



## HESG Summer Abstract booklet

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Hosted by the Centre for Health  
Economics at Warwick (CHEW)



**ID:** CHEW0003

**Title:** Current challenges and potential solutions when evaluating the cost-effectiveness of newborn genome sequencing: a long road ahead?

**First author:** James Buchanan, Queen Mary University of London

Every baby in the UK is currently offered newborn blood spot screening in the first five days of their life. This test can detect nine rare and serious health conditions, including sickle cell disease and cystic fibrosis.

Genomics England recently announced the launch of a Newborn Genomes Programme (the “Generation Study”). This study aims to understand whether sequencing babies’ genomes can help to discover more rare genetic conditions, early in life, improving outcomes and quality of life for babies and their families. A pilot study beginning in 2024 will sequence and analyse the genomes of 100,000 babies, considering 223 individual conditions caused by changes in over 500 different genes. These conditions usually appear in the first five years of life and, if identified early, can be improved by a treatment or intervention available through NHS England.

Alongside evaluating the utility and feasibility of screening for these conditions, the Generation Study will also investigate how genomic data could improve knowledge and treatments, and explore the risks and benefits of storing an individual’s genome over their lifetime.

The Generation Study is one of several newborn sequencing studies worldwide (e.g. BabySeq, The Guardian Study). Many of these studies include a health economic evaluation. Evaluating the cost-effectiveness of genome sequencing in any context is challenging, due to issues surrounding the measurement of costs and outcomes, uncertainty over the appropriate analytical approach, and weak test effectiveness data. These challenges are exacerbated in a newborn context, in particular the measurement of health and non-health outcomes. The health technology assessment landscape for newborn sequencing in England is also complex, with multiple potential decision-makers such as the National Screening Committee (NSC).

This paper will outline the challenges associated with evaluating the cost-effectiveness of newborn sequencing. The approach to economic evaluation in the Generation Study will be compared and contrasted with the analyses planned in other newborn sequencing studies. Potential solutions to some challenges will be proposed, with a key focus on harmonising the collection of data on health and non-health outcomes globally to ensure implementation decisions reflect a robust evidence base.

**ID:** CHEW0004

**Title:** You've Been Framed: The impact of risk and time framings on contraceptive preferences elicited through a discrete choice experiment

**First author:** Matthew Quaife, Evidera

Previous research shows that choices are influenced by how probabilities are described and presented. Likewise, on average we value the impact of losses more than equivalent gains. In addition, we have been shown to suffer from collective statistical illiteracy and misunderstand, for example, the cumulative impact of risk over time. These factors are important when designing discrete choice experiments (DCEs) because almost all DCEs include some representation of probability, usually the likelihood of a treatment-induced benefit or side-effect, alongside a time period over which that risk is incurred.

Contraceptive choice is one of the most common choices worldwide and requires potential users to make risk-benefit trade-offs between efficacy, side effects, and mechanisms of delivery and action. In this study, we used a DCE to explore whether people choose differently when faced with positive or negative framings of contraceptive effectiveness, alongside whether people valued one-year or three-year cumulative risks differentially.

We developed an online survey and collected choice data through a simple, eight-task DCE with three attributes: effectiveness, frequency of administration, and a hormonal or non-hormonal method. Participants were randomised to see the effectiveness attribute as positive or negatively framed with numerically equivalent levels e.g., 80% will not become pregnant versus 20% will become pregnant. Additionally, numerically equivalent one-year and cumulative three-year effectiveness values were varied in a within-participant design. We used mixed multinomial logistic regression models with interaction terms to assess the impact of framings and explored heterogeneity in attribute and framing coefficients.

We found that both framings significantly and independently affected preferences for contraceptive effectiveness. The negative frame increased women's sensitivity to contraceptive effectiveness: one percentage point of effectiveness was valued 18% more under the negative framing ( $p=0.04$ ), compared to the positive frame. Sensitivity to one percentage point of cumulative effectiveness over three years was 10% less than over one year ( $p=0.01$ ). Preferences were heterogeneous with respect to attributes, but not framing effects.

Attribute framings substantially affected preferences for contraceptive effectiveness. These findings highlight the need for standardised reporting and presentation of probabilistic outcomes in DCEs, and decisions around risk presentation should be reported transparently.

**ID:** CHEW0005

**Title:** Is it cost-effective to induce early to prevent shoulder dystocia? Evidence from the Big Baby trial

**First author:** Seyran Naghdi, University of Warwick

**Background:** Shoulder dystocia is when the fetal shoulder is stuck behind the mother's pubic bone delaying the birth of the baby. Large-for-gestational age fetuses are at a greater risk of shoulder dystocia and inducing mothers earlier seeks to reduce this risk. We assessed the cost-effectiveness of earlier labour induction compared to standard care in preventing shoulder dystocia.

**Methods:** A prospective, multicentre randomised control trial of pregnant women with estimated fetal weight >90th centile who underwent either earlier induction at 38+0 to 38+4 weeks gestation or standard care. Resources used and costs were measured from randomisation to six months postpartum from an NHS and personal social services perspective. Outcomes included the number of cases of shoulder dystocia prevented for babies and quality-adjusted life years (QALYs) for mothers. Base-case analyses estimated incremental cost per case of shoulder dystocia prevented and an incremental cost per QALY gained.

**Findings:** 2,893 women were randomised; 1,447 to earlier induction. The induction group had a lower incidence of shoulder dystocia (Mean difference (MD): 0.75%, 95% confidence interval (CI): -0.45% to 1.95%). There was a non-significant QALY gain in the induction arm compared to standard care (MD: 0.0023, 95% CI: -0.0005 to 0.0051). However, neonatal costs in induction arm were significantly higher (MD £331, 95% CI: £42-£620,  $p=0.02$ ). The combined (women and baby) costs in the induction arm were greater than in the standard care arm (MD: £89, 95% CI: -£79 to £257) over six months. The incremental cost of preventing one case of shoulder dystocia costs was £11,879. Based on hypothetical cost-effectiveness thresholds of £5,000, £10,000, and £20,000: the probability of labour induction being cost-effective was 0.32, 0.45, and 0.65, respectively. The incremental cost per QALY gained was £39,518, indicating that labour induction was not cost-effective at the £20,000 and £30,000 thresholds (0.36 to 0.44, respectively).

**Discussion:** Earlier induction resulted in higher costs due to increased need for neonatal care. These data will help inform policy makers when considering recommendations for/against routine induction for babies suspected to be large-for-gestational age. Assessments of the long-term effects of shoulder dystocia should be incorporated into future economic evaluations.

**ID:** CHEW00010

**Title:** Contrasting primary care physicians' gatekeeping and agent roles in England and Japan: an interview study

**First author:** Yuri Hamashima, University of Bristol

Primary care physicians (PCPs) make key decisions to allocate scarce resources in practice. In Japan, there is an ongoing debate regarding whether a formal gatekeeping system should be introduced in response to rising healthcare demand in hospitals. By contrast, general practitioners (GPs) in England have taken on the role of gatekeeper since the inception of the NHS in 1948. This study aimed to investigate how resource allocation decisions are made and discussed within these two different primary care contexts.

We conducted semi-structured interviews with PCPs in England and Japan between July and December 2021. In England, we contacted a primary care research centre and recruited affiliated academic GPs, while in Japan PCPs were recruited via key informants from urban and rural areas. We elicited participants' experiences and views about rationing and managing patients' demands in practice; hypothetical consultation scenarios were also used. Interview transcriptions were coded line by line and analysed using a constant comparative approach.

Eight GPs in England and 15 PCPs in Japan participated in the interviews. English GPs often implied that they were aware of their dual agent role, for the patient and society. Most GPs in England expressed their frustrations over the expectation that, as gatekeepers to the system, they would handle the mounting pressure on the NHS. Some GPs talked about financial constraints by sharing existing referral guidelines with patients. By contrast, Japanese physicians experienced challenges in adopting a gatekeeping role in the current Japanese healthcare system. Incentives to offer referrals included the fear of litigation and inter-relationships with hospitals. Japanese physicians were more willing to respond to a patient's requests by offering the services the patient asked for, which was interpreted as fulfilling their roles as single agents for their patients.

Although the feasibility of gatekeeping in England is supported by explicit rationing protocols and GPs' ability to balance between their dual agency roles, the current rationing policies may overly curtail available options and increase the dilemma over responding to the expectations of individual patients. On the path to redesigning the primary care health system, Japanese policymakers can learn from the UK gatekeeping context.

**ID:** CHEW00015

**Title:** Preferences for Primary Healthcare Providers among Urban Slum Dwellers of Dhaka City in Bangladesh: A Discrete Choice Experiment

**First author:** Md Zahid Hasan, University of Leeds

Background: Strengthening and reforming the urban primary healthcare (PHC) system is essential to efficiently deliver need-based healthcare services to the rapidly increasing urban poor population in Bangladesh. Aligning resource allocation with the preferences of urban slum dwellers is crucial in delivering the services they need in a low-cost and accessible way. However, it is unclear what attributes people prioritise when choosing healthcare providers considering different state of illness. We conducted a discrete choice experiment (DCE) among low-income slum dwellers to elicit their preference for healthcare providers based on a series of descriptive attributes.

Methods: The DCE was developed using a systematic review along with qualitative data from focus group discussions with slum dwellers and key informant interviews with providers, and one-to-one consultation with health system experts. A Bayesian D-efficient design was used to construct choice sets using NGene. In each DCE task, participants were shown two hypothetical PHC providers and an opt-out (local pharmacy). They made two choices, first imagining they were seeking help for a minor illness, and then for a major illness. A total of 304 face-to-face interviews were completed during January-February 2024 in two selected slums of Dhaka City in Bangladesh. Initially, conditional logit models were used to analyze the data.

Results: Participants chose the opt-out 28.5% of the time for minor illness and never chosen opt-out for major illness of 3040 choices. Preliminary results show that for minor illness, consultation fee and providers' qualification were highly valued attributes, and coefficients were statistically significant. Participants' preferences changed when imagining they had a major illness, with qualification of healthcare provider and travel time to reach facility were significantly highly valued attributes. Findings will be used to understand how people make trade-offs across the attributes in case of major and minor illness while choosing a healthcare provider.

Conclusion: Understanding the priorities of patients when choosing PHC providers is essential for ensuring equitable access to healthcare in urban areas, especially in limited resource settings. Allocation of resources for strengthening PHC services with the needs and preferences of the beneficiaries can enhance their access to healthcare services towards better health outcomes.

**ID:** CHEW00016

**Title:** The impact of economic evaluation on real-world decision-making: Some initial findings and a research agenda

**First author:** Hareth Al-Janabi, University of Birmingham

**Objectives:** Economic evaluation is central to the discipline of health economics and practice of applied health research. In principle, the detailed assessment of costs and benefits within an economic evaluation helps decision-makers decide whether to commit scarce public resources to an intervention. While much attention is given to undertaking applied economic evaluation and enhancing methods, there is relatively focus on the way economic evaluation does (or does not) affect real-world resource allocations decisions. This paper explores perceptions of the impact of economic evaluations and how to strengthen links between practice and real world decision-making.

**Methods:** Mixed methods were used comprising an online survey and 10 semi-structured follow-up interviews with health economists within the UK. Free text and qualitative data were coded and thematic analysis was used to identify key barriers and facilitators to linking economic evaluation with real world impact.

**Results:** The survey showed that economic evaluations 'fed into' decisions to fund, not fund, or partially fund vaccines, drugs, and new clinical pathways. Economic evaluations also influenced implementation processes and policy documentation and debates. Interviews indicated impactful economic evaluation occurred when evaluations were directly commissioned by decision-makers and there was close contact and use of context-specific data. Impact was limited when results were inconclusive or there were budget cuts, legal issues, and clinical dominance.

**Discussion:** Our exploratory work-in-progress suggests lessons to enhance impact based on the perceptions of health economists, which will be presented in the full paper. However, further insights from 'users' involved in the resource allocation process are also important. Furthermore, findings are based on perceptions and work to trace processes and mechanisms by which economic evidence does (or does not) influence specific forms of resource allocation in health and care setting would be useful.

**ID:** CHEW00019

**Title:** What is healthy? How shortfalls in quality-adjusted life expectancy depend on the choice of healthy benchmark

**First author:** Edward Webb, University of Leeds

**Background:** Healthcare systems often wish to prioritise resources towards patients with the most severe conditions. Several countries use the shortfall in quality-adjusted life expectancy (QALE) to measure disease severity. Calculating shortfalls requires benchmark measures of healthy QALE. A hitherto neglected topic is what benchmarks should be used.

**Aim:** To provide the first estimates of how sensitive measures of absolute and proportional QALE shortfall are to different choices of healthy QALE benchmark.

**Methods:** Data on quality of life was obtained from the 2018 and 2019 Health Survey for England and data on life expectancy was obtained from the Office of National Statistics. Bayesian models were used to produce estimates of age-specific QALE averaged over the whole population, as well as separately for people in each index of multiple deprivation (IMD) quintile and for people of asian, black, mixed, white and other ethnicities. Changes in absolute and proportional QALE shortfalls due to using population average or group-specific healthy benchmarks were calculated.

**Results:** Absolute QALE shortfall varied by up to 10 quality adjusted life-years (QALYs) depending on whether the healthy QALE benchmark used was specific to the most or least deprived IMD quintile. Differences in absolute shortfall were generally of higher magnitude when considering benchmarks from different IMD quintiles than from different ethnicities. Proportional QALE shortfall was much less sensitive to the choice of healthy benchmark than absolute shortfall.

**Conclusions:** The choice of healthy benchmark can have a potentially large impact on measures of absolute QALE shortfall, but relatively little impact on measures of proportional shortfall. Given the observed social gradient in health, the study proposes a new way for healthcare systems to assess disease severity: measure QALYs lost compared to the benchmark of the QALE for the most advantaged group.

**ID:** CHEW00021

**Title:** Disability Onset, Earnings, and Income Dynamics: Examining the Role of Hearing Loss in Working-age Adults

**First author:** Mohammad Nure Alam, Macquarie University

Hearing Loss is the third leading contributor of years lived with disability, affecting 1.57 billion or 20.3% of the global population. While existing literature corroborates that hearing loss is associated with reduced earnings and income, findings are mainly derived from cross-sectional studies. Hence, we examine the longitudinal association between the onset of hearing loss and earnings and income dynamics among working-age Australians. We use the longest-running panel data from the Household, Income and Labour Dynamics in Australia (HILDA) survey. Our analytical sample comprised 8632 individuals and 103239 observations over 19 years (2003 to 2021). We apply Propensity Score Matching combined with Difference-in-Difference (PSM-DID) techniques to estimate the causal impact of the onset of hearing loss on earnings and income. We apply fixed effect regression to estimate relative earnings and income dynamics before and after the onset of hearing loss. Furthermore, we conducted a subgroup analysis to identify the sociodemographic heterogeneity in hearing loss-associated earnings and income dynamics over time.

We find evidence of a significant negative causal effect of the onset of hearing loss on earnings and income. The fixed effects regression results suggest that hearing loss was associated with significant earnings and income losses not only during the year of onset of hearing loss but also 15 years after post-enrolment. This hearing earnings gap barely recovers and grows over time, indicating a greater decline in economic well-being. Moreover, we found that the earnings and income losses are more pronounced for males with hearing loss, early career working-age people, individuals with lower educational attainment, and those who resided in socioeconomically disadvantaged areas. Overall, this study provides comprehensive evidence that individuals who experience hearing loss tend to be economically disadvantaged relative to their hearing peers. Efforts to address non-financial barriers and social welfare system heterogeneity may be needed to reduce hearing-related economic disparities.

**ID:** CHEW00022

**Title:** Horizontal equity in payments to primary medical care providers in England, 2014-2022

**First author:** Charlene Lo, University of Manchester

**Objectives:** Studies of inequalities in payments to primary care providers in England have typically focused on specific funding streams and deprivation as the need measure. We assessed income-related inequity in payments to primary care providers in the National Health Service in England from 2014 to 2022, in total and by scheme, and using alternative definitions of need.

**Methods:** We used data on annual payments to 7,765 general practices in England between 2014 and 2022, linked to practice patients' average neighbourhood characteristics. We measured income using the average neighbourhood income deprivation of practice patients and examined equity in average payment per patient, accounting for area input prices. We measured need in four scenarios as: (i) demand for care, using data on patients' last attempt to make appointments; (ii) expected utilisation, using the primary care allocation formula needs index; (iii) known ill-health, using prevalence of 20 diseases monitored in the Quality and Outcomes Framework; and (iv) expected utilisation for known ill-health, using the allocation formula needs index for hospital care. We ranked practices by income and calculated the concentration index of indirect need-standardized payments (HI). We decomposed the concentration index into inequality driven by (1) needs, (2) area input prices, (3) income, (4) other non-need variables (e.g., education, ethnicity, economic activity, region, and practice characteristics), and (5) residuals.

**Results:** We found pro-rich inequity in total payment when defining need as expected utilisation (HI: 2014=0.0221; 2018=0.0215; 2022=0.0276) or expected utilisation for known ill-health (HI: 2019=0.0191; 2018=0.0156; 2022=0.0212) and pro-poor inequity when defining need as known ill-health (HI: 2014=0.0169; 2018=-0.0057; 2022=-0.0008) or demand for care (HI: 2014=0.0122; 2018=-0.0048; 2022=-0.0029). Need was concentrated amongst poorer general practices when defined as expected utilisation, amongst richer when defined as demand for care or known ill-health, and near equal when defined as expected utilisation for known ill-health. Inequity varied substantially across payment schemes, from pro-rich (HI 0.7431) for Minimum Practice Income Guarantee to pro-poor (HI -0.1089) for Balanced of Personal Medical Services Expenditure.

**Discussion:** Payments do not fully reflect population need. Clear objectives for resources distribution should be defined and harmonized across different schemes to reduce horizontal inequities.

**ID:** CHEW00025

**Title:** Are there economies of scale in the production of primary medical care?

**First author:** Tianchang Zhao, University of Manchester

**Objective:** There is an international trend to increase the size of primary care providers and encourage additional collaboration between them to benefit from economies of scale. However, there is little research evidence to support this. We examine whether there are economies of scale in the production of clinical appointments, a high-profile output for primary care providers in England. **Methods:** We obtained monthly data on appointment volumes and workforce from over 6,000 general practices, from August 2022 to December 2023. We use longitudinal regressions with Correlated Random Effects to estimate the transcendental logarithmic production function, using the full-time equivalent numbers of GPs, other clinical, and administrative staff as three input variables and controlling for time-invariant practice characteristics. As outputs, we consider registered patients, total appointments, and timely appointments, defined as taking place within two days of booking. Appointments are further categorised by whether they are with GPs or other clinical staff. **Results:** There exists large variation in practice size. The median practice employs 4.75 FTE GP (10th percentile: 1.33, 90th: 10.93), 9.45 FTE administrative staff (10th percentile: 4.04, 90th: 20.84), and 3.69 FTE other clinical staff (10th percentile: 0.95, 90th: 10.58). The marginal effects of all three categories of staff inputs on overall appointment volume increase with the numbers of those staff. For example, a 1% increase in FTE GP for a practice at the 90th percentile is estimated to have an effect of 6.98% increase in total appointment, while for a practice at the 10th percentile the effect is only 2%. The input variables have higher marginal effects on appointments booked within two days which also have steeper marginal effects curve. **Conclusion:** Overall, the production of general practice appointments exhibits economies of scale. For practices in the lowest 10 to 20 percentiles of staffing level, initial increases in workforce may lower productivity but most practices would produce disproportionately more by increasing practice size. Economies of scale are more obvious in the appointments booked within a short period of time than the total volume of appointments provided. Therefore, the production of timely appointments may benefit more from larger practice size.

**ID:** CHEW00028

**Title:** Saving lives, saving money? The effect of a suicide prevention program on a healthcare system

**First author:** Henry Cutler, Macquarie University and University of Oxford

Suicide and intentional self-harm are major global policy concerns. In 2014 the World Health Organization (WHO) made preventing suicide a global imperative, suggesting governments reduce suicide rates by implementing a comprehensive multisectoral suicide prevention strategy. Some European governments have since implemented this type of strategy, although evaluations of their effectiveness have been hampered by small sample sizes, confounding, and low data quality. This study estimates the impact of a large, community based multisectoral suicide prevention intervention in Australia on healthcare resource use and costs. We exploit a stepped-wedge, cluster randomised controlled trial conducted between 2017 and 2020 and use a linked state government administrative dataset with millions of observations on emergency department presentations, inpatient hospital care, primary care and pharmaceutical supply. Patients from a population of two million people in four local health networks exposed to the suicide prevention intervention were matched to patients from neighbouring local health networks that were not exposed, using entropy balancing. A multigroup, staggered difference-in-differences approach was employed to account for different intervention start dates and to allow for heterogeneous effects to be estimated across local health networks and time. We present the causal effect of the intervention on healthcare resource use and costs in aggregate. The effect is disaggregated across each quarter within the first two years after first receiving the intervention, and across each treated local health network. We explore heterogeneity within each local health network by separately estimating the effect of the intervention on emergency department presentations, inpatient hospital care, primary care and pharmaceutical supply. We test whether results are robust by using alternative estimators and alternative local health network controls to account for potential spillover effects and confounding from non-parallel trends. Our study provides valuable insights into the potential impact of large community based, multisectoral suicide prevention interventions on healthcare systems, and provides a better understanding of the mechanisms of impact associated with these types of strategies.

**ID:** CHEW00033

**Title:** An examination of inequalities in hospital expenditure by ethnicity and socio-economic status amongst older adults in England using linked hospital records and survey data

**First author:** Laura Anselmi, University of Manchester

Ethnic and socio-economic inequalities in use of healthcare services have been documented globally. In England, evidence on these inequalities is limited due to lack of data on individual characteristics and service use in the same datasets. Using linked administrative and survey data we analysed inequity in hospital expenditure for older adults in England.

We used data for 11,678 adults aged 50 years or older on annual hospital expenditure, covering admissions, outpatient visits and emergency attendances. We derived costs and diagnoses recorded during hospital admissions (grouped in 20 ICD-10 chapters) from Hospital Episode Statistics (HES) records for the financial years 2007/08 to 2016/17. We linked these to survey responses to the English Longitudinal Study of Ageing (ELSA) (waves 3 to 7), including: age in 10-year bands, gender, ethnicity, household composition, income, education, health behaviours, self-reported health and 19 conditions. We regressed total cost in 2016/17 on: i) area level deprivation; ii) household equivalised income; iii) education, and/or iv) health behaviours, alongside person characteristics, household composition and diagnoses.

Over 60% of the sample had at least one contact with hospital services. Conditional on age, gender, household composition and hospital diagnoses, ethnic minority (4% of the sample) individuals used less health care (-£354 per year). Individuals in the second most (£-132), middle (-£162), second least (-£214) and least deprived quintile (-£118) used less care than those in most deprived areas. Those in second lowest (£-42), middle (-£78), second highest (-£150) and highest household income quintile (-£175) used less care than the poorest. Those with medium (+£49) or low education (+£131) use more care than those with high education, but differences are not statistically significant. These patterns were reduced but remained similar when accounting for health behaviours, with not smoking and undertaking exercise predicting reduced hospital use. patterns were similar but differences reduced when controlling for access to services with area fixed effects.

Further analysis will account for additional measures of need and supply, including exploiting panel data over 10 years, self-reported health and conditions, and area level supply variables, to draw implications for estimating service need across different areas.

**ID:** CHEW00035

**Title:** The validity of the EQ-HWB (EuroQol Health and Wellbeing Instrument) among informal carers of people with dementia

**First author:** Cate Bailey, University of Melbourne

**Objectives:** The EQ-HWB was designed as a broad, generic measure to assess health, social care, and carer-related quality-of-life. There is little evidence yet on its performance for informal caregivers. People living with dementia spend more time receiving informal care than other diseases; thus, assessing the instrument's validity in caregiver populations is essential. Here, we present a study on the validity of the EQ-HWB (25-items) and EQ-HWB-S (9-items) in this caregiver population.

**Methods:** An online survey of caregivers of people living with dementia was developed that included demographic questions, informal care-related questions, and quality-of-life (QoL) measures suitable for caregivers, such as C-DEMqol and CarerQol-7D, as well as the EQ-HWB. Analysis included testing acceptability (missing data), response distribution of items including testing for floor and ceiling effects, convergent validity with a priori expectations, known-group validity with a priori expectations and effect sizes compared to the other QoL measures, and an exploration of the dimensionality of the instruments using exploratory factor analysis (EFA). **Results:** Data from 202 caregivers of people living with dementia were obtained. There were very few missing data-points despite answers not being forced. The EQ-HWB item responses had a good spread over all items, apart from mobility, personal care, and safety, which were positively skewed. In convergent validity analyses, 87% of EQ-HWB items hypothesised to be at least moderately correlated were found to be so compared to the CarerQol, and 94% compared to the C-DEMqol. Spearman correlations were .70 between EQ-HWB-S index-scores and CarerQol sum-scores and .73 between EQ-HWB-S and C-DEMqol sum-scores. In known-group validity analysis, the EQ-HWB-S (with preference-based values) was able to detect differences in hypothesised directions across a range of known groups, such as informal care time and caregiver health, with moderate to large effect sizes. **Conclusion:** The EQ-HWB and EQ-HWB-S performed consistently well across a range of analyses. The use of EFA for interpreting these findings, known group analysis for the EQ-HWB long version and comparisons with the C-DEMqol and CarerQol will be discussed. The EQ-HWB instruments, which allow consistent measurement across patients and carers, should be of great value in future health economic assessments.

**ID:** CHEW00038

**Title:** Productivity and efficiency: measuring different things gives different results

**First author:** Daniel Howden, University of Leeds

There is continued interest in estimating the productivity, in various guises, of healthcare systems. Two key strands of this literature with respect to the NHS in England (and other constituent parts of the UK) have focused on (1) estimating annual changes in total productivity using weighted activity (most notably the annual NHS England productivity report produced by the University of York's Centre for Health Economics), and (2) estimating the marginal productivity of the NHS, using QALYs as the outcome (a strand of research most recently calling this object of interest "marginal cost per QALY").

Recent discussions of this have considered the extent to which of these methods can and should be seen as preferable, to what extent they should be expected to be in qualitative or quantitative agreement, and for what purposes they can and should be used. Such purposes include audit of the workings of system as a whole or at the margin, and of estimation of relevant cost-effectiveness thresholds. Some discussion of this however appears to feature conflation or misunderstandings of fundamental microeconomic theory underlying the theory of the firm (and associated production functions) as well as of what this means when applied to a healthcare context.

Given this context, this paper uses microeconomic concepts to illustrate concepts of productivity and efficiency in a healthcare system, highlighting important distinctions regarding what the relevant outputs of the system are, ways of measuring these outputs, and distinctions between average and marginal productivity. It considers the relevance, as well as the positive and negative aspects of each cutting across these, with specific regard to various purposes for which measures of productivity may be used. It suggests appropriate measures of productivity for various purposes, their limitations, and to what extent agreement between such measures should be expected.

**ID:** CHEW00040

**Title:** LifeSim Childhood: Extrapolating Intervention Effects and Public Cost Savings from Birth to Adolescence in the UK

**First author:** Shranthinth Venkatesh, University of York

Economic evaluation of early childhood interventions (age 0 to 5) is difficult because it is hard to extrapolate the full range of long-term benefits and public cost savings from short-term effectiveness evidence. We aim to develop the first childhood microsimulation model of a wide range of outcomes and public cost savings up to age 17 based on bespoke modelling of Millenium Cohort Study (MCS), and illustrate how this can be used to extrapolate the long-term consequences of a reduction in early childhood poverty.

We use MCS birth cohort data on about 18,000 babies born in the UK around 2000/1 and followed up to age 17. We select a set of policy-relevant outcomes from age 3 to 17, including cognitive skills, socio-emotional and behavioural problems, educational attainment, smoking, obesity, self-reported health, psychological distress and subjective wellbeing, and use multiple imputation to address attrition and non-response. We focus on a single early childhood exposure variable - mean household income age 0 to 5 - but the same approach can be applied to a wide range of further early childhood circumstances that policy makers often target for prevention or for support services or both (e.g. teenage mother, preterm birth, low birthweight, complex chronic conditions, school readiness, and many others). We specify assumptions about the causal relationship between the exposure and the outcomes to age 17, identifying the relevant confounding variables. We run one regression for each outcome ages 3-17. We use discrete event simulation to extrapolate those outcomes between ages 3 to 17 by progressing a birth cohort to age 17, allowing for uncertainty around both coefficients and outcomes.

We use six outcomes to quantify public costs potentially amenable to policy intervention: truancy, exclusion, hospitalisation, special education needs, conduct disorder and activity limiting conditions. We model the potential effect of three income-shifting scenarios based on quintile group regressions - shifting the poorest fifth to the next poorest, shifting the two poorest fifths to the middle, and shifting everyone to the richest fifth. We report outcomes and costs by age and further disaggregate costs by sector (health, social care, and education).



**ID:** CHEW00041

**Title:** The healthcare costs of bullying victimisation among school children: Evidence from Australia

**First author:** Keshini Muthukuda, University of Queensland

**Background** The prevalence of bullying among school-aged children has become a critical problem with severe consequences for their health outcomes and behaviours. While previous studies have shown negative association between bullying victimisation and health-related outcomes, there is a lack of empirical evidence on the economic cost (in terms of healthcare cost) it creates on the publicly funded healthcare system.

**Objective** In this study, we aim to address this gap by quantifying the healthcare cost of bullying victimisation.

**Data** We use nationally representative data from the Longitudinal Study of Australian Children (LSAC) and linked administrative data from Medicare Australia. Our sample represents an unbalanced panel of 6577 children who are observed from age 8-15 years. We measure healthcare costs as the sum of the cost of medical services under the Medicare Benefits Schedule (MBS) and prescription medicine listed under the Pharmaceuticals Benefits Scheme (PBS).

**Methods** We estimate a two-way fixed effect model to implement a difference-in-difference strategy and test for parallel trends by including one period lead of the treatment. We show that we have one-step ahead parallel trends by showing that the one-period lead of the treatment is insignificant. To account for concerns of reverse causation, we calculate our measures of outcomes by summing the costs incurred within the 6 and 12-month window following the date the child reported bullying. Additionally, we complement our analysis by applying the method proposed by Oster (2019) for selection on unobservables to address other potential concerns of endogeneity.

**Results** Our results show that the 6-month and annual healthcare costs of victims are \$30 and \$42 higher, respectively, compared to non-victims. This translates to an 11% - 16% increase in average healthcare costs. This effect is stronger for boys than girls. We further show that a large fraction of cost increase is driven by the use of MBS services, specifically on general practitioners (GPs) and mental health services.

**Policy implications** Our findings underscore the importance of implementing policy measures aimed at addressing and preventing school children from being victims of bullying episodes.

**ID:** CHEW00049

**Title:** NEET prevention through Sweden's youth payroll tax cut: Evaluating cost-effectiveness using CALY-SWE

**First author:** Kasper Walter Meili, Umeå University, Sweden and research visit at Sheffield University.

**Introduction:** Sweden, during the Great Recession of 2007 to 2009, introduced a payroll tax cut for young employees aged 26 and lower, positively affecting their employment rates.

Unemployment is a contributing factor to Not being in education, employment or training (NEET), by definition. Being NEET in young ages has been linked to life course scarring effects, for example regarding the labor market.

Our aim was to analyze the cost-effectiveness of the tax-cut in terms of cost per capability adjusted life year, considering QoL and salary consequences related to unemployment and lifecycle NEET scarring effects - in a fiscal and a societal perspective.

**Methods:** We cross-sectionally surveyed individuals' capability-related QoL using the CALY-SWE questionnaire, and whether individuals were NEET during ages of 16-29 for at least one year (the Swedish NEET definition). We then modeled the probability of self-reported former NEET status in a logistic regression with the overall exposure to unemployment as covariate.

Next, we combined survey data with literature estimates of employment effects of the tax cut and official unemployment statistics to predict the counterfactual number of former NEET individuals. In addition, we estimated counterfactual unemployed effects, QoL effects, and salary consequences.

We used a fiscal perspective of tax-only consequences, and a social perspective with full salary consequences for estimating productivity, to calculate cost per CALY, per job created, and per former NEET averted, in two scenarios with cautious and optimistic parameter estimates.

**Results:** In the fiscal perspective in the cautious scenario cost per CALY was \$55,240, and \$10,560 in the optimistic scenario. In the societal perspective, the cautious estimate and the optimistic estimate were cost-saving. Cost per averted former NEET were in the fiscal perspective \$101,960 (cautious) and \$28,850 (optimistic), and cost per job year created were \$27,810 (cautious).

**Discussion:** This study demonstrates a first application of CALY-SWE for cost-effectiveness analyses in broader social welfare. A threshold value for CALY-SWE has not been established yet. Using Swedish QALY threshold values, the results indicate that the payroll tax was likely cost effective in the societal perspective but maybe not necessarily in the fiscal perspective.

**ID:** CHEW00051

**Title:** Impact of a pro-primary-care shared savings incentive scheme for chronic diseases in China: an interrupted time-series analysis

**First author:** Yuqi Zhang, University of Manchester

**Background:** Shared savings is a form of payment which allow healthcare providers working together to keep a proportion of any savings they can make in providing services to a defined population. Providers are incentivised to focus together on combined cost saving, particularly through more preventative and efficient care. However, they might also have an incentive to undertreat. There is currently little empirical research on how savings should be effectively shared among providers and the impact of different forms of sharing. We examined the impact of a novel pilot shared savings scheme for chronic diseases implemented in China on health service use (i.e. admissions, visits) and costs. The pilot adapted an existing scheme by increasing the proportion of savings to primary care providers instead of hospitals.

**Methods:** We used claims data for 47,710 patients registered with chronic diseases before (January 2020-December 2020) and after (January 2021-December 2022) initiating the shared savings scheme. A panel interrupted time series was used while controlling for individual and time fixed effects.

**Results:** After the reform, inpatient admissions significantly decreased by 0.07% per patient per month ( $p < 0.001$ ). This decline was driven by reduced admissions in county hospitals (0.04%) and outside the county (0.03%) ( $p < 0.001$ ). Inpatient costs have a significantly larger drop at 0.79%, which might be influenced by a decrease in length of stay of 0.24% ( $p < 0.001$ ). Additionally, outpatient costs decreased by 5% and outpatient visits in primary care also decreased by 0.07% ( $p < 0.001$ ). Patients with single diseases demonstrated larger decreases in all outcomes than those with multimorbidity, except outpatient visits in primary care.

**Conclusion:** Pro-primary care shared saving schemes can reduce inpatient utilisations and costs for chronic disease, especially in hospitals. The impacts might indicate containment in previous overtreatment, but also some unintended undertreatment (decrease of primary care utilisation).

**ID:** CHEW00054

**Title:** Standard versus Accelerated initiation of Renal Replacement Therapy in Acute Kidney Injury (STARRT-AKI): a randomised controlled trial with cost-effectiveness analysis

**First author:** Kang Wang, Kings College London

**Background:** Acute kidney injury (AKI) is common among critically ill patients and is associated with a high risk of death and a high level of resource use. This study aims to assess the cost-effectiveness of an accelerated initiation (within 12 hours) of Renal Replacement Therapy (RRT) compared with the standard initiation (conventional indications developed or AKI persisted for >72 hours) of RRT for AKI patients in the United Kingdom (UK).

**Methods:** A randomised controlled trial with cost-effectiveness analysis was conducted with a setting of intensive care units in the UK, and a Markov model was developed to evaluate the lifetime cost-effectiveness. Primary health care and social care use were surveyed using a patient questionnaire which records the use of residential care, nursing care, community services, informal care and productivity loss. Secondary healthcare use data including inpatient care, outpatient care, critical care and accident & emergency visits were obtained from Hospital Episode Statistics (HES) and Public Health Scotland (PHS) for patients in England and Scotland respectively. Data from the Intensive Care National Audit & Research Centre (ICNARC) were obtained to ensure the completeness of the secondary healthcare use data. An EQ-5D questionnaire was administered at month 3 and month 12 after randomisation to measure the Quality-adjusted Life Year (QALY). Health states of RRT-dependent, RRT-independent and death are included in the Markov model.

**Results:** The accelerated cohort ( $n=95$ ) dominates the standard cohort ( $n=90$ ) over both the 12-month follow-up period and the 20 years after randomisation. From the NHS and Personal Social Service (PSS) perspective, patients in the accelerated cohort spent £62,546.94 on average during the follow-up period and gained a QALY of 0.3219 while patients in the standard cohort spent £75,002.34 and achieved a QALY of 0.2707. Within the lifetime model, the accelerated cohort is associated with a reduced cost of £10,143.32 and a higher QALY of 0.008 compared to the standard cohort.

**Conclusion:** The accelerated initiation of RRT yields superior clinical effectiveness and lower healthcare costs and societal costs compared to standard initiation. Due to the small size of this study, the findings need to be interpreted with caution.

**ID:** CHEW00056

**Title:** Are environmental considerations taken into account in economic evaluations? Evidence from a systematic literature review on single-use versus multiple-use endoscopes in gastroenterology

**First author:** Mandana Zanganeh, University of Warwick

In July 2022, the NHS became the first health care system to set a target of being a net zero health service by 2040. To achieve this, decision making around new technologies and interventions made available to the population will need to take into account broader environmental and sustainability considerations. A prominent example is the adoption of single-use endoscopes as a replacement for reusable endoscopes in gastroenterology due to perceived benefit in reducing cross-infection.

Besides considerations related to technical and clinical performance, there are differences in the cost to the NHS and the impact they have on the environment. The aim of this review is two-fold. First, it sets out to identify, assess and summarise evidence on the costs and consequences arising from use of single-use gastrointestinal endoscopes compared to multiple-use ones, and secondly, it seeks to investigate whether (and how) broader environmental considerations are taken into account in economic evaluations of technologies that have a conspicuous environmental impact.

We searched 9 databases (MEDLINE, Embase, Web of Science, Cochrane Library, HTA, NHS EED, INAHTA, EconPapers and CEA Registry) for relevant economic evaluations published from each database's inception date until 4th March 2024, as well as Google Scholar and prominent HTA agency websites (NICE, CADTH, ICER). Study selection, quality assessment and data extraction were carried out according to published guidelines. Thirteen relevant economic analyses were identified (partial economic evaluations (n=7): all cost analyses; full economic evaluations (n=6): 4 cost utility analyses (CUA), 2 cost minimisation analyses (CMA)). Five of the studies were model based. Seven studies were from USA, five from various European countries and one from Korea. The most commonly considered costs included purchase and reprocessing/decontamination, and the most commonly used types of outcomes were infection risk and quality adjusted life years (QALYs). There was very limited evidence on environmental impact being considered. An in-depth analysis is currently in progress and will be available for discussion at the HESG meeting. These findings, and the ways they can be used in subsequent economic analysis planned for the purposes of this study, will be also discussed.

**ID:** CHEW00064

**Title:** Supported weight loss to alleviate Long COVID symptoms: An economic evaluation alongside a randomised clinical trial

**First author:** Heather Lynne Fraser, University of Glasgow

Background: After COVID-19 infection, some people can experience long-term effects of the illness (Long-COVID), with significant impacts on quality of life, placing a burden on the NHS. Symptoms associated with overweight/obesity overlap with and may aggravate those of Long-COVID. The Remote Diet Intervention to REduce long COVID symptoms Trial (ReDIRECT) aimed to evaluate the impact of Counterweight-Plus on the self-reported symptoms of Long-COVID in those living with overweight/obesity. Counterweight-Plus is a dietitian-supported programme of total diet replacement and food reintroduction, with weight-loss maintenance support, shown by ReDIRECT to be safe and effective in alleviating Long-COVID symptoms.

The economic evaluation alongside ReDIRECT aims to estimate the cost-utility of Counterweight-Plus, both within-trial and over the long-term. Due to the absence of long-term data on Long-COVID, there are challenges in conceptualising a long-term economic model, and a particular need to explore uncertainty related to key model assumptions.

Methods: The within-trial economic evaluation estimated the cost-utility of Counterweight-Plus at 6 months post-randomisation, compared to usual care, with the control group receiving delayed entry to Counterweight-Plus after 6 months. Quality-adjusted life years (QALYs) over the within-trial period were calculated using EQ-5D-5L data collected at baseline, 3 months, and 6 months. Similarly, resource-use data collected over the trial period were used to calculate costs. We will model the long-term cost and health consequences under a range of scenarios, incorporating assumptions derived from public-patient involvement.

Results: The within-trial cost-utility analysis estimated an incremental cost-effectiveness ratio (ICER) of approximately £15,000/QALY at 6 months post randomisation, with high probability of cost-effectiveness at a £20,000/QALY threshold. Work on the long-term model is ongoing.

Discussion: Long-COVID has a poorly understood disease course. Intervention costs are upfront, with no further Counterweight-Plus costs beyond 6 months. This suggests that the short-term within-trial analysis may demonstrate the intervention's cost-effectiveness and indeed may be conservative if health benefits persist beyond the trial period. Nevertheless, it is important to explore long-term consequences of the intervention. Feedback from health economists with a range of modelling experience will assist in specifying assumptions and will aid in developing a robust long-term economic model.

**ID:** CHEW00066

**Title:** Impact of stage at cancer diagnosis on healthcare costs: a national population-based study using English individual-level patient data

**First author:** David Jones, University of Oxford and Grail

**Background and Objectives:** Multicancer early detection tests are an innovation that aims to shift diagnosis to an earlier stage across a broad range of cancer types. An important aspect of understanding the impact of such tests is estimating how the shift to an earlier stage at diagnosis may change healthcare resource use and costs. The objective of this study is to quantify the total healthcare cost for the diagnosis and treatment of cancer, and how this varies across cancer types, and by stage-at-diagnosis within each cancer type, in NHS England.

**Data and Methods:** A retrospective cohort study using routinely-collected linked national datasets indexed to the English National Cancer Registration Dataset (NCRD). All patients with a first primary diagnosis of one of eight selected cancer types between January 2014 and December 2017 were included in the study. Recorded resource use included all episodes of care in Hospital Episode Statistics (HES), the Diagnostic Imaging Dataset (DIDS), the National Radiotherapy Treatment Dataset (RTDS) and the Systemic Anti-Cancer Therapy Dataset (SACT). A process of deduplication was applied. Records were cleaned to minimise errors before being processed by NHS Grouper software to assign Healthcare Resource Group codes. Unit costs were obtained from matched National Reference Costs. Incidence costs were calculated as costs accruing to a fixed cohort of patients over a period of time, and divided into 4 phases of care: diagnostic, initial, maintenance and terminal.

Unadjusted and adjusted estimates of expected costs stratified by cancer type and stage at diagnosis will be produced. In an analysis stratified by cancer type, regression methods will be used to estimate the effect of stage on total healthcare costs adjusted for other patient characteristics. To isolate the effect of cancer care on total costs a comparison will be made with a non-cancer control group.

**Results:** Descriptive statistics of the sample will be available for review. Cost outcomes are work-in-progress.

**ID:** CHEW00069

**Title:** Conceptual modelling for economic evaluation of complex interventions: Development of a model for Integrated Case Finding and Management for Neglected Tropical Diseases of the Skin

**First author:** Iris Mosweu, London School of Hygiene and Tropical Medicine

**Background:** Conceptual modelling is recommended to guide cost-effectiveness analyses, particularly of complex interventions. The World Health Organization has recommended integrated approaches for improved diagnosis, treatment, and care of neglected tropical diseases (NTDs) of the skin, in part based on claims about their efficiency; however, the cost-effectiveness of such complex interventions has not been assessed. We develop a conceptual model to guide economic evaluations of integrated strategies versus standard care for skin NTDs.

**Methods:** We followed ISPOR guidelines for conceptualising a model and drew on mixed methods formative research conducted in Ghana and Ethiopia to support intervention and evaluation design. We complemented this evidence with findings from a systematic review of economic evaluations of skin NTDs, reviewed clinical evidence, and engaged extensively with experts from wide-ranging disciplines to understand the mechanisms by which integrated strategies may alter care-seeking, service utilisation, downstream costs, and health outcomes. We identified key model components and data sources for critical input parameters.

**Results:** Our conceptual model, depicted in a diagram, illustrates how potential intervention activities (both demand and supply-side) target (often multiple and overlapping) specific objectives and subsequently influence (often multiple and overlapping) key drivers of costs, length and quality of life, and cost-effectiveness. Our model is framed to address policy questions about whether adding integrated strategies into current practices would be affordable, effective, and efficient in a given context. We present both simplified and fuller versions of the conceptual model. We propose a combined decision tree and Markov model structure to project the costs and outcomes over medium to long-term periods, identify data sources for model inputs, and specify highly uncertain parameters requiring extended sensitivity analyses.

**Discussion:** Our conceptual model has informed ongoing evaluations of complex interventions in Ghana and Ethiopia and may guide future economic evaluations of integrated skin NTD strategies elsewhere. Given the scarcity of conceptual models for economic evaluation more generally, we hope our example may also promote their wider use, particularly in Africa.

**ID:** CHEW00073

**Title:** Social care in England: understanding need and demand

**First author:** Anne Mason, University of York

Social care is defined in various ways but it generally refers to help with activities of daily living such as washing, dressing and feeding. Care support can be provided on a short-term or long-term basis in people's homes or in institutions.

There is currently no National Care System in England, instead there is a mixed economy consisting of public, private and voluntary sector provision of social care. In contrast to health care, access to free or subsidised publicly funded social care is limited to individuals with high levels of need defined by national eligibility criteria. Eligibility for care is also restricted to those with income and savings below specific financial thresholds. People who do not qualify for free or reduced cost care must fund their care themselves or rely on care from friends and family (informal care). Individuals who are not currently receiving publicly funded care ('new clients') have a right to request support from local authorities. Data on these requests are published at local authority level and are a measure of demand, albeit an imperfect one.

To conceptualise demand for social care and its relationship with need, we first set out a framework for understanding these two concepts and their interrelationship and their relationship to the supply of social care. We review the literature to examine the market failures arising in social care, which we compare and contrast to those affecting healthcare markets and identify 'hotspots' where market failures for both sectors coincide. Lastly, we analyse local authority data on requests for support. To investigate geographic and socio-demographic inequalities, we devise new measures of met and unmet need and demand and examine what drives them. Examples include the proportion of older people receiving welfare benefits as a proxy for need; the proportion of those requesting support who receive short-or long-term care (met demand); and the proportion of those in need of care who receive no formal support (unmet need). Together, our findings provide insights on how best to target limited resources and inform wider efforts to reform social care to put it on a fairer and more sustainable footing.

**ID:** CHEW00075

**Title:** The Price effect of biosimilars on the US pharmaceutical market

**First author:** Mireia Jofre-Bonet, Office of Health Economics and City, University of London

This study examines the impact of biosimilar entry on the pricing of original drugs in the US pharmaceutical market. Biosimilars, approved through the faster Biologic License Application (BLA) pathway, began approvals in 2015 under the US Biologics Price Competition and Innovation Act of 2010. Despite the EU approving more biosimilars, US data is more accessible. Using Centers for Medicare and Medicaid Services (CMS) data from January 2015 across 34 quarters, we analyse the effect of biosimilar competition on eight original drug markets. We use a two-pronged approach: first, we study the effect of biosimilar entry on prices, measured by the ratio of current average market price to pre-entry non-biologic price; second, we assess market concentration using the Herfindahl-Hirschman Index (HHI) based on market shares. To address endogeneity issues between competition and prices, we use an Instrumental Variable (IV) approach with various IVs for robustness. Our results show a 9-34% decrease in the price ratio for each biosimilar entry, and a 5-10% decrease in the price ratio with a 10% decrease in market concentration. These findings highlight the significant effect of competition on sales revenue in high-priced drug markets. While competition seems to have positive price effects, concerns about supply sustainability moderate these short-term benefits. We discuss the policy implications of our results in the final section.

**ID:** CHEW00078

**Title:** Health Economics and the changing landscape of healthcare provision: a discussion

**First author:** Elizabeth Goodwin, University of Exeter

**Background:** The last two decades have seen a broadening of the healthcare landscape, to encompass more holistic, personalised and societal approaches to health and wellbeing. This is reflected in social prescribing, through which NHS professionals can refer patients to community-based support to meet non-clinical needs. The existing literature on social prescribing reveals limitations in current evaluation methods, in terms of providing evidence around effectiveness and cost-effectiveness to inform healthcare decision-making.

This paper draws on examples of 'heritage-based interventions' (HBIs), which use places and activities linked with the past to improve health and wellbeing, to provide a catalyst for discussion about the potential implications of this changing healthcare landscape for health economics research.

Our research: 'Scaling Up Human Henge' delivered a ten-week programme of cultural, group-based activities in the Stonehenge landscape to 18 participants with mental health conditions. We successfully collected EQ-5D-5L, SWEMWBS and resource use data at baseline and follow-up. While no significant change was seen in resource use, participants' health and wellbeing showed meaningful improvement at the end of the programme, but had reduced somewhat at 6-month follow-up.

'Conserving the Mind' is a current study exploring the impact of the National Trust's Conservation in Action programme on mental wellbeing. Visitors to five National Trust properties are completing the SWEMWBS at the start and end of their visit, and results will be compared between those engaging, and not engaging, with Conservation in Action activities.

**Discussion:** Our experiences indicate that economic evaluations of HBIs are possible. We are currently planning a randomised controlled trial and cost-effectiveness analysis (RCT-CEA) of the wellbeing impact of participation in heritage activities (application under review). However, while many in the heritage field strongly believe that RCT-CEAs are the way forward, others – including the National Academy for Social Prescribing – are considering (and using) evaluation methods that provide results more quickly, at less cost. How compatible is the RCT-CEA approach with social prescribing interventions? Would alternative approaches (eg social return on investment) provide sufficient evidence to convince decision-makers? And how do we navigate the changing landscape of healthcare provision - and research - as a discipline?

**ID:** CHEW00080

**Title:** PUSHing Patient's Preferences

**First author:** Jack Dowie, London School of Hygiene and Tropical Medicine

The Online elicitation of Personal Utility Functions (OPUF) method of establishing a public HRQOL value set is particularly interesting, insofar as the production of full value sets for individuals potentially enables the individual to compare their personalised utilities for health states, current and intervention-estimated, with those assigned by the public set, wherever one is available for their population. The spreadsheet-platformed Personal Utility Set for Healthcare (PUSH) template will enable individuals to make this comparison as part of personalised clinical decision support. However, in contrast to OPUF, PUSH is designed exclusively for use by and/or with a person-as-patient facing an immediate clinical decision, not one contributing to research to support later impersonal public/group decisions. Substantial differences in method are required. In particular PUSH rejects conventional preferences for choice-based comparisons and swing weighting as impractical and normatively inappropriate. It first elicits the person's assessments of their current health on dropdown versions of the EQ-5D-5L VAS and 5D-5L instruments. If country is selected, the public tariff value for their health state is then displayed. Level weights are then elicited on a VAS and a version of SMART is used to elicit the dimension weights. The required 'anchoring' displacement of the disutility matrix is achieved on the basis of the person's location of 55555 on a scale running from 'Very much prefer 55555 to being dead' to 'Very much prefer being dead to 55555'. The tool then provides instant utilities for the current health state and ones entered as forecasts from contemplated interventions (of specified nature/duration). Being able to elicit a full personalised utility set in a few minutes is an exciting potential component of clinical decision support. The instantaneous comparison of person's and public's preferences provides an additional basis for the subsequent intervention evaluation and deliberation. (Currently the tool includes sets for 10 countries; more are easily added.) Once the normative standards for eliciting a public value set in a research context are rejected, the patient-as-person elicitation task becomes one of meeting clinically appropriate and practical standards; standards which will always be sensitive to preferences regarding the multiple dis/advantages of all methods.

**ID:** CHEW00082

**Title:** Determining relevant economic and contextual factors influencing implementation decisions in healthcare settings: A discrete choice experiment

**First author:** Lane Carrandi, Monash University

Stakeholder involvement and buy-in is vital to implement practice, management, or policy changes into routine care. Those wishing to implement an innovation must convey to all stakeholders the value of the implementation efforts and how the innovation improves health. Fundamentally, economic considerations shape the business case for an innovation. A critical component of building a business case is capturing the overall value of its implementation. Perceptions of value need to be garnered from all stakeholders who might choose to support and resource the innovation, and its implementation process over time. Discrete choice experiments (DCE) offer an opportunity to understand how innovations may be desired, demanded, and valued by various stakeholders. DCEs also determine the relevant contextual factors that influence perceptions of value. In this study a DCE is used to elicit and quantify preferences, and to explore trade-offs between factors influencing implementation decisions. A D-efficient design was chosen to maximize the statistical efficiency of choice tasks.

The research question, “which factors are most important to stakeholders when choosing whether to implement an innovation?” will be answered using a DCE. The construction of choice sets, including the identification and selection of attributes and levels, the appropriate number of profiles per choice set, and the inclusion of opt-out or status-quo options, was informed by a systematic review<sup>1</sup> and a rigorous process of expert consultation. Six implementation factors were identified: (1) total cost and resources required, (2) administrative processes, (3) whether the innovation addresses an important concern, (4) presence of a local champion, (5) organisational readiness, and (6) level of evidence.

Stakeholders, including clinicians, service providers, administrators, policymakers, and funders, are being recruited from Australia and the United Kingdom to participate in the DCE. We aim to recruit 200 stakeholders, with a minimum of 15 per professional group (e.g., 15 clinicians, 15 policymakers, etc.). Identifying relevant subgroups could be valuable in understanding contextual factors that impact implementation decisions. Results of the DCE will illuminate key factors influencing the resourcing of implementation and their relative importance in driving healthcare innovation. 1doi: <https://doi.org/10.1186/s43058-024-00562-3>

**ID:** CHEW00083

**Title:** Cost-effectiveness of empowering older patients transitioning from hospital to home: Trial-based analysis of the 'Your Care Needs You' intervention

**First author:** Alfredo Palacios, University of York

Background: Transitioning from hospital to home presents significant challenges, especially for patients aged 75 and above. This period is marked by high rates of unplanned readmissions and adverse health outcomes, highlighting the need for effective interventions. The 'Your Care Needs You' (YCNy) intervention, assessed through a cluster randomised controlled trial (cRCT), aims to empower these patients by providing the essential knowledge and tools necessary for a safer transition.

Objective: This study evaluates the cost-effectiveness of the YCNy intervention compared to standard care, aiming to enhance healthcare for older patients within the UK's healthcare system.

Methods: The economic evaluation utilised individual patient-level data from the YCNy cRCT. Information was combined from a routine dataset, including unplanned hospital readmissions, lengths of stay, and hospital characteristics, with a case report form (CRF) dataset detailing patient socio-demographics and EQ-5D health scores. The analysis calculated the adjusted mean differences in costs and Quality-Adjusted Life Years (QALYs) between the intervention and control groups, employing Multiple Imputation by Chained Equations (MICE) for missing data. Multilevel Mixed-Effects Generalised Linear Models (MME-GLM) accounted for the data's hierarchical structure, while Seemingly Unrelated Regression (SUR) models addressed cost and QALY correlations.

Results: Base case results indicated cost reductions of -£249.77 (MME-GLM) and -£299.71 (SUR) favouring the YCNy intervention, with minimal yet positive QALY adjustments (0.0012 with MME-GLM and 0.0013 with SUR). These findings suggest the intervention's dominance over usual care, with a high probability of cost-effectiveness across various cost per QALY thresholds.

Discussion: The YCNy intervention could represent a promising, cost-effective approach for improving the safety and experience of older adults transitioning from hospital to home in the UK. While preliminary, these findings support integrating patient-centred care models like YCNy into healthcare policies, potentially catalysing a shift towards more sustainable and effective care strategies within the NHS.

**ID:** CHEW00084

**Title:** A Heterogeneity Analysis of Preference-based Health-related Quality of Life Outcomes in Individuals born Very Preterm and Very Low Birthweight Adults: An Individual Participant Data Meta-analysis

**First author:** Corneliu, Bolbocean, University of Oxford

**Aim:** We explore heterogeneity in the effects of preterm birth on HRQoL in early adulthood using a machine learning approach, Causal Forests (CF). We perform a decomposition analysis of the impacts with respect to available sociodemographic variables.

**Data:** Individual participant data were obtained from five prospective cohorts of individuals born very preterm (VP) or with very low birthweight (VLBW) and a group of normal birthweight or at term matched controls contributing to the 'Research on European Children and Adults Born Preterm' Consortium. The combined dataset included over 2,100 adult VP/VLBW survivors aged between 18 and 29 years and controls. The main exposure was defined as birth before 32 weeks' gestation (VP) and/or birth weight below 1500 grams (VLBW). Outcome measures included multi-attribute utility scores generated by the Health Utilities Index Mark 3 (HUI3).

**Methods:** We applied novel machine learning methods to identify the risk factors associated with differences in HRQoL by estimating conditional average treatment effects (CATE). We assess variable importance in explaining preterm birth impact on adult HRQoL. We applied machine learning methods, Causal Forests and Shrinkage Bayesian Causal Forests to estimate the CATEs. We were interested in heterogeneity across the following subgroups: maternal age, maternal education and maternal ethnicity, and interactions between maternal age, ethnicity and maternal education. We used the CF algorithm - a nonparametric method commonly used for estimating heterogeneous treatment effects that recursively splits the observations into groups that differ in terms of expected effects of treatment.

**Preliminary Results:** VP/VLBW status was associated with a significant difference in the HUI3 3 multi-attribute utility score of - 0.06 (95% confidence interval - 0.08, - 0.04) in comparison to birth at term or at normal birthweight. We find that effects are heterogeneous by maternal ethnicity (white vs non-white), maternal age groups and maternal age.

**Conclusion:** Effects of preterm birth are heterogeneous by the subgroups considered. Further studies that estimate the effects of VP/VLBW status on HRQoL outcomes in mid and late adulthood across the socioeconomic status are needed.

**ID:** CHEW00090

**Title:** The association between continuity of primary care and patient complaints: Evidence from the English NHS

**First author:** Jinyang Chen, University of York

**Objective:** Relational continuity of care (RCC) is the extent to which patients see the same clinicians over time. Both doctors and patients see absence of RCC leading to harm (misdiagnosis, patients withdrawing from care) and loss of trust in the care team. We aim to investigate whether this perception is supported by empirical evidence. To this end, we analyse whether lower RCC in primary care is associated with more patient complaints.

**Methods:** We use practice level data from various sources covering the period from 2016/17 to 2021/22 (with one year data gap in 2019/20) totalling 35,666 practice-year observations. We obtain information on our dependent variable - the number of new written complaints per 10,000 patients received by each practice annually - from NHS Digital. Our key explanatory variable is a subjective measure of RCC obtained from the GP Patient Survey (GPPS) and is defined as the percentage of patients never seeing their preferred GP during the survey year. We control for patient demographic characteristics and practice characteristics such as size, NHS payment per patient, and practice quality in terms of QOF points achieved, all obtained from NHS Digital and Public Health England data. We employ linear and count data regression models to carry out the analysis for the pooled sample and by year.

**Result:** The average number of complaints per 10,000 patients across practices increased from 11.93 in 2016/17 to 16.85 in 2021/22. The distribution of complaints is positively skewed with a median of 13.26 in 2021/22. The pooled model estimates show that a 1 percentage point increase in the number of patients who never saw their preferred GP was significantly associated with an additional 0.163 (P<0.01) new complaints, marking a 1.3% increase. Conducting the analysis for each year separately revealed a notable difference in the impact of RCC on complaints. Specifically, in 2020/21, the marginal effect was significantly lower (0.092; P<.01) compared to 2018/19 (0.164; P<.01). Nevertheless, the effect fully rebounds in 2021/22 (0.165, P<.01).

**Conclusion:** Subjective measures of RCC are associated with stronger negative feedback from patients, which has been exacerbated during the pandemic.



**ID:** CHEW00091

**Title:** Exploring asymmetry of aversion to health inequalities attributed to different causes

**First author:** Aki Tsuchiya, University of Sheffield

There is a growing empirical literature that elicits social preferences from members of the public over socioeconomic inequality in health, to gauge an inequality aversion parameter for use in distributional cost-effectiveness analyses. On the other hand, there is an emerging concern that these studies result in systematically biased inequality aversion parameters, because they fit a symmetric Health-Related Social Welfare Function (HRSWF) to data that are likely to reflect asymmetric preferences, made up of not just an aversion for unequal health but also judgements over the underlying unequal socioeconomic status. There is some evidence to suggest that people tolerate more health inequality in scenarios where the inequality is between anonymous groups with unknown causes compared to scenarios with the same health inequality across socioeconomic groups caused by the financial inequality - and thus, symmetry is violated. However, little is known about asymmetry in different contexts, involving health inequalities driven by other factors such as genetics or lifestyles. The objective of this paper is to elicit social preferences regarding the efficiency-equality trade-off in lifetime health, when the source of inequality is: a) not related to any particular individual characteristic, b) caused by socioeconomic factors, c) caused by genetic factors, or d) caused by freely chosen individual behaviour. Symmetry is assumed for context (a), while whether it holds (and if not, the size of the asymmetry) in contexts (b) to (d) is an empirical question. We will use a benefit trade-off approach and consider the distribution of health (operationalised as average number of life years) between two groups (i.e. the two halves of the population). Given a HRSWF specification, health inequality aversion and asymmetry will be reported for the different contexts. A representative sample of the Spanish population ( $n = c.500$ ) will be surveyed on-line. (We do not have results yet.)

**ID:** CHEW00092

**Title:** Origins, development and future of health economic evaluation: perspectives from health economics and decision science

**First author:** Philip Clarke, University of Oxford

Health economic evaluation has evolved since the late 1960s and has been shaped by several seminal methodological and empirical works, subsequent attempts to standardize methods through guidelines, as well as continuing debates and controversies (e.g., what should be included in future healthcare costs). This study provides a collation of interview responses from three prominent health economists who contributed to the development of the discipline: Professors Michael Drummond, Louise Russell, and Milton Weinstein. Topics covered include: why they became interested in health economics; early influences; the development of key works, including the books: Hypertension: A Policy Perspective, Is Prevention Better Than Cure and Methods for the Economic Evaluation of Health Care Programs; the rise of evaluation as a sub-discipline that combines health economics with elements of decision sciences; as well as reflections on their intellectual life and development of networks. Each interview ends with reflections on current controversies and possible directions for the future development of economic evaluation.

**ID:** CHEW00095

**Title:** Elicitation of monetary values for children and young people's time. Selecting tools and laying the groundwork

**First author:** Lazaros Andronis, University of Warwick

Economic evaluations are routinely called upon to inform decisions about the adoption of programmes and interventions, many of which are made available to children and young people (CYP). When evaluations are carried out from a societal perspective, it is important that a range of inputs—including those contributed to or sacrificed by CYP—are considered and accounted for. Time is such an input: it is limited, valuable and entails an opportunity cost which needs to be reflected in calculations, especially when patient time requirements are likely to differ between assessed interventions. Despite this, coming up with a monetary value of CYP's time that can be included in economic evaluations is challenging, and the lack of such estimates has been seen as a persistent gap in the economic evaluation 'playbook'.

In this paper, we identify, discuss and debate possible ways of estimating the value of CYP time. We start by looking at a range of tools that have been used to elicit the (monetary) value of individuals' time in the economic literature, paying particular attention to stated preference methods. We then discuss the numerous complexities of eliciting CYP's preferences about time, and we pinpoint pertinent questions that need to be answered for an elicitation exercise to be fruitful. These range from contextual questions around key factors (attributes) that affect or moderate the value CYP place on their time and variation of preferences according to CYP's age, to pragmatic questions such as at what age children are able to comprehend and answer elicitation tasks about time, which of different types/formats of elicitation tasks CYP find more intuitive and easier to answer, and how many elicitation tasks CYP of different ages can complete before they lose interest. We lay out a plan for answering these questions by working collaboratively with CYP, and we discuss how these answers can be brought together when designing dependable elicitation exercises on, and beyond, the specific topic.

Being 'work in progress', our study will greatly benefit from feedback, plurality of opinions and a constructive discussion, and we are convinced that HESG offers the best possible platform for this.

**ID:** CHEW00101

**Title:** Health prevention and promotion activities in the current NHS – does an increase in provision rely on a magic money tree?

**First author:** Rachael Hunter, University College London

**Introduction:** Reducing avoidable emergency admissions is a priority in the English National Health Service (NHS). This is often the aim of health prevention and promotion activities, with the hypothesis that commissioners will find the funds to implement them from the system-wide cost-savings that result from reduced admissions. This paper uses the case study of HomeHealth, a personalised, behaviour change, health promotion service for older adults with mild frailty, to examine the challenges associated with funding health promotion and prevention activities in the NHS.

**Methods:** Participants aged 65+ years with mild frailty were recruited to a 1:1 randomised control trial to receive HomeHealth or treatment as usual (TAU). Health and social care resource use and amount of paid and unpaid carer time were self-completed at baseline, 6-months and 12-months. Primary and secondary health care resource use and medications were collected from patient files at 12-months post recruitment, covering the past 18-months. Commissioners were consulted on the results of the trial and budget impact.

**Results:** 195 participants were randomly allocated to receive HomeHealth and 193 to TAU. At 12-months, participants allocated to HomeHealth had a significant reduction in emergency hospital admissions (0.65 95%CI 0.45 to 0.92). The impact on total health care costs was not significant (-£796 95%CI -£2016 to £424). There was a significant reduction in unpaid carer hours at 6-months (16 hours (95%CI -18 to -14 hours) fewer per patient in the HomeHealth group over 6-months) or the equivalent of -£360 (95%CI -369 to -351) per patient if carer time was paid at the same rate as a home-care worker.

**Discussion:** Although the HomeHealth intervention results in fewer emergency admissions per patient, commissioners struggle to identify the resources to fund it. This is primarily because although reductions in emergency admissions may be cost-saving to the system as a whole, they are not cash releasing unless they occur on a large scale. An historical under provision of social care, currently provided by unpaid carers, means that cash-savings from social care are doubtful. Health promotion and prevention initiatives are unlikely to be funded from local budgets without significant system wide changes.

**ID:** CHEW00108

**Title:** Assessing Psychometric Properties of EQ-5D-5L and ICECAP-A in Patients with Chronic Depression in the UK

**First author:** Esubalew Assefa, Queen Mary University of London

**Background:** The EQ-5D is a generic measure of health-related quality of life, while ICECAP-A offers a broader measure of quality of life and well-being. Both instruments are applied in economic evaluation as outcome measures in mental health. There is little evidence on the psychometric properties of these two instruments for assessing benefits of new interventions for patients with chronic depression.

**Aims:** This study aimed to evaluate the validity and responsiveness of the EQ-5D-5L and ICECAP-A instruments for economic evaluation in patients with chronic depression in the UK. **Methods:** We used data from a cluster randomised controlled trial. 365 participants with diagnosis of chronic depression were recruited from nine NHS Trusts between 06/2019 and 02/2022. We assessed the psychometric properties of EQ-5D-5L (index and VAS) and ICECAP-A instruments against four mental health specific measures (MANSA, BDI-II, MADRS and CGI-S). All measures were administered at baseline, 6- and 12-months post-randomisation.

We applied exploratory factor analysis to identify the factor structure of the EQ-5D-5L and ICECAP-A. Convergent validity was assessed with Spearman's rank correlation coefficients. To evaluate the discriminant validity, EQ-5D-5L index, EQ-VAS scores and ICECAP-A index were compared between different severity groups defined by BDI-II and MADRS scores using Cohen's d standardised absolute effect sizes. Responsiveness was assessed by examining the changes in outcome measures between baseline and 12-months follow-up with and without external anchors using standardized response means.

**Results:** Two factors emerged from the exploratory factor analysis. One factor had meaningful loadings on all domains of the ICECAP-A and two items of the EQ-5D-5L (usual activities and depression/anxiety). EQ-5D-5L and ICECAP-A indices showed moderately good correlation with mental health specific measures ( $0.25 < p < 0.58$ ;  $0.27 < p < 0.60$ , respectively). EQ-5D-5L index, EQ-VAS, and ICECAP-A index can discriminate between different severity groups in the hypothesized direction. The mental health specific measures were more responsive compared to the EQ-5D-5L and ICECAP-A. We are working-in-progress to assess the responsiveness of the two generic measures with/without anchors.

**Conclusions:** Our results showed some level of overlap between the EQ-5D-5L and ICECAP-A in patients with chronic depression. Both instruments reported good discriminant validity, while mental health specific measures showed better responsiveness

**ID:** CHEW00110

**Title:** Cost-consequence analysis of radiographer target volume online contouring for prostate MR-guided adaptive radiotherapy

**First author:** Emma Xue, City, University of London

**Background:** Prostate cancer (PCa) accounted for 22% of male cancers in Europe in 2020. More than 30% of PCa patients receive radical radiotherapy (RT). Advances in RT delivery which include image guided radiotherapy (IGRT) have been associated with improved outcomes. Recently the MR-Linac (MRL) provides superior IGRT capabilities with the additional ability to replan the treatment daily through online adaptive MRI-guided radiotherapy (MRIgRT)). However, this involves the clinicians to be present at the time of treatment for the contouring of target volumes and organs at risk, which is resource and time intensive. This study explores the costs and consequences of shifting the task of online contouring from clinicians to radiographers for patients receiving MRIgRT on the MRL for PCa. **Methods:** A cost-consequence analysis was conducted using a discrete event simulation (DES) in Simul8 modelling the MRIgRT workflow. The model was populated with workflow timing data from 15 patients undergoing a 20-treatment schedule (clinicians contouring 136 fractions, radiographers contouring 160), and 16 patients on a 5-treatment schedule (clinicians contouring 59 treatments, radiographers contouring 15). Input parameters for the DES model were estimated through distribution fitting in R, with unit costs sourced from the PSSRU. The analysis considered an annual cohort of 58 patients to reflect prostate radiotherapy referrals in a single department in 2022-23. An alternative cohort scenario of 55 patients (20-treatments) and 221 patients (5-treatments) was evaluated to represent the proportion of prostate patients able to be treated at maximum capacity in a year.

**Results:** Our model estimated cost saving of £108,311 for 20-treatment regimen and £24,440 in the 5-treatment regimen for a cohort of 58 patients. Results show time savings of between 460 and 685 hours for 20-treatments and between 120 and 167 hours for 5-treatments. Under the alternative cohort scenario, there is a cost saving of £102,708 for 20 fractions and £92,745 for 5 fractions. Time savings ranged from 436 and 649 hours for 20-treatments and 457 and 637 hours for 5-treatments. **Conclusions:** Implementing radiographer online contouring is cost saving and reduces the demand on clinician time. Our findings highlight the economic and efficiency benefits of this transition.

**ID:** CHEW00111

**Title:** Differences in health reporting behaviour between ethnic groups in England

**First author:** Juan Virdis, University of Manchester

Previous research in England has revealed significant ethnic inequalities in health-related quality of life (HRQoL). These conclusions were derived from the EQ-5D-5L index designed to represent the health status of the English population based on self-assessment responses. However, it remains unclear whether these inequalities are affected by variations in reporting behaviour between different ethnic groups. This study aims to evaluate disparities in how different ethnic groups report their self-assessed health in England.

We analysed nine waves of data from the 2012 to 2017 General Practice Patient Survey (GPPS) for England. Participants were adults aged 18 and above, continuously registered with a GP practice for at least six months. We employed the Hierarchical Ordered Probit model, using each dimension of the EQ-5D-5L questionnaire as outcome. The variables used to estimate the underlying latent health status included 16 long-term health conditions, while age groups, gender, ethnic background, and primary care utilization, were presumed to affect reporting behaviour. The model was used to reclassify individuals experiencing moderate and severe problems in each of the five dimensions. The subsequent analysis presents the change in the proportion of individuals facing these issues after adjustment by ethnic group, with higher adjusted proportions associated with underreporting and lower adjusted proportions associated with over-reporting.

The English group had higher adjusted proportions of anxiety problems (2.32%) and pain or discomfort (9.6%), but lower adjusted proportions of self-care problems (-0.28%). Arab individuals showed higher adjusted proportions of difficulties with usual mobility (0.63%) and usual activities (0.06%), but lower proportions facing anxiety issues (-6.33%). Similarly, African, Chinese, Indian, and Irish groups exhibited mixed results. Both Bangladeshi and Pakistani individuals were associated with overreporting, with respective negative adjustments ranging from -4.14% to -9.06% and -3.38% to -3.97%, respectively. Pain or discomfort reporting exhibited the greatest adjustments, while self-care problems displayed minor adjustments.

These results suggest that disparities in self-assessed health between ethnic groups may be partially due to variations in reporting behaviour. Overall, a mixed pattern was found when considering ethnic groups separately. Further research will explore ethnic differences between specific age ranges, genders, regions, and deprivation groups.

### Lightning talks

**ID:** CHEW00013

**Title:** Emerging Drug Treatments and Suggested Global Prices Based on a Model-based Cost-Effectiveness Analysis

**First author:** Men Hoang

**ID:** CHEW00031

**Title:** Effect of exposure to violent conflict on fertility outcomes and child wellbeing in Pakistan

**First author:** Shagufta Sultana, Pakistan Institute of Development Economics

Violent conflicts not only cause physical destruction of capital but also has adverse impacts on human capital. In the last two decades, terrorist attacks affected the Pakistan very badly and country paid huge cost in terms of economic loss and human losses. According to the Global Terrorism Index report 2019, Pakistan is among the top ten countries that most impacted by terrorism since 2003. This study examined the effect of terrorist attacks on fertility outcomes and child wellbeing in Pakistan.

This paper uses two source of dataset: individual level data from Pakistan Demographic Health Survey (PDHS) and terrorist attacks data from Global Terrorism Database (GTD). we exploited temporal and spatial variation in the data because in the provinces KP and Balochistan, the intensity of attacks was very high relative to Sindh and Punjab. To evaluate the impact of terrorism on fertility and child health outcomes, we employ Difference-in-differences estimation strategy.

The sample of 34,729 ever married women aged 15-49 used for the analysis. The children ever born to the women residing in the treated provinces relative to control provinces increased by 0.20 children. The women exposed to violent conflict increased the fertility during the conflict period, the reason or potential channel might be the direct (to replace died children) or indirect (lower accessibility to health facilities and malnutrition) effects of conflict. Overall, results indicate that exposure to terrorist attacks increases the desired fertility and reduces the contraceptive use. Furthermore, the increase in fertility in treated provinces have negative impact on child health outcomes (height-for-age Z-score) aged 0-5 years relative to control provinces. The results support the notion that temporary increase in the fertility decreases the quality of children in the conflict group relative to control group. The reason behind the reduced quality of children is increased competition for the available resources among the children in the household because now there are more mouths to feed.

Our findings are particular to terrorist attacks in Pakistan but these channels are also important to explain negative effects of violent conflict in other countries.

**ID:** CHEW00055

**Title:** Estimating Price Elasticity of Demand for Sugar-Sweetened Beverages in Mongolia using a Censored QUAIDS Approach

**First author:** Nyamdavaa Byambadorj, Macquarie University

Obesity and cardiovascular diseases have been increasing in the population of Mongolia year by year. To combat these diseases, the Parliament of Mongolia is considering tax policy solutions to reduce the consumption of sugar-sweetened beverages, one of the main contributors to the diseases. Our study estimates price elasticity of demand for sugar-sweetened beverages (SSBs), as a preliminary study to investigate the tax policy impact, using data from two years of the Mongolian Household Socio-Economic Survey. In our research, we used the latest demand model, the censored quadratic almost ideal demand system (QUAIDS) model, known for its flexibility and accuracy in depicting consumption patterns and dealing with censoring. We also enhanced the data by incorporating quality adjustments in price to deal with price endogeneity. Our primary findings show that SSBs are price-elastic products, with their own-price elasticity of -1.57 for the 2021 dataset, indicating that implementing a 20% tax on SSBs could reduce SSB consumption by 31.4%. These tax-driven changes in consumption are projected to lead to an average weight loss of around 1.14 kilograms per person per year. A sub-socio-economic group analysis suggests that the estimated price elasticities vary across various socio-demographic groups. For example, urban households, smaller households, and lower-middle income households showed greater decreases in SSB consumption with a price increase, implying more substantial health benefits in terms of calorie reduction and weight loss. In addition, through the detailed methodological approach and robust findings, we contribute to the literature on consumption behaviour and public health interventions, especially for countries, including Mongolia, that are considering taxation of SSBs.

**ID:** CHEW00062

**Title:** Do informal carers identified by different methods have different characteristics and outcomes? A comparison of self-declaration and time diary approaches

**First author:** Charles Smith, University of Manchester

**Introduction:**

Informal caregiving is widespread, but there is concern that studies do not identify all the caregiving that is taking place. This may bias estimates of caregiving effects and lead to ineffective support for caregivers. There is little evidence on whether the method of carer identification uncovers different carers and whether these methods result in different conclusions on caregiving consequences.

We aim to show that use of a time diary identifies more and different carers, compared to when self-declaration alone is used.

**Data:**

We use the Innovation Panel component of the UK Household Longitudinal Study, which is an experimental set of questions asked to a subset of the main panel. In wave seven, this included a time diary, which records all activities done in two 24-hour periods, and has an activity code for co- and extra-residential caregiving. Self-declaration as a co- or extra-residential caregiver is asked in all waves of the main and innovation panels.

**Methods:**

We compare the characteristics of carers identified by a time diary and from self-declaration using linear OLS regression. Using a doubly-robust approach of entropy balancing alongside regression adjustment, we assess whether the association of caregiving with health and wellbeing measures change depending upon the identification method.

**Results:**

Out of a sample of 1055 individuals, we identify 261 carers by at least one method. 16% of these are only identified through the time diary, and so would be missed if identification was based on self-declaration alone. Time diary-identified carers are more likely to have low household income and be from ethnic minorities. They also experience worse mental health outcomes because of caregiving. The results are consistent for self-declared carers in the innovation panel and the larger main UKHLS survey (N=28,815).

**Implications:**

Correlations of informal care with health and wellbeing are under-estimated when we only identify carers with self-declaration. Activity-based methods may identify carers earlier and therefore help provide more timely support to carers who may face a greater unmet need for support. Future survey design and the assessment of the scale of caregiving should consider the degree to which caregiving is under-reported.

**ID:** CHEW00065

**Title:** Measuring health inequalities and disparities in influenza and covid-19 vaccination status across countries

**First author:** Sophie Cole, University of Oxford

#### Introduction

High rates of vaccine hesitancy in some countries were a feature of the recent pandemic, but it is not known how vaccine uptake varies across levels of socioeconomic status. This study aimed to compare and measure health inequalities in Influenza (flu) and COVID-19 vaccine uptake internationally.

#### Methods

We obtained data from the Survey of Health, Ageing and Retirement in Europe (SHARE) study, the Health survey for England, the US Medical Expenditure Panel Survey. Health inequalities in vaccine uptake were measured using Erreygers adjusted concentration index. For our outcome measure we considered two outcomes, the dichotomized self-reported flu and COVID-19 vaccination status. The ranking variable was household income measured as the sum of the individual household components and equalised by adjusting for household size.

**Results (Preliminary: subject to change)**

Our results are based on comparisons of over 30 countries with sample size ranging from N=651 (Cyprus) to N=4046 (Estonia) with an average sample of N=1752. Vaccination uptake rates across the countries ranged from 3.7% (Bulgaria) to 66.8% (Malta) for flu and from 19.1% (Bulgaria) to 98.2% (Malta) for COVID-19. For flu vaccination 15 countries reported positive inequality estimates (pro-rich). Spain and Belgium reported the most regressive coefficients, at 0.2885 and 0.1859 respectively. 5 countries reported negative flu inequality estimates (pro-poor) with the Netherlands (-0.2551) and Sweden (-0.2025) reporting the most progressive coefficients. 13 countries reported positive COVID-19 inequality estimates with the most regressive coefficients reported by France (0.1502) and Romania (0.1279). 3 countries reported negative COVID-19 inequality estimates with the most progressive coefficients being reported by Luxembourg (-0.1293) and the Czech Republic (-0.1203). For the flu vaccine there were 8 countries which reported no significant difference from equality and 12 countries for the COVID-19 vaccine.

#### Discussion

Inequitable vaccine uptake was reported for most countries for both flu and COVID-19 vaccinations. Both pro-rich and pro-poor disparities were greater for flu vaccination. Vaccine inequalities have implications for all society due to the negative externalities of poor vaccine uptake. It is important that potential vaccine health policies for marginalised groups such as improvements in information dissemination or financial incentives are identified and explored.

**ID:** CHEW00068

**Title:** Supporting mental health of NHS staff: a cost-consequence analysis of the Cambridgeshire & Peterborough Staff Mental Health Service

**First author:** Krishnan Puri Sudhir, University of East Anglia

**Background:** Healthcare workers have faced extraordinary pressures, particularly during and since the COVID-19 pandemic. A recent study by Lamb et al. (N=4,378) highlighted during the first pandemic wave notable proportions of NHS staff meeting criteria for: depression (27.3%); anxiety (23.2%); and post-traumatic stress disorder (PTSD; 30.2%). To address mental health (MH) of local staff, a specialised service – the Staff Mental Health Service (SMHS) – was established in September 2020 to provide rapid-access assessment and treatment within a multidisciplinary team for staff across five NHS trusts in Cambridgeshire and Peterborough. We report an economic evaluation comparing SMHS treatment costs and outcomes with hypothetical alternatives informed by literature and local experts.

**Method:** A cost-consequence analysis is being conducted using a decision tree to compare costs and outcomes of SMHS treatment with alternatives. SMHS costs and outcomes are informed by primary data collection. SMHS outcome measures include: Patient Health Questionnaire (PHQ-9); Generalised Anxiety Disorder Assessment (GAD-7); Post-traumatic Symptom Checklist Civilian Version (PCL-C); and the Warwick-Edinburgh Mental Wellbeing Scale (WEMWBS). Expert opinion and data availability determined the choice of counterfactuals, but includes general services such as NHS Talking Therapies. We adopt a health service perspective. Primary model outcomes include: average total treatment costs; score changes in mental health measures; quality-adjusted life years gained; and total costs of lost productivity.

**Results:** Preliminary findings suggest treated SMHS patients have more severe symptoms than general MH patients – based on available patient data (n=51): 84% had moderate-severe depressive symptoms (PHQ-9 score 11-27, 43/51); 82% had moderate-severe anxiety symptoms (GAD-7 score 10-21, 41/51); and 56% met diagnostic cut-off for PTSD (PCL-C score  $\geq 44$ , 29/51). Additionally, the mean WEMWBS score (33.9), was worse by 17 points than the non-clinical national mean of 51 (N=1,749), suggesting low overall wellbeing. Analysis is in progress, with results expected by June 2024.

**Discussion:** Staff accessing services have more severe MH needs. Results from our evaluation will aid commissioning of other such services as they are established to address substantial MH needs among staff. Challenges around data access underline the need to improve such linkages to ensure robust evaluations inform service design.