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Niacin: bad for health and healthcare budgets?

Project team: Seamus Kent, Alastair Gray and Bobby Mihaylova on behalf of the HPS2-THRIVE collaborators

Reliable estimates of the impacts of adverse events on health and healthcare costs are needed to evaluate the net effects of health interventions. HERC researchers have recently completed a study which generated such estimates using data from the HPS2-THRIVE trial (Heart Protection Study 2 – Treatment of HDL to Reduce the Incidence of Vascular Events) and used them to evaluate the net effects of 2g of extended-release niacin-laropiprant daily in this 25,000-participant study.

The detailed information on adverse events, deaths, hospitalisations, and quality of life of the HPS2-THRIVE participants (50 to 80 years old and with previous cardiovascular disease) was used to estimate the impact of a range of vascular and nonvascular adverse events on annual hospital costs and health-related quality of life (measured using the EQ-5D). Stroke, heart failure, musculoskeletal events, gastrointestinal events, and infections were all associated with significant decreases in quality of life in both the year of the event and in subsequent years. All serious vascular and nonvascular events were associated with substantial increases in hospital care costs.

These estimates were then used to evaluate the net effect of treatment with niacin-laropiprant versus placebo on quality-adjusted life years (QALYs) and costs in HPS2-THRIVE. It was found that participants allocated to niacin-laropiprant experienced fewer QALYs and accrued greater hospital care costs. Over the 4 years of follow-up in the study this corresponds to 300 fewer years of life in good health and excess hospital care costs of £1.3 million.

The estimates of the quality of life and cost impacts of adverse events are now available for use in further analyses of the effects of interventions in populations with previous cardiovascular disease.

To assist such efforts, a calculator is available to download at **HERC**

For more information: **HERC**



“ ...participants allocated to niacin-laropiprant experienced fewer QALYs and accrued greater hospital care costs ”

Do cancer patients value genomic testing?

Project team: James Buchanan and Sarah Wordsworth

Genetic tests that target single genes are now established as routine practice to guide treatment decisions in several clinical areas (e.g. BRCA1/2 testing in breast cancer). In many areas, attention is now turning towards tests such as whole genome sequencing that could permit the more widespread use of individualised treatments. These genomic tests simultaneously detect changes in multiple genes to identify their combined influence on treatment response. However, they have had little impact on clinical practice to date, in part because evidence of the benefits that patients derive from these tests is limited. Measuring these benefits is difficult because these tests provide patients with both clinical utility and personal utility (benefits or harms manifested outside medical contexts).

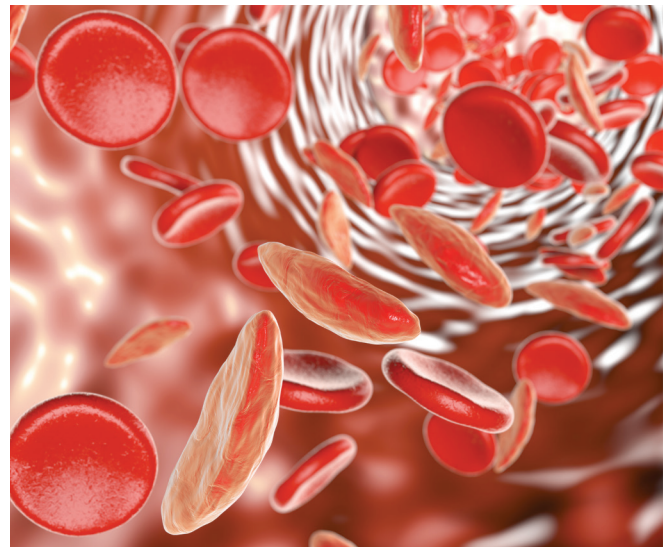
HERC researchers have recently completed a discrete choice experiment survey which investigated the preferences of UK cancer patients for genetic and genomic testing, and the results of this work are now available in *The Patient*. The survey presented leukaemia patients with 16 questions in which they had to choose between two tests. These tests were described in terms of 6 process-related and outcome-related characteristics, including ability to identify chemotherapy non-responders, time to receive test result and type of clinician who explains the test result.

219 patients completed the survey and the key finding was that respondents valued both the clinical and process-related characteristics of the tests. For example, patients were willing to pay £24 for a 1% increase in the number of chemotherapy non-responders identified, and £27 to reduce time to receive test results by 1 day. Patients were also willing to wait an extra 29 days for test results if an additional one-third of chemotherapy non-responders could be identified. Overall, patients preferred combinations of test characteristics that more closely reflected future genomic testing practice than current genetic testing practice. Going forward, commissioners will need to carefully consider how genomic testing is implemented if the full benefits of testing are to be realised.

For more information:



“ ...the key finding was that both clinical and process-related attributes were valued by respondents ”



The economic burden of blood disorders across Europe

Project team: Richéal Burns, José Leal and Ramón Luengo-Fernández

In 2015, researchers at HERC were commissioned by the European Hematology Association (EHA) to estimate the economic impact of malignant and non-malignant haematologic disorders across the EU-28, Iceland, Norway and Switzerland. This is the first systematic cost-of-illness study to assess the economic impact of blood disorders across Europe, and the results of this work have just been published in *The Lancet Haematology*.

This study adopted a societal perspective and included healthcare, informal care, and productivity costs due to illness and premature death. The total cost of blood disorders across the 31 countries in 2012 was estimated to be €23 billion, with malignant blood disorders accounting for €12 billion (52%) and non-malignant blood disorders accounting for €11 billion (48%). Healthcare costs accounted for 68% of the €23 billion total cost, with inpatient care accounting for about half of these healthcare-related costs. 119,000 working years were lost due to mortality, which were valued at €2.5 billion (11% of total costs), while 32 million working-days were lost in 2012 due to blood disorder-related morbidity, which accounted for €3 billion (14% of the total costs).

Overall, malignant blood disorders account for a substantial proportion (8%) of total costs for all cancers across the EU-28 (€143 billion). Looking at healthcare costs alone, malignant blood disorders were the second highest relative to other cancers (12% of total cancer-related healthcare costs). There was also considerable variation in care delivered for malignant blood disorders, which suggests a need to harmonise best practice guidance across Europe.

This study is part of a wider project identifying unmet clinical and scientific needs in the area of haematology research, and adds to recent HERC intelligence on the costs of cancer, bladder cancer, dementia and cardiovascular disease by adopting the same methodology across all countries. We hope that the findings from this work will contribute to public health and policy intelligence, which is required to deliver affordable care systems and improve patient outcomes and experiences.

For more information:



“ The total cost of blood disorders... was estimated to be €23 billion ”



“...NLPI is potentially cost-saving, depending on the scale of delivery and duration of follow-up”

Nurse-led psychoeducational programme for men with prostate cancer highlights potential improvement in quality of life

Project team: Richéal Burns and Jane Wolstenholme

After treatment, men with prostate cancer may have a range of physical, psychological and emotional problems that can impact on their quality of life. Access to information about the short and long term complications of the disease as well as the efficient management of these complications may alleviate many of these issues. The PROSPECTIV trial, a pilot randomised controlled trial funded by Prostate Cancer UK, has recently explored the feasibility, effectiveness and cost-effectiveness of a nurse-led psychoeducational intervention (NLPI) which promoted self-management for men after treatment for prostate cancer. The intervention included an initial face-to-face consultation with a specialist nurse, follow-up access to a specialist nurse based on individual need and a final phone call at 6 months; usual care consisted of ad-hoc visits to the nurse and GP as needed.

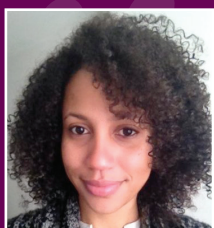
HERC researchers undertook an economic evaluation alongside this trial and found that NLPI is potentially cost-saving, depending on the scale of delivery and duration of follow-up. There was a reduction in quality-adjusted survival post-treatment over the 7 month follow-up period in both trial arms; however, NLPI mitigated the negative impact on quality of life. Medication usage was the main driver of resource use and cost differences: patients in the NLPI arm used medications to alleviate the impact of physical and psychological disease-related complications for a longer period of time. There was also an impact on health services utilisation: use of primary care services increased by 45% in the NLPI arm, whereas use of secondary care services was greater by 45% in the usual care arm. The number of practice nurse visits was also greater by 32% in the usual care arm than the NLPI arm.

A key finding from this work was that incorporating health economic analysis at the pilot study stage facilitates a better understanding of the drivers of cost-effectiveness. This will enable a more robust research design to be selected for future larger scale studies.

For more information:



Spotlight on SOPHIE DIARRA



I joined HERC in October 2015 to undertake a DPhil in Population Health sponsored by the Medical Research Council and the Nuffield Department of Population Health. The aim of my research is to establish whether there is a relationship between child respiratory health and family income. I am using data from the Millennium Cohort Study which has followed children born in the UK in the new millennium

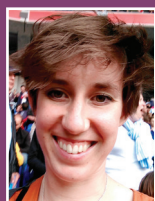
up to 2011; this rich dataset has allowed me to explore how income is transmitted into child respiratory health. I also plan to investigate, in the presence of a causal relationship between income and child respiratory health, whether this relationship changes from early childhood to later childhood. This will provide an insight into whether the respiratory health of children from lower income families worsens with age, causing them to fall even further behind children from high-income

families. I hope that the findings of my research will highlight some key areas of socioeconomic inequality that can be addressed to improve respiratory health in children living in low income families in the UK, and also prove the importance of addressing these inequalities early in a child's life.

Before joining HERC I worked in consultancy, focussing on the economic evaluation of drugs. I completed my MSc in Health Economics at City University in London, funded by the National Institute of Health Research. I also hold a post-graduate diploma in Public Health from the London School of Hygiene and Tropical Medicine and I completed my first degree, in Economics, at the University of Cape Town, South Africa. Alongside my DPhil, I participate in college rowing and compete in triathlons.

I continue to enjoy my research and the warm environment at HERC.

Staff News – Welcome to:



Ellen Nuttall Musson:

Ellen, an NHS junior doctor on a four-month rotation with HERC, is currently working with Filipa Landeiro and José Leal on a systematic review of health promotion interventions to alleviate social isolation and loneliness in older people.



Waqar Ali Khurshid:

Waqar is a public health registrar who is on a two-month placement with HERC prior to starting a Masters in Global Health Science at the University of Oxford. He is currently working with Filipa Landeiro and José Leal on the RHAPSODY project, which is investigating the challenges and opportunities for decision modelling from the onset of pre-diabetes onwards.

Recently Funded

Effectiveness and safety of gabapentin versus placebo as an adjunct to multimodal pain regimens in surgical patients: A placebo controlled, double blind randomised controlled trial (GAP trial).

HERC will be collaborating with Dr Maria Pufulete at the University of Bristol. The economic analyses will be led by Sarah Wordsworth.

HERC Seminars

Convenor: Laurence Roope

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 June, prior to the summer break, we welcomed **Osea Giuntella**, Postdoctoral Research Fellow in Economics at the Blavatnik School of Government & Nuffield College, University of Oxford, who presented his findings entitled: *If you don't snooze you lose. Evidence on health and weight.* To end the 2015/16 series, **Tom Drake**, a research fellow and DPhil student from the Mahidol Oxford Tropical Medicine Research Unit, gave a talk on *Economic Evaluation of Malaria control in Myanmar: applied analysis and methodological challenges.*

The seminar series resumes in September 2016 when Apostolos Tsiachristas, a senior researcher from HERC, will take over as the new Seminar Convenor. Many thanks to Laurence Roope for co-ordinating the series and inviting such varied and interesting speakers during 2015/16.

Details of forthcoming talks can be found on the HERC website: **HERC**

To be added to our mailing list for future seminars, email us at **HERC**

Presentations by members of HERC

International Society of Clinical Biostatistics Conference

Birmingham, August 2016

Ines Rombach

Applying multiple imputation to multi-item patient reported outcome measures: advantages and disadvantages of imputing at the item, sub-scale or score level

ACE F2F Steering Committee Meeting

Oxford, July 2016

Alastair Gray

Economic evaluation alongside the Acarbose Cardiovascular Evaluation (ACE) trial

Oxford Technology Showcase 2016 - Big Healthcare Challenges in Chronic Disease

Oxford, July 2016

Alastair Gray

Modelling Diabetes

EuHEA conference

Hamburg, July 2016



Peter Eibich

Retirement, time costs and uptake of cancer screening
Patient-level heterogeneity in the cost-effectiveness of total joint replacement surgery: The value of stratified decisions in the ACHE study

Filipa Landeiro

Delayed hospital discharges and social isolation among elderly hip fracture patients in England (poster)

Jacqueline Murphy

Using decision-analytic modelling to estimate the impact of introducing FIT screening at a range of potential cut-off levels in the NHS Bowel Cancer Screening Programme in England

Apostolos Tsiachristas

Evaluating the lifetime cost-effectiveness of population health interventions alongside clinical trials: the case of the STRATEGIC trial

Economic impact of Early Intervention in Psychosis services: results from a longitudinal retrospective controlled study in England

Public Health England Cancer Data and Outcomes Conference

Manchester, June 2016

Richéal Burns

Economic Burden of Malignant Blood Disorders across Europe

The Importance of Health Economics in Pilot Studies: Lessons learned from incorporating cost-consequence and cost-utility analysis in the PROSPECTIV study (poster)

PROMs Conference

Sheffield, June 2016

Helen Dakin

Using PROMs in decision-making: Determining PROM-based thresholds for joint replacement referrals based on cost-effectiveness

Ines Rombach

Applying multiple imputation to multi-item patient reported outcome measures: advantages and disadvantages of imputing at the item, sub-scale or score level

Nova Healthcare Initiative Open Day, Universidade Nova de Lisboa

Lisbon, June 2016

Filipa Landeiro

The impact of social isolation on delayed hospital discharges of older hip fracture patients and associated costs

XXXVI Jornadas de Economía de la Salud

Murcia, June 2016

Filipa Landeiro

Delayed discharges and social isolation in countries with an ageing population: England versus Portugal

Society of Medical Decision Making

London, June 2016

Jacqueline Murphy

Evaluating predicted resource use, cost and quality of life outcomes of colorectal cancer screening with the faecal immunochemical test in England using economic modelling

Society of Clinical Trials Conference

Montreal, May 2016

Ines Rombach

The current practice of handling and reporting missing outcome data in 8 widely-used PROMs in RCT publications: A review of the current literature

Applying multiple imputation to multi-item patient reported outcome measures: advantages and disadvantages of imputing at the item, sub-scale or score level

PUBLICATIONS

Burns R, Leal J, Sullivan R, Luengo-Fernández R.

Economic burden of malignant blood disorders across Europe: a population-based cost analysis. The Lancet Haematology. 2016. doi:10.1016/S2352-3026(16)30062-X

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Fusco F, Turchetti G. *Telerehabilitation after total knee replacement in Italy: cost-effectiveness and cost-utility analysis of a mixed telerehabilitation-standard rehabilitation programme compared with usual care. BMJ Open* 2016 May 17;6(5):e009964. doi: 10.1136/bmjopen-2015-009964

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Landeiro F, Barrows P, Gray A, and Leal J. *Reducing social isolation in older people: a systematic review protocol. PROSPERO* 2016:CRD42016039650

Luengo-Fernández R, Burns R, Leal J. *Economic burden of non-malignant blood disorders across Europe: a population-based cost study. The Lancet Haematology.* 2016. doi:10.1016/S2352-3026(16)30061-8

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