



***Health Economists' Study Group Meeting:
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Abstract booklet

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Title: Crowding in GP practice and patient-reported unmet care needs: an analysis of GP Patient Survey data

Author(s): Al Jahwari, Mignon

Abstract:

Objectives - Crowding in primary care has emerged as a significant issue within the NHS, where both increasing demand and limited resources are complicating patient access to services. This study aims to examine how key elements of GP access—such as ease of contacting GP office, securing preferred appointment times, experience of making an appointment, and continuity with a preferred GP—is associated the likelihood of unmet care needs during consultations.

Methods - We analyzed cross-sectional individual-level data from the GP Patient Survey (2018–2023), encompassing over 750,000 observations annually. Binary outcome variables were derived from survey questions, capturing whether individuals needs were met during an appointment. To assess the impact of access factors on these outcomes, we employed weighted and logistic regression models. The models control for sociodemographic characteristics, including age, ethnicity, long-term conditions, socioeconomic status, geographic region, and the type of healthcare professional seen in the patient's most recent appointment. A next step is to account for unobservable characteristics at the GP practice level by relying on fixed effects.

Results - The analysis demonstrates that positive experiences with GP access are significantly associated with lower levels of unmet care needs. These disparities are particularly pronounced among socioeconomically disadvantaged populations.

Discussion - The findings highlight the importance of addressing barriers to primary care access to mitigate unmet care needs. As these barriers can be a signal of crowding, policies which increase resources or enhance patient experience, particularly for disadvantaged groups, are crucial in reducing health inequalities and improving overall healthcare outcomes. Strengthening continuity of care and reducing obstacles in booking and contacting GP services will be essential for ensuring equitable access to healthcare across diverse populations."

Keywords: unmet care need, crowding, GP practice

Title: Small area-level mental health and health care utilisation impacts of Universal Credit natural migration in England

Author(s): Amo-Agyei, Munford, Sutton

Abstract:

Background: Universal Credit (UC) represents a major reform of the UK's welfare system, merging six means-tested benefits for working-age individuals into one. Although aimed at simplifying the benefits system and improving work incentives, research has indicated that the implementation of UC has had negative mental health effects, possibly due to difficulties in the claims process, increased conditionality, and reduced payment amounts.

Objective: This study investigates the impact of UC natural migration on small-area mental health and health care utilization in England. Additionally, we estimate the associated mental health care costs arising from the migration.

Methods: We use difference-in-differences techniques to assess trends in mental health outcomes in Lower Super Output Areas (LSOAs) exposed to UC at different stages. This phased rollout is treated as a natural experiment. Our analysis uses the Small Area Mental Health Index data developed by Daras and Barr (2021), which provides annual measures of mental health for each LSOA in England from 2011-2019. These data are supplemented with population-level information from the Office for National Statistics (ONS). Outcomes examined include antidepressant prescription, depression prevalence, and mental health-related hospital attendance, alongside a composite mental health index. Data sources include the National Health Service Digital, the Quality and Outcomes Framework, Department for Work and Pensions, and the ONS.

Results: Areas exposed earlier to UC experienced a deterioration in mental health outcomes relative to later-exposed areas. Our baseline estimates indicate that UC natural migration increased overall mental health needs by 0.1 standard deviations (SD), depression rate by 0.1%, mental health-related hospital attendance by 0.015 SD, and antidepressant usage by 0.11 units per person. These effects are robust across various model specifications and sensitivity analyses. We also observe significant increases in mental health care utilization costs linked to UC migration.

Discussion: The findings highlight the adverse mental health impacts of UC natural migration on recipients at the small-area level, alongside a corresponding rise in mental-health related health care utilization. These results suggest that welfare reforms such as UC should carefully consider their potential effects on population health and well-being. Further policy considerations are warranted to mitigate these unintended consequences."

Keywords: universal credit, mental health, healthcare utilisation, difference-in-differences, welfare reform

Title: Elasticity of substitution between private and public sector activity for dual-practice hospital consultants in England

Author(s): Anderson, Grigoroglou, Allen, Gutacker, Bloor, Walshe

Abstract:

Background: Dual-practice occurs when hospital doctors work in public and private institutions simultaneously. This may lead to a reduction in public supply and can incentivise the diversion of patients to and away from private practice (based on complexity). However, there is limited empirical evidence on the relationship between public and private sector activity in dual-practice consultants in the UK.

Aim: To test if increased private sector activity at the consultant level is associated with decreased NHS activity.

Data: Quarterly Hospital Episode Statistics (HES) and Private Healthcare Information Network (PHIN) Admitted Patient Care (APC) activity data at the consultant level between January 1st 2017 and December 31st 2023. We focused on hospital consultants within seven key specialties which account for the majority of care provided in both sectors (Orthopaedics, General Surgery, Ophthalmology, Ear, Nose and Throat, Urology, Obstetrics and Gynaecology, and Plastic Surgery).

Methods: We estimate linear regression models with consultant fixed effects to assess the effect of changes in consultants' activity in private hospitals on NHS hospital activity. Tariff costs were used to adjust for patient case-mix in NHS activity. The same was not possible in private hospitals as we only had access to consultant-level PHIN data. Shifting focus from provision to funding, we repeated our analyses to also estimate the relationship between changes in NHS-funded and privately-funded FCEs at the consultant-level.

Results: Initial findings suggest that consultants who increased their activity in private hospitals also increased their activity in NHS hospitals (0.022, 95% 0.002, 0.042). This positive association is most pronounced within orthopaedics, male consultants, and consultants within twenty years of qualification. This statistically significant positive association also existed between changes in privately-funded and NHS-funded FCEs (0.088, 95% 0.065, 0.112).

Conclusion: Consultants increase their productivity in the NHS and private sector simultaneously and not at the expense of each other. Further analyses will seek to establish how productivity of consultants changes once they start or end private practice; and explore the use of instrumental variables to address endogeneity concerns."

Keywords: Private healthcare, Productivity, Surgery, Elective Care, Dual Practice

Title: Developing a primary care needs-based workload formula for England

Author(s): Anselmi, Wang, Lau, Anderson, Kontopantelis, Sutton

Abstract:

Background: Payment to general practices in England are informed by weighted capitation, with weights based on a formula developed in 2004 using patient level data from the General Practice Research Database. These weights are outdated and unlikely to reflect the additional needs of general practices serving more deprived populations. We developed a needs-based primary care workload formula which utilises recent patient level primary care data and information on diagnoses and deprivation.

Methods: We used data on 12,755,868 million patients registered with 1,406 general practices in England on 1 April 2018 from the Clinical Practice Research Datalink (CPRD), a large nationally representative database. We used linear regression to estimate the association between cost-weighted appointments and patient characteristics, including age and gender, ethnicity, area-level deprivation, new registration and diagnoses recorded in primary or secondary care. We compared models including three different sets of diagnoses: i) 20 Quality and Outcome Framework (QOF) long-term conditions recorded in primary care, ii) 152 groups of ICD-10 conditions recorded during hospital admissions in previous two years, and iii) both. We applied the coefficients to the characteristics of the registered population to derive weighted patients for each general practice in England. We tested models using alternative workload and diagnoses.

Results: The mean cost-weighted appointments were £110.23 per person per year, and varied between £7.24 and £881.69 at the 1st and 99th percentile. The inclusion of diagnostic flags, particularly QOF and ICD-10 conditions together, flattened the deprivation gradient. It also widened the range of the weighted-patient measure by deprivation within older age bands, reflecting higher accumulation of diseases amongst more deprived groups and at younger ages. The distribution of GP practice weighted-patients nationally remained similar across models, with higher values for more deprived and more rural GP practices. However, the range widened from 0.85-1.14 to 0.80-1.16 between 5th and 95th percentiles and from 0.97-1.03 to 0.97-1.05 between least and most deprived decile when including QOF and ICD-10 diagnoses. Alternative models produced similar patterns.

Conclusion: A workload formula including diagnoses recorded in primary and in secondary care better discriminates need and redistribute resources toward general practices serving more deprived population.

Keywords: primary care, weighted capitation, workload, diagnoses, deprivation

Title: Valuation of the Alzheimer's Disease Five Dimensions Instrument: A Discrete Choice Experiment with Life Duration in Chile

Author(s): Araya-Ríos, Nguyen, Comans, Trépel

Abstract:

Objectives: To estimate health utilities for the Alzheimer's Disease Five Dimensions (AD-5D) instrument in the Chilean population using a Discrete Choice Experiment with life duration (DCETTO).

Methods: A sample of the Chilean population was recruited online to complete a DCETTO survey. Weights were built based on region of residence, gender, age, and educational level. The experimental design was composed of 20 blocks, each composed of 10 choice sets plus 2 additional choice sets to check for dominance and consistency. In each choice set, participants compared two health states described by the five AD-5D dimensions and the life duration. The choice data were analyzed using a multinomial logit model (MNL) and anchored to the health utility scale using the Chilean EQ-5D-5L for the calculation of quality-adjusted life-years (QALY). **Results:** The study included 1,895 participants who completed the DCETTO tasks. The weighted sample showed that the respondents were more educated than the general population of Chile, however, other characteristics were comparable. The Physical Health dimension had the greatest impact on utility, followed by Living Situation, Mood, Memory, and Ability to do things for fun. The EQ-5D-anchored utility values ranged from 1 (full health) to -0.497 (worst health state), with 50 health states having negative utilities.

Conclusions: This study provides the first AD-5D utility value set for the Chilean population, enabling the use of these values in the economic evaluation of dementia-related interventions. The EQ-5D-anchored utility values allow for comparisons across different health conditions, broadening the applicability of these findings in health economic evaluations in Chile.

Keywords: AD-5D, Chile, discrete choice experiment, health-related quality of life, utility

Title: Should I stay or should I go? Identification of the factors associated with Adult Social Care workforce tenure in England

Author(s): Arif, Ullah, Whittaker

Abstract:

Background: Adult social care (ASC) services in England provide support to adults in need, primarily through residential or nursing care homes and home care services. According to Skills for Care, around 18,000 organisations provided care to 836,000 people (including 225,000 short-term care episodes) across 39,000 establishments in 2022/23, employing 1.52 million people - surpassing the NHS headcount of 1.43 million. The sector faces multifaceted challenges, such as high staff turnover and recruitment difficulties, leading to numerous unfilled vacancies which affect its ability to meet demand. This study provides important insights into the factors influencing length of service and offers robust evidence on how different pay models may enhance retention and extend service duration.

Methods: Multi-level fixed effects regressions, along with pooled ordinary least squares (OLS) and correlated random effects models were estimated to identify factors correlated with tenure of ASC employees between 2015 and 2022. The sample covered 690,222 employee observations from the ASC workforce dataset a linked employer-employee panel of ASC workforce across England. Observed variations in tenure were decomposed into components determined by fixed worker attributes, stable provider characteristics, and other time-varying factors related to workers, providers, and local authorities.

Results: Our analyses reveal that tenure increases with age, pay, contracted hours, permanent contracts, training, working conditions (as indicated by staff to resident ratio and CQC rating), while it decreases with greater distance to work. Workers' time-invariant differences explain 34.4% of the tenure variation with 92% of this driven by unmeasured time-invariant characteristics. Additionally, time-invariant provider differences account for 19.7% of the variation in tenure.

Conclusion: Unmeasured time-invariant factors such as provider location, long-term management practices, pay policies, working conditions, training, job stability and workers' personal circumstances and attributes are significant determinants of employee tenure in adult social care. Strengthening the ASC workforce is a key policy priority, and the findings of this study highlight the potential policy measures that may strengthen the workforce resilience and better equip the sector to meet the needs of the population.

Keywords: Staff turnover, Tenure, Vacancies, Fixed effects, Linked employer-employee data

Title: Cost-effectiveness of self-testing among high-risk populations for hepatitis C virus in Malaysia and Georgia

Author(s): Asgharzadeh, Xiaohui, Japaridze, Stvilia, Chan, Abu Hassan, Vickerman, Shilton, Walker

Abstract:

Background: Hepatitis C virus (HCV) remains a global health challenge despite World Health Organisation elimination targets. To achieve elimination, HCV screening needs to reach marginalised populations, such as men who have sex with men (MSM) and people who inject drugs (PWID). Self-testing has been shown to increase testing rates for HIV and has been recently introduced for HCV. We conducted a cost-effectiveness analysis of HCV self-testing (HCVST) programs for MSM and PWID in Georgia and Malaysia.

Method: A randomised clinical trial was conducted in 2021-2022 to analyse the cost-effectiveness of HCVST versus standard care. Participants enrolled via online platforms designed for HIV self-testing, alongside community organisation-based recruitment in Georgia. In Malaysia, participants received oral-fluid or blood-based HCVST, or referral to standard testing. In Georgia, oral-fluid tests were distributed by courier or peer-delivery. Costs, excluding research-specific expenses, were converted to US Dollars using the average 2021 exchange rate. We used linked decision tree and Markov models to simulate progression of HCV disease/outcomes in terms of DALYs under each screening approach, with a lifetime horizon.

Result: In Malaysia, 92% of participants were male, median age 26 years, with 91% identified as MSM and 1% as PWID. HCV self-testing (HCVST) arms had 98% testing uptake, in contrast to 51% uptake in the control group. In Georgia, self-testing rate was 91-95% while standard care was 72% and 76%, depending on population and mode of delivery.

In Malaysia, the unit costs for oral and blood-based testing were \$89, with oral testing having variable costs of \$10.4 compared to blood-based testing's \$3.6. In Georgia, unit costs for HCV testing were \$20 for MSM and \$29 for PWID, with higher variable costs for PWID (\$17 vs. \$13).

In both Malaysia and Georgia, self-testing was more expensive than standard care, but likely to be cost-effective with ICER values below willingness-to-pay thresholds equivalent to 45% and 20% of GDP per capita for Malaysia and Georgia, respectively.

Conclusion: HCVST approaches vary in cost with considerable fixed costs depending on the screening approach. HCVST is likely cost-effective as an additional approach for screening HCV for high-risk MSM and PWID.

Keywords: HCV self-testing - Cost-effectiveness - MSM - PWID

Title: Can we improve quality of care for Child and Adolescent Mental Health Services in the English NHS within a resource constrained environment?

Author(s): Barker, Castelli, Chen, Goddard, Gutacker, Mason, Matias, Villasenor-Lopez, Jacobs

Abstract:

Mental health conditions in children and young people (CYP) are rising, with short- and long-term effects on individual's educational attainment, economic engagement and overall health. In England, policies have prioritised care expansion and quality improvement for Child and Adolescent Mental Health Services (CAMHS). However, little is known about the cost implications of quality improvement initiatives within CAMHS. This study addresses this gap by estimating the marginal cost of quality for a range of quality indicators including readmission rate, follow-up post discharge, waiting time for assessment and treatment, and clinician-reported outcome measures.

We used the Mental Health Services Data Set (MHSDS) from 2016/17 to 2021/22 to calculate quality measures at the individual level. Costs were calculated based on activity reported in the MHSDS for CYP (under 18) using average unit costs at a hospital level from the National Cost Collection.

A Generalised Linear Model (GLM) was used given the skewed nature of the dependent variable, total cost. The model adjusted for fixed effects including year, month and trust and patient demographics including age, sex, ethnicity and deprivation. Marginal cost was calculated at the patient mean.

The analysis included over 2 million CYP. Modest positive marginal costs were found for waiting days to assessment (£1.90). However, there were significant large negative marginal costs associated with a reduction in readmission rate at 7 days (-£48,652) and providing post-discharge follow-up care at 7 days (-£17,864), indicating that improving quality of care, particularly in reducing readmissions (and instead providing care in the community), could be extremely cost effective.

In 2021/22 only 62% of individuals received follow-up within 7 days (compared to 98% who avoided readmission). These findings suggest that significant investment in this area could have large impact without associated net increase in costs.

Results, whilst limited by the inability to control for diagnosis and severity, provide the first snapshot for where policymakers and providers might focus quality improvement efforts in CAMHS, especially in a resource constrained environment.

Keywords: Marginal cost, mental health, children, health care, quality

Title: Assessing Health Economic Outcomes After Miscarriage: Implications for Graded Care Models

Author(s): Bolbocean, Devall, Coomarasamy

Abstract:

Objective: To compare health-related quality of life (HRQoL), workplace productivity, and healthcare utilization between women with sporadic and recurrent miscarriage.

Methods: We analyzed data from 226 participants who experienced miscarriage and completed the iPCQ and EQ-5D-5L questionnaires at baseline and three months. Outcomes included HRQoL dimensions, absenteeism, unpaid work reduction, and healthcare contacts.

Results: At baseline, HRQoL was comparable between sporadic and recurrent miscarriage groups. By three months, women with recurrent miscarriage showed significantly worse mobility (80.8% vs. 98.6% optimal, $p < 0.001$), self-care (86.5% vs. 97.2% optimal, $p = 0.03$), and usual activities (71.2% vs. 88.7% optimal, $p = 0.01$). Anxiety/depression also trended worse ($p = 0.05$). EQ-5D index scores declined in the recurrent group (0.79 vs. 0.87, $p = 0.01$). Absenteeism at baseline was higher in the sporadic group (52.4% vs. 32.8%, $p = 0.02$), but this difference did not persist. Unpaid work disruptions initially affected sporadic miscarriage more, but by three months shifted toward the recurrent group (23.5% vs. 8.7%, $p = 0.02$). Healthcare utilization patterns remained largely similar between groups. While initial differences in productivity losses favored the recurrent group, over time these women experienced significantly worse HRQoL and unpaid work disruptions. Despite these changes, healthcare utilization did not increase substantially for either group.

Conclusion: The persistent mental health challenges and productivity losses associated with sporadic or recurrent miscarriages highlight the need for a graded model of care to improve well-being and optimize resource use. Further research is needed to assess its feasibility, acceptability, and impact on healthcare services in the UK, as well as its potential to mitigate adverse health economic consequences through earlier intervention.

Keywords: Miscarriage; Early Pregnancy Loss; First Pregnancy; Self-harm Outcomes; Mental Health Outcomes.

Title: Regional disparities in elective waiting times following the COVID-19 pandemic

Author(s): [Britteon](#)

Abstract:

Introduction

The COVID-19 pandemic has substantially increased elective waiting times in the UK, constraining both national and regional healthcare systems. Current evidence has analysed changes in national waiting times but without exploring regional disparities or accounting for pre-pandemic trends. We address this gap by investigating regional variations in waiting times, analysing drivers of inequality and how the pandemic has exacerbated these disparities over time.

Data

We use monthly commissioner-level data on elective waiting times, referrals, and activity in England from 2015 to 2024, linked with sub-national data on demographics, deprivation, hospital resources, and GP referrals.

Methods

We estimate the differential impact of the pandemic on waiting times for each region relative to their pre-pandemic trends. We analyse waiting times using a stock and flow model to hypothesise and track changes in referrals (inputs), waiting lists (stock), and activity (outputs) over time. We then apply machine learning methods to identify moderating factors predictive of changes in waiting times, including ethnicity, deprivation, and resource availability.

Results

Referrals reduced following the pandemic relative to pre-pandemic trends but to different degrees across regions, reflecting differences in missing demand. Elective activity was lower than the referral rate in most regions, resulting in an increase in the waiting list backlog. Regions with greater deprivation and ethnic diversity experienced more severe backlogs and slower recovery, increasing healthcare inequalities during and after the pandemic.

Discussion

Our findings highlight significant regional disparities in the impact of COVID-19 on elective waiting times, with evidence of deepening healthcare inequalities. While national policies aimed at reducing waiting times have been implemented, additional efforts and resources may be needed in the regions most affected by the pandemic to prevent further entrenchment of these inequalities.

Keywords: waiting times, healthcare, inequalities, pandemic

Title: Exploring the Dynamic Effects of Income Inequality on Health Outcomes: A Longitudinal Empirical Analysis in the Australian Context

Author(s): Cheng, Sinha, Wang, Gu

Abstract:

This study investigates the causal impact of income inequality on mental health in Australia, utilizing recent data from the Household, Income and Labour Dynamics in Australia (HILDA) survey. Addressing the gap since the last major study a decade ago, we employ both traditional regression and cutting-edge double machine learning (Double ML) techniques to examine the dynamic effects of income inequality. Our findings confirm a significant adverse impact of income disparity on mental health, reinforcing the need for targeted economic policies to reduce inequality and improve mental health outcomes in Australia. This study examines the causal effects of income inequality on mental health outcomes in Australia, utilizing the Household, Income and Labour Dynamics in Australia (HILDA) dataset, addressing a gap since the last major study a decade ago. We employ traditional regression and innovative double machine learning (double ML) methods to analyze the dynamics of income inequality and its impact on mental health. Our objectives are to update the understanding of these relationships with recent data and to apply advanced causal inference techniques to assess the robustness of the effects. The results confirm a significant causal relationship between income inequality and mental health outcomes, highlighting that higher income disparity adversely affects mental health. These findings underscore the necessity for targeted economic policies to address income disparities as a means to improve mental health outcomes in the Australian context.

Keywords: Income inequality, Mental health, Causal inference, Double machine learning, Australia

Title: Challenges in assessing cost-effectiveness alongside non-randomised clinical studies in Sub-Saharan Africa: A case study of a pharmaceutical intervention

Author(s): Culeddu, Jorgensen, Pirmohamed, Waitt, Sekaggya-Wiltshire, Lamorde, Cohen, Blockman, Toh, Okello, Allen, Orrell, Hughes

Abstract:

Despite its population of over one billion, Sub-Saharan Africa (SSA) accounts for only 3% of the world's health workforce while bearing 24% of the global disease burden. The region's healthcare systems are complex, underfunded and lack the infrastructure to collect and maintain patient records. Patients' access to healthcare is limited due to the sparse availability of clinics and high travel costs required to reach them, posing a challenge for patients requiring oral anticoagulation, as they need regular follow-up visits for blood tests and dosage adjustment. This study presents a comprehensive economic evaluation of a bundle-of-care intervention, which included a portable, point-of-care self-testing device offering a faster, and potentially less costly alternative to regular blood tests, in South Africa and Uganda.

The study compared patients who received the bundle-of-care using data collected utilising case report forms, with historical controls, for which study data could not be collected. Resource use data pertaining to the control group were available from clinic notes and diaries but only for medicines and laboratory blood tests. Missing data on other aspects of healthcare resource use necessitated an alternative approach which involved simulations using regression imputation. In the absence of nationally published tariffs, in Uganda, unit costs for secondary care were taken from WHO-CHOICE, and primary care costs were calculated by dividing healthcare providers' salaries by consultation time. In South Africa, the Uniform Patient Fee Schedule was used. Medication costs were sourced from the International Medical Products Price Guide and calculated based on daily dosage. Quality-adjusted life years (QALYs) were calculated from responses to the EQ-5D-3L for the intervention group and simulated for the control group. Incremental cost-effectiveness ratios were estimated.

The implementation of the bundle-of-care in South Africa and Uganda, demonstrated mixed results in terms of cost-effectiveness. The main limitation of this study was the large amount of missing data for the standard care group. Despite this, it stands as the first comprehensive economic evaluation of point-of-care testing for warfarin management in Sub-Saharan countries and presents several strategies for acquiring, simulating and analysing data when routine information is not available.

Keywords: Cost-effectiveness, Point-of-care testing, Oral anticoagulation, Sub-Saharan Africa, Healthcare access

Title: Quantifying Health Inequalities: Can NICE Integrate DCEA into Its Framework?

Author(s): Deng, Griffin, Hodgson

Abstract:

Many health technology assessment (HTA) agencies, including the National Institute for Health and Care Excellence (NICE) in the UK, recognise that healthcare can have varying effects across different population segments, resulting in disparities in health outcomes. Despite the existence of formal, quantitative methodologies for assessing the impact of technologies on health inequalities, most HTA agencies retain a qualitative and deliberative approach to incorporating equity concerns.

Distributional cost-effectiveness analysis (DCEA) is one such quantitative method that can be used to evaluate the equity impact of healthcare technologies on different population subgroups. It extends the decision rule of standard cost-effectiveness analysis to incorporate the value of fairness in the distribution of health outcomes. DCEA is currently a distinct, non-reference case approach that goes beyond the methods outlined in the NICE methods guide. For bodies like NICE, integrating formal quantitative approaches to equity assessment in the evaluation process might strengthen their commitment to health equity and enhance guideline robustness by promoting evidence and transparency. However, the introduction of formal methods may come with political, technical and evidentiary challenges.

NICE continues to consider options for the formal assessment of health inequalities, as shown in its most recent methods consultation. This commentary explores the potential adoption of DCEA as a viable option, motivated by the recent application of DCEA in two evidence submissions. We examine the potential benefits and implications of integrating DCEA into NICE's evaluation process and decision-making. NICE's new 'modular' approach to updating its methods guide is relevant to our discussion. We explore considerations and conceptual barriers to NICE integrating DCEA within the NICE reference case, including potential interactions with other decision modifiers such as severity. We also highlight differences in how NICE interprets the cost-effectiveness threshold compared to the health opportunity costs reflected in DCEA, and reflect on the implications.

Through this assessment, we aim to contribute to the broader discourse on how health inequalities can be systematically addressed by HTA agencies.

Keywords: Health inequality, cost-effectiveness analysis, economic evaluation, opportunity cost, value judgments

Title: Outside Wage Dynamics, Turnover and Hospital Performance - Evidence from the English NHS

Author(s): Faggio, McGuire, Serra-Sastre, Stockel

Abstract:

Pay in the National Health Service (NHS) is heavily regulated, leading to significant wage disparities between NHS salaries and “outside” wages in local labor markets. Turnover within the NHS linked to these differences has been associated with decreased care quality, particularly mortality rates. While staff turnover has been proposed as a key mechanism, direct evidence has been lacking. This study uses panel data on turnover by clinical staff groups—specifically doctors, nurses, and support staff—in acute care trusts from 2010 to 2019, combined with detailed data on “outside” wage changes in trust-specific local labor markets, constructed from individual-level earnings and work hours. This comprehensive dataset enables us to observe long-term wage dynamics in local labor markets and their impact on turnover across different staff groups, over a period of public sector austerity.

Descriptive analyses reveal that wage growth among public and private sector workers has significantly diverged, exacerbating pre-existing regional wage differences in England. Employing a range of econometric methods that leverage the panel nature of our data, we demonstrate that real terms “outside” wage growth causes turnover, particularly among nursing staff and those in A&E departments, confirming the proposed mechanism linking pay regulation to outcome disparities. We find, for example, that a 10% increase in real terms “outside” wages resulted in a 1.36% and 2.39% increase in nursing turnover in trusts and A&E departments, respectively. Notably, this relationship is driven primarily by private sector wage dynamics, as no link between turnover and “outside” wages based on (non-nursing) public sector workers is observed.

Our findings have significant implications for ongoing debates on the NHS’s workforce management and incentive structures, as well as broader challenges faced by high-income healthcare systems. Ongoing work aims to provide further evidence on the direct link between “outside” wages differentials and care outcomes, employing reduced form evidence using “outside” wages as an instrumental variable for turnover, while also examining how trust-specific policies may influence these dynamics. Lastly, we aim to explore whether nursing staff leave the NHS or tend to relocate to areas with smaller wage-gaps.

Keywords: staff turnover, hospital performance, care quality, local labour markets

Title: Does the age of people at the end-of-Life influence how much weight people provide to their outcomes compared with those of their family and friends? A budget pie study in the UK general population.

Author(s): Floredin, Mitchell, Peters, Husbands, Neilson, Coast

Abstract:

Background:

Where a broader perspective than the individual patient is used in the economic evaluation of end-of-life care (EOLC), decisions can incorporate outcomes for both those at the end-of-life (EOL) and family and friends. Where this is done, however, there are questions about how to integrate the two outcomes. Previous deliberative work explored how much weight should be placed on outcomes for people at the EOL and how much weight should be placed on family and friends in funding decisions. However, this deliberative work did not explore the impact of age on these weights and did not aim to achieve a representative sample. This study explores weights given to outcomes for young people (14-25 years) at the EOL, relative to the weights given to outcomes for family and friends.

Methods:

An online panel survey with 566 respondents explored preferences of the UK general adult population. To obtain weights, respondents were presented with a budget pie task and asked to allocate tokens between people at the EOL and family and friends. The task was repeated for situations where the person at the end of life fell into different age groups (all ages; 14-17 years old; 18-25 years old) and for different time points in the trajectory towards death (over the twelve months preceding death).

Results:

Average weights elicited for the importance that should be given to family and friends were similar across tasks for different age groups, at approximately 45% for them compared to approximately 55% for persons at the EOL. For tasks at different time points in the trajectory towards death, average weights given to family and friends increased from approximately 43% to 51% as the person approached death.

Discussion:

Compared with the deliberative work, in this study respondents tended to give more weight to family and friends. This study provides empirical evidence that the general public is willing to trade between benefits for the person at the EOL and those for their family and friends. Findings can inform an integrated framework for economic evaluation that considers outcomes for both groups when making funding decisions about EOL interventions.

Keywords: capability outcomes, economic evaluation, end-of-life, externalities, young people

Title: The half-life of truth revisited: a new method to quantify the long-term value of research

Author(s): Glynn

Abstract:

Value of information (VOI) methods provide an approach to quantify the value of resolving uncertainty in a decision. VOI has had considerable academic and policy interest over the decades. However, there is one key unresolved issue with VOI methods which has major implications for their application.

Information generated from a clinical trial can be used to inform decisions for patients in the present and in the future. This means that when estimating the value of a trial we must make a judgement about the future value of the information collected. Current practice is to make a judgement about the number of years the information generated will be valuable for, T . The total gain from a research project can then be calculated by projecting the current value of research up to year T . Unsurprisingly, the choice of T can have extremely large impacts on the estimated value of research. More surprisingly, there is scant research (theoretical or empirical) to guide the choice of T .

The one paper which addressed this was “The Half Life of Truth” (Phillips et al 2008). This paper explicitly modeled how VOI changed in response to a series of future changes in price, information (new trial results) and the entry of new technologies. The authors concluded that modelling all the possible future events was infeasible. In response practitioners vary T with little guidance on reasonable values.

In this paper I describe an approach to model future events using simplifying assumptions and empirical evidence. I demonstrate the method using a reconstructed breast cancer model from the NICE HTA process. The aim is to provide practitioners with guidance on how to choose a reasonable value for T . I focus on comparative effectiveness research and assume that manufacturers price to the cost-effectiveness threshold. Preliminary results show that larger price reductions and more new research reporting results in lower values of T . However, the entry of new technologies does not reduce the value of research resulting in $T = \infty$. An exception is when the future evidence network forms a ring resulting in indirect evidence and thus lower T .

Keywords: Value of information, clinical trials, research prioritization.

Title: Exploring differences between NHS and private hospital patient complexity: Analyses of NHS-funded elective activity in England, 2017-2023

Author(s): Grigoroglou, Anderson, Allen, Gutacker, Bloor, Stringer, Ferguson, Walshe

Abstract:

Background: The English NHS has increasingly relied on private sector delivery of NHS-funded care, especially in recent years. Public and private hospitals are reimbursed under the NHS payment scheme, which is a type of activity-based hospital payment system but have different patients in terms of casemix and may have different coding practices.

Aim: To investigate differences in the reported complexity of NHS patients treated in the NHS and the private sector.

Data: We used individual patient-level data from Hospital Episode Statistics (HES) to capture NHS-funded elective inpatient activity in public and private hospitals between 2017/18 and 2022/23. We focused on finished consultant episodes (FCEs) for ophthalmology and orthopaedics admissions. We also conducted sub analyses focused specifically on hip replacement, knee replacements and cataract surgeries, which together account for a large proportion of NHS-funded activity delivered by the private sector in England. We classified episodes by patient complexity based on Healthcare Resource Group (HRG) codes.

Methods: We explored differences in patient demographic and clinical characteristics within specialties. We calculated the distribution of activity in each HRG root provided by the NHS and private sector in the selected specialties. We investigated patient complexity by ownership status (NHS vs private) focusing on specific HRGs codes used for hip replacement, knee replacement, and cataract surgery.

Results: Private sector providers appeared to have a narrower range of activity in both specialties. There was a shift in the period leading up to the COVID-19 pandemic, where both NHS and private sector providers started treating more complex patients compared to the period before, and this shift was more pronounced among private sector providers. Over time, the changes in the proportion of the most complex patients treated by either sector in hip and knee replacements were small.

Conclusion: Over the study period, we observed marked differences in patient complexity by ownership status across the specialties and surgeries under investigation. We plan to conduct further analyses of private hospitals based on their for-profit status, as well as by different private hospital groups.

Keywords: Private healthcare, Surgery, Elective Care, Upcoding, Patient complexity, Costs

Title: Incorporating environmental impacts in economic evaluations: a model-based cost utility analysis comparing single-use versus reusable endoscopes in gastroenterology

Author(s): Jiang, Zanganeh, Waugh, Arasaradnam, Andronis, SUMU research project team

Abstract:

Background: In July 2022, the NHS became the first healthcare system to establish a goal of being a net zero health service by 2040. To achieve this, decisions around care made available to NHS patients will need to be informed by evaluations that also take into account broader environmental considerations. A notable example is the adoption of single-use endoscopes as a replacement for reusable endoscopes in gastroenterology, driven by their perceived benefit in reducing cross-infection. Besides considerations around technical and clinical performance, there are differences in the cost to the NHS and the impact they have on the environment.

Objectives: To present a methodology for assessing the cost-effectiveness of interventions that are anticipated to have an environmental impact — in this case, single-use versus reusable gastrointestinal endoscopes — taking broader environmental considerations into account.

Methods: In communication with stakeholders, we developed a decision analytic model that compares the cost-utility of different available types of duodenoscopes, devices that are commonly used in gastrointestinal endoscopy. The model compares single-use duodenoscopes, reusable duodenoscopes, and reusable duodenoscopes with disposable endcaps taking account a range of inputs not routinely factored in economic evaluations. These include costs due to manufacturing duodenoscopes, costs arising from cleaning, reprocessing and managing waste associated with each type of duodenoscope, as well as costs associated with infections due to use of contaminated reusable duodenoscopes and accessories. Sensitivity analyses will consider alternative estimates of costs and effects, as well as different way of monetarising environmental impacts. Data collection is currently in progress.

Discussion: To achieve sustainable health care, economic evaluations need to be adaptable and useful for decisions making that considers environmental goals. This work presents an example of tailoring a model to include broader costs and outputs. We believe that presenting this work at HESG and discussing obstacles and uncertainties to incorporating such impacts into health economic evaluations will be a useful first step towards making our methods and practice adaptable to emerging requirements and goals.

Keywords: Single-use, multiple-use, gastrointestinal endoscopes, cost-effectiveness, environmental impact.

Title: Preferences for the use of Artificial Intelligence (AI) technologies to help diagnose skin cancer in primary care settings: discrete choice experiment

Author(s): Jones, Walter, Morris

Abstract:

Skin cancers, including melanoma and keratinocyte carcinomas, are amongst the commonest cancers worldwide. More accurate triage of patients presenting with suspicious skin lesions in primary care could improve early detection of skin cancer, leading to better outcomes for patients, and reduced workload of overstretched secondary care skin cancer clinics. Artificial Intelligence (AI) technologies have been postulated to address these issues, but there are few studies evaluating these technologies in clinical practice and little evidence of the views and preferences of stakeholder groups. The aim of this study was to examine patient, public, and general practitioner (GP) preferences for different attributes of AI technologies in triaging suspicious skin lesions in primary care settings.

Methods:

We conducted a discrete choice experiment using online surveys. Choice scenarios were based on the following attributes: false negative rate, false positive rate, cost, location of the AI technology, efficacy on different skin tones, and recommendation in guidelines. Data were analysed using alternative-specific conditional logit regression models.

Results:

2302 participants completed the survey between January and March 2024. All attributes significantly influenced the AI technology respondents preferred. Relative importance ranking of the attributes was identical between GPs, patients, and members of the public; with false negatives rate seen as the most important attribute, followed by the skin tones the AI technology had been developed and tested on. False negative results had a significantly greater negative effect on GPs choices compared to patients and members of the public.

Conclusions:

The similarities in the relative importance ranking of attributes between groups may be beneficial for implementation, differing preferences could lead to conflicting priorities. Low false negative rates are clearly the most important attribute for developers and adopters to consider. However, developing and testing the AI technology on data from all skin tones, and therefore ensuring safety with patients from all demographics, was also clearly important to our participants. Somewhat surprisingly, participants from all groups preferred an AI technology used by a healthcare professional over an AI technology that patients could use at home. Whilst this ranked as the least important attribute, it potentially has significant implications for implementation.

Keywords: artificial intelligence, skin cancer, primary care, decision support, discrete choice

Title: Poverty and end-of-life unpaid caregiving

Author(s): Juet, Webb, Stone, Gardiner

Abstract:

Background: Unpaid carers play a vital role in supporting people towards the end of life. However, end of life caregiving has significant negative impacts for the carer including financial burden and challenges maintaining paid employment. In spite of this, there is a lack of evidence internationally on poverty amongst end-of-life carers and how this extends into bereavement.

Aim: The aim of this study was to examine the impact of end-of-life unpaid caring on financial and employment outcomes.

Design: Secondary analysis of observational data from the UK Household Longitudinal Study (UKHLS).

Methods: UKHLS collects health and social data annually from around 40,000 households in the UK. End-of-life unpaid carers were defined as participants who identified as a carer for someone in their household, where the care dependent died before the household's next annual interview. Using a staggered difference in difference (DiD) approach we explored the causal impact of the last year of care and the death of the individual cared for on the financial and employment outcomes. To gain a better understanding of the effects in play, we have implemented a triple difference comparing the DiD results with individuals who are not carers but who have suffered bereavement.

Results: Using two measures of poverty, we found that the likelihood of unpaid carers falling into poverty significantly increased by between 7-19 percentage points after the death of the person being cared for. We also found a corresponding decrease in household income during this time. In addition, we found that unpaid carers were more likely to retire before reaching State Pension age, suggesting end-of-life carers are more likely to exit the labour market early. We find that these impacts are mostly driven by a bereavement effect and not a specific end-of-life care effect.

Conclusion: This is the first study to use representative population data to explore poverty and employment outcomes of end-of-life unpaid caregiving. The findings contribute to increased understanding of the needs of end-of-life family carers internationally and suggest a need for targeted interventions to address poverty and financial burden.

Keywords: End-of-Life, Carers, Poverty

Title: Do travel times and local service availability contribute to socio-economic inequalities in treatments received for early-stage non-small cell lung cancer?

Author(s): Kagenaar, Lugo-Palacios, Grieve, O'Neill, Rachet, Hutchings

Abstract:

Introduction: Socio-economic inequalities in the receipt of curative treatments for lung cancer may be partly explained by clinical factors such as comorbidities and tumour stage. Organisational factors such as treatment availability at the diagnosing trust, and travel time to the treatment centre may also explain treatment allocation. This is a major concern as the centralisation of cancer services has changed travel times to treatment centres. However, the relative contribution of these organisational and clinical factors to socio-economic inequalities in treatment receipt is unknown, which is a barrier to evidence-based policy-making.

Objective: To examine the extent to which treatment availability, travel time and clinical factors contribute to socio-economic inequalities in the receipt of treatments for early-stage lung cancer

Methods: We used socio-demographic, clinical, and organisational data from the linked National Cancer Registration and Analysis Services, and identified 26,075 patients diagnosed with early-stage non-small cell lung cancer in England, 2015-2018. We fitted logistic regression models to identify key prognostic factors for treatment receipt. We applied a Fairlie decomposition approach to quantify the contributions of patient characteristics, travel time and treatment availability to inequalities according to income quintile, in the treatments received.

Results: We found people diagnosed with cancer in a trust that provided radical surgery had an increased probability of receiving treatment compared to those diagnosed in a trust that did not provide radical treatment. Results of the Fairlie decomposition suggested that neither travel time nor treatment availability in the trust diagnosing the cancer contributed to socio-economic inequalities in treatment receipt. Differences across income quintiles in individual-level clinical factors, especially frailty, contributed to socio-economic inequalities in treatment receipt. However, not all socio-economic inequalities are explained by clinical or organisational factors.

Discussion: Socio-economic inequalities in treatment receipt were not explained by travel times or treatment availability in the centre where the patient was diagnosed. We are applying flexible machine learning models to further identify reasons for treatment inequalities. We will discuss how insights from these advanced methods can inform government future policies for reducing inequalities in cancer care in England.

Keywords: non-small cell lung cancer, socio-economic inequalities, treatment availability, travel times

Title: Valuation of the WAlTE using online personal utility functions in an adult population

Author(s): King, Robinson, Ternent, Bate

Abstract:

Background: Online personal utility functions (OPUF) present a new method for eliciting preferences. In this study we used the OPUF to elicit a health state utility value set for the Weight-specific Adolescent Instrument for Economic-evaluation (WAlTE) with a representative sample of the UK adult population.

Methods: WAlTE OPUF survey design was informed by prior qualitative work. The survey consisted of the WAlTE descriptive system, domain weighting, level rating (per domain) and a VAS anchoring task. Personal utility functions were estimated on the individual level for all participants. Personal utility functions were aggregated and combined with the anchoring factor to give the social utility function and utility value set. Preference heterogeneity was assessed using Euclidean distance and PERMANOVA to explore preference variation within the sample. An experimental sensitivity analysis dichotomised preference heterogeneity into anchoring variation and domain weighting/level rating variation.

Results: A total of 300 participants completed the WAlTE OPUF survey. The sample was broadly representative of the UK adult population. Participants, on average, took less than 10 minutes to complete the survey. The most important domains were tiredness and unhappiness, while least important domains were sports and embarrassment. Social utility values and the anchoring utility value estimated were comparable to previous studies. Preferences generally were heterogeneous, especially among different ages. Younger participants assigned lower utility values to WAlTE health states and provided significantly lower scores on the VAS anchoring task compared to older participants.

Conclusion: This study successfully elicited health state utility values for the WAlTE using the OPUF. Preference heterogeneity analysis identified differences in preferences for different age groups and a further valuation study is ongoing to explore whether this heterogeneity exists between adults and adolescents.

Keywords: Preference elicitation, online-personal utility functions, preference heterogeneity.

Title: Getting inside the black box of prevention: Does it matter for health economists who people think is responsible for prevention?

Author(s): Kulikov, Fitzsimmons, Tudor Edwards

Abstract:

Although health economists are increasingly working in the sphere of prevention and public health economics, we do not often stop to ask who is responsible for preventing avoidable ill-health, disability, and premature death.

Around half of global mortality and disability are associated with behavioural, occupational, metabolic and environmental risk factors. A growing number of people are economically inactive due to ill-health. The UK health care system is prioritising prevention to reduce demand for health and social care services in an aging population especially following the global pandemic and economic pressures. Addressing the wider determinants of health may produce benefits both in quality-adjusted life years and in long-term financial savings.

The opportunities for prevention lie across society as a whole, including the public and private sectors, voluntary services, and individual households. The explicitly published literature around views on relative responsibility of different stakeholders is sparse. Implicitly, the concept appears in public health policy.

This HESG paper considers relevant literature and presents the methods and findings of a pilot study using a simple visual approach. It includes the views of different stakeholders in health care and public health. Participants were asked ‘who do you believe is responsible for reducing preventable ill-health and disability in society across the life-course?’ and were offered to divide a pie chart by hand to reflect their opinions.

The exercise was offered to 234 participants who identified a mean of four parties responsible for reducing ill-health and disability in society across the life-course. The paper offers the analysis of the parties offered by participants and the relative share of responsibility assigned to them. The most frequently proposed parties for taking responsibility were ‘Statutory services’ such as ‘Health’, ‘Education’, and ‘Social care’, ‘Different levels of government’, and ‘Individual households’. The results point towards a need for collaboration between the public sector, private businesses, voluntary organisations, and individuals to finance and co-produce prevention.

Keywords: Responsibility, pie-chart, prevention, views.

Title: Efficiency and equity of parallel pathways of community-based falls prevention: model-based health economic evaluation

Author(s): Kwon, Squires, Young

Abstract:

Background: Three parallel pathways exist for community-based falls prevention: reactive (R) – after a fall requiring medical attention; proactive (P) – after professional referral of high-risk individuals; and self-referred (SR) – voluntary intervention enrolment. The UK guidelines recommend the scale-up of all three ('recommended care' (RC)), but the scale-up of none ('usual care' (UC)), one (R, P, SR) or two (R+P, R+SR, P+SR) are potential options. This study aims to compare the options in terms of efficiency and equity.

Methods: A previously validated health economic model of community-based falls prevention was used. Cost-utility analysis from the societal perspective over a 40-year horizon sought to identify the optimal strategy among the above options based on efficiency alone. Probabilistic sensitivity analysis accounted for parameter uncertainty. Efficiency and equity were jointly evaluated by distributional cost-effectiveness analysis. Equity was conceived as reduction in the relative and absolute per-capita societal net health benefit differences across socioeconomic status quartiles. Alternative scenarios assessed the impacts of changes in frailty level and progression, cognitive impairment incidence, intervention demand and GP access.

Results: The public sector cost-effectiveness threshold would have to increase above £30,000 per quality-adjusted life year (QALY) gained for RC to have the highest probability of being cost-effective, the next best strategy being R+SR. However, if decision-maker had relative health inequality aversion of the same level as that of the English general public, RC would be the optimal strategy in terms of efficiency and equity at the threshold of £30,000 per QALY gained. R+SR consistently remained the optimal strategy when absolute health inequality aversion was considered. Scenarios of worse geriatric health (increased frailty level/progression and cognitive impairment incidence) favoured RC such that it was the optimal strategy at threshold of £20,000 per QALY gained and at lower relative inequality aversion levels. Other scenarios had little impact on strategy rankings.

Conclusion: Concurrently scaling up all three community-based falls prevention pathways as recommended by the UK guidelines would be optimal only if equity regarding relative health inequality is considered alongside efficiency. This is a case of equity consideration making a concrete difference to the decisional recommendation generated by a health economic model.

Keywords: falls prevention; economic model; NICE falls prevention guideline; equity

Title: Frequent Users of the Emergency Department: Analysing Healthcare Costs in Multicentre Linked Regional UK Data

Author(s): Mattock, Bojke, Saraiva, Relton, Kumar, Burton, Mason, Marshall, West, Lea, Pilkington, Arris, Van Der Feltz-Cornelis, Guthrie

Abstract:

Background: Frequent users (FUs) of emergency departments (EDs) represent a small proportion of patients who impose a substantial economic burden. The overall cost impact of FUs across all UK urgent care pathways is unknown. Additionally, it is unclear whether healthcare costs vary across types of FU, who may differ based on characteristics such as demographics, morbidity, reasons for attendance, and patterns of service utilisation. This study uses the CUREd database, which integrates data from EDs, inpatient services, ambulance services, and NHS 111 calls, to analyse healthcare costs of frequent ED users in Yorkshire and Humber.

Objectives:

1. Estimate annual healthcare costs and service utilisation for FUs
2. Estimate costs per each A&E attendance for FUs
3. Explore variations in cost and service utilisation by FU characteristics and subtypes

Methods: CUREd data were obtained across three financial years from April 2014 to March 2017. Frequent users were defined as having 5 or more A&E attendances per year. Healthcare costs were calculated using the NHS Grouper software. Annual costs and resource utilisation were estimated using a multi-level generalised linear regression model adjusting for individual characteristic including age, sex, ethnicity, mental health conditions, multiple morbidities, and including random effects by hospital site. A latent class analysis (LCA) was used to identify different FU subtypes.

(Preliminary) Results: FUs comprised 2.6% of the sample but accounted for 12.6% of A&E attendances and 13.1% of costs. Their annual costs (£11,000 vs. £2,000 for non-FUs) were driven largely by inpatient admissions. FUs with mental health problems had higher volumes of A&E attendances, but fewer inpatient admissions. The LCA identified four distinct FU subtypes, differentiated by probability of inpatient admissions, severity of A&E attendance, presence of multiple morbidities, and patterns of frequent use. Annual healthcare costs were substantially higher for the two subtypes with a higher probability of inpatient admission.

Conclusion: This is the first UK study to estimate the healthcare costs of FUs. We found significant costs across all urgent care pathways, with inpatient admissions representing the largest burden. FUs are a heterogeneous group, requiring a range of targeted interventions to address their varied healthcare needs.

Keywords: Frequent users, emergency department, healthcare costs, CUREd, latent class, A&E

Title: Methods and considerations for costing a health system under constraints

Author(s): Mohan

Abstract:

Accounting for health system constraints in the evaluation of healthcare interventions is crucial for capturing context-specific bottlenecks that can significantly affect cost-effectiveness. It also facilitates the assessment of interventions aimed at overcoming these bottlenecks. All-disease health systems models represent a cutting-edge approach in economic evaluation, enabling decision analysis for sector-wide resource allocation within the context of health system capacity constraints.

This paper presents a novel application of the ingredients-based costing approach to health system models, aimed at estimating the costs of delivering a wide gamut of healthcare interventions. Specifically, we outline methodologies for estimating four distinct cost types, each serving different policy objectives: financial costs, economic costs, costs assuming current demand and supply-side constraints, and costs assuming no system constraints.

To illustrate our approach, we apply these methods to estimate healthcare delivery costs in Malawi, using the Thanzi La Onse model as a case study. This health systems model mechanistically integrates epidemiology, healthcare-seeking behavior, and system constraints as well as the interdependencies among health conditions and healthcare interventions for Malawi. This mechanistic representation offers a unique opportunity to carry out a detailed costing of the major health system inputs needed to deliver services within the context of the existing healthcare infrastructure, including the cost of medical consumables, health worker training and remuneration, medical equipment, and health facility operation for outpatient, inpatient and emergency care.

We detail the relevant costing methodologies, identify key data sources, and explain how model inputs and outputs can be fine-tuned for the application of ingredients-based costing techniques. Furthermore, we demonstrate how varying assumptions about health system constraints can substantially alter the estimated costs of healthcare interventions. Finally, we outline an iterative process for aligning model-based cost estimates with actual system costs, utilizing budget and national health accounts data.

While at this stage, this work focuses on costs from a health system perspective, the underlying principles can be extended to estimate societal costs under similar constraints."

Keywords: costing, health system modelling, economic evaluation, resource allocation, cost-effectiveness

Title: Children and Young People's Time-Use Questionnaire for use in Economic Evaluation (CYP-TUQEE): a new tool for data collection

Author(s): Morgan, Aussems, Donaldson, Lancsar, Petrou, Rivero-Arias, Thorn, Ungar, Zhang, Andronis

Abstract:

Patient time represents a limited resource, the opportunity cost of which ought to be considered when conducting an economic evaluation from a societal perspective. However, economic evaluations of interventions related to children and young people (CYP) rarely account for the opportunity cost of their time. Before such costs can be valued and included in an economic evaluation, the amount of time forgone by CYP seeking and receiving care must be measured. Currently, no standardised data collection tools exist for capturing CYP's time displaced by care.

To address this gap, we developed and pretested the Children and Young People's Time Use Questionnaire for use in Economic Evaluation (CYP-TUQEE), producing one version intended for completion by CYP aged 11 to 17 directly, and a second version for completion by parents or carers on behalf of younger patients. This paper discusses the iterative development of the CYP-TUQEE, which involved initial scoping reviews, consultation with a Working Group of experts, and pretesting consisting of think aloud interviews with CYP and parents. Pretesting participants were asked to go through the questionnaire whilst thinking aloud and providing feedback, with a particular focus on comprehension and vocabulary, question structure and response options, and the categorisation of activities for questions regarding time displaced by seeking or receiving an intervention. This pretesting process aimed to produce a questionnaire that is comprehensive but easy to complete, even by younger CYP within this age range.

The resulting CYP-TUQEE offers a novel, standardised instrument to facilitate the collection of time-use data for paediatric economic evaluations, addressing a critical gap in current methodology and practice. This instrument is designed to facilitate the inclusion of CYP's time costs in economic evaluations adopting a societal perspective, leading to more informed decision-making. Future research will involve additional testing of the CYP-TUQEE in a 'real-world' setting, to further validate and refine its design.

Presenting this work at this (pre-publication) stage should give us an opportunity to obtain feedback from academic colleagues, discuss the next steps for this project, and identify ways of maximising the use of the CYP-TUQEE in future research through discussion with peers.

Keywords: children and young people, value of time, time-use questionnaire

Title: The effect of reductions in substance misuse service expenditure on hospital admissions in England

Author(s): Moss, Anselmi, Sutton

Abstract:

Background: Fiscal tightening following the 2008 financial crisis led to reductions in health service expenditure in many countries. In England, local authorities reduced expenditure on substance misuse services, which may have led to negative health outcomes and additional costs incurred in other parts of the publicly funded healthcare system. Evidence suggests that the cuts resulted in fewer people receiving treatment for substance use disorders, but no change in mortality or alcohol-specific hospital admissions. However, previous studies have not attempted to address reverse causality and drug-related admissions have not been considered. **Data:** We use annual counts of three different drug-related hospital admissions at the upper-tier local authority level (admissions with a primary diagnosis of drug-related mental health and behavioural disorders, admissions with a secondary diagnosis of drug-related mental health and behavioural disorders, and admissions with a primary diagnosis of poisoning by illicit drugs) and counts of alcohol-specific admissions. We also use data on local authority expenditure on substance misuse services, public health grant allocations, and economic and demographic population characteristics. The estimation sample comprises 135 local authorities for 2016/17 to 2019/20.

Methods: We use a shift-share instrumental variable approach to estimate the effect of local authority substance misuse service expenditure on drug-related and alcohol-specific hospital admissions. We leverage nationally administered reductions (“shifts”) in public health grant allocations which local authorities use to fund substance misuse services. We control for population characteristics and local authority fixed effects.

Results: A £1 reduction in per-capita expenditure on substance misuse services led to an additional 0.94 (SE 0.52) admissions with a secondary diagnosis of a drug-related mental health and behavioural disorder per 10,000 population. We find null results for admissions with a primary diagnosis of drug-related mental health and behavioural disorders, admissions with a primary diagnosis of poisoning by illicit drugs, and alcohol-specific admissions.

Conclusion: Preliminary results suggest reductions in local authority expenditure on substance misuse services resulted in a greater number of admissions where drug use was a factor, but not the main reason for admission. Further analysis will test sensitivity of results to the study period and alternative specifications of the instrument.

Keywords: Public Health, Local Government Expenditures, Health Expenditures, Healthcare, Substance Use

Title: The Causal Effect of Health on Employment and Earnings: A Partial Identification Strategy with Imperfect Instruments

Author(s): Munford, Ullah, Jabeen, Mignon

Abstract:

In observational studies, estimates of health's impact on labour market outcomes often risk bias due to omitted variables, measurement errors, and reverse causality. Using data from the UK Longitudinal Household Survey, this study uses a nonparametric partial identification strategy to bound the true causal effects of health on employment and earnings. To accurately capture health status, we employed three alternative measures derived from: 1) self-reported non-communicable diseases, disability, and poor general health; 2) the SF-12 health-related quality of life questionnaire; and 3) biomarkers from blood samples collected during nurse assessments in Waves 2 and 3.

Findings reveal that individuals with one health condition earn £0 to £1,700 less per month, two conditions reduce earnings by £590 to £1,820, and three conditions by £710 to £1,840 compared to those without health conditions. Men (women) with one condition have a 0-7% (0-7%) lower probability of employment, two conditions reduce this by 4-8% (5-9%), and three by 6-9% (7-9%).

The biomarkers-based health measure, which is less prone to measurement error, show similar results. For instance, individuals with two abnormal blood tests earn £0 to £2,750 less and have a 0-2% lower probability of employment; with three abnormal tests, earnings fall by £610 to £4,260, and employment probability drops by 1-5%.

We also estimate the returns to qualifications, showing that health impacts are comparable to differences in earnings and employment between individuals with no qualifications and A-levels, or GCSEs and degree level qualifications. This suggests health capital is as significant as education in improving labour market outcomes.

Finally, we estimate the labour market effects of several non-communicable diseases. Our estimation approach provides bounds on the population average treatment effect (ATE), a more relevant policy parameter, allows for unlimited treatment effect heterogeneity, and relies on relatively weaker assumptions than those used in instrumental variables or fixed effects regressions. However, this comes at the cost of yielding a range of values for the ATE rather than point estimates.

Keywords: Labour market outcomes, partial identification, Inequalities, Biomarkers

Title: Trading Diagnostic Certainty for Lower Complication Risk: A Discrete Choice Experiment
Developing a Target Product Profile For 99mTc-Sestamibi SPECT In Kidney Cancer Diagnosis

Author(s): Ndwandwe, Warren, Wildgoose, Fox, Tran, Hunter

Abstract:

Background:

Over 13,000 people are diagnosed with kidney cancer annually in the UK, often by chance. Conventional imaging methods struggle to differentiate between cancerous and non-cancerous kidney tumours - up to 30% kidney tumours are non-cancerous. Currently diagnosis depends on histology from surgery or biopsy, both of which are invasive procedures with risk of complications. The 99mTc-sestaMIBI SPECT nuclear scan, has shown high diagnostic accuracy for benign tumours. However, limited research exists on patient and public preferences for this scan. We developed a discrete choice experiment (DCE) to identify preferences for key diagnostic features and developed a target profile favouring the scan over resection or biopsy.

Methods:

An initial list of attributes related to cancer diagnostics was identified from literature; and narrowed down to 20 then 5 items through discussion and a focus group of eight patient representatives respectively. Appropriate attribute levels were assigned, and choice sets optimised using the D-efficiency approach (Stata 17), which minimised parameter estimates' variance-covariance matrix. A three-part online survey was distributed nationally. Respondents ranked the five attributes by order of importance then completed 10 choice-tasks each with two test options. Conditional logit models quantified attributes' impact on utility and willingness to give up test certainty depicted trade-offs. Minimal and optimal criteria were defined for test attributes that could satisfy >80% and >90% of respondents as an alternative to surgery.

Results:

Of the 150 responses received, 35% (n=53) had prior experience of cancer tests, 87% (n=130) were white, 68% (n= 102) female. The risk of serious complication was ranked as the most important attribute and had the greatest impact on utility (coefficient = -2.17). Pain/discomfort from the test was ranked lowest. Respondents were willing to trade 32% diagnostic certainty for 1% improvement in complication risk. For 99mTc-sestamibi SPECT/CT with 75% specificity, 0.75% probability of a serious complication, mild pain or discomfort, 30% needing additional tests, the minimally acceptable test sensitivity would be 75% whilst the optimally acceptable test sensitivity would be 87%.

Conclusions:

This study presents strong evidence for patients trading-off kidney cancer diagnostic certainty to avoid complications, a key-value proposition for the 99mTc-sestamibi SPECT/CT

Keywords: stated-preference, cancer diagnostics, 99mTc-Sestamibi SPECT, sensitivity, specificity

Title: A Discrete Choice Experiment to Compare Valuations of the EQ-5D-3L and a Modified Version for Adults with Learning Disabilities

Author(s): O'Dwyer, Webb, Kind, Hulme, Bryant, Meads

Abstract:

Objectives: In the UK, 1.3 million people with learning disabilities face significant health disparities, living on average 20 years less than the general population. Research indicates this group face difficulties in completing the EQ-5D-3L. A modified EQ-5D-3L, incorporating images and revised wording for self-reporting, was developed and validated. This study uses a discrete choice experiment (DCE) with the UK general population to obtain health state values for the modified tool, comparing these to values from the original version.

Methods: A DCE was designed with 36 blocked choice sets, each participant completing six, indicating which EQ-5D-3L health state they considered to be better. Identical choice sets, constructed using both the original and modified EQ-5D-3L, were presented. Participants completed both versions of the EQ-5D-3L and answered questions about survey comprehension. Mixed logit models were used to analyse the data. Using participant EQ-VAS ratings of health states 11111, 33333, and dead, latent scale valuations were anchored to a full health =1 and dead=0 scale. Comparisons were made across versions and with the existing 3L value set. Robustness was tested by filtering participants based on VAS responses and self-reported understanding.

Results: Analysis of the DCE and VAS responses showed that the modified measure produced lower and more variable health state utility values than the standard EQ-5D-3L. When illogical responders were excluded, the differences were no longer statistically significant. Of the 643 participants, 82% reported understanding the tasks. The modified versions level coefficients are in the expected (negative) direction, with more significant decrements for level 3 than level 2. All coefficients in the modified version were statistically significant at the 1% level.

Discussion: The modified EQ-5D-3L for adults with learning disabilities is a valid and reliable measure, facilitating self-reported health status. Results suggest the new descriptive system does not significantly impact health state valuation. Full results on a valuation tariff to support its use in economic evaluation are presented.

Keywords: Discrete choice experiment, Valuation, EQ-5D, Health inequalities, Learning disability

Title: Optimising allocation of healthcare resources with machine learning: The case of personalised DR screening for diabetes patients.

Author(s): Pedersen, Trine Kjær, Olsen, Byberg

Abstract:

Introduction: Optimal chronic disease management requires continuous assessment of disease progression risk, such as monitoring biomarkers to prompt timely adjustments to treatment plans. However, standardised guidelines for monitoring often take a one-size-fits-all approach, overlooking individual risk profiles. Machine learning (ML) provides a novel approach to predicting risk of developing complications and group patients by their expected progression profile, allowing targeted interventions to optimise allocation of resources according to need.

Aim: In this study, we propose a ML algorithm for individualised diabetic retinopathy (DR) screening by extending/reducing the screening interval beyond the current intervals for low/high risk individuals. The algorithm aims to predict the risk of DR progression between screenings. We hypothesise that DR screening intervals for individuals at low risk of DR progression can be safely extended, and estimate the potential yearly cost savings of implementing tailored screening.

Research design and methods: The study includes 4,520 adults with type 1/2 diabetes treated at Steno Diabetes Center Copenhagen from 2003-2017. Different ML models are tested, and the one with the best fit is chosen. Features include age, sex, year of diabetes debut, diabetes type (type 1/type 2), smoking status, physical activity, alcohol consumption, albuminuria status, diastolic- and systolic blood pressure, HbA1c, estimated glomerular filtration rate (eGFR), BMI, LDL, total cholesterol and triglycerides. Based on the predicted risk of progression of DR, the 'optimal' recommended interval for the next screening was projected. For individuals with a predicted progression risk below/above 1% and no/mild/moderate DR, the recommended interval was set to 24/12/6 and 48/24/12 months, respectively. We apply a simulation model to estimate the potential cost savings from application of the ML algorithm compared to standard practice.

Results: Preliminary results suggest that ML can effectively predict the risk of DR progression, and decrease the number of total screenings.

Discussion: A risk-stratified test program for DR screening, in which screening intervals for the slow progressors are prolonged and increased for the fast progressors, will provide equitable access to health care according to need and free healthcare resources.

Keywords: Resource allocation, Personalised interval, Diabetes, Risk prediction

Title: Are Death and Cure Equivalent? Uncovering Methodological Gaps in Evaluating Carer QALYs Across Recovery, Death, and Beyond.

Author(s): Pennington, Cranmer, Davis

Abstract:

Health economic evaluations are increasingly including quality adjusted life years (QALYs) for carers, as well as patients. However, there are disagreements as to how carer QALYs should be incorporated into these evaluations. Two common approaches are: the “absolute utility” approach in which carer utility values are included until patients die, and the “disutility” approach in which a disutility (the difference between the carers’ utility and population average utility) is included until patients die. Recently, an “incremental” utility approach has also been proposed, in which the difference between each health state and an anchor health state (which can be best, worst, or mid-range) is used to generate an incremental (dis)utility which is applied as patients improve or worsen.

There is much debate as to how patient death affects carers; for example, is it appropriate to model effects on carer burden after the person they cared for has died, and would patient death worsen or improve carer burden? There has been much less consideration as to what the implications of these approaches are for curative therapies where patients may no longer require carers due to either an improvement in health or an avoidance of health decline.

We argue that the effects of patient cure and patient death should be symmetric; in both cases carers are no longer required (if formal carers were included instead, their costs would be excluded after either). We apply the five different approaches to six hypothetical interventions (with different combinations of cure, mortality, and morbidity effects) and demonstrate that all generate the same results when carer QALYs after patient cure and patient death are included. We demonstrate that where patient cure and patient death are both excluded, the approaches lead to different results and inconsistencies.

We note that the tension between QALY maximisation for carers and patients is not new or unique to health economics and draw from the literature on the intersectionality of disability studies and care research. We propose a set of questions to discuss with carers and stakeholders with the aim of advancing methods to include carer QALYs in economic evaluations for healthcare decision-making.

Keywords: Carers, caregiving, QALY, HRQoL, modelling

Title: How do schools use economic evidence in mental health priority-setting? A think-aloud study

Author(s): Qu, Al-Janabi, Camille

Abstract:

Aim: This study investigates how school decision-makers use economic and non-economic evidence to inform their resource allocation decisions for mental health and wellbeing, addressing the gap between assumptions of evidence use and actual practice.

Methods: A structured priority setting task was designed for participants to select mental health and wellbeing investments within a constrained budget. Subsequently, participants were presented with economic evidence (e.g., Quality-Adjusted Life Years, and cost-effectiveness ratios) and non-economic evidence (e.g., school survey data, academic literature, and social media) to assess whether and how these forms of evidence influenced their choices. Using a qualitative think-aloud interview method, the study has collected data from 15 participants, including school principals, Safeguarding Leads, and other school staff. Interviews are planned with 15 more staff or stakeholder participants. Transcribed interviews were coded by independent raters using seven models of evidence use, tracking the frequency and types of evidence in decision-making.

Results: Most participants prioritise their own experience and field knowledge when making decisions about resource allocation. The most commonly used model of evidence is the Interactive Model, indicating a preference for combining research with personal expertise and judgment, rather than directly applying research findings. The economic evidence, was considered by some to be complex and difficult to understand. The social media evidence, was often viewed with skepticism. Visual evidence were more readily accepted than textual information. Internal school data, such as surveys, were frequently recognised as reliable sources of information. Local context, including perceptions of existing support and available resources, played an important role in decision-making.

Discussion: Economic evidence was not used in school mental health and wellbeing decision-making in a straightforward way and was influenced by organisational traditions, values and attitudes. The findings emphasise the importance of considering the local context and the widespread reliance on empirical knowledge rather than formal evidence. Data collection and analysis is ongoing but (i) making economic evidence more accessible and understandable, possibly through the use of visual aids; and (ii) recognising and addressing tensions with the professional autonomy of educators may promote a more receptive attitude towards the inclusion of evidence in decision-making processes.

Keywords: Mental Health, Think-Aloud Method, Resource Allocation, Priority-Setting, Economic Evidence

Title: Can models for surrogate endpoint evaluation be used to predict generic measures from disease specific measures of health related quality of life based on summary data?

Author(s): Sadek, Cooper, Welton, Bujkiewicz

Abstract:

Objectives

Decisions on the cost-effectiveness of new treatments require estimates of treatment effects on generic Health related Quality of Life (HRQoL) outcomes. However, it is often the case that studies report disease specific scales, rather than the generic measure suitable for decision making, and this is especially the case in rare diseases. When there are multiple studies available, evidence synthesis of HRQoL outcomes can aid decision makers by fully reflecting the available evidence and reducing uncertainty. We aimed to explore the use of meta-analytic models for surrogate endpoint evaluation to obtain estimates of generic measures of HRQoL from disease specific measures.

Methods

We illustrate the methods using summary data from 25 RCTs reporting effectiveness of treatments in Ankylosing Spondylitis (AS) and non-radiographic axial Spondylarthritis (nr-axSpA). Target generic measures of HRQoL are mapped by predicting the missing treatment effects on the generic outcomes. We compare the following models: bivariate random meta-analysis (BRMA), Daniels-Hughes model (D&H), and BRMA in product normal formulation (BRMA PNF). The predicted and observed treatment effects on the generic outcomes are pooled and evaluated.

Results

We found associations between the generic 36-Item Short Form Survey Physical Component Summary (SF36-PCS) and the disease specific Bath Ankylosing Spondylitis Disease Activity Index (BASDAI), the Mental Component Summary (SF36-MCS) and Functioning Index (BASFI). Cross validation confirmed the models' prediction intervals to contain observed estimates for at least 90% of included studies. The treatment effect on BASDAI predicted the treatment effect on the SF36-PCS in all of the studies. BRMA PNF estimates were more precise than D&H estimates. Pooling estimates with BRMA PNF reduced uncertainty by 38% on SF36-PCS when compared to a univariate model.

Conclusions

Methods for synthesis of surrogate endpoints predicted and increased precision in estimates of the generic HRQoL needed for HTA. BRMA PNF gave the most precise estimates."

Keywords: surrogate endpoint, quality of life, bivariate meta-analysis, Ankylosing Spondylitis, bayesian

Title: Wellbeing Investment in English Schools: A Theory-Testing Process Tracing study

Author(s): Shagalov, Al-Janabi

Abstract:

Background: In recent years, there has been a marked increase in the role of schools in the mental health and wellbeing of students. They make difficult decisions in the face of squeezed school budgets and invest significant financial, human, physical, and time resources in mental health and wellbeing activities. This presents a major priority-setting challenge for such organisations. The existing literature on resource allocation priorities assumes a rather simplistic rational choice model that may overlook important school features. How priority setting works in practice is known mainly from empirical analysis of healthcare settings. In order to support resource allocation decisions in educational settings, a better understanding is needed of why and how schools invest in mental health and wellbeing.

Objectives: to deductively test theories of resource allocation drawing on a range of sources of evidence to confirm or refute their propositions.

Methods: We apply the 'process tracing' approach mainly used in policy studies in an innovative way to a health economics problem. We trace the processes that decision makers follow when allocating resources for mental health and wellbeing-related activity. This comprises 5 school case studies in Birmingham, in which interviews, observation, and document analysis were used.

Findings: In our early stages of research, we found that schools respond to internal and external challenges when making decisions about resource allocation. A significant external challenge was the coronavirus pandemic, which has increased schools' leadership drive focus on the mental health of students. In turn, tight budgets, an internal challenge, deviate schools from the rational choice model to look for resources outside. The tangible return on investment in mental health triggers further investment and parental involvement in the school, consistent with our theoretical insights.

Discussion: School investment decision-making and resource allocation is a much more complex process than previously assumed in the academic literature. Testing the 'process tracing' approach in a health economics framework has shown its applicability for further research. We would appreciate the comments of conference participants on the methodology used and the economic and policy implications of our findings.

Keywords: Wellbeing Investment, Schools, Decision-making, Resource Allocation, Process Tracing

Title: The impact of time and risk preference on attendance to the medical check-up for blood pressure in a sample of chronically ill patients: Findings from an experimental module occurred during wave 5 of the English Longitudinal Study of Ageing (ELSA).

Author(s): Tebaldi, Bojke, West

Abstract:

Introduction

Time and risk preferences are ubiquitous in health economics, and an extensive body of literature links intertemporal choices and attitudes toward risk to a diverse range of health behaviour. The management of chronic conditions such as hypertension, type 2 diabetes and high cholesterol are no exception since they require regular monitoring of key biomarkers such as blood pressure. However, the existing evidence on the topic focuses on either risk or time preference in explaining heterogeneity in the management of chronic conditions, ignoring to account for the well-documented interconnections between these two individuals' characteristics. Using the Grossman model of the Demand for Health as an underlying theoretical framework, this study will investigate whether and to what extent time and risk preferences predict attendance to the medical check for blood pressure.

Methods

The present research uses data on a unique sample of 540 chronically ill individuals from the wave 5 of the English Longitudinal Study of Ageing (ELSA) were for the first and only time in the ELSA time and risk preferences were elicited through a lottery-type laboratory experiment. We employed a series of binary logit models to investigate predictors of attendance to the medical check for blood pressure. All models were adjusted for age, education, and non-pension wealth. An interaction term between time and risk preferences was included in sensitivities analyses.

Results

Risk-averse individuals were more likely to attend the blood pressure check (Odds Ratio, 1.999, 95% CIs 1.227 - 3.257). However, this effect was only found when the variable for time preference was dichotomised at the median of its distribution. There was no statistically significant effect of time preferences on the probability of attending the medical check for blood pressure.

Discussion

We found limited evidence that time and risk preferences predict attendance to the medical check for blood pressure. These results add to previous literature by using preferences elicited during a laboratory experiment rather than relying on proxies for measuring them and simultaneously considering both of these variables within the same model."

Keywords: Time preferences, risk preferences, chronic conditions, medical check, blood-pressure

Title: Development of a PRISMA extension for systematic reviews of health economic evaluations (PRISMA-EE)

Author(s): Tran, Petrou, Kwon, Booth, Bastounis, Staniszewska, Grant, Hopewell, Page

Abstract:

Systematic reviews of health economic evaluations play a crucial role in informing evidence-based healthcare decisions, yet they lack standardization in reporting. This project aims to develop a Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) extension for systematic reviews of health economic evaluations (PRISMA-EE).

The project involves: a two-part review process (a scoping review of the methodological literature and a review of sample papers) and other pre-survey activities to generate an initial and refined list; a multi-round online Delphi survey and a consensus meeting; post-consensus activities; and dissemination activities.

The scoping review follows the PRISMA-ScR Checklist, with searches conducted in Medline, Embase, and Web of Science (2015-2024), complemented by grey literature and supplementary searches. Articles that provide methods, frameworks, guidance/recommendations on the reporting of systematic reviews of health economic evaluations or enhanced case studies that discuss relevant issues or contain useful reporting categorizations will be included.

The PRISMA-EE guideline will include both generic items applicable to all systematic reviews of health economic evaluations and specific items relevant to particular categories. Hence, the review of sample papers aims to confirm the global relevance of the generic items and to ensure that the range of specific items is relevant and broad enough to suit a set of categorized samples.

The Delphi survey will aim to achieve consensus on the included items. We will involve around 200 participants in each Delphi round, ensuring equality, diversity, and inclusion. A consensus meeting will finalize the precise wording of reporting items and vote on items where consensus was not previously reached.

We will invite potential users to apply the final checklist to selected reviews to identify any practical challenges and to inform the guidance's wording. The reporting statement and accompanying explanation and elaboration document will be developed and various dissemination activities will be undertaken.

The development of the user-friendly reporting tool will enhance completeness, transparency and structure in the reporting of systematic reviews of health economic evaluations.

We plan to report the interim results at HESG, including the scoping review results and initial candidate items, and invite HESG attendees to participate in the Delphi survey.

Keywords: PRISMA, reporting guideline, systematic review, health economic evaluation, consensus building

Title: A Rapid Systematic Review of elicitation methods for equity-related preferences in healthcare regarding concentration and dispersion of health benefits

Author(s): Trigg, Moolla, Angus, Tsuchiya

Abstract:

Background

NICE generally adopts a QALY maximisation approach, where each unit of health is valued equally regardless of who benefits, this means that there is no consideration of distributional concerns. One such concern is that the social value of a given total QALY gain might depend on whether the benefits are concentrated among a smaller group, or dispersed across a larger population. Preferences for the concentration or dispersion of healthcare benefits may be driven by several factors. Firstly, positive time and pure equity preferences may motivate an individual to prefer to disperse benefits as widely as possible, however, the presence of a threshold effect, whereby individuals discount health gains that are sufficiently small may result in an individual preferring to concentrate health gains to a smaller population.

This literature review aims to identify and evaluate past methods used to elicit public preferences regarding the concentration versus dispersion of healthcare benefits and the theoretical bases underlying these methods.

Methods

Systematic searches were conducted in PubMed, PsycINFO, and EconLit on 23/08/2024. Additionally, a round of forward and backward citation chasing was performed on four key papers. Screening of titles, abstracts, and full texts was completed by a single reviewer, with a second reviewer verifying 20% of full-text screenings. Data synthesis will be conducted narratively to identify trends and gaps in the literature.

Results

From an initial pool of 1,347 unique papers, 52 full texts were screened and 14 studies were identified that elicited distributional preferences. Published between 1994-2018, these studies collectively involved 6,604 participants. The majority of studies used Discrete Choice Experiments (DCE) or Person-Trade-Off (PTO) methods. Five studies asked participants to imagine themselves in a decision making role, five asked participants to select the program option that they would personally prefer, and four used both approaches. Final results, including a detailed analysis of methods and findings, are forthcoming.

Keywords: Preference Elicitation, Equity, Systematic Review

Title: Why care workers switch jobs and what they gain: A case study of Adult Social Care in England

Author(s): Ullah, Whittaker, Arif

Abstract:

Background:

Worker turnover in England's adult social care (ASC) sector is among the highest, with serious implications for the continuity and quality of care. Skills for Care estimates an annual turnover rate of 30.4% in the independent ASC sector for 2022/23, alongside an 11.8% vacancy rate. Of those leaving their roles, 67% remain within the sector.

Aims:

This study tracks care workers who change employers within the ASC sector to understand the factors driving these job changes and what workers gain from job switches.

Methods:

Using the Adult Social Care Workforce Dataset (ASC-WDS), a linked employer-employee panel dataset covering 2015-2023, we conducted an event design before-and-after comparative analyses. The study includes 28,724 job switchers, with 209,106 worker-year observations, compared to 20,453 workers who remained with the same employer during the sample period (190,280 observations).

Results:

Workers on zero-hour contracts, with fewer contracted hours, employed by smaller and independent sector providers, are more likely to switch employers. Job changes result in permanent contracts (impact size of 2%), non-zero-hour contracts (6%), and increased contracted hours (9%). Workers tend to move to employers with better staff-to-resident ratios (17%), higher CQC ratings (7%), larger providers (2%), and those owned by local authorities (3%). Pay improvements from job switching are minimal and economically insignificant.

Implications:

Job stability, guaranteed hours, and improved working conditions play a crucial role in retention. The focus on low pay as the primary barrier to retention may be overstated, potentially overlooking poor working environments. Future local authority commissioning should ensure fee increases lead not only to pay raises but also to improved working practices. Local authority funding may be tied to CQC ratings, staff-to-resident ratios, and reducing zero-hour contracts. A balanced approach between spot/framework and block contracts could improve income stability for private providers, helping to reduce the use of zero-hour contracts."

Keywords: Workforce Retention, Pay, Working conditions, Comparative Analysis, Adult Social Care

Title: Shared stakes in English general practice: the impact of practice managers as partners on outcomes

Author(s): Walker, Urwin, Anderson

Abstract:

Background: General practice in the United Kingdom is facing a recruitment crisis. This is pronounced in declining GP partner numbers which is a role that offers a financial stake and decision-making power with a practice but requires additional responsibilities and workload. It is not clear if the recent introduction of non-clinical practice managers as partners could help improve practice recruitment and outcomes. Previous studies into non-clinical vs. clinical management in healthcare have inconclusive results and are limited to hospital settings.

Aim: We aim to answer two questions 1) What types of practices appoint a practice manager as a partner? 2) How does the appointment of a manager partner impact on practice outcomes?

Data: We use a combination of six NHS administrative and survey data sources across eight financial years from 2015-2023. Our outcomes relate to the supply-side (staff type per 1000 patients), quality (QOF and patient reported) and access (saw a GP within two days).

Method: We examine the factors associated with appointment of a manager partner using OLS. Second, we consider the impact of manager partners on our outcomes using an event study design. We conduct several robustness checks including the application of inverse probability of treatment weights and alternative event study designs.

Results: The number of practices that had at least one manager partner increased from 0/7559 in 2015/16 to 335/6430 in 2022/23.

We find that practices with more patients, dispensing practices, and a nearby practice having a manager partner are related to a higher probability of having a practice manager partner. Introducing manager partners increased the recruitment of direct patient care staff and admin staff per 1,000 patients. There were no statistically significant findings for quality of care, patient satisfaction, or access. These results are consistent across a range of robustness checks.

Conclusion: Our results show that manager partners can help address the general practice recruitment crisis through a greater ability to hire alternative roles. Non-clinical manager as partners do not negatively impact on practice quality and therefore offer an alternative solution to declining GP partner numbers.

Keywords: Primary Care, Non-clinical management, Difference in difference

Title: Treat one, treat everyone? Quantifying who benefits from health-related productivity gains

Author(s): Webb

Abstract:

Background: Including productivity in economic evaluation is debated. One argument against is that it would disadvantage some groups. A counter-argument is that including productivity can benefit everyone, since higher productivity increases society's wealth and therefore the resources available for healthcare. However there is little empirical evidence as to whether productivity gains are likely to increase healthcare resources.

Aim: To examine whether increased productivity from life-extending and/or quality of life-improving treatments is likely to be sufficient to improve everyone's health due to the additional resources available to society.

Methods: The UK Household Longitudinal Survey has collected data annually from around 80,000 people since 2009. Individuals complete the SF-6D, from which utility on a full-health=1, dead=0 scale was estimated. People's financial outcomes and whether they die in-between waves is also recorded. Random effects models were used to estimate individuals' quality-adjusted life expectancy, the total surplus they generate over their working life, as well as their net contribution to public funds. The effects of marginal increases in the probability of surviving until the next survey wave and utility were used to approximate the effects of life-extending and quality of life-improving treatments.

Results: Life-extending treatments resulted in lifetime surplus generated increasing by up to £284,000 per quality adjusted life-year (QALY) for those aged around 30 who were already in good health. However, life-extending treatments to anyone aged over 45 implied net costs to the social decision-maker, which could be as high as £19,600/QALY. Quality of life improving treatments always resulted in improvements both in lifetime surplus generated and net contributions to public funds, but these increases were modest and never exceeded £5,000/QALY.

Discussion: Whether or not to include productivity costs in health technology assessment is an ongoing debate, and practice varies from country to country. This study contributes by showing that, while life-extending treatments can improve individuals' productivity, the largest gains are seen for those who already have a good level of health, and treating anyone middle-aged or older is likely to reduce the budget available for healthcare. However, low cost quality of life-improving treatments have the potential to pay for themselves.

Keywords: productivity; economic evaluation; social decision-making; econometrics

Title: Have social prescribing referrals reduced appointment pressures on primary care? Evidence from Electronic Healthcare Records

Author(s): Wilding, Agboraw, Munford, Wildman, Sutton, Beeson, Mercer, Wilson

Abstract:

Background: One in five general practice appointments are for social rather than medical reasons. To alleviate these pressures on primary care, NHS England mandated the national roll-out of social prescribing link workers in July 2019. Patients referred to social prescribing meet with a link worker who connects them to groups, activities or services in their community to meet their social needs. This displacement activity could reduce general practitioner appointments. However, despite costing £130 million per year, the impact of social prescribing link workers has not been assessed.

Data: We use electronic health records (Clinical Practice Research Datalink) of 15.7 million patients across 1,461 practices in England from 2016 to 2021, representing around 28% of England's population. We create a patient-level, quarterly panel dataset (T=21, N= 228 million) containing counts of appointments with a general practitioner and interactions with social prescribing link workers identified via specific SNOMED codes.

Methods: Patients could be referred to the NHS Social Prescribing Scheme from quarter three of 2019 (t=16) onwards. We adopt a staggered difference-in-differences approach, in which we classify patients as treated (i.e. referred), not yet treated, and never treated at each time point. We include patient-level fixed effects to control for time-invariant characteristics, such as ethnicity and sex. We omit 226 practices that implemented separate social prescribing programmes prior to national rollout in July 2019. We then estimate the average treatment effect on treated patients across the study period.

Results: Patients referred to social prescribing subsequently have 0.678 (p-value<0.001) fewer appointments per quarter with a general practitioner compared to those not referred. In England, we estimate a total of 780,000 GP appointments were freed-up due to social prescribing referrals from July 2019 to March 2021.

Discussion: This early analysis of the impact of the national roll-out of social prescribing link workers suggests NHS England has met its intended aim of reducing general practitioner appointments. This indicates pressures on primary care can be reduced by addressing patients' social needs.

Keywords: Healthcare, Staggered-Difference-in-Difference, Primary Care, Social Prescribing

Title: What blend of general practice payment methods produces the highest patient satisfaction?

Author(s): Zhao, Sutton, Meacock

Abstract:

Primary care providers in England are paid through a combination of capitation, pay-for-performance, and fee-for-service elements, although the proportion of practice income from pay-for-performance has decreased significantly in the last two decades. Whilst it is generally agreed that such a blended payment system is preferable, the optimal composition of these payment methods is unknown.

Aim

To examine the relationship between patient satisfaction and the composition of different payment methods to primary care practices, and identify the blend that maximises patient satisfaction.

Method

We obtained annual data on NHS payments to practices and patient satisfaction from over 6,000 general practices in England, from 2019 to 2023. We computed proportions of total practice income gained from capitation, pay-for-performance, and fee-for-services, and used the isometric log-ratio method to account for their compositional nature. We then used linear regression to relate patient satisfaction to payment composition, controlling for overall payment level and practice and population characteristics.

Result

There is wide variation in the composition of income sources across general practices in England. The median proportion of income gained from capitation is 76.7% (10th percentile: 65.5%, 90th: 84.7%); from fee-for-service 12.7% (10th: 5.4%, 90th: 25.4%); from pay-for-performance 10.2% (10th: 7.7%, 90th: 12.3%). The composition of payment methods has a significant effect on patient satisfaction, with low proportions of payment coming from capitation associated with higher patient satisfaction. A ratio between fee-for-service and pay-for-performance of 2:3 is associated with the highest average patient satisfaction.

Conclusion

The composition of general practice payment methods has a strong impact on patient satisfaction, after accounting for the overall level of practice income per weighted patient. Increasing the proportion of payments to general practices allocated through fee-for-services and pay-for-performance schemes would likely increase patient satisfaction with primary care in England. These empirical findings are in line with theoretical literature proposing that linking payment to provider effort and services provided can increase quality. The disadvantages commonly related to such payment methods, including overutilization or supplier induced demand, may be limited in this context by the ongoing shortage of general practice workforce and appointments.

Keywords: general practice, funding, mixed payment system, compositional data analysis

Lightning Talks

Title: Informal caregivers' preferences and willingness to pay for using robots to support informal care provision – a discrete choice experiment study in Hungary and Poland

Author(s): Baji, Golicki, Gulácsi, Zrubka, Haidegger, Marques, Kovács, Péntek

Abstract:

Background: Robots in informal care are increasingly being explored to support elderly and disabled individuals in daily activities. These assistive technologies can enhance the quality of life by providing companionship, cognitive support, and physical assistance, potentially reducing the burden on informal caregivers.

Aim: This study aims to elicit informal caregivers' preferences and willingness to pay (WTP) for using robots at the care recipient home in Hungary and Poland, using a choice experiment (DCE).

Methods: A cross-sectional, internet-based DCE was conducted in March and April 2024 with 400-400 informal caregivers in Hungary and Poland who had been providing informal care to an adult for more than a month. In the DCE, robots were described by the following attributes: appearance, size, main function, availability of remote monitoring of the care recipient, availability of a built-in emergency call system and monthly cost. A D-efficient fractional design was created with N-gene software with 40 pairs of robot profiles, blocked into four sets of ten choice sets that were randomly distributed across respondents.

Results: The most valued robots were the ones that help to carry out everyday activities (caregivers WTP were willing to pay £318 more in Hungary and £343 more in Poland for such robots compared to those aiding the mobility of the care recipient), followed by robots performing nursing tasks (WTP +£179/+£159, respectively) and companion robots (WTP +£33, +£76). Informal caregivers were willing to pay £102/£81 more for the option of remote monitoring of the care recipient and £106/£59 more for a built-in emergency call system. Medium-size and robot-like appearance was preferred, and animal-like robots were strongly disliked (WTP -£343/-£364) in both countries.

Discussion: Willingness to use and pay for robots to support the provision of informal care was high in both countries. Further analysis of the data will explore preference heterogeneity.

Keywords: informal care, robots, discrete choice experiment, willingness to pay

Title: Choosing Wisely: Evaluating Latent Factor Models in the Presence of Contaminated Instrumental Variable(s)

Author(s): Das, Banerjee

Abstract:

Causal inference methods are widely used in empirical research; however, there is a paucity of evidence on the properties of shared latent factor estimators for the estimation of causal treatment effects in the presence of contaminated instrumental variable (IV) when strong IV may not be available. We present a theoretical formulation to depict how the strength of an IV and the degree of contamination simultaneously determine the optimal choice between traditional IV estimators and shared latent factor estimators. We perform Monte Carlo simulations with four outcome variables and an endogenous treatment variable, with sample sizes varying between 500 and 1000, and for 1000 iterations, to compare the finite sample properties of the OLS, 2SLS, shared latent factor (SLF), and shared latent factor with IV (SLF+IV) estimators. Finally, we exhibit the applicability of the proposed estimators to study the causal impact of obesity on different health indicators: diastolic blood pressure, systolic blood pressure, blood glucose level, and haemoglobin level, using the 2019-2021 Round 5 of the National Family Health Survey (NFHS-5) data from India. We find that, for a given strength of the IV, there exists a threshold degree of contamination, such that the SLF+IV estimator has a lower (greater) bias than the SLF estimator when the degree of contamination lies below (above) that threshold. Similarly, we find that for a given degree of contamination of the IV, there exists a threshold strength of the IV, such that the SLF+IV has a lower (greater) bias than the SLF estimator if the strength of the IV lies above (below) that threshold. The simulation results are consistent and aligned with the theoretical propositions. We find that obesity is significantly associated with higher diastolic and systolic readings, a higher blood sugar level, and a higher haemoglobin level in the blood.

Keywords: Latent factor models, Instrument strength, Instrument contamination, Parameter identification

Title: Economic evidence of interventions to improve vaccine uptake: a systematic review

Author(s): Hamashima, Breheny, Dawson, Davies, Caldwell, Higgins, Yates, Letley, French

Abstract:

Introduction

Accomplishing high vaccine uptake is important to maximising the effectiveness of any vaccination programme. To ensure the best allocation of scarce financial resources, it is crucial that decision-makers understand the economic implications of interventions. We aimed to collate cost analyses and economic evaluations of interventions to increase vaccine uptake.

Method

We conducted a review of the economic evidence, alongside a systematic review and network meta-analysis (SRNMA) of randomised controlled trials (RCTs) on the effectiveness of interventions to increase vaccine uptake. The literature search was undertaken in two parts. Firstly, during the search of nine databases, clinical trial registers and grey literature up to April 2024, reviewers noted reports potentially containing relevant economic data. Secondly, a tailored search for further economic information was conducted using MEDLINE, EMBASE, and NHS Economic Evaluation Database (EED) up to March 2024. Eligible studies reported economic analyses (including economic evaluations or cost analyses) pertaining to RCTs included in the SRNMA. The quality of economic evaluations was assessed using the Drummond checklist. Data were summarised narratively.

Results

We screened 33 potentially eligible reports identified from the SRNMA, and 2,803 from the tailored searches for economic data. In total, 32 studies were eligible for inclusion in the synthesis. The majority were set in the United States (n=24) and four in the UK. Twenty-one studies conducted a cost analysis and only five conducted full economic evaluations. The types of vaccinations for which economic data was most reported were influenza (n=12) and human papillomavirus vaccines (n=11). Reminder interventions had the most supporting economic data (n=19). However, cost analyses only estimated direct costs related to the implementation of interventions, mostly from the perspective of local public health programme providers.

Conclusion

Our review highlights a lack of cost data and a substantial lack of full economic evaluations for interventions intending to increase vaccine uptake. The majority of economic analyses focus on direct costs, with considerable variation in the components of total costs reported. Collecting relevant economic data is vital for enabling informed decision-making around which interventions to implement to improve vaccine uptake.

Keywords: Vaccine, Public Health, Systematic Review, Economic Evaluation

Title: Transdisciplinarity, climate change and future roles for health economists

Author(s): Roberts, Tudor Edwards, Parkinson, Borghi, Simpson

Abstract:

As part of submitting evidence to the World Health Organization consultation on Health and Climate Change, ahead of COP30 in Brazil, we ask in this paper how the health economics paradigm meets the needs today and in future of international discussions about climate change and health, in the context of the urgency of the climate emergency and the need for mitigating actions to reduce CO₂ emissions and reduce climate risks.

We present infographics to show how we see the paradigm of health economics needing to change and evolve, embracing the One Health approach to meet the evidence challenges of climate change threats facing policymakers today and in future. We also discuss what distinguishes us as transdisciplinary health economists and how we add value and weight to sustainability research. Here we present a recent collaboration between Wales and the Amazon, Brazil in which health and health economics is a central part of addressing the considerable contemporary challenges threatening the environment, health and livelihoods. We reflect on the Small is beautiful philosophy of economist Ernst Schumacher (1973) whose book, “Small is Beautiful: A Study of Economics as if People Mattered”, 50 years on has much to offer in guiding the way of our approach today.

This planned transdisciplinary work in the Amazon is case study that tests our health economics paradigm, largely shaped by the Global North. We reflect on the 2023 International Health Economics Association World Congress meeting held in South Africa. This was the first time the meeting was held in a low- or middle-income country which in itself highlights the power imbalance between the Global North and Global South. Prevailing economic systems of the Global North have been negatively impacting the environment of the Global South. We consider the fundamental examination and shift of our economic paradigm that is needed to address the big challenges of climate change and equity, placing One Health, well-being and well-becoming at its centre. We close by remembering Schumacher’s village perspective which draws on two interconnected factors: ‘enoughness’ and sustainability, a pertinent lesson for the Global North and potential steer for future health economics.

Keywords: Health economics, environmental sustainability, climate change, health system adaptation; equity

Title: Mapping the NASH-CHECK to the EQ-5D-5L for patients with MASLD in Seven European Countries

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Abstract:

Background: Metabolic-dysfunction associated steatotic liver disease (MASLD) is a progressive chronic liver condition characterised by substantial inter-patient variation in disease severity, with the probability of progressing to hepatic fibrosis, cirrhosis or hepatocellular carcinoma. The prevalence of MASLD is increasing rapidly and is challenging healthcare systems worldwide. A novel non-preference-based Patient-Reported Outcome Measures (PROM) called NASH-CHECK has been developed, yet a preference-based outcome measure is needed to generate quality adjusted life years (QALYs) for economic evaluation.

Methods: We used a large dataset consisting of 1,798 people with MASLD from seven European countries (France, Italy, Netherlands, Portugal, Spain, Sweden and the UK) to generate mapping algorithms to predict EQ-5D-5L utility scores from the NASH-CHECK. Regression results from a number of popular candidate models were compared against each other in terms of statistical and visual fit, including more conventional models (OLS, Tobit, Two-Part) and the more recently developed Adjusted Limited Dependent Variable Mixture Model (ALDVMM). Mapping was conducted separately for each of the seven countries.

Results: The ALDVMM with higher numbers of components provided the best visual fit across all samples, especially at the low end (representing very poor health states and worse-than-death health states) and high end (representing fairly good health states and full health) of the EQ-5D value set. The ALDVMM also produced predicted estimates with better statistical fit (in terms of mean absolute error, root mean square error and information criteria where applicable) for countries with relatively large number of observations, although it did not outperform other models when the sample size was small.

Conclusions: Using an ALDVMM with higher numbers of components, this work provides robust estimates across the whole distribution for the prediction of EQ-5D-5L as a function of NASH-CHECK scores for people with MASLD in several European countries.

Keywords: Mapping, EQ-5D, MASLD, ALDVMM