



UNIVERSITY
of York

RESEARCH



Centre For Health Economics



2020 Annual Report

Informing Policy and Practice
Economic Analysis of Worldwide Repute

www.york.ac.uk/che

Contents

Welcome	3
News and events 2020	4
Equity and economic evaluation of system-level health interventions: a case study of Brazil's Family Health Program	6
Research projects 2020	7
Does social care supply impact how much health care is used by older people in England?	9
When is evidence sufficient? Value of Information for informing research prioritisation decisions	11
Are NICE's appraisal methods 'fit for purpose' for the evaluation of histology-independent drugs?	13
Do small hospitals have lower quality? Evidence from the English NHS	15
Courses and Workshops 2020	16
Diagnostic evaluations for NICE: challenges of quantifying health and cost impacts	17
Publications 2020	18
PhD Students	23
Presentations 2020	26
Staff	28

Welcome

It is an understatement to say that 2020 did not turn out quite as anyone expected. The global pandemic has presented significant challenges to health, healthcare, and the economy. Many of us have also experienced personal difficulties and great sadness during this period, and I extend my sympathies to all colleagues who have been affected in this way.



In CHE, it has meant adapting to a completely different way of working, mainly seeing our colleagues via our computer screens or outdoors, and it has been very rewarding to see the enormous efforts made by everyone to deal with the new ways of working, supporting, and helping each other along the way. Our research agenda has also adapted and continues to do so, with COVID-19-related research underway in both national and international contexts. For example, research on levelling up health and wellbeing and the equity implications of COVID-19 (NIHR); investigating the quality and efficiency of mental healthcare during COVID-19 (Health Foundation); and exploring the impact of social distancing on domestic violence against women in Brazil (UKRI). We will update on progress with these, and the other COVID-19-related projects we are undertaking, in our newsletters and reports throughout 2021. CHE colleagues have also engaged widely with local, national, and international decision-makers who are tackling the challenges arising from COVID-19, offering them advice, support and evidence, wherever we can.

After 25 years of offering the Summer Workshops in Economic Evaluation in the fair city of York, we transferred them to online courses which ran very successfully towards the end of 2020. We will be delivering these workshops again – as well as some of our other long-standing CHE short courses – in an online format in 2021. Virtual formats have been widely used in lieu of conferences and seminars and CHE colleagues continued to disseminate research to academic and policy audiences, giving over 70 presentations at events hosted all over the world, but delivered mainly from their own living rooms. We supervised remotely seven MSc Health Economics students from the University's Department of Economics for their summer placements and, although we missed having them around in our CHE offices, we wish them the very best in their future careers.

It was a shame that we had to say farewell to most of the colleagues who left CHE in 2020 via zoom rather than in person, but we sent them off with our good wishes, especially the three members of CHE support staff who retired and between them clocked up a remarkable 74 years of service with CHE. As I write (in 2021), our Centre Manager, Trish Smith, is also due to retire after 18 years in CHE. We are extremely fortunate to have such talented and loyal support staff, without whom the wheels that keep CHE turning would definitely have come off long, long ago!

Despite the pandemic-related modifications we made to our research agenda, and to the way in which we deliver our research, CHE has also continued in 2020 with "business as usual". It is a tribute to all of our colleagues that through their sterling efforts we have competed successfully for grants from a wide range of funders, completed research projects, and produced many high quality outputs. These are documented in this annual report and I hope you will find them an interesting read. We recruited five new PhD students (one of whom started her studies in 2020), four new researchers, and a new member of support staff, and we look forward to seeing them all in person before too long.

Finally, I would like to note that this welcome to the 2020 Annual Report will be the last I write as Director of CHE. After 12 years as Director (and 10 years before as Deputy), I will be standing down from the role at the end of September 2021 and passing the mantle on to Professor Mark Sculpher as Director and Professor Rowena Jacobs as Deputy Director. They will be fantastic in these roles. It has been an absolute honour and a privilege to lead CHE and to work alongside such brilliant colleagues who continue to contribute to CHE's enduring success spanning almost 40 years.

With best wishes

News and events 2020

Japanese Ministry Officials and Health Economics Researchers Visit CHE

Before we faced lockdown, CHE hosted a visit from a *Japanese delegation* on February 18, 2020. The delegation comprised of officials from the Ministry of Health and Welfare (MHW), the National Institute of Public Health, and university-based researchers.



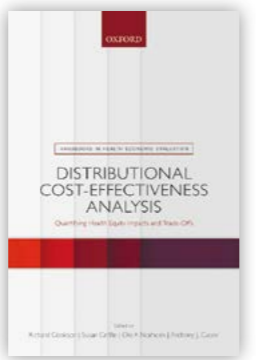
MSc Health Economics students

Over the summer, CHE welcomed 7 Health Economics students from the University of York MSc course. Students worked virtually on a wide range of topics with CHE supervisors, addressing interesting issues of national and international relevance.

New Books published in CHE



Global Health Economics - Shaping Health Policy in Low- and Middle-Income Countries.
Authors: Paul Revill, Marc Suhrcke, Rodrigo Moreno-Serra, Mark Sculpher.



Distributional cost-effectiveness analysis: quantifying health equity impacts and trade-offs.
Authors: Richard Cookson, Susan Griffin, Ole F Norheim, Anthony J Culyer.

Contributions to Conferences

Despite lockdown, CHE staff and students contributed to 54 conferences, workshops and events, across 19 countries. Further details can be found on the presentations pages in this report.

Thank you

During the pandemic our research and support staff and PhD students demonstrated remarkable resilience, pulling together

to achieve another successful year for our research centre and most importantly supporting each other and keeping each

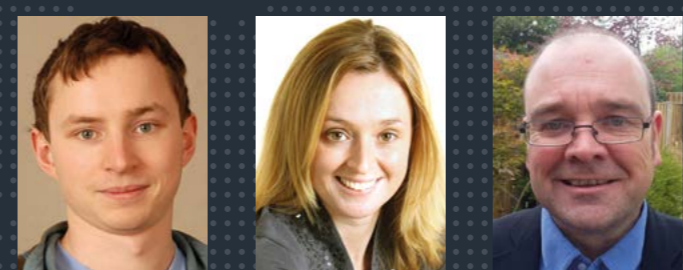
other safe during these challenging times. Thank you to everyone in CHE for your focus, energy, ability to adapt and problem solve,

and for all your creativity and sheer determination, as well as the endless kindness shown over this past year.



News and events 2020

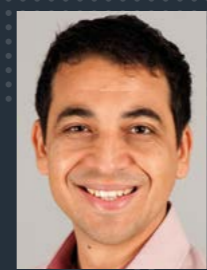
Awards for staff



Sebastian Hinde Laura Bojke Gerry Richardson

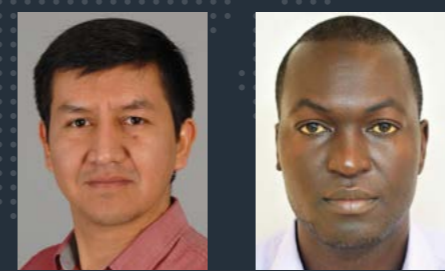
Sebastian Hinde, Laura Bojke and Gerry Richardson won a Highly Commended Papers award by Emerald Publishing's Journal of Integrated Care Literati Awards 2020 for their paper 'Does the integration of response services lead to meaningful change in healthcare activity? A case study evaluation'.

Rodrigo Moreno-Serra and Giancarlo Buitrago were awarded the Colombian National Medical Academy Prize for Scientific Research for their paper 'The Effects of Conflict Violence Reduction on Pregnancy Outcomes: Evidence from a Natural Experiment in Colombia', produced within the HSRI MRC War & Peace project.

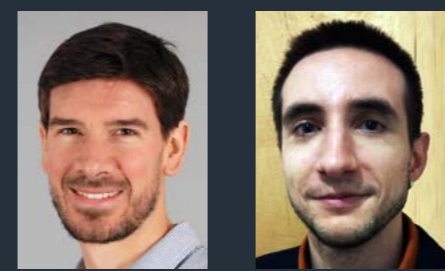


Rodrigo Moreno-Serra

PHD success for

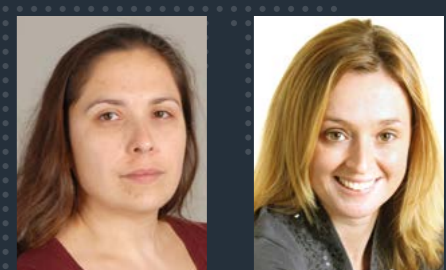


Misael Anaya Montes Gowokani Chirwa

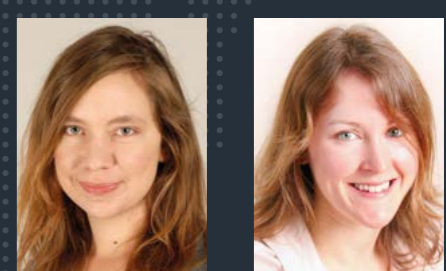


Samuel Lordemus Georgios Nikolaidis

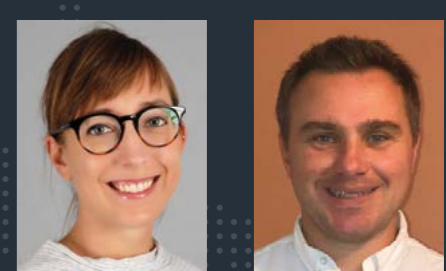
Promotion success for



María José Aragón Laura Bojke



Katja Grasic Susan Griffin



Jessica Ochalek Paul Revill

Retirements

Three long serving members of our support team retired in 2020. Congratulations to Kerry Atkinson, John Galloway and Gillian Robinson on their retirement. We express our thanks to our wonderful colleagues for all their contributions over their many years of service.



Kerry Atkinson John Galloway Gillian Robinson

Equity and economic evaluation of system-level health interventions: a case study of Brazil's Family Health Program

James Love-Koh,
Marc Suhrcke (CHE),
Andrew Mirelman (WHO)



Large scale health interventions delivered to a whole population or health system present a range of practical and methodological challenges for analysts trying to estimate their value for money. This is even more the case for 'distributional' evaluations that investigate how outcomes vary by socioeconomic groups or geographical areas, which place further demands on the evidence used to build mathematical models.

Our objective for this study was to illustrate the complexities of these types of evaluations through a case study - the Brazilian Family Health Programme ('Programa Saúde da Família' or PSF). The PSF places small teams of physicians, nurses, and community health workers in small areas, with the aim of improving access to, and utilisation of, healthcare in deprived populations. Introduced in the early 1990s, PSF teams covered more than 60% of Brazil's population by 2014.

The case study investigated (i) the net population health impacts of the PSF and (ii) potential changes to state-level health inequalities through a distributional cost-effectiveness analysis (DCEA). DCEA has been developed by colleagues within CHE as a way to generate evidence on inequality impacts in economic evaluations,

which typically only focus on average outcomes and ignore socioeconomic or demographic variation.

The most significant challenge we identified for this, and also for future evaluations, was the availability of treatment effectiveness evidence. Population-level interventions are far less likely to be evaluated under experimental conditions and, whenever evaluations are undertaken, they tend not to explore the variation of outcomes across groups of interest. Furthermore, the evaluations may take place years after the intervention is introduced in order to account for long-term effects, hence limiting their usefulness for contemporaneous decisions.

By focusing on geographical inequalities, we identified data on how model parameters varied across Brazilian states, in terms of treatment effectiveness, disease prevalence,

mortality, and health-related quality of life. Using a simple decision model, we calculated how reductions in mortality and disease prevalence averted disability-adjusted life years (DALYs), a measure of health that combines length and quality of life. The PSF appears highly cost-effective, averting an estimated 5.29 million DALYs in total. The cost-effectiveness differed from state to state, averting 0.65 DALYs per person in Rondônia, compared with 0.12 per person in São Paulo. However, there was little impact on geographical inequalities, with small changes observed in our set of inequality metrics.

The large scale and scope of many population-level health interventions is sufficient justification for examining their value for money. Our work on the PSF represents one of an increasing number of attempts to do so, whilst also demonstrating how distributional concerns can be accounted for in the results.

This work is funded by the National Institute for Health Research (NIHR) Global Health Research Units and Groups (16/137/90).

Further details of the work can be found in the following publication:

Love-Koh J, Mirelman A, Suhrcke M. *Equity and economic evaluation of system-level health interventions: A case study of Brazil's family health program. Health Policy and Planning 2020*; doi: 10.1093/heapol/czaa18.

Research projects 2020

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:

CHE funders

- **Bill and Melinda Gates Foundation**
- **Biotechnology and Biological Sciences Research Council (BBSRC)**
- **British Council -UK/China Partnership Innovation Challenge Fund**
- **British Heart Foundation (BHF)**
- **British Skin Foundation (BSF)**
- **Cancer Research UK (CRUK)**
- **Centre for Future Health (CFH)**
- **Department for International Development (DFID)**
- **Department of Health and Social Care (DHSC)**
- **Economic and 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
- **European Union Horizon 2020 research and innovation programme: Marie Skłodowska-Curie grant**
- **EuroQol Research Foundation**
- **Geneva University Hospitals Foundation**
- **Global Challenges Research Fund (GCRF)**
- **Health Foundation**
- **Medical Research Council (MRC)**
GCRF Foundation
Newton Fund
Research Councils UK (RCUK)
UK Prevention Research Partnership
- **National Institute for Health Research (NIHR)**
Applied Research Collaboration (ARC)
Central Commissioning Facility (CCF)
Collaboration for Leadership in Applied Health Research and Care Yorkshire and Humber (CLAHRC YH)
Department of Health and Social Care (DHSC)
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)
Programme Grants for Applied Research (PGfAR)
Public Health Research (PHR)
Research and Development (R&D) Programme
Research Capability Funding (RCF)
Research for Patient Benefit (RfPB)
Research and Innovation for Global Health Transformation (RIGHT)
Technology Assessment Reviews (TARs)
- **National Institute for Health and Care Excellence (NICE)**
- **NordForsk**
- **Public Health England (PHE)**
- **Research Council of Norway**
- **The World Bank**
- **Trond Mohn Foundation and Norwegian Agency for Development Cooperation**
- **UK Research and Innovation (UKRI)**
- **Wellcome**
- **Yorkshire Cancer Research (YCR)**

Economic evaluation

A pragmatic, multicentre, randomised controlled trial to assess the clinical and cost effectiveness of negative pressure wound therapy versus usual care for surgical wounds healing by secondary intention (SWHSI 2)

Pedro Saramago Goncalves
Funder: NIHR HTA

A randomised controlled trial of compression therapies for the treatment of venous leg ulcers

Marta Soares, Pedro Saramago Goncalves
Funder: NIHR HTA

Antimicrobial resistance impact on surgical procedures

Beth Woods, Marta Soares, Mark Sculpher
Funder: PHE

Appraising the social distributions to guide levelling up health and wellbeing during COVID-19 recovery

Susan Griffin, Simon Walker, Helen Weatherly
Funder: NIHR PRP

Assessing the value of novel antimicrobials under new payment models

Mark Sculpher, Beth Woods, Laetitia Schmitt, Claire Rothery, Dina Jankovic, Laura Bojke
Funder: DHSC PRP EEPURU

Atopic Eczema (AE) in adults & children

Andrea Manca (CHE), Tom Patton (University of California)
Funder: BSF

Assessing the impact of introducing home-based cardiac rehabilitation to existing cardiac rehabilitation services on uptake amongst people with heart failure, alongside a process evaluation of implementation barriers and enablers and modelling of national level health economic consequences: The Home-Rehab Impact Study

Laura Bojke, Sebastian Hinde
Funder: NIHR HS&DR

Breathlessness RELief AT Home (BREATHE)

Susan Griffin (CHE), Victoria Allgar (Department of Health Sciences, York)
Funder: NIHR RfPB

Cerebral embolic protection in TAVI - A Clinical Outcome Trial

Stephen Palmer
Funder: BHF and NIHR

Cost-effectiveness of care guided by cardiovascular magnetic resonance, myocardial perfusion scintigraphy or NICE Guidelines

Edward Cox, Simon Walker, Mark Sculpher
Funder: BHF

Research projects

(in progress 2020 or completed in 2020)

Developing peer Mentorship to Improve self-management of Osteoarthritis: A feasibility study (aMigO study)

Gerry Richardson
Funder: NIHR RfPB

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

Sebastian Hinde, Susan Griffin, Mark Sculpher
Funder: DHSC PRP EEPRU

End of life care for babies, children and young people

Helen Weatherly
Funder: NIHR HS&DR

Estimating health opportunity costs for the NHS

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

Estimating the shares of the value of branded pharmaceuticals accruing to manufacturers and to the NHS

Beth Woods, Aimee Fox, Mark Sculpher, Karl Claxton
Funder: DHSC PRP EEPRU

Evidence for the impact of interventions for, and medicines reconciliation in, problematic polypharmacy: a rapid review of systematic reviews and scoping searches

Rita Faria, Mark Sculpher (CHE), Marrissa Martyn-St James, Ruth Wong, Alison Scope (University of Sheffield)
Funder: DHSC PRP EEPRU

Facilitating patient choice in haematology

Andrea Manca, Alastair Bennett, Hyacinthe Kankeu
Funder: NIHR PGFAR

FARSTER – Feasibility study of early outpatient review and early cardiac rehabilitation after coronary artery bypass grafting

Sebastian Hinde (CHE), Jude Watson, Patrick Doherty, Caroline Fairhurst, Catherine Hewitt (Department of Health Sciences, York)
Funder: NIHR RfPB

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, Rita Faria, David Glynn, Mark Sculpher
Funder: NIHR HTA

Healthcare Alliance for Resourceful Medicines Offensive against Neoplasms in Haematology (HARMONY)

Andrea Manca
Funder: European Commission IMI H2020 programme

Health economics and outcomes measurement

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

HTx: Next Generation HTA

Andrea Manca, Noemi Kreif, Claire Rothery (CHE), Cynthia Iglesias, Alexandra Smith, Ge Yu (Department of Health Sciences, York)
Funder: European Commission H2020 programme

IMPORT LOW: Randomised trial testing intensity modulated and partial organ radiotherapy following breast conservation surgery for early breast cancer

Susan Griffin, Rita Faria, David Glynn, Mark Sculpher
Funder: CRUK (CRUK/06/003) and DHSC

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

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

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, York)
Funder: European Commission H2020 programme

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, James Lomas, Pedro Saramago Goncalves
Funder: NIHR TARs

NICE Economic and Methodological Unit (EMU)

Helen Weatherly, Susan Griffin, Simon Walker, Rita Faria, with colleagues from York Health Economics Consortium
Funder: NICE

NIHR Applied Research Collaboration – Yorkshire and Humber ARC (Health Economics, Evaluation, Equality theme)

Laura Bojke, Gerry Richardson, Sebastian Hinde, Rowena Jacobs (CHE), with colleagues from across the University of York
Funder: NIHR ARC

NIHR Research Design Service (RDS)

Gerry Richardson, Susan Griffin, Sebastian Hinde
Funder: NIHR

PRECISE: A health economic approach to evaluate uncertain evidence in personalised medicine

Karl Claxton
Funder: NordForsk

PREVAIL – PREVenting infection using Antibiotic Impregnated Long lines

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

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

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

PROFID: Implementation of personalised risk prediction and prevention of sudden cardiac death after myocardial infarction

Andrea Manca, Beth Woods, Vijay Gc, Alastair Bennett (CHE), Cynthia Iglesias (Department of Health Sciences, York)
Funder: European Commission (IMI) H2020 programme

REVascularisation of Ischaemic Ventricular Dysfunction (REVIVED): 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

Setting payment-levels and managing uncertainty within the commercial arrangements for new antibiotics

Beth Woods, James Lomas, Mark Sculpher, Karl Claxton
Funder: NIHR PRP EEPRU

SHIFT – A cluster randomised controlled trial to investigate the effectiveness and cost-effectiveness of a Structured Health Intervention For Truckers

Gerry Richardson, Edward Cox, Simon Walker
Funder: NIHR PHR

Strategies for reducing sitting time in office workers: a three arm cluster randomised controlled trial

Gerry Richardson, Edward Cox, Simon Walker
Funder: NIHR PHR

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

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

The cost-effectiveness of cascade testing for familial hypercholesterolaemia

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

Does social care supply impact how much health care is used by older people in England?

Project Team: Maria Goddard, Rowena Jacobs, Anne Mason (CHE), Dan Liu (University of Technology Sydney), Maria Lucia Pace (Università Cattolica del Sacro Cuore), Raphael Wittenberg (London School of Economics and Political Science), Gerard McGonigal (York Teaching Hospital NHS Foundation Trust)



Over the last decade, spending on adult social care has fallen substantially whilst demand for care has risen. We wanted to know: have cuts in local authority (council) budgets had an impact on people's use of healthcare services in the English NHS? Our research focused on older people, including those with dementia, because we expected them to have been affected by reductions in budgets for adult social care.

We linked data on spending, staffing, and use of health care for 150 councils. We then created two measures of social care supply: (1) spending per head

by councils on older people, and (2) four categories of social care staff. We examined the impact of these measures on several outcomes.

1. Emergency hospital admissions for falls in people with dementia aged 65 and over.
2. Emergency hospital admissions for fractured neck of femur in people 65 and over.
3. Cases where people with dementia stayed in hospital 7 days or longer.
4. Cases where people with dementia stayed in hospital 21 days or longer.
5. Cases of NHS Continuing Health Care.

We used standard statistical methods to investigate impacts, but also applied some special statistical techniques known as *instrumental variables*. These methods are designed to reflect the fact that social care spending decisions may be based on long-standing problems in the local NHS. For example, councils may choose to spend more on social care if there

are high numbers of older people with lengthy hospital stays.

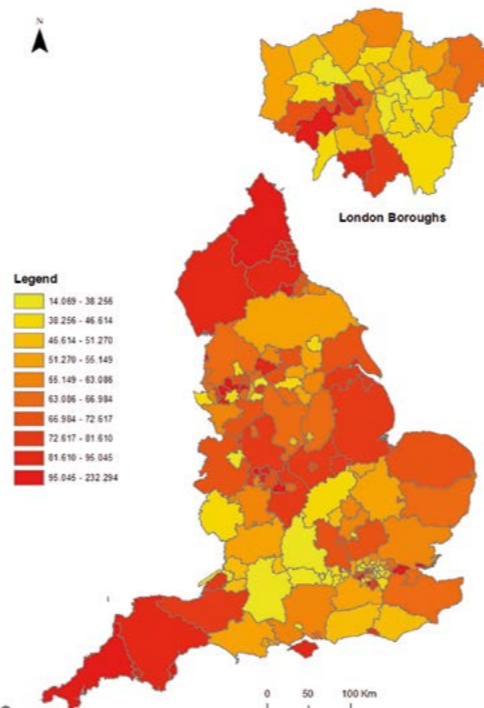
The study found no conclusive proof that reductions in social care budgets led to the expected rises in hospital admissions, hospital stays, or uptake of NHS Continuing Health Care. These findings were consistent regardless of which method we used to analyse the data. But there was evidence that councils who employ more front-line social care staff, particularly professional staff, may be more successful in helping their clients to access NHS Continuing Health Care. We also identified two factors that seemed to be linked to lower rates of long hospital stays: higher rates of social care staffing by the independent sector; and higher rates of unpaid carers providing intensive care (35 hours a week or more). Future research is needed to test whether these findings are valid. Studies should analyse more detailed data on the health and social care used by individuals, and use a longer time period to capture any longer-term impacts.

This work is funded by the National Institute for Health Research (NIHR) Policy Research Programme (103/0001).

Further details of the work can be found in the following publications:

Liu D, Pace ML, Goddard M, Jacobs R, Wittenberg R, Mason A. *Investigating the relationship between social care supply and healthcare utilization by older people in England*. *Health Economics* 2021;30:36-54.

Pace ML, Liu D, Goddard M, Jacobs R, Wittenberg R, McGonigal G & Mason AR. *The relationship between social care resources and healthcare utilisation by older people in England: an exploratory investigation*. *CHE Research Paper 174*. Centre for Health Economics, University of York, York.



Research projects

(in progress 2020 or completed in 2020)

The wearable clinic for digital care services

Andrea Manca, Vijay Gc (CHE), Cynthia Iglesias (Department of Health Sciences, York), Ibrahim Habli (Department of Computer Science, York)
Funder: EPSRC

Transforming the treatment and prevention of leprosy and buruli ulcers in low-and middle-income countries (LMICs)

Mark Sculpher, Rita Faria, Jessica Ochalek
Funder: NIHR RIGHT

UK China Health and Economy Partnership

Cynthia Iglesias (Department of Health Sciences, York), Andrea Manca (CHE)
Funder: British Council -UK/China Partnership Innovation Challenge Fund

Health policy

Analysis of purchaser-provider contracts: modelling risk sharing and incentive implications.

Martin Chalkley, Hugh Gravelle, Maria Goddard, Nils Gutacker, Nikita Jacob, Rowena Jacobs, Leonardo Koesler, Dan Liu, Rita Santos (CHE), Luigi Siciliani (Department of Economics and Related Studies, York)
Funder: NIHR PRP ESHCRU II

Case-mix adjustment of PROM data at the level of health domains

Nils Gutacker (CHE), David Parkin (Office of Health Economics & City University of London), Yuanyuan Gu (Macquarie University, Australia)
Funder: Euroqol Group

Decomposing the socioeconomic gradient in health-related quality of life over the life course (DeQoL-LIFE)

Nils Gutacker, James Love-Koh (CHE), Tim Doran (Department of Health Sciences, York), Simon McNamara, Paul Schneider (University of Sheffield).
Funder: Euroqol Group

Drivers of demand for health care and associated activity and spending

Nigel Rice, Martin Chalkley, Nils Gutacker, Panos Kasteridis, Anne Mason, Maria Ana Matias, Rita Santos (CHE), Raphael Wittenberg (LSE)
Funder: NIHR PRP ESHCRU II

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

Martin Chalkley, Nils Gutacker, Luis Fernandes, Laurie Rachet Jacquet (CHE), Luigi Siciliani (Department of Economics and Related Studies, York) in collaboration with Universität Hamburg, Universidade de Lisboa, University of Southern Denmark, Bocconi University, Erasmus University Rotterdam.
Funder: European Union Horizon 2020 research and innovation programme: Marie Skłodowska-Curie grant

Exploring the variance of EQ-5D-5L index in patients with chronic conditions in England

Hugh Gravelle
Funder: Euroqol Group

Fast response analytical facility

Anne Mason (CHE), Karen Bloor, Tim Doran (Department of Health Sciences, York), Yvonne Birks (Social Policy Research Unit, York)
Funder: NIHR PRP CCF

General Practitioners and Emergency Department (GPED)

Nils Gutacker, Dan Liu, James Gaughan (CHE), Karen Bloor (Department of Health Sciences, York)
Funder: NIHR HS&DR

How did previous patients like me do?

Nils Gutacker
Funder: Geneva University Hospitals Foundation

Investigating Heterogeneous Reporting Behaviour in the EQ-5D

Nils Gutacker (CHE), Paula Lorgelly (UCL), Mark Harris, Stephanie Thomas (Curtin University, Australia), Feng Xie (McMaster University, Canada), Jan Abel Olsen (UiT, the Arctic University of Norway, Norway)
Funder: Euroqol Group

Measuring NHS productivity

Adriana Castelli, Martin Chalkley, James Gaughan, Maria Ana Matias, Anastasia Arabadzhyan
Funder: NIHR PRP

Paying for health benefits using PROMs data

Martin Chalkley, James Gaughan, Nils Gutacker, Hugh Gravelle (CHE), Luigi Siciliani (Department of Economics and Related Studies, York)
Funder: NIHR PRP ESHCRU II

PREPARE 2020 – 2025 Fast response research and analytical facility

Nils Gutacker, Anne Mason (CHE), Karen Bloor, Tim Doran, Stephen Holland, Trevor Sheldon (Department of Health Sciences, York), Yvonne Birks (Social Policy Research Unit, York), in collaboration with the King's Fund
Funder: DHSC PRP

The causal impact of health on Labour Market Outcomes: consequences for individuals and households

Nigel Rice, in collaboration with University of Sheffield and Vrije Universiteit Amsterdam
Funder: Health Foundation

Mental health

Assessing the quality and uptake of incentivised physical health checks for people with serious mental illness

Panos Kasteridis, Rowena Jacobs, María José Aragón, Luis Fernandes, Nils Gutacker (CHE), Najma Siddiqi (Department of Health Sciences, York)
Funder: NIHR PRP CCF

Closing the GAP (CTG) Mental Health Network

Rowena Jacobs, María José Aragón, with colleagues from across the University of York
Funder: UKRI

CODI – Costs and Outcomes of Digital Interventions to promote and improve mental health

Laura Bojke, Pedro Saramago Goncalves, Dina Jankovic
Funder: NIHR NETSCC

Contracting for secure mental health services

Martin Chalkley, María José Aragón, Rowena Jacobs
Funder: DHSC PRP EEPURU

DIADEM – Design and evaluation of interventions to improve outcomes for diabetes and depression multi-morbidity in Bangladesh and Pakistan

Rowena Jacobs, Marc Suhrcke, Simon Walker (CHE), Najma Siddiqi, Simon Gilbody, Catherine Hewitt (Department of Health Sciences, York)
Funder: NIHR RIGHT

DIAMONDS: Improving diabetes self-management for people with severe mental illness

Rowena Jacobs, Stephen Palmer, Simon Walker, Panos Kasteridis, Rita Santos, Francesco Fusco, Dina Jankovic (CHE), with colleagues from Department of Health Sciences, York
Funder: NIHR PGfAR

Efficiency, cost and quality of mental healthcare provision

Rowena Jacobs, Adriana Castelli, Maria Goddard, Hugh Gravelle, Nils Gutacker, María José Aragón, Anne Mason (CHE), with colleagues from University of Sheffield and University of Birmingham
Funder: Health Foundation

IMPACT: Improving outcomes in mental and physical multimorbidity in South Asia

Rowena Jacobs (CHE), with colleagues from across the University of York and partner institutions
Funder: NIHR Global Health Research

Improving diabetes care for people with serious mental illness (SMI)

Rowena Jacobs (CHE), with colleagues from Department of Health Sciences, York
Funder: Closing the Gap (CTG) Mental Health Network, UKRI

Knowledge Exchange Workshop on the use of the Mental Health Services Dataset (MHSDS)

Rowena Jacobs, Claire de Oliveira, Leonardo Koesler, María José Aragón, Maria Ana Matias, Anastasia Arabadzhyan
Funder: Health Foundation

When is evidence sufficient? Value of Information for informing research prioritisation decisions

Claire Rothery (co-Chair of the ISPOR Value of Information Analysis Emerging Good Practices Task Force), David Glynn, Georgios Nikolaidis, Dina Jankovic, Karl Claxton



Research prioritisation is an essential component of managing health systems. It is the art of developing a consensus on a number of priority areas that need to be underpinned by future investment in research. Once resources are invested in one research topic they are no longer available for other investments. Prioritisation helps ensure the most cost-effective use of resources for optimal health gain from new information.

Commissioning new research implies that the uncertainty about outcomes is unacceptable, and is considered important enough to justify the investment in research. While there are a number of ways of setting priorities for health research, methods of Value of Information (VOI) provides an analytic framework to quantify the expected benefits of research that would resolve decision uncertainty. VOI methods are the subject of two recent reports issued by the ISPOR Task Force. The first report outlined the role of VOI in supporting different types of research decisions, while the second report provided guidance on selecting the most appropriate methods for computing VOI. Both reports provided expert consensus guidance on international good practices in VOI.

VOI has traditionally been applied

be detected in a new research study before there is confidence that health outcomes will be improved.

Where the information for rapid VOI is readily available, the approach can offer a quick and practical means for estimating the value of further research to allow research funders to determine high-priority areas. We have also developed a tool, RANE (Rapid Assessment of the Need for Evidence), to calculate the value of research proposals to inform research funding and prioritisation decisions in a timely manner. We are working with the National Institute for Health Research (NIHR) Evaluation, Trials and Studies Coordinating Centre (NETSCC) to assess the application of the tool in practice, in terms of its acceptability, fit for purpose, and practicality by end users.

This work is funded by the National Institute for Health Research (NIHR) Health Technology Assessment (HTA) Programme (16/29/01).

Link to tool: <http://shiny.york.ac.uk/rane/>

Further details can be found in the following ISPOR Task Force reports:

Fenwick E, Stotten L, Knies S, et al. *Value of information analysis for research decisions: an introduction report 1 of the ISPOR Value of Information Analysis Task Force. Value in Health 2020;23(2):139-150.*

Rothery C, Strong M, Koffberg H, et al. *Value of information analytical methods emerging good practices: report 2 of the ISPOR VOI Task Force. Value in Health 2020;23(3):277-286.*

Research projects

(in progress 2020 or completed in 2020)

MIND-ECON: The longer-term, average & distributional effects of mental health interventions & the causal impact of mental illness on economic outcomes

Rowena Jacobs, Nikita Jacob, Marc Suhrcke, Samuel Lordemus, Noemi Kreif, (CHE), Andrew Mirelman (WHO), with colleagues from University of Cape Town, South Africa, and the South African Medical Research Council
Funder: MRC Newton Fund

Multimorbidity Among People with Serious mental illness (MAPS): Mapping disease clusters, risk factors, trajectories, service barriers and outcomes

Rowena Jacobs, Claire de Oliveira, Panos Kasteridis, Leo Koeser (CHE), with colleagues from across the University of York
Funder: MRC

Non-psychiatric admissions among people with serious mental illness (SMI)

Rowena Jacobs, María José Aragón (CHE), with colleagues from Department of Health Sciences, York, and University of Glasgow
Funder: Closing the Gap (CTG) Mental Health Network, UKRI

Personalising mental health treatments for young people using machine intelligence (ProMetheUs)

Noemi Kreif, with colleagues from across the University of York
Funder: CFH

The HOME study: A randomised controlled trial comparing the addition of Proactive Psychological Medicine to usual care on the time spent in hospital by older acute hospital inpatients

Simon Walker, Fan Yang, Mark Sculpher (CHE), with colleagues from University of Oxford and London School of Hygiene and Tropical Medicine
Funder: NIHR HS&DR

The PSY-SIM model: Using real world data to inform health care policy for individuals with psychosis in England

Claire de Oliveira, Rowena Jacobs (CHE)
Funder: Closing the Gap (CTG) Mental Health Network, UKRI

Yorkshire and Humber ARC (Mental and Physical Multimorbidity theme)

Rowena Jacobs, Laura Bojke, Gerry Richardson, Sebastian Hinde (CHE), with colleagues from across the University of York
Funder: NIHR ARC

Equity in health and health care

Accounting for unmet need in equitable healthcare resource allocation

Richard Cookson, James Lomas (CHE), Lead by Ben Barr (University of Liverpool)
Funder: NIHR HS&DR

Act Early – a city collaborative approach to early promotion of good health and well-being

Richard Cookson
Funder: UK Prevention Research Partnership (MRC)

Bergen Centre for Ethics and Priority-Setting, University of Bergen (subcontract via grants from Trond Mohn Foundation and Norwegian Agency for Development Cooperation)

Richard Cookson
Funder: Trond Mohn Foundation and Norwegian Agency for Development Cooperation

Equity impact toolkit – Small-scale prototype development study

Richard Cookson, Fan Yang, James Love-Koh, Rita Faria, Susan Griffin
Funder: NICE

Evidence to support efficient and effective reduction of health inequality

Susan Griffin, Simon Walker, Nils Gutacker
Funder: NIHR PRP

Local NHS equity trends and their wider determinants: Pilot study of data on emergency admissions

Richard Cookson (CHE), Tim Doran, Karen Bloor (Department of Health Sciences, York)
Funder: NIHR PRP

MatCHNet: Harnessing cross-country administrative data to evaluate national policy impacts on maternal, infant and child health and health inequalities

Richard Cookson (CHE), Ruth Dundas, Alastair Leyland, Anna Pearce (University of Glasgow), Ruth Gilbert, Pia Hardelid, Katie Harron (UCL), Sinead Brophy (Swansea University), Joanne Given, (Ulster University), Rachael Wood (NHS National Services Scotland)
Funder: UK Prevention Research Partnership (MRC)

Network proposal early years

Richard Cookson
Funder: UK Prevention Research Partnership (MRC)

Re-engineering health policy for fairer decisions and better health

Richard Cookson (CHE), Tim Doran (Department of Health Sciences, York),
Funder: Wellcome Senior Investigator Award

Tracing causes of inequalities in health and well-being: analysis of rich longitudinal data

Nils Gutacker
Funder: Research Council of Norway via University of Tromsø

Global health

ARISE: Accountability for informal urban equity hub

Sumit Mazumdar (CHE), Helen Eelsey (Department of Health Sciences, York)
Funder: ESRC GCRF

Assessing the value of new technologies

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

Breather Plus Trial

Simon Walker, Paul Revill
Funder: EDCTP

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

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

COVID-19, social distancing and violence against women in Brazil (BRAVE)

Rodrigo Moreno-Serra, Noemi Kreif, Samuel Lordemus
Funder: UKRI GCRF/Newton Fund

Economic evaluation of health impacts of transport sector interventions and policies

Oliver Kaonga, Susan Griffin
Funder: MRC GCRF RCUK Thanzi la Onse project 2019

Estimating cost-effectiveness thresholds: a case study on Indonesia

Marc Suhrcke, Karl Claxton, Paul Revill, Noemi Kreif, Rodrigo Moreno-Serra, Alex Rollinger (CHE), Andrew Mirelman (WHO)
Funder: Bill and Melinda Gates Foundation via NICE International

Extension to the economic analysis of the REALITY trial of prophylactic strategies in advanced HIV patients in Africa

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

HIV modelling consortium: 4 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

Marta Soares (CHE), Andrew Mirelman (WHO)
Funder: MRC

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

Marc Suhrcke (CHE), Andrew Mirelman (WHO)
Funder: The World Bank

Are NICE's appraisal methods 'fit for purpose' for the evaluation of histology-independent drugs?

Stephen Palmer, David Glynn, Peter Murphy

The first histology-independent marketing authorisation was granted by the European Medicines Agency in 2019. This was the first time a cancer treatment had been approved based on a common biomarker rather than the location in the body where the tumour originated. Histology-independent treatments represent an important paradigm shift in the treatment of cancer, and may provide significant health improvements for patients who currently have limited, or no available, treatment options. However, it is also important to ensure that the use of these treatments in the NHS is supported by systematic and robust assessments of clinical effectiveness and value for money.

These assessments are undertaken by NICE, usually for treatments targeting specific tumour sites. However, a histology-independent marketing authorisation will include many tumour sites, and it is not possible for NICE to conduct a separate assessment for each tumour site for which the treatment could be beneficial. As a result, NICE needs to consider how these products can be appropriately assessed without creating unnecessary delays to patient access.

Together with collaborators at the Centre for Reviews and Dissemination (CRD) and the University of Sheffield, we sought to explore whether NICE's existing approaches for assessing clinical and economic value can be applied to histology-independent drugs, and any changes that might be required. We undertook a series of targeted reviews to determine the type of evidence that is likely to be available at initial marketing authorisation for these products. We used these reviews to identify specific challenges for histology-independent appraisals, and alternative analytic approaches which might be used to investigate and account for

different sources of uncertainty and heterogeneity. We also developed an exemplar case to illustrate the nature of the assessments that could be used to assess the cost-effectiveness of histology-independent drugs.

Our research found that the potential for heterogeneity in a range of model inputs, either across tumour histologies or across other characteristics, is likely to be an important issue for NICE appraisals of these technologies. Where there is evidence of heterogeneity in treatment effects and estimates of cost-effectiveness, consideration should be given to optimised or 'stratified' recommendations. We developed a general framework to help inform NICE's approval and research policies for these products. Our proposed framework explored the uncertainties and risks associated with different policies. We identified alternative approaches to managing risk, including the role of further data collection, the use of pricing schemes, and stratified decision making. We concluded that routine presentation of the scale of the consequences of heterogeneity and decision uncertainty could provide

important additional assessments to those specified in the current NICE methods guide.

Our research is being formally considered by NICE as part of their ongoing review of their methods and processes, and our findings will help to shape future NICE policy on how to appraise cancer drugs with histology-independent indications. It will also inform the development of guidance for those developing these treatments, to help their understanding of the clinical- and cost-effectiveness assessments that will be required to inform NICE appraisals.

This work is funded by the National Institute for Health Research (NIHR) Health Technology Assessment (HTA) Programme (127582).

A summary of the key issues and implications for cost-effectiveness analysis can be found in the following paper: Murphy P, Claxton L, Hodgson R, Glynn D, Beresford L, Walton M, Llewellyn A, Palmer S, Dias S. *Exploring heterogeneity in histology-independent technologies and the implications for cost-effectiveness*. *Medical Decision Making* 2021;doi:10.1177/0272989X20980327.

Detailed descriptions of the methods and results of this work as well as discussion of the policy implications can be found in the full report produced for NICE: <https://www.nice.org.uk/Media/Default/About/what-we-do/Research-and-development/histology-independent-HTA-report-1.docx>



Research projects

(in progress 2020 or completed in 2020)

National and regional policies to improve food environments, obesity and cardiovascular health in Peru: A community-based systems and modelling approach

Marc Suhrcke (CHE), Andrew Mirelman (WHO)
Funder: BBSRC

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

Marc Suhrcke, Rodrigo Moreno-Serra, Noemi Kreif, Sumit Mazumdar, Mark Sculpher, Paul Revill, Stephen Palmer, Martin Chalkley, Nigel Rice, Richard Cookson (CHE), Andrew Mirelman (WHO). 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

Redressing gendered health inequalities of displaced women and girls in contexts of protracted crisis in Central and South America

Rodrigo Moreno-Serra, Cristobal Cuadrado (CHE), Jean Grugel (Department of Politics, York)
Funder: ESRC

Refugees in Africa ClusTer (REACT): humanitarian health policy, gender and health economics

Paul Revill, Mark Sculpher, Wiktorja Tafesse
Funder: EPSRC

Setting research priorities in global health: appraising the value of evidence generation activities to support decision-making in health care

Beth Woods, Claire Rothery, Paul Revill, Karl Claxton (CHE), Timothy Hallett (Imperial College London), Andrew Phillips (UCL)
Funder: Bill and Melinda Gates Foundation

SHINE: Shorter treatment for minimal TB in children

James Love-Koh, Paul Revill, Simon Walker
Funder: MRC CTU

Short intensive anti-tuberculosis and anti-thrombosis treatment for children with tuberculous meningitis

Simon Walker, Paul Revill
Funder: MRC

Tailoring health policies to improve outcomes using machine learning, causal inference and operations research methods

Noemi Kreif
Funder: MRC

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, Steph Richardson, Sakshi Mohan, Beth Woods, Simon Walker,

Peter C Smith, Susan Griffin, Wiktorja Tafesse, 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: MRC GCRF, RCUK

The impact of health shocks on developing economies

Marc Suhrcke
Funder: MRC UKRI

Towards a global research network for the molecular pathological stratification of leishmaniasis

Paul Revill (CHE), Paul Kaye, Dimitris Lagos (HYMS, York), Pegine Walrad (Biology, York)
Funder: MRC

Uganda EQ-5D-5L valuation study

Fan Yang, Susan Griffin, Mark Sculpher (CHE), Kenneth Katumba (MRC/UVRI & LSHTM Uganda Research Unit, Uganda)
Funder: Euroqol Group

War and Peace: the health and health system consequences of conflict in Colombia

Rodrigo Moreno-Serra, Noemi Kreif, Marc Suhrcke, Samuel Lordemus (CHE), Andrew Mirelman (WHO), Nina Caspersen (Department of Politics, York), Bayard Roberts (London School of Hygiene and Tropical Medicine). With Universidad de los Andes, Colombia.
Funder: MRC/ESRC/DFID/Wellcome

Health and social care

ESSENCE – Examining the economic case for a range of adult social care interventions

Helen Weatherly
Funder: NIHR-CCF SCCR

Evaluating the life-course health impact of a city-wide system approach to improve air quality in Bradford, UK: A quasi-experimental study with implementation and process evaluation.

Laura Bojke, Simon Walker (CHE), Kate Pickett (Department of Health Sciences, York)
Funder: NIHR PHR

Evaluation of the Integrated Personal Commissioning programme

Helen Weatherly, Rita Faria, Francesco Longo
Funder: DHSC PRP

Intensive behavioural interventions for young children with autism

Claire Rothery
Funder: NIHR HTA

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

Gerry Richardson
Funder: NIHR PGfAR

Scoping exercise for a model to evaluate the clinical and cost effectiveness of newborn screening for hypoxaemia using pulse oximetry

Laura Bojke
Funder: PHE

Yorkshire lung cancer screening

Sebastian Hinde, Mark Sculpher
Funder: Yorkshire Cancer Research

Public health

BREEZE – A feasibility randomised controlled trial of a complex breathlessness intervention in Idiopathic Pulmonary Fibrosis

Gerry Richardson
Funder: NIHR RfPB

CLAHRC II – health economics and outcomes measurement

Laura Bojke, Gerry Richardson, Susan Griffin (CHE), Karen Bloor (Department of Health Sciences, York)
Funder: NIHR CCF

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

Gerry Richardson, Simon Walker (CHE), Tracey Bywater, Amanda Mason-Jones, Kate Pickett (Department of Health Sciences, York), Kathleen Kiernan (Social Policy and Social Work, York)
Funder: NIHR PHR

Evaluation of Coenzyme Q10 in chronic heart failure

Claire Rothery
Funder: NIHR HTA

Tees, Esk and Wear Valleys NHS Foundation Trust. Identifying and linking individual patient data to assess alternative service designs for pharmacy services

Gerry Richardson, Laura Bojke, Sebastian Hinde
Funder: NIHR RCF

The role of different diets in children who are gastrostomy fed

Gerry Richardson (CHE), Lorna Fraser, Catherine Hewitt, Jo Taylor (Department of Health Sciences, York), Bryony Beresford (Social Policy Research Unit, York)
Funder: NIHR HTA

Wider societal benefits of public health interventions and their impact on distributional cost effectiveness analysis

Susan Griffin, Mark Sculpher, Simon Walker, Fan Yang
Funder: DHSC PH PRU

Do small hospitals have lower quality? Evidence from the English NHS

James Gaughan,
Hugh Gravelle (CHE),
Luigi Siciliani
(DERS, York),
Giuseppe Moscelli
(University of
Surrey)



The quality of care is a key policy objective in health systems. It comes in many forms, including: clinical quality, patient experience, and availability of services. One policy concern is that small hospitals, defined in the context of the English National Health Service (NHS) as those with fewer than 400 beds, may provide lower quality care, leading to higher mortality, higher hospital acquired infection rates, and worse patient perceptions of their care. This might be driven by greater difficulty for small hospitals to recruit staff, manage a smaller pool of staff in providing 24/7 emergency care, or to invest in diagnostic services.

The quality of care in small hospitals is a vital component in debates around hospital closures or mergers, lower quality often being used as a justification for change. As well as wishing to maximise care quality, there are specific equity considerations. Patients living close to small hospitals might receive lower-quality care, as distance is a key factor in hospital choice. At the same time, a hospital closure reduces timely access to care for the same patient group, which is particularly the case for small hospitals, which are generally located in more rural areas.

We investigated the extent to which small hospitals are associated with lower quality. We used publicly-available data at the hospital organisation level for five financial years (1st April to 31st March) from 2010/11 to 2014/15. We considered twelve quality measures for all non-specialist acute NHS hospitals in England. We included five hospital mortality rates (overall, non-elective procedures, heart attack, hip fracture, and stroke cases), two measures of

hospital-acquired infection rates (MRSA and C-Difficile), four patient reported perceptions of the care they receive (hospital cleanliness, decision involvement, being treated with dignity, recommendable to friends and family), and waiting times in the accident and emergency department.

We used two approaches to investigate the different measures of quality with linear regression models. First, since patients are concerned if they receive low quality of care, regardless of its cause, we investigated whether patients treated in small hospitals receive lower quality than those in larger hospitals, after adjusting for differences in the composition of patients who attend different hospitals. Second, we investigated if any association between quality and hospital size can be explained by other hospital characteristics. Understanding associations between hospital characteristics and quality is important for policy makers, which may be able to influence these features. We considered: being a teaching hospital; having Foundation Trust status, which

gives more independence to the hospital; staff composition; input costs; market structure; the demand faced by the hospital; and the accessibility of primary care, which can be a substitute for secondary care.

We found that small hospitals are generally not associated with lower quality before or after controlling for hospital characteristics. The only exception is heart attack mortality, which is generally higher in small hospitals. Our analysis does not provide any strong support for the proposition that small NHS acute hospitals in England provide generally lower quality to their patients. This may be a reflection of the relatively large number of beds even in small NHS hospitals in England.

This work is funded by the National Institute for Health Research (NIHR) Policy Research Programme (103/0001).

Further details of the work can be found in the following publication:

Gaughan J, Siciliani L, Gravelle H, Moscelli G. *Do small hospitals have lower quality? Evidence from the English NHS.* *Social Science & Medicine* 2020;265:113500.

Courses and Workshops 2020

The COVID-19 global pandemic meant that it was not possible for us to host our usual range of face-to-face short courses and workshops during 2020. Courses that we unfortunately had to postpone due to the virus included:

- Outcomes Measurement and Valuation for Health Technology Assessment York Summer Workshop
- Decision Analytic Modelling for Economic Evaluation - Foundations and Advanced courses
- Statistical Methods in Economic Evaluation for Health Technology Assessment - Foundations and Advanced Courses
- Analysing Patient-Level Data Using Hospital Episode Statistics (HES)

However, for the first time ever, we transformed and developed two of our face-to-face York Summer Workshops in Health Economic Evaluation into two York Online Workshops which we hosted in November/December 2020. These online workshops included a mix of recorded lectures, participant exercises, discussion forums, and daily live question and answer sessions. We welcomed participants from 24 countries across the globe, from academia, pharmaceutical and medical device companies, consultancy, health systems, government and HTA organisations.

York Online Workshops in Health Economic Evaluation

Foundations of Economic Evaluation in Health Care

The online Foundations Workshop ran for 7 days from 19-27 November, and was attended by 60 participants. This workshop covered the main design features of evaluation studies, how to handle cost data, and how to analyse economic data alongside clinical studies.

<https://vimeo.com/442299067>

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

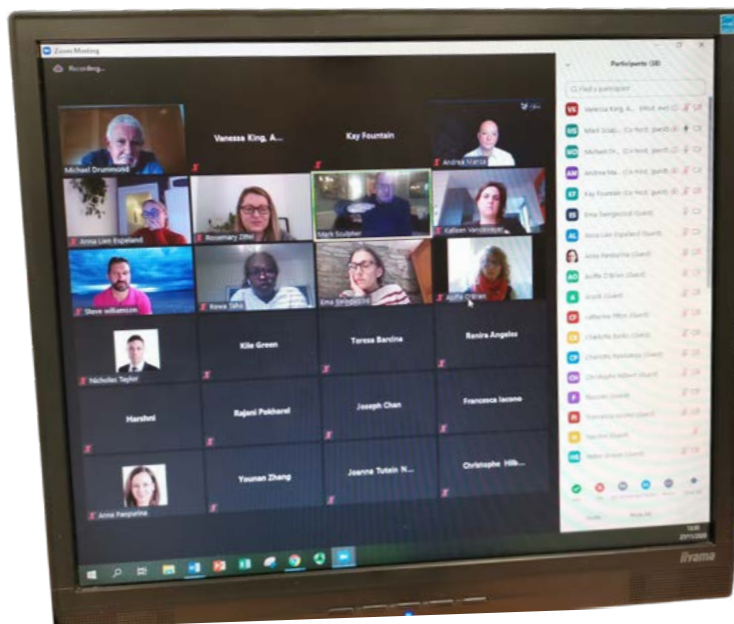
The online Advanced Workshop ran for 7 days, from 30 November to 8 December, and was attended by 60 participants. This workshop covered more advanced analytical techniques, including evidence synthesis, uncertainty, value of information analysis, and building a decision analytic model.

Workshops participants were given access to revisit and view the study materials until early January 2021.

<https://vimeo.com/440682416>

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: https://www.york.ac.uk/economics/postgrad/distance_learning/



Thank you so much for putting this course on during COVID. It was a shame not to be able to have a trip to York but I am so grateful to have been able to complete this learning to fit with PhD study plans.

The video lectures were great because I could rewind and listen again to parts that I didn't understand the first time. In that sense it was even better than having a lecture face to face because I could rewind as many times as I needed to.

The live Q&A sessions were really interesting and helpful. And they also enabled a more interactive communication with the lecturers and also the other participants, which I find fundamental.

WORKSHOP PARTICIPANTS

Diagnostic evaluations for NICE: challenges of quantifying health and cost impacts

Ana Duarte, Stephen Palmer, Claire Rothery, Marta Soares, Simon Walker



The National Institute for Health and Care Excellence (NICE) provides guidance and sets quality standards to improve people's health, and prevent and treat ill health. NICE's Diagnostic Assessment Programme (DAP), evaluates diagnostic technologies that have the potential to improve health outcomes, but whose introduction is likely to be associated with an overall increase in cost to the NHS. CHE's applied work in this programme supports the role of NICE by ensuring national guidance is underpinned by rigorous and independent assessments of clinical effectiveness and value for money. Our related methodological research aims to address the specific evaluation challenges posed by diagnostic technologies.

Diagnostics can be used for various different purposes, including diagnosis, clinical monitoring, staging, screening, and risk stratification. NICE's DAP programme differs, in a number of important ways, from other NICE programmes which focus on the use of new and existing medicines and treatments. In particular, diagnostics differ because they improve health outcomes indirectly, from tailoring treatment decisions (or other courses of action that impact on patient outcomes) to patient characteristics. Hence, structuring an evaluation requires consideration for the following interlinked components:

- **Classification:** how test results can be used to classify patients into groups who will be managed differently
- **Choice:** what health care choices (including treatments, further diagnostics or preventative strategies) can be made for each of the groups defined from test results and their classification, for example, whether to offer treatment to individuals that test positive and whether to offer a prevention strategy to those that test negative
- **Outcomes:** what are the consequences of the different health care choices adopted for the distinct groups in terms of (net) health.

To support appraisals, direct evidence on how the use of a particular test affects health outcomes is often not available. 'Outcomes studies' are costly, complex, and may present limited generalisability at the time of reporting. A linked evidence approach, using modelling, is thus required to allow quantification of cost-effectiveness. CHE's researchers have developed an analytical framework for establishing the value of diagnostic tests for HTA, in a way that is consistent with methods used for the evaluation of other health care technologies. The framework can also be applied to diagnostic tests that provide more complex information, such as continuous measures (for example, blood glucose measurements) or multiple categories (such as tumour classification systems).

Our applied work for the NICE DAP covers a broad range of different diagnostic technologies, including recent assessments of the use of point-of-care creatinine tests to assess kidney function for outpatients requiring contrast-enhanced CT imaging, and of the use of imaging software for assessing functionally significant stenosis during invasive coronary angiography. As an assessment group for NICE, one of the biggest challenges we face when modelling diagnostic assessments is in linking the evidence on the key components of classification, choice and outcomes - i.e. the model structure - in a

way that is reflective of what is expected to happen in clinical practice and that best uses available evidence.

Existing good practice modelling guides and reporting checklists do not reflect the complexity required in modelling diagnostic technologies. As a result, many applied studies do not routinely, and explicitly, report how the required linkage is done, making it difficult to evaluate the plausibility of any assumptions required. We are currently developing a framework for the structured reporting of the evaluation of clinical and economic value of diagnostics tests, aiming to explicitly identify to decision makers the underlying relationships imposed between the key components of value of tests and identifying value drivers.

This work is funded by the National Institute for Health Research (NIHR) Health Technology Assessment (HTA) Programme (DAP48).

Further details of the work can be found in the following publications:

Soares MO, Walker S, Palmer SJ, Sculpher MJ. *Establishing the value of diagnostic and prognostic tests in Health Technology Assessment. Medical Decision Making* 2018;38(4):495-508.

Corbett M, Duarte A, Llewellyn A, Altunkaya J, Harden M, Harris M, Walker S, Palmer S, Dias S & Soares M. *Point-of-care creatinine tests to assess kidney function for outpatients requiring contrast-enhanced CT imaging: systematic reviews and economic evaluation. Health Technology Assessment* 2020;24(39).

Duarte A, Llewellyn A, Walker R, Schmitt L, Wright C, Walker S, Rothery C, Simmonds M. *QAngio XA 3D/Quantitative Flow Ratio (QFR) and CAAS vFFR imaging software for assessing coronary obstructions*

Peer reviewed

Abramovich A, **de Oliveira C**, Kiran T, Iwajomo T, Ross LE, Kurdyak P. Assessment of health conditions and health service use among transgender patients in Canada. *JAMA Network Open* 2020;3(8):e2015036.

Aguilar-Farias N, Miranda-Marquez S, Martino-Fuentealba P, Sadarangani KP, Chandia-Poblete D, Mella-Garcia C et al (includes **Cuadrado C**). 2018 Chilean physical activity report card for children and adolescents: Full report and international comparisons. *Journal of Physical Activity and Health* 2020;17(8):807-815.

Al-Hanawi MK, **Chirwa G**, Pemba LA, Qattan AMN. Does prolonged television viewing affect body mass index? A case of the Kingdom of Saudi Arabia. *PLOS ONE* 2020;15(1):e0228321.

Al-Hanawi MK, **Chirwa G**, Kamninga TM. Decomposition of gender differences in body mass index in Saudi Arabia using unconditional quantile regression: Analysis of national-level survey data. *International Journal of Environmental Research Public Health* 2020;17(7):2330.

Arnold M, Nkhoma D, **Griffin S**. Distributional impact of the Malawian Essential Health Package. *Health Policy and Planning* 2020;35(6):646-656.

Baker P, Coole C, Drummond A, Khan S, McDaid CM, Hewitt CE et al. (includes **Richardson G**). Occupational advice to help people return to work following lower limb arthroplasty: the OPAL intervention mapping study. *Health Technology Assessment* 2020;24:45.

Bakhai A, Petri H, Vahidnia F, Wolf C, Ding Y, Foskett N, **Sculpher M**. Real-world data on the incidence, mortality, and cost of ischaemic stroke and major bleeding events among non-valvular atrial fibrillation patients in England. *Journal of Evaluation in Clinical Practice* 2020;doi:10.1111/jep.13400.

Barry R, Rehm J, **de Oliveira C**, Gozdyra P, Kurdyak P. Rurality and risk of suicide attempts and death by suicide among people living in four English-speaking high-income countries: A systematic review and meta-analysis. *Canadian Journal of Psychiatry* 2020 Jan 29;65(7):441-447.

Baxter R, Murray J, O'Hara J, Hewitt C, **Richardson G**, Cockayne S et al. Improving patient experience and safety at transitions of care through the Your Care Needs You (YCNy) intervention: a study protocol for a cluster randomised controlled feasibility trial. *Pilot and Feasibility Studies* 2020;6:123.

Berdud M, **Drummond MF**, Towse A. Establishing a reasonable price for an orphan drug. *Cost-Effectiveness and Resource Allocation* 2020;18:31.

Biswas A, Dobson KG, Gignac MAM, **de Oliveira C**, Smith PM. Changes in work factors and concurrent changes in leisure time physical activity: A 12-year longitudinal analysis. *Occupational and Environmental Medicine* 2020;77(5):309-315.

Canals M, **Cuadrado C**, Canals A, Johannessen K, Lefio LA, Bertoglia MP et al. Epidemic trends, public health response and health system capacity: the Chilean experience in four months of the COVID-19 pandemic. *Pan American Journal of Public Health / Revista Panamericana de Salud Pública* 2020;44:e99.

Catalá-López F, Caulley L, Ridaio M, Hutton B, Husereau D, **Drummond MF** et al. Reproducible research practices, openness and transparency in health economic evaluations: study protocol for a cross-sectional comparative analysis. *BMJ Open* 2020;10(2):e034463.

Chan K, Nam S, Evans B, **de Oliveira C**, Chambers A, Gavura S et al. Developing a framework to incorporate real-world evidence in cancer drug funding decisions: The Canadian Real-world Evidence for Value of Cancer Drugs (CanREValue) collaboration. *BMJ Open* 2020;10(1):e032884.

Chetter I, Arundel C, Bell K, Buckley H, **Claxton K**, Corbacho Martín B et al (includes **Saramago P**, **Soares M**). The epidemiology, management and impact of surgical wounds healing by secondary intention: a research programme including the SWHSI feasibility RCT. *NIHR Programme Grants for Applied Research* 2020;8(7).

Chi YL, Blecher M, Chalkidou K, Culyer A, **Claxton K** et al (includes **Kreif N**, **Ochalek J**) What next after GDP-based cost-effectiveness thresholds? *Gates Open Research* 2020; 4:176.

Chirwa G, **Moreno-Serra R**, **Suhrcke M**. Socioeconomic inequality in premiums for a community based health insurance scheme in Rwanda. *Health Policy and Planning* 2020;doi:10.1093/heapol/czaa135.

Clemes S, Bingham D, Pearson N, et al (includes **Richardson G**, **Altunkaya J**). Stand out in class: Restructuring the classroom environment to reduce sitting time – findings from a pilot cluster randomised controlled trial. *International Journal of Behavioral Nutrition and Physical Activity* 2020;17:55.

Collins B, Kypridimos C, **Cookson R**, Parvulescu P et al. Universal or targeted cardiovascular screening? Modelling study using a sector-specific distributional cost effectiveness analysis. *Preventive Medicine* 2020;130:105879.

Cookson R, **Griffin S**, Norheim OF, **Culyer AJ**, Chalkidou K. Distributional cost-effectiveness analysis comes of age. *Value in Health* 2020;doi:10.1016/j.jval.2020.10.001.

Cookson R, **Skarda I**, Cotton-Barrett O, Adler M, Asaria M, Toby O. Quality adjusted life years based on health and consumption: A summary wellbeing measure for cross-sectoral economic evaluation. *Health Economics* 2020;doi:10.1002/hecl.4177.

Corbacho Martín B, **Drummond MF**, **Santos R**, Jones E et al. Does the use of health technology assessment have an impact on the utilisation of health care resources? Evidence from two European countries. *The European Journal of Health Economics* 2020;21(4):621-634.

Corbett M, **Duarte A**, Llewellyn A, Altunkaya J, Harden M, Harris M, **Walker S**, **Palmer S**, Dias S & **Soares M**. Point-of-care creatinine tests to assess kidney function for outpatients requiring contrast-enhanced CT imaging: systematic reviews and economic evaluation. *Health Technology Assessment* 2020;24(39).

Crosbie P, Gabe R, Simmonds I, Kennedy M, Rogerson S, Ahmed N et al (includes **Hinde S**, **Sculpher M**). The Yorkshire Lung Screening Trial (YLST): protocol for a randomised controlled trial to evaluate invitation to community-based low dose CT screening for lung cancer versus usual care in a targeted population at risk. *BMJ Open* 2020;10(9):e037075.

Cylus J, **Smith PC**. The economy of wellbeing: What is it and what are the implications for health? *BMJ* 2020;369:m1874.

de Oliveira C, Cheng J, Chan K, Earle CC, Krahn M, Mittmann N. High-cost patients and preventable spending: A population-based study. *JNCCN Journal of the National Comprehensive Cancer Network* 2020;18(1):23-31.

de Oliveira C, Cho E, Kavelaars RA, Jamieson M, Bao B, Rehm J. Economic analyses of mental health and substance use interventions in the workplace: a systematic literature review and narrative synthesis. *The Lancet Psychiatry* 2020;7(10):893-910.

de Oliveira C, Iwajomo T, Gomes T, Kurdyak P. The role of the medical school training on physician opioid prescribing practices: Evidence from Ontario, Canada. *Canadian Journal of Psychiatry* 2020; 65(10):710-720.

de Oliveira C, Mason J, Kurdyak P. Characteristics of patients with mental illness and persistent high-cost status: a population-based analysis. *CMAJ* 2020;192(50):e1793-e1801.

Dias J, Brealey S, Cook L, Fairhurst C, **Hinde S**, Leighton P et al (includes **G Richardson**). Surgical fixation compared with cast immobilisation for adults with a bicortical fracture of the scaphoid waist: the SWIFFT RCT. *Health Technology Assessment* 2020;24(52).

Dias J, Brealey S, Fairhurst C, Amirfeyz R et al (includes **Hinde S**, **Richardson G**). Surgery versus cast immobilisation for adults with a bicortical fracture of the scaphoid waist (SWIFFT): a pragmatic, multicentre, open-label, randomised superiority trial. *Lancet* 2020; 396(10248):390-401.

DiazOrdaz K, Rhan D, **Kreif N**. Data-adaptive doubly robust instrumental variable methods for treatment effect heterogeneity. *Journal de la Société Française de Statistique* 2020 Jun 30;161(1):135-163.

Di Novi C, **Jacobs R**, Migheli M. Smoking inequality across genders and socio-economic positions. Evidence from Italian data. *Journal of Bioeconomics* 2020;22(3):177-203.

Driscoll A, **Hinde S**, Harrison A, **Bojke L**, Doherty P. Estimating the health loss due to poor engagement with cardiac rehabilitation in Australia. *International Journal of Cardiology* 2020;317:7-12.

Drummond MF. Taking steps towards transparency in real world evidence studies. *Value in Health* 2020;23:9:1119.

Drummond MF, Mullins CD. Yes, authorship is important. *Value in Health* 2020;23:7:827-828.

Drummond MF, Torbica A, Tarricone R. Should Health Technology Assessment be more patient-centric? If so, how? *European Journal of Health Economics* 2020;21(8):1117-1120.

Elliott R, Camacho E, **Faria R**, **Jankovic D**, **Sculpher M**. Economic analysis of the prevalence and clinical and economic burden of medication error in England. *BMJ Quality & Safety* 2020;doi:10.1136/bmjqs-2019-010206.

Essue BM, Iragorri N, Fitzgerald N, **de Oliveira C**. The psychosocial cost burden of cancer: A systematic literature review. *Psycho-Oncology* 2020;29(11):1746-1760.

Fenwick E, Steuten L, Knies S, Ghabri S, Basu A, Murray JF, Koffijberg HE, Strong M, Sanders Schmidler GD, **Rothery C**. Value of Information Analysis for Research Decisions-An Introduction: Report 1 of the ISPOR Value of Information Analysis Emerging Good Practices Task Force. *Value in Health*. 2020 Feb;23(2):139-150.

Fowler-Davis S, **Hinde S**, Ariss S. Complex programme evaluation of a 'New Care Model' vanguard: a shared commitment to quality improvement in an integrated health and care context. *BMJ Open* 2020;10(3):e029174.

Foy R, Willis T, Glidewell L, Mceachan R, Lawton R, Meads D et al (includes **Schmitt L**). Developing and evaluating packages to support implementation of quality indicators in general practice: the ASPIRE research programme, including two cluster RCTs. *NIHR Programme Grants for Applied Research* 2020;8(4).

Franklin M, **Lomas J**, **Richardson G**. Conducting value for money analyses for non-randomised interventional studies including service evaluations: an educational review with recommendations. *Pharmacoeconomics* 2020;38(7):665-681.

Fuster M, Burrowes S, **Cuadrado C**, Velasco Bernal A, et al. Understanding policy change for obesity prevention: learning from sugar-sweetened beverages taxes in Mexico and Chile. *Health Promotion International* 2020;doi:10.1093/heapro/daaa045.

Gaughan J, Siciliani L, **Gravelle H**, Moscelli G. Do small hospitals have lower quality? Evidence from the English NHS. *Social Science & Medicine* 2020;doi:10.1016/j.socscimed.2020.113500.

Gc V, Franklin D, Whitty JA, Dalziel SR, Babl FE, Schalpbach LJ et al. First-line oxygen therapy with high-flow in bronchiolitis is not cost saving for the health service. *Archives of Disease in Childhood* 2020;105(10):975-980.

Gravelle H, Schroyen F. Optimal hospital payment rules under rationing by waiting. *Journal of Health Economics* 2020;70:102277.

Greene W, Harris M, Knott R, **Rice N**. Specification and testing of hierarchical ordered response models with anchoring vignettes. *Journal of the Royal Statistical Society: Series A (Statistics in Society)* 2020;doi:10.1111/rssa.12612.

Greenwood J, **Walker S**. Stress CMR imaging for stable chest pain syndromes: Underused and undervalued? *JACC: Cardiovascular Imaging* 2020;13(7):1518-1520.

Griffin S, **Walker S**, **Sculpher M**. Distributional cost effectiveness analysis of West Yorkshire low emission zone policies. *Health Economics* 2020;29(5):567-579.

Gutacker N, **Patton T**, Shah K, Parkin D. Using EQ-5D data to measure hospital performance: Are general population values distorting patients' choices? *Medical Decision Making* 2020;40(4):511-521.

Hardeman W, Mitchell J, Pears S, Van Emmeris M, Theil F, **Gc V**, Vasconcelos J, Westgate K, Brage S, **Suhrcke M** et al. Evaluation of a very brief pedometer-based physical activity intervention delivered in NHS Health Checks in England: The VBI randomised controlled trial. *PLoS Medicine* 2020;17(3):e1003046.

Harris M, Knott R, Lorgelly P, **Rice N**. Using externally collected vignettes to account for reporting heterogeneity in survey self-assessment. *Economics Letters* 2020;194:109325.

Hernandez Alava M, Wailoo A, Pudney S, Gray L, **Manca A**. Mapping clinical outcomes to generic preference-based outcome measures: Development and comparison of methods. *Health Technology Assessment* 2020;24(34).

Hinde S, Harrison A, **Bojke L**, Doherty P. Quantifying the impact of delayed delivery of cardiac rehabilitation on patients' health. *European Journal of Preventive Cardiology* 2020;27(16):1775-1781.

Hoeks M, Bagguley T, van Marrewijk C, Smith A, Bowen D, Culligan D et al (includes **Drummond MF**). Toxic iron species in lower-risk myelodysplastic syndrome patients: Course of disease and effects on outcome. *Leukemia* 2020;doi:10.1038/s41375-020-01022-2.

Iragorri N, **de Oliveira C**, Fitzgerald N, Essue B. The indirect cost burden of cancer care in Canada: A systematic literature review. *Applied Health Economics and Health Policy* 2020;doi:10.1007/s40258-020-00619-z.

Isaranuwatthai W, Teerawattananon Y, Archer RA et al. (includes **Smith PC**). Prevention of non-communicable disease: Best buys, wasted buys, and contestable buys. *BMJ* 2020;368:m141.

Iwajomo T, Bondy S, **de Oliveira C**, Colton P, Trottier K, Kurdyak P. Excess mortality associated with eating disorders: a population-based cohort study. *British Journal of Psychiatry* 2020;doi:10.1192/bjp.2020.197.

Jacob N, Munford L, **Rice N**, Roberts J. Does commuting mode choice impact health? *Health Economics* 2020;doi:10.1002/hecl.4184.

Jacobs R, Aylott L, Dare C, Doran T, Gilbody S, **Goddard M**, **Gravelle H**, **Gutacker N**, **Kasteridis P**, Kendrick T, **Mason A**, **Rice N**, Ride J, Siddiqi N, Williams R. The association between primary care quality and health-care use, costs and outcomes for people with serious mental illness: A retrospective observational study. *NIHR HS&DR Journal* 2020;8(25):pp158.

Jankovic D, Bojke L, Marshall D, Saramago P, Churchill R, Melton H et al. Systematic review and critique of methods for economic evaluation of digital mental health interventions. *Applied Health Economics and Health Policy* 2020;doi:10.1007/s40258-020-00607-3.

Jiang S, Gu Y, Yang F, Wu T, Wang H, Cutler H et al. Tertiary hospitals or community clinics? An enquiry into the factors affecting patients' choice for healthcare facilities in urban China. *China Economic Review* 2020;63:101538.

Kasteridis P, Mason A, Street A. Evaluating integrated care for people with complex needs. *Journal of Health Services Research & Policy* 2020;doi:10.1177/1355819620931872.

Kozloff N, Foussias G, Durbin J, et al (includes **de Oliveira C**). Early Psychosis Intervention-Spreading Evidence-based Treatment (EPI-SET): Protocol for an effectiveness-implementation study of a structured model of care for psychosis in youth and emerging adults. *BMJ Open* 2020;10(6):e034280.

Kozor R, Walker S, Parkinson B, Younger J, Hamilton-Craig C, Selvanayagam JB et al. Cost-effectiveness of cardiovascular magnetic resonance in diagnosing coronary artery disease in the Australian healthcare system. *Heart, Lung and Circulation* 2020;doi:10.1016/j.hlc.2020.07.008.

Kreif N, Sofrygin O, Schmittiel J, Adams A, et al. Exploiting non-systematic covariate monitoring to broaden the scope of evidence about the causal effects of adaptive treatment strategies. *Biometrics* 2020;doi:10.1111/biom.13271.

Kreutzberg A, Jacobs R. Improving access to services for psychotic patients: does implementing a waiting time target make a difference. *European Journal of Health Economics* 2020;21(5):703-716.

Kunst N, Wilson E, Glynn D, Alarid-Escudero F, Baio G, Brennan A et al. Computing the expected value of sample information efficiently: Practical guidance and recommendations for four model-based methods. *Value in Health* 2020;23(6):734-742.

Kurdyak P, Zaheer J, Carvalho A, de Oliveira C, Lebenbaum M, Wilton AS et al. Physician-based availability of psychotherapy in Ontario: a population-based retrospective cohort study. *CMAJ Open* 2020;8(1):E105-E115.

Liu D, Pace ML, Goddard M, Jacobs R, Wittenberg R, Mason A. Investigating the relationship between social care supply and healthcare utilisation by older people in England: social care supply and health care utilisation. *Health Economics* 2020;doi:10.1002/hec.4175.

Longo F, Saramago P, Weatherly H, Rabiee P, Birks YF, Keding A et al. Cost-effectiveness of in-house vs contracted-out vision rehabilitation services in England. *Journal of Long-Term Care* 2020;pp118-130.

Love-Koh J, Cookson R, Claxton K, Griffin S. Estimating social variation in the health effects of changes in healthcare expenditure. *Medical Decision Making* 2020;40(2):170-182.

Love-Koh J, Griffin S, Kataika E, Revill P, Sibandze S, Walker S. Methods to promote equity in health resource allocation in low- and middle-income countries: an overview. *Globalization and Health* 2020;16:6.

Love-Koh J, Mirelman A, Suhrcke M. Equity and economic evaluation of system-level health interventions: A case study of Brazil's family health program. *Health Policy and Planning* 2020;doi:10.1093/heapol/czaa181.

Love-Koh J, Pennington B, Owen L, Taylor M, Griffin S. How health inequalities accumulate and combine to affect treatment value: A distributional cost-effectiveness analysis of smoking cessation interventions. *Social Science & Medicine* 2020;265(Nov):113339.

Maddison P, Castelli A, Tiffin P. Unravelling the mental health productivity puzzle: where do we start? *The British Journal of Psychiatry* 2020;doi:10.1192/bjp.2020.142.

Magill N, White IR, Walker J, Burke K, et al. (includes **Yang F, Walker S, Sculpher M**). The HOME Study: Statistical and economic analysis plan for a randomised controlled trial comparing the addition of Proactive Psychological Medicine to usual care, with usual care alone, on the time spent in hospital by older acute hospital inpatients. *Trials* 2020;21:373.

Mahentharan M, Kouyoumdjian FG, de Oliveira C, Iwajomo T, Simpson AIF, Jones R et al. Prevalence and predictors of reincarceration after correctional center release: A population-based comparison of individuals with and without schizophrenia in Ontario, Canada. *Canadian Journal of Psychiatry* 2020;doi:10.1177/0706743720953018.

Manchira Krishnan S, Gc V, Sandhu H, Underwood M, Eldabe S, Manca A et al. Protocol for an economic analysis of the randomised controlled trial of improving the wellbeing of people with opioid treated chronic pain: I-WOTCH study. *BMJ Open* 2020;10(11):e037243.

Martin A, Morciano M, Suhrcke M. Determinants of bicycle commuting and the effect of bicycle infrastructure investment in London: evidence from UK Census microdata. *Economics & Human Biology* 2020;doi:10.1016/j.ehb.2020.100945.

Martin S, Lomas J, Claxton K. Is an ounce of prevention worth a pound of cure? A cross-sectional study of the impact of English public health grant on mortality and morbidity. *BMJ Open* 2020;10(10):e036411.

Martyn-St James M, Faria R, Wong R, Scope A. Evidence for the impact of interventions and medicines reconciliation on problematic polypharmacy in the UK: a rapid review of systematic reviews. *British Journal of Clinical Pharmacology* 2020;doi:10.1111/bcp.14368.

McBride M, de Oliveira C, Duncan R, Bremner K, Liu N, Greenberg M et al. Comparing childhood cancer care costs in two Canadian provinces. *Healthcare Policy* 2020;15(3):76-88.

McGuire F, Revill P, Twea P, Mohan S, Manthalu G, Smith PC. Allocating resources to support universal health coverage: development of a geographical funding formula in Malawi. *BMJ Global Health* 2020;5(9):e002763.

Meregaglia M, Whittall A, Nicod E, Drummond MF. 'Mapping' health state utility values from non-preference-based measures: a systematic literature review in rare diseases. *Pharmacoeconomics* 2020;38(6):557-574.

Meregaglia M, Nicod E, Drummond MF. The estimation of health state utility values in rare diseases: overview of existing techniques. *International Journal of Technology Assessment in Health Care* 2020;36(5):469-473.

Nazif-Munoz JI, Cuadrado C, Oulhote Y, Spengler J. Do election laws restricting public road publicity reduce road traffic crashes and their consequences? *Epidemiology* 2020;31(4):490-498.

Ng'ambi W, Mangal T, Phillips A, Colbourn T, Mfutso-Bengo J, Revill P et al. Factors associated with healthcare seeking behaviour for children in Malawi: 2016. *Tropical Medicine International Health* 2020;doi:10.1111/tmi.13499.

Nicod E, Whittall A, Drummond MF, Facey K. Are supplemental appraisal/reimbursement processes needed for rare disease treatments? An international comparison of country approaches. *Orphanet Journal of Rare Diseases* 2020;15:189.

Ochalek J, Abbas K, Claxton K, Jit M, Lomas J. Assessing the value of human papillomavirus vaccination in Gavi-eligible low- and middle-income countries. *BMJ Global Health* 2020;5(10):e003006.

Ochalek J, Claxton K, Lomas J, Thompson K. Valuing health outcomes: Developing better defaults based on health opportunity costs. *Expert Review of Pharmacoeconomics & Outcomes Research* 2020;doi:10.1080/14737167.2020.1812387.

Ochalek J, Lomas J. Reflecting the health opportunity costs of funding decisions within value frameworks: Initial estimates and the need for further research. *Clinical Therapeutics* 2020;42(1):44-59.

Ochalek J, Manthalu G, Smith PC. Squaring the cube: towards an operational model of optimal universal health coverage. *Journal of Health Economics* 2020;70:102282.

Ochalek J, Wang H, Gu Y, Lomas J, Cutler H, Jin C. Informing a costeffectiveness threshold for Health Technology Assessment in China: A marginal productivity approach. *Pharmacoeconomics* 2020;38(12):1319-1331.

O'Neill S, Kreif N, Grieve R, Sutton M. A comparison of methods for health policy evaluation with controlled pre-study designs. *Health Services Research* 2020;55(2):328-338.

Padula W, Sculpher M. Ideas about resourcing health care in the United States: Can economic evaluation achieve meaningful use? *Annals of Internal Medicine* 2020;doi:10.7326/M20-1234.

Pentland M, Cohen E, Guttmann A, de Oliveira C. Maximizing the impact of the Canada child benefit: Implications for clinicians and researchers. *Journal of Paediatrics and Child Health* 2020;doi:10.1093/pch/pxaa092.

Perry-Duxbury M, Asaria M, Lomas J, van Baal P. Cured today, ill tomorrow: A method for including future unrelated medical costs in economic evaluation in England & Wales. *Value in Health* 2020;23(8):1027-1033.

Phillips A, Bansi-Matharu L, Venter F, Havlir D, et al (includes **Revill P**). Updated assessment of risks and benefits of dolutegravir versus efavirenz in new antiretroviral treatment initiators in sub-Saharan Africa: modelling to inform treatment guidelines. *The Lancet HIV* 2020;7(3):e193-e200.

Polillo A, Foussias G, Wong A, Ampofo A, Stergiopoulos V, Anderson K et al (includes **de Oliveira C**). ED to EPI: Protocol for a pragmatic randomised controlled trial of an SMS (text) messaging intervention to improve the transition from the emergency department to early psychosis intervention for young people with psychosis. *BMJ Open* 2020;10(12):e042751.

Qin VM, McPake B, Raban MZ, Cowling TE, Alshamsan R, et al (includes **Smith PC**). Rural and urban differences in health system performance among older Chinese adults: cross-sectional analysis of a national sample. *BMC Health Services Research* 2020;20(1):372.

Ramponi F, Tafesse W, Griffin S. Economic evaluation of interventions to address undernutrition: a systematic review. *Health Policy and Planning* 2020;doi:10.1093/heapol/czaa149.

Rangan A, Brealey S, Keding A, Corbacho B et al (includes **Richardson G**) on behalf of the UK FROST Study Group. Management of adults with primary frozen shoulder in secondary care (UK FROST): a multicentre, pragmatic, three-arm, superiority randomised clinical trial. *The Lancet* 2020;396(10256):977-989.

Reckers-Droog V, Federici C, Brouwer W, Drummond MF. Challenges with coverage with evidence development schemes for medical devices: A systematic review. *Health Policy and Technology* 2020;9(2):146-156.

Rodgers M, Marshall D, Simmonds M, Le Couteur A, Biswas M, Wright K, Rai D, Palmer S, Stewart L, Hodgson R. Interventions based on early intensive applied behaviour analysis for autistic children: a systematic review and cost-effectiveness analysis. *Health Technology Assessment* 2020;24(35):1-306.

Rodriguez Santana I, Aragón MJ, Rice N, Mason A. Trends in and drivers of healthcare expenditure in the English NHS: a retrospective analysis. *Health Economics Review* 2020;10(20)doi:10.1186/s13561-20-00278-9.

Rodriguez Santana I, Anaya Montes M, Chalkley M, Jacobs R, Kowalski T, Suter J. The impact of extending nurse working hours on staff sickness absence: Evidence from a large mental health hospital in England. *International Journal of Nursing Studies* 2020;112:103611.

Rothery C, Strong M, Koffijberg HE, Basu A, Ghabri S, Knies S, Murray JF, Sanders Schmidler GD, Steuten L, Fenwick E. Value of information analytical methods: Report 2 of the ISPOR Value of Information Analysis Emerging Good Practices Task Force. *Value in Health* 2020 Mar;23(3):277-286.

Santos R, Rice N, Gravelle H. Patterns of emergency admissions for ambulatory care sensitive conditions: a spatial cross-sectional analysis of observational data. *BMJ Open* 2020;10(11):e039910.

Saramago P, Claxton K, Welton N, Soares M. Bayesian econometric modelling of observational data for cost-effectiveness analysis: establishing the value of negative pressure wound therapy in the healing of open surgical wounds. *Journal of the Royal Statistical Society: Series A (Statistics in Society)* 2020;183(4):1575-1593.

Sculpher M, Palmer S. After 20 years of using economic evaluation, should NICE be considered a methods innovator? *Pharmacoeconomics* 2020;38(3):247-257.

Serhal E, Iwajomo T, de Oliveira C, Crawford A, Kurdyak P. Characterizing family physicians who refer to telepsychiatry in Ontario. *The Canadian Journal of Psychiatry* 2020;doi:10.1177/0706743720954061.

Seuring T, Serneels P, Suhrcke M, Bachmann M. Diabetes, employment and behavioural risk factors in China: Marginal structural models versus fixed effects models. *Economics and Human Biology* 2020;39:100925.

Siciliani L, Martin S, Smith PC. Socioeconomic inequalities in waiting times for primary care across ten OECD countries. *Social Science and Medicine* 2020;263:113230.

Soares M, Sculpher M, Claxton K. Health opportunity costs: Assessing the implications of uncertainty using elicitation methods with experts. *Medical Decision Making* 2020;40(4):448-459.

Stuttard L, Hewitt C, Fairhurst C, Weatherly H, Walker S, Longo F et al. Partnerships between deaf people and hearing dogs (PEDRO): Protocol for a single-centre randomised superiority study to investigate the effectiveness and cost-effectiveness of receiving a hearing dog on mental wellbeing and health. *JMIR Research Protocols* 2020;9(4):e15452.

Sun Z, Guerriere DN, de Oliveira C, Coyte PC. Temporal trends in place of death for end-of-life patients: Evidence from Toronto, Canada. *Health and Social Care in the Community* 2020;28(5):1807-1816.

Suter J, Kowalski T, Anaya Montes M, Chalkley M, Jacobs R, Rodriguez Santana I. The impact of moving to a 12 hour shift pattern on employee wellbeing: a qualitative study in an acute mental health setting. *International Journal of Nursing Studies* 2020;112:103699.

Taraldsen K, Mikolaizak A, Maier A, Mellone S, Boulton E, Aminian K et al (includes **Yang F**). Digital technology to deliver a lifestyle-integrated exercise intervention in young seniors - the PreventIT feasibility randomised controlled trial. *Frontiers in Digital Health* 2020;doi:10.3389/fgdth.2020.00010.

Tarricone R, Ciani O, Torbica A, Brouwer W, Chaloutsos G, Drummond MF et al. Lifecycle evidence requirements for high-risk implantable medical devices: a European perspective. *Expert Review of Medical Devices* 2020;17(10):993-1006.

Thokala P, Carlson JJ, Drummond MF. HTA'd in the USA: A comparison of ICER in the US with NICE in England and Wales. *Journal of Managed Care and Specialty Pharmacy* 2020;26(9):1162-1170.

Torbica A, Fornaro G, Tarricone R, **Drummond MF**. Do social values and institutional context shape the use of economic evaluation in reimbursement decisions? An empirical analysis. *Value in Health* 2020;23(1):17-24.

Twea P, Manthalu G, **Mohan S**. Allocating resources to support universal health coverage: policy processes and implementation in Malawi. *BMJ Global Health*. 2020;5(8):e002766.

Vanness D, **Lomas J**, Ahn H. A Health opportunity cost threshold for cost-effectiveness analysis in the United States. *Annals of Internal Medicine* 2020;doi:10.7326/M20-1392.

Walker S, Cox E, Revill P, Musiime V, et al (includes **Soares M**). The cost-effectiveness of prophylaxis strategies for individuals with advanced HIV starting treatment in Africa. *Journal of the International Aids Society* 2020;23(3):e25469.

Walker S, Cox E, Rothwell B, Berry C, McCann G, Bucciarelli-Ducci C et al (includes **Sculpher M**). Cost-effectiveness of cardiovascular imaging for stable coronary heart disease. *Heart* 2020;doi:10.1136/heartjnl-2020-316990.

Wang Y, **Castelli A**, Cao Q, Liu D. Assessing the design of China's complex health system - Concerns on equity and efficiency. *Health Policy OPEN* 2020;1:100021.

Weir S, Samnaliev M, Kuo T, Tierney T, **Manca A et al**. Persistent postoperative pain and healthcare costs associated with instrumented and non-instrumented spinal surgery: a case-control study. *Journal of Orthopaedic Surgery and Research* 2020;15:127.

Woods B, Schmitt L, Rothery C, Phillips A, Hallett T, **Revill P, Claxton K**. Practical metrics for establishing the health benefits of research to support research prioritisation. *BMJ Global Health* 2020;5(8):e002152.

Woods B, Sideris E, **Palmer S**, Latimer N, **Soares M**. Partitioned survival and state transition models for health care decision making in oncology: Where are we now? *Value in Health* 2020;23(12):1613-1621.

Wu T, **Yang F**, Chan W, Lam C, Wong C. Healthcare utilization and direct medical cost in the years during and after cancer diagnosis in patients with type 2 diabetes mellitus. *Journal of Diabetes Investigation* 2020;11(6):1661-1672.

Yang F, Angus C, **Duarte A**, Gillespie D, **Walker S, Griffin S**. Impact of socio-economic differences on distributional cost-effectiveness analysis. *Medical Decision Making* 2020;40(5):606-618.

Yang F, Jiang S, He X, et al. Do rural residents in China understand EQ-5D-5L as intended? Evidence from a qualitative study. *Pharmacoeconomics - Open* 2020;doi:10.1007/s41669-020-00212-z.

Zaheer J, Olsson M, Mallia E, Lam JSH, **de Oliveira C**, Rudoler D et al. Predictors of suicide at time of diagnosis in schizophrenia spectrum disorder: A 20-year total population study in Ontario, Canada. *Schizophrenia Research* 2020;222:382-388.

Books

Cookson R, Griffin S, Norheim OF, **Culyer AJ**. *Distributional Cost-Effectiveness Analysis: Quantifying Health Equity Impacts and Trade-Offs*. Oxford University Press 2020;pp384.

Revill P, Suhrcke M, Moreno-Serra R, Sculpher M. *Global Health Economics - Shaping Healthcare Policy in Low- and Middle-Income Countries*. World Scientific Publishing Co Pte Ltd 2020; pp376.

Book Chapters

Chalkley M, Mirelman A, Siciliani L, **Suhrcke M**. Paying for performance for health care in low- and middle-income countries: An economic perspective. In **Revill P, Suhrcke M, Moreno-Serra R, Sculpher M** (eds). *Global Health Economics - Shaping Healthcare Policy in Low- and Middle-Income Countries*. World Scientific Publishing Co Pte Ltd 2020; Chapter 6; pp157-190.

Clarke L, **Drummond MF**. Evaluating economic impacts in health emergency and disaster risk management. *WHO Guidance on Research Methods for Health Emergency and Disaster Risk Management*. WHO Centre for Health Development 2020;Ch:4.7.

Cookson R, Cotton-Barrett O, Adler M, Asaria M, Ord T. Years of good life based on consumption and health: A practical well-being metric for economic evaluation. In Eyal N, Hurst SA, Murray CJL, Schroeder SA, Wikler D (eds), *Measuring the Global Burden of Disease: Philosophical Dimensions*. Oxford: Oxford University Press. 2020;Ch9.

Cookson R, Culyer AJ, Norheim OF. Principles of health equity. In **Cookson R, Griffin S**, Norheim OF, **Culyer AJ** (eds). *Distributional Cost-Effectiveness Analysis: Quantifying Health Equity Impacts and Trade-Offs*. Oxford University Press 2020;Chapter 2.

Cookson R, Griffin S, Norheim OF, **Culyer AJ**. Designing a distributional cost-effectiveness analysis. In **Cookson R, Griffin S**, Norheim OF, **Culyer AJ** (eds). *Distributional Cost-Effectiveness Analysis: Quantifying Health Equity Impacts and Trade-Offs*. Oxford University Press 2020;Chapter 3.

Cookson R, Griffin S, Norheim OF, **Culyer AJ**. Describing equity impacts and trade-offs. In **Cookson R, Griffin S**, Norheim OF, **Culyer AJ** (eds). *Distributional Cost-Effectiveness Analysis: Quantifying Health Equity Impacts and Trade-Offs*. Oxford University Press 2020;Chapter 4.

Cookson R, Love-Koh J, Angus C, **Lomas J**. Introduction to the training exercises. In **Cookson R, Griffin S**, Norheim OF, **Culyer AJ** (eds). *Distributional Cost-Effectiveness Analysis: Quantifying Health Equity Impacts and Trade-Offs*. Oxford University Press 2020;Chapter 5.

Cookson R, Morton A, Schokkaert E, Gomez GB, Merritt M, Norheim OF, **Griffin S, Culyer AJ**. Future challenges. In **Cookson R, Griffin S**, Norheim OF, **Culyer AJ** (eds). *Distributional Cost-Effectiveness Analysis: Quantifying Health Equity Impacts and Trade-Offs*. Oxford University Press 2020;Chapter 16.

Goryakin Y, **Revill P**, Mirelman A, Sweeney R, **Ochalek J, Suhrcke M**. Public financial management and health service delivery. In **Revill P, Suhrcke M, Moreno-Serra R, Sculpher M** (eds). *Global Health Economics - Shaping Healthcare Policy in Low- and Middle-Income Countries*. World Scientific Publishing Co Pte Ltd 2020; Chapter 7; pp191-215.

Griffin S. Uncertainty about facts and heterogeneity of values. In **Cookson R, Griffin S**, Norheim OF, **Culyer AJ** (eds). *Distributional Cost-Effectiveness Analysis: Quantifying Health Equity Impacts and Trade-Offs*. Oxford University Press 2020; Chapter 15.

Love-Koh J. Health opportunity costs. In **Cookson R, Griffin S**, Norheim OF, **Culyer AJ** (eds). *Distributional Cost-Effectiveness Analysis: Quantifying Health Equity Impacts and Trade-Offs*. Oxford University Press 2020;Chapter 9.

Love-Koh J, Mirelman A. Health by social variables. In **Cookson R, Griffin S**, Norheim OF, **Culyer AJ** (eds). *Distributional Cost-Effectiveness Analysis: Quantifying Health Equity Impacts and Trade-Offs*. Oxford University Press 2020;Chapter 7.

Mirelman A, Asaria M, Dawkins B, **Griffin S, Cookson R**. Fairer decisions, better health for all: Health equity and cost-effectiveness analysis. In **Revill P, Suhrcke M, Moreno-Serra R, Sculpher M** (eds). *Global Health Economics - Shaping Healthcare Policy in Low- and Middle-Income Countries*. World Scientific Publishing Co Pte Ltd 2020; Chapter 4: pp99-132.

Mirelman M, **Cookson R**. Financial protection. In **Cookson R, Griffin S**, Norheim OF, **Culyer AJ** (eds). *Distributional Cost-Effectiveness Analysis: Quantifying Health Equity Impacts and Trade-Offs*. Oxford University Press 2020;Chapter 10.

Moreno-Serra R, Hole A, **Smith PC**. A new approach to measuring health development: From national income toward health coverage (and beyond). In **Revill P, Suhrcke M, Moreno-Serra R, Sculpher M** (eds). *Global Health Economics - Shaping Healthcare Policy in Low- and Middle-Income Countries*. World Scientific Publishing Co Pte Ltd 2020; Chapter 9; pp239-262.

Nakamura R, **Lomas J, Claxton K**, Bokhari F, **Moreno-Serra R, Suhrcke M**. Assessing the impact of health care expenditures on mortality using cross-country data. In **Revill P, Suhrcke M, Moreno-Serra R, Sculpher M** (eds). *Global Health Economics - Shaping Healthcare Policy in Low- and Middle-Income Countries*. World Scientific Publishing Co Pte Ltd 2020; Chapter 1: pp 3-49.

Nakamura R, Mirelman A, **Cuadrado C**, Silva N, Dunstan J, **Suhrcke M**. Evaluating the 2014 sugar-sweetened beverage tax in Chile: Observational evidence from urban areas. In **Revill P, Suhrcke M, Moreno-Serra R, Sculpher M** (eds). *Global Health Economics - Shaping Healthcare Policy in Low- and Middle-Income Countries*. World Scientific Publishing Co Pte Ltd 2020; Chapter 12; pp287-301.

Ochalek J, Manthalu G, Nkhoma D, **McGuire F, Rollinger A, Revill P, Sculpher M, Claxton K**. Supporting the development of Health Benefits Packages (HBPs): Principles and initial assessment for Malawi. In **Revill P, Suhrcke M, Moreno-Serra R, Sculpher M** (eds). *Global Health Economics - Shaping Healthcare Policy in Low- and Middle-Income Countries*. World Scientific Publishing Co Pte Ltd 2020; Chapter 10; pp265-273.

Ochalek J, Revill P, Drummond MF. Allocating scarce resources - tools for priority setting. In **Revill P, Suhrcke M, Moreno-Serra R, Sculpher M** (eds). *Global Health Economics - Shaping Healthcare Policy in Low- and Middle-Income Countries*. World Scientific Publishing Co Pte Ltd 2020; Chapter 2: pp53-73.

Revill P, Ochalek J, Lomas J, Nakamura R, **Woods B, Rollinger A, Suhrcke M, Sculpher M, Claxton K**. Cost-effectiveness thresholds: Guiding health care spending for population health improvement. In **Revill P, Suhrcke M, Moreno-Serra R, Sculpher M** (eds). *Global Health Economics - Shaping Healthcare Policy in Low- and Middle-Income Countries*. World Scientific Publishing Co Pte Ltd 2020; Chapter 3: pp75-97.

Revill P, Phillips A, Eaton J, Hallett T. Modelling and economic evaluation to inform WHO HIV treatment guidelines. In **Revill P, Suhrcke M, Moreno-Serra R, Sculpher M** (eds). *Global Health Economics - Shaping Healthcare Policy in Low- and Middle-Income Countries*. World Scientific Publishing Co Pte Ltd 2020; Chapter 11; pp275-285.

Rothery C, Griffin S, Koffijberg H, **Claxton K**. Using meta-analysis to plan further research. In Schmid C, Stijnen T, White I (eds). *Handbook of Meta-Analysis*. Chapman & Hall/CRC Handbooks of Modern Statistical Methods; Chapter 23; pp 523-544.

Weatherly H, Faria R, Rollinger A, van den Berg B, Chiwaula L, Kingkaew P, Mejia A, Seeley J, Settumba S, Sandanam S. Economic evaluation of social care and informal care interventions in low- and middle-income countries. In **Revill P, Suhrcke M, Moreno-Serra R, Sculpher M** (eds). *Global Health Economics - Shaping Healthcare Policy in Low- and Middle-Income Countries*. World Scientific Publishing Co Pte Ltd 2020; Chapter 5; pp133-154.

Others

Bryan M, **Rice N**, Roberts J, Sechel C. Mental health and employment: A bounding approach using panel data. *Sheffield Economic Research Paper Series* 2020;0006.

Castro AN, **Suhrcke M**. Television, children's obesity risk and mental well-being: Lessons from the UK digital switchover. Working papers No. 2020-12 *LISER*.

D'Aeth J, Ghosal S, Grimm P et al (includes **Smith PC**). Optimal scheduling rules for elective care to minimize years of life lost during the SARS-CoV-2 pandemic: an application to England. 2020 COVID-19 Report 40, Imperial College London.

Haw D, Forchini G, Christen P et al (includes **Smith PC**). How can we keep schools and universities open? Differentiating closures by economic sector to optimize social and economic activity while containing SARS-CoV-2. 2020 COVID-19 Report 35, Imperial College London.

Hogan A, Winskill P, Watson O et al (includes **Smith PC**). Modelling the allocation and impact of a COVID-19 vaccine. 2020 COVID-19 Report 33, Imperial College London.

Kreif N, Mirelman A, **Suhrcke M**, Buitrago G, **Moreno-Serra R**. The impact of civil conflict on child health: Evidence from Colombia. *Households in Conflict Network* 2020;Working paper 336.

Smith PC, Siciliani L, Sagan A et al. Building on value-based health care. Towards a health system perspective. Report prepared for 2020 G20, Copenhagen: World Health Organization.

Tinelli M, Knapp M, Bauer A, **Weatherly H**, Schlaepfer B. ESSENCE: Examining the economic case for adult social care interventions. In Curtis L, Burns A (eds). *Unit Costs of Health and Social Care Report 2020*. PSSRU, University of Kent, Canterbury p:12-17.

Weatherly H, Faria R, Van den Berg B, **Sculpher M** et al. Economic evaluation methods in social care: A scoping review. In Curtis L, Burns A (eds). *Unit Costs of Health and Social Care Report 2020*. PSSRU, University of Kent, Canterbury. P:18-26.

CHE Research Papers

171 Productivity of the English National Health Service: 2017/18 update. **Adriana Castelli, Martin Chalkley, James Gaughan, Idaira Rodriguez Santana**.

172 Does public long-term care expenditure improve care-related quality of life in England? **Francesco Longo, Karl Claxton, James Lomas, Stephen Martin**.

173 Who benefits from health insurance? Uncovering heterogeneous policy impacts using causal machine learning. **Noemi Kreif, Andrew Mirelman, Rodrigo Moreno-Serra, Taufik Hidayat, Karla DiazOrdaz, Marc Suhrcke**.

174 The relationship between social care resources and healthcare utilisation by older people in England: an exploratory investigation. Maria Lucia Pace, Dan Liu, **Maria Goddard, Rowena Jacobs, Raphael Wittenberg, Gerard McGonigal, Anne Mason**.

175 Does Health Technology Assessment guidance give adequate consideration to decisions about less costly and less effective alternatives? **Susan Griffin, Francesco Fusco, Bhash Naidoo, Matthew Taylor, Simon Walker**.

176 A synthesis of key aspects of health systems and policy design affecting the refugee populations in Uganda - Report Structure. Federica Margini.

Presentations 2020

Claire de Oliveira. Understanding persistency in the high-cost state among mental health patients. *Health Economists' Study Group, Newcastle, UK.* January 2020.

Maria Goddard. The punk professor's legacy: from "faith based political wheezes" to health policy informed by economic analysis, data and evidence. *YorkTalks, University of York, UK.* January 2020.

Laurie Rachet Jacquet. Do surgeons forget? Investigating the impact of days out of practice on health outcomes for emergency hip fracture. *Health Economists' Study Group, Newcastle, UK.* January 2020.

Francesco Ramponi. Economic evaluation of interventions to address undernutrition: A systematic review. *Health Economists' Study Group, Newcastle, UK.* January 2020.

Simon Walker. Programme evaluation and policy making: evidence for decision making. *Health Economists' Study Group, Newcastle, UK.* January 2020.

Fan Yang. Incorporating health inequality concerns into economic evaluation: The application of distributional cost-effectiveness analysis in assessing smoking cessation services. *The George Institute for Global Health, Sydney, Australia.* January 2020.

Jessica Ochalek. How do cost-effectiveness thresholds help inform health coverage decisions? *Red CRITERIA.* February 2020.

Stephen Palmer. Should HTA methodology and evaluation frameworks adapt to ensure patient access to cell and gene therapies? *2020 HTA Conference, Athens, Greece.* February 2020.

Stephen Palmer. HTA challenges for cell and gene therapies. *CDDF 11th Spring Conference, Noordwijk, Netherlands.* February 2020.

Mark Sculpher. The use of QALYs in economic assessment: Still the best measure of health available? *Inaugural EuroQol African Regional Meeting, Cape Town, South Africa.* February 2020.



Mark Sculpher. Maximising the policy relevance of economic evaluation: Recent methods advances and remaining challenges. The role of economic evaluation in universal health coverage. *The University of Cape Town, South Africa.* February 2020.

Helen Weatherly. i-Companion. Personalised intelligent care providing a safe and enhanced quality of life. *YorRobots Exhibition, University of York, UK.* February 2020.

James Love-Koh, Ana Duarte. Economic evaluation and decision modelling for health. Short Course for GHE2 project partners. *University of São Paulo, Brazil.* March 2020.

Marta Soares. How accurate are individuals in judging uncertain quantities? Findings from a novel experimental approach. *The Advances in Data Science Seminar series, University of Manchester, UK.* April 2020.

Susan Griffin. Distributional cost effectiveness analysis. *Virtual ISPOR 2020 Conference.* May 2020.

Rowena Jacobs. Funding for mental health services in England. *The Peruvian Ministry of Health, Peruvian Economics Ministry and General Director of Mental Health.* May 2020.

Dina Jankovic. Reducing decision uncertainty - a framework to combine structured expert elicitation and value of information (VOI) analyses workshop. *Virtual ISPOR 2020 Conference.* May 2020.

Noemi Kreif. Who benefits from public health insurance in Indonesia? A machine learning approach to estimate treatment effect heterogeneity. *Essen Health Economics Seminar Program, Essen, Germany.* May 2020.

Anne Mason. Incentives to tackle under diagnosis in dementia & the tale of the elusive data. *Centre for Health Economics at Warwick (CHEW) seminar, University of Warwick, UK.* May 2020.

Mark Sculpher. Identifying and evidencing the value of novel antibiotics: Are health outcomes enough? *Virtual ISPOR 2020 Conference.* May 2020.

Mark Sculpher. Tailoring opportunity costs to state budgets and cost-effectiveness thresholds: How to broaden the impact of value assessment in the U.S. with state and commercial payers. *Virtual ISPOR 2020 Conference.* May 2020.

Helen Weatherly. Scoping review on social care economic evaluation methods. *NIHR SSRC Webinar Series on the Economics of Social Care.* May 2020.



Claire de Oliveira. Preventable acute care spending among high-cost patients with cancer: a population-based study. *Ontario Health - Cancer Care Ontario, Toronto, Ontario, Canada.* June 2020.

Claire de Oliveira. The role of mental health-related care among high-cost patients. *Institute for Clinical and Applied Health Research, University of Hull, Kingston upon Hull, UK.* June 2020.

Rowena Jacobs. Funding for mental health services in England. *The Peruvian Minister of Finance.* June 2020.

Laurie Rachet Jacquet. The impact of surgeons' days out of practice on patient health outcomes. *2020 ASHEcon Conference.* June 2020.

Georgios Nikolaidis. Borrowing strength from indirect evidence in HTA. *Career Young Statisticians Session, Promoting Statistical Insight (PSI) Conference Webinar.* June 2020.

Mark Sculpher. How do we assess the value of cancer drug optimisation? *First International Summit on Interventional Pharmacoeconomics, University of Chicago, USA.* June 2020.

Adriana Castelli. The institutional determinants of health system efficiency in Latin America and the Caribbean. *EuHEA Virtual Conference.* July 2020.

Adriana Castelli. The contribution of NHS staff to overall NHS productivity growth. *EuHEA Virtual Conference.* July 2020.

Mike Drummond. Good practice in coverage with evidence development schemes for medical devices. *EuHEA Virtual Conference.* July 2020.

Luis Fernandes. The effect of merit awards on physicians' activity rates in the English NHS. *EuHEA Virtual Conference.* July 2020.

Sebastian Hinde. The pitfalls of analysis based on limited data: Why all data are not born equal. *EuHEA Virtual Conference.* July 2020.

Sebastian Hinde. Is extending the role of cardiac rehabilitation cost-effective and economically sustainable? *EuHEA Virtual Conference.* July 2020.

PhD Students

Jacopo Gabani

PhD Student

In recent years, many countries around the world have initiated health system reforms to reach Universal Health Coverage by increasing health sector public funding. As the COVID-19 pandemic showed us, countries in which the health system is largely financed by public funding are better positioned in responding to changes in population health needs, especially during a pandemic. This highlights the fact that how countries raise and spend money for health can have an impact on people's health. The objective of my PhD is to investigate how different health policies interact with different healthcare financing systems in order to deliver improved population health.



I am now in my second year. The support of my supervisor, Thesis Advisory Panel members, other PhD and non-PhD colleagues at CHE, and at the Department of Economics and Related Studies, has been invaluable during my first year. I had the opportunity to attend three advanced economics modules that greatly improved my econometrics skills, and had the chance to discuss my ideas with world-class researchers in CHE within an extremely collegiate atmosphere. During the COVID-19 pandemic, the CHE PhD students have managed to maintain our connections with each other, and both my supervisor and CHE as an organisation have been very supportive.

I am sure the next two years will be very challenging and rewarding at the same time, and I am looking forward to them!

Oliver Kaonga

PhD Student

In September 2019, I relocated from Zambia to York to embark on my PhD journey. This was an exciting time for me as I have had the chance to meet and learn from so many accomplished researchers in the field of health economics, whose work I had only read about prior to joining CHE. Halfway through my first year, the COVID pandemic began and this affected delivery of some academic activities. I am, however, grateful that I have had the opportunity to continue learning through virtual supervision meetings and seminars; and I was also afforded a chance to attend the York Online Workshops in Health Economic Evaluation, delivered by CHE. My research topic is at the intersection of health and transport. I examine the extent to which transport sector policies and interventions affect health outcomes, and explore ways in which transport sector externalities, such as health and economic costs linked to road traffic injuries and traffic congestion, can be internalised in economic evaluations of transport projects. The findings of this research are potentially useful to influence resource allocation decisions in low- and middle income countries where the transport externalities impose a huge burden on the health sector. The past one and a half years of my PhD program have been the most challenging as I develop skills to turn ideas into refined research topics. Overall, it has so far been a rewarding experience!



Presentations 2020



Francesco Longo. Evaluation of an integrated care service in England: the Integrated Personal Commissioning (IPC) intervention. *EuHEA Virtual Conference.* July 2020.

Francesco Longo. Does public adult social care expenditure improve care-related quality of life in England? *EuHEA Virtual Conference.* July 2020.

Finn McGuire. The effect of distance to health facility on utilisation of delivery, pre- and post-natal health care services in rural Malawi. *EuHEA Virtual Conference.* July 2020.

Laurie Rachet Jacquet. Do surgeons forget? Investigating the impact of days out of practice on health outcomes for emergency hip fracture patients. *EuHEA Virtual Conference.* July 2020.

Paul Revill, Simon Walker. Health economics: from trial findings to resource allocation decisions. *MRC Clinical Trials Unit, UCL Seminar Series, University College London, UK.* July 2020.

Helen Weatherly. How a face-to-face 'residential' for students of a Distance Learning MSc programme in Health Economics was taken online in the summer term 19-20 using live and recorded lectures and activities. *Online presentation for a Programme Design and Learning Technology Team (PDLT) Show and Tell event on online workshops. University of York, York, UK.* July 2020.

Adriana Castelli. Response to COVID-19: Was Italy (un)prepared? *EHPG conference 'COVID-19: impacts on health and health care systems in Europe'. London School of Economics and Political Science, UK.* September 2020.

Richard Cookson. How distributional cost-effectiveness analysis could be used to inform decisions about prioritising access to COVID treatments and vaccinations. *International Society for Pharmacoeconomics and Outcomes Research Webinar Series. Balancing Economics and Ethics: How Can VA/HTA Support Equitable Resource Allocation? September 2020.*

Rowena Jacobs. Primary care quality and healthcare utilisation, cost and outcomes for people with serious mental illness. Invited presentation to *CPRD Observational Research Team Journal Club.* September 2020.

Francesco Longo. Does public social care expenditure improve care-related quality of life in England? *PRU Events Web Seminar. Funded by NIHR Policy Research Unit in Adult Social Care.* September 2020.

Stephen Palmer. Modelling approaches for histology-independent cancer drugs to inform NICE appraisals. *The NICE Technical Forum.* September 2020.

Francesco Ramponi. Economic evaluation of public health programmes with costs and effects falling outside the health sector. *PRICELESS-SA Journal Club. Priceless SA, Johannesburg, South Africa.* September 2020.

Ana Duarte. HTA and reimbursement of Cell Therapies. Workshop. *The 4th Annual European Meeting on Gene Therapy for Rare Disorders.* October 2020.

Katja Grasic. Incentivising hospital quality through evidence-based care bundle payment. *EuHEA Digital Seminar Series.* October 2020.

Susan Griffin, Fan Yang. Short course. Quantifying and valuing health inequality impacts in economic evaluation. *The SMDM 42nd Annual North American Meeting.* October 2020.

Fan Yang. Uncertainty analysis in intervention impact on health inequality for resource allocation decisions. *The SMDM 42nd Annual North American Meeting.* October 2020.

Laura Bojke. Short course on Health Technology Assessment. *University of Ljubljana, Slovenia.* November 2020.

Rita Faria. Lessons from cost-effectiveness analysis of screening for familial hypercholesterolaemia to the design of models of complex pathways. *Virtual Europe ISPOR 2020.* November 2020.

Noemi Kreif. Who benefits from health insurance? Uncovering heterogeneous policy impacts using causal machine learning. *Nuremberg Research Seminar in Economics, Friedrich-Alexander-Universität, Germany.* November 2020.

Sumit Mazumdar. Private means for public ends? Insights and considerations from health market behaviour and responses in India during the COVID-19 pandemic. *Department of Health Policy Seminar, London School of Economics and Political Science, UK.* November 2020.

Jessica Ochalek. Informing a cost-effectiveness threshold for Health Technology Assessment in China: A marginal productivity approach. *3rd China Health Technology Assessment Conference, Beijing, China.* November 2020.

Stephen Palmer. Modelling approaches for the evaluation of histology independent treatments. *Virtual ISPOR Europe 2020.* November 2020.

Stephen Palmer. Bridging the gap: pathways for regulatory and health technology assessment of histology independent therapies. *Virtual ISPOR Europe 2020.* November 2020.

Mark Sculpher. The principles of value frameworks for decision-making in health. *ISPOR South African Chapter Virtual Conference.* November 2020.



Marta Soares. Update of the methodological guidelines for economic evaluation in Portugal. Part of a workshop on 'Methodological and Normative Issues Arising in Recently Updated National Guidelines for Economic Evaluation'. *Virtual ISPOR Europe 2020.* November 2020.

Simon Walker. Evaluation of digital health interventions. *East Central and Southern African Health Community - Health Economics Community of Practice Webinar series.* November 2020.

Beth Woods. How should pharmaceutical companies and patients served by health systems share the value generated by new medicines? *Virtual ISPOR Europe 2020.* November 2020.

Rita Faria, Dalia Dawoud (NICE). Pharmacoeconomics: an appropriate tool for policy makers around the world. *Sharing International Experience. United for Health: HTA an Appropriate Tool for Policy Makers around the World Sharing International Experience, Egypt.* December 2020.

James Gaughan. The impact of locating primary care physicians in Emergency Departments. *Webinar series hosted by the Health Economics Research Centre, Oxford, UK.* December 2020.

David Glynn. Informative relative effect priors for research prioritisation. *The meta-analysis in medicine meeting, Institute of Medical Biometry and Statistics, University of Freiburg, Germany.* December 2020.

Nikita Jacob. Does commuting mode choice impact health? *The Centro de Estudios Económicos, El Colegio de México, Mexico.* December 2020.

Noemi Kreif. Transferability of real-world evidence to facilitate the economic evaluation of treatment sequences for Lower-Risk Myelodysplastic Syndrome (LR-MDS) patients in CEE countries. *HTx transferability webinar.* December 2020.

Sumit Mazumdar. Private means for public ends? Insights and considerations from health market behaviour and responses in India during the COVID-19 pandemic. *Global Health Economics Seminar, Heidelberg Institute of Global Health, Heidelberg University, Germany.* December 2020.

Rodrigo Moreno-Serra. COVID-19, social distancing and violence against women in Brazil. *42nd Meeting of the Brazilian Econometric Society.* December 2020.

Jessica Ochalek. Confronting tight fiscal human resources and evidence constraints: the Malawi Health Benefits Package. What's In? What's Out? *Designing and Review of Essential Health Care Package for Universal Health Coverage Workshop. Lusaka, Zambia.* December 2020.

Laurie Rachet Jacquet. The impact of surgeons' days out of practice on patient health outcomes. *2020 Journées des Economistes de la Santé Français Conference, Collège des Economistes de la Santé, France.* December 2020.

Mark Sculpher. Evidence needs for evaluating predictive technologies. *Academy of Medical Sciences FORUM Workshop. Precision Prevention for Modifiable Health Risks: Steps to Achieving Personalised Preventative Healthcare.* December 2020.

Peter C Smith. DAEDALUS: an economic-epidemiological model to optimise economic activity while keeping the COVID-19 pandemic under control. *Hungarian Health Economics Association.* December 2020.

Beth Woods. Estimating the shares of the value of branded pharmaceuticals accruing to manufacturers and to patients served by health systems. *The Department of Health and Social Care Analysts Seminar.* December 2020.

Beth Woods. Estimating the shares of the value of branded pharmaceuticals accruing to manufacturers and to patients served by health systems. *The NICE Technical Forum.* December 2020.



New Research Staff

Leonardo Koester

Research Fellow

Leonardo joined CHE from Kings College London in March 2020, working with the Health Policy team.



Cristóbal Cuadrado

Research Fellow

Cristóbal Cuadrado is a Research Fellow in the Global Health team. He holds a PhD in Public Health, and a Medical Doctor (MD) degree. His areas of interest are health economics (impact evaluation, decision modelling and economic evaluations, health financing), health policy analysis (health system reforms and access to health services), policy decision-making (prioritisation processes, use of evidence) and comparative health systems, with a special focus on Latin-America. Previously, he worked as a researcher for the Ministry of Health of Chile, Economic Commission for Latin America and the Caribbean (ECLAC), PAHO/WHO, Inter-American Development Bank (IDB), and the World Food Programme (WFP).



Maria Ana Matias

Research Fellow

Maria Ana Matias joined the Health Policy team in May 2020. Prior to that, she was a teaching assistant at Nova School of Business and Economics in Lisbon, and a researcher in the Mission Structure for the Sustainability of the Health Budgetary Programme, researching the productivity of the Portuguese NHS hospitals, primary care reform, and absenteeism of healthcare workers. She holds a PhD in Economics. Her main areas of research are in health economics applied to mental health. Part of her research focuses on the financing and organisation of mental health systems, socio-economic determinants of mental health, and drivers of adherence to psychotropic medication.



Peter Sivey

Reader

Peter is a Reader in Health Economics in the Health Policy team. His previous position was at RMIT University in Melbourne, Australia. His research interests centre on the economics of healthcare markets, including hospital waiting times, emergency department performance, competition in health care and doctors' labour markets. His work applies microeconometrics and microeconomic theory (especially Industrial Organisation) applied to healthcare systems. He has a PhD in Economics (2009) from the University of York.



Anastasia Arabadzhan

Research Fellow

Anastasia joined the Health Policy team in August 2020. She holds a PhD in Economics from the University of Bologna. Anastasia is an applied microeconomist, with research interests covering a broad range of topics, including Health Economics (in particular in the areas of Mental and Global Health), Economics of the Household, Crime Economics and Policy Evaluation. Prior to joining CHE, she worked at the Centre for Advanced Studies in Tourism on the Horizon 2020 SOCLIMPACT project.



Luis Fernandes

Research Fellow

Luis Fernandes started his new role of Research Fellow in November 2020. He joined CHE in 2017 as a PhD Fellow supervised by Professor Martin Chalkley and Dr Nils Gutacker. His thesis focusses on identifying indicators that provide strong signals of quality of care and safety of patients in the hospital sector, as well as variations in practice and incentives to transform it. This project has received funding from the European Union's Horizon 2020 research and innovation programme under the Marie Skłodowska-Curie grant agreement No 721402. Luis holds a MSc in Health Economics from the University of York, and an MD from the University of Coimbra in Portugal, where he previously worked as a public health specialist within the national health service.



PhD Students 2020

Jacopo Gabani
Alessandro Grosso
Oliver Kaonga
Christopher Lubker
Finn McGuire

Vishalie Shah
Nelson Teich

New PhD Students 2020

Fei Liu

Fei's research focuses on self-funding for social care and informal care provision, and its impact on the social distribution of health, supervised by Professor Laura Bojke and Dr Matthew Franklin (The University of Sheffield). Prior to joining CHE, she has research experience in care needs evaluation and service provision for an ageing population. Fei holds two Bachelor's degrees in Medicine and Economics from Peking University, an MPhil in Public Health from The University of Hong Kong, and an MSc in Health Economics from University of York.



CHE Research Fellows also registered for a PhD in 2020

Misael Anaya Montes
Gowokani Chirwa
Samuel Lordemus

Luis Fernandes
Georgios Nikolaidis
Katja Grašič

Staff

Research Staff

Maria Goddard
Professor and Director of CHE

James Gaughan
Research Fellow

Samuel Lordemus
Research Fellow

Rita Santos
Research Fellow

Anastasia Arabadzhyan
Research Fellow

Vijay Gc
Research Fellow

James Love-Koh
Research Fellow

Pedro Saramago Goncalves
Research Fellow

María José Aragón
Research Fellow

David Glynn
Research Fellow

Andrea Manca
Professor

Laetitia Schmitt
Research Fellow

Alastair Bennett
Research Fellow

Katja Grašič
Research Fellow

Anne Mason
Senior Research Fellow

Mark Sculpher
Professor

Laura Bojke
Professor

Hugh Gravelle
Professor

Maria Ana Matias
Research Fellow

Peter Sivey
Reader

Adriana Castelli
Senior Research Fellow

Susan Griffin
Professor

Sumit Mazumdar
Research Fellow

Ieva Skarda
Research Fellow

Martin Chalkley
Professor

Nils Gutacker
Senior Research Fellow

Sakshi Mohan
Research Fellow

Peter C Smith
Professor

Karl Claxton
Professor

Sebastian Hinde
Research Fellow

Rodrigo Moreno-Serra
Reader

Marta Soares
Senior Research Fellow

Richard Cookson
Professor

Nikita Jacob
Research Fellow

Georgios Nikolaidis
Research Fellow

Marc Suhrcke
Professor

Edward Cox
Research Fellow

Rowena Jacobs
Professor

Jessica Ochalek
Research Fellow

Wiktoria Tafesse
Research Fellow

Cristóbal Cuadrado
Research Fellow

Dina Jankovic
Research Fellow

Stephen Palmer
Professor

Simon Walker
Senior Research Fellow

Claire de Oliveira
Reader

Panos Kasteridis
Research Fellow

Francesco Ramponi
Research Fellow

Helen Weatherly
Reader

Michael Drummond
Professor

Leonardo Koester
Research Fellow

Paul Revill
Professor

Beth Woods
Senior Research Fellow

Ana Duarte
Research Fellow

Noemi Kreif
Research Fellow

Nigel Rice
Professor

Fan Yang
Research Fellow

Rita Faria
Research Fellow

James Lomas
Research Fellow

Gerry Richardson
Professor

Luis Fernandes
Research Fellow

Francesco Longo
Research Fellow

Claire Rothery
Senior Research Fellow

Emeritus Professor

Tony Culyer

Honorary Professors

Keith Derbyshire
Keith Abrams

Honorary Visiting Fellows

Manuel Espinoza

Visitors to CHE during 2020

Sara Jamalabadi
University of Hamburg, Germany

Toni Mora
Universitat Internacional de Catalunya, Spain

Adriano Dutra Teixeira
University of São Paulo, Brazil

Simon McNamara
University of Sheffield

Rachel Meacock
University of Manchester

Jemimah Ride
University of Melbourne, Australia

Olivia Bodnar
Dusseldorf Institute for Competition Economics, Heinrich-Heine University of Düsseldorf, Germany

Pieter van Baal and Meg Perry-Duxbury
Erasmus University Rotterdam

Andrew Street
London School of Economics and Political Science

Misael Anaya Montes
Ministry of Education, Peru

Staff

Professional and Support staff

Linda Baillie
Administrator

Liz Grant
Finance and Research Support Officer

Sally Bowler
Finance and Research Support Administrator

Ruth Helstrip
Project Coordinator

Louise Campbell
Project Coordinator

Vanessa King
Administrative Manager and Assistant to the Director

Sarah Crust
Administrator

Stephanie Richards
Project Coordinator

Katherine Devlin
Project Coordinator

Alexandra Rollinger
Project Manager

Gill Forder
Publications Administrator

Trish Smith
Centre Manager

Kay Fountain
Administrator

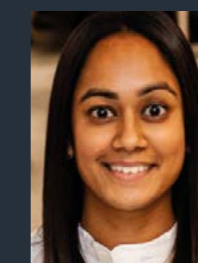
Vanessa Wood
Finance and Research Support Co-ordinator

New support staff in 2020

Soraya Rusmaully
Project Manager

Naurin Fatima
Finance and Research Support Administrator

Tim Glover
Administrator





UNIVERSITY
of York



Centre For Health Economics

Centre for Health Economics
University of York
York YO10 5DD UK
Tel +44 (0)1904 321401
che-web@york.ac.uk
www.york.ac.uk/che
@CHEyork
CentreForHealthEconomics



FSC
www.fsc.org

MIX

From responsible
sources

FSC® C156273

The University of York is committed to environmentally friendly sustainable printing. Our CHE Annual Report includes the use of Forest Stewardship Council (FSC®) certified paper.