



# HEB Newsletter

## Health Economics at Bristol (HEB)



### Welcome from Will

Welcome to the latest edition of the HEB newsletter. This edition provides a snapshot of the wide array of research that HEB staff lead on and contribute to.

When we teach students about evidence-based medicine we often talk of the 'pyramid of evidence' and stress the pre-eminence of randomised controlled trials and the meta-analyses based on them. However, the research summarised in this edition highlights the need for health economic methods and analyses to be much broader in order to really help clinicians and policy makers.

**Elsa Marques** and her research group use the large numbers and lengthy follow up afforded by registry data to estimate the long-term cost-effectiveness of numerous hip implants in a way that a single RCT could not. **Myles-Jay Linton** and **Gareth Myring** are working with charities to evaluate care in health and social care settings where RCTs are extremely difficult if not impossible. **Sabina Sanghera** is developing methods to appropriately measure and value health outcomes that fluctuate in a way that would be missed by most RCTs with follow up at fixed intervals. **Jeff Round** and my work on Mirtazapine for treatment resistant depression demonstrates that even when a 'simple' RCT is possible, interpretation and implementation are complex.

I hope you enjoy reading about our work and that we'll see you at HESG, IHEA or in Bristol before too long.

*Will Hollingworth*, Director of HEB



# HEB News



Myles

## Grant Success!

**Myles-Jay Linton** has been awarded an Economic and Social Science Research Council Impact grant to fund a part-time secondment to a mental health charity (Second Step).

Second Step has been providing support to people with multiple and complex needs for three decades. One of the main challenges facing the charity, is how it evaluates the impact of its diverse services, therefore one of the goals of this project is to embed tools, skills and procedures to support evaluations.

Myles is undertaking Patient and Public Involvement (PPI) work to select measures of wellbeing for use in evaluations, analysing survey data, facilitating focus groups and undertaking semi-structured interviews. This experience has highlighted the essential and valuable role played by third sector organisations in the delivery of health and social care.

 @ MJ\_Linton



Elsa

## Cost-Effectiveness Results of HIPS and KNEES Studies

The Hip Implant Prosthesis Study (HIPS) team at the University of Bristol Medical School has shown that small-head (less than 36 mm in diameter) cemented metal-on-plastic hip replacements are the most cost-effective in men and women older than 65 years. For adults younger than 65, small-head cemented ceramic-on-plastic hip replacements are more likely to be cost-effective. The cost-effectiveness findings included a collaboration to analyse over 1 million individual patients' data in two national joint cohorts:

the National Joint Registry for England, Wales, Northern Ireland and the Isle of Man, and the Swedish Hip Arthroplasty Register. This work follows the team's findings published last year in [BMJ](#) from a large review of randomised controlled trials, where no evidence was found that newer implants such as ceramic or uncemented implants were better than the traditional cemented metal-on-plastic ones, whereas metal-on-metal and resurfacing implants were worse.

Small-head cemented metal-on-plastic implants have the longest track-record of use; they are safe and the cheapest implant type on the market but tend only to be favoured for older patients. Currently only 30 per cent of patients in the NHS are offered a cemented implant, whereas the uptake of uncemented implants has been rising in the UK in the last ten years, particularly for younger adults. HIPS findings produce new evidence to inform clinical practice and influence NICE guidance. Regardless of their bearing material, there is no effectiveness or cost-effectiveness evidence that uncemented implants last longer and avoid revision surgeries for any patient group.

**Elsa Marques**, based at the [Musculoskeletal Research Unit](#) at the [Bristol Medical School: Translational Health Sciences](#) (THS), led the study with a multidisciplinary team including HEB colleagues **Nicky Welton**, **Will Hollingworth** and **Howard Thom**. Elsa and colleagues have now been successful in obtaining further NIHR funding to study the effectiveness and cost-effectiveness of knee implant prosthesis. The Knee Implant Prosthesis Study (KNIPS) started this January!

**Papers:** ['Choice of prosthetic implant combinations in total hip replacement: cost-effectiveness analysis using UK and Swedish Hip Joint Registries Data'](#) by Fawsitt C et al in *Value in Health* [open access]. ['Choice of implant combinations in total hip replacement: systematic review and network meta-analysis'](#) by López-López J et al in *BMJ* [open access]

**Video:** [https://www.youtube.com/watch?time\\_continue=2&v=TFuFChdhYxs](https://www.youtube.com/watch?time_continue=2&v=TFuFChdhYxs)

 @ whereselsa



Jo &amp; Caoimhe

## HEB's Contribution to ISPOR Conference

November 2018 saw **Howard Thom**, **Jo Thorn** and **Caoimhe Rice** journey to sunny Barcelona for ISPOR Europe. Jo presented her cost effectiveness analysis of a novel use for CBT by clinical teams to reduce arthritis fatigue in the RAFT study. Caoimhe presented her methodological work *Direct data without duplication of effort* a process for obtaining resource use data directly from hospital informatics systems in lieu of research nurse collected CRFs.

On the final day, Howard Thom gave a workshop with Devin Incerti, Jeroen Hansen and Gianluca Baio entitled *R you seriously Still using Excel? The Many Advantages of Open Source Decision Modelling in Efficient Programming Languages*. If you missed it, look out for the short course *Economic Evaluation and Modelling Using R* coming to University of Bristol in 2020.

## How Do Patients With Fluctuating Health States Complete Questionnaires?



Sabina

**Sabina Sanghera** is working on a NIHR post-doctorial fellowship to identify how best to measure and value quality of life when health fluctuates.

As quality of life data inform cost-effectiveness decisions and it is not clear how patients with

fluctuating health complete quality of life questionnaires, the first step of the project was to interview patients with fluctuating symptoms.

In her first year, Sabina has been busy interviewing patients undergoing chemotherapy for cancer to explore whether these patients with constantly fluctuating symptoms adhere to recall periods, construct an average or recall the worst point of the chemotherapy cycle when completing EQ-5D-5L ('health today'), SF-12 ('past four weeks') and EORTC-QLQ-C30 ('past week').

Look out for the results and implications of using these questionnaires to calculate quality-adjusted life years, as Sabina starts to publish these findings.



## Economic Analysis of End of Life Care Interventions



Gareth

**Gareth Myring** is working on a number of projects that focus on economic evaluation of interventions at the end of life. These include an NIHR funded paper looking at the feasibility of studying Namaste interventions for those in nursing homes with advanced dementia and Marie-Curie funded

research looking at day hospices and interventions to reduce constipation amongst those receiving hospice care.

In all these studies, the availability of relevant resource use and costing data are being explored together with analysis of the feasibility, acceptability, and validity of the use of both health (EQ-5D-5L) and capability (ICECAP-O, ICECAP-SCM, ICECAP-CPM) measures to assess patient outcomes within these settings.

The feasibility of the completion of outcome measures on behalf of advanced dementia patients by proxy is also being investigated, including a qualitative analysis of measure completion while using the 'think-aloud' interview technique.

## MIR Trial



Will

HEB researchers **Jeff Round** (now at the Institute of Health Economics, Edmonton) and **Will Hollingworth** evaluated the cost-effectiveness of Mirtazapine in addition to Selective Serotonin Reuptake Inhibitors (SSRIs) in patients with treatment resistant depression.

The NIHR HTA funded trial led by David Kessler randomised 480 patients to Mirtazapine or Placebo. At 12 weeks, depression scores were slightly better in the Mirtazapine group, diminishing by 52 weeks. However, the difference between groups was not clinically important or statistically significant.

Economic analysis demonstrated a small positive net benefit of Mirtazapine with a 77% probability of being cost-effective at a £20,000 cost per QALY threshold. As is common with economic evaluations, the evidence is not definitive, making policy implications difficult.

The precautionary principle suggests that a higher burden of proof might be needed before recommending patients are given an additional medication. In this study, there was no clear clinical benefit from treatment at 12 weeks as per the primary outcome measure. There was some evidence of a greater burden of adverse effects in the treatment group, dependent on how and when these were measured. From a clinical perspective we cannot recommend this treatment with statistical confidence. However, Mirtazapine is cheap, well-tolerated over-all, and from a decision-making perspective is more likely than not to be cost-effective.

The study raises questions about the most appropriate approach to decision making in circumstances where the evidence is unclear. Reference: [www.ncbi.nlm.nih.gov/pubmed/30468145](http://www.ncbi.nlm.nih.gov/pubmed/30468145)

### HEB Research Themes:

Economics of Health and Care across the Life Course  
 Methods for Applied Health Economics Efficiency  
 Equity in Decision Making

## Key publications

### Efficiency and Equity in Decision Making

**Fawsitt C, Thom H, Hunt L, Nemes S, Blom A, Welton N, Hollingworth W, López-López JA, Beswick AD, Burston A, Rolfson O, Garellick G, Marques E.** Choice of Prosthetic Implant Combinations in Total Hip Replacement: Cost-Effectiveness Analysis Using UK and Swedish Hip Joint Registries Data. *Value in Health*. 2018 Nov 2. <https://doi.org/10.1016/j.jval.2018.08.013>

Sweeney S, **Ward Z**, Platt, L, Guinness L, Hickman M, Hope V, Maher L, Iversen, J, Hutchinson, S. J, Smith J, Ayres R, Hailey I, Vickerman P. (2019) Evaluating the cost-effectiveness of existing needle and syringe programmes in preventing hepatitis C transmission in people who inject drugs. *Addiction* <https://doi.org/10.1111/add.14519>

**Thorn J, Hollingworth W**, Kirwan J, Blair P, Turner N. Reducing Arthritis Fatigue impact: Two-year randomised controlled trial of cognitive behavioural approaches by rheumatology Teams (RAFT). *Annals of the Rheumatic Diseases*. 2019 Jan 11.

Harding S, Evans R, Morris R, Gunnell D, Ford T, **Hollingworth W** et al. Is teachers' mental health and wellbeing associated with students' mental health and wellbeing? *Journal of Affective Disorders*. 2019 Jan 1;242:180-187. <https://doi.org/10.1016/j.jad.2018.08.080>

Hay A, Anderson E, Ingle S, Beck C, **Hollingworth W**. Respiratory Tract Infections in Children in the Community: Prospective Online Inception Cohort Study. *Annals of Family Medicine*. 2019 Jan;17(1):14-22. <https://doi.org/10.1370/afm.2327>

Anokye N, Mansfield L, Kay T, **Sanghera S**, Lewin A, Fox-Rushby J. The effectiveness and cost-effectiveness of a complex community sport intervention to increase physical activity: An interrupted time series design. *BMJ Open*. 2018 Dec;8(12):e024132.

**Kessler D**, Wiles N, MacNeill S, Tallon D, Peters TJ, **Hollingworth W** et al. Mirtazapine added to SSRIs or SNRIs for treatment resistant depression in primary care: phase III randomised placebo controlled trial (MIR). *BMJ*. 2018 Oct 31;363(8174):k4218.

Oppong R, Smith RD, Little P, Verheij T, Butler CC, Goossens H, Coenen S, Jowett S, Roberts TE, Anchana F, Stuart B, **Coast J**. Cost-effectiveness of internet-based training for primary care clinicians on antibiotic prescribing for acute respiratory tract infections in Europe. *Journal of Antimicrobial Chemotherapy*. 2018 Nov;73(11):3189-3198. dky309. <https://doi.org/10.1093/jac/dky309>

### Economics of Health Care across the Life Course

**Coast J**. Assessing capability in economic evaluation: a life course approach? *European Journal of Health Economics*. 2019 Jan 8.

Carroll FE, Al-Janabi H, Rooshenas L, **Owen-Smith A**, Hollinghurst S, Hay AD. Parents' preferences for nursery care when children are unwell: a discrete choice experiment. *Journal of Public Health (United Kingdom)*. 2018 Dec 20. fdy215. <https://doi.org/10.1093/pubmed/fdy215>

Bailey C, Kinghorn P, Hewison A, Radcliffe C, Flynn TN, Huynh E et al. Hospice patients' participation in choice experiments to value supportive care outcomes. *BMJ Supportive and Palliative Care*. 2018 Nov 12. <https://doi.org/10.1136/bmjspcare-2018-001582>

### Methods for Applied Health Economics

Franklin M, **Thorn J**. Self-reported and routinely collected electronic healthcare resource-use data for trial-based economic evaluations: the current state of play in England and considerations for the future. *BMC Medical Research Methodology*. 2019 Jan 9;19. 8. <https://doi.org/10.1186/s12874-018-0649-9>

**Thorn H**, White IR, **Welton N**, Lu G. Automated methods to test connectedness and quantify indirectness of evidence in network meta-analysis. *Research Synthesis Methods*. 2018 Dec 4. <https://doi.org/10.1002/jrsm.1329>

**Linton M-J, Mitchell P**, Al-Janabi H, Schlander M, Richardson J, Iezzi A, Ubel J, **J Coast**. Comparing the German Translation of the ICECAP-A Capability Wellbeing Measure to the Original English Version: Psychometric Properties across Healthy Samples and Seven Health Condition Groups. *Applied Research in Quality of Life*. 2018 Dec 7. <https://doi.org/10.1007/s11482-018-9681-5>

**Dixon P**, Round J. Caring for carers: Positive and normative challenges for future research on carer spillover effects in economic evaluation. *Value in Health*. 2018 Oct 9

**Kandiyali R**, Hawton A, Cabral C, Mytton JA, Shilling V, Morris C et al. Working with Patients and Members of the Public: Informing Health Economics in Child Health Research. *PharmacoEconomics - Open*. 2018 Oct 15. <https://doi.org/10.1007/s41669-018-0099-7>



## Congratulations Sabina & Howard!

**Sabina Sanghera** and **Howard Thom** were both recently appointed to the position of Lecturer in Health Economics.



## HEB Starts New Module for MSc in Public Health

2019 in Bristol sees the start of a new module on "Introduction to Health Economics for Public Health".

HEB co-leads for this module on the MSc in Public Health, **Joanna Coast** and **Paul Mitchell**, as well as other HEB team members, have been busy developing lectures and practicals of relevance for students on this new Master's course.

Students are being exposed to a wide array of topic areas including market failure in public health, behavioural economics, qualitative and quantitative health economics research methods and economic evaluation and decision making for public health. The diversity in teaching topics covered on this module illustrates the variety of research strengths across HEB.

## 'R' Short Course

As part of the Bristol Medical School Short Courses in Population Health Sciences programme, **Howard Thom**, **Padraig Dixon**, **Claire Williams**, and **Nicky Welton** will be internally piloting a 2-day course on the use of the R statistical software for economic evaluation (EE).

R has the advantages of flexibility, transparency, and speed over Excel and Bristol is leading the charge to increase uptake of R for EE. If successful, the course will open to non-Bristol participants from 2020.

## An Introduction to Qualitative Methods for Health Economics short course

An Introduction to Qualitative Methods for Health Economics will run for the first time in 2019 as part of the Bristol Medical School's short course programme. This is an internal pilot course being co-led by **Joanna Coast**, **Sam Husbands** and **Amanda Owen-Smith**.

The course will provide participants with information on how qualitative techniques can inform health economics research, and will offer guidance on core practical techniques around qualitative sampling, data collection and data analysis.

## Bookings are open for our short course

**Introduction to Economic Evaluation 24th – 26th April**

Designed for clinicians, public health specialists and health care researchers. No previous knowledge required. We still have places left - for further details and to book please click [here](#)

## Population Health Sciences

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