Health Economics Research Centre

HERC news

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Education programmes are achievable and cost-effective for preventing type 2 diabetes

Project team: José Leal, Dariush Ahrabian and Alastair Gray

Type 2 diabetes (T2D) is a major public health problem in terms of patient morbidity, mortality and costs to healthcare systems. In the UK, diabetes accounts for around 10% of total healthcare expenditure, projected to increase to 17% by 2036 as the prevalence of T2D continues to rise. Several initiatives have been developed to promote preventative measures for T2D, such as behavioural (focusing largely on lifestyle changes), pharmacological or surgical interventions. However, there is a lack of empirical evidence on how well these initiatives translate into UK routine clinical care.

The Let's Prevent randomised controlled trial (RCT) was conducted by the University of Leicester to compare standard care with a programme targeting lifestyle behaviour change among individuals with pre-diabetes. HERC researchers carried out an economic evaluation alongside this trial.

Eight hundred and eighty patients with pre-diabetes were randomised to receive either standard care or a 6-hour group structured education programme, with follow up sessions in a primary care setting. Resource use and quality of life were measured at baseline and during the 36 month follow-up period. The cost of the Let's Prevent intervention was estimated at £200 per participant over the 3-year trial period.

The intervention group was found to have a net gain of 0.046 QALYs over 3 years, adjusted for baseline utility, at an additional cost of £168 per patient compared with the standard care group. The incremental cost-effectiveness ratio is £3,643 per QALY gained and when incorporating uncertainty, the intervention has an 86% probability of being cost-effective at a willingness to pay threshold of £20,000 per QALY gained.

This cost-effectiveness analysis is based on the longest RCT among pre-diabetes patients in a UK community setting. The Let's Prevent intervention is cost-effective and the pragmatic nature of the study suggests that the intervention could be readily implemented in a real-world setting.

For more information: HERC

> "In the UK, diabetes accounts for around 10% of total healthcare expenditure, projected to increase to 17% by 2036 as the prevalence of T2D continues to rise"

Prostate cancer costs in the Republic of Ireland

Project team: Richéal Burns, José Leal and Jane Wolstenholme

The Republic of Ireland has one of the highest incidence rates of Prostate Cancer (PCa) in Europe. A key driver of incidence is thought to be widespread use of prostate specific antigen (PSA) testing. The debate on whether or not PSA testing does more harm than good continues internationally with varied guidance, however high PSA testing is known to result in higher detection of early stage PCa, which increases the associated cost burden.

To better understand the overall cost burden as well as the individual components of healthcare costs associated with PCa, a costing framework was developed by HERC researchers, informed by project-specific data collection tools and existing evidence. This work was funded by a Health Research Board Ireland grant awarded to Professor Linda Sharp (Newcastle University) and Professor Ciaran O'Neill (Queen's University Belfast), and also involved Dr. Frances Drummond of the National Cancer Registry Ireland and University College Cork and Professor Frank Sullivan of University College Hospital Galway and National University of Ireland, Galway.

Data on diagnosis, treatment and mortality for patients diagnosed with PCa during 2007-2010 were obtained from the National Cancer Registry in Ireland. The healthcare costs of PCa were estimated using both incidence-based and prevalence-based approaches for comparative purposes.

Overall, the total healthcare and mortality-related costs of PCa up to four-years after diagnosis were approximately €46 million in 2010. Diagnosis and treatment of PCa in the Republic of Ireland was estimated to cost €7,337 per patient excluding treatment complications, and €7,532 per patient including treatment complications.

This was the first study to estimate the costs of PCa diagnosis and treatment in the Republic of Ireland. PCa healthcare costs represent a sizeable proportion of the Irish healthcare budget relative to disease prevalence. This analysis highlights potential areas of focus for cost containment strategies that warrant further research.

For more information: HERC

> "Prostate cancer healthcare costs represent a sizeable proportion of the Irish healthcare budget"

Cost-effectiveness of comprehensive geriatric assessment

Project team: Apostolos Tsiachristas, Alastair Gray

Population ageing and the prevalence of chronic conditions pose a major threat to population health and healthcare budgets, and healthcare interventions that increase the efficiency of caring for elderly people are urgently required. One intervention that potentially meets this description is comprehensive geriatric assessment (CGA). CGA is a multidimensional, multidisciplinary diagnostic and therapeutic process to determine the medical, mental and functional problems of older people with frailty in order to develop a co-ordinated and integrated plan for treatment and follow-up. However, there is limited of evidence on the cost-effectiveness of CGA.

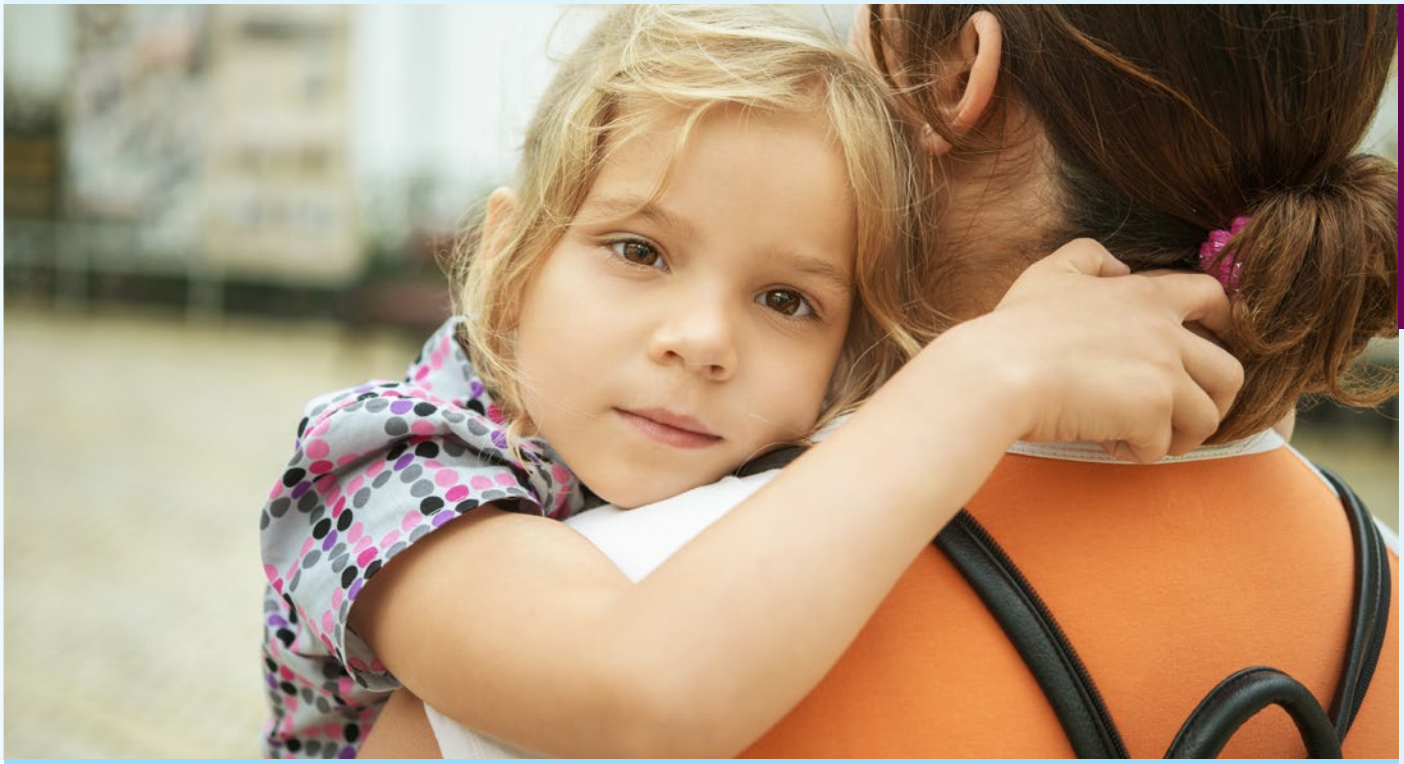
HERC researchers have recently undertaken an economic evaluation of CGA for older people urgently admitted to hospital from a health service perspective. This model-based economic evaluation combined individual patient data (IPD) with data from a systematic review and a survey of CGA delivery. Data on length of stay were derived from a meta-analysis and QALYs were calculated by converting the Barthel Index from 3 trials into EQ-5D scores using mapping studies. We also calculated both life-years (LYs) and 'life years living at home' (LYLAHs) after discharge from hospital, as a measure of independence and well-being, based on IPD from two trials.

The economic evaluation indicated that CGA was more effective than usual care with respect to all outcome measures (0.012 more QALYs, 0.037 more LYs, 0.019 more LYLAHs per patient). The healthcare costs per patient in the CGA group were £234 higher than in the usual care group, and the ICERs in terms of QALYs, LYs and LYLAHs were £19,802, £6,305 and £12,568, respectively. The probability that CGA would be cost-effective at a £20,000 ceiling ratio for a QALY, LY and LYLAH was 0.50, 0.89, and 0.47, respectively.

CGA is therefore likely to be cost-effective, although there is some uncertainty surrounding this result. The methodological approach used in this study could be used to evaluate other health interventions, but further work is required to establish the optimal way of combining review-based results with model-based economic evaluations.

For more information: HERC

> "CGA is likely to be cost-effective, although there is some uncertainty surrounding this result"



Treating anxiety disorders in children: a role for parents?

Project team: Mara Violato and the TCAP trial team

Anxiety is one of the most common mental health disorders. It is associated with a larger economic burden than any other mental health condition, due to its prevalence, persistence over time and the adverse impact that it may have on everyday life circumstances, for example, school attainment and general health. Although half of lifetime anxiety disorders emerge before 12 years of age, access to evidence-based psychological therapies for affected children is poor. Furthermore, there is limited research into the effectiveness and cost-effectiveness of self-help manuals for parents of anxious children.

The TCAP (Treatment of Child Anxiety in Primary Care via Guided CBT Self-Help) trial was the first randomised controlled trial to investigate the clinical and economic outcomes of Guided Parent-Delivered Cognitive Behaviour Therapy (GPD-CBT) compared with an alternative treatment, Solution Focused Brief Therapy (SFBT), for anxious children referred to routine child mental health services in the UK. Both therapies were brief psychological treatments involving 5 hours of therapist contact. The study was conducted by the University of Reading, the University of Oxford and the Oxford Health NHS Foundation Trust, and was funded by the Research for Patient Benefit Programme of the National Institute for Health Research.

During the trial, 136 children with anxiety aged between 5 and 12 years were assigned to receive either GPD-CBT or SFBT. No significant differences were observed on any clinical (relative risk: 1.01) or economic (mean QALY difference: 0.006) outcome measure. However, GPD-CBT treatment was associated with an average cost saving of £448 per child, indicating that GPD-CBT may be a more cost-effective approach than SFBT and could be considered as a first-line treatment for children with anxiety problems. This is timely evidence given recent NHS policy documents such as Future in Mind (2015) and The Five Year Forward View for Mental Health (2016), and has the potential to change clinical practice during a period of shrinking healthcare budgets.

For more information: HERC

Spotlight on WINNIE MEI

I joined HERC in October 2016 as a part of the team conducting the economic analyses of Anacetrapib in the REVEAL trial. REVEAL is a large randomised trial coordinated by the Clinical Trials Service Unit in Oxford that is assessing the effects of Anacetrapib treatment in patients with pre-existing cardiovascular conditions already treated with statin. The aim of the project is to evaluate the cost-effectiveness of Anacetrapib in these patients, from both the UK and the US healthcare perspectives. In addition, I will be contributing to a study investigating the cost-effectiveness of LiverMultiScan, a MRI-based tool for the diagnosis and staging of non-alcoholic fatty liver diseases, in three EU territories in the RADIcAL 1 trial.

Prior to joining HERC, I was a Medical Statistician in the China Kadoorie Biobank (CKB) research group, also at the University of Oxford. My work at CKB was primarily in the field of genetic epidemiology, where I utilised Mendelian randomisation to infer causal relationships between risk factors and outcomes, including alcohol consumption and CVD risk factors. I also participated in the development of a genetic instrument aimed at establishing a causal link between consumption of spicy food and disease outcomes such as diabetes. Prior to coming to Oxford, I completed an MPhil in Epidemiology at the University of Cambridge and worked on an NHS Foundation Trust funded project that investigated the main determinants of barriers to diabetes self-care. I acquired my first degree in biochemistry and molecular biology at University of Toronto, Canada, and also worked as a downstream Biochemistry Analyst at Sanofi Pasteur for 18 months before starting my MPhil.

I have not been with HERC for long but my time here has been extremely rewarding. I hope to continue to broaden my knowledge base in health economics related research and develop my own research interests in this field.

staff • visitors • students • funding • publications • presentations • seminars

Staff News – Welcome to:

Matthew Little: joined HERC in April 2017 as a research associate in Health Economics. He is currently working with Ramon Luengo-Fernanadez on a model of the cost-effectiveness of a machine designed to reduce the occurrence of asthma attacks in people with severe asthma. He is also writing up his PhD which examined the relationship between financial expectations and individual health.

Liam McMorrow: joined HERC as a researcher in April 2017 after submitting his PhD in health economics at the University of Aberdeen. He is currently working with Alastair Gray, José Leal and Frauke Becker on the ACE trial, a large multicentre randomised control trial in China evaluating the effect of acarbose on patients with prediabetes and a history of cardiovascular disease.

Frauke Becker: joined HERC as a senior researcher in May 2017. She is currently working on a number of economic evaluations alongside clinical trials in diabetic and pre-diabetic populations. Prior to her appointment at HERC she worked at the Health Economics Group at Newcastle University where she was involved in a number of economic evaluations for public health interventions and conducted some preference elicitation work.

Katie Walsh: an NHS junior doctor on a 4 month rotation with HERC, is working with Filipa Landeiro and Alastair Gray on a systematic review of quality of life in Alzheimer's disease for the ROADMAP project.

Helena Wace: a junior doctor on a 4 month rotation in HERC, will be working on a systematic review on the costs and resource use of Alzheimer's care, also for the ROADMAP project with Filipa Landeiro and Alastair Gray.

Roshni Janarthanan: is an academic foundation doctor within the Oxford deanery. She will be helping José Leal and Jacqueline Murphy with the ATLAS study for the next 4 months, looking at the cost-effectiveness of the components of the Enhanced Recovery Programme in hip and knee replacements.

Darren Barber:

Darren joined HERC in March 2017 as an Assistant to Professor Alastair Gray. His main responsibilities will be to provide PA support to Professor Gray, to administer the HERC Applied Methods course and to work with the editorial team to produce the HERC newsletter. Prior to joining HERC Darren worked for the University of Oxford in the Department of Experimental Psychology. When not working for the University, Darren also works for Oxford United FC as a Youth Sports Psychologist with the Academy. He also consults with Funded Athletes in the Oxfordshire area whilst undergoing professional training with the British Psychological Society.

Farewell to:

Luke Blount: who for the last three years has held the position of Unit Administrator at HERC. Luke has led the administrative team over this period, performing a vital role for HERC and providing a range of support and services to the Director, staff and students. Luke's time with HERC has been eventful, and he has coped very successfully with significant expansion of the group, two office moves, integration with the Department, and not least, twins! Fortunately for HERC, Luke will not be moving too far away as he will be joining the administrative team of the Nuffield Department of Population Health as a Research Finance Manager. We wish Luke every success in his future role – he will be missed by all at HERC.

Office move

In March 2017, the (ever expanding) HERC Team moved into new offices in the Richard Doll Building on the Old Road Campus. We are now sharing a building with the rest of the Nuffield Department of Population Health which brings together over 500 staff from a number of world-leading research groups. We are based on the first floor, occupying 11 offices, and visitors are always welcome!

Recently Funded

Sarah Wordsworth and **Laurence Roope** are collaborating with researchers in the Nuffield Department of Medicine, Nuffield Department of Primary Health Care Services, and at Imperial College London and Public Health England, on an ESRC funded project entitled: "*Improving the uptake and SusTainability of Effective interventions to promote Prudent antibiotic Use in Primary care (STEP-UP)*". The study, which will last for four years, aims to accelerate the uptake, and maximise the sustainability, of interventions to reduce antibiotic prescribing in primary care that previous research has already shown to be effective. The ultimate goal is achieving year-on-year overall reductions in unnecessary antibiotic prescribing in primary care in England over the next decade, and hence consequent reductions in antimicrobial resistance.

HERC Seminars

Convenor: Apostolos Tsiachristas

HERC runs a series of seminars with invited speakers from the health economics community who talk on a wide range of applied and methodological topics.

In February, **Dr Padraig Dixon**, Senior Research Associate in Health Economics, School of Social and Community Medicine, University of Bristol visited to present his work: *Prospects for the use of Mendelian Randomization in Economic Evaluation.*

In March, **Dr Shona Fielding**, Institute of Applied Health Sciences, University of Aberdeen visited us to give a talk on: *Dealing with missing quality of life data in clinical trials*.

In April, **Professor Franco Sassi**, Professor of International Health Policy and Economics, Imperial College London visited to present his work on: *Incentives, Choice and Public Health Policy*.

Details of forthcoming talks can be found on the HERC website: **http://www.herc.ox.ac.uk**. To be added to our mailing list for future seminars, email us at **herc@dph.ox.ac.uk**

Presentations by members of HERC

Erasmus University
Thomas Rouyard Rotterdam, Netherlands, February 2017
Trade-off between health outcomes and behaviour: an analysis under prospect theory

Society for Academic Primary Care Conference
Richéal Burns Oxford, March 2017
Assessing the Economic Impact of Oral Dexamethasone for Symptom Relief of Sore Throat: The TOAST Study.

German Health Economics Association
Peter Eibich Basel, Switzerland, March 2017
Retirement, time costs and uptake of cancer screening.

British Society for Haematology Annual Scientific Meeting
Liz Stokes Brighton, March 2017
A prospective study to estimate the full costs of administering blood transfusions in the UK (Poster presentation)

Coeliac UK Annual Research Conference
Mara Violato London, March 2017
The economic burden of Coeliac Disease in the UK: a retrospective population-based study. (Poster presentation)

Estimating the quality of life impact of Coeliac Disease diagnosis using retrospective population self-reports. (Poster presentation)

Annual Scientific Conference of the NIHR Health Protection Research Unit in Gastrointestinal Infections
Mara Violato University of Liverpool, March 2017
Family income and presentation to primary and second care for Diarrhoeal, Respiratory and Ear Infection: evidence for the UK Millennium Cohort Study

Scottish Economic Society
Peter Eibich Perth, April 2017
Retirement, intergenerational time transfers, and fertility.

PUBLICATIONS

1. Benedetto U, Altman DG, et al. [includes **Gray A**] on behalf of the ART Investigators. *Impact of dual antiplatelet therapy after coronary artery bypass surgery on 1 year outcomes in the Arterial Revascularization Trial (ART)*. European Journal of Cardio-Thoracic Surgery. 2017. Doi: 10.1093/ejcts/ezx075.

2. **Dakin H**, **Gray A**. *Economic evaluation of factorial randomised controlled trials: Challenges, methods and recommendations*. Statistics in Medicine. 2017. Doi: 10.1002/sim.7322.

3. **Gray A**, **Murphy J**, et al. *One-year costs of bilateral or single internal mammary grafts in the Arterial Revascularisation Trial*. Heart. 2017. Doi: 10.1136/heartjnl-2016-311058.

4. Hamblin A, **Wordsworth S**, **Fermont JM**, et al. *Clinical applicability and cost of a 46-gene panel for genomic analysis of solid tumours: Retrospective validation and prospective audit in the UK National Health Service*. PLoS Med. 2017. 14(2): e1002230.

5. **Kent S**, Green J, et al. [includes **Gray A**, **Mihaylova B**] on behalf of the Million Women Study collaborators. *Hospital costs in relation to body mass index in 1.1 million women in England: a prospective cohort study*, Lancet Public Health. 2017. 2:e214-22.

6. Olfert JA, Penz ED, et al. [includes **Luengo-Fernandez R**]. *Cost-effectiveness of indwelling pleural catheter compared with talc in malignant pleural effusion*. Respirology. 2016. 22(4):764-770.

7. Wilkins E, Wilson L, et al. [includes **Leal J**, **Luengo-Fernandez R**, **Burns R**]. *European Cardiovascular Disease Statistics* 2017. European Heart Network, Brussels.

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