CHE
Centre For Health Economics

Health Economics *News*

issue 30 • November 2017
www.york.ac.uk/che

Welcome to the CHE Newsletter

If you are viewing this newsletter electronically and would like further details on particular topics, click on the icon marked www, or if reading from a hard copy go to our website www.york.ac.uk/che/publications

Follow us on and

Courses and workshops

Analysing Patient-Level Data using Hospital Episode Statistics (HES)
December 2017

Statistical Methods in Economic Evaluation for HTA - Foundations/ Regression Methods
March 2018

Decision Analytic Modelling for Economic Evaluation
April 2018

York Summer Workshops in Health Economic Evaluation
June/July 2018

Further details: www

Athena SWAN Bronze Award

Global Health Economics research - two major new awards

Paul Revill and Marc Suhrcke

This summer saw CHE receive two large grants to expand our work in global health economics. Awarded under the Global Challenges Research Fund (GCRF) - the UK government's new and ambitious development research initiative - the grants build upon CHE's strengths in methods research. They enable us to apply this expertise in order to address health issues facing low- and middle-income countries.

The *Global Health Economics and Econometrics* (GHE-2) group was awarded through the National Institute for Health Research (NIHR). It involves collaboration with researchers in Brazil, South Africa and Indonesia to evaluate large-scale population- and system-level health interventions, using advanced econometric methods.

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

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

More details: www

GCRF Global Challenges Research Fund | RESEARCH COUNCILS UK | NHS National Institute for Health Research

Choosing and booking – and attending?

Project Team: Hugh Gravelle (CHE), Mark Dusheiko (Université de Lausanne)

Patient non-attendance for outpatient appointments can lead to worse health outcomes and longer waiting times. In the English National Health Service (NHS) around 7 per cent of patients who are referred by their general practice for a hospital outpatient appointment fail to attend. An electronic booking system (Choose and Book – C&B) for general practices making hospital outpatient appointments was introduced in England in 2005 and by 2009 accounted for 50 per cent of appointments. It was intended, inter alia, to reduce the rate of non-attendance.

We investigated whether it did so with general practice level data on use of C&B from 2004-2009. We allowed for the potential endogeneity of practice use of C&B. To take account of relaxations on patient choice of hospital from 2006, we included a time and area varying measure of the proportion of patients who were aware of their right to a choice of hospital. The introduction of C&B reduced non-attendance by referred patients in 2009 by 72,160 (8.7 per cent). We also found that greater awareness of choice led to an increase in referrals and a reduction in non-attendance, suggesting that patients were able to choose providers better suited to them.

Health Economics article: www

Challenges and solutions to the cost-effectiveness analysis of diagnostic tests: an application in prostate cancer diagnosis

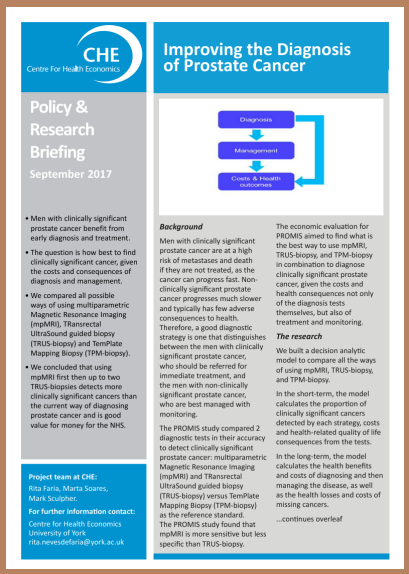
Project Team: Rita Faria, Marta Soares, Mark Sculpher (CHE), Eldon Spackman (University of Calgary), Hashim Ahmed (Imperial College London), Louise Brown, Richard Kaplan, Mark Emberton (University College London)

We have recently completed the cost-effectiveness analysis (CEA) of biopsies and MRI scans for the diagnosis of clinically significant prostate cancer. In this work we addressed three challenges which are common in the CEA of diagnostic tests.

First, identifying all the feasible ways that the tests can be combined to define our diagnostic strategies for the CEA. We identified 383 strategies.

Second, obtaining the long-term costs and health outcomes of men with clinically significant prostate cancer with and without correct diagnosis and subsequent treatment. We combined information from published studies in a calibration model to obtain transition probabilities, which informed a model to predict the long-term costs and health outcomes.

Third, quantifying and representing uncertainty when there are a large number of strategies and parameters acting in combination. We added a third dimension to the standard cost-effectiveness plane, representing the probability that a strategy is cost-effective.



CHE
Centre For Health Economics

Policy & Research Briefing
September 2017

- Men with clinically significant prostate cancer benefit from early diagnosis and treatment.
- The question is how best to find clinically significant cancer, given the costs and consequences of diagnosis and management.
- We compared all possible ways of using multiparametric Magnetic Resonance Imaging (mpMRI), TRansrectal UltraSound guided biopsy (TRUS-biopsy) and TemPlate Mapping Biopsy (TPM-biopsy).
- We concluded that using mpMRI first then up to two TRUS-biopsies detects more clinically significant cancers than the current way of diagnosing prostate cancer and is good value for money for the NHS.

Project team at CHE:
Rita Faria, Marta Soares, Mark Sculpher.

For further information contact:
Centre for Health Economics
University of York
rita.nevesdefaria@york.ac.uk

Improving the Diagnosis of Prostate Cancer

Diagnosis → Management → Costs & Health outcomes

Background

Men with clinically significant prostate cancer are at a high risk of metastases and death if they are not treated, as the cancer can progress fast. Non-clinically significant prostate cancer progresses much slower and typically has few adverse consequences to health. Therefore, a good diagnostic strategy is one that distinguishes between the men with clinically significant prostate cancer, who should be referred for immediate treatment, and the men with non-clinically significant prostate cancer, who are best managed with monitoring.

The PROMIS study compared 2 diagnostic tests in their accuracy to detect clinically significant prostate cancer: multiparametric Magnetic Resonance Imaging (mpMRI) and TRansrectal UltraSound guided biopsy (TRUS-biopsy) versus TemPlate Mapping Biopsy (TPM-biopsy) as the reference standard. The PROMIS study found that mpMRI is more sensitive but less specific than TRUS-biopsy.

The economic evaluation for PROMIS aimed to find what is the best way to use mpMRI, TRUS-biopsy, and TPM-biopsy in combination to diagnose clinically significant prostate cancer, given the costs and health consequences not only of the diagnosis tests themselves, but also of treatment and monitoring.

The research

We built a decision analytic model to compare all the ways of using mpMRI, TRUS-biopsy, and TPM-biopsy.

In the short-term, the model calculates the proportion of clinically significant cancers detected by each strategy, costs and health-related quality of life consequences from the tests.

In the long-term, the model calculates the health benefits and costs of diagnosing and then managing the disease, as well as the health losses and costs of missing cancers.

...continues overleaf

We concluded that having an MRI scan to guide the biopsy is cost-effective compared with the current clinical standard. Our research may inform future guidelines on the diagnosis of prostate cancer.

For more details, see our paper and CHE Policy & Research Briefing

New recommendations on the use of alternative modelling approaches when evaluating cancer drugs

Project team: Beth Woods, Eleftherios Sideris, Stephen Palmer, Marta Soares (CHE), Nick Latimer (University of Sheffield)

One modelling approach – partitioned survival analysis – has come to dominate assessments of value in oncology, with over 70 per cent of cancer appraisals conducted by NICE using this method. Although intuitive and easy to implement, the method makes strong assumptions which have not been recognised by those making pricing and reimbursement decisions.

In a new NICE Decision Support Unit Technical Support Document we describe and critique the approach as a decision modelling tool and evaluate the potential for application of alternative methods, such as multi-state survival analysis used within a state-transition modelling framework. We recommend that cost-effectiveness results from both partitioned survival analysis and state transition modelling should be presented to decision makers, and that further work is required to support the robust application of multi-state survival analysis in cancer appraisals.

Different methods may produce quite different estimates of the gains in life expectancy associated with new therapies, which could have profound implications for assessments of whether new drugs represent value for money. It is therefore important that analysts and policy makers can critically assess the appropriateness of these alternative methods.

Further details:

Does payment for dental x-rays increase their use?

Project Team: Martin Chalkley (CHE), Stefan Listl (Radboud University)

Like any form of radiation, x-rays are potentially damaging, so patients expect and regulators require that health professionals only use them when the benefits outweigh the risks. That assessment of benefits and risks ought to be independent of how much is being paid for conducting the x-ray. This study establishes that this is not the case for dental x-rays.

Dental x-rays are the most common exposure to radiation that most people experience. They are very low dose, but the evidence is that there is no completely safe exposure to radiation. The research establishes that the chance of a patient being x-rayed increases when their dentist is paid separately for each x-ray, compared with that dentist being on a salary and paid a fixed income.

The research focused on detailed payment data for dentists in Scotland, which is a good place to study since it has run a dual system of 'fee-for-service' and fixed salaries for dentists. By looking at those dentists that changed from one system to another, and by focusing on the treatments given to the same patients before and after that change, the research finds that the chance of receiving an x-ray increases by about 6 per cent, due simply to the way the dentist was paid. This finding poses an important challenge to those who are charged with ensuring the safety of health care – payment should not affect this safety-critical decision, but it does.

Full paper can be accessed from here: www

Selected news

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

Paul Revill gave a seminar entitled 'Informing resource allocation using HIV modelling: the centrality of opportunity costs', at the Medical Practice Evaluation Centre, Massachusetts General Hospital, Boston, USA on 10th July.

During July, several CHE Staff attended, organised sessions and presented research at the 12th International Health Economics Association (iHEA) World Congress, Boston, USA.

In July **Mike Drummond** gave the Plenary presentation 'Managed entry agreements for pharmaceuticals' at the 5th Brazilian Forum on Pharmaceutical Care and Pharmacoeconomics in Salvador, Brazil. He also gave the Keynote Address in the Plenary session, speaking on 'Adoption and Uptake of Biosimilars: European vs. US Experiences' at the Western Pharmacoeconomics & Outcomes Research Conference held in Albuquerque, New Mexico, in October.

Rowena Jacobs attended the Centre for Future Health funded Global Mental and Physical Health Comorbidity in South Asia (GMaP) workshop held in York in July 2017 to support further development of collaborative research partnerships. She was also Chair of the Independent Assurance Panel for NHS England's Clinical Services Quality Measures (CSQM) on 10th August.

Adriana Castelli was invited as an expert to a round-table discussion by The Health Foundation on the topic 'NHS finances and consultant productivity: Presentations and evaluation' held in London on 14th September.

For the third time, CHE organised a training day in Health Economics for new Overseas Development Institute (ODI) Fellows being posted to Malawi, Thailand, Sierra Leone and Zanzibar.

New funding

The cost-effectiveness of cascade testing for familial hypercholesterolaemia
Mark Sculpher, Beth Woods, Pedro Saramago Goncalves
Funder: NIHR HTA
Apr 2017 to Mar 2020

Economic evaluation of public health programmes with costs and effects falling outside the NHS and local authority
Mark Sculpher, Susan Griffin, Simon Walker, Ana Duarte
Funder: DoH PHRC
Apr 2016 to Mar 2018

Improving quality of care in Europe – IQCE
Martin Chalkley
Funder: EU
Jan 2017 to Dec 2020

Evaluation of the integrated personal commissioning programme
Helen Weatherly, Rita Faria, Francesco Longo
Funder: DoH PRP
Nov 2016 to Oct 2018

Harrogate Vanguard Evaluation (Phase 1)
Gerry Richardson, Laura Bojke, Seb Hinde
Funder: Harrogate & District NHS Foundation
Dec 2016 to Mar 2017

CHE Publications July - October 2017

Abu-Omar K, Rütten A, Burlacu I, Schätzlein V, Messing S, **Suhrcke M**. The cost-effectiveness of physical activity interventions: A systematic review of reviews. *Preventive Medicine Reports* 2017;8:72-78.

Al-Janabi H, **Manca A**, Coast J. Predicting carer health effects for use in economic evaluation. *PLoS ONE* 2017;12(9):e0184886.

Al Quait A, Doherty P, **Gutacker N**, Mills J. In the modern era of percutaneous coronary intervention: Is cardiac rehabilitation engagement purely a patient or a service level decision? *European Journal of Preventive Cardiology* 2017;24(13):1351-1357.

Alvarado M, Kostova D, **Suhrcke M,** et al. Trends in beverage prices following the introduction of a tax on sugar-sweetened beverages in Barbados. *Preventive Medicine* 2017;doi:10.1016/j.ypmed.2017.07.013.

Aragon MJ, **Castelli A**, **Gaughan J**. Hospital trusts productivity in the English NHS: uncovering possible drivers of productivity variations. *PloS One* 2017;12(8):e0182253.

Asaria M, Dhami S, van Ree R, et al. Health economic analysis of Allergen Immunotherapy (AIT) for the management of allergic rhinitis, asthma, food allergy and venom allergy: A systematic overview. *Allergy* 2017;doi:10.1111/all.13254.

Banks H, Torbica A, Valzania C, Varabyova Y, Rupel VP, Taylor RS, Hunger T, **Walker S**, et al. For the MedtecHTA group. Five year trends (2008-2012) in cardiac implantable electrical device utilization in five European nations: a case study in cross-country comparisons using administrative databases. *Europace* 2017;doi:10.1093/europace/eux123.

Bojke L, Grigore B, **Jankovic D**, Peters J, **Soares M**, Stein K. Informing reimbursement decisions using cost-effectiveness modelling: a guide to the process of generating elicited priors to capture model uncertainties. *Pharmacoeconomics* 2017; 35(9):867-877 doi:10.1007/s40273-017-0525-1.

Cookson R, **Mirelman A**. Equity in HTA: what doesn't get measured, gets marginalized. *Israel Journal of Health Policy Research* 2017;6:38.

Corbacho Martin MB, Bell KJ, Stamuli E, **Richardson G**, et al. Cost-effectiveness of the Family Nurse Partnership (FNP) programme in England: evidence from the Building Blocks Trial. *Journal of Evaluation in Clinical Practice* 2017;doi:10.1111/jep.12799.

Dusheiko M, **Gravelle H**. Choosing and booking – and attending? Impact of an electronic booking system on outpatient referrals and non-attendances. *Health Economics* 2017;doi: 10.1002/hec.3552.

Espinoza M, **Manca A**, **Claxton K**, **Sculpher M**. Social value and individual choice: the value of a choice-based decision making process in a collectively funded health system. *Health Economics* 2017;doi:10.1002/hec.3559.

Faria R, **Soares M**, et al, **Sculpher M**. Optimising the diagnosis of prostate cancer in the era of multi-parametric magnetic resonance imaging: a cost-effectiveness analysis based on the Prostate MR Imaging Study (PROMIS). *European Urology* 2017;doi:10.1016/j.eururo.2017.08.018.

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

Gaughan J, **Gravelle H**, Siciliani L. Delayed discharges and hospital type: Evidence from the English NHS. *Fiscal Studies* 2017;38(3):495-519.

Gc V, **Suhrcke M**, Hardeman W, et al. Cost-effectiveness and value of information analysis of brief interventions to promote physical activity in primary care. *Value in Health* 2017;doi:10.1016/j.jval.2017.07.005.

Goryakin Y, Monsivais P, **Suhrcke M**. Soft drink prices, sales, body mass index and diabetes: Evidence from a panel of low-, middle- and high-income countries. *Food Policy* 2017;73:88-94.

Gutacker N, Street A. Multidimensional performance assessment of public sector organisations using dominance criteria. *Health Economics* 2017;doi:10.1002/hec.3554.

Hakim J, Musiime V, Szubert A, Mallewa J, Siika A, Agutu C, **Walker S**, et al for the REALITY Trial Team. Enhanced prophylaxis with antiretroviral therapy for advanced HIV in Africa. *New England Journal of Medicine* 2017;377:233-245.

Johannesen KM, **Claxton K, Sculpher M**, Wailoo AJ. How to design the cost-effectiveness appraisal process of new healthcare technologies to maximise population health: A conceptual framework. *Health Economics* 2017;doi:10.1002/hec.3561.

Joyce VR, Sun H, Barnett PG, Bansback N, **Griffin S**, Bayoumi A, Anis AH, **Sculpher M**, et al. Mapping MOS-HIV to HUI3 and EQ-5D-3L in patients with HIV. *MDM Policy & Practice* 2017;2(2).

Jull J, Whitehead M, Petticrew M, et al, **Cookson R**, et al. When is a randomised controlled trial health equity relevant? Development and validation of a conceptual framework. *BMJ Open* 2017;7(9):1-9.e015815.

Kreif N, Tran L, Grieve R, De Stavola B, Tasker R, Petersen M. Estimating the comparative effectiveness of feeding interventions in the paediatric intensive care unit: a demonstration of longitudinal targeted maximum likelihood estimation. *American Journal of Epidemiology* 2017;doi:10.1093/aje/kwx213.

Kronenberg C, Doran T, **Goddard M**, Kendrick T, Gilbody S, Dare C, Aylott L, **Jacobs R**. Identifying primary care quality indicators for people with serious mental illness: a systematic review. B*ritish Journal of General Practice* 2017;doi:10.3399/bjgp17X691721.

Longo F, Siciliani L, **Gravelle H**, **Santos R**. Do hospitals respond to rivals' quality and efficiency? A spatial panel econometric analysis. *Health Economics* 2017;26(S2);38-62.

Moran V, **Jacobs R**. Investigating the relationship between costs and outcomes for English mental health providers: a bi-variate multi-level regression analysis. *The European Journal of Health Economics* 2017;doi:10.1007/s10198-017-0915-5.

Moran V, **Jacobs R**. Costs and performance of English mental health providers. *The Journal of Mental Health Policy and Economics* 2017;20(2):83-94.

Moscelli G, Siciliani L, **Gutacker N**, **Cookson R**. Socioeconomic inequality of access to healthcare: Does choice explain the gradient? *Journal of Health Economics* 2017;doi: 10.1016/j.jhealeco.2017.06.005.

Nakamura R, **Suhrcke M**, Zizzo DA. Triple test for behavioral economics models and public health policy. *Theory and Decision* 2017;doi:10.1007/s11238-017-9625-9.

Ochalek J, **Revill P**, van den Berg B. Causal effects of HIV on employment status in low-income settings. *Economics and Human Biology* 2017;27(Pt A):248-260.

Ozawa S, Clark S, Portnoy A, Grewal S, Stack M, Sinha A, **Mirelman A**, et al. Estimated economic impact of vaccinations in 73 low- and middle-income countries, 2001–2020. *WHO Bulletin* 2017;BLT.16.178475.

Reichert A, **Jacobs R**. Socioeconomic inequalities in duration of untreated psychosis: evidence from administrative data in England. *Psychological Medicine* 2017;doi:10.1017/S0033291717002197.

Rodriguez Santana I, **Chalkley M**. Getting the right balance? A mixed logit analysis of the relationship between UK training doctors' characteristics and their specialties using the 2013 National Training Survey. *BMJ Open* 2017;7(8):e015219.

Verzulli R, **Jacobs R**, **Goddard M**. Autonomy and performance in the public sector: the experience of English NHS hospitals. *European Journal of Health Economics* 2017;doi: 10.1007/s10198-017-0906-6.

Weatherly H, **Faria R**, van den Berg B. Quantifying informal care for economic evaluation in mental health. In Razzouk D (ed). *Mental Health Economics: The Costs and Benefits of Psychiatric Care 1st edition.* Springer 2017;Ch17:pp.267-280.

Weir S, Samnaliev M, Kuo T-C, Choitir C, Tierney T, Cumming D, Bruce J, **Manca A**, et al. The incidence and healthcare costs of persistent postoperative pain following lumbar spine surgery in the UK: a cohort study using the Clinical Practice Research Datalink (CPRD) and Hospital Episode Statistics (HES). *BMJ Open* 2017;7(9):e017585.

Westby M, Dumville JC, **Soares MO**, et al. Dressings and topical agents for treating pressure ulcers. *Cochrane Database of Systematic Reviews* 2017; Issue 6:CD011947.

Woods B, **Sideris E**, **Palmer S**, Latimer N, **Soares M**. NICE DSU technical support document 19: *Partitioned survival analysis for decision modelling in health care: a critical review.* 2 Jun 2017, NICE Decision Support Unit;72p.

CHE Centre For Health Economics

University of York

Centre for Health Economics
University of York
Heslington
York YO10 5DD UK

Tel: +44 1904 321401
Email: che-news@york.ac.uk
www.york.ac.uk/che