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Co-authors	Dr Chris Vernazza (Newcastle University), Prof Cam Donaldson (Glasgow Caledonian University), Prof John Wildman (Newcastle University)
Title	Application of distributional judgements in a programme budgeting and marginal analysis framework
HESG ID	1016
Time	Monday 6 January, 13.00-13.55
Abstract	<p>Introduction: Programme budgeting and marginal analysis (PBMA) offers an opportunity to identify services which may not use resources efficiently and allocate the potentially available resources elsewhere. PBMA often relies upon value judgements from a panel; which can be vulnerable to considerations beyond agreed criteria (such as political pressures or individual prejudice for/against services). To make decisions regarding resource allocation without consulting a panel, a range of distributional arguments with economic foundations could be applied.</p> <p>Methods: A panel responsible for making decisions regarding dental care identified 14 interventions as potential investments or disinvestments as part of a PBMA. Enacting all potential disinvestments would release approximately £651,338,605 meaning this is the total budget to invest.</p> <p>This paper evaluates resource allocation in the context of NHS dentistry using four distributional arguments which can be measured objectively (health maximisation, vertical equity of access, oral health inequalities and societal preference as measured by willingness to pay). Evidence for these arguments was collected from a range of published sources and a nationally representative survey.</p> <p>Results: Allocating resources with respect to different distributional arguments generates 4 different sets of investments, with some overlap. All interventions invested in under health maximisation receive investment in at least one other distributional argument. The majority of investments made under the societal preference argument were proposed as disinvestments by the panel and do not receive investments under any other distributional argument. The intervention routinely available from NHS England dentists (scale and polish, which was proposed as a disinvestment) does not receive investments under any of the decision rules. A proposed investment, issuing preventative advice, also does not receive any investment. However, potential investments designed to address existing oral health inequalities only account for a third of the available spend meaning money can be diverted into preventing the inequalities or different interventions to reduce inequalities should be considered. There is only one intervention (providing tooth maintenance in care homes) which receives investment under all decision rules, which is not provided by NHS England but was recommended in the overall PBMA process.</p>

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Title	A comprehensive simulation study of population-adjusted indirect comparison methods
HESG ID	1013
Time	Monday 6 January, 13.00-13.55
Abstract	<p>Objectives: Population-adjusted indirect comparison methods are increasingly used to compare treatment outcomes across separate clinical trials and to inform health technology assessment. We review current methods for population adjustment; matching-adjusted indirect comparison (MAIC) and simulated treatment comparison (STC), and present a novel method called predictive-adjusted indirect comparison (PAIC). A comprehensive simulation study is carried out to compare the methods.</p> <p>Methods: The rationale behind PAIC is the following: individual-level data are used to model the link between an outcome and the available prognostic variables and effect modifiers via a generalised linear model. Then, a large number of pseudo-populations are generated by forward sampling from the published aggregate-level values. This step allows the practitioner to incorporate information about the correlations between covariates. The simulated datasets are used to estimate an unbiased average treatment effect.</p> <p>A comprehensive simulation study has been carried out where the statistical properties of PAIC are evaluated and benchmarked against those of other recently proposed approaches for population-adjustment (MAIC and STC). The simulation study considers dichotomous outcomes and survival outcomes in an anchored setting. The comparative vulnerability of each population-adjustment method to failures in assumptions/model specification is assessed and compared to that of standard indirect comparison approaches such as the Bucher method.</p> <p>Results: PAIC consistently produces less biased and more accurate estimates and has more power to detect differences between the effect of treatments. All population-adjustment methods provide unbiased estimates when all effect modifiers are accounted for and when these interact with treatment in the same way in both trials. PAIC and STC are less biased than MAIC under effect modifier misspecification. The Bucher method is the gold standard when covariates are balanced but is clearly biased and inappropriate when they are not. MAIC displays large variance over replicates as weighting considerably reduces the effective sample size. Population-adjustment consistently increases the variance of estimates and their variability across simulations.</p> <p>Conclusions: Population-adjustment methods should be used with caution due to bias-variance trade-offs and as their assumptions seem hard to be met in practice. Notwithstanding, they are very useful tools for comparative effectiveness research without head-to-head trials.</p>

First author	Paul Peter Schneider (University of Sheffield)
Co-authors	N/A
Title	Interpersonal comparability of health state utilities: why it is unfair to measure preferences in units of full-health-time, and what we can do about it
HESG ID	989
Time	Monday 6 January, 13.00-13.55
Abstract	<p>Health state utilities are commonly measured using the time trade-off (TTO) or standard gamble (SG) method. For each state, utilities are aggregated and then used in economic evaluations to value changes in quality and quantity of life in terms of QALY. Compared to other valuation methods (e.g. willingness-to-pay), TTO/SG have intuitive appeal: since the value of one year in full health is the same for everyone (=1QALY), the method seemingly ensures a fair comparisons across individuals. On closer inspection, however, the theoretical and empirical basis for assuming interpersonal comparability of health state utilities is weak. This work is motivated by the observation that utility differences between individuals are mainly driven by the their willingness to trade survival time for quality of life: while some refuse to give up any lifetime (non-traders), others consider time with slightly impaired health not worth living ('high-traders'). When utilities are aggregated across individuals, 'high-traders' have significantly more influence on the resulting cardinal ordering of health states; or put more generally, when utilities are measured in units of 'full-health-time', health state preferences are contaminated by preferences over survival time, and vice versa.</p> <p>Here, I argue that this property of health state utility comparisons is neither necessary nor desirable. I revisit and review some of the arguments that were previously used to justify measuring utilities on a normalised ratio scale, with full health (=1) as the upper limit, and 'being dead' as a natural zero. Following a theoretical discussion, I demonstrate that, it is not sufficient to assert that the utility difference between one year in full health and being dead is the same for all individuals; to be able to make utilities in all respects interpersonally comparable, it is also required that the difference between full health and the worst possible health state is the same for all. Two solutions are proposed: one involves decomposing and transforming utilities; while the other uses a scale invariant method for comparison. Both come with technical challenges, but may enable fairer aggregation and comparisons of health state utilities across individuals.</p>

First author	An Thu Ta (University of Sheffield)
Co-authors	N/A
Title	Adaption To Disability – Evidence From The UK Household Longitudinal Study
HESG ID	937
Time	Monday 6 January, 14.00-14.55
Abstract	<p>Do people adapt to disability? This study focuses on the phenomenon of hedonic adaptation, which refers to a process where an individual’s subjective wellbeing (SWB) responds to a good or bad change in life circumstance, but gradually reverts to its original level over time, even when the changed circumstance remains the same. Little work has examined hedonic adaptation to disability, especially by looking at physical and mental disability separately. This study is the first to investigate the effect of physical, mental, and general disability on SWB, conditional on an observed reduction in SWB at onset of disability, and its heterogeneity across age at onset and gender. Using a fixed effects (FE) lag model, this study analyses data from The UK Household Longitudinal Study (UKHLS) 2009-2017. If there is no observed drop in SWB level following onset, there is no scope for observed adaptation to disability. Therefore, the main sample is restricted to only those individuals who reported a drop in SWB at onset. In all cases, there are approximately 60% of the observations are at onset, 20% for one to two years, 10% for two to three years and 10% for three or more years of disability. Furthermore, the analysis compares males and females by running FE regressions separately for the two genders. The study also looks at heterogeneity across age at onset, by grouping the observations based on the tertiles of age at onset. The results show that mental disability has larger negative impacts on SWB than physical disability at onset. There is evidence of partial adaptation (20% to 80%) to both physical and mental disability at three years or more after onset conditional on an observed reduction in SWB at onset. In addition, females and the middle-aged experience larger negative impacts. Regarding adaptation after onset, across most age groups, there is no evidence for adaptation to disability. The exception is the youngest onset group, which partially adapt to general disability after three or more years after onset. There appears to be no difference in hedonic adaptation to disability by gender.</p>

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Title	Identifying characteristics of optimum smoking cessation interventions for pregnant women: an economic modelling study
HESG ID	1023
Time	Monday 6 January, 14.00-14.55
Abstract	<p>Background: Smoking during pregnancy (SDP) continues to be a significant health problem, especially in high-income countries, which is also a health equity issue because SDP prevalence is higher among women from disadvantaged backgrounds. Current SDP interventions are typically cost-effective, but their uptake, content and outcomes are limited and relapse rates are high.</p> <p>Objective: This study aims to identify characteristics of ‘optimum’ SDP interventions using economic modelling. This entails modelling different intervention characteristics relating to aim (from reducing smoking in the pregnant woman to achievement of a smoke free household), content (e.g. type of service provider, behavioural intensity, use of financial incentives, nicotine provision (nicotine replacement therapy and e-cigarettes) and duration.</p> <p>Methods: An economic model will be used to undertake a cost-utility analysis to assess long-term cost-effectiveness of potential interventions compared to standard services in the National Health Service in England. The Economic impacts of Smoking In Pregnancy (ESIP) model developed by Jones (2018) overcame many limitations in previous evaluations. However, this study develops the ESIP model further by incorporating partners’ smoking and the number of cigarettes consumed by women. In addition, some health conditions (lower respiratory disease, obesity) which were not included in the ESIP model will be taken into account. The new model comprises one decision tree for the within-pregnancy period, and three linked Markov chains covering the post-pregnancy period for the mother, partner and child. The model parameters will be estimated from published literature.</p> <p>Results: The model will enable the characteristics of optimum cessation interventions for pregnant women to be identified by comparing different hypothetical smoking cessation interventions designed based on current evidence. The results will be presented in the paper.</p> <p>Discussion: This new model will be the first to enable estimation of the lifetime health implications and cost outcomes of SDP interventions by considering the severity of mothers’ smoking and the partners’ smoking status. From a policy perspective, the results will provide valuable insight into the extent to which additional resources could be used to promote smoke free households (e.g. implementing comparatively high levels of shopping voucher incentives over a comparatively long period) while fulfilling cost-effectiveness criteria.</p>

First author	Linda Fenocchi (Glasgow Caledonian University)
Co-authors	Helen Mason (Glasgow Caledonian University), Cam Donaldson (Glasgow Caledonian University)
Title	Back to basics? A role for Cost Benefit Analysis in the evaluation of public health interventions: a proof of concept study
HESG ID	998
Time	Monday 6 January, 14.00-14.55
Abstract	<p>Background: While guidance exists about approaches to economic evaluation of public health interventions, there is limited availability of published studies implementing this guidance. This case study provides an account of the use of cost benefit analysis (CBA) to evaluate Sistema Scotland’s Big Noise Govanhill project, a complex asset-based early years intervention which aims to improve health and well-being, educational outcomes and engagement of young people through participation in a children’s orchestra.</p> <p>Methods: As proof of concept, a conventional economic approach - specifically a CBA framework - was used to identify and measure relevant economic costs and benefits of the intervention project. The economic analysis was undertaken from a societal perspective, and drew upon a review of academic literature, financial data and the Big Noise logic models. Predicted flows of costs and benefits were monetised. Net Present Value (NPV) was used as an indication of the value of the flow of benefits over the appraisal period (0-15 years). Sensitivity analysis was conducted for varying timescales, for individual costs and benefits, and for scenario assumptions.</p> <p>Results: Based on the assumptions of the economic model, the evaluation indicated that Big Noise Govanhill had the potential to generate greater social benefits than the social costs to deliver it (NPV = 28.91 (GBP millions) baseline, 9.07 to 169.50 across sensitivity analyses). Methodological challenges determining both the impacts and the value of costs and benefits highlighted potential difficulties faced by the analyst dealing with these types of projects.</p> <p>Conclusion: While this case study demonstrates that it is possible to apply conventional methods of economic evaluation to an asset-based intervention, it also highlights challenges faced by the analyst. The proof of concept explores the difficulties in measurement and valuation of benefits which are predicted to be realised over time. The cost benefit analysis was premised on the assumption that claims for achievable outcomes were both possible and probable. Longitudinal data about actual outcomes for participants will be important for future research. Further economic evaluations in these areas are called for to explore the methodological challenges that these projects present.</p>

First author	Nicolas Silva-Illanes (University of Sheffield)
Co-authors	Monica Hernández Alava (University of Sheffield), Aki Tsuchiya (University of Sheffield)
Title	An essay on the measurement of total health inequalities at the individual level
HESG ID	1015
Time	Monday 6 January, 15.30-16.30
Abstract	<p>Income inequality is one of the concepts that is widely used to assess and compare the economic achievements of nations. Income inequality focuses on the study of how the total amount of a defined source of income is distributed among individuals within a country. By contrast, in the health-inequality literature the main focus has typically been the assessment of inequalities between socioeconomic groups. However, in the 2000s, while discussing how the World Health Organization should measure health inequality within countries, Gakidou, Murray and Frenk (in Bulletin of the WHO, 78(1):42–54, 2000) proposed to measure health inequality at the individual level using a metric denoted as 'individual health expectancy'. It was argued that since health is an intrinsic component of well-being, societies should be concerned with inequality in health per se, irrespective of how it is correlated with other aspects of well-being (e.g. socioeconomic position). This proposal has been contested by several scholars, Hausman and Asada amongst them, who argue that health inequalities at the individual level are not a good proxy of general justice compared to other dimensions of well-being (e.g. socioeconomic position) and that the concept of health expectancy at the individual level is misleading and cannot be measured. Instead, these authors argue that the measurement of health inequalities at the individual level should be focused on health outcomes rather than health expectancies, and advocate for the measurement of health inequalities between socioeconomic groups rather than between individuals. This paper revisits this debate and offers new insights concerning the measurement of health inequalities. It argues that individual health expectancy is not a misleading concept and proposes a new definition of this metric. It also makes the case that measuring inequalities in health outcomes is the wrong approach if the interest is to measure total health inequalities in a similar fashion to what is done in the income-inequality literature. The paper offers a discussion and a critique of the arguments that favour income inequality over health inequality as a better proxy of general justice.</p>

First author	Jonathan Briody (SPHeRE Scholar University College Dublin)
Co-authors	N/A
Title	Does parental experience of the recession influence child anthropometry?
HESG ID	944
Time	Monday 6 January, 15.30-16.30
Abstract	<p>The relationships between recessions and health are predominantly studied in adults. Children are a vulnerable population group, and the importance of general economic deprivation for child health and development has been documented frequently. However, little research has studied the importance of early life recessionary exposures for the healthy development of children. The association between changing macroeconomic conditions during the Irish recession and child weight is investigated in the Growing up in Ireland infant cohort from 2008 to 2013. Fixed effect logistic regression, with individual and area fixed effects, is used to examine the effects of parental unemployment on child weight. This study is the first to use longitudinal anthropometric measurements to estimate the impact of economic change on children's weight before, during and after a recession, both in Ireland and the rest of Europe. Child growth charts quantify children overweight for BMI, weight for age and weight for height measures. When comparing children to themselves over time, the results suggest that parental job loss is associated with increases in the probability of overweight in children. The analysis is repeated for dual parent unemployment, maternal unemployment and paternal unemployment to clarify mechanisms of effect.</p>

First author	Hareth Al-Janabi (University of Birmingham)
Co-authors	Eve Wittenberg (Harvard University), Cam Donaldson (Glasgow Caledonian University), Werner Brouwer (Erasmus University)
Title	The relative value of carer and patient quality of life: A person trade-off (PTO)
HESG ID	950
Time	Monday 6 January, 15.30-16.30
Abstract	<p>Introduction: Carer quality of life is increasingly considered in economic evaluations; a practice now advocated in methods guidelines. This implies that society is willing to trade-off quality of life effects for patients and carers. However, no empirical study of social values with respect to such trade-offs has been conducted.</p> <p>Methods: A person trade-off experiment was designed to elicit preferences for carer and patient quality of life. 1052 representative members of the UK public (carers and non-carers) chose between hypothetical services that improved the quality of life of carers and patients, iterating to a point of indifference. Alternative scenarios investigated the effect of the scope, scale, and starting point of quality of life gains, as well as the effect of patient age and whether the service benefited both carers and patients. Data was collected on the reasons for choices and social attitudes to priority setting.</p> <p>Results: The majority (84%) of individuals traded patient quality of life for carer quality of life. Of these 41% preferred patients, 20% preferred carers, and 23% made choices consistent with valuing the two equally. Aggregation of preferences, via ratio of means, generated a ‘weighting’ of 0.74 for carer (relative to patient) quality of life. Analysis of the effect of characteristics of quality of life gain, social attitudes data, and free text data is ongoing.</p> <p>Discussion: Public preferences appear to support the inclusion of carer effects within economic evaluation. If carer quality of life scores are to be weighted to reflect ‘social value’, the results outlined here provide a means to include carer quality of life in economic evaluation. However, there are different normative positions that can be taken with respect to how the results are applied in practice.</p>

First author	Carys Jones (Bangor University)
Co-authors	Ned Hartfiel (Bangor University), Rhiannon Tudor Edwards (Bangor University)
Title	Social Return on Investment Analysis of the Health Precinct – an integrated health and social care hub to manage chronic conditions in a community setting
HESG ID	935
Time	Monday 6 January, 15.30-16.30
Abstract	<p>Background: Local Authorities and Health Boards are being encouraged to work together to promote wellbeing and develop integrated services. Social participation and community-based physical activity are key in promoting wellbeing for older people. The Health Precinct is a community hub in North Wales that people with chronic conditions are referred to. Hub staff include nurses, social workers, physiotherapists and council staff. A key element of the Hub is the emphasis it places on wellbeing and social interaction, encouraging people to take control over their day-to-day life. To improve community-based assets such as the Hub, there is a need to understand and evidence the social value generated by such initiatives.</p> <p>Methods: Qualitative and quantitative data collection took place October 2017 – September 2019. Social Return on Investment (SROI) analysis was used to evaluate the social value generated by the Hub. Stakeholders included Hub participants aged 55+, participants’ families, Hub staff, NHS and the local authority. A programme theory of change was developed following focus groups with Hub staff and local authority stakeholders. Participants’ health and wellbeing data were collected upon referral to the Hub and four months later using the EQ-5D, Campaign to End Loneliness Scale and the Warwick Edinburgh Mental Wellbeing Scale. Family members completed brief questionnaires on observed changes at four months. Cost data were provided by programme administrators. An impact map was created, and financial proxies assigned to observed outcomes.</p> <p>Findings: Baseline data were collected for 150 participants. Rolling four month data collection will be completed in September 2019; preliminary findings indicate that participants reported increased levels of physical activity, mobility and wellbeing; and reduced loneliness and depression. The social value generated by Hub activities will be calculated, and divided by the cost of inputs required to deliver programmes at the Hub, resulting in an SROI ratio of social value generated for every £1 invested in the Hub.</p> <p>Interpretation: SROI analysis offers a novel approach to understanding which aspects of the Hub generates social value, and to which stakeholders. The findings will be of relevance to service commissioners seeking evidence for integrated health and social care community hubs.</p>

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Title	Emergency readmissions as a quality measure: The impact of definition on the output and productivity of the English NHS
HESG ID	1008
Time	Tuesday 7 January, 09.30-10.25
Abstract	<p>Background and Aims: In measuring the performance of public healthcare systems, observing quality is a vital consideration. Quality information is employed to calculate productivity (output value divided by input cost), a major element in estimating the future funding needs of healthcare systems, as well as forming part of other performance measures. In this study, we explore the implications of different definitions for emergency readmissions, a quality measure which is recognised as important but where consensus on an appropriate definition is lacking. We quantify the volume and cost of the most popular definitions and measure their impact on the productivity of the English NHS, when treated as a deadweight loss.</p> <p>Methods: The Hospital Episode Statistics (HES) dataset is used to identify observations captured by different definitions of readmissions for the period 2011/12 - 2015/16. Identified readmissions are weighted by their unit costs to obtain a total value. Thus, readmissions are considered as “bads” in the production of NHS output, which should be netted out of output measures.</p> <p>Results: Expenditure on readmissions is substantial, but sensitive to the definition used: Over the study period, the number of readmissions ranges from 0.3 million to 5.9 million depending on definition. The mean value of a readmission also varies by definition, from £1,641.79 to £2,084.02, with more conservative definitions indicating a higher average value for readmissions. Different definitions also indicate different patient groups being most at risk of readmission. The effect of definitions on the growth in output and productivity is more modest, due to the stability of readmission rates over time.</p> <p>Conclusions: Our findings highlight the importance of definition in attempting to observe avoidable emergency readmissions through administrative data. In addition, we quantify the implications of how readmissions might be accounted for as a quality dimension in measuring health sector productivity.</p>

First author	Sean Gavan (The University of Manchester)
Co-authors	Luke Munford (The University of Manchester)
Title	The Impact of Hosting a Major International Sporting Event on Health and Health-related Behaviours
HESG ID	1004
Time	Tuesday 7 January, 09.30-10.25
Abstract	<p>Background: Policy-makers around the world have sought to improve health-related behaviours and population health outcomes by hosting major international sporting events (eg. the Olympic Games & the FIFA World Cup). The evidence to support the health-related legacy of these major sporting events is mixed. In July 2014, the Tour de France – the oldest grand tour cycling race and the most widely attended annual sporting event in the world – began in Yorkshire, England. Policy-makers stated that one explicit objective of hosting the Tour de France was to improving health outcomes and increase cycling activity within the Yorkshire region. The aim of this study was to investigate whether hosting the Tour de France improved the health and health-related behaviours of the local population.</p> <p>Method: This study used a difference-in-differences design with four waves of the Understanding Society panel survey. The pre- and post-Tour de France health and health-related behaviours of individuals in Yorkshire were compared with the rest of the UK. A short-term analysis, restricted to Wave 5, investigated cycling frequency, fruit & vegetable consumption, smoking behaviour, and participation in 13 different sporting activities. A long-term panel analysis with random effects investigated cycling frequency, physical, and mental health.</p> <p>Preliminary Results: In the short-term analysis (n=33,342 individuals), cycling in Yorkshire reduced by 3% (p=0.016) after the Tour de France relative to the rest of the country. In the long-term analysis (n=23,783 individuals), the Tour de France had no effect on cycling behaviour or physical health. Mental Component Summary scores, however, improved by 0.53 units (p=0.017) in Yorkshire after the Tour de France indicative of an improvement in mental wellbeing.</p> <p>Conclusion: The preliminary results suggest that hosting the Tour de France reduced cycling activity within Yorkshire in the short-term. Cycling has a high cost of entry compared with other sports; therefore, the increased exposure to professional cycling may have induced spill-over improvements in other health-related behaviours. Improvement in long-term mental wellbeing is consistent with findings that hosting major international sporting events can have intangible benefits on the local population, such as enhanced cohesion and greater social capital in the community.</p>

First author	Padraig Dixon (University of Bristol)
Co-authors	Neil Davies (University of Bristol), Will Hollingworth (University of Bristol), Sean Harrison (University of Bristol), George Davey Smith (University of Bristol)
Title	Modelling the causal effect of genetic liability to prevalent chronic health conditions on hospital costs using Mendelian Randomization
HESG ID	985
Time	Tuesday 7 January, 09.30-10.25
Abstract	<p>Background: Accurate measurement of the effects of health conditions on healthcare cost is important in the pragmatic evaluation of interventions but is complicated by endogeneity biases due to omitted variables and reverse causality. Mendelian Randomization, the use of random perturbations in germline genetic variation as instrumental variables, can avoid these limitations. We report the first such analysis of the causal effect of health conditions on healthcare costs.</p> <p>Methods: We used Mendelian Randomization to model the causal impact on inpatient hospital costs of six prevalent health conditions: asthma, eczema, migraine, coronary heart disease, type 2 diabetes, and major depressive disorder. The first three conditions are infrequently encountered in inpatient hospital settings and serve as negative controls (i.e. no causal effect is expected) for the other conditions. We obtained information on genetic variants from replicated genome-wide associations studies, and assessed their association with inpatient hospital costs using data from UK Biobank, a large prospective cohort study of over 500,000 individuals linked to records of hospital care. We assessed potential violations of the instrumental variable assumptions, particularly the exclusion restriction (i.e. variants affecting costs through alternative paths) and used methods to account for outlying genetic variants that contribute substantial heterogeneity to instrumental variable estimates. We also conducted our own genome wide association studies within the UK Biobank cohort as a further sensitivity analysis.</p> <p>Results: Genetic variants explained only a small portion of the variance in each health condition. Models for asthma, eczema and migraine were null. Coronary heart disease affected healthcare costs (approximately £27 per person per year per doubling of genetic liability to the condition) but type 2 diabetes and major depressive disorder associations were consistent with the null.</p> <p>Conclusion: We report the first Mendelian Randomization analysis of the causal effect of health conditions on healthcare cost. The modest precision of available data indicating genetic liability to prevalent long-term health conditions, and selection into the relatively healthy UK Biobank cohort, is likely to explain null results, suggesting the absence of evidence rather than evidence of absence. These considerations will challenge future work research using data from these and similar cohorts.</p>

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Title	Does public adult social care expenditure improve care-related quality of life in England?
HESG ID	1019
Time	Tuesday 7 January, 09.30-10.25
Abstract	<p>Objectives: To estimate the marginal productivity of changes in public adult social care (ASC) expenditure on measures of care-related quality of life (CRQoL).</p> <p>Background: ASC in England is provided to support people experiencing difficulties with their activities of daily living and is funded through a mix of public and private expenditure. Public ASC services are provided by 152 local authorities, which are funded through local taxation, a grant from the central government, and user contributions. Individuals that do not meet the financial and needs eligibility criteria to receive public ASC services may still purchase similar services from private providers. Private ASC expenditure is however half the public ASC expenditure. Our estimate of the marginal productivity can inform choices about which investment in ASC can be regarded as cost-effective and inform the broader policy question of whether more public expenditure should be devoted to ASC.</p> <p>Methods: We collected data on outcomes and characteristics of publicly funded ASC users and on expenditure and characteristics of local authorities across England in 2017/18. We employ an instrumental variable approach to estimate the effect of public ASC expenditure on users' CRQoL.</p> <p>Results: Our preliminary findings show that increasing public ASC expenditure by £1,000 per user generates 0.0027 additional CRQoL. This result is statistically significant at the 5% level. The first-stage results of the instrumental variable regression show that the instruments are relevant (i.e. the F-statistic is above 10) and valid (i.e. the over-identification test does not reject the null hypothesis of exogeneity of the instruments).</p> <p>Conclusions: Our results suggest that public ASC is effective in increasing users' quality of life. This result combined with other findings that show a significant effect of ASC expenditure on mortality can inform policy makers in the UK and around the world about whether social care provides good value for money. Moreover, our estimate of the marginal effectiveness of public ASC expenditure across LAs also informs an assessment of opportunity costs in the social care sector, which will aid judgement about the cost-effectiveness of alternative services and investments given current levels of funding.</p>

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Co-authors	Katherine Carr (Newcastle University), Richard Holmes (Newcastle University), Steve Morris (University of Cambridge), Georgios Tsakos (UCL), Chris Vernazza (Newcastle University), John Wildman (Newcastle University)
Title	Developing capitation formulae for NHS dentistry
HESG ID	984
Time	Tuesday 7 January, 10.30-11.25
Abstract	<p>Background: The amount of money dental practices receive from NHS England to deliver dental care is often determined by historical allocations and negotiations between health service managers and the dental practices. Funding for many of the services provided by other areas of the NHS are in part determined by allocation formula based on clinical indicators and socioeconomic data. To date no formula has been applied to NHS dentistry. There are currently proposed reforms to the NHS dental system in England that seek to introduce capitation for registered patients and some treatments. As such there is a need for the development of weighted capitation formula to allocate resources to geographical regions across England. Furthermore, there are major inequalities in oral health in England. Allocation formulas can be used to address inequalities in health and access to health care.</p> <p>Aim: This paper aims to discuss the development of a series of formula based on different potential measures of utilisation and need as well as the different proposed reforms.</p> <p>Methods: Formula are developed using available utilisation and supply data from the NHS Business service authority and proxies for need using socioeconomic indicators based on evidence from the Adult and Child Dental Health Surveys. The formula are estimated at the local area (CCG) level using a two-stage process, first controlling for age and sex and then introducing additional needs indicators controlling for supply.</p> <p>Results: Preliminary results indicate that there are large variances in the uptake of NHS dental services both geographically and based on the socio-demographic profile of individuals. The analysis models the extent to which geographic variation between CCGs can be explained by the socio-demographic profile of the population.</p>

First author	Xuemin Zhu (University of Aberdeen)
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Title	The role of GPs risk attitudes and personalities in the uptake of procedural or specialist services in rural areas
HESG ID	999
Time	Tuesday 7 January, 10.30-11.25
Abstract	<p>Objectives: Australia’s vast size and relatively small population mean that many rural areas and remote regions do not have hospitals equipped with in-house staff specialists. Services such as anaesthetics, surgery, obstetrics and emergency medicine are often delivered by procedural general practitioners (GPs) instead. The proportion of GPs delivering these services is declining in Australia’s rural areas. It is therefore important to investigate the determinants of the provision of procedural services. This paper aims to examine the role of risk preference and personality. Risk seeking GPs may be more likely to provide procedural services as these services are associated with risk. The personality of the GP may also play a role. For example, agreeable and conscientious physicians may feel more obligated to provide these services to rural residents. However, the role of risk preferences and personality in the uptake of procedural services has not been explored to date to any great extent.</p> <p>Methods: This paper uses data from the Medicine in Australia: Balancing Employment and Life (MABEL), a prospective panel study of Australian doctors. Waves 4 to 10 collect information on whether GPs are providing four different types of procedural services (anaesthetics, surgery, obstetrics or emergency medicine). Wave 2 includes the Big Five Inventory measure of personality. All new survey participants are also asked to complete the Big Five measure. Four waves (2013-2017) include questions about risk attitudes in the financial, career and clinical domains. Regression analysis is used to examine the role of risk attitudes and personality in the delivery of procedural services.</p> <p>Preliminary results: Preliminary results suggests that GPs who provide procedural services are more risk seeking in financial, career and clinical domains, they also score lower in neuroticism and agreeableness, and higher in openness. This result holds after adjusting for individual and practice characteristics.</p> <p>Conclusion: If the results hold then risk attitudes and personality should be taken into account when designing interventions or policies to improve the uptake of procedural services. For example, interventions that mitigate the risk of procedural services may encourage more risk averse GPs to offer these services.</p>

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Title	Using quality-adjusted service years to capture quality of life effects of sanitation programmes – an exploratory cost-effectiveness analysis
HESG ID	974
Time	Tuesday 7 January, 10.30-11.25
Abstract	<p>Background: Sanitation interventions improve health outcomes, but also quality of life (QoL) outcomes such as privacy, safety and dignity, which are valued by users. Comparing sanitation interventions within a health value framework risks misallocating resources. We aimed to illustrate a novel approach to cost-effectiveness analysis, by using quality-adjusted service years (QASYS) to capture QoL effects of sanitation interventions evaluated by the Maputo Sanitation (MapSan) Trial.</p> <p>Methods: We used a decision analytical model to compare two upgraded options, namely shared toilets (STs) and community sanitation blocks (CSBs), to the existing use of self-built shared pit latrines. For economic costs, we used a top-down analysis of capital costs and a bottom-up analysis of recurrent costs. For outcomes, we used a novel measure of sanitation-related quality of life (SanQoL) to weight QASYS, and estimated effects using regressions on household survey data. A QASY is one year of sanitation service for an individual at full sanitation capability. We calculated incremental cost-effectiveness ratios (ICERs) to compare QASY gains.</p> <p>Results: In the 11 urban neighbourhoods receiving the MapSan interventions, 7,200 people benefitted from STs and CSBs. The annual economic life-cycle cost per capita was US\$ 19.1 for the ST option (2015 prices) and \$32.4 for the CSB option, as compared to US\$ 2.2 for low-quality shared pit latrines. Point estimates for SanQoL index values were 0.84 (95% CI: 0.82-0.87) for STs, 0.79 (95% CI: 0.72-0.86) for CSBs and 0.49 (95% CI: 0.46-0.53) for pit latrines. In probabilistic sensitivity analysis of the base case, the ICER was US\$ 41 per QASY gained (95% CI: 37-45) for the ST, as compared to the pit latrine option. For the CSB, the ICER was US\$ 86 (95% CI: 72-104).</p> <p>Discussion: The ST dominates the CSB on costs and outcomes, so it is preferred unless there are strong engineering grounds for CSBs. The decision of whether to invest in the ST option at all depends on policy-makers' willingness to pay threshold for QASY gains, as yet unknown for a new metric. The use of SanQoL and the QASY allows a more powerful economic comparison of sanitation programmes than previously possible.</p>

First author	Simon Walker (University of York)
Co-authors	James Altunkaya, Mike Drummond, Aimee Fox, Nils Gutacker, Paul Revill, Mark Sculpher
Title	Programme evaluation and policy making: evidence for decision making
HESG ID	973
Time	Tuesday 7 January, 10.30-11.25
Abstract	<p>Programme evaluation of complex population and system level health policies has often focused on ex-post estimation of causal effects on short-term surrogate outcomes, using observational data. However, the value of such information is limited for decision makers. The failure to reflect the final outcomes of interest and disregard for opportunity costs prohibits the assessment of value for money. These evaluations also fail to consider other relevant evidence and the range of other potential policy specifications. Further, decision makers need evidence on a policy's expected impact and value for money when considering whether to introduce or continue it, as well as information on the value of producing additional evidence. The ex-post nature of typical policy evaluations fails to consider the value at different points across a policy's life cycle.</p> <p>In this paper, we explore how evaluations of complex population and system level policies could better meet the needs of decision-making and provide an assessment of value for money. We begin by defining the evidence required to inform decision-making in terms of the impacts on the outcomes of interest, the costs and associated opportunity costs, and the magnitude and consequences of uncertainty. We then review the literature to identify the key challenges described in evaluating population and system level policies. We categorise these challenges into groups linked to the evidence required for decision making, for example, challenges in defining the outcomes of interest, in identifying the mechanisms of action, in establishing causal effects, in estimating the opportunity costs and in the generalisability of evidence. Finally, we discuss the methods available to help tackle these different challenges so that relevant evidence for decision making can be produced. A broad set of methods is available, for example, decision-analytic modelling, theory of change, evidence synthesis, causal inference and elicitation. The appropriate set of methods will differ depending on the type of policy, the challenges posed and the time in the policy life cycle at which the evaluation is taking place. We use a series of case studies from low, middle and high income country settings to demonstrate how evaluations could be improved to better inform decision-making.</p>

First author	Claire de Oliveira (Centre for Addiction and Mental Health)
Co-authors	Joyce Cheng
Title	Understanding persistency in the high-cost state among mental health patients
HESG ID	945
Time	Tuesday 7 January, 11.45-12.45
Abstract	<p>Background: High-cost patients place a substantial burden on health care systems. Most research has examined high-cost patients as a whole; little research has examined patient sub-groups, such as those with mental illness, despite evidence suggesting they differ from other high-cost patients. The objectives of this analysis were to understand whether high-cost patients with mental illness persist in the high-cost state and explore whether the dynamics of being in this state are heterogeneous.</p> <p>Methods/Approach: Using administrative health care data from Ontario, we selected all patients in the ninetieth percentile of the cost distribution in 2010. Among all high-cost patients, we defined mental health high-cost patients as those for whom costs related to mental health and addiction care accounted for 50% or more of their health care costs. We followed these patients until 2017 and modelled mobility in and out of the high-cost state using panel linear probability models, while controlling for relevant socio-demographic and clinical characteristics. Persistent mental health high-cost patients were defined as those who remained in the high-cost state for 6 or more years. In addition, we examined whether persistency differed by age groups (young vs. old), neighbourhood income quintile (high vs. low) and administrative health region. Results: In 2010, there were 52,271 mental health high-cost patients. Persistent mental health high-cost patients made up 19.2% of all patients. These individuals were slightly younger (mean age = 42), made up of more males (53%), more likely to live in a low income neighbourhood (30%) and more likely to have a diagnosis of psychosis (66%) compared to other high-cost patients. Having a diagnosis of psychosis was identified as the main predictors of persistency in the high-cost state; younger age and living in more urban health regions were also important predictors but not neighbourhood level income.</p> <p>Conclusion: Roughly 20% of all mental health high-cost patients persisted in the high-cost state over 8 years. Having a diagnosis of psychosis was the strongest predictor of persistency. These findings will be useful to inform the development of appropriate case management and care coordination interventions, and to improve the design of care pathways for this population.</p>

First author	Yiu-Shing Lau (University of Manchester)
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Title	Impact of services in the community on hospital care
HESG ID	981
Time	Tuesday 7 January, 11.45-12.45
Abstract	<p>Background: It is often assumed that the improvement and expansion of care in community settings will ease increasing pressures on hospital services. The assumption of substitutability is tempting, as lowering hospital service use is expected to lower overall health care costs. However, improvements in community-based care may have complementary relationships with hospital services through newly-identified needs. These system-level relationships are critical to the economic case for expanding services in the community.</p> <p>There is a lack of evidence on how community and hospital services are related. The availability of new national data on community and GP services opens up the possibility to estimate how activity across different sectors is related.</p> <p>Aim: To assess whether activity in the community complements or substitutes services provided in hospitals.</p> <p>Method: We obtained monthly counts of community care contacts and community patient referrals between October 2017 and April 2019 from the national Community Services Data Set. We obtained monthly counts of primary care contacts between November 2019 and April 2019 from the national Appointments in General Practice dataset. We linked these to numbers of Accident and Emergency attendances, outpatient visits, and elective and emergency hospital admissions from Hospital Episode Statistics at a provider level. We used two-way fixed effects regression methods to identify the associations between different types of hospital activity and levels of activity in primary and community care services.</p> <p>Results: Preliminary analyses suggest that over the study period, NHS Trusts and Foundation Trusts have provided around 84% of all community care contacts and community care referrals. We find that community care contacts and referrals are weak complements with inpatient hospital service use (1 admission per 1000 care contacts and 5 admissions per 1000 referrals, both statistically significant at the 10% level). We do not find statistically significant results between community care contacts and referrals with Accident and Emergency use at the 10% level; however, the estimated coefficients suggest these services are substitutes.</p> <p>Conclusion: Initial findings suggests that the expansion of community care services may not lead to immediate reductions in hospital services as inpatient services and community services are found to be weak complements.</p>

First author	Niamh Carey (National Centre for Pharmacoeconomics/ Trinity College Dublin)
Co-authors	Dr. Laura Mc Cullagh (National Centre for Pharmacoeconomics/Trinity College Dublin), Dr. Lea Treala-Larsen (National Centre for Pharmacoeconomics), Dr. Arthur White (Trinity College Dublin)
Title	Expert Elicitation of Probability Distributions to Inform Survival Modelling of CAR T-Cells
HESG ID	1003
Time	Tuesday 7 January, 11.45-12.45
Abstract	<p>Introduction: In Ireland, the HSE commissions the National Centre for Pharmacoeconomics (NCPE) to assess the cost-effectiveness of new and existing technologies in order to inform the decision making process. The NCPE was commissioned in 2018 to conduct an HTA of the first commercially available CAR T-cells, tisagenlecleucel and axicabtagene ciloleucel. CAR T-cells are considered to be a major advancement in personalised cancer treatment, demonstrating promising outcomes in both relapsed/refractory diffuse large B-cell lymphoma (r/r DLBCL) and relapsed/refractory paediatric acute lymphoblastic leukaemia (r/r pALL). However, these results are based on short follow-up, limiting their value in predicting long-term estimates. This limited evidence base has also led to uncertainty in the most appropriate survival modelling method to employ.</p> <p>Objective: To use expert elicitation to derive long-term survival estimates of patients treated with CAR T-cells in r/r DLBCL and r/r pALL in order to address the structural uncertainty associated with the economic modelling of these agents.</p> <p>Methods: In order to generate long-term survival estimates of patients treated with CAR T-cell therapy, an expert elicitation method known as the histogram technique will be employed. In this method, a predefined discrete numerical scale is presented in Microsoft Excel® and the expert is asked to place 20 crosses on a frequency chart. These crosses represent the expert's belief about the distribution of a particular quantity, with each cross representing 5% of the distribution. Once the surveys are completed, individual distributions will be aggregated across experts using linear pooling. Aggregation will be conducted by assuming equal weight for each expert and also by assuming weights based on calibration. These weights will be generated based on the expert's response to a seed question. Due to the highly specialised nature of CAR T-cell therapy, experts will be identified by purposive sampling.</p> <p>Results: The results of this study will be used to calibrate CAR T-cell therapy survival estimates presented in HTA submissions to the NCPE, ensuring a more rigorous assessment. The study is expected to reach completion by the end of October 2019.</p>

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Title	Valuing care-related outcomes for economic evaluation: An application of the wellbeing valuation method
HESG ID	949
Time	Tuesday 7 January, 11.45-12.45
Abstract	<p>Objective: This study applies the “wellbeing valuation method” to weight care-related outcomes for carers in an economic evaluation alongside health-related outcomes for patients.</p> <p>Background: The inclusion of carer outcomes in economic evaluations is increasingly advocated to better inform policy decisions. This may involve including care-related quality of life (CRQoL), measured with instruments like the Carer Experience Scale (CES) and CarerQoL. How to include CRQoL outcomes in an economic evaluation alongside patient health-related quality of life (HRQoL) outcomes remains an open question.</p> <p>Method: We calculate an ‘exchange rate’ between HRQoL and CRQoL by extending the subjective-wellbeing valuation (WV) to derive the equivalent compensating HRQoL variation (CHV). Data on wellbeing, CRQoL and HRQoL are taken at baseline and 12 month follow-up from a recent carer QoL survey. In the base-case analysis, we used life-satisfaction as a proxy for utility. A Random effects model was used to estimate life-satisfaction as a function of carers’ HRQoL, CRQoL and a set of control variables. The ratio of the coefficients on the carer’s HRQoL and CRQoL determines the CHV. In the alternative case analysis, ICECAP-A replaces life-satisfaction as the proxy for utility.</p> <p>Results: For the Random effects model, we found the coefficients on the HRQoL and CRQoL to be both positive and statistically significant, regardless of the proxy used for utility. In the base-case, our estimates suggest that a one point gain in the CES score is equivalent to approximately a 0.014 gain in EQ-5D-5L value and 0.03 gain with CarerQoL as the outcome measure. Using ICECAP-A as the proxy for utility, we find a one point improvement in the CES is equivalent to a 0.010 gain on the EQ-5D and 0.018 when using CarerQoL.</p> <p>Conclusion: Where patients’ HRQoL and carers’ CRQoL has been collected, the ‘exchange rate’ derived in this study could be used as a potential method to reweight CRQoL. This could potentially provide an aggregate measure of benefit for carer-patient dyads and facilitate the inclusion of carer outcomes in economic evaluations.</p>

First author	Jon Gibson (University of Manchester)
Co-authors	Sean Urwin (University of Manchester), Sharon Spooner (University of Manchester), Kath Checkland (University of Manchester), Matt Sutton (University of Manchester)
Title	General practice employment models and job satisfaction: Evidence from the GP Worklife Survey in England 2001-2017
HESG ID	1026
Time	Tuesday 7 January, 13.45-14.45
Abstract	<p>Primary care is a vital component of many health systems, providing the first point of contact and continuing care for patients. High-quality primary care services have been shown to reduce mortality, health inequalities and improve health. In England, however, general practice is experiencing a 'crisis', with job satisfaction of general practitioners at their lowest point since 2001 and reported intentions of practitioners to quit patient care within five years being at an all-time high.</p> <p>The introduction of a new general medical services (GMS) contract in 2004 led general practices in England to possess the ability to hire either profit sharing members (principal GPs) or hired labour (salaried GPs). This change has provided GPs more options in the work model they can undertake and has provided principal GPs greater flexibility in how they manage their workforce.</p> <p>In this paper we utilise seven waves of the GP worklife survey (GPWLS) between 2001 and 2017 to examine how self-reported work satisfaction, work pressures and intended changes to working life for both salaried and principal GPs have changed over time. The GPWLS is a biennial paper questionnaire sent to a randomly selected sample of GPs in England. The time series consists of one sample from prior to the contract change and six samples at time points after the contract change. We estimate seemingly unrelated regression models to jointly estimate the impact of employment type (salaried/principal) on multiple self-reported job satisfaction scores in domains such as satisfaction with hours of work and remuneration, as well as overall job satisfaction. Initial estimates, controlling for demographics, suggest that the average overall job satisfaction and satisfaction with remuneration of principal GPs increased to be greater than that of salaried GPs, immediately after the contract introduction, but that this differential has diminished over time. In the hours of work satisfaction domain, salaried GPs have been consistently more satisfied than principal GPs.</p> <p>Such differential changes in satisfaction between principal and salaried GPs suggests that principal GPs may have initially benefitted from the introduction of the new contract. However, this relative positive satisfaction gap over salaried GPs has diminished over time.</p>

First author	Claire Sloan (Academic Unit of Health Economics Leeds Institute of Health Sciences Department of Medicine and Health University of Leeds)
Co-authors	John Baker (School of Healthcare, University of Leeds), Kathryn Berzins (School of Healthcare, University of Leeds), Chris Bojke (Leeds Institute for Health Sciences, University of Leeds)
Title	The impact of variation in patient/staff ratios on incidents in high risk environment inpatient mental health wards: Is the perceived relationship of more nurses equals more incidents correct or an artefact of endogeneity?
HESG ID	1010
Time	Tuesday 7 January, 13.45-14.45
Abstract	<p>Incidents in ‘high-risk environment’ inpatient mental health wards are considered a major source of both physical and psychological quality of life loss to patients and NHS staff and increased costs to the NHS. Nursing workforce volume and composition is considered a major policy-amenable instrument and was the focus of the third (but unpublished) NICE Safe-Staffing Review. As with other areas of nursing, there has been a decline in supply over time with an estimated 12% fall in NHS MH nurses between 2010 and 2017.</p> <p>The literature on nurse/patient staffing ratios is dominated by Bower’s City-128 study – an observational 6-month study of 136 acute psychiatric wards in 2004-05. The surprising conclusion from the study was that greater numbers of qualified nurses systematically lead to an increased probability of conflicts and incidents, a finding which is the opposite to that of the more general literature on nursing level impact. Post-hoc rationalisation suggests that qualified nurses are more likely to stand-up to aggressive patient behaviour and this may potentially escalate to incident and conflict. However, an alternative explanation is that the analysis has failed to adequately address potential problems of endogeneity bias caused by omitted variables – specifically that more staff are systematically allocated to wards where patient case-mix leads to a higher underlying probability of conflict.</p> <p>To address this issue we use longitudinal data from 9 wards from a single trust over a period of 3 months. Data include aggregate staffing levels and type; patient volume and classification and numbers and types of incidents over shifts. We exploit an early-evening shift change in which patient/staff ratios systematically change as a form of natural experiment. Rather than pooling data across ‘exchangeable’ experimental units as is common, we seek to explore the ways the wards differ from each other. We conclude that wards have systematically different ratios that are not fully explained by observable patient characteristics and furthermore that variations in patient/staff ratios are also likely endogenous. We do not systematically replicate Bower’s results and conclude via a more thorough exploration of the known methodological flaws that a directional bias is likely.</p>

First author	Fiona Kiernan (School of Economics, University College Dublin)
Co-authors	N/A
Title	What is the Value of a Level of Health? Mapping the Self Assessed Health Variable to a Utility Score using the Theory of the Demand for Health
HESG ID	946
Time	Tuesday 7 January, 13.45-14.45
Abstract	<p>Introduction: This paper examines if it is possible to reliably map the categorical variable of self assessed health to a utility score. Previous attempts have used linear regression and interval regression methods. However, research from the health outcomes literature has suggested that finite mixture models are appropriate mapping methods when transforming continuous health outcome measures to utility scores, because these models take account of the properties of bimodal and skewed distribution of utility scores. This paper also adds to the literature by harnessing the theory of the demand for health when selecting covariate.</p> <p>Methods: Using data from 2006 wave of the German SOEP dataset I compare two finite mixture models, the adjusted limited dependent variable mixture model and beta based mixture model, with the previously accepted ordinary least squares model, and interval regression. Using the best performing model I develop algorithms for each level of self assessed health, and test these using data from the 2008 wave. Additional robustness checks include out of sample testing as well as a shortened model that only includes socio-economic and demographic variables, instead of the theory of the demand for health.</p> <p>Results: I find that the adjusted limited dependent variable mixture model outperforms the other techniques for all goodness of fit measures. Furthermore, mixture models are helpful when taking account of the heterogeneity of individuals. The optimal model includes covariates relating to Grossman's theory of the demand for health. The derived algorithms can be used to predict health utility for additional waves, with an r^2 of 0.955 for the algorithm derived and model predicted utility scores.</p> <p>Conclusion: It is possible to map the categorical variable of self assessed health to a utility score using the adjusted limited dependent variable mixture model. This takes account of the properties of utility scores. Grossman's theory is helpful in explaining the relationship between levels of self assessed health and health utility. These techniques may be used in mapping the categorical self-assessed health variable to a utility score in large population level datasets for economic evaluations at a large scale.</p>

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Title	Incorporating economic evidence into Cochrane systematic reviews
HESG ID	957
Time	Tuesday 7 January, 13.45-14.45
Abstract	<p>Cochrane reviews are intended for international use in health care decision-making. Cochrane reviews aim to find, appraise, synthesise and rate the certainty of evidence on the effects of health care interventions (Intervention Reviews), diagnostic test accuracy (DTA reviews) and prognosis (Prognosis Reviews). The standard meta-analytic framework for a Cochrane Intervention Review focuses on synthesising statistical outcome data collected from eligible primary studies of intervention effects (e.g. effect sizes from randomised controlled trials), to derive more precise and less biased estimates of those effects. Reviews compare the effects of one or more pre-specified interventions, with those of one or more comparators, on a set of health outcomes considered important in decision-making, in a predefined patient population (PICO). Because resources are scarce and budgets are constrained, health care decisions also need to be based (implicitly or explicitly) on evidence for the impacts of interventions on the use of resources (costs), alongside evidence for their beneficial and adverse health and other effects (effectiveness).</p> <p>The Campbell and Cochrane Economics Methods Group (CCEMG) has developed two methods frameworks to facilitate the incorporation of economic evidence into Cochrane systematic reviews of interventions: the Brief Economic Commentary (BEC); and the Integrated Full Systematic Review of Economic Evidence (IFSREE). Both frameworks accommodate the twin considerations of economic and effectiveness evidence within an Intervention Review. The frameworks aim to enhance the relevance and applicability of the reviews and their findings and thus contribute to: (i) decision-making by an international audience of end-users and (ii) the development of de novo cost-effectiveness models.</p> <p>In contrast to the standard meta-analytic framework, BECs and IFSREEs do not aim to aggregate data from eligible economic evaluations to produce 'more precise' or 'less biased' estimates of incremental costs or cost-effectiveness, but instead adopt a more descriptive and explanatory approach. Both frameworks place the economic evidence within the context of the evidence for effects of the intervention on health outcomes.</p> <p>This paper will discuss the two economic methods frameworks in detail, elaborate on key factors influencing the choice between them and describe plans for their further development.</p>

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Co-authors	Vincenzo Carrieri (Department of Law, Economics and Sociology, “Magna Graecia” University of Catanzaro; RWI-Research Network), Andrew M. Jones (Department of Economics and Related Studies, University of York/ Centre for Health Economics, Monash University)
Title	A latent class approach to inequity in health using biomarker data
HESG ID	1022
Time	Tuesday 7 January, 15.30-16.30
Abstract	We develop an empirical approach to analyse, measure and decompose Inequality of Opportunity (IOp) in health, based on a latent class model. This addresses the limitations that affect earlier work in this literature concerning the definition of types- such as partial observability, the ad hoc selection of circumstances, the curse of dimensionality and unobserved type-specific heterogeneity- that may lead to either upwardly or downwardly biased estimates of IOp. We apply the latent class approach to quantify IOp in allostatic load, a composite measure of our biomarker data. Using data from Understanding Society (UKHLS), we find that a latent class model with three unobserved types best fits the data and that these types differ in terms of their observed circumstances. Decomposition analysis shows that about two-thirds of the total inequality in allostatic load can be attributed to the direct and indirect contribution of circumstances.

First author	Mario Martinez Jimenez (Lancaster University)
Co-authors	Professor Bruce Hollingsworth (Professor of Health Economics and lead the Health Economics at Lancaster group), Dr Eugenio Zucchelli (Senior Lecturer at Lancaster University)
Title	Does retiring during an economic crisis improve health? New evidence from the English longitudinal study of ageing
HESG ID	991
Time	Tuesday 7 January, 15.30-16.30
Abstract	<p>This paper explores short- and long-run impacts of retirement on both physical and mental health during the Great Recession. The Great Recession was the most severe economic crisis since the Great Depression and seriously affected most OECD countries, including the UK, whose recovery was particularly slow. This resulted in a long period (from December 2007 to June 2009) of high levels of job insecurity and economic uncertainty, affecting the entire working population. However, the effects of the Great Recession on health, and mental health more specifically, are not entirely conclusive. As such, in this paper we investigate whether moving into retirement during an economic crisis may reduce work-related stress and in turn improve health. We employ data from the second to the eight wave of the English Longitudinal Study of Ageing (ELSA), including observations pre- and post-recession (2004-2017). Our identification strategy is based on an Instrumental Variable Fixed Effects (IV-FE) approach and exploits statutory and early retirement eligibility rules as instruments to reduce potential endogeneity concerns. We also capture changes in macroeconomic conditions by exploiting timing and regional variation of the economic crisis as well as its severity. We estimate the effects of retiring on a series of mental as well as physical health outcomes, including specific diagnosed conditions (e.g. cancer, stroke, and diabetes); self-assessed health and well-being (e.g. self-rated health, life satisfaction and loneliness) and biological measures (e.g. body mass index, blood pressure and cholesterol levels). Moreover, we shed light on the mechanisms through which macroeconomic conditions may impact retirement and in turn health, by looking at health behaviours and income expectations as well as heterogeneous effects among sub-groups of individuals. Preliminary results indicate that retirement may improve mental health, even though there does seem to be considerable effect heterogeneity. Our analysis may help policymakers to design labour policies and incentives in order to better protect the health of their citizens, as well as, mitigate the employment effects of the next economic recession.</p>

First author	Marjon van der Pol (University of Aberdeen)
Co-authors	Alastair Irvine (University of Aberdeen), Verity Watson (University of Aberdeen)
Title	Does bias in personalised Decision Aids lead to lower use by doctors: a lab experiment
HESG ID	975
Time	Tuesday 7 January, 15.30-16.30
Abstract	<p>Asymmetric information is a barrier to doctors and patients choosing utility maximising treatments. Doctors can decide how much effort to take to overcome this asymmetry. Decision Aids (DA) can reduce the effort needed and have been promoted as part of shared decision-making. Recently developed DAs use stated-preference methods to elicit patients' preferences, predicting their 'preferred' treatments. However, DA predictions may be inaccurate for some patients by omitting a relevant treatment attribute, or behavioural biases in information presentation. This could lead to treatment choices that are inefficient (not welfare maximising). Increased use of DAs, combined with potential bias, mean it is important to know whether doctors reduce the use of DAs when the bias is sufficiently large.</p> <p>This is tested in a lab experiment where doctors spend effort points to receive information about patients' preferences. We include a Decision Aid, a short conversation, and a long conversation in the doctor's possible effort choices. The experiment has a three-arm, between-subjects design. In Arm 1 the DA is accurate for all patients, so is an efficient choice. In Arm 2 the DA is inaccurate for a large group of patients and is not efficient. In Arm 3 the DA is inaccurate, but the affected group is small. If subjects are utility maximising, DA use should be highest in Arm 1, lowest in Arm 2.</p> <p>The doctor consults 25 patients (of type A or B), choosing how much effort to exert, then makes a treatment recommendation the patient accepts. Information quality depends on patient type and an effort cost representing time and communication skill. Participants' income is decreasing in effort: the DA cost is between short and long conversations. Payments are based on one randomly chosen patient. We donate the patient's utility to charity and deduct the doctor's effort from their salary. The experiment is developed in oTree, using 150 students in the doctor role.</p> <p>Data are analysed using chi-square tests and regression analysis. Our results will have implications for understanding how DAs are used in practice, potentially anticipating barriers to adoption.</p> <p>Data collection is underway, with preliminary results available by the paper deadline.</p>

First author	Leonie Brinkmann (University of Manchester)
Co-authors	Rachel Elliott (University of Manchester), Sean Gavan (University of Manchester), Darren Ashcroft (University of Manchester), Niels Peek (University of Manchester)
Title	Estimating the economic impact of digital health interventions using routinely collected data and quasi-experimental methods: a case study in primary care patient safety
HESG ID	1024
Time	Tuesday 7 January, 15.30-16.30
Abstract	<p>Background: Digital health interventions (DHI) are increasingly used in health care. Implementation is often not based on trial-based effectiveness, but quasi-experimental methods. Estimating health and economic impact relies on use of routine data and process indicators rather than patient outcome data. DHIs are often implemented across a group of providers such that the cost is shared. The impact of these methodological challenges is examined in a case study of The Salford Medication sAfeTy daSHboard (SMASH), which is designed to reduce hazardous prescribing events (HPE) by interrogating electronic health records of general practices and providing feedback via a web-app. Pharmacists process feedback and advise on appropriate actions.</p> <p>Method/Design: SMASH was introduced in 43 practices in Greater Manchester (2016-2017). HPE rates before and after the introduction were compared using interrupted time series analysis. At 12 month HPE rates were reduced by 40.65% compared to the hypothetical comparator (extrapolated pre-intervention trend). Costs of SMASH from a health-care provider perspective were compared with standard care before SMASH. This involved identifying set-up and maintenance costs, as well as staff time incurred from dealing with HPE (accessed from field-notes). Costs were constructed at practice-level and combined with HPE reduction estimates to assess the economic impact of SMASH. Impact of different allocation methods of SMASH costs to practices was examined in sensitivity analysis as well as derivation methods for estimates of the hypothetical comparator.</p> <p>Results: HPE rates were 2.4% for standard care compared to 1.6% with SMASH. Cost for providing SMASH for 12 month were £1010 per practice resulting in £119 (SD ±15) per HPE avoided in a probabilistic analysis. Primary driver of total costs were costs for managing HPE. The number of HPE avoided by SMASH were highly impacted by the calculation method of standard care effectiveness.</p> <p>Conclusion: SMASH reduced the HPE rate, at an increased cost of £119. This analysis was not able to estimate economic impact of harm as only HPE were recorded, not patient outcomes. To date no gold standard on application of results from quasi-experimental studies in economic evaluation is available. We showed what options are available and what implications they have.</p>

First author	Charlie Moss (University of Manchester)
Co-authors	Thomas Allen (University of Manchester), Matt Sutton (University of Manchester), Sudeh Cheraghi-Sohi (University of Manchester)
Title	Patterns of preventable hospital admission amongst people who are homeless: a longitudinal study of hospital records in England 2013-2018
HESG ID	1009
Time	Wednesday 8 January, 09.30-10.25
Abstract	<p>Background: Homelessness is a major and growing problem in England. Homeless people experience significant barriers to accessing routine health care such as primary care. This may lead to more emergency hospital admissions but existing studies have focused on local areas and the national scale of this effect has not been estimated.</p> <p>Data and Methods: We use English hospital emergency department data to match 16,287 homeless patients to 16,287 homed patients on the basis of age, sex, region of attendance and broad primary diagnosis. We follow these matched pairs through admissions data for the following four years to count the number of emergency admissions and emergency admissions for an ambulatory care sensitive condition for each patient each year.</p> <p>Results: People defined as homeless have an incident rate ratio of 2.26 (CI 2.14 to 2.38) for emergency admissions and 1.77 (CI 1.48 to 2.11) for emergency admissions for an ambulatory care sensitive condition.</p> <p>Conclusion: For the first time, national data have been used to investigate one of the many potential health impacts of the poor access to health care experienced by the homeless. The health and wellbeing of the homeless is a complex societal problem in need of integrated solutions. Our findings suggest policies to improve primary care access may improve individuals' health while also reducing avoidable hospital admissions.</p>

First author	Jannis Stöckel (Erasmus School of Health Policy & Management, Erasmus University Rotterdam)
Co-authors	Werner Brouwer (Erasmus School of Health Policy & Management, Erasmus University Rotterdam), Job van Exel (Erasmus School of Health Policy & Management, Erasmus University Rotterdam)
Title	Adaptation in Life Satisfaction and Self-Assessed Health to Adverse Health Shocks – Evidence from the UK
HESG ID	997
Time	Wednesday 8 January, 09.30-10.25
Abstract	<p>Objective: Subjective quality of life measures, such as self-assessed health or subjective well-being, provide the advantage of capturing individuals’ perceived experiences and in the case of well-being incorporate broader benefits beyond health states. However, these measures pose practical and normative challenges. For example, several studies document individuals adapting to ill health with experienced utility reverting to pre-change levels across time. This paper explores the prevalence of adaptation to ill health across subgroups by analyzing subjective well-being and self-assessed health in comparison.</p> <p>Methods: We used all 8 waves (2009-2018) of the United Kingdom Household Longitudinal Study, a representative longitudinal survey of the adult UK population. The analysis sample contained 10,754 individuals providing information on life satisfaction, used as an experienced utility measure, self-assessed health and socio-economic control variables. Respondents are observed prior to the onset of a long-standing mental and/or physical impairment and followed for up to five years of continued affliction. We exploited the panel structure of our dataset using an ordered logit fixed effects model to explore the effects of ill health on self-assessed health and life satisfaction over time.</p> <p>Results: Our results regarding the onset of an undefined chronic condition indicate adaptation, both in self-assessed health and life satisfaction. While disease-onset negatively affects both subjective measures, for life satisfaction the effect becomes insignificant after three years. For self-assessed health the magnitude of the effect decreases starting in year four but remains negative. The pattern for self-assessed health stays consistent across gender and age subgroups, but not for life satisfaction. Life satisfaction among men seems to adapt faster than women while elderly and younger individuals seem to adapt earlier compared to middle-aged respondents.</p> <p>Discussion: The results are in line with previous studies providing evidence on adaptation to ill health among specific subgroups, such as younger or elderly individuals. We provide new evidence based on a general population sample, and for two subjective quality of life measures side-by-side. In ongoing analyses, we aim to explore additional heterogeneity by differentiating between dimensions of mental and physical health.</p>

First author	Timea Helter (Department of Health Economics, Center for Public Health, Medical University of Vienna)
Co-authors	Agata Ł ASZEWSKA (Department of Health Economics, Center for Public Health, Medical University of Vienna), Tanja Stamm (Section for Outcomes Research, Center for Medical Statistics, Informatics, and Intelligent Systems, Medical University of Vienna), Joanna Coast (Health Economics Bristol, Population Health Sciences, Bristol Medical School, University of Bristol), Judit SIMON (Department of Health Economics, Center for Public Health, Medical University of Vienna; Department of Psychiatry, University of Oxford)
Title	Empirical comparison of capability instruments in mental health research: OcCAP-MH vs. ICECAP-A in schizophrenic patients with depression
HESG ID	951
Time	Wednesday 8 January, 09.30-10.25
Abstract	<p>Background: A recent literature review suggests that two capability instruments have been validated for adult populations with mental health problems. The Oxford CAPabilities questionnaire-Mental Health (OxCAP-MH), rooted in Nussbaum’s central human capabilities, was published in 2013. It is a questionnaire with 16 items, validated for most mental health diseases, and its scores share an equal contribution to the overall score. The ICEpop CAPability measure for Adults (ICECAP-A) was published between 2009-2012 drawing on the capability approach and using qualitative methods to generate attributes. The questionnaire has 5 items, is validated for the adult population and specifically for depression and opiate dependence, and has a value set derived from the UK general population. While both instruments are grounded in the capability approach and have been implemented in the mental health context, the properties of OxCAP-MH and ICECAP-A have not been compared to each other.</p> <p>Objectives: The paper aims to comprehensively compare the properties of the OxCAP-MH and ICECAP-A instruments in schizophrenic patients with depression.</p> <p>Methods: The analysis was based on OxCAP-MH and ICECAP-A data from the same 100 patients. The properties of the two instruments were compared in terms of feasibility of completion; correlations between the OxCAP-MH, ICECAP-A, EQ-5D-5L and VAS scores; minimal important differences; and comparative assessment of sensitivity to change. Exploratory factor analysis (EFA) investigated the extent to which the instruments measure complementary or overlapping constructs. The pattern and extent of agreement between OxCAP-MH and ICECAP-A was plotted on Bland-Altman diagrams.</p> <p>Results: The analysis found no significant differences in the feasibility of completion between OxCAP-MH and ICECAP-A. Different aspects of the analysis confirmed that the capability instruments have stronger associations and are more correlated to each other than to health-related instruments. The EFA with four factors found that the EQ-5D-5L and most ICECAP-A items load on up to two common factors, whilst some of the OxCAP-MH items spread to two further factors. In terms of sensitivity to change, OxCAP-MH appeared more sensitive to capture small changes, whilst ICECAP-A seemed to better capture bigger changes. The findings seem to depend on whether the analysis was based on preference-based or raw scores.</p>

	<p>Note: We would welcome comments on the choice of methods and their use, the presentation of results, and suggestions for further analysis in this PhD research, from HESG participants.</p>
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First author	Rachel Baker (Glasgow Caledonian University)
Co-authors	Helen Mason (Glasgow Caledonian University), Neil McHugh (Glasgow Caledonian University), Cam Donaldson (Glasgow Caledonian University)
Title	What does 'The Public' think?! What to do when people disagree and why economists should care about reasons as well as choices
HESG ID	977
Time	Wednesday 8 January, 09.30-10.25
Abstract	<p>Public values are increasingly emphasized in health priority setting both in the academic literature and as a requirement of the institutions that make up the health system. However, it is one thing to agree that public values are important and another to agree how those values should be elicited, deliberated and integrated into decision-making.</p> <p>Surveys of public values will rarely deliver unanimity, and preference heterogeneity, or plurality, is to be expected. Plurality presents challenges, though, for policy recommendation. How can one policy take account of multiple, competing perspectives? How can plurality be made visible and respected but resolved for policy development? Different disciplines take different approaches to address plurality, placing more or less emphasis on counting (majoritarian, strength of preference), coherence (logical consistency and moral argument) and consensus (deliberative, talk-centred methods) but generally there are two routes to resolution of plurality: aggregation or deliberation.</p> <p>This work-in-progress paper outlines the strengths and weaknesses of aggregative and deliberative approaches to public values in priority setting. To set our discussion into a real context we draw on empirical literature in relation to public values and the provision of life-extending medicines for people with terminal illnesses, when medicines are high cost and of limited effectiveness. This has seen a number of recent preference studies in health economics and a few qualitative and mixed methods studies. We argue that no single approach is sufficient to satisfactorily resolve plurality in public values for health priority setting.</p> <p>We conclude that an interdisciplinary framework is required, that would combine choice data with participants' policy preferences and their values at higher levels of abstraction, and would permit transparent consideration of heterogeneity, consistency and consensus. We provide an initial proposal for such a framework, influenced by Sunstein's Incompletely Theorised Agreements, for discussion and debate.</p>

First author	Anam Bilgrami (Macquarie University Centre for the Health Economy)
Co-authors	Dr Kompal Sinha (Department of Economics, Macquarie University), Dr Henry Cutler (Macquarie University Centre for the Health Economy)
Title	Constructing a valid counterfactual to evaluate an income-targeted policy: means-tested subsidies and tax penalties on private health insurance coverage
HESG ID	948
Time	Wednesday 8 January, 10.30-11.25
Abstract	<p>Many governments intervene in private health insurance (PHI) markets to incentivise demand, balance efficiency and equity, and counter adverse selection. In the context of rising health care costs, this is a complex task, and understanding the relative effectiveness of interventions can help governments design an optimal policy mix. We evaluate the impact of means-testing a premium rebate and increasing an income tax penalty rate on PHI hospital coverage in Australia. We employ difference-in-difference (DID) analysis on a Household Income and Labour Dynamics in Australia (HILDA) survey panel of 6,179 individuals. To construct a valid control group, individuals below the policy income threshold are matched to the intervention group using entropy balancing on pre-treatment covariates and trends. Our analyses suggest that FPHI increased the probability of holding hospital cover by 1.5 to 1.8 percentage points ($p < 0.05$ to < 0.1). The effect was driven by a significant increase in coverage of 2.4 percentage points ($p < 0.1$) for those in the highest income tier. Estimates were relatively robust to sensitivity analyses, including removing those with complicated income streams and removing potential income shifters. Our findings suggest that increased tax penalty rates had a stronger impact than means-testing premium rebates, most likely due to the low price elasticity of PHI demand in Australia. We discuss these findings in the context of developing an efficient policy mix to attract and maintain PHI members in Australia and the US to promote PHI market sustainability.</p>

First author	Emma McManus (University of Manchester)
Co-authors	Rachel Meacock (University of Manchester), Paul Wilson (University of Manchester), Judith Gellatly (University of Manchester), Matt Sutton (University of Manchester)
Title	Exploring the effect of financial compensation on GP referrals to a prevention programme
HESG ID	976
Time	Wednesday 8 January, 10.30-11.25
Abstract	<p>Background: Prevention programmes need to enrol a sufficient and suitable supply of participants to be successful. We consider the NHS Diabetes Prevention Programme, which aims to identify 200,000 people per year with non-diabetic hyperglycaemia who are at-risk of developing Type 2 Diabetes. The programme is delivered by non-NHS providers, but the majority of participants are identified and referred by GP practices. In some areas, GP practices were offered financial compensation for identifying and referring participants. We analyse the impact of variations in this compensation on referral rates.</p> <p>Aim: To evaluate the effects of the existence and structure of financial compensation on GP referrals to a prevention programme.</p> <p>Methods: We surveyed areas participating in the Diabetes Prevention Programme to establish if and what types of financial compensation were used to encourage referrals from GP practices. We linked this information to recently published data from the National Diabetes Audit, which provides practice-level statistics on numbers of patients identified as at-risk and numbers referred into the Diabetes Prevention Programme, as well as summary statistics on their characteristics (age, body mass index, ethnicity and index of multiple deprivation). We also linked to national datasets on practice characteristics (including size, contract type and other reimbursements) and characteristics of their registered populations (including age composition, deprivation and rurality). We use count data regression models to identify the impact of the presence and structure of financial compensation on rates of referral to the Diabetes Prevention Programme, conditional on practice and population characteristics.</p> <p>Results: We received responses from 9 out of the 11 sites participating in Wave 1 of the Diabetes Prevention Programme and 11 out of the 14 Wave 2 sites. Some sites reported that they offered no financial compensation. Amongst those that offered payments, the compensation structure varied from unconditional per-capita payments, to payments for referral letters sent, to payments per participant referred. The outcome-based compensation schemes induced the highest referral rates. We are currently examining how this response varies across practice and population characteristics.</p> <p>Conclusion: Identifying how compensation schemes impact referral rates can increase cost-effectiveness and inform the future design of prevention programmes.</p>

First author	David Mott (Office of Health Economics)
Co-authors	Nour Chami (City, University of London; Evidera), Tommi Tervonen (Evidera)
Title	Uncertainty in patient trade-offs: issues in the reporting of marginal rates of substitution in discrete choice experiments
HESG ID	994
Time	Wednesday 8 January, 10.30-11.25
Abstract	<p>Background: Discrete choice experiments (DCEs) are commonly used to elicit patient preferences for treatment characteristics. DCEs can be used to estimate marginal rates of substitution (MRS), which illustrate the trade-offs that respondents would make between attributes, illustrating the likes of maximum acceptable risk and willingness to pay. As MRS are an important behavioural output, and are often incorporated into other analyses, it is essential that uncertainty is reported. Whilst uncertainty can be estimated by utilising other commonly reported information (i.e. coefficients and their standard errors [SEs]), doing so may be inaccurate as covariances are seldom reported.</p> <p>Objectives: The primary objective of this paper was to review recently published DCE studies that elicit patient preferences in relation to the reporting of MRS. A further objective was to explore the accuracy of using other reported information to estimate the uncertainty of MRS when it is not reported.</p> <p>Methods: A systematic literature review of DCEs conducted with patients and published between 2014-2019 was performed. The number of studies reporting coefficients and MRS, as well as SEs or confidence intervals (CIs) for both, was recorded. Studies that provided full information were included in an MRS analysis whereby SEs were re-estimated using the delta method assuming zero covariance, to determine the impact that this assumption might have.</p> <p>Results: 245 studies were identified for full text screening. 62% (n=152) of studies reported coefficients, and 32% (n=79) reported one or more MRS. Of the studies that reported MRS, only 62% (n=49) provided an estimate of the uncertainty (i.e. SE or CI). Of these studies, 17 contained enough information for inclusion in the MRS analysis. Re-estimating SEs assuming zero covariance often led to substantially inaccurate estimates of the true SE; the error was >25% in over a third of all SEs calculated.</p> <p>Conclusions: Despite being good practice, the uncertainty of MRS are not reported in a significant proportion of recently published DCE studies. Our analysis indicates that SE estimates of MRS based on other reported information will often be biased as covariances are not reported and, although often small, cannot be assumed to be zero.</p>

First author	Michael Drummond (Centre for Health Economics)
Co-authors	Carlo Federici (Bocconi University, Milan), Vivian Reckers-Droog (Erasmus University, Rotterdam), Werner Brouwer (Erasmus University, Rotterdam)
Title	Challenges in coverage with evidence schemes for medical devices: A European survey
HESG ID	1006
Time	Wednesday 8 January, 10.30-11.25
Abstract	<p>Coverage with evidence development (CED) schemes have been proposed as an approach for reducing the decision uncertainty surrounding new health technologies. Under these schemes, the new technology is recommended for use on the condition that further evidence on effectiveness and/or costs is gathered in order to inform a final decision on the technology's reimbursement and use.</p> <p>In principle, medical devices are good candidates for CED, since the clinical data available at market entry are often sparse and cost-effectiveness in real-world use is often dependent on user skills and organizational characteristics. However, despite being a promising approach, experience with CED to date is predominantly with pharmaceuticals, and a number of challenges in the design and implementation of schemes have been identified.</p> <p>The objective of this research was to explore the challenges with CED schemes for devices and how these challenges are being tackled in EU member states. Based on a systematic review of the literature, we identified 13 challenges relating to study design, data collection, monitoring and implementation of CED schemes. We then surveyed those policy makers responsible for medical device appraisal in EU member states, to obtain details of CED schemes for medical devices in their jurisdiction, to determine their views about the various challenges, and to ascertain how these have been tackled in any existing schemes.</p> <p>Experts from 15 countries agreed to be interviewed, and 6 of them reported on existing schemes for devices. The procedures to initiate, implement and monitor CED schemes vary across countries, including the eligibility criteria, type and roles of the stakeholders involved, funding arrangements, and the mechanisms to implement policies based on study results. Overall, experts agreed that device characteristics, such as the existence of a learning effect, short product life cycle and incremental innovations require particular attention when determining the desirability and design of schemes. However, no explicit guidelines exist on how to address these characteristics.</p> <p>The results obtained should help policy makers to anticipate the likely challenges in CED schemes and to identify aspects of good practice in the design and implementation of schemes that they could follow in their own jurisdiction.</p>

First author	Sean Urwin (University of Manchester)
Co-authors	Yiu-Shing Lau (University of Manchester), Gunn Grande (University of Manchester), Matt Sutton (University of Manchester)
Title	The effect of informal care provision on the allocation of time
HESG ID	1021
Time	Wednesday 8 January, 11.45-12.45
Abstract	<p>Introduction: There is increasing recognition of informal care as an input to health production and an aspect that needs to be taken account of in the evaluation of interventions. As informal care provision is often unpaid, there are difficulties in its measurement and valuation. The time diary method is seldom used but has the potential to provide a detailed understanding of the allocation of a carer's time. More accurate valuations of informal care can be obtained by identifying the types of activity that are displaced to accommodate caregiving.</p> <p>Aim: To estimate the time and types of activity foregone to accommodate caregiving within a time budget framework.</p> <p>Method: We use data from the innovation panel (wave 7 from 2014) of the UK Household Longitudinal Study. 1288 individuals completed both a recall questionnaire and a time diary. We use multivariate fractional regression models to estimate how being a carer affects the time spent on a variety of types of tasks. We use propensity scores to match non-carers with similar characteristics to carers.</p> <p>Results: 147 (11.41%) of the 1288 respondents identified as carers in the time diary. They spent an average of 106 minutes per diary day providing care which displaced leisure and sleep time.</p> <p>Implications: This study provides new evidence on how caregiving affects the distribution of individuals' time across a range of activities. The types of activities foregone should be taken into account when considering a valuation method for informal care.</p>

First author	Iris Lopes-Rafegas (City, University of London)
Co-authors	Mireia Jofre-Bonet, Agne Suziedelyte
Title	The effect of peer-group weight indicators on the onset of eating disorders
HESG ID	958
Time	Wednesday 8 January, 11.45-12.45
Abstract	<p>We investigate whether the weight of peers influence irregular health behaviours, particularly the onset of eating disorders. We identify two differentiated peer groups: within school peer group based on individual friendship nominations, and the grade-school group which is composed by those individuals that share the same grade and school. Using AddHealth data we generate several weight related linear-in-means peer indicators.</p> <p>The preliminary OLS results suggest that there is a positive relationship between higher proportion of below-average-weight friend-peers and the onset of eating disorders. Contrarily, the proportion of underweight friend-peers has a negative effect on the onset. Both weight references are only statistically significant for the female subsample. OLS results are robust to the addition of network contextual variables and physical development of the peer group.</p> <p>Following the OLS estimation, we use an instrumental variable (IV) approach in order to assess the potential endogeneity in peer-group formation emerging from friendship nominations. Under the assumption of intransitive triads, we propose as an instrument peers-of-peers measures. In the first stage, results show that peers-of-peers is a good predictor of peers' characteristics. Second stage IV estimates show no significant peer group effects. This result suggests that the positive correlation observed in the OLS model is driven by group sorting rather than the presence of peer effects.</p> <p>When considering the grade-school group our identification strategy is based on exogenous group formation, by exploiting within grade and school variation. We observe that the presence of clinically diagnosed ED peers in the grade-school reference group is strongly and negatively affecting the onset of eating disorders. We observe that this effect is only observed on the female sample and that the relevant comparison group for the female sample is the female grade-school group. Preliminary discussion of the results suggest that the presence of severe cases, often associated to diagnosed individuals, within grade-school deters irregular health behaviours.</p>

First author	Chris Sampson (Office of Health Economics)
Co-authors	N/A
Title	Risk calculation engines, cost-effectiveness analysis, and Microsoft Excel: lessons from an intractable model
HESG ID	1011
Time	Wednesday 8 January, 11.45-12.45
Abstract	<p>Background: Decision analytic cost-effectiveness models are increasingly complex. One contemporary demonstration of this is the potential to integrate risk calculation engines, which can be used to dynamically determine parameters within a model. Microsoft Excel is one of the most commonly used software packages for the development of cost-effectiveness models, but it has recently faced criticism due to its supposed limitations. The purposes of this paper are twofold. First, I provide guidance on the incorporation of risk calculation engines into cost-effectiveness models. Second, I outline some of the practical limitations of Excel in this context.</p> <p>Methods: A model to evaluate the cost-effectiveness of risk-based screening for diabetic eye disease was developed in Excel. The model started life as a cohort state transition model and ended as a state-based individual sampling model. It included a recently published risk calculation engine, which determined disease progression and event pathways. The simulation was too computationally demanding to run within any reasonable time frame.</p> <p>Results: I identified three key barriers to using Excel for the development of cost-effectiveness models that include risk calculation engines: i) difficult mathematical problems, particularly computation of the matrix exponential; ii) high-precision time observation; and iii) large and heterogeneous populations. Adjustments to the model were challenging due to its structural inflexibility. Tactics to partially overcome these barriers included efficient coding and judicious simulation procedures.</p> <p>Discussion: Cost-effectiveness models that incorporate risk calculation engines can be built in Microsoft Excel, but it is not advisable. The complexity required from our model increased over time, due to changes in policy. The model was able to simulate a large number of pathways but required some mathematical simplifications. Adjustments to the individual sampling model increased its efficiency greatly, reducing the estimated simulation duration from 458 years to 12 years. Most of my findings relate to the limitations of Excel, though I highlight general lessons for those seeking to incorporate a risk calculation engine into a cost-effectiveness model.</p>

Posters

A dedicated poster session will take place on Tuesday 7th January between 14.45 and 15.30. Posters will also be available to view throughout the conference.

First author	Sarah Jane Abraham (University of Leeds)
Co-authors	Professor Sandy Tubeuf (Université Catholique de Louvain, Institute Health and Society – Institute of Economic and Social Research)
Title	Self and parent completed health-related quality of life of children: lessons from a pilot study
HESG ID	961

First author	Saima Arif (Pakistan Institute of Development Economics)
Co-authors	Dr. Shehzad Ali (Department of Health Sciences, University of York), Katja Grasic (Center of Health Economics, University of York), Dr. Muhammad Nasir (PIDE)
Title	Is Higher Hospital Efficiency Associated with Higher Quality of Care? Evidence from Pakistan
HESG ID	966

First author	Rose Atkins (University of Manchester)
Co-authors	Alex Turner (University of Manchester), Matt Sutton (University of Manchester), Tarani Chandola (University of Manchester)
Title	The relationship between early-life non-cognitive skills and later-life health: going beyond the mean with the SF-6D and biomarkers
HESG ID	936

First author	Garima Dalal (University of Manchester)
Co-authors	Iain Leslie (Health Improvement Scotland)
Title	Achieving a 'stage shift' in lung cancer: an economic evaluation of earlier interventions to improve patient outcomes from the National Health Service perspective
HESG ID	1025

First author	Hannah Hussain (University of Manchester)
Co-authors	Dr Elizabeth Camacho (University of Manchester), Professor Rachel Elliott (University of Manchester)
Title	Measuring health benefit for economic evaluations in people with dementia
HESG ID	993

First author	Likun Mao (The Irish Longitudinal Study on Ageing (TILDA), Trinity College Dublin)
Co-authors	Prof. Colin P. Green (Dept of Economics, Norwegian University of Science and Technology), Dr. Vincent O'Sullivan (Dept of Economics, Lancaster University Management School)
Title	The Effect of Internet Use on the Cognition of Retirees
HESG ID	959

First author	Laurie Racquet-Jacquet (Centre for Health Economics, University of York)
Co-authors	N/A
Title	Do surgeons forget? Investigating the impact of days out of practice on health outcomes for emergency hip fracture patients
HESG ID	953

First author	Colin Ridyard (Centre for Health Economics and Medicines Evaluation, Bangor University)
Co-authors	Joanne Blair MD (Department of Endocrinology, Alder Hey Children’s NHS Foundation Trust), Dyfrig A Hughes PhD (Centre for Health Economics and Medicines Evaluation, Bangor University); On behalf of SCIPi Trial Investigators [Members of the SCIPi Trial Management Group were: Joanne Blair (chair and chief investigator), Carrol Gamble (senior statistician), Andrew McKay (study statistician), Dyfrig Hughes (lead health economist), Colin Ridyard (health economist), Matthew Peak (co-investigator), John Gregory (co-investigator), Mohammed Didi (co-investigator), Francesca Annan (co-investigator), Keith Thornborough (nurse specialist) and Emma Bedson (senior trials manager)].
Title	Cost utility analysis of continuous subcutaneous insulin infusion in UK pediatric patients newly diagnosed with Type 1 Diabetes
HESG ID	996

First author	Inna Thalmann (Health Economics Research Centre, University of Oxford)
Co-authors	Iryna Schlackow (Health Economics Research Centre, University of Oxford), David Preiss (Clinical Trial Service Unit & Epidemiological Studies Unit, University of Oxford), Alastair Gray (Health Economics Research Centre, University of Oxford), Borislava Mihaylova (Health Economics Research Centre, University of Oxford)
Title	Socioeconomic differences in medication use for the secondary prevention of cardiovascular disease in 2009-2017 Scotland
HESG ID	980

First author	Bernarda Zamora (Office of Health Economics)
Co-authors	Ioannis Laliotis (LSE), Graham Cookson (OHE)
Title	Labour Productivity and Skill Mix in Maternity Services: Evidence from the English NHS
HESG ID	960

First author	Lorna Tuersley (Bangor University)
Co-authors	Nathan Bray (Bangor University), Jennifer McAnuff (Newcastle University), Louise Tanner (Newcastle University), Fiona Beyer (Newcastle University), Dawn Craig (Newcastle University), Jane Noyes (Bangor University), Dor Wilson (Newcastle University), Aimee Grayston (NHS Leeds Community Healthcare Children’s Services), Rhiannon Tudor Edwards (Bangor University), Niina Kolehmainen (Newcastle University)
Title	Early Mobility and Powered Wheelchair Review (EMPoWER): Developing a tariff of costs and budget impact analysis for paediatric powered mobility provision

HESG ID	1031
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First author	Francesco Ramponi (Centre for Health Economics, University of York)
Co-authors	Susan Griffin (Centre for Health Economics, University of York)
Title	Cross-sectoral evaluation of the Malawi's Social Cash Transfer Programme
HESG ID	990