department of Health Sciences, York)

Funder: NIHR CCF

Commissioning public health services: the impact of the health reforms on access, health inequalities and innovation in service provision

Anne Mason, Dan Liu, (Led by Linda Marks, Durham University)

Funder: DH PRP

Enhancing social-emotional health and wellbeing in the early years: a community-based randomised controlled trial (and economic) evaluation of the incredible years infant & toddler (0 – 2) parenting programmes

Tracey Bywater, Amanda Mason-Jones, Kate Pickett (Department of Health Sciences, University of York), Gerry Richardson (CHE), Kathleen Kiernan (SPSW, University of York)

Funder: NIHR PHR

Opportunities within the school environment to shift the distribution of activity intensity in adolescents

Marc Suhrcke

Funder: DH PRP

DIAGNOSTICS

With advances in technology in recent years there is a growing range of new diagnostic and prognostic tests. Their increasing price tags place pressure on health systems, and resourcing decisions need to consider the value of these technologies.

There is a long history of value assessment for drugs and other treatments, using Health Technology Assessment (HTA), which typically evaluates not just effectiveness but also cost-effectiveness. However, tests differ from treatments in the way value is accrued to the population of users: ultimately, their objective is to identify patients that are expected to benefit the most from different treatments, which means that value depends critically on downstream health care choices. Hence, health systems need to consider not only which tests should be used, but also the best way to proceed clinically, from the information they provide. Perhaps recognising this, a number of health systems have created separate HTA processes for diagnostic/prognostic technologies, such as the Diagnostics Assessment Programme (DAP) at NICE for England and Wales and the HTA of co-dependent technologies in Australia. Methodological research has however, given little attention to how methods of HTA (and cost-effectiveness in particular) differ for these diagnostic/prognostic technologies.

A team of CHE researchers has considered the assessments of value for diagnostic and prognostic tests in the context of HTA. They specify the characteristics of these technologies of relevance to HTA, including the mechanisms of accrual of value based around three components: classification (how patients are differentiated), choice (what management decisions are made) and outcome (what impact is there on patients' health). A methodological framework for the HTA of tests is then applied to technologies with dichotomous results (for example, presence or absence of disease), where most methodological research has focussed up to now. The framework is

extended to consider tests that provide more complex information, such as continuous measures (for example, blood glucose measurements) or multiple categories (such as tumour classification systems). Throughout, graphical ways of summarising the results of such complex assessments of value to decision makers are suggested¹.

This research builds on a number of applied evaluations of diagnostic/prognostic tests undertaken in CHE for a wide range of funders and across a range of disease areas, including, prostate cancer², cervical abnormalities³, coronary artery disease⁴, pregnancy⁵ and prenatal testing⁶.

- 1 Soares MO, Walker S, Palmer S, Sculpher M. Establishing the value of diagnostic and prognostic tests in Health Technology Assessment. *Medical Decision Making*. In Press
- 2 Faria R, Soares MO, Spackman E, Ahmed HU, et al. Optimising the diagnosis of prostate cancer in the era of multi-parametric magnetic resonance imaging: a cost-effectiveness analysis based on the Prostate MR Imaging Study (PROMIS). *European Urology* 2018;73(1):23-30.
- 3 Péron M, Llewellyn A, Moe-Byrne T, Walker S, et al. Adjunctive colposcopy technologies for assessing suspected cervical abnormalities: a systematic review with meta-analysis and economic evaluation. *Assessment Group's Report for the Diagnostics Assessment Programme of the National Institute for Health and Care Excellence* 2017.
- 4 Pletscher M, Walker SM, Moschetti K, Pinget C, et al. Cost-effectiveness of functional cardiac imaging in the diagnostic work-up of coronary heart disease. *European Heart Journal - Quality of Care and Clinical Outcomes* 2016;2(3):201-207.
- 5 Farrar D, Simmonds M, Griffin S, Duarte A, et al. The identification and treatment of women with hyperglycaemia in pregnancy: an analysis of individual participant data, systematic reviews, meta-analyses and an economic evaluation. *Health Technol Assess* 2016;20(86).
- 6 Saramago P, Yang H, Llewellyn A, Palmer J, et al. High-throughput, non-invasive prenatal testing for fetal RHD genotype to guide antenatal prophylaxis with anti-D immunoglobulin: a cost-effectiveness analysis. *BJOG: an international journal of obstetrics and gynaecology* 2018;doi:10.1111/1471-0528.15152.

PROJECT TEAM:



Marta Soares



Simon Walker



Stephen Palmer

COURSES AND WORKSHOPS



In 2017 we welcomed 305 delegates to York for our short courses from 39 countries worldwide, spanning six continents and all organisational sectors, including for-profit organisations such as pharmaceutical and medical technology companies, and not-for-profit organisations such as universities, hospitals, government bodies and charities.

Details of our current short courses can be found on our website:

york.ac.uk/che/courses

YORK SUMMER WORKSHOPS IN HEALTH ECONOMIC EVALUATION

Foundations of Economic Evaluation in Health Care

This five-day workshop, held in June, covered all the key issues in the methodology and practice of economic evaluation and was attended by 56 delegates.

▶ <https://vimeo.com/147309364>

Advanced Methods for Cost-Effectiveness Analysis: Meeting Decision Makers' Requirements

This five-day workshop, also held in June, dealt with advanced methods in economic evaluation in health care, and was attended by 56 delegates.

▶ <https://vimeo.com/147310423>

Outcomes Measurement and Valuation for Health Technology Assessment

This three-day workshop included new material linked directly to the needs of organisations, such as NICE, which make decisions about health care delivery and funding. Twenty-five delegates attended this workshop held in July.

▶ <https://vimeo.com/157732001>

DECISION ANALYTIC MODELLING FOR ECONOMIC EVALUATION

The two-day Foundations course and three-day Advanced course are run jointly between the Centre for Health Economics and the University of Glasgow. Eighty-one delegates in total attended both courses designed to inform and promote understanding in key areas of quality of life assessment and health economic evaluation.

▶ <https://vimeo.com/196699566>

STATISTICAL METHODS IN ECONOMIC EVALUATION FOR HEALTH TECHNOLOGY ASSESSMENT

Twenty-seven delegates in total attended the two-day Foundations course and the three-day Regression Methods course, intended for people currently undertaking, reviewing or commissioning analyses of health economics and outcomes research (HEOR) data within the pharmaceutical and medical device industries, consultancy, academia or the health services.

▶ <https://vimeo.com/196700119>

ANALYSING PATIENT-LEVEL DATA USING HOSPITAL EPISODE STATISTICS (HES)

This three-day course included instruction on how to understand, manage and manipulate HES data, construct and analyse key variables such as waiting times or length of stay, and link inpatient and outpatient HES records together and to other datasets. The course was held twice, in July and December, for a total of 55 participants.

HEALTH ECONOMICS BY DISTANCE LEARNING

The York Distance Learning Programmes in Health Economics for Health Care Professionals offer students the opportunity to study for university-accredited qualifications at the postgraduate level. The programmes are designed to allow students to study whilst continuing in their careers, and offer the flexibility to spread study over a period of years to match professional and personal circumstances. For more information, visit the *Distance Learning Programmes* in Health Economics website.



2017 Foundations Workshop delegates

PUBLICATIONS 2017

PEER REVIEWED

- Abongomera G, Kiwuwa-Muyingo S, **Reville P**, Chiwaula L, Mabugu T, Phillips AN et al. Impact of decentralisation of antiretroviral therapy services on HIV testing and care at a population level in Agago District in rural Northern Uganda: results from the Lablita population surveys. *International Health* 2017;9(2):91-99.
- Abu-Omar K, Rütten A, Burlacu I, Schätzlein V, Messing S, **Suhrcke M**. The cost-effectiveness of physical activity interventions: A systematic review of reviews. *Preventive Medicine Reports* 2017;8:72-78.
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- Barnabas RV, **Reville P**, Tan N, Phillips A. Cost-effectiveness of routine viral load monitoring in low- and middle-income countries: a systematic review. *Journal of the International Aids Society* 2017;20 (S7):50-61.
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PHD STUDENTS



David Glynn

2017 was the second year of my PhD and it was also the year I turned 30 years old. Both of these events prompt the question, "well, what are you going to do?" My research involves using an economic concept called value of information to help the NHS decide which clinical research should be funded given its limited budget. Value of information captures the fact that the benefit of a particular clinical trial is determined by a number of factors including how uncertain the treatment decision is, how severe the disease is and how many people are affected by the disease. These methods are well developed in the literature but have yet to be taken up by decision makers.

To help us understand the requirements for real policy decision making, the National Collaborating Centre for Mental Health (NCCMH, the main body that funds clinical trials in the NHS) has sent us a set of clinical research funding proposals. In response to this I am developing simplified methods to estimate value of information and a website which will allow people with minimal technical training to conduct this analysis.

In addition to working on my PhD project I have had the privilege to attend the seminars held at CHE, present at NICE, attend courses and tutor on the York distance learning module.

The most valuable thing about studying here is not just the specifics of what I have learnt but the demonstration of how to think about health economics. I feel very grateful to be part of such a great group of PhD students and staff members.

PhD supervisors: **Claire Rothery** and **Karl Claxton**

2017 was a very exciting and fruitful year professionally speaking. I successfully completed my PhD studies in CHE and became a Doctor in Economics. Throughout the year, I worked on finalising my thesis chapters on the impact of providing informal care on carer well-being, early retirement decisions and health.

Alongside my studies, I had the opportunity to disseminate my work at the XXXVII Spanish Health Economics conference celebrated in Barcelona where I presented my second thesis chapter on the impact of providing informal care on the decision to retire. I also enriched my studies with teaching experience. I have been the module leader and tutor in

the Distance Learning Programmes in Health Economics for the module "Health Economics: Concepts and Analysis", and have tutored in the Regression Methods course delivered by CHE and the Department of Economics.

Moreover, after submitting my PhD thesis in September, I was also very lucky to be offered a job in CHE as a Research Fellow in the Health Policy team. CHE is a fantastic place to work, both for its high valuable reputation in health economics and for its working environment and community. I have always felt much supported by my colleagues in CHE and I am very happy to have made such great friends in the work place.

Overall, a very good year!

PhD Supervisor: **Hugh Gravelle**



Irene Sanchez

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142 The economics of health inequality in the English NHS – the long view – **Miqdad Asaria**.

143 First do no harm – The impact of financial incentives on dental x-rays – **Martin Chalkley**, Stefan Listl.

144 Do hospitals respond to rivals' quality and efficiency? A spatial econometrics approach – **Francesco Longo**, Luigi Siciliani, **Hugh Gravelle**, **Rita Santos**.

145 The effect of hospital ownership on quality of care: evidence from England – **Giuseppe Moscelli**, **Hugh Gravelle**, Luigi Siciliani, **Nils Gutacker**.

146 Productivity of the English NHS: 2014/15 update – Chris Bojke, **Adriana Castelli**, **Katja Grašič**, Daniel Howdon, **Idaira Rodriguez Santana**, **Andrew Street**.

147 Health care costs in the English NHS: reference tables for average annual NHS spend by age, sex and deprivation group – **Miqdad Asaria**.

148 Pricing implications of non-marginal budgetary impacts in health technology assessment: a conceptual model – Daniel Howdon, **James Lomas**.

149 Does hospital competition improve efficiency? The effect of the patient choice reform in England – **Francesco Longo**, Luigi Siciliani, **Giuseppe Moscelli**, **Hugh Gravelle**.

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Manca A. Invited talk. Health economic evaluation and precision medicine. *Centre Hospitalier de Luxembourg, Luxembourg.* September 2017.

Manca A. Cost-effectiveness of subgrouping and matching treatment for decision making. *University of Keele, UK.* October 2017.

Mason A. Local authority commissioning of NHS Health Checks: an exploratory evaluation. *Health Economists' Study Group, Birmingham, UK.* January 2017.

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Moscelli G. Market structure, patient choice and hospital quality for elective patients. *Nuffield Department of Primary Care, University of Oxford, UK.* March 2017.

Moscelli G. Categorising mental health patients for payment purposes: does the hospital matter? Evidence from English mental health providers. *UK Department of Health, Leeds, UK.* March 2017.

Moscelli G. The impact of competition on emergency and elective quality of hospital care in England. *The Competition Policy in Hospital Markets conference, Erasmus University, Rotterdam, The Netherlands.* May 2017.

Moscelli G. Market structure, choice and quality for elective hospital patients. Evidence from England. *The Competition and Markets Authority, London, UK.* June 2017.

Nikolaidis G. 'Beyond the mean' in biomarkers modelling: a case study on Gestational Diabetes Mellitus. *HTAi conference, Rome, Italy.* June 2017.

Nikolaidis G. Using evidence to inform cost-effectiveness models in HTA: common problems and solutions. *Sapienza University, Department of Public Health and Infectious Diseases, Rome, Italy.* June 2017.

Ochalek J. Supporting the development of an essential health package: Principles and initial assessment for Malawi. *12th iHEA World Congress, Boston, USA.* July 2017.

Patton T. Putting the P back into PROMs: using patient valuations of EQ-5D health states to improve hospital performance comparisons. *Advances in Patient Reported Outcomes Research, Oxford, UK.* June 2017.

PRESENTATIONS 2017

Reichert A. Socioeconomic inequalities in waiting for specialist treatment for people with a first episode of psychosis. *Health Economists' Study Group, Birmingham, UK.* January 2017.

Revill P, Woods B. Presented in workshops on HIV modelling and economics at the World Bank and US National Institutes of Health (NIH) in Washington DC, convened by the HIV Modelling Consortium. May 2017.

Revill P. Informing resource allocation using HIV modelling: the centrality of opportunity costs. *The Medical Practice Evaluation Centre, Massachusetts General Hospital (MGH), Boston, USA.* July 2017.

Revill P. Economic evaluation of healthcare programmes and interventions: applications to low- and middle-income countries. *12th iHEA World Congress, Boston, USA.* July 2017.

Revill P. Re-tooling cost-effectiveness analysis for global health policy relevance. *12th iHEA World Congress, Boston, USA.* July 2017.

Revill P. Economic evaluation in infectious disease modelling. *Royal Statistical Society (RSS) Annual Conference, Glasgow, UK.* September 2017.

Revill P. Economics and Epi Modelling in Global Health Goals and Guidelines. *Centre for Global Development Working Group, Washington DC, USA.* November 2017.

Ride J. Socioeconomic inequality in postnatal depression: a potential early-life root of disadvantage. *Health Economists' Study Group, University of Aberdeen, UK.* June 2017.

Ride J. Socioeconomic inequality in postnatal mental health: a potential early-life root of disadvantage. *CLOSER conference - Inequalities: a longitudinal perspective, British Library, London, UK.* November 2017.

Rodriguez Santana I. The medical "sorting hat": Do gender and ethnicity affect training doctors' chances of being selected into the preferred specialties? *Health Economists' Study Group, University of Aberdeen, UK.* June 2017.

Rodriguez Santana I, Chalkey M. Choice of medical specialty and demographics - Economic implications. *DREAMS workshop 3: The Economics of Workforce Selection. The University of York, UK.* December 2017.

Rothery C. Characterising uncertainty in the assessment of medical devices and determining future research needs. *Lancaster University, UK.* February 2017.

Sanchez I. Informal care and early retirement decisions for the UK. *XXXVII Jornadas de Economía de la Salud, Barcelona, Spain.* September 2017.

Santos R, Sculpher M, Revill P. Workshop on the "Economics of leishmaniasis". *Principal Hotel, York, UK.* October 2017.

Sculpher M. Making economic evaluation fit for purpose: two areas for improvement. *Seminar the Medical Research Council Clinical Trials Unit, London, UK.* February 2017.

Sculpher M. Health technology assessment and decision making in the UK. *Hitotsubashi University Health Economics Symposium, Tokyo, Japan.* April 2017.

Sculpher M. Reflecting affordability in cost-effectiveness analysis through appropriate measures of opportunity cost. *ISPOR 22nd Annual International Meeting, Boston, USA.* May 2017.

Sculpher M. Why we need to consider empirical estimates of opportunity costs. *ISPOR 22nd Annual International Meeting, Boston, USA.* May 2017.

Sculpher M. Future directions for CEA defining benefits and how much we should pay for them. *ISPOR 22nd Annual International Meeting, Boston, USA.* May 2017.

Sculpher M. Evaluating diagnostics: the case of cardiovascular magnetic resonance in coronary heart disease. *Ministry of Health, Agency for Care Effectiveness International Advisory Panel, Singapore.* October 2017.

Sculpher M. Generating real-world evidence for real-world decisions. Application of advanced methods. *ISPOR 20th Annual European Congress, Glasgow, UK.* November 2017.

Sculpher M. Generating evidence to support off-label higher value cancer treatment regimens. *ISPOR 20th Annual European Congress, Glasgow, UK.* November 2017.

Sculpher M. Does valuation of innovation of new technologies provide appropriate incentives for manufacturers and access for patients? *ISPOR 20th Annual European Congress, Glasgow, UK.* November 2017.

Sculpher M. Recent developments at NICE. *ISPOR Australia Policy Forum, Sydney, Australia.* December 2017.

Soares M. Time for a change? Alternative approaches to modelling in cancer value assessments workshop. *ISPOR 20th Annual European Congress, Glasgow, UK.* November 2017.

Suhrcke M. Disability and development: an economic perspective. Workshop on aging, health, disability and wellbeing. *Swiss School of Public Health, Lausanne, Switzerland.* June 2017.

Suhrcke M. The economics of preventing non-communicable diseases. Final Conference of EU-Project Foresight and Modelling for European Health Policy and Regulation (FRESHER). *European Public Health Alliance, Brussels, Belgium.* December 2017.

Walker S. Approaches for priority setting in health care: which is the best way. *HTAi Conference, Rome, Italy.* June 2017.

Walker S. Tackling the low uptake of "cost-effective" technologies. *12th iHEA World Congress, Boston, USA.* July 2017.

Weatherly H. Economic evaluations of social care interventions: Are we all on the same page? *Health Services Research UK Symposium, Nottingham, UK.* July 2017.

Weatherly H. Economic evaluations of social care interventions: are we all on the same page? *8th International Conference for EBHC Teachers and Developers, The ecosystem of evidence, Taormina, Italy.* October 2017.

Woods B. Time for a change? Alternative approaches to modelling in cancer value assessments workshop. *ISPOR 20th Annual European Congress, Glasgow, UK.* November 2017.

STAFF

NEW RESEARCH STAFF



James Altunkaya

James joined TEEHTA in September 2017. He holds a BA in Philosophy, Politics & Economics from the University of Oxford, and an MSc in Public Health from the London School of Hygiene & Tropical Medicine.



Vijay Gc

Vijay joined TEEHTA in August 2017. He holds a double MSc in public health (MPH, advanced public health methods) from three European Institutions (University of Sheffield, UK, University of Copenhagen, Denmark and EHESP School of Public Health, France).



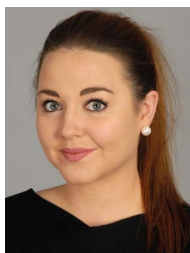
Luis Fernandes

Luis joined CHE in November 2017 as a PhD Fellow of the Marie Skłodowska Curie Innovative Training Network.



Nikita Jacob

Nikita is a Research Fellow in the Health Policy Team. She was awarded a Doctorate in Economics from the University of Essex.



Aimée Fox

Aimée joined TEEHTA in April 2017. She was awarded her PhD in Health Economics from the School of Economics (UCC) in 2016.



Dina Jankovic

Dina is a Research Fellow in TEEHTA and she holds a Pharmacy degree from the University of Manchester and an MSc in Health Economics from the University of York.



Francesco Fusco

Francesco joined TEEHTA in November 2017. Prior to joining CHE, Francesco was a post-doctoral researcher at the Health Economics Research Centre (University of Oxford).



Francesco Longo

Francesco joined CHE in May 2017 as a Research Fellow. He has two master's degrees in Economics, one from the University of Modena and Reggio Emilia and the other from the University of Warwick.

PHD STUDENTS 2017

Misael Anaya Montes

Gowokani Chirwa

David Glynn

Richard Mattock

Georgios Nikolaidis

Francesco Ramponi

Anika Reichert

STAFF



James Love-Koh

James joined CHE in December 2017 as a Research Fellow affiliated with the Global Health Economics and Economic Evaluation teams. He previously joined CHE in 2013 to undertake a PhD on incorporating health inequality concerns into cost-effectiveness analysis.



Laetitia Schmitt

Laetitia joined TEEHTA in September 2017. She completed an MSc in Environmental Economics and a PhD in Health Economics at the University of York. She also has an MSc in Management and Finance from Grenoble Graduate business school in France.



Laurie Rachet Jacquet

Laurie joined CHE in September 2017 as a PhD Fellow of the Marie Skłodowska Curie Innovative Training Network. She holds an MSc in Economics and Public Policy from Sciences Po (Paris).



Ieva Skarda

Ieva is a Research Fellow working within the CHE health equity group. Prior to joining CHE, she was working towards her PhD in Economics at the University of York.



Jemimah Ride

Jemimah is a member of the Health Policy team. Prior to joining CHE she conducted her PhD at Monash University. She holds qualifications in medicine (MBBS, Monash University) and public health (MPH, LaTrobe University).



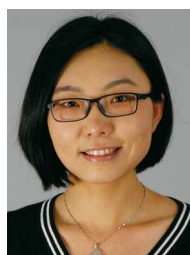
Peter C Smith

Peter is Professor of Global Health Economics. He worked at the University of York for 25 years before moving to Imperial College Business School, where he is now Emeritus Professor of Health Policy. He has returned to the Centre for Health Economics to contribute to projects in global health.



Irene Sanchez

Irene is a member of the Health Policy Team. She holds an MA in Economic Theory and Econometrics from the Toulouse School of Economics (June 2010) and an MSc in Economics from the Barcelona Graduate School of Economics (June 2011).



Fan Yang

Fan joined TEEHTA in October 2017. She earned a BSc in Pharmacy from Fudan University, China and a PhD in Health Economics from National University of Singapore, Singapore.

RESEARCH FELLOWS ALSO REGISTERED FOR A PHD

Luis Fernandes

James Gaughan

Katja Grašič

Dina Janković

Francesco Longo

James Love-Koh

Laurie Rachet Jacquet

Idaira Rodríguez Santana

Irene Sanchez

Rita Santos

Ieva Skarda

STAFF

RESEARCH STAFF 2017

Maria Goddard

Professor and
Director of CHE

James Altunkaya

NIHR Research
Methods Fellow

Maria José Aragon

Research Fellow

Miqdad Asaria

Research Fellow

Laura Bojke

Senior Research
Fellow

Adriana Castelli

Senior Research
Fellow

Martin Chalkley

Professor

Pei Fen Chuar

NIHR Research
Methods Intern

Karl Claxton

Professor

Richard Cookson

Professor

Edward Cox

Research Fellow

Michael Drummond

Professor

Ana Duarte

Research Fellow

Rita Faria

Research Fellow

Luis Fernandes

Marie Curie Early
Stage Researcher

Aimee Fox

Research Fellow

Francesco Fusco

Research Fellow

James Gaughan

Research Fellow

Vijay Gc

Research Fellow

Katja Grašič

Research Fellow

Hugh Gravelle

Professor

Susan Griffin

Senior Research
Fellow

Alessandro Grosso

NIHR Research
Methods Fellow

Nils Gutacker

Research Fellow

Sebastian Hinde

Research Fellow

Nikita Jacob

Research Fellow

Rowena Jacobs

Professor

Dina Jankovic

Research Fellow

Hyacinthe Kankeu

Research Fellow

Panos Kasteridis

Research Fellow

Noemi Kreif

Research Fellow

Dan Liu

Research Fellow

James Lomas

Research Fellow

Francesco Longo

Research Fellow

James Love-Koh

Research Fellow

Andrea Manca

Professor

Anne Mason

Senior Research
Fellow

Andrew Mirelman

Research Fellow

Rodrigo Moreno Serra

Reader

Giuseppe Moscelli

Research Fellow

Ryota Nakamura

Research Fellow

Jessica Ochalek

Research Fellow

Stephen Palmer

Professor

Thomas Patton

Research Fellow

Mathilde Peron

Research Fellow

Laurie Rachet Jacquet

Marie Curie Early
Stage Researcher

Paul Revill

Senior Research
Fellow

Nigel Rice

Professor

Gerry Richardson

Professor

Jemimah Ride

Research Fellow

Idaira Rodriguez Santana

Research Fellow

Claire Rothery

Senior Research
Fellow

Irene Sanchez

Research Fellow

Rita Santos

Research Fellow

Pedro Saramago Goncalves

Research Fellow

Laetitia Schmitt

Research Fellow

Mark Sculpher

Professor

Ieva Skarda

Research Fellow

Eleftherios Sideris

Research Fellow

Peter C Smith

Professor

Marta Soares

Senior Research
Fellow

Andrew Street

Professor

Marc Suhrcke

Professor

Simon Walker

Research Fellow

Helen Weatherly

Senior Research
Fellow

Beth Woods

Senior Research
Fellow

Fan Yang

Research Fellow

STAFF

EMERITUS PROFESSOR

Tony Culyer

HONORARY PROFESSORS

Peter C Smith

January 2011 –
January 2020

Keith Derbyshire

February 2017 –
February 2021

HONORARY VISITING FELLOWS

Marco Barbieri

February 2013 –
31 January 2019

Mark Dusheiko

January 2016 –
31 December 2018

David Epstein

February 2011 –
31 January 2020

Manuel Espinoza

February 2015 –
31 January 2018

Rob Hettle

February 2016 –
31 January 2019

Jon Sussex

June 2014 –
31 July 2017

VISITORS TO CHE DURING 2017

Filipa Sampaio

Uppsala University,
Sweden

Geidson Santana

Federal University of
Bahia, Salvador, Brazil

Laura Edney

The University of
Adelaide, Australia

Susan Mendez

University of
Melbourne, Australia

Niek Stadhouders

Radboud University
Nijmegen,
Netherlands

Cristobal Cuadrado

University of Chile,
Santiago, Chile

Nicolas Silva

University of Chile,
Santiago, Chile

Jocelyn Dunstan

University of Chile,
Santiago, Chile

Bernard van den Berg

University of
Groningen, The
Netherlands

Lisa Oberlander

Paris School of
Economics, France

Simon Reif

University of
Erlangen-Nuremberg,
Germany

John Tayu Lee

Saw Swee Hock
School of Public
Health, Singapore

Olena Nizalova

University of Kent

Juying Zeng

Zhejiang University,
China

ALAN WILLIAMS FELLOWS

In 2017, **Claire de Oliveira** from the Institute for Mental Health Policy Research, Toronto, Canada was awarded a Fellowship and visited CHE from October to December. Her research project was 'Equity in the utilization of psychiatric inpatient care among patients with severe mental illness (SMI) in Ontario, Canada'.

ADMINISTRATIVE AND SUPPORT STAFF

Kerry Atkinson

Administrator

Linda Baillie

Administrator

Laure Bedecarrax

Project Coordinator

Louise Campbell

Administrator

Gill Forder

Publications
Administrator

Kay Fountain

Administrator

John Galloway

Computer Support
Officer

Liz Grant

Finance and Research
Support Officer

Ruth Helstrip

Project Coordinator

Vanessa King

Administrator
and Assistant to
the Director

Gillian Robinson

Administrator

Alexandra

Rollinger
Project Coordinator

Frances Sharp

Publications Manager

Trish Smith

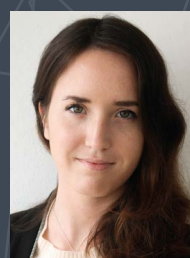
Centre Manager

Rachel Wilkinson

Finance and
Research Support
Administrator

Vanessa Wood

Finance and Research
Support Officer



Laure Bedecarrax

Laure joined CHE in December 2017 as the Project Coordinator for the Thanzi la Onse (Health of All) Research Programme. She is responsible for managing day-to-day programme activities and internal communications.



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*Committed to the advancement
of gender equality: representation,
progression and success for all.*