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Parallel Session 1

Room A Economic Evaluation and Cost Effectiveness 1

Policy Decisions on Locally Advanced and Advanced Lung Cancer Treatments in Australia: A Comparison of Survival between Clinical Trials and Real-World Evidence

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Co-authors: Jing Jing Li, Dennis Petrie, John Zalcberg, Margaret Brand, Robert Stirling, Udani Himalsha

Background: The Pharmaceutical Benefits Advisory Committee (PBAC) determines subsidization of drugs through the Pharmaceutical Benefits Scheme (PBS) in Australia. In this context, PBAC publishes Public Summary documents (PSD) that outline the evidence considered for decision-making. It is important to understand the magnitude of difference in survival benefits between clinical trial findings reported in the PSD and Real-World data (RWD).

Objectives 1. Comparison of Overall Survival (OS) in the clinical trials included in PSDs of advanced lung cancer drugs with the observed OS in real-world data based on Victorian Lung Cancer Registry (VLCR). 2. Analysis of OS based on real-world data from the VLCR in patients with characteristics that would typically exclude them from participating in the clinical trials included in PSDs of advanced lung cancer drugs.

Methodology: The key clinical trials reported in PSDs of approved targeted therapy and immune check point inhibitors were extracted. The inclusion criteria of the trials were applied to the VLCR, and then survival analysis was conducted. The characteristics and the OS of patients who were excluded from the aforementioned analysis were also analysed. Results:14 key trials on lung cancer from the PSDs (2012 - 2021) were included. When applying the inclusion criteria of these trials to VLCR, an adequate sample size was available for 3 targeted therapeutic agents (erlotinib, gefitinib, and osimertinib) and 3 immune checkpoint inhibitors (nivolumab, pembrolizumab, and atezolizumab) to compare with 12 of the clinical trials. The median OS in VLCR was higher for erlotinib and gefitinib, and lower for osimertinib compared to the clinical trial. For immunotherapeutic agents, the OS reported in 5 key trials were comparable to that of the VLCR cohort. OS was lower than reported in KN189 and KN024 of pembrolizumab, and was higher than reported in CA209-017 (nivolumab). The exclusion criteria in trials were at least one of the following- Eastern Cooperative Oncology Group (ECOG) status-2 or more, current smoker, history of surgery, radiotherapy and treatment with platinum-based compounds.

The survival with ECOG-2 or more was nearly half of those with status ECOG-0 and ECOG-1 (log-rank test, $p < 0.05$), for pembrolizumab. There was no difference in the OS bases on ECOG status for osimertinib, smoking status (gefitinib), history of treatment with platinum-based compounds, surgery or radiotherapy (nivolumab and pembrolizumab).Conclusions:Based on the comparison of survival estimates from 12 clinical trials to RWD using the trials' inclusion criteria, it was observed that at least eight of the situations exhibited similar or even better survival estimates. Even though many clinical trials implemented exclusion criteria based on multiple factors, it appears that only ECOG status significantly impacted OS within this cohort. This study highlights the importance of RWD as a complementary source to clinical trial data.

Simulating the Healthcare Workforce Impact and Capacity for Pancreatic Cancer Care in Victoria: A Model-Based Analysis

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Background: Internationally and in Australia, the incidence of pancreatic cancer is rising. Therefore, it is important to identify individuals at high risk of developing pancreatic cancer and monitor them closely for early detection and treatment. To support workforce planning, our aim is to perform a model-based analysis that simulates the potential impact on the healthcare workforce, assuming an earlier diagnosis of pancreatic cancer.

Methods: We developed a simulation model to estimate the demand (i.e. new cases of pancreatic cancer) and supply (i.e. the healthcare workforce including general surgeons, medical oncologists, radiation oncologists, pain medicine physicians, and palliative care physicians) between 2023 and 2027 in Victoria, Australia. The model compares the current scenario to one in which pancreatic cancer is diagnosed at an earlier stage. The incidence of pancreatic cancer, five-year survival rates, and Victoria's population size were obtained from government statistics. The healthcare workforce data were sourced from the Department of Health's Health Workforce Data. The model was constructed at the remoteness level. We analysed the new cases and the number of health professional data together to assess the impact on the healthcare workforce.

Results: In the current status quo, over the next five years, there will be 198 to 220 stages I-II, and 495 to 550 stage IV pancreatic cancer cases diagnosed annually, respectively. Assuming 70% of the shift towards pancreatic cancer's earlier diagnosis (shifting from stage IV to stages I-II pancreatic cancer within one year), the stages I-II cases could increase to 598 to 665 per year. The shift to early diagnosis led to substantial survival gains, translating into an additional 795 out of 5246 patients with pancreatic cancer remaining alive up to year 5 post-diagnosis. Workforce supply decreases significantly by the remoteness levels, and remote areas face a shortage of key medical professionals registered in delivering pancreatic cancer care, indicating travel necessities by patients or clinicians.

Conclusion: Improving the early detection and diagnosis of pancreatic cancer is expected to bring significant survival benefits, although there are workforce distribution imbalances in Victoria that may affect the ability to achieve the anticipated survival gain.

Economic evaluation of shared care models to improve survivorship care for cancer outpatients

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Background: As the number of cancer survivors increase, efforts have been made to improve the quality of survivorship care. Traditionally this has been led by clinical cancer specialists, delivered in a hospital or specialist care setting, however this places additional burden on the acute cancer care system and on patients for ongoing access to care. As such, an alternative model of follow-up care ('shared care') has been proposed. This involves a collaboration between the specialist/hospital-based oncology team and a non-hospital health care practitioner (such as a general practitioner or community nurse), capitalising on the complementary expertise of each provider.

In addition to reducing the burden on acute cancer-care services, shared-care models have been shown to improve patient satisfaction and reduce costs for both patients and health care services. However, evidence that shared care models are cost-effective is currently lacking.

Objectives: To explore the cost-effectiveness of two models of shared care assessed through multi-site, randomised controlled trials in Australian settings for cancer outpatients with colorectal cancer who have completed treatment with curative intent (SCORE trial) and cancer outpatients who were about to commence a systemic chemotherapy regimen (ESCAPI trial).

Methods: For both clinical trials we conducted within-trial economic evaluations from a healthcare system perspective. Follow up period was 12 months for SCORE and from the start of cycle 1 to the start of cycle 4 of the chemotherapy regimen in ESCAPI. Cost inputs were sourced from trial and hospital records and linked MBS/PBS data. A common outcome in both trials was cancer-specific quality of life as measured by the EORTC QLQ-C30, with questionnaire responses converted to health state utility values using the QLU-C10D with Australian utility weights. Additionally, ESCAPI measured unplanned presentations to emergency departments or cancer centers.

Results: Both shared care interventions resulted in reductions in healthcare costs of approximately $420 (SCORE) and $207 (ESCAPI) per patient. The shared care intervention in ESCAPI also resulted in a reduction in unplanned presentations, however the relative risk reduction was not significant (-12% (95% CI: -23%, 36%)). There were no significant differences in cancer-specific quality of life between the intervention and control arms in either trial.

Conclusions: From this sample of two Australian clinical trials, there is evidence that shared follow-up care for cancer outpatients is cost-minimising compared to usual care, without compromising patient quality of life. Further investigation of impacts of shared care on patient relevant outcomes can be addressed with longer-term follow-up.

The cost-consequences of a nudge intervention to improve care in hospital admissions at the end of life: results from a stepped-wedge cluster randomised trial

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Objectives: Older patients nearing the end of life in acute hospital settings are at risk of receiving non-beneficial treatments. The Intervention for Appropriate Care and Treatment (InterACT) trial aimed to improve care and treatment decisions for older people in hospitals, through implementation of a nudge intervention that identified at-risk patients and communicated their risk profiles to treating clinical teams. This study aimed to evaluate the health service costs and outcomes of the InterACT trial.

Methods: A stepped-wedge cluster randomised trial was conducted across three large tertiary hospitals in Queensland between May 2020 and June 2021. Throughout the trial, independent clinical auditors continuously screened all patients 75 years and older admitted under 14 enrolled clinical teams. Over 7,000 patients were screened, with 60% identified as 'at-risk' of receiving non-beneficial treatment. During the intervention phase, clinical teams were notified of any at-risk patients, but no further instruction was provided. Length of stay, care type and cost data were obtained from hospital databases for all at-risk index admissions and any subsequent re-admissions. The analysis adopted a health service perspective to compare pooled hospital outcomes between the intervention versus usual care phases of the trial. Unadjusted medians and inter-quartile ranges (IQR) are reported given the right-skewed nature of the data.

Results: The intervention cost $308,086 over the 12 month trial period; this largely comprised salary related costs of the nurse auditors who performed a combined 4,640 hours in audit and screening activities. There were 2,145 at-risk admissions identified in the intervention phase, and 2,160 in the usual care phase. Intervention admissions had a median length of stay of 6.0 days compared to 5.7 for usual care. Median admission costs were $13,024 (IQR: $7,526 to $25,524) in the intervention compared with $12,228 (IQR: $7,027 to $23,747) in usual care. Only 121 (5.7%) intervention admissions and 98 (4.6%) control admissions were classified as including a palliative care phase. Readmission rates were lower in the intervention phase, and median readmissions costs were $15,880 (IQR: $3,230 to $38,670) in intervention phase versus $20,760 (IQR: $6,091 to $50,812) in usual care.

Conclusions: While it was hypothesised that increased awareness of a patient's risk profile would reduce the likelihood of non-beneficial treatments and in turn reduce hospital length of stay and cost, this did not occur. The failure of the intervention may have been impacted by several factors including the sensitivity of the screening tools, broader health system challenges exacerbated by COVID-19 outbreaks, and variability in implementation processes between hospitals. Our findings suggest that simple nudge-style interventions may not be adequate to impact health service resource use in complex end-of-life settings.

Weathering a health shock, impacts on educational outcomes

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A health shock, such as a cancer diagnosis, on parents can have significant implications for the education outcomes of their adolescent children, particularly with regards to university completion. We evaluate educational outcomes using linked population-wide administrative data from Australia for adolescents whose parents underwent cancer treatment. Factors such as financial strain, increased caregiving responsibilities, and emotional distress may all impact educational outcomes. In this paper we aim at disentangling these channels. Understanding the potential impact of a health shock on adolescent education outcomes can inform interventions aimed at mitigating the negative consequences of such events on the future success of these young individuals.

Accuracy of self-reported private health insurance coverage

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Objectives: Studies on health insurance coverage often rely on measures self-reported. The presumed accuracy of survey reports of health insurance enrolment influences how these data are used for health policy evaluations, yet the accuracy of such measures has not been thoroughly validated. This paper aims to fill that gap in the literature by presenting the first evidence on the extent and factors associated with accuracy of private health insurance (PHI) coverage reporting in an Australian context.

Methods and results: This paper uses linked Australian National Health Survey and administrative population tax data to explore the accuracy of self-reported private health insurance coverage in survey data. We find that 11.86% of individuals misreport their PHI coverage status, with 11.57% of true PHI holders reporting that they are uninsured and 12.37% of true non-insured persons self-identifying as insured. Our results show reporting errors are systematically correlated with individual and household characteristics, including age, migration status, English proficiency, education, marital status, smoking status, employment status and household income. We additionally find that most of these characteristics influence the probability of giving a false negative or a false positive report very differently. Our evidence on the determinants of errors is supportive of common reasons for misreporting.

We directly investigate biases in the determinants of PHI enrolment using survey data. We find that, as compared to administrative data, survey data depict a quantitatively different picture of PHI enrolment determinants, especially those capturing age, gender, language proficiency, labour force status, disability status, the number of children or household income. We also show that PHI coverage misreporting is subsequently associated with misreporting of reasons for purchasing PHI, type of cover and length of cover.

Conclusion: This study finds that reporting accuracy of PHI coverage is quite high in a nationally representative health survey in Australia, providing some good news for studies using such survey data to document PHI coverage. Our evidence of the factors associating with PHI misreporting may provide useful insights for the constructors of surveys to consider in order to improve accuracy of responses to PHI-related questions. Our finding of a substantial relationship between PHI coverage misreporting and a range of explanatory variables indicates that reporting errors of PHI enrolment in survey data are non-classical. These non-classical errors suggest complicated biases in other studies that use self-reported PHI enrolment as an independent variable in regressions, including those evaluating effects of PHI enrolment on health care utilization and health outcomes.

A Bayesian Factor-Augmented Multi-Product Use Model with Choice Set Endogeneity with an Application to Marijuana Use

Tao Sun, University of Melbourne

Identification and estimation of complementarities across substances are essential for understanding and assessing the intended and unintended consequences of (proposed) changes in substance market regulations, including their impacts on use, health, and tax revenues. This paper introduces a Bayesian factor-augmented model for analyzing the joint consumption of multiple products. The proposed method is extended to accommodate endogenous choice sets, specifically addressing situations where an individual's choice set is constrained by the illegality of a substance and where access to an illicit substance may be correlated with usage decisions. I investigate the performance of the proposed method on simulated data and apply it to investigate the joint use of recreational and medical marijuana, utilizing data from the National Survey on Drug Use and Health. The first empirical finding is that access into recreational marijuana is not random, which is consistent with earlier work. Furthermore, our preliminary results suggest that recreational and medical marijuana are independent products in demand for consumers. Importantly, we also find that researchers would incorrectly conclude the products are complements in use, if selection into access is not controlled for.

Team Familiarity: The case of Surgeon and Anesthesiologist Learning

Erica Sun, Stanford University

Background: The care of surgical patients occurs requires extensive teamwork between surgeons and anesthesiologists, raising the question of whether increased familiarity between a given surgeon and anesthesiologist can improve outcomes as the two physicians become more familiar over time. While some studies have examined the issue, in general they have not addressed the extent to which any observed differences are due to selection effects as opposed to actual team familiarity. For example, to the extent that surgeons can choose the anesthesiologists they work with, the observation that more experienced surgeon-anesthesiologist pairs have better outcomes may simply reflect that surgeons select anesthesiologists with whom they are better able to work with, as opposed to true learning over time.

Objective: To estimate the extent to which increased surgeon-anesthesiologist familiarity is associated with increased efficiency, as measured by shorter operating times.

Methods: Using administrative healthcare claims data, we constructed a large dataset consisting of over 100,000 patients undergoing total knee arthroplasty. We then estimated the extent to which the operating time, measured based on the reported minutes on the anesthesiologist's claim, was associated with the number of cases the given surgeon-anesthesiologist pair had previously worked together.

Results: Increased surgeon-anesthesiologist familiarity is associated with increased efficiency as measured by operating room time. For example, surgeon-anesthesiologist pairs that have performed more than 50 cases together complete a case 15.6 minutes faster (95%CI 13.2 to 18.0, $p<0.001$) than surgeon-anesthesiologist pairs who have worked 0-10 cases together. We find some evidence that this effect is driven to some extent by selection. Among surgeon-anesthesiologist pairs that worked more than 50 cases together, the average time for the first 10 cases is 121.8 (95%CI 119.7 to 123.9) compared to 137.4 minutes for surgeon-anesthesiologist pairs that worked a total of 10 or fewer cases together, suggesting that more experienced teams were more talented to begin with. Moreover, for surgeon-anesthesiologist pairs who worked more than 50 cases together, their first 10 cases are 121.8 minutes (95%CI 119.7 to 123.9), compared to 120.4 minutes for their most recent cases together, suggesting little evidence of learning over time.

Conclusions: Increased surgeon-anesthesiologist familiarity is associated with increased efficiency, but this observed effect may largely be driven by selection effects.

Teams in the operating room

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Co-authors: Adam Elshaug, Khic-Houy Prang, Anthony Scott, Jongsay Yong

How do medical teams influence treatment decisions? There is evidence that the work environment and professional relationships of doctors can influence their approach to healthcare, resulting in variations in the quality, quantity, and expenses of medical services provided. This study focuses on examining the significance of medical teams, rather than individual doctors, in determining variations in care. Specifically, teams are defined by surgeons and anaesthetists working in a setting where each doctor sets their own prices and negotiates payments arrangements with the insurance provider.

We use claims data from one of the largest private health insurance companies in Australia. The data spans from 2012 to 2019 and it links records from over 1.6 million patients to the doctors who provided their care while undergoing treatment in a private hospital. The detailed information allows to risk-adjust for patient complexity and identify repeated interactions of surgeon-anaesthetist teams across time.

While an episode may involve multiple doctors, in episodes were a surgeon and an anaesthetist work together, their combined prices make, on average, over 70% of the episode total claim. There is significant heterogeneity in the intensity of teams' past collaborations and a negative correlation with prices. We construct a measure of diversity that captures the number of anaesthetists a surgeon works with taking into consideration the volume of claims the surgeon is involved in. Using linear regression analysis, we show that high concentration (surgeons who work more often with the same anaesthetist) tend to have lower prices. Surgeons with a one standard deviation higher team concentration charge 7.5% lower prices. Patient outcomes such as readmissions and hospital acquired complications will be evaluated.

Understanding medical relationships is important because repeated interactions might help forming more stable and efficient teams. But it can also aid price coordination.

Distance as a barrier to care: Evidence from the expansion of cancer treatment centres

Dan Liu, University of Technology Sydney

Co-authors: Serena Yu; Mei Ling Yap, Philip Haywood

Objectives: Geographic access to healthcare has long been a policy concern, particularly in a geographically vast country like Australia. In this study, we examine the impact of distance on cancer care, an area of healthcare where patients require urgent and high marginal benefit treatment with strong side-effects, and where patients must travel for extended and repeated care. The outcome measures including patient out-of-pocket (OOP) costs, waiting times, whether patients were treated in a teaching hospital, and whether patients received any radiotherapy treatment at all, a treatment indicated for one in two patients.

Methods: We use 45 and Up Study data linked to Medicare Benefits Schedule and Cancer Registry data. Our sample is based on cancer patients who were diagnosed between 2006 and 2017. The unit of analysis is the first episode of cancer care which includes all radiotherapy services and consultations. Distance is measured from the centroid of patient's postcode to the nearest radiotherapy treatment centre. Waiting time is from the consultation to the first planning service. OOP costs include costs of consultations and radiotherapy services. Using a continuous difference-in-difference (DID) approach, we exploit the openings of cancer treatment centres to generate exogenous variation in distance and calculate credibly causal effects of distance on outcomes. Continuous DID exploits within-postcode variation over time, comparing patients in postcodes where the nearest centre changed to those where it didn't. We use OLS estimation in regression models which also include patient characteristics, centre characteristics and year fixed effects. To address concerns about spatial sorting of patients and/or private centres, we estimate results for a sub-sample of patients whose locations did not change from the time prior to their diagnosis to after their treatment, and a subsample of patients where their nearest centre was always public.

Results: We find that distance has a large and significant causal effect on the treatment decisions of cancer patients. We find that living more than 10km from a radiotherapy centre caused a reduction in the probability of receiving radiotherapy of between 9.2 and 20.9 percentage points. For patients who had been referred for radiotherapy, there were more modest effects, with suggestive evidence that living further from a treatment centre reduced the likelihood of being referred to a teaching hospital; this effect was concentrated amongst patients who were in remote areas (over 100km from treatment). We find that distance has little effect on OOP costs and waiting time.

Discussions: Our results suggest that geographic access to radiotherapy help explain large variations in radiotherapy utilisation rates and should continue to be a policy priority in a country with a significant rural population. Approval of new centres should account for the importance of geographic access, especially outside of Sydney.

Does telehealth improve prescribing quality in primary care? Evidence from Australia

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We investigate the diffusion of telehealth on healthcare quality using a survey data from a representative sample of general practitioners in Australia linked to their administrative claims and prescribing records. We classify physicians into low and high telehealth adopters based on the rate at which they used telehealth services when they were introduced as government subsidised services during the COVID-19 lockdown period, and subsequently compare their rates of antibiotic prescription before and after lockdown periods. Our results suggest that high telehealth adopters reduced their antibiotic prescribing rates relatively more than low telehealth adopters. This reduction had no significant adverse effects on prescribing quality.

Impact of telehealth on access to obstetric services in Australia

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Background: To examine the Impact of telehealth on access to obstetric services in Australia, from the introduction of telehealth service items into the Medicare Benefits Schedule (MBS) in March 2020 to February 2023.

Methods: A retrospective review of the telehealth items data was conducted to analyse the impact of the introduction of telehealth service items into the MBS Medicare Benefits Schedule (MBS), for obstetric consultation (face-to-face, videoconference, telephone) activity. Telehealth items for obstetric services policy were introduced into the MBS in March 2020. The study compared the rate of provision of obstetric services via in-person and telehealth consultations across four distinct time intervals: pre-intervention (pre-COVID, March 2019 to February 2020), COVID-pandemic period (March 2020 to February 2021), recovery period (March 2021 to February 2022), and post recovery period (March 2022 to February 2023), coinciding with the implementation of the telehealth MBS policy change. One-way analysis of variance was used to compare the impact of telehealth on obstetric services in the index periods.

Results: Despite the restrictions imposed by COVID-19 emergency measures, there was no difference in the utilization of antenatal care services in Australia before and after the pandemic. The rate of uptake of telehealth for obstetric services was highest for postnatal consultations by phone. However, there were no instances of postnatal consultations via phone with midwives, obstetricians, or general practitioners in Northern Territory during the COVID-pandemic period and in Tasmania during the post-recovery period. Notably, there was a significant increase in the number of postnatal consultations with midwives, obstetricians, or general practitioners, increasing from 5 per 100,000 to 19 per 100,000 during the immediate COVID pandemic period and reaching 14 per 100,000 in the post-pandemic period (p= 0.04). At the national level, the introduction of MBS telehealth items did not have an impact on the number of antenatal consultations.

Conclusion: The introduction of telehealth service items into the Medicare Benefits Schedule (MBS), for obstetric services resulted in a progressive increase in access to postnatal services among women in Australia.

The impact of female education on maternal healthcare utilization: Evidence from Viet Nam

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Structured abstract

INTRODUCTION: Despite several impressive advancements in reproductive health and maternal childcare, giving birth in Viet Nam remains risky for many women and their babies. Inadequate and limited access to health care during pregnancy, childbirth and early childhood means 600 maternal deaths and more than 10,000 neonatal deaths are recorded in the country each year (UNICEF, 2022). Education is considered to have essential effects on health-related outcomes in the population, including women's health. The health returns to education are widely mentioned in the literature, with some growing research on the causal link between education and maternal healthcare utilization.

OBJECTIVES: The study's primary objective is to investigate the impact of female education on women's use of maternal healthcare in Viet Nam, with a specific focus on ethnic minority groups.

METHODS: We use fuzzy regression discontinuity design (RDD), exploiting exogenous characteristics of the Universal Primary Education (UPE) Law 1991 as a natural experiment to elicit causal effects. We rely on the age of women exposed to the implementation of the UPE Law to investigate the impact of education on our interest outcomes. This research utilizes cross-sectional data from the surveys on the socio-economic situations of 53 ethnic minority groups in 2015 and 2019.

RESULTS: Our principal findings are that female education significantly and positively affects institutional delivery/support, antenatal visits, and women's contraceptive needs/use. In particular, the probability that a pregnant woman has standard antenatal care increases by 0.7 percentage points if she has an additional schooling year. The woman will visit a health facility for her antenatal care with nearly 10 percentage points likelihood. In addition, female schooling could enhance 5 percentage points in their probability of giving birth at a health facility and 6 percentage points in their possibility of receiving professional support during the delivery. Regarding their reproductive health practice, educated women will be more likely to express their needs for contraceptive methods by 7 percentage points and use these methods by 6.7 percentage points.

CONCLUSION: We conclude that these findings provide a rationale for policymakers to consider potential improvements in women's access to education and health in Viet Nam. The assessment of maternal healthcare utilization is markedly recognized as crucial information for the policymakers to improve the healthcare system or enhance health issues, especially for ethnic minority women.

Keywords: Education, maternal healthcare utilization, fuzzy RDD, Viet Nam, ethnic minority

The Impact of Loneliness on Health Service Use and Health-Related Quality of Life among informal carers in Australia

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Objective: The demanding nature of caregiving and limited social support can lead to informal carers experiencing loneliness, which can impact their well-being and overall health service use (HSU). The study aims to examine the impact of loneliness on HSU and Health-Related Quality of Life (HRQoL) among informal carers in Australia.

Methods: Data were derived from three waves (2009, 2013, and 2017) of the nationally representative longitudinal Household Income and Labour Dynamics of Australia (HILDA) survey, focusing on adult informal carers. Outcome measures included visits to the General Practitioner, the number of hospital admissions, and the SF-6D score. Generalized Estimating Equations (GEE) analysis was conducted to explore the associations between loneliness and HSU, as well as loneliness and HRQoL (based on SF-6D) while adjusting for age, sex, education, marital status, income, and physical/ mental health conditions.

Results: After controlling for covariates, lonely carers reported lower HRQoL (IRR= 0.76, 95%CI [0.72, 0.81], $p<0.001$) compared to non-lonely carers. Lonely carers reported a higher number of GP visits (IRR= 1.18, 95% CI [1.04, 1.36], $p<0.05$) but fewer hospital admissions (IRR= 0.68, 95%CI [0.48, 0.95], $p<0.05$) compared to the non-lonely carers.

Conclusions: The findings of this study suggest that loneliness among informal carers is associated with decreased HRQOL and increased GP visits. This highlights the detrimental impact of loneliness on both healthcare utilization and carers' overall well-being. Addressing loneliness through targeted interventions and social support systems can help improve health outcomes and potentially reduce the overall healthcare costs among informal carers in Australia.

FCTC ratification, smoking prevalence, and GDP per capita: lessons for Indonesia and the rest of the world

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Background: Indonesia's stagnated progress towards tobacco control could be addressed through the implementation of a comprehensive national framework, such as the World Health Organization's (WHO) Framework Convention of Tobacco Control (FCTC). However, national tobacco industry supporters argue that accepting the FCTC will have negative economic implications for the country. These arguments have, thus far, discouraged the Indonesian government from ratifying the FCTC. Drawing from an analysis of the impact of the FCTC on other countries' smoking rates and Gross Domestic Product (GDP) per capita, this study offers empirical evidence against industry arguments concerning the potential negative economic impacts of FCTC adoption. This study applies a two stage least square estimation strategy to unbalanced panel data at country level. In the first stage we estimate the impact of FCTC ratification on smoking rates, and in the second step, we estimate the influence of smoking activity on macroeconomic performance.

Results: The result of this study shows that FCTC ratification has a negative impact on a country's smoking prevalence. While FCTC ratification positively correlates with reduced smoking prevalence, a decline in smoking prevalence is not related to a decline in GDP per capita.

Conclusions: The results of this study shows that FCTC ratification, which can be an important driver for more effective tobacco control, does not necessarily have a negative impact on the economy. Instead, FCTC ratification may be beneficial for both health and economic outcomes, as it provides comprehensive guidance for reducing smoking prevalence that take into account social and economic factors.

Keywords: Framework convention on tobacco control (FCTC), Indonesia, GDP per capita

The impact of enhancing social care on healthcare use and mental health prescriptions for people with a disability: evidence from Australia

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Background: Social care plays a critical role in the health and wellbeing for people with a disability. It can complement healthcare access by overcoming the barriers people with a disability face when accessing healthcare, but it may also provide a substitute for healthcare, especially for allied health and mental health care where there is a fine line between therapy (healthcare) and daily-living support (social care). More generally, enhanced social care may improve the health of people with a disability over time and reduce the need for future healthcare. Thus, it is unclear how providing enhanced social care will impact healthcare utilisation for people with disabilities. The Australian National Disability Insurance Scheme (NDIS) was established in 2013 and implemented through a staggered rollout across Australia. It provides enhanced personalised support (e.g., daily activities, non-clinical therapies) to people with a long-term profound or severe disability. In this paper, we examine whether providing enhanced social care via NDIS affected the healthcare use of people with disability.

Methods: Linked Australian population-wide administrative datasets, provided detailed information about healthcare utilisation, NDIS status and population demographics from 2011 to 2020. Using the staggered rollout, we estimate a Difference in Difference model to assess the impact of the NDIS on healthcare use. Specifically, we focus on healthcare services (e.g., visits to general practitioners (GPs), mental healthcare providers, allied health professionals and specialists) and filled mental health prescriptions.

Results: Our results show that the NDIS decreased the quarterly use of mental health services (b=-0.035 time/quarter, 95%CI: -0.061 to -0.009) and allied health services (b=-0.017 time/quarter, 95%CI=-0.030 to -0.003) in the six quarters after enrolment, but has not yet impacted the visits to GP or specialists. The decrease in mental health services comes from fewer mental health visits to GPs, allied health professionals, and psychologists, but the use of psychiatrists remains stable. These changes seem to be mostly driven by children and young adults aged 0-24 years old. We also find no change in the mental health prescriptions.

Conclusion: The decreased use of mental health and allied health services suggests that the NDIS may have a substitution effect on healthcare services it directly funds. Before the NDIS, the healthcare system potentially bore more of the burden of both the clinical and non-clinical sides of the therapies and care. The NDIS seems to be able to relieve some of that burdens, especially on non-clinical care by healthcare professionals. Longer-term follow-up is needed to see whether enhanced social care has longer-term effects on reducing healthcare needs.

Change in dental visits of eligible children under impact of the Child Dental Benefits Schedule in Australia

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Objective: This study aims to identify the impact of the Child Dental Benefits Schedule (CDBS) in increasing dental visits for eligible children. The CDBS was introduced in 2014 as a national policy and a means-tested schedule with the goals to limit the impact of poor oral health among children and to reduce social inequalities by increasing dental care use. The schedule provides a capped benefit for basic dental services for eligible children aged 0-17 years.

Methods: Using a difference-in-differences (DiD) panel data analysis with fixed effects and random effects, in addition to a mixed-effects analysis, this study assessed changes in dental visits under the CDBS policy. The treatment and control groups in the DiD design are eligible and non-eligible children for the CDBS policy, respectively. The control variables in the models include the characteristics of the child (gender, ethnicity, age, teeth cleaning habit, oral health status), the child's family (household income, homeownership, education of mother, employment status of mother, number of children in household, living with both biological parents) and place of residence (state). Data were obtained from the birth cohort in the Longitudinal Study of Australian Children (LSAC) from 2008 to 2018. The final sample consists of 22,985 observations.

Results: The results show statistically significant impacts of the CDBS on dental visits that remain stable across different specifications. In the fixed-effects model with all control variables, the odds ratio for the effect of the CDBS is 1.17 (95%CI: 1.00-1.36, p=0.048), suggesting the odds of visiting dentists among eligible children is 1.17 times than that of non-eligible children. Using the fixed-effects linear probability regression, the estimated marginal effect of the CDBS on dental visits is 0.028 (p=0.030), meaning that there was a 2.8-percentage-point increase in dental visits after the introduction of the policy.

For the sensitivity check of the DiD design, we conducted a placebo implementation year of the CDBS. We used 2012 as a placebo implementation year instead of 2014. This shows no significant change in dental visits of eligible children relative to non-eligible children under the CDBS.

To check the robustness of the findings, we employed propensity score-based methods. The average treatment effects of the CDBS on dental visits were estimated by different matching methods, including propensity scores matching, nearest-neighbor matching and inverse probability weighting. The results show that the estimates of the policy effect remain relatively stable across these estimators. Compared to the 'untreated' group, there was an increase in the prevalence of dental care use among the 'treated' group attributed to the CDBS.

Conclusion. Our empirical findings demonstrate that there was statistically significant but modest increase in the prevalence of dental care use of eligible children as a result of the CDBS policy.

Using economic evidence to support decision makers

Bronwyn Croxson, New Zealand Ministry of Health

Purpose: This paper contributes to the ongoing discussion about how expertise and evidence can be most useful (and influential) in public sector decision-making. It will use as case studies real-world decisions about the use of sugar and tobacco taxes.

Context: There is increasing attention and scholarship on the relationship between evidence and expertise on the one hand, and government decisions on the other. Some of this attention results from the COVID-19 pandemic, which demonstrated the potential value of evidence and also the difficulties of using it in a rapidly changing and uncertain context, when decision makers had multiple objectives and there were, indeed, multiple decision makers. While COVID was an exaggerated example of the non-linear decision context, it is usually the case that influence is achieved not through "speaking truth to power" but rather by drawing the principles developed in the canons of public choice, the behavioural sciences and political economy.

Approach and outline: The paper will take a narrative approach, drawing on international literature addressing the use of economic evidence in government decisions. We will describe the changes over time in regulatory settings in one jurisdiction, for tobacco excise tax and sugar tax, and relate these changes to a comprehensive review of the economic evidence about the impacts of each tax. We will also discuss how this evidence was translated into decision-making contexts and decisions, with particular emphasis on the role played by economic principles, and how these principles were disseminated and used to support the trade-offs being made by decision makers. We will highlight and use specific examples, and papers, to show the importance of working with non-economists to build understanding of price elasticity of demand, the real and specific institutional arrangements governing the impact of changes in tax settings on behaviour, and the importance of using empirical studies that control for causation.

Results: Supporting decision-makers entails understanding the problems they are facing and the difficult choices they face, and being ready with the right evidence at the right time. "Communications" is only a very small part of this: by far the most important dimension is understanding what is needed, and knowing how to provide information that is both evidence-based (and therefore has integrity) and helpful to the situation in hand. The examples we present in this paper – using taxation to try and raise prices and influence behaviour – highlight one aspect of the choices decision-makers face, between increasing the expenses faced by low income households and trying to affect health-affecting behaviour. The negative consequences of the tax, both in its impact on disposable income (to the extent that users are insensitive to price) and in terms of distortionary impacts mean that it is important to properly evaluate and advise on the actual price elasticity of demand.

Causes of risky pharmaceutical opioid use in Australia: Evidence from internal migration

Francis Graham, Monash University

Co-authors: Dennis Petrie, Sonja de New

Background: From 2000 to 2018, the rate of pharmaceutical opioid use in Australia approximately doubled. Over the same time period, the rate of pharmaceutical opioid-involved hospitalisations grew by approximately 40%, and pharmaceutical opioid-involved mortality by approximately 60%. In this paper, we attempt to understand the causes of these trends using a dynamic model of risky pharmaceutical opioid use developed by Finkelstein et al. [2022]. By exploiting internal migration across regions, we identify the extent to which patient- and place-specific factors explain variation in risky use. Further, we distinguish between place-specific factors which impact on the likelihood of individuals to transition into of risky use (for example, the willingness of physicians to prescribe opioids to opioid naïve patients) and place factors which affect rate of risky use (for example, the presence of unscrupulous prescribers or dispensers), enabling us to identify the most promising channels by which policymakers may mitigate extra-medical pharmaceutical opioid use in Australia.

Data: We use linked administrative data from the Multi Agency Data Integration Project (MADIP) observing all publicly funded opioid prescriptions in Australia from 2011-2020. Previous literature (for example Finkelstein et al. [2022]) is limited to samples with high rates opioid-involved morbidities such as veterans, active duty soldiers, or the disability insurance-eligible population.

Methods: We first specify our model. Second, we estimate event studies to provide descriptive evidence of the relative importance of person- and place-specific factors in our sample. Finally, we estimate our model using GMM, and use these estimates to construct counterfactual scenarios where policies targeting each place-specific channel were implemented.

Results and conclusions: Results have not been cleared by DataLab so we discuss how they can be interpreted. Through our event studies, we infer the relative importance of place-specific factors in determining risky use. Through our main model, we discuss two sets of results. Firstly, we quantify the relative importance of place-specific factors influencing transitions into risky use versus place-specific factors influencing the rate of risky use. Second, using the estimated parameters from our model, we construct counterfactual scenarios which compare the dynamic impact of closing down each channel over our sample. From these counterfactuals we infer the sets of policies most effective at mitigating extra-medical pharmaceutical opioid use in Australia.

Exploring the face validity of the EQ-5D-5L, EQ-HWB, ASCOT and QOL-ACC in residential aged care

Lidia Engel, Monash University

Co-authors: Leona Kosowicz, Ekaterina Bogatyreva, Frances Batchelor, Nancy Devlin, Briony Dow, Andrew S Gilbert, Brendan Mulhern, Tessa Peasgood, Rosalie Viney

Objective: There is an increased use of preference-weighted quality of life measures in residential aged care to guide resource allocation decision or for quality of care assessments. However, little is known about their face validity (i.e., how understandable, appropriate and relevant the measures are 'on its face' when respondents complete them). The aim of this study was to assess the face validity of four preference-weighted measures (i.e., EQ-5D-5L, EQ-HWB, ASCOT, QOL-ACC) in older people living in residential aged care.

Methods: Qualitative cognitive think-aloud interviews were conducted using both concurrent and retrospective think-aloud techniques. To reduce burden, each resident completed two measures, with the four measures randomised across participants. Audio recordings were transcribed and framework analysis was used for data analysis, based on an existing framework derived from the Tourangeau four-stage response model.

Results: In total, 24 interviews were conducted with residents living across three residential aged care facilities in Melbourne, Australia. Response issues were identified across all four measures, often related to comprehension and difficulty selecting a response level due to double-barrelled and ambiguous items that have different meanings in the residential aged care context. We also identified issues related to understanding instructions, non-adherence to the recall period, and noted positive responding that requires attention when interpreting the data.

Conclusions: Our findings provide further evidence on the appropriateness of existing measures to guide the selection process for research and practice. We discuss several potential adaptations that could improve the face validity of the measures for use in residential aged care.

Proxy reported aged care-specific quality of life: validation of a proxy version of the Quality of Life-Aged Care Consumers (QOL-ACC) instrument

Jyoti Khadka, Flinders University

Co-authors: Claire Hutchinson, Rachel Milte, Amanda Muller, Julie Ratcliffe

Background/objectives: From April 2023 the Quality of Life-Aged Care Consumers (QOL-ACC) instrument has been rolled out nationally in Australia as a mandatory quality indicator to benchmark and monitor quality of life of aged care recipients. The QOL-ACC has already been validated amongst aged care recipients who are able to self-report. Whilst self-report is always preferrable, a high proportion of aged care recipients are living with cognitive impairment and dementia, contributing to the need for proxy reporting for those who are unable to respond on their own behalf. Therefore, this study aimed to assess the validity of a proxy-version of the QOL-ACC amongst the carers of aged care recipients.

Methods: Carers of aged care recipients (family members who saw the older person regularly) in Australia, completed proxy versions of the QOL-ACC, Adult Social Care Outcome Tool (ASCOT), Quality of Care-Aged Care Consumers (QCE-ACC) and the EQ-5D-5L adopting a proxy-proxy perspective (i.e., their own perception of the older person's aged care experience and quality of life). Convergent and known-group validity were assessed to inform construct validity of the QOL-ACC. Convergent validity was assessed by exploring the relationship between the QOL-ACC and other instruments (ASCOT, QCE-ACC, EQ-5D-5L). The known group validity of the QOL-ACC was assessed by testing its ability to discriminate varying levels of carer-reported global health and quality of life of the aged care recipients.

Results: A total of 605 carers (mean age ±SD, 39±10.6 years; 72% female, 95% born in Australia), caring for an aged care recipient, completed the survey. Of the 605 aged care recipients they cared for, the majority (N=444, 73.4%) were receiving care at home and 161 (26.6%) were living in residential aged care (RAC) facilities. Proxy-reported QOL-ACC utilities were higher for home care recipients (mean ±SD, 0.78 ±0.19) than those living in RAC facilities (mean ±SD, 0.50±0.31). The proxy-version of the QOL-ACC demonstrated moderate correlations with the QCE-ACC (home, $r=0.64$ and RAC, $r=0.41$; $p<0.001$), ASCOT (home, $r=0.64$ and RAC, $r=0.66$; $p<0.001$) and EQ-5D-5L (home, $r=0.53$, $p<0.001$) and a stronger correlation with EQ-5D-5L in RAC ($r=0.75$, $p<0.001$). The carers reporting lower on the global health and quality of life questions of the aged care recipients were also reported lower quality of life utilities on the QOL-ACC.

Conclusions: Proxy-reported QOL-ACC and EQ-5D-5L utilities were found to be more closely associated in RAC relative to home care, indicating that proxy reported quality of life may be more closely associated with proxy reported health status in RAC setting relative to aged care recipients at home. Overall, QOL-ACC's correlations with other validated instruments supports its construct validity amongst carers. When necessary, the QOL-ACC can now be used as a valid proxy outcome measure in home care and residential settings.

One and the same or different? An empirical comparison of aged care recipient and non-aged care recipient preferences for quality of aged care amongst older Australians

Jai Song, Flinders University

Co-authors: Gang Chen, Jyoti Khadka, Rachel Milte, Julie Ratcliffe

Background/Objectives: The Quality of Care Experience Aged Care Consumers (QCE-ACC) is a new preference based instrument recently adopted by the Australian government as a new quality indicator for aged care. A key consideration for the national and international implementation of the QCE-ACC is whose values should count in the development of the preference-based scoring algorithm for establishing the relative importance of key QCE-ACC dimensions. This study developed and applied a discrete choice experiment approach to empirically compare the preferences of aged care recipients (aged ≥ 65 years) and non-aged care recipients amongst the older Australian population (aged ≥ 65 years; living independently in the community and potential future aged care users) for quality of care experience using the QCE-ACC.

Methods: A DCE consisting of 200 choice sets, each presenting two quality-of-care experiences offered by hypothetical alternative aged care providers, was designed. The survey was administered online to older Australians receiving aged care services in their own homes from a registered aged care provider. The QCE-ACC comprises six attributes: ""Respect and Dignity"", ""Make Own Decisions"", ""Skills and Training"" (of staff), ""Health and Wellbeing"", ""Social Relationships"", and ""Lodging Complaints"" rated on a five-level response scale (ranging from “Never” to “Always”). The conditional logit model was used to estimate the preferences of aged care recipients with respect to the QCE-ACC dimension levels. These results were then compared with the results from a previous study by Chen and colleagues (2021) for an age-matched sample of non-aged care recipients to assess the extent of convergence (or divergence) in preference.

Results: A total of 201 older people (age 74.2±6.2; 59.7% female) receiving aged care services completed the DCE and provided valid responses. The model estimation indicated that the respondents valued all the presented quality attributes. The preferences of the aged care recipient population diverged somewhat from those of the matched older general population sample. Amongst aged care recipients, being treated with “Respect & Dignity” (29%) was the most important quality of care experience defining dimension, with “Health & Wellbeing” (19%) ranked second and “Staff Skills & Training” (17%) ranked third. However, in the general older population, “Staff Skills & Training” (24%) was considered the most important dimension, followed by “Respect & Dignity” (23%) and “Health & Wellbeing” (21%).

Conclusion: This study highlights the non-interchangeability of preferences for quality in aged care between aged care recipients and older people in the general population as potential future aged care users; some important differences are evident. Further research is needed to examine the extent to which these differences impact the results of quality assessments and economic evaluations in aged care.

Preferences and the willingness to pay for a dementia home care program: A Discrete Choice Experiment in Australia

Sabrina Lenzen, The University of Queensland

Co-authors: Brenda Gannon, Richard Norman, Sally Bennett

Introduction: Dementia is currently affecting one in ten people aged 65 or older and the total number of people living with dementia is set to increase substantially due to a rise in the number of people in old age. Due to its high dependency on care, dementia is one of the most expensive diseases and its increasing prevalence is putting pressure on long-term care systems around the world. Home care rather than residential aged care is the preferred long-term care option by individuals and governments, not only due to lower costs but also because the majority of older people prefer to remain in their homes. A recent formal public inquiry into issues related to aged and dementia care in Australia recommended improving dementia care standards and mandatory dementia training for people engaged in dementia care.

Objective: In this paper, we examine preferences for the design and the willingness-to-pay (WTP) of an allied health home care program for people with dementia in Australia using a discrete choice experiment (DCE). We compare the WTP for different program characteristics and the overall WTP for the program. In addition, we study the preferences of different subsamples of our participants, such as those who have experience with home care services or dementia.

Methods: A discrete choice experiment was administered in a representative sample of the Australian adult population. The online survey approach asked a series of hypothetical choice tasks and allowed estimation of the relative value of different aspects of care as well as the overall WTP for the program. Data was collected from a total of 1100 people aged 18 and older who were residing in Australia.

Results: Using mixed logit models, our findings show a strong preference for in-person care and improving the level of independence in daily activities as well as mood and dementia-related behaviours. People have a higher WTP if the program includes more sessions and is structured around the person's physical and cognitive function. The mean WTP varied across scenarios with higher values for the scenarios offering more sessions and those that went beyond improving safety during everyday activities. People who had experienced someone in their close family with dementia had on average a higher WTP for the program. Overall, respondents in this paper showed empathy and understanding toward family carers and people with dementia through their willingness to pay for this program.

Discussion: The general Australian population values the anticipated implementation of the dementia care program provided by an occupational therapist. The results of this study and the strong population preferences should be considered when designing the program.

Residential Aged Care Funding in Australia: Past, Present and Future

Kees Van Gool, Menzies Centre for Health Policy and Economics

Co-authors: Samuel Webster, Jane Hall, Michael Woods

The Royal Commission into Aged Care Quality and Safety examined issues of non-compliance, insufficient care and safety concerns within aged care facilities. In its final report, the Commission made 148 recommendations including the establishment of an independent pricing authority for aged care services. In August 2022, the Independent Health and Aged Care Pricing Authority (IHACPA) was established to provide ongoing advice to Government on pricing in aged care.

This presentation will focus on IHACPA's role in aged care funding. In doing so, it will examine previous funding mechanisms that led to the Royal Commission's recommendations, recent reforms including the introduction of the Australian National Aged Care Classification (AN-ACC) as well as IHACPA's role in developing the pricing framework and pricing model and delivering advice for the 2023-24 financial year. The presentation will also outline IHACPA's plans for delivering future pricing advice through the use of the Residential Aged Care Costing Study that is currently in the field, and highlight key research questions for future consideration.

Parallel Session 2

Room A Economic Evaluation and Cost Effectiveness 1

Economic Evaluation of Healthy Food and Drink Retail Policies in Australian Healthcare Settings

Huong Tran, Deakin University

Objectives: Dietary behaviours are influenced by the surrounding food and drink environment encountered by individuals. Hospitals and healthcare settings play a leadership role in promoting the health and well-being of staffs and patients, and encouraging the wider community to make healthier dietary choices. Ample evidence demonstrates the positive impacts of such interventions on purchasing and consumption behaviours. In light of this, governments across various jurisdictions in Australia have implemented healthy food and drink retail policies at hospitals and healthcare facilities. This project aims to evaluate the cost-effectiveness of the healthy food and drink retail policies implemented in hospitals and healthcare settings to improve the diet of the healthcare workforce from a limited societal perspective.

Methods: A review of systematic review and a meta-analysis of the impacts of health-promoting retail interventions on dietary behaviours of employees were conducted. Given the diverse approaches to healthy food retail policy implementation across jurisdictions, a comparative and narrative analysis of the policy components and implementation processes was conducted. This involved an extensive review of publicly available government documents and consultations with government stakeholders to identify commonalities and variations in the policy and the implementation processes. The results from this analysis will inform the development of a generic health food retail policy for the economic evaluation. Resources used for policy implementation are estimated based on publicly available implementation resources from government websites, and consultations with participating government stakeholders. The ACE-Obesity Policy model, a validated proportional, multi-state lifetable Markov model will be used to assess the long-term health benefits of the policy on the healthcare workers and healthcare cost-saving resulting from reduced disease risks associated with improved diets. All costs and health outcomes are discounted at 7% and reported in 2019 values. Monte-Carlo simulations are employed to account for uncertainties in parameter inputs. Sensitivity analyses will be conducted to test various viable policy scenarios and to assess the impact of key assumptions on the cost-effectiveness results.

Results: Five jurisdictions have mandated policies to improve the healthiness of food retail in hospital settings. Notable commonalities between polices including an entity administering the implementation and managing the implementation resources, a designated public health agency facilitating policy compliance within hospitals and healthcare facilities, and the audit-feedback mechanism to enhance policy compliance. Initial findings from the review demonstrated positive impacts of such policies on the dietary behaviours of employees within the intervention setting. The cost-effectiveness results will be completed and reported at the conference.

Modelled health economic and distributional impact on dental caries and health outcomes from a 20% sugar sweetened beverages tax in Australia

Tab Nguyen, Monash University

Co-authors: Utsana Tonmukayakul, Long Khanh-Dao Le, Ankur Singh, Anita Lal, Jaithri Ananthapavan, Hanny Calache, Cathrine Mihalopoulos

Background: Dental caries is the most prevalent oral disease across the life course. Objectives: This study modelled the population health and economic impact of a 20% sugar sweetened beverages tax (SSB) for preventing dental caries compared to no intervention (societal and healthcare perspective).

Methods: A distributional cost-effectiveness analysis according to quintiles of area-level socioeconomic disadvantage was performed for the 2020 Australian population (0-100 years old) using a closed cohort Markov model. A qualitative assessment of implementation considerations (e.g. acceptability, equity, sustainability) was undertaken. Health outcomes were modelled as decayed teeth prevented and disability-adjusted life years (DALYs) averted. The 10-year and lifetime scenarios were modelled with probabilistic sensitivity analysis (Monte Carlo simulation, 2,000 cycles).

Results: The 10-year scenario from a societal perspective yielded cost-savings of AUD$63.5M, healthcare cost-savings of AUD$42.2M, 510,977 decayed teeth averted and 98.1 DALYs averted. The lifetime scenario resulted in societal cost savings of AUD$176.6M, healthcare cost-savings of AUD$122.5M, 1,309,211 decayed teeth averted and 254.9 DALYs averted. Modelling indicated 71.5% and 74.5% cost-effectiveness for the 10-year and lifetime scenarios, respectively. A three-fold health benefit for the least advantaged was found compared to the most advantaged.

Conclusion: A 20% SSB tax in Australia is cost-effective and promotes health equity.

Impact of a Sugar Sweetened Beverage (SSB) tax on Oral Diseases in Australia: A modelling study

Mishel Shahid, Griffith University

Co-authors: Mishel Shahid, Lennert Veerman

Background: Oral diseases are a growing public health challenge affecting approximately 3.5 billion people globally. Despite improvements in health care systems, the oral health amongst Australians is poor. Sugar Sweetened Beverages (SSBs) are a significant source of dietary sugar, the fermentation of which is an important part of the cariogenic process. Systemic inflammation and metabolic disorders explain the association between increased sugar consumption and periodontitis. The progression of dental caries and periodontitis leads to tooth loss and edentulism.

Methods: We developed an epidemiological model that projects the 2019 Australian population across their remaining life course in terms of their consumption of sugar-sweetened beverages and oral health outcomes. The PMSLT model consists of multiple cohorts of the population stratified by age and sex. We added dental caries, periodontitis and edentulism to the model in addition to 31 non oral health conditions allowing it to deal with competing risks. The model compared the outcomes under a reference scenario (no intervention) and a 20% tax on sugared drinks. Estimates for the incidence and prevalence were obtained for dental caries, edentulism, and periodontitis from the GBD 2019 study. Health Adjusted Lifer Years (HALYs) accrued over the lifetime of the 2019 Australian population were quantified.

Results: A 20% SSB tax would have a significant impact in reducing the incidence of dental caries with a total of 18,915,728 incident cases avoided among men (61%) and women (39%). This would also significantly reduce the incidence of periodontitis (n= 9,53,303) over 25 years with 58% males and 42% females. The incidence of edentulism due to dental caries would reduce by 381,107 total cases with 58% males and 42% females. The incidence of edentulism due to periodontitis would reduce by 194,481 total cases with 49% males and 51% females. The model projected that the SSB tax would save up to 2.3 million HALYs for the 2019 Australian population over their lifetime considering the impact of oral diseases. Dental caries saves a total of 32,475 HALYs while periodontitis saves a total of 76,953 HALYs over the lifetime. Edentulism via dental caries is projected to save 224,025 HALYs while edentulism via the periodontitis pathway adds a total of 240,176 HALYs over the lifetime of the Australian 2019 population.

Discussion: A 20% SSB tax showed substantive health gains and reduction in the burden of oral diseases for the Australian population. This is the first study to quantify the impact of an SSB tax on the burden of dental caries, periodontitis and edentulism in Australia. The GBD estimates for edentulism considered those with severe tooth loss and no access to dentures which could overestimate the impact on Australians who do not face these challenges. The results provide measurable impact indicators that can guide policy interventions related to SSB consumption for the Australian population.

Cost-effectiveness of treatment and management of early gestational diabetes mellitus: economic evaluation alongside the TOBOGM study, an international multi-centre randomized controlled trial

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Co-authors: Kathy Tannous, Jincy Immanuel, William M Hague, Helena Teede, N Wah Cheung, Emily Hibbert, Christopher Nolan, Michael Peek, Vincent Wong, Jeff Flack, Mark Mclean, Arianne Sweeting, Alexandra Kautzky-Willer, Jürgen Harreiter, Emily Gianatti, Mohan V, Helena Backman, David Simmons on behalf of the TOBOGM consortium

Background: An international multicentre randomised controlled trial (RCT), the Treatment Of Booking Gestational diabetes Mellitus (TOBOGM), was recently conducted to investigate whether treatment of early gestational diabetes mellitus (GDM) improves maternal and neonatal outcomes. This study aimed to assess the cost-effectiveness of treating early GDM compared with usual healthcare.

Methods: Economic evaluation was performed alongside the RCT from Australian healthcare perspective. Pregnant women (4-19+6 weeks) diagnosed with GDM by World Health Organisation (WHO) 2013 criteria were eligible to participate. Participants were randomised (1:1) to either early immediate treatment for GDM (intervention) or to deferred or no treatment, based on repeat oral glucose tolerance test (OGTT) at 24-28 weeks (control). Control group received routine antenatal care as per local guidelines; intervention group received standard GDM treatment in addition to usual antenatal care. Primary outcome was composite of adverse neonatal outcomes (preterm birth < 37 weeks, birth trauma, birthweight ≥ 4.5 kg, respiratory distress, phototherapy requirement, stillbirth/neonatal death, or shoulder dystocia). Secondary outcome was quality-adjusted life-year (QALY) measured from EQ-5D questionnaire. Costs were calculated from participants' self-reported healthcare resource utilisation questionnaire and hospital administrative record. Data were analysed as per intention-to-treat (ITT) principle. Missing data were replaced using multiple imputations. Incremental cost-effectiveness ratio (ICER) was expressed as cost per reduction in adverse neonatal outcome, and cost per QALY. Cost-effectiveness acceptability curve (CEAC) and cost-effectiveness plane were constructed using nonparametric bootstrap method with 1000 replications to explore uncertainty surrounding ICERs.

Results: Total 802 participants were included (406 intervention, 396 controls). Compared to control group, intervention group achieved greater reduction in adverse neonatal outcomes (-5.6, 95% CI [-10.1, -1.2], p = 0.039) and gains in QALY (+0.02, 95% CI [0.01, 0.04], p = 0.022). Intervention group was associated with higher health professional consultation and medications costs, but lower hospitalisation costs. There was no significant difference in overall mean healthcare costs between the arms ($482, 95% CI: [-$281, $1245], p = 0.082). Base case ICERs ($25,129 per QALY and $86.07 per adverse neonatal outcome reduced (p<0.001)) suggest the intervention was cost-effective compared to usual care under the conventional thresholds of cost-effectiveness. The probability of cost-effectiveness varied from 63% at $50,000/QALY WTP threshold to 86% at $100,000/QALY WTP threshold.

Conclusion: The study provides empirical evidence that treatment and management of early GDM is a cost-effective option for improving maternal and neonatal outcomes.

Trial registration: Australian Clinical Trials Registry ACTRN12616000924459.

Future burden of ischemic stroke in Australia: impact on health outcomes between 2019 and 2038

Tamrat Befekadu Abebe, Monash University

Objectives: To estimate the lifetime risk of ischemic stroke (IS), and project the health burden of IS over a twenty-year period (2019-2038) in Australia.

Methods: First, we estimated the lifetime risk of IS (from age 40 to 100 years) using a multistate life table model. Second, a multistate dynamic model was constructed to project the burden of IS for the Australian population aged between 40 and 100 years over a twenty-year period (2019-2038). Data for the study were primarily sourced from a large, representative Victorian linked dataset based on Victorian Admitted Episode Dataset and National Death Index. The model projected non-fatal IS, fatal-IS, and years of life lived (YLL) with and without IS. The YLL outcome was discounted by 5% annually; we varied the discounting rate in scenario analyses.

Results: The lifetime risk of IS from age 40 years was estimated as 15.5% for males and 14.0% for females in 2018. From 2019-2038, 644 198 Australians were projected to develop incident IS (564 925 non-fatal and 79 273 fatal). By 2038, the model projected there would be 358 410 people with prevalent IS, and in 2038 there would be 35 561 non-fatal IS and 5 330 fatal-IS cases, a 14.4% (45 023), 73.0% (15 000) and 105.6% (2 738) increase compared to 2019 estimations, respectively. Projected YLL (with 5% discount rate) accrued by the Australian population were 174 782 680 (84 251 424 in males and 90 531 256 in females), with 4 052 950 YLL among people with IS (2 319 887 in males, 1 733 063 in females).

Conclusions: The burden of IS is projected to increase in the coming decades in Australia. Outcomes of the model provides important information for decision makers to design strategies to alleviate stroke burden.

Deterioration of Health-Related Quality of Life: The Hidden Health Burden of Informal Caregiving

Syed Afroz Keramat, The University of Queensland

Co-authors: Tracy Comans

Objectives: Informal carers are individuals who provide unpaid informal care to a sick or disabled person within the context of an existing relationship. Informal caregiving is often physically and mentally demanding and may lead to poor health and impaired well-being. This study aims to check the impact of informal caregiving on health-related quality of life.

Methods: We utilised longitudinal data from the most recent 16 waves of the Household, Income and Labour Dynamics in Australia (HILDA) survey. The final analytic sample consists of 198,669 yearly observations from 26,994 unique individuals. This study measured health-related quality of life (HRQoL) through the physical component summary (PCS), the mental component summary (MCS), and the short-form six-dimension utility index (SF-6D). The primary exposure variable is informal caregiving. The variable was categorised into no caregiving, lighter (<5 hours/week), moderate (5-19 hours/week), and intensive caregiving (≥ 20 hours/week) based on the hours of providing care per week. We fitted longitudinal fixed-effects regression models to estimate the effects of informal caregiving on health-related quality of life (HRQoL).

Results: We have found that informal caregiving negatively affects HRQoL. More specifically, lighter (β = -0.003, 95% CI: -0.005 - -0.001), moderate (β = -0.005, 95% CI: -0.007 - -0.002) and intensive caregiving (β = -0.010, 95% CI: -0.014 - -0.006) significantly reduced SF-6D utility value. Our results also showed that moderate (β = -0.61, 95% CI: -0.86 - -0.36) and intensive (β = -1.75, 95% CI: -2.15 - -1.35) caregiving lowered MCS score after adjusting covariates. In addition, the results revealed that intensive caregiving decreases the scores of all SF-36 dimensions, excluding physical functioning.

Conclusion: Informal caregivers are highly susceptible to experiencing a decline in HRQoL. Our study findings have significant policy implications for enhancing the HRQoL and well-being of the carers. Some ways to protect the health and well-being of informal carers includes helping them balance caregiving with work and personal life, providing financial support and social security, giving access to community-based services, giving access to information and training, and provision of respite care.

Impact of postnatal depression on productivity losses

Paul Amores, University of Melbourne

Co-authors: Alan Gemmill, Jeannette Milgrom, Sarah Maher, Sabine Braat, David Story, An Tran-Duy

Objective: Perinatal depression is highly prevalent and associated with an increase in both direct and indirect healthcare costs. In developed countries, more than 1 in 10 mothers experience perinatal depression. We aimed to quantify the impact of depression on productivity losses over a 6-month period after giving birth.

Methods: Data was collected as part of the PIRIMID cluster randomised control trial. PIRIMID is an electronic clinical decision support system for identifying perinatal depression and facilitating treatment uptake. Postnatal depression was assessed at 8 weeks after giving birth using the Edinburgh Postnatal Depression Scale (EPDS). Women with an EPDS score of 11 or higher were considered as having postnatal depression. Productivity losses (absenteeism, presenteeism and unpaid work) were measured using the iMTA Productivity Cost Questionnaire (iPCQ), collected at 8 weeks, 4 months and 6 months after giving birth, and valued using the human capital method. Missing values were imputed using predictive mean matching with 10 nearest neighbours. The impact of depression on productivity cost was assessed using a two-part model consisting of a logit regression and a generalised linear regression model with a log link and gamma distribution, adjusted for socio-demographic factors. Rubin's rule was used to pool the model parameter estimates.

Results: There were 836 participants in the study, of which 111 were identified as having postnatal depression. Mean productivity costs over the six-month period were AU$2530 and AU$915 for women with and without depression, respectively. Depression was significantly associated with an increase in the risk of having positive productivity cost (odds ratio, 2.7; p-value < 0.001). Married women, those with a high school education, and those with unreported family income were found to be less likely to have positive productivity cost. Conditional on having positive productivity cost, depression was associated with an increase of AU$1681 in productivity cost over the six-month period, adjusted for differences in socio-demographic factors.

Conclusion: This is the first study in Australia that assessed the relationship between depression and productivity loss in women after giving birth. Postnatal depression was associated with a noticeable increase in productivity losses. Our results suggest that productivity losses should also be taken into consideration in economic evaluation of interventions for perinatal depression.

Economic Disparities, Life Events, and the Gender Mental Health Gap

Kim Huong Nguyen, The University of Queensland

Co-authors: Thao Nguyen, Nicholas Rohde

This paper studies gender inequality in mental health scores using Australian panel data. We show that men have significantly higher mean outcomes and the left tail of the combined distribution is disproportionately female. Using regression-based decompositions, we examine the degree that both economic inequalities and life experience account for this phenomenon. We find that disparities in income play a substantial role, and subject to an assumption of exogeneity, would be enough to account for the gender gap amongst individuals with very poor psychological wellbeing. We also examine the mental health effects of various negative life experience, such as the death of a family member or being a victim of violence. At the individual level, these variables have large effect sizes but are not strongly correlated with gender to explain our mental health disparities.

Does universal access to psychosocial services improve the quality of mental health services

Thomas Plunkett, Monash University

Objectives: Mental illness is a major burden to health and healthcare systems around the world, resulting in significant healthcare costs and economic losses. Mental-health related medications alone are responsible for, on average, 2.4% of all pharmaceutical spending within OECD countries. Notably, several studies have suggested that a large proportion of this cost is being incurred by unnecessary, long-term prescribing, which additionally carries the risk of drug interactions and adverse effects, such as cognitive issues, weight gain, and addiction. In November 2006, the Australian Government introduced the Better Access initiative, which provided subsidised psychosocial treatment as an adjunct or alternative option. This study aimed to investigate the impact that this policy had on the quality of treatment, via its effect on the discontinuation rate of long-term anxiolytic and antidepressant medication use.

Methods: A large 10% random sample of linked MBS health service use and PBS pharmaceutical data for all Australians, for the years 2003-2009, was utilised. The sample was restricted to concessional, adult patients (≥18 years old), who were continuously using either an anxiolytic or antidepressant prior to November 2006. Two outcomes were investigated: (1) the likelihood of temporarily discontinuing; and (2) the likelihood of completely ceasing, their medication. Analysis was conducted using recursive bivariate probit models (RBPM) and different copulas, using prescriber preference as an instrumental variable.

Results: In line with earlier studies, simple analysis showed a reduced likelihood of discontinuing, or ceasing, either medication class. However, once controlling for potential self-selection bias, the RBPM models found that treatment under the Better Access initiative was, conversely, more likely to lead to discontinuation, or cessation, for both medication classes. This study provides a novel analysis of the Better Access initiative in Australia, contributes to the literature on the role of psychosocial treatment options in the cessation of long-term anxiolytic and antidepressant medications, and demonstrates the importance of proper model specification when examining treatment effects.

Treatment Gap for Depression in Indonesia

Mohammad Fikru Rizal, Monash University

Mental disorder is the second leading cause of disability worldwide. It poses a more significant challenge for Low-and Middle-Income Countries (LMICs) due to its much bigger treatment gap. However, evidence of what drives this gap in these settings is scarce. To shed light on this issue, we use a large health-specific household survey containing 420,000 economically productive adults aged 25-59 from Indonesia to explore individual and district-level predictors of treatment-seeking among individuals with mental health needs. Based on the Mini International Neuropsychiatric Interview (MINI) questionnaire, we identify that approximately 6.2% of respondents meet the criteria for experiencing a current depressive episode. They tend to be female, unmarried, living alone, low educated, poorer, and unemployed. Among those with depressive episode, only 9.5% seek treatment from healthcare professionals. Holding their age, district of residence, and levels of health needs and disabilities constant, those who are poorer and not having health insurance are significantly less likely to receive treatment. On the other hand, we find no statistically significant differences in treatment rate by education level, marital status, household composition, and rural-urban location. Our further analysis suggests that higher treatment rates are observed in districts with more psychologists per capita and with mental health services available at all public primary care centres. These findings highlight the importance of addressing financial barriers and improving mental healthcare capacity at the primary care level to narrow the treatment gap in LMICs.

Can a future-health-evoking story increase preventive health information seeking?

Huan Wang, University of Melbourne

Objectives: Preventive health information, such as on disease risks or preventive measures, has been increasingly disseminated online. However, individuals, who are known to allocate little attention to the future and health in their everyday lives, may not actively seek out such information despite its future health benefits.

The strategies to increase people's seeking of health information are important but under-studied. There remains a prevailing gap in preventive health knowledge, especially in developing countries with growing burdens of non-communicable diseases. Yet, the existing literature focused on studying the effects of supplying health information, instead of the demand for such information.

In this paper, I design a connectable story to draw people's attention to future health. I then study the effect of this story on the seeking of preventive health information.

Empirical design: I implement a randomised controlled trial online where respondents are randomly presented with this story or a story not related to health.

The story mimics people's real-life experiences of learning that someone around them just experienced a health shock. In the story, a character from a similar background to the respondents talks about how he or she felt about being diagnosed with diabetes and how this has affected his or her life. The goal of the story is to connect individuals to future health risks and consequences of an illness.

Right after the story is presented, respondents are asked to select articles to read from a list, at the cost of doing 2 real-effort tasks per article. Whether they select and read the preventive health articles is the outcome variable. I study their willingness to seek out two health articles. One is self-related, on diabetes. One is non-self-related to measure within-family spillover of the story, on cervical cancer to male respondents and prostate cancer to female respondents.

800 married respondents aged between 30 to 49 are recruited via a marketing research company, Qualtrics.

Results: I first document that individuals have low demand for preventive information even given almost no acquisition cost. In the control group, none of the respondents chose to read the information on diabetes. Men are less likely to seek out spouse- related information on cancer. This may be driven by our finding that men, compared to women, perceive the health risk of their spouses to be lower. Men are also more likely to believe their spouses to have less knowledge of the preventive measures although they reported a lower level of prior knowledge.

After reading the story, respondents are more likely to seek out diabetes information. The effect on spouse-related cancer information is positive but statistically insignificant. Analysis of mechanisms suggests that the story makes people more health-oriented. Respondents adjust upwards their perceived risk and consequences of diabetes but not cancer.

Effects of private health insurance on hospital utilisation in a mixed public-private system

Jongsay Yong, The University of Melbourne

Co-authors: Maxim Ananyev; Yuting Zhang

Background: Australia has a mixed public-private healthcare system. All Australians are covered by Medicare, and in addition about 45% of Australians have private health insurance (PHI). Australian government subsidises PHI and private healthcare through a number of channels. The justification is that patients with PHI are more likely to use private rather than public hospital care, thus helping to relieve pressure off public hospitals. However, due to possible high out-of-pocket costs of private healthcare, patients with PHI may opt to use public hospitals as a public patient.

Aims and Objectives: This study investigates the degree of substitution between private and public hospital use arising from an exogenous increase in PHI enrollment. We exploit the discontinuity in the Lifetime Health Cover (LHC) policy introduced in the year 2000. LHC imposes a premium loading of 2% per year for individuals who decide to purchase PHI after they turn 31 years or older. LHC does not affect individuals aged 30 or younger. Our study sample include patients aged 30 and 31 at the time of hospital admission.

Methods and Data: We examine how PHI take-up affects patients' choice for private or public hospitals. However, the decision to purchase PHI is endogenous to private hospital use, because individuals may purchase PHI in anticipation of using private hospital care. To mitigate the endogeneity, we estimate two models: a linear probability model using the introduction of LHC as an instrument for PHI take-up; and a recursive system of two probit equations, with PHI status and patient type (private vs public) as two binary dependent variables.

Results: Our preliminary results indicate that a one percentage point increase in PHI enrollment resulted in an increase in private admission of about 0.8 percentage points. This implies an elasticity of approximately 0.6.

Conclusions: We find the increase in insurance enrollment has a relatively large effect on private hospital admission among those aged 30 and 31. We caution that our results are conditional on individuals having to use hospital care. Data constraints prevent us from examining the use and non-use of hospital care as a result of insurance enrollment.

Socioeconomic inequity in the utilisation of hospital-related care among people with eating disorders in Australia: Trend and decomposition analyses

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Co-authors: Sarah Maguire, Francisco Brahm, Natasha Nassar, Marcellius Kim, Jane Miskovic-Wheatley, Danielle Maloney and Michelle Cunich

Background: Although the universal healthcare system in Australia aims to ensure access to affordable and equitable healthcare services based on individual health requirements, little is known about equity in access to hospital-related care among people with eating disorders (EDs). To address this research gap, this study aims i) to assess the horizontal inequity in hospital-related care utilisation among people with EDs, ii) to analyse its trend, and iii) to explore the contribution of different need and non-need factors to explain the observed inequalities.

Methods: Using data from several administrative health datasets in New South Wales (NSW), including NSW Admitted Patient Data Collection, NSW Emergency Department Data Collection, and Mental Health Ambulatory Minimum Data Set from 2005 to 2020, we employed the horizontal inequity approach to measure the extent of inequity. Socioeconomic Indexes for Areas (SEIFA) Index of Relative Socioeconomic Advantage and Disadvantage (IRSAD) score from the Australian Bureau of Statistics (ABS) was used as the rank variable. The decomposition analysis was conducted to explain the factors accounting for inequality in terms of both need (age, sex, comorbidities, duration of ED) and non-need (born in Australia, marital status, remoteness of residence, area-based socioeconomic status) factors. Hospital-related care consisted of four outcomes: public inpatient (hospital) admissions, private inpatient admission, visits to outpatient clinics, and emergency department visits, with three different measures (probability of visit, total number of visits, and conditional number of visits) for each outcome variable.

Results: The estimated horizontal inequity indices for the probability of private hospital admission due to EDs ranged from 0.04 to 0.09 during 2005-2020, suggesting a pro-rich socioeconomic inequity based on IRSAD deciles, with people from advantaged areas using more of these services after accounting for the difference in need. However, there was no significant inequity in the probability of public hospital admission, emergency department visit and outpatient visit. Inequality in ED-related private hospital admission was mainly explained by socioeconomic status and remoteness of residence. While socioeconomic status contributed most to the pro-rich inequality in private hospital admissions, a significant increase (from 6% to 20%) in the contribution of remoteness of residence was observed over the last 15 years.

Conclusions: There is unequal use of private hospital services by people with EDs that is driven mainly by the location they reside in and socioeconomic status. This is important information for policymakers as they develop programs and policies to achieve greater fairness in ED-related healthcare.

The disease modifying therapy utilisation and costs trends for multiple sclerosis in Australia from 2013 to 2022

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Objectives: Disease modifying therapies (DMTs) are commonly used to reduce the rate of relapses and disease progression in people with multiple sclerosis (MS). The MS DMT prescribing landscape in Australia has substantially changed over time due to reimbursement policy, particularly in the last decade. This study evaluated the utilisation and cost trends of MS-related DMTs in Australia in the last 10 years and investigated the differences between Australian States/Territories (S/T).

Methods: 16 DMTs were listed on the Pharmaceutical Benefits Scheme (PBS) for subsidisation in Australia in December 2022. We obtained the utilisation and costs data from the PBS Item Reports from January 2013 to December 2022. Population data were extracted from the Australia Bureau of Statistics. DMTs were grouped into three categories based on their clinical efficacy and route of administration: Category 1: classical injectable DMTs; Category 2: moderate efficacy group; and Category 3: higher efficacy group. A descriptive approach was used, and following results were analysed for each year: 1) the number of DMT prescriptions and costs per 10,000 population; 2) the proportion of prescriptions and costs by DMT category; and 3) the prescription volumes and costs of individual DMTs. The growth rates of DMT prescriptions and costs per 10,000 population from 2013 to 2022 were also calculated. All estimates were produced for Australia and stratified by S/T.

Results: Total number of DMT prescriptions rapidly increased during 2013-2015, stabilised during 2015-2018 and then gradually increased during 2018-2022. The growth rate of DMT prescriptions during 2013-2022 was 125%, with the Australia Capital Territory recording the highest growth (251%). Category 3 DMTs accounted for 54% of total prescriptions in 2013, and this proportion increased to 75% in 2022. Category 1 DMTs accounted for 46% of the total prescription in 2013, then was exceeded by Category 2 DMTs from 2018. The prescription proportions of the three DMT categories exhibited similar trends in most S/T, but the time-point at which Category 2 dominated Category 1 differed between Australian S/T. Fingolimod was the most popular individual DMT until 2020, which was then dominated by Ocrelizumab. The trends of individual DMT prescriptions were largely similar in most S/T except in Western Australia, Tasmania, and the North Territory. The annual total costs that government paid for DMTs continuously increased from $173,876,822 in 2013 to $515,782,763 in 2022. Fingolimod had the highest costs in 2013, then was exceeded by Ocrelizumab from 2020.

Conclusions: MS-related DMT utilisation and costs continuously increased over the last decade, particularly Category 3 DMTs. The DMT utilisation patterns and costs differed between Australian S/T. Our findings highlight the need to understand the drivers of such differences to identify various barriers and facilitators to standardising the use of DMTs in Australia.

Trends in increased healthcare service utilizations and expenditures of older adults in China from 1993 to 2018

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Background: Aging is associated with an increased prevalence of non-communicable chronic diseases (NCDs), functional impairments, and diverse demands for health services. This study analyzed the trends in older adults' needs and utilization of health services from 1993 to 2018 in China, as well as chronic disease-related economic burdens.

Method: The research data were collected from the six cross-sectional National Health Service Survey (NHSS), implemented every 5 years from 1993 to 2018. A multi-stage stratified random cluster sampling method has been adopted in the NHSS, which included the data on the older population's socio-economic characteristics, health service needs and utilization, and healthcare expenditures. And the prevalence of NCDs and related Out-of-pocket (OOP) expenditures were collected. In the 2013 and 2018 NHSSs, EQ-5D-3L and visual analogue scale were used to evaluate the health condition. Functional dependency and impairment data were collected in 2018. The Katz Activities of Daily Living scale evaluated six functions, including self-feeding, dressing, bathing, transferring, toilet hygiene, and controlling bowel movements.

Results: The two-week morbidity rate and prevalence of NCDs showed a rapid upward trend in older adults. With the development of health system reform and universal health insurance coverage, older adults' two-week medical consultation rate increased from 25.6% in 1993 to 40.1% in 2018, and the hospitalization rate rose from 6.1% to 24.9%. The difference in health service needs and utilization between urban and rural areas decreased, and the hospitalization rate in rural areas (26.3%) exceeded that in urban areas (23.6%) for the first time in 2018. Functional independence becomes more severe as they aged. The proportion of severe functional impairment was 6.9% and 2% in the group aged 80 or over and group 70-79 years, respectively. Regarding disability status, 32.5% had hearing problems and 31.4% had visual impairment. The highest prevalence rates of NCDs in older adults were found in hypertension (36.9%), followed by diabetes (10.6%), cerebrovascular disease (5.4%), ischemic heart disease (4.5%), and intervertebral disc disease (4.2%). The average annual OOP expenditures attributed to NCDs increased from ¥2481.8 RMB in 2013 to ¥8255.9 RMB in 2018 for older adults. About 90.7% of older adults prefer to live in the residential community, leading to the demands for preventive care (30.4%), medical treatment (14.1%), and elderly education (8.6%).

Conclusion: The elevated risks of age-related impairments, chronic morbidities, and increased demands of preventive care are critical public health issues. Policymakers should strengthen primary healthcare and move towards integrated delivery to improve access and quality of care for older adults. The integration of healthcare and social security constitutes an adaptive trend in meeting the multi-level demands of an aging society.

Children's Time Allocation and the Socioeconomic Gap in Human Capital

Danusha Jayawardana, Monash University

Co-authors: Nicole Black, Gawain Heckley

Background: Children born into low socioeconomic status (SES) families tend to experience poorer educational and mental health outcomes compared to those born into more advantaged families. Yet we still have limited understanding as to how we can effectively narrow these SES gaps in human capital.

Objective: In this paper we measure the SES gap in cognitive and mental health difficulties and utilise detailed time use diaries from a nationally representative survey of Australian children aged 4 through to 14 years to understand the role of time use in the development of the SES gap from childhood into adolescence.

Methods and results: We find that a substantial SES gap is observed in both cognitive skills and mental health difficulties. Decomposing this gap by way of Oaxaca-Blinder decomposition with an augmented value-added model of human capital development, we find that differences in time use explain an important part of the observed SES gap in both literacy and numeracy skills. Specifically, that low SES children spend more time with digital media, and less time on extracurricular educational activities (e.g. homework and tutoring/music lessons) and cognitive leisure time (e.g. board games and reading). We find similar results for internalising problems (such as depression and anxiety), but these estimates are imprecise. Our results are robust to a number of specification tests including an exogeneity test applied to time use variables.

Policy implications: Our findings suggest that programs that encourage and enable a substitution away from digital media (especially passive media) towards out-of-school educational activities and cognitive leisure for children from low SES backgrounds could reduce the SES gap in human capital.

Childhood ADHD and Young Adult Outcomes

Jessica Arnup, Monash University

Objectives: Attention Deficit Hyperactive Disorder (ADHD), characterised by significant inattention and/or hyperactivity-impulsivity difficulties, is one of the most common childhood mental health disorders. Previous correlational research suggests that ADHD is associated with several negative outcomes, including decreased health-related quality of life, poorer educational achievement, and increased involvement in traffic accidents. Extending on prior research, this study leverages population level data to estimate the impact of childhood ADHD on human capital and labour market outcomes in Australia.

Methods: We utilise the Australian Bureau of Statistics' (ABS) Multi-Agency Data Integration Project (MADIP) to examine the human capital and young adult labour market outcomes of children with treated ADHD. The MADIP is a large population-based dataset that links individuals from the 2011 Australian Census of Population and Housing with higher education, tax, healthcare, and welfare administrative data. Restricting our sample to children between 12-15 years of age, we exploit Medicare records to identify children who are prescribed ADHD medication. Specifically, we examine the impact of childhood ADHD on enrolment in higher education, receipt of government welfare payments (either a job-seeking payment or disability support pension), and employment income in early adulthood.

We first use a sibling fixed effect approach to compare the outcomes of siblings. Secondly, we use a neighbourhood fixed effect approach to compare outcomes of children of the same age and gender, who reside in the same neighbourhood. This allows us to control for unobserved characteristics of families and neighbourhoods that may jointly impact ADHD diagnosis/treatment, and young adult outcomes.

Results: Results from sibling fixed effect regressions show that children with ADHD are significantly less likely to be enrolled in tertiary education and have significantly higher welfare use at age 20. We also find that children with ADHD are significantly less like to have a salary indicative of full-time employment at age 19.

As expected, we find similar, yet larger, results from the neighbourhood fixed effects approach compared to the sibling fixed effects models. These estimates aren't biased by within-family spill-overs; however, it is possible that they are biased from confounding family or genetic factors. We expect that the true estimated effect of having childhood ADHD (relative to belonging to a family without any ADHD prevalence) lies somewhere between our two sets of estimates.

Conclusion: These findings suggest that having childhood ADHD significantly impacts the human capital development and early labour market outcomes of young adults in Australia. Our results suggest that more support is required for children with ADHD to succeed in the labour market after compulsory schooling.

The effects of sleep duration on child health and development

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Co-authors: Ha Trong Nguyen, Stephen R Zubrick

Objectives: Humans spend approximately one-third of their lives sleeping, with children sleeping more than adults. A large scientific literature repeatedly attests to the association between a range of sleep qualities – including the amount of time – and aspects of child development. And yet, studies that more directly estimate the causal effects of time sleeping on various health, cognitive and non-cognitive outcomes in children and adolescents are scant. This paper examines the causal impact of sleep duration on health and development of children and adolescents.

Methods: Using over 50 thousand time use diaries from two cohorts of Australian children spanning over 16 years in the Longitudinal Study of Australian Children (LSAC) survey, we first document that, on days with longer daylight duration, children sleep significantly less, partly by going to sleep later and waking up earlier. We then exploit variations in local daily daylight duration measured on pre-determined diary dates across the same individuals through time as an instrument in an individual fixed effects regression model to draw causal estimates of sleep duration on a comprehensive set of child development indicators.

Results: We find that sleeping longer improves selected general developmental and behavioural outcomes, such as Emotional development, Physical development, Health related quality of life, Emotional symptoms, Conduct and behavioural and emotional difficulties generally. Our results also reveal that sleeping more increases the probability of having excellent health or decreases the likelihood of having any ongoing condition. By contrast, sleeping longer statistically significantly increases BMI scores, mainly by increasing the risk of being overweight. Moreover, while the beneficial effects of sleeping longer on general and behavioural outcomes are more pronounced for females or older individuals, the impact on BMI is only observed for males. Furthermore, the results show statistically insignificant or a relatively small positive impact of sleeping more on cognitive development. We also uncover evidence of a non-linear relationship between sleep duration and selected general development, behavioural and health-related outcomes, suggesting a more pronounced impact of sleeping longer for individuals at the two ends of the sleep duration spectrum.

Inequity in Child Mental Healthcare Use

Martin Downes, Griffith University

Co-authors: Nicole Black, Michael Shields, Trong-Anh Trinh

Worldwide, many children with mental healthcare needs do not receive adequate treatment. In this study, we investigate the importance of socioeconomic factors in determining whether Australian children with poor mental health receive mental healthcare. The analysis is made feasible by linking a longitudinal study of children – which includes parent, teacher, and child-reported mental health questionnaires – with administrative pharmaceutical and therapeutic records. Three separate identification approaches are used, and the results from each are consistent. Children with mental health problems from families with low income levels, experiencing financial hardship, and with low parental education are significantly less likely to receive mental health treatment. This is particularly evident for psychology and psychiatry services, which often have high out-of-pocket costs, and is less pronounced for mental health services supplied by GPs and mental health medications.

Resilience, Socioeconomic Status and Wellbeing among Adolescents in Australia

Maame Esi Woode, Monash University

Co-authors: Gang Chen

Background: Coping with everyday stresses and emotions in life is necessary on a day to day basis. This is even more critical in the period of adolescence when one is transitioning between childhood and adulthood. This period is often characterised by several emotional upheavals, some positive and others not so positive.

Objectives: The goal of this study is to understand how socioeconomic status and resilience influences both subjective and psychological wellbeing among adolescents in Australia and the impact of both on life satisfaction.

Methods: A partial least square – structural equation modelling (PLS-SEM) approach is used. PLS-SEM allows us to explore the associations between the four latent variables of interest using both a measurement and a structural model. To address the issue of endogeneity, we use the Gaussian Copula method. We focus on four quality of life and wellbeing measures. Life satisfaction is measured using the Personal Wellbeing Index (PWI) and the Brief Multidimensional Student Life Satisfaction Scale (BMSLSS). Quality of life is measured using the Child Health Utility 9D (CHU9D) instrument, Psychological wellbeing is measured using the World Health Organisation's five wellbeing index (WHO5), with resilience measured using the 14-item resilience scale (RS14). Both subjective and objective socioeconomic status variables are considered. The Gaussian Copula method was used to identify and correct for endogeneity between resilience and psychological health as well as between quality of life and both psychological health and life satisfaction.

Results: A total of 568 Australian adolescents between the ages of 14 and 18 years took part in the online survey with an average age of 16 years. A little more than a third (38.2%) were boys with the majority of the respondents (85.6%) living in urban areas. Quality of life, psychological wellbeing and resilience were positively associated with life satisfaction. There was also a positive relationship between resilience and quality of life. No direct significant relationship was found between either resilience or quality of life and psychological wellbeing. The relationships between socio-economic status and resilience and wellbeing varied by the type of SES measures

Discussion: Being able to cope with everyday stress important for life satisfaction, even in adolescence. The results of this study indicate that resilience not only affects life satisfaction directly but also indirectly through its effect on quality of life and psychological wellbeing. Socio-economic stability is an important factor in determining resilience.

Keywords: Resilience, Quality of Life, Wellbeing, Life Satisfaction, Adolescents

A reporting checklist for discrete choice experiments in health

Jeminah Ride, Monash University

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Objective: To develop a reporting checklist for discrete choice experiments (DCEs) applied in health or health care. The aim of the checklist is to improve the quality of reporting, allowing readers and reviewers to assess all important aspects of the methods, and to facilitate comparison across studies by making descriptions of methods more consistent.

Methods: 1. Scoping review of existing guidelines, reporting checklists, quality checklists, and other relevant documents to identify domains or items to be included in a reporting checklist for DCEs in health. 2. Collation of these items to reduce duplication and organise the items into domains. 3. Online Delphi study among 30-50 health economists and other researchers who conduct DCEs in health and who publish the results in academic journals. This aims to gain consensus on the items most important to include in the checklist and the wording of items. 4. Consolidate the results and formulate the checklist with accompanying guidance statement. 5. Gain feedback on the checklist and guidance statement from experienced and inexperienced DCE researchers. Update the documents as needed. 6. Disseminate the checklist in health economics, health services research, and other relevant disciplines.

Results: This is to be a work-in-progress, interactive presentation to present interim results and gain feedback from peers on potential items for the checklist. At the time of submission, the scoping review has identified 105 potential items for the checklist after removal of duplicates. These have been organised by 1) the stage of conducting a DCE (e.g. selection of attributes and levels, experimental design) and 2) section of a paper in which these are usually reported (e.g. introduction, methods, results). The Delphi study is in progress.

Conclusions: The ultimate goal of this work is to have the reporting checklist embedded as standard practice for DCEs applied in health and health care. Gaining feedback from those who conduct DCEs and the wider health economics community is vital to ensure that the checklist is fit for purpose and acceptable to those who will use it. This presentation will form part of our methods for developing the checklist.

Preference inversion in Discrete Choice Experiment: A comparison between emoji scale and purple colour coding

Thao Thai, Monash University

Background: Preference inversion occurs when respondent preferences do not align with the hierarchical order of attribute levels. Preference inversion is common in discrete choice experiments (DCEs) and DCE-based valuation studies, and may cause serious issues such as limiting trade-off values estimation or imposing further assumptions on coefficient estimates.

We aim to compare an emoji scale, a universally recognisable pictographic symbol embedded in text, with the purple colour coding in facilitating respondent understanding of the ordering of attribute levels.

Methods: In the context of evaluating the Recovery Quality of Life instrument including positively and negatively worded attributes with the same attribute levels, a within-respondent comparison was conducted. Each respondent was randomly allocated one set of five choice tasks assisted with emoji scales and one set of five choice tasks assisted with purple colour coding. Both versions were derived from the same 230 choice tasks, each of which has three overlapping and five varying attributes. The emoji scale was composed of five icons modelled after the five attribute levels of the ReQoL where a level was presented by an enlarged, blue-coloured emoji positioned within a scale of other smaller, colourless emojis to reflect the level order. To minimise bias, we randomised the version order and choice tasks within each version.

Results: The comparison was conducted based on a sample of >1000 respondents aged 18 years and older in Australia. The evaluation criteria consist (1) choice consistency, (2) the logical consistency of preference estimates, (3) respondents' perceived difficulties and (4) respondents' stated preference for each type of presentation. The first two criteria were explored through (1) the heteroscedastic logit model and (2) the prevalence of preference inversion while the last two criteria were based on respondents' cognitive debriefing responses. A nested logit model combined with respondents' qualitative responses provide further insights on respondents' preference for each of visual presentations.

Conclusions: This study establishes evidence whether emoji scale is as effective as purple colour coding. As emojis possess the power of familiarity and universality to respondents in various formal and informal settings, we contribute to the literature through the use of an alternative visual tool to navigate language in written attribute levels and improve respondent cognitive burden across diverse backgrounds, potentially applicable to children and people with intellectual disability or low literacy.

Do risk attitudes influence completion of a discrete choice experiment?

Alison Pearce, University of Sydney

Co-authors: Hannah Qu, Deme Karikios, Deborah Street

Background: Discrete choice experiments (DCEs) are increasingly used to elicit preferences for health care. Literature has focused on communicating risk and measuring risk attributes in a DCE, but there is a lack of research on the relationship between risk profiles and completion of DCEs.

Aims: The aims of our research were to determine whether people with risk profiles impact on the level of difficulty experienced when completing a DCE and the consistency of stated preferences.

Methods: A DCE about cancer treatment preferences was run with an online panel sample representative of the Australian population. The DCE survey included a validated question for self-reported general risk profiles, along with questions capturing understanding, attribute non-attendance, hypothetical bias and learning heuristics. Along with descriptive and chi-squared comparisons of risk profiles and difficulty with the DCE, a heteroscedastic conditional logit model was run to assess whether those with high risk tolerance had less consistent preferences (i.e. greater error variance).

Results: 731 participants completed the DCE, 21% of whom reported high risk tolerance, while 58% had neutral risk tolerance and 21% had low risk tolerance. Participants who were younger, male, with higher education, higher income and current employment were more likely to report higher risk tolerance. Those with a higher risk tolerance were more likely to report having difficulty understanding the concept of making a choice between cancer treatments (42%, $p<0.001$) compared to those reporting low risk tolerance (10%), although were no more likely to report attribute non-attendance, hypothetical bias or learning heuristics. People with higher risk tolerance also displayed greater error variance, suggesting less consistent preferences (scale coefficient -0.242, $p<0.001$).

Conclusions: These results suggest that individuals with greater risk tolerance may be less careful when completing a DCE, and to have more trouble doing so. This may have implications for the accuracy and interpretation of DCE survey results.

How much overlap is just right? Comparing stated preference with model consistency in DCEs

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Discrete choice experiments (DCEs) are commonly used to value health states for estimating quality of life years. Past studies have found that DCEs are cognitively challenging for respondents, even with instruments such as the EQ-5D, which has only 5 dimensions. With the emergence of more complex instruments, DCEs using such instruments may pose a greater cognitive burden on respondents. Several strategies have been proposed to reduce task complexity and improve respondent efficiency in DCEs, including attribute level overlap and colour coding. One challenge with attribute overlap is the reduction in information obtained from each choice task and it is important to strike a balance between statistical and respondent efficiency. Determining the optimal overlap format depends on various factors, such as research topic, descriptive system, respondent characteristics and sample size. This paper aims to develop a practical guide to identifying the optimal overlap format for broader and longer descriptive systems, using the Adult Social Care Outcomes Toolkit (ASCOT) as an example.

The ASCOT contains 8 dimensions each with 4 levels. A within-subjects design was employed to explore 4 different levels of overlap using a total of 618 respondents. Each respondent answered 16 pairwise choice tasks divided into 4 subsets, with each subset having 0, 2, 4 or 6 overlapped attributes. After each subset, respondents were asked about the difficulty and attribute attendance of the tasks they had just completed. To eliminate the potential confounding effects of presentation order on perceived difficulty, respondents were randomly assigned to one of three orders: increasing, decreasing and random. Upon the completion of all choice tasks, respondents answered questions about their preferences and capabilities of dealing with attribute overlap. Data analysis explored stated preference/capability, model consistency, and stated attribute non-attendance. Logistic regression was used to assess the impact of attribute overlap on perceived difficulty and preference when making a choice. Various models were used to examine the influence of attribute overlap on model consistency, including generalised multinomial model, heteroscedastic logit model and mixed logit model.

Results indicated that overlap on 4 of the 8 attributes was the most preferred format while only overlap on 6 attributes significantly reduced the stated difficulty. In terms of model consistency, large variations in the estimates were observed across all models when 6 attributes overlapped but this was not the case when fewer attributes were overlapped.

This paper is the first to offer guidance on how to identify the optimal overlap format in DCEs. It recommends overlapping on 4 attributes in designing DCEs using the ASCOT as the descriptive system. By following the steps outlined in this guide, researchers can conduct efficient small-scale pilot testing to inform the design of DCEs in their main projects.

What is more important for a better life amongst adolescents in Australia?

Gang Chen, Monash University

Co-authors: Julie Ratcliffe; Jan Abel Olsen

The pursuit of subjective well-being has also become one of the ultimate aims of public policies globally. This study adopted a discrete choice experiment (DCE) technique to elicit the relative importance of key life domains that are perceived by adolescents to have a better life. A partial profile design was used to reduce the response burden. An online survey was developed on Qualtrics Survey Software and administrated to an online panel of middle adolescents aged 14 to 18 years old in Australia. A mixed logit model which considers respondents' preference heterogeneity was adopted to estimate the DCE data. A total of 1,140 adolescents completed the whole survey (mean: 16 years; 61% girls) and were included in the analysis. The choice experiment results found that all ten life domains significantly influenced adolescents' preferences for a better life. Personal health was the most important life domain to a better life, followed by family life, and personal relationships in full sample; meanwhile, preference heterogeneity was observed. The aggregated preference reported in this study will facilitate the policymakers to understand the relative importance of life domains from a societal perspective, which will be particularly relevant for public resource prioritization.

Parallel Session 3

Room A Economic Evaluation and Cost Effectiveness 3

What level of aggregation should we use in economic evaluation: an inferiority cluster crossover trial of aspirin after joint replacement

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Background: While economic analysis of individual patient data in trials may have greater internal validity than decision analysis models based on aggregate published literature, trial data relevant to an economic analysis can complicated by factors such as early trial cessation or randomisation at a group level. This study explores some analytical choices in conducting economic analyses in non-inferiority cluster crossover trials through a case study comparing enoxaparin to aspirin for prevention of symptomatic venous thromboembolism (VTE) in hip and knee arthroplasty (THA and TKA).

Methods: CRISTAL was an Australian based multicentre trial (31 hospital sites) which included 9,203 patients randomised to commence enoxaparin or aspirin after undergoing primary THA/TKA who reported VTE status. Event data was collected 90 days (VTE, bleeds) and 6 months (EQ-5D-5L) post-arthroplasty. Costs were calculated for each patient based on individual clinical events and published management guidelines, and included only healthcare costs. Unit costs were from Australian sources. Multiple imputation was used for missing utility data. Incremental costs, VTEs avoided and QALYs were estimated using linear models controlling for treatment and order of treatment (and baseline utility for QALYs), and hospital clustering on the standard errors. A decision-making approach was taken: acceptability curves were presented to take account of the uncertainty in estimated costs and outcomes due to sampling and missing data. An alternate statistical model specification was considered, with summary measures at the site rather than patient-level.

Results: The CRISTAL trial found enoxaparin more effective than aspirin in preventing symptomatic VTE within 90 days of primary THA/TKA, with estimated risk difference 1.6% (95%CI 0.5%,2.6%) at patient level, 2.0% (95%CI 0.5%, 3.4%) at site level. The additional cost to prevent a VTE after a THA/TKA was $83 (95%CI $68, $97) for enoxaparin versus aspirin at patient level; $79 (95%CI $62, $96) at site level. If the willingness to pay for a QALY is at least $70,000, we can be 60% confident of net benefits.

Discussion: While the economic analysis did estimate gains in average patient utility over 12 months of follow-up, there was uncertainty in the monetary net benefits from enoxaparin over aspirin. There were several important contributors to the uncertainty in the analysis: 16 hospitals did not achieve the required number of patients to crossover to the alternate treatment before trial cessation due to it reaching the cut-off for non-inferiority of aspirin (particularly affecting the site level analysis); VTE events and EQ-5D data were collected at different time points; and EQ-5D data at 6 months was missing in 12% of patients.

This analysis provides insight into some of the issues that might arise during trial-based economic analyses, particularly with respect to aggregation, and how this could be considered alongside trial design.

Valuing the health benefits of active transport

Lennert Veerman, Griffith University

Co-authors: Mary Wanjau, Holger Möller, Fiona Haigh, Christopher Standen

Background: Physical inactivity is one of the main contributors to the rise in non-communicable diseases worldwide. Active transport, which refers to modes of transport that involve physical activity such as walking, cycling and walking and cycling to and from public transport stops, offers a known means of raising physical activity at a population level. The health benefits of active transport are well established, although there currently is no agreed method of valuing them in strategic business cases in New South Wales. The aim of this project was to deliver a best-practice method to value the health benefits of active transport in NSW.

Methods: A previous version of the multistate lifetable model was amended and populated with NSW-specific demographic and epidemiological data and NSW Treasury guidelines were followed. It quantifies the health impacts of changes in active transport behaviour over the lifetime of a population allowing for different health states and co-morbidities. The model considers exposures to physical activity, air pollution and road trauma. The health benefits are valued in accordance with current Office of Best Practice Regulation recommendations. A central (reference case) scenario was modelled based on a mode-specific intervention scenario for walking, cycling and public transport. Values per additional km of walking and cycling are reported.

Results: The reference case puts the economic value of the health benefits of a km walking at $6.33 (95% uncertainty interval $6.03 to $6.62). An additional km cycled results in $2.87 ($2.67 - $3.06) in health benefits. Assuming no risk of injury and background levels of air quality, an additional km of cycling on separate, off-road bicycle paths is valued at $2.98 ($2.78 - $3.17) per km. An increase in walking associated with public transport use is associated with health benefits of $6.05 ($5.68 to $6.45) per km. These values are sensitive to a range of factors including age and prior level of physical activity. A range of additional outputs and the results from a wide range of sensitivity analyses are reported.

Conclusions: The per-km values in our study are higher than those of previous similar studies, which is largely due to the inclusion of a direct link between physical activity and mortality, and the use of accelerometry-derived relative risks. The values can be used in cost benefit analyses for business cases for infrastructure projects. The model can also be used to determine the potential health benefits based on transport mode share targets before detailed demand modelling has been carried out. The broader methodology can be used for health impact assessment in other policy areas where interventions outside the health sector have health consequences. Additional steps to account for non-health benefits and costs are required for full cost-benefit analyses.

Impact of structural differences on the modelled cost-effectiveness of non-invasive prenatal testing

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Background: Non-invasive prenatal testing (NIPT) was developed to improve the accuracy of prenatal screening programs to detect chromosomal abnormalities. NIPT offers a higher detection rate and lower false positive rate compared to traditional screening. Cost-effectiveness studies have yielded very different ratios for NIPT, including conclusions of NIPT being dominant, cost-effective and cost-ineffective. These differences do not appear to be driven solely by contextual factors such as currency, year of analysis, choice of comparator, or local willingness-to-pay thresholds. Multiple structures have been used to model NIPT, and the extent to which these structural variations contribute to differences in results is unclear.

Aims: Our aim was to assess the impact of different model structures on the cost-effectiveness of NIPT for the detection of trisomy 21 (T21; Down syndrome).

Methods: A systematic review identified thirty-three economic models comparing NIPT to current screening for the detection of chromosomal abnormalities. Key variations in published model structures were identified: the number of health states, and the approach used. New models with different structures were developed in TreeAgeTM and populated with consistent parameters for costs, clinical inputs, utility weights and transition probabilities. The population, comparator, time horizon, year of analysis and currency were held constant to enable a comparison of the extent to which structural variations impacted on the modelled results. The following incremental cost-effectiveness ratios (ICERs) were derived for each model structure: cost/T21 detected; cost/pregnancy related loss (PRL) avoided; cost/quality adjusted life year (QALY).

Results: Four new model structures were developed which compared three versus five health states, and a decision tree approach versus microsimulation. When comparing three to five health states and using a decision tree approach, small differences in results were found in terms of cost/T21 detected and cost/PRL avoided. When examining the cost/QALY and using a microsimulation approach, a model with three health states resulted in an ICER of $51,182/QALY and a model with five health states resulted in NIPT being dominated. A decision tree with five health states resulted in an ICER of $96,873/T21 detected and changing the approach to a microsimulation caused NIPT to become dominated. Looking at cost/PRL avoided, using a decision tree resulted in an ICER of $13,030/PRL avoided and a microsimulation resulted in an ICER of $20,439/PRL avoided.

Conclusion: The choices made in the model structure can have a significant impact on the ICER and conclusions regarding cost-effectiveness. Policy makers should be aware that structural choices made by modellers may inadvertently affect decisions to support or not support funding for NIPT.

Economic evaluations of interventions for reducing perinatal morbidity and mortality: a systematic review

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Background: Reducing perinatal morbidity and mortality remains a public health worldwide. Disparities in the perinatal mortality rate range from the lowest in northern Europe to the highest in sub-Saharan Africa. Even in countries with low overall perinatal mortality rates, significant disparities exist between population groups. Although adverse perinatal outcomes are disproportionately higher in resource-limited settings, it is still a significant burden in high-income countries. Several interventions are available to address perinatal morbidity and mortality, but no study has provided a comprehensive and systematic synthesis of the available economic evaluation evidence. Evaluating perinatal health interventions from both health and economic perspectives can help identify the most effective healthcare strategies to avert mortality and morbidity.

Objective: This systematic review aims to systematically summarise findings from a comprehensive evidence synthesis on the cost-effectiveness and benefits of perinatal health interventions to evaluate which interventions are most effective and give the highest benefits or value-for-money in reducing perinatal morbidity and mortality.

Methods: We will undertake this systematic review following the general principles published by the University of York Centre for Reviews and Dissemination (Akers, Aguiar-Ibáñez, & Baba-Akbari, 2009). The systematic review protocol is registered with PROSPERO and will be reported following the PRISMA-P guidelines (Moher et al., 2015). We will systematically search several databases, including, EconLit, PubMed, Scopus, CINAHL, Web of Science, and Cost-Effectiveness Analysis (CEA) Registry, using a search algorithm developed with keywords and MeSH terms related to broader themes: i) perinatal morbidity and mortality, and ii) economic evaluation. Studies reporting on any partial or full economic evaluation of direct or potential interventions during preconception through the early childhood period will be considered. The Endnote library software was used to store all abstracts and full-text papers. The screening process will follow a two-step approach based on inclusion and exclusion criteria, with two reviewers independently screening titles and abstracts. Full-text papers will be reviewed if there is doubt or disagreement. Studies will be assessed for quality of methodology using the Drummond checklist and its modified version published by the Centre for Reviews and Dissemination of the University of York (Akers et al., 2009). Data extracted will be collated and synthesized using narrative and descriptive summaries, with descriptive subgroup analyses conducted where possible.

Results: (to be announced)

Conclusion: Findings from this systematic review will provide comprehensive and policy-relevant economic evidence to inform health decision-makers about the most effective healthcare interventions for reducing perinatal mortality and morbidity.

Bring out Your Dead: A Review of the Cost Minimisation Approach in Health Technology Assessment Submissions to the Australian Pharmaceutical Benefits Advisory Committee

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Objectives: Published literature has levied criticism against the cost-minimisation analysis (CMA) approach to economic evaluation for new medicines, with prevailing papers declaring its 'death'. However, the approach is robust under certain conditions and is the most common way new medicines are listed for public subsidy in Australia. This research aims to fill the gap in the existing literature regarding the use of CMA in Australia by identifying the factors that influence recommendations made by the Pharmaceutical Benefits Advisory Committee (PBAC) regarding the subsidy of medicines submitted using CMA. Additionally, it assesses whether PBAC's recommendations adhere to the appropriate application of CMA and the PBAC Methodology Guidelines.

Methods: Relevant information was extracted from Public Summary Documents of submissions to the PBAC that included CMA and were assessed between 2005 and 2022 (n = ~550). Four theoretically relevant variables were collected: potential for inferior safety, potential for inferior efficacy, exceeding a noninferiority margin, and disparities in safety profiles. Additionally, key confounders were considered and controlled for, such as type of medication, population characteristics, and severity of disease. A generalised linear model was fitted, with control variables selected through an iterative feature selection process using the Bolasso Method.

Results: While two of the four theoretically relevant variables, the potential for inferior safety and the potential for inferior efficacy, reduce the likelihood of a recommendation ($p<0.01$), the PBAC Methodology Guidelines suggest these submissions should be excluded from using CMA and instead should use cost-effectiveness analysis. This suggests that the Guidelines define a process not strictly adhered to in practice.

Conclusions: Key stakeholders should consider whether the approach accepted for cost-minimisation is appropriate or whether the Methodology Guidelines require revision. Nonadherence reduces the clarity and increases the uncertainty of how a submission process will eventuate for the pharmaceutical company. Further, nonadherence may result in the inclusion of inferior medicines at equivalent costs. This situation could lead to suboptimal patient outcomes (due to using inferior medicines) and increased healthcare and economic burdens (due to worsened health status).

Exploring Inequality of Opportunity in Birth Outcomes: A Mother Fixed-Effects Study

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Objective: Inter-generational transmission of economic inequalities occurs as parents' socioeconomic status (SES) significantly impacts the distribution of outcomes among their children. We examined the effect of inherited parental characteristics on birth weight and infant mortality using the mother-fixed effect model.

Methodology: To conduct our analysis, we utilize a rich dataset comprising Indian birth records from the 2019-2021 Demographic and Health Survey, encompassing a substantial sample size of 122,420 observations. Our focus lies in uncovering the extent of inequality of opportunity (IOP) in birth outcomes and exploring how parental socioeconomic status (SES) plays a significant role in shaping these outcomes. Furthermore, employing the Shapley-value decomposition technique, we investigate the relative contributions of various factors to the observed inequality of opportunity.

Results: Our findings reveal that a notable proportion, ranging from 3% to 14%, of the observed inequality of opportunity in birth outcomes can be attributed to the influence of parental characteristics. Specifically, infants born to affluent mothers exhibit a slightly lower likelihood of being born with low birth weight and a decreased risk of mortality. Decompositions find that the parental influence on IOP in birth outcomes surpasses the impact of other factors, such as the demographic characteristics of the children and the availability of pregnancy-related health resources.

Conclusion: Our findings show the importance of parental socioeconomic status in shaping birth outcomes and emphasize the need for targeted interventions and policies that aim to break the cycle of inherited disadvantage, such as prioritizing marginalized infants for the provision of health care resources.

Keywords: Birth Weight, Birth Outcomes, Parental Socioeconomic Status, Inequality of Opportunity, Mother Fixed Effect.

Economic and mental health effects of automotive plant closures: Evidence from Australia

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Co-authors: David Johnston, Michael Shields, Sonja de New

Objectives: The near complete closure of Australia's 70-year-old automobile industry in 2017 is regarded as one of the most significant structural adjustments in the country's manufacturing sector. We study how the gradual closure of the industry affected selected economic and health outcomes of blue-collar workers in the automobile manufacturing workforce.

Methods: Using administrative data from the Multi-Agency Data Integration Project (MADIP) released by the Australian Bureau of Statistics (ABS), we estimate an event study design, comparing changes in individual outcomes overtime between workers directly affected by automotive plant closures and similar unaffected workers in the construction industry – another blue-collar industry involved in hard manual labour, but with minimal linkages to the automobile industry and not subject to any economic shocks during the study period.

We use the following event study specification:

$$Y_{ijt}=\alpha_0+\sum[\alpha_1 (period_t*treat_i)] +\mu_i+\theta_t+\varepsilon_{ijt}$$

where Y_{ijt} is the specific outcome of individual i in SA4 j, in calendar year t. The variable (period_t*treat_i) denotes a series of 'event-time dummies', from 2011–2020, which are year dummies interacted with the treatment group indicator, which equals one for automobile industry workers and zero for construction industry workers. Each interacted coefficient is then compared to 2010, the base year. μ_i denotes individual fixed effects which control for both observable and unobservable time-invariant differences across individuals potentially affecting economic and health outcomes. θ_t are year fixed effects which account for factors specific to a given year, such as nationwide policy changes which equally affect economic and health outcomes across locations.

Results and conclusions: We find that the economic wellbeing of blue-collar automobile workers – as measured by job instability, real wages, and welfare recipient status – has worsened in the years following car plant closure announcements and closures, in comparison to similar unaffected workers in the construction industry. These effects are more pronounced for lower-skilled and older workers. However, we do not find evidence of worsening mental health outcomes – as measured by prescription receipts of mental health-related drugs – among automobile workers vis-à-vis construction industry workers, suggesting that the industry closure did not cause an increase in severe mental health problems. One possible explanation is the comprehensive and well-targeted support programs for affected workers put in place well in advance of car plant closures and sustained in the post-closure period, with a strong emphasis on worker health and wellbeing. Our findings convey important policy lessons for countries in managing harmful effects associated with inevitable structural adjustments in the face of technological advancements or recessions driven by economic shocks.

Rainfall Variation and Wellbeing in Urban Informal Settlements: Evidence from Indonesia

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Co-authors: David Johnston, Rohan Sweeney

This study investigates the effects of rainfall on the physical and mental wellbeing of residents living in urban informal settlements in Makassar, Indonesia. Informal settlements, which accommodate more than one billion individuals in low- and middle-income countries, often face hazardous conditions and lack essential services and infrastructure. Weather events, including increased rainfall, further compound the vulnerability of informal settlement residents, leading to housing and infrastructure damage, as well as the spread of diseases due to inadequate sanitation. This research aims to examine the impact of rainfall variability on the wellbeing of this climate-vulnerable population and explore the underlying mechanisms and resilience of the residents.

The study utilizes data from the Revitalising Informal Settlements and their Environment survey, a longitudinal survey that collects comprehensive information from both adults and children residing in twelve informal settlements located in Makassar, Indonesia. While the vulnerability of informal settlements to health impacts resulting from climate change is widely recognized, there is a lack of concrete evidence regarding the specific effects of weather and climatic changes on the health of settlement residents. This study seeks to address this research gap by employing household-level panel data, enabling the estimation of causal relationships between rainfall and health outcomes while considering unobservable heterogeneity across households and the seasonality of rainfall events.

The analysis reveals statistically significant effects of rainfall on the physical and mental health of residents in urban informal settlements. An increase in rainfall during the preceding week is associated with higher reported morbidities among adults, with a doubling of rainfall resulting in a 4.2% increase in adult morbidity rates. Additionally, higher levels of rainfall are correlated with higher depression scores and decreased perceptions of wellbeing among adult respondents. For children, increased rainfall is linked to a rise in reported illnesses and a decline in emotional functioning as reported by their primary caregivers.

To examine the potential mechanisms through which rainfall impacts wellbeing, this study will analyze the associations between rainfall patterns and the quality of water and soil. Furthermore, it will investigate the potential contribution of increased rainfall to an increased occurrence of vector-borne and water-borne diseases.

In conclusion, this study provides valuable insights into the significant influence of rainfall on the physical and mental wellbeing of residents in urban informal settlements. By understanding the impacts and mechanisms through which weather events affect this vulnerable population, policymakers and stakeholders can develop targeted interventions and strategies to enhance the resilience of informal settlement residents in the face of weather events.

Social environments, genetic predispositions, and lifestyle with risk of dementia: a long-term cohort study

Melinda Chen, University of New South Wales

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Background: Genetic predisposition, social factors, and lifestyle work together to determine dementia. However, there is a lack of evidence on how these social factors in aggregate influence dementia. We aimed to assess the association between aggregated social risk, measured by a novel polysocial score, and the risk of developing dementia. In addition, we explored the interaction effects of genetic predisposition and lifestyle respectively in the association.

Methods: We conducted a retrospective cohort study based on the US Health and Retirement Study (HRS). We included those aged ≥ 60 years, non-demented at baseline, with genetic data, and completed the module on the psychosocial questionnaire. The baseline year was 2006 and participants were followed up until the 2018 wave. The stepwise Cox regression model was first used to identify significant social factors for dementia out of 21 social determinants. We then constructed the polysocial score based on the coefficients of the selected social factors and categorized the participants into low, intermediate, and high-risk groups. Genetic predisposition was measured by the polygenetic risk score for Alzheimer's disease (AD) for participants of European and African Ancestries respectively. Lifestyle factors include physical activity, smoking, and alcohol consumption. Finally, we used Cox proportional hazards models to assess the association between the polysocial score and the risk of dementia, and explore the interaction effects of genetic predisposition and lifestyle in the association respectively.

Results: We included 5,199 participants in the study (mean age=73.4, SD=8.3; 58.0% female; 11.6% African American). They were followed up for an average of 6.2 years (median: 6.0 [IQR: 3.8-8.5]), and 709 participants developed dementia during follow-up. Ten social factors were retained to construct the PsRS. They were individual income, total household income, total wealth, education, employment, marital status, home type, living arrangement, life insurance and social support. Compared with the low-risk social group, intermediate and high-risk groups were 1.2 times (adjusted hazard ratio [aHR]=2.24, 95%CI=1.71-2.94) and 3.7 times (aHR=4.72, 95%CI=3.62-6.15) more likely to develop dementia respectively. African Americans were 1.6 times (aHR=2.64, 95%CI=2.21-3.16) more likely to develop dementia than European Americans during follow-up, ceteris paribus. We also found that regular exercise and moderate drinking could help reduce dementia risk. We further found a significant interaction between social risk and drinking in determining dementia (p<.000).

Conclusion: Older adults living in an unfavourable social environment are more likely to develop dementia. Fostering a healthy lifestyle can help reduce the risk of developing dementia, despite the genetic and social environmental risk.

Heterogeneity in the intertemporal persistence of health: Evidence from a monthly micro panel

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Co-authors: Stephen Hoskins, David Johnston, Johannes Kunz, Michael Shields

Objectives: Health outcomes, like self-reported health or healthcare expenditures, exhibit a high degree of persistence: health in one period correlates strongly with health in future periods. This paper studies the individual-level heterogeneity in the state dependence of health and health-related outcomes using monthly panel data from a large representative survey of older Singaporeans.

Disentangling state dependence from other sources of persistence (such as permanent differences in health levels between individuals), as well as understanding the extent and drivers of heterogeneity in state dependence, is essential for the design and evaluation of health interventions because state dependence determines the dynamics and long-run effects of policies that affect current health. Heterogeneity in state dependence means, for instance, that some individuals recover more slowly from health shocks or that some individuals benefit from certain policies for longer. Thus, considering this heterogeneity in responsiveness to health shocks and policies in target populations is a significant issue that has implications for the efficiency and equitability of interventions.

Methods: We extend the standard linear dynamic panel data model with fixed effects which has a single constant coefficient measuring the impact of the lagged variable to models with a separate coefficient for each individual. These state dependence parameters are then estimated freely without imposing any distributional assumptions, akin to the fixed effects estimation of the individual-specific constants. Because the estimator, while consistent, is biased in samples with finite time periods, we also consider bias-corrected estimators that adjust the estimates for this bias. We use theoretical results and simulations to inform the optimal estimator choice for the model and data.

Results: 1. There is substantial heterogeneity across individuals in the state dependence of self-assessed health, healthcare use and out-of-pocket healthcare expenditures. 2. The heterogeneity in state dependence is only weakly correlated across the outcomes we considered, but there is strong evidence of correlation with baseline characteristics. 3. Among these, personality traits have more predictive power than economic status or economic preferences. 4. In all outcomes, we find that 13%-25% of individuals display little to no state dependence, with the remaining individuals having a bell-shaped distribution with most of its mass in the positive support region.

Conclusions: Incorporating heterogeneity in persistence to dynamic models of health is crucial. If heterogeneity is present, standard approaches (including those that account for fixed effects and dynamic bias) can be drastically biased, with biases as large as 100%. Beyond avoiding bias, models with heterogeneity give additional insights by making it possible to analyse the shape and correlates of this policy-relevant form of heterogeneity.

Inequality aversion in health: views of the Australian general public on disparities between socioeconomic groups, Indigenous status, and geographic location

Marie-Anne Boujaoude, University of Melbourne

Co-authors: Kim Dalziel, Nancy Devlin, Natalie Carvalho

Objectives: To understand the extent to which the public prioritizes reducing health inequality over maximizing total health gains by determining the level of health inequality aversion among the Australian general population. A secondary aim is to investigate the variations in attitudes of different sociodemographic subgroups towards health inequality.

Methods: A 15-minute online survey was administered in May 2022 to 3105 members of the Australian public. Benefit trade-off exercises using life expectancy at birth as the health outcome were designed to capture health inequality aversion across three scenarios: socioeconomic status, Indigenous status, and geographic location. Based on health-related social welfare functions, the Atkinson (e) and Kolm (a) indices were calculated along with their implied weights to get a measure of relative and absolute inequality aversion. Differences of median respondents by demographic subgroups were studied using ordered probit regressions.

Results: After excluding 20% of responses exhibiting irrational patterns of answers, around 80% of responses were included in the analysis. The majority (80%) of the public gave either some or an exclusive priority to the worst-off. Median inequality aversion parameters for the socioeconomic status scenario were e= 27.16 and a= 0.318, implying that the Australian public is willing to weight incremental health gains to the poorest fifth 5-times as highly as incremental health gains to the richest fifth. The Indigenous status scenario resulted in median parameters of e= 17.73, a= 0.216 and the geographic location scenario e=31.70, a=0.378. These parameters suggest a willingness to weight incremental gains to the worst-off 6 and 4 times respectively as highly as incremental gains to the better-off. The median response of males was observed to be slightly less egalitarian than females, similarly for individuals with higher income compared with lower income and those with higher education degrees compared to high school degrees.

Conclusion: Previous research has shown that the Australian public exhibits an egalitarian tendency. However, this is the first study to empirically quantify the level of health inequality aversion of the Australian public across three key subgroups. These findings are significant for priority setting and public program investment decisions and signal that the Australian public differently prioritise health gains to subpopulations including Indigenous populations, individuals with lower income and those living in rural areas. Future research will explore application of these weights to benefit decision-making.

Key words: health inequality, health related social welfare function, inequality aversion, survey

Decomposing gaps in healthy and unhealthy life expectancy between Indigenous and non-Indigenous Australians: overall and by underlying causes

Yuejen Zhao, NT Department of Health

Background: The healthy life expectancy (HLE) gaps between Indigenous and non-Indigenous population in Australia were substantial. More accurate information is required to close the Indigenous life expectancy (LE) gaps.

Aims: This paper aims to quantify and compare the relative contribution of underlying causes to the gaps in HLE between Indigenous and non-Indigenous population.

Data and methods: The data was sourced from the burden of disease and injury study in the Northern Territory (NT) between 2014 and 2018. An improved age-cause decomposition was used to analyse the differences in HLE and unhealthy life expectancy (ULE).

Results: In 2014-2018, the HLE at birth in the NT Indigenous population was estimated at 43.3 years in males and 41.4 years in females, 26.5 and 33.5 years shorter than the non-Indigenous counterparts. This approximately doubled the LE gap (14.0 years in males, 16.6 years in females) at birth. ULE was longer in the Indigenous than non-Indigenous population. The top three leading causes of the HLE gap at birth were cardiovascular disease (explaining 4.8-7.4 years, 18-22%), cancers (4.6-7.4 years, 17-22%) and endocrine disorder (3.8-5.1 years, 14-15%), entirely different from the causes for the ULE gap (endocrine: 7.4-10.1 years, 60%; hearing/vison loss: 5.4-7.0 years, 32%-56%; kidney / urinary disorder: 3.3-4.6 years, about 25%) and the LE gap (cancers, cardiovascular disease and unintentional injury) at birth.

Conclusions: The HLE and ULE estimates provide better information for population health, service delivery and health planning.

Developing a childhood obesity model for priority populations

Tom Lung, University of Sydney

Co-authors: Anagha Killedar, Kirsten Howard, Li Ming Wen, Michelle Dickson, Sarah Taki, Louise Baur, Patrick Kelly, Simone Sheriff & Alison Hayes

Background and significance: The prevalence of overweight and obesity among children and adolescents in Australia remains persistently high, despite rates plateauing in recent years. Inequalities exist within the population distribution of childhood obesity, as obesity rates continue to rise among children from cultural and linguistically diverse households (CALD) and Aboriginal and Torres Strait Islander children.

Our aim is to analyse the association between body-mass index z-score (zBMI) and CALD status to inform the development of a childhood obesity model for cost-effective, tailored interventions of children from different CALD backgrounds.

Methods: We used data from the "baby" (B) and "kindergarten" (K) cohorts from the Longitudinal Study of Australian children (LSAC). For this study, we included children from waves 2-8 for both the B and K cohort, representing 9417 children aged between 2-19 years of age. We stratified our analyses over three periods of child development: early childhood (2-5 years); middle childhood (6-11 years); and adolescence (12-19 years).

Children were classified into 9 distinct groups: 1) English-speaking countries; 2) Middle East & North Africa; 3) East & South-East Asia; 4) South & Central Asia; 5) Europe; 6) Sub-Saharan Africa; 7) Americas; 8) Oceania; and 9) Aboriginal and Torres Strait Islander.

Multilevel mixed linear regression models were used to model the influence of CALD status on BMI, adjusting for known predictors of zBMI: age; sex; mother's smoking status; family socioeconomic position; maternal BMI; gestational age at birth; and child's birthweight. The models were used to predict the prevalence of overweight and obesity by CALD groups at each wave of data.

Results: After adjustment, children from the following groups had significantly higher zBMI compared to the referent group (English): the Middle East and North Africa and the Americas (0.33 to 0.45 zBMI units), Oceania (0.52 to 0.56 zBMI units) and Aboriginal and Torres Strait Islanders (0.22 zBMI units). Children in the two Asian groups had significantly lower zBMI than the referent group.

Our model predicted children from English-speaking households had a stable prevalence of 30% overweight and obesity from age 4-5 to 18-19 years. The higher risk CALD groups had consistently higher overweight and obesity than those from English-speaking households, between 40-50% prevalence.

Conclusions: Our findings identified key populations that are at higher risk of overweight and obesity in childhood. Prevention efforts should prioritise these at-risk groups to avoid the further widening of inequalities in childhood obesity. This highlights the need to predict appropriate long-term costs and benefits for cost-effectiveness analyses. Future work is required to determine key health economic inputs for such a model.

Health selection, partner's and child's health status, family time allocation and labour market participation - Another pathway to widening gendered inequality

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Co-authors: Liana Leach, Yixuan Zhao, Lyndall Strazdins

Objectives: Using nationally representative data from Household Income and Labour Dynamics in Australia (HILDA), this paper examines the impact of domestic work, family time allocation, child's health, partner's health and life events (e.g., shocks) on non-market time, and how non-market time and health status affect the labour market participation of couples aged 25-64 and how the effect varies across gender.

Methods: To investigate the roles of health selections, roles of partner's and child's health, and family time in labour market participation (i.e., workhours with zero-left censored) with a particular focus on the role of family division of labour, one would apply the longitudinal instrumental variable (IV) Tobit model to address endogeneity of family unpaid time and time unobserved heterogeneity. Unfortunately, IV Tobit does not allow for panel data, the longitudinal IV mixed effect generalized linear model (GLM) (two-step estimation) with bootstrapping estimation for standard errors is employed in our current study.

Findings: Our findings indicate that non-market (or unpaid) time is largely determined by exogenous factors such as having young children, child's health and partner's health and life events. These effects are particularly strong for women, while men's unpaid time is less responsive to changes in family circumstances. We also find a significant trade-off between non-market time and labour market participation, which is more pronounced for women than men. This trade-off contributes to the gender inequality, as couple women face a disadvantage in working longer hours and earning higher incomes than couple men. We also observe that health selection in the labour market participation of both men and women, with the effect being stronger for men.

Policy implications and conclusions: Care for family, young children and partner with ill health or shocks, and for poor health children adds much more unpaid workload for women restricting them to work more market hours and hence earn more. This is a fundamental mechanism widening gendered inequality. In addition, couple women's market time is less responsive to their own health, indicating that they are more likely to compromise their health to maintain their income. This compromise may come at a third cost, compromised health (alongside time and income cost), as women tend to minimize market time reduction to keep their income, even if it means trading off their health. Freeing up women from uncounted work by providing adequate family supports e.g., childcare, disability support will enable couple women to increase their market time, hence income and also reduce health compromising. This is the effective way to narrow gendered inequality in income and health.

An Intersectional Approach to Quantifying the Impact of Geographic Remoteness and Health Disparities on Quality-Adjusted Life Expectancy: Application to Australia

Peter Lee, Deakin University

Background: An intersectional multilevel analysis of individual heterogeneity and discriminatory accuracy (MAIHDA) is a novel method for exploring the interaction between sociodemographic characteristics which affect health outcomes. This study explores the interaction between geographic remoteness and socioeconomic status on health outcomes in Australia from an intersectional perspective.

Methods: Data from a cross-sectional survey were matched with data from the Australian Bureau of Statistics (ABS) and the Australian Institute of Health and Welfare. To explore the effect of health-related quality-of-life on life expectancy, quality-adjusted life expectancy (QALE) was estimated through applying utility values derived from the EQ-5D-5L to life table data from the ABS. The effect of geographic remoteness on QALE was quantified using multivariable linear regression. An intersectional MAIHDA was performed to explore differences in mean QALE across strata formed by intersections of age, sex, and Socioeconomic Indexes for Areas (SEIFA) score.

Results: Based on multivariable linear modelling, QALE declined significantly with increasing remoteness (Inner regional: -1.0 years (undiscounted); Remote/Very Remote: -3.3 years (undiscounted)) ($P<0.001$). In contrast, life expectancy was only significantly different between participants in remote/very remote areas versus major cities (β-coefficient: -2.4, 95% CI: -4.4 to -0.5, $P = 0.016$). No intersectional interaction effects between strata on QALE were found in the MAIHDA.

Conclusions: QALE has considerable value as a metric for exploring disparities in health outcomes. As no intersectional interactions were identified, our findings support broad interventions which target the underlying social determinants of health appropriately reduce disparities versus interventions targeting intersectional interactions.

Integrating Social Outcomes and Health Related Quality of Life

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Co-authors: Brendan Mulhern, Deborah Street, Rosalie Viney

Objective: The Quality-Adjusted Life Year (QALY) is widely used to inform decision-making in health technology assessment. Recent literature suggests that for equitable allocation of scarce healthcare resources, it is necessary to expand the scope of what the QALY measures to include broader outcomes. To address this, there have been initiatives to develop instruments that capture broader aspects of health and well-being. A novel approach to include broader outcomes is to combine existing descriptive systems measuring the different quality of life constructs, such as health-related and social care-related QoL, into the same measurement and valuation framework. This study explores the generation of a combined descriptive system using the EQ-5D-5L and Adult Social Care Outcomes Toolkit (ASCOT) by assessing the instrument's measurement relationship.

Methods: This exploratory analysis was conducted using data collected online from a sample of the Australian general population with and without commonly occurring health conditions who completed demographic questions and a number of QoL instruments, including the EQ-5D-5L and ASCOT. A descriptive assessment was conducted to understand demographic characteristics. Convergent validity between the dimensions was assessed using correlations. An assessment was conducted to check for the ceiling effect and the item response pattern. Known group validity was tested across conditions for the two instruments using one-way ANOVA, and Cohen’s D was used to report effect size.

Results: The dataset had 794 respondents, of whom the majority were females (52.1%) and were born in Australia (78.7%). The mean EQ-5D-5L utility scores (0.75) were slightly lower than ASCOT utility scores (0.81), where 7.5% of respondents reported that they were in the best health state as described by the EQ-5D-5L and none of the respondents reported being in the best health state as described by ASCOT. Correlation between the EQ-5D-5L and ASCOT utility values was found to be moderate (0.55), where ASCOT dimension- social contact (had the highest correlation (0.46) with the anxiety-depression dimension of EQ-5D-5L in comparison to any other dimension. Low correlation throughout suggested that both instruments capture different aspects of QoL and were explored further. Known group validity results show that all indicators are sensitive to differences at the 1% significance level using the one-way ANOVA, with effect size generally in the moderate range.

Conclusion: The exploratory analysis has revealed a divergence between the EQ-5D-5L and ASCOT descriptive systems, although some areas overlap in the psychosocial sphere of QoL. The analysis provides valuable insight into interactions between responses to items from the two instruments in a general population sample. This will inform our future work in developing and valuing a combined instrument that captures a broader range of health and social care-related QoL measures.

Socioeconomic inequalities in health-related quality of life among Australian disabled population: Explaining disability types and chronic conditions

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Background: Prior studies indicate that socio-economic inequalities exist in health outcomes, specifically health-related quality of life (HRQoL). However, research on the contribution of disability types and chronic conditions on HRQoL disparities is scant. We aim to investigate the contribution of disability types and chronic conditions on HRQoL inequality among disabled Australians.

Methods: We utilised three waves (waves 9 [2009], 13 [2013], and 17 [2017]) from the Household, Income and Labour Dynamics in Australia (HILDA) survey to show the trends in socio-economic inequalities in HRQoL. HRQoL was measured through the SF-6D utility score, a generic preference-based tool from the SF-36 questionnaire. We used the standard concentration index, and decomposed inequality to report the contribution of disability types and chronic conditions.

Results: We found evidence that disability is highly concentrated in the socio-economically rich disabled adults over time (Index values: .026 [2009], .024 [2013], and .025 [2017]). We also found evidence that over 40% of pro-rich socioeconomic inequality in HRQoL is due to disability types and chronic conditions. More specifically, chronic conditions and disability types (sensory: 0.73, physical: 10.98, psychological: 8.22, and other disability: 5.24) contribute to nearly 14%, and 25%, respectively, of inequality in HRQoL.

Conclusion: We found a significant positive concentration index which indicates that socio-economic inequality exists in HRQoL in the Australian disabled population. Our finding has important policy implications. Disability and chronic diseases should be considered when designing measures to reduce socioeconomic disparities in HRQL.

Impact of deaf and hard of hearing and interventions on quality of life: a systematic review of cohort studies

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Objectives: The impact of deaf and hard of hearing (DHH) and hearing interventions on quality of life (QoL) is often assessed using different QoL instruments. However, there is limited evidence on the relative importance of different domains. This study aimed to synthesise existing evidence on the relationship between DHH/interventions and various aspects of QoL.

Methods: The study included adults aged ≥18 years, employing randomised, prospective cohorts, and before/after studies. Publications from Medline, Embase, and PsycINFO databases were considered. Relevant terms like 'hearing loss', 'hearing devices', 'quality of life', and 'quantitative studies' were used for the literature search. The risk of bias assessment utilised the Critical Appraisal Skills Programme (CASP) checklist. Meta-analyses were conducted to evaluate the impact of DHH or hearing interventions on each domain using the top five QoL instruments, with results reported as standardized mean differences (SMD).

Results: A total of 61 studies were included in the analysis. The majority of the studies (n=11, 18%) were conducted in Germany, followed by the United States (n=5, 11%) (see Table 2). Most studies were prospective or longitudinal, with 33 (54%) measuring QoL pre- and post-cochlear implantation, 5 (8%) related to pre- and post- bone anchored hearing aid, 4 (7%) without a specific intervention, 4 (7%) being randomised trials of hearing aids or cochlear implants, and the remaining 15 (25%) involving other interventions. The studies employed a total of 37 different QoL instruments. On average, each study used two instruments. The most frequently utilized instruments were SF-36 (SF-36) (n=17, 15%), SSQ (n=12, 11%), NCIQ (n=12, 11%), HUI-3 (n=10, 9%), and APHAB (n=7, 6%).

Preliminary meta-analysis results indicated that hearing (SMD: 0.90 [95% CI: 0.35, 1.46]) and speech (SMD: 0.34 [0.03, 0.66]) domains significantly increased following hearing interventions. Emotional and social functioning were also positively associated with hearing interventions.

The overall risk of bias was moderate based on the CASP checklist, attributed to limited sample sizes, inadequate regression analyses, and incomplete reporting of necessary parameters for comprehensive meta-analysis.

Conclusions: The identified domains most impacted by hearing interventions have the potential as additional items in the EQ-5D bolt-on exercise. Validation of these domains will be confirmed through ongoing focus group discussions and interviews involving individuals with hearing loss, audiologists, and speech and language therapists.

Incorporating these specific domains into the modified EQ-5D instrument enables more reliable estimates of DHH and interventions. However, improving study quality and standardising methodologies are crucial to enhance the validity and generalisability of QoL assessments in the field of hearing interventions.

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The quality-of-life impact of the COVID-19 pandemic on people living with multiple sclerosis and the general population: a comparative study utilising the novel EQ-5D-5L-Psychosocial instrument

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Co-authors: Ingrid van der Mei, Bruce Taylor, Suzi Claflin, and Gang Chen and Julie Campbell (the last two are joint senior authors)

Objectives: MS is an autoimmune/neurodegenerative disorder that cost Australian society $2.5 billion in 2021, with prevalence increasing by 30% from 2017-2021 to 33,335 cases. This study aimed, primarily, to compare the prevalence and quality-of-life impact of COVID-19-related adversity between the general population and people living with multiple sclerosis. It also aimed to evaluate the discriminatory power of and establish interim population norms for the novel EQ-5D-5L-Psychosocial multi-attribute utility instrument.

Methods: Cross-sectional data was obtained from the Australian How Is Your Life general population study (comprised of subsamples with and without chronic disease) and the Australian MS Longitudinal Study from August-October 2020. Quality-of-life was measured using health state utilities (HSUs) generated by the EQ-5D-5L-Psychosocial. COVID-19-related adversity was measured via specialised survey items. Clinical and sociodemographic information was also collected. Analyses used descriptive techniques and multivariable regression models.

Results: 1020 general population and 1635 MS participants entered the study (mean age 52.4 and 58.4; female 80.2% and 52.4%, respectively, consistent with the clinical presentation of MS). The EQ-5D-5L-Psychosocial was found to discriminate between non-disease and disease cohorts, with population norms of 0.803 and 0.651 being generated for the general population with and without chronic disease (0.671 for people living with MS). Multivariable regression identified that the individual-level, HSU impact of COVID-19-related adversity was not dependent on disease status (-0.128, on average, for all affected participants). However, COVID-19-related adversity prevalence was higher among people living with chronic diseases, especially MS (PR: 1.901 [CI: 1.557, 2.321]), than people without chronic diseases.

Conclusions: This study established that the EQ-5D-5L-Psychosocial instrument can differentiate between cohorts with and without chronic disease. It also generated interim population norms which will assist with the interpretation of EQ-5D-5L-Psychosocial HSUs. Moreover, the study found that people with chronic diseases were more likely to experience COVID-19-related adversity, especially people living with MS.

Personality Traits, Capability and Subjective Wellbeing among Adults in Australia

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Co-authors: Gang Chen, Shunping Li

Personality has been found to be associated with subjective wellbeing (SWB). This study aims to investigate the relationship between Big Five personality traits (extraversion, agreeableness, conscientiousness, neuroticism, and openness) and different wellbeing measures among adults in Australia. We also aim to reveal to what extent the relationships vary by individual differences. Data was collected from Australian adults aged 18 and above. Participants self-completed a series of wellbeing measures, including the Personal Wellbeing Index (PWI), WHO-5 Wellbeing Index, and the ICECAP-A capability wellbeing measure. The analyses adopted a social-cognitive perspective of personality. The latent class path model, which can capture potential unobserved heterogeneity, was used to investigate the (direct and indirect) effects of Big Five personality traits on SWB. Data from 1024 participants (52% female) were included in the analysis. The mean scores of participants' wellbeing were 6.5, 14.2, and 0.70 for PWI, WHO-5, and ICECAP-A, respectively. The absolute magnitudes of Spearman correlation coefficients among Big Five personality traits ranged from 0.02 to 0.32. Heterogeneity was evident from the latent class estimates. Among Big Five personality traits, neuroticism was found to have a robust and significant influence on all three types of wellbeing measures. Findings from this study provide new knowledge on the complex relationships between personality traits and individual wellbeing.

Patient preferences for breast cancer treatment in New Zealand (NZ): a stated preference Discrete Choice Experiment (DCE) study

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Co-authors: Gin Nie Chua; Mudassir Anwar; Catherine Han; Carlo Marra

Objective: To elicit patients' preferences for treatment in breast cancer (BC) and explore the impact of sociodemographic and clinical characteristics on treatment preferences.

Methods: A nationwide cohort of BC patients in NZ participated in a DCE survey. The DCE consisted of 12 choice tasks featuring 2 unlabeled alternatives with 6 attributes: overall survival (OS), waiting time for treatment access, risk of hair loss, risk of peripheral neuropathy (PN), quality of life (QoL), and out-of-pocket (OOP) cost. The survey design incorporated Bayesian D-efficiency and level balance considerations. Preference data were analyzed using a multinomial logistic regression (MNL) model. Subgroup analyses were conducted by interacting patients' characteristics with each attribute level in an MNL model.

Results: Among the 225 patients included in the study (mean age=51.87, SD10.15), the most valued treatment attributes were longer OS, better QoL, and lower OOP cost. Conversely, patients expressed a disutility against a longer waiting time to commence treatment, a higher risk of hair loss, and a higher risk of PN. All attributes were significantly valued by patients ($p<0.05$). Subgroup analysis revealed that patients with advanced BC placed greater value on a longer OS ($p=0.02$) and a reduced risk of PN ($p=0.04$) compared to patients with early-stage BC. Patients receiving treatment in private care prioritized a longer OS ($p<0.01$) compared to those in public care. Patients who were married or had higher incomes exhibited similar preferences, where they valued a longer OS ($p<0.01$) and a better QoL ($p<0.05$) compared to those who were unmarried or had lower incomes. Furthermore, compared to patients with lower income, patients with higher income placed more importance on a shorter WT ($p=0.02$). Patients with higher education levels valued a longer OS ($p<0.01$) and a better QoL ($p=0.04$) but were more averse to a higher risk of hair loss ($p=0.03$) compared to patients with lower education levels. Patient preferences for all attributes were unaffected by age, ethnicity, employment status, and residential location (rural or city).

Conclusion: Patients exhibit varying preferences in terms of the trade-offs between benefits and risks. Some patients were willing to accept higher risks in exchange for a chance at extended survival, while others might have a lower tolerance for risks. The results of our study indicated that patient’s preference for BC treatment in NZ was influenced by a range of characteristics including cancer stage, marital status, income, education level, and healthcare system (public or private). The presence of diverse preferences among BC patients highlights the necessity for a personalized approach when offering treatment options. Acknowledging this preference heterogeneity is crucial for healthcare decision-making to ensure the development of patient-centered policies that are congruent with patients’ values and preferences.

The Path to Resilience: Insights from a National Survey and Contingent Valuation on Emergency Preparedness among Australians with Disability, Caregivers, and General Population

Jade Chang, University of Sydney

Co-authors: Michelle Villeneuve, Dale Dominey-Howes, Gwynnyth Llewellyn

Objectives: This study aims to 1) assess personal emergency preparedness levels among Australians with disability, caregivers, and the general population; 2) determine the monetary value of formal support in person-centred emergency planning through contingent valuation; and 3) explore factors influencing preparedness levels and the value placed on formal support, such as demographics, mental resilience, and hazard concerns.

Methods: A cross-sectional survey and contingent valuation methodology were employed. Surveys were designed based on the Person-Centred Emergency Preparedness (P-CEP) framework. Contingent valuation employed two sets of double-bounded dichotomous choice (DBDC) questions to estimate the monetary value individuals placed on formal support in tailored emergency planning. Participants were purposively recruited using quota sampling to ensure representativeness. Data was collected through a web-based survey and analysed using descriptive statistics and regression modelling.

Results: The study included 227 Australians with disability, 200 informal caregivers, and 211 general population representatives. No significant differences were found among study groups in terms of emergency planning and household preparedness. Multivariate regression analyses revealed positive associations between having an emergency plan and mental resilience ($P < 0.001$), as well as concern for bushfire ($P < 0.001$). Household preparedness was positively associated with older age($P < 0.001$), having an emergency plan ($P = 0.001$), and higher levels of mental resilience ($P = 0.004$), but negatively associated with concern for tsunami or king tides ($P < 0.001$). Adjusted mean willingness-to-pay (WTP) for formal support in tailored emergency planning was highest among caregivers ($167.64, 95%CI: $162.48 - $172.80), followed by the general population ($146.31, 95%CI: $141.78 - $150.84) and people with disability ($131.26, 95%CI: $127.20 - $135.32). Men expressed significantly higher WTP ($161.49, 95%CI: $157.61 - $165.36) compared to women ($135.40, 95%CI: $131.97 - $138.84). Those extremely concerned about the pandemic were willing to pay more ($172.10, 95%CI: $166.97 - $177.23) than those with no concern ($90.76, 95%CI: $84.58 – $96.95). Adjusted mean WTP was negatively associated with household preparedness. Individuals with a minimum preparedness score of 0 were willing to pay an additional $49.56 for formal assistance ($163.69, 95%CI: $158.59 - $168.79), compared to those with a maximum score of 1 ($114.13, 95%CI: $104.24 – $124.03).

Conclusions: This study highlights the importance of inclusive and effective disaster management practices for Australian with disability, caregivers, and the broader community. By assessing preparedness levels and the economic value placed on formal support in emergency planning, this study provides insights for policymakers, emergency management agencies, and community organisations to develop targeted interventions and policies.

Measuring the importance of different barriers to opioid agonist treatment using best-worst scaling in an Australian setting

Natasha Hall, Monash University

Co-authors: Long Le, Julie Abimanyi-Ochom, Cathy Mihalopoulos

Objective: Opioid agonist treatment (OAT) is an effective treatment for opioid use disorder (OUD), however several client barriers to OAT are reported. The importance of these client barriers using economic preference elicitation measures have not been identified. This paper aims to determine the most important OAT barriers using best-worst scaling (BWS) and to compare the results of BWS to Likert scale.

Methods: Cross-sectional self-completed survey with 191 opioid dependent clients who attended Australian needle and syringe sites. Participants were presented 15 Likert scale barriers and 15 BWS barrier scenarios. The BWS data was presented using count analysis, multinomial logit and mixed logit models.

Results: The most important client barrier items were 'not ready to start treatment', 'cost', 'treatment is hard to access', 'lack of support services', and 'treatment not a priority due to chaotic lifestyle'. BWS barriers differed to Likert scale barriers at the most important barriers and mid-range barriers, but produced similar results for the least important barriers.

Conclusion: Policies around cost, treatment access (increased OAT prescribing doctors and OAT dosing points) and support services (increased access to psychological services) would be beneficial in improving treatment uptake. Comparing BWS to Likert scale produced different highest ranked barriers, indicating the method used to identify preferences has significant implications on the type of intervention prioritised.

Measuring parent preferences for care during a child's hospital admission: an unlabelled DCE survey

Virginia Mumford, Macquarie University

Co-authors: Yuanyuan Gu, Johanna Westbrook

Aims: Medication safety is a critical component in ensuring safe and high-quality paediatric care, but parents have rarely been given the opportunity to demonstrate which care processes are more important than others. As part of a larger survey to evaluate the impact of introducing an electronic medication management system, our aim was to determine parent preferences for care and the importance of medication safety during a child's admission to hospital.

Methods: We held clinician and parent focus groups to identify seven attributes for the study. We used NGene software to design a two block D-efficient unlabelled design with no opt-out. The final design included seven attributes, six with three levels and one with five levels. We randomised participants between the two blocks and also randomised the presentation order of the choice pairs. The survey included 10 choice pairs, with demographic and usability survey questions. Participants (sample size=375) were recruited on-line through social media, and on the wards and outpatient departments of two paediatric hospitals in NSW, Australia, during July 2021.

Results: The final attributes related to; 1) Safety - medication error rates, 2) Accountability - frequency of medication chart reviews, 3) Disclosure relating to medication errors, 4) Access to non-urgent care, 5) Privacy in terms of ward layout, 6) Cost and availability of parking, and 7) Predictability of discharge. Our fixed effect logistic model using completed surveys (n=382) showed all attributes, except parking, with significant ($p<0.05\%$) difference from the base case. Relative attribute importance was highest for Safety (29%), waiting <20minutes for non-urgent care (20%), and always being told if there had been a medication error (18%).

Conclusions: Discrete choice experiments can be a useful tool to determine what care processes parents find most important during a child's admission. These findings can be used to direct policy and training programs to ensure that hospitals are engaging in quality improvement projects that matter the most to the patients and their families.

Evaluating Consumer Preferences for Government Subsidized Prescription Medicines using Discrete Choice Experiment

Elena Meshcheriakova, University of Technology Sydney

Co-authors: Stephen Goodall, Deborah Street, Rosalie Viney

Objectives: The primary objective of this study was to examine the implications of a policy in Australia where the government subsidizes only one brand of prescription medicines at a fixed price for consumers. The aim was to investigate how such a policy may impact consumer preferences for prescription medicines, considering the existing practice of subsidizing multiple brands of the same medicine and the subsequent price variation due to existence of brand premiums. By examining these implications, the study sought to provide insights into the trade-off between achieving cost savings for the government and maintaining patient choice.

Methods: This study employed a discrete choice experiment (DCE) methodology to elicit the preferences of a sample of 1,233 Australian respondents. The DCE included various attributes, such as the brand of the medicine, cost, PBS listing, availability at the pharmacy, and pharmacist recommendation, allowing respondents to make trade-offs between these attributes. In addition to the DCE, a Likert scale questionnaire was utilized to evaluate consumers' attitudes and beliefs regarding branded and generic medicines, doctor's prescriptions, cost of medicines, and pharmacist recommendations. This approach aimed to capture a comprehensive understanding of consumer preferences and their perceptions of the attributes associated with prescription medicines.

Results: Consumers preferred medicines that were subsidised by the government, were the original brand and were recommended by the pharmacist. The attitudes of the responders also showed that generic medicines were perceived to be as effective and safe as branded. However, there was a strong association between a belief that branded drugs are more effective, that a brand premium indicated better quality and that the pharmaceutical company deserved a price premium for discovering the drug. Nevertheless, consumers expressed a willingness to opt for generic medicine brands when prescribed by their doctors.

Conclusions: The results indicate that recent policies focusing on "active ingredient prescribing" may not be effective in driving consumer acceptance of generic brands. Although this policy promotes consumer engagement with pharmacists for advice and recommendations, it falls short in encouraging voluntary adoption of generic brands without imposing restrictions on brand choices.

These findings highlight the need for additional measures to incentivize consumers to choose generic brands. Relying solely on the ""active ingredient prescribing"" policy may not be sufficient to overcome consumer preferences for branded medications. Policymakers should consider implementing complementary strategies that address the underlying factors influencing consumer choices and perceptions of generic medications. This approach would foster a greater acceptance of generic brands while preserving consumer autonomy in selecting their preferred medication.

Parallel Session 4

Room A Economic Evaluation and Cost Effectiveness 4

Cost-effectiveness of eADVICE

Amy von Huben, University of Technology Sydney

Co-authors: Martin Howell, Deborah Richards, Sana Hamilton, Armando Teixeira-Pinto, Kirsten Howard, Patrina HY Caldwell

Purpose: To establish the cost-effectiveness of the eADVICE-continence program (a web-based program involving an avatar for assessment, diagnosis, and treatment advice for children with urinary incontinence) compared to usual care (routine waiting for a specialist appointment).

Methods: A within-trial cost-effectiveness analysis was performed from a state government healthcare funder perspective on a multicentre waitlisted controlled randomised trial over six months. A predefined analysis plan was followed to estimate incremental cost per incremental change in continence status and quality of life on an intention-to-treat basis. A bootstrap technique was used to estimate uncertainty and calculate incremental cost-effectiveness ratio (ICER) point estimates and 95% confidence intervals. Point estimates were plotted on a cost-effectiveness plane. Scenarios for implementation in the health system and to improve the equity of the intervention were undertaken, along with one-way sensitivity analyses. All costs were valued in 2021 Australian dollars (AUD) and costs occurring after one year were discounted per state government guidelines.

Results: 239 participants were randomised, 120 to eADVICE and 119 to control. eADVICE resulted in a higher proportion of patients dry over 14 days at six months (Risk difference 0.13; 95% CI 0.02, 0.23) with mean healthcare costs reduced by AUD188 (95% CI 61, 315) per patient (Table 1 and Figure 1). Proportions of patients no longer categorised as “significant” UI and “frequent” NE at six months, adjusted by status at baseline, were also significantly higher and quality of life improved (PinQ mean difference -0.37; 95% CI -0.71, -0.03) in eADVICE patients. Analysis using multiple imputation for missing values, and scenarios for implementation costs and costs to improve the equity of the intervention, also confirmed eADVICE to be cost-effective (dominant) over usual care. One-way sensitivity analysis identified cost-effectiveness was more sensitive to the assumption, estimated from prior studies, that the number of required specialist visits for eADVICE patients was reduced compared with usual care patients, but less sensitive to the cost per clinic encounter or discount rates used.

Conclusions: eADVICE is cost-saving and beneficial compared to usual care from a state government healthcare funder perspective.

Finding the cost-effectiveness of theory-based implementation approaches: an analysis of the Hide and Seek Project (HaSP) trial

Bonny Parkinson, Macquarie University

Co-authors: Priscilla Chan, April Morrow, Emily Hogden, Julia Steinberg, Michael Caruana, Kirstie McLoughlin, Sarsha Yap, Gabriella Tiernan, Yoon-Jung Kang, Emily He, Elizabeth Kennedy, Rhiannon Edge, Deborah Debono, Sam Egger, Michael David, Hide and Seek Project Clinical Team, Karen Canfell, Finlay Macrae, Kathy Tucker, Emily Hogden, Natalie Taylor

Background: Evidence that a healthcare intervention is clinically and cost-effective, and subsequently funded, does not guarantee adoption into routine clinical practice. Implementation science can help by identifying barriers and facilitators, and developing and testing strategies to improve adoption rates – however, these also involve valuable healthcare resources. This study aimed to assess the cost-effectiveness of a theory-based implementation approach compared to a non-theory-based implementation approach and no implementation approach to improve referral rates for genetic testing for Lynch syndrome, a common cause of hereditary colorectal cancer, from the Australian health system perspective.

Methods: A cluster randomised controlled trial (the Hide and Seek Project, HaSP) was conducted that compared a theory-based implementation approach to a non-theory-based approach to improve referral rates for genetic testing for Lynch syndrome, and thus detection of cases, among Australian colorectal cancer patients across seven large hospitals (n=3,321 patients). Trial outcomes included the proportion of patients receiving biochemical and genetic testing. Costs associated with the implementation approaches and the subsequent strategies were collected during the trial, including the time of all staff involved, and ongoing recurrent and capital costs of the strategies. The costs of increased testing were based on the Medicare Benefits Scheme fee or estimated by the hospitals. Trial results and costs will be incorporated into Policy1-Lynch, a microsimulation health economic model that simulates pathways for testing (both for proband and at-risk relatives), diagnosis, surveillance and prophylaxis for Lynch syndrome carriers and non-carriers throughout their lifetimes. Costs were reported in 2022 Australian dollars. Economic evaluation outcomes will be reported in terms of cost per additional patient referred for genetic testing (within-trial analysis), and cost per life year gained and per death avoided (modelled analysis).

Results and conclusion: Preliminary results suggest that a theory-based implementation resulted in more patients receiving genetic referral, at a slightly higher cost, compared to a non-theory-based approach. Using a theory-based implementation approach is more effective, and potentially cost-effective, compared to a non-theory-based approach to improving referral rates for genetic testing for Lynch syndrome. Further research will be needed to confirm these results in other settings and for other conditions.

Cost-effectiveness of delaying or avoiding total knee replacements by implementing a national non-surgical management program

Sean Docking, Monash University

Co-authors: Zanfina Ademi, Christian Barton, Jason Wallis, Ian Harris, Richard de Steiger, Natasha Brusco, Kirby Young, Marcella Ferraz Pazzinatto, Ilana Ackerman

Background: Clinical guidelines for knee osteoarthritis recommend that non-surgical management be exhausted prior to total knee replacement being considered. An absence of a coordinated national strategy for knee osteoarthritis has led to fragmented care and high rates of surgery. It is unclear whether non-surgical management programs that avoid or delay surgery represent good value for money.

Objectives: To model the costs and benefits of implementing a national non-surgical management program (comprising exercise and education) for individuals who are eligible for total knee replacement, compared to total knee replacements for all eligible individuals (usual care).

Methods: We developed a life table, multistate Markov model to estimate the incremental cost and health outcomes from a healthcare perspective over a lifetime horizon. Health states were defined as 'no/mild pain', 'moderate pain', 'severe/extreme pain', and 'dead'. We used age- and sex-specific rates of total knee replacement obtained from the Australian Institute of Health and Welfare to calculate the size of our cohort. Data from the Australian Orthopaedic Association National Joint Replacement Registry was used for transition probabilities, health-related quality of life (EQ-5D) utilities, and rate of revision for individuals undergoing surgery. The likelihood of avoiding total knee replacements following non-surgical management, transition probabilities, and utilities were obtained from randomised trials and the Australian GLA:D registry.

The primary outcomes were net monetary benefit (NMB), with a willingness-to-pay threshold of $AUD 28,033 based on empirical estimates of opportunity costs of decisions to fund new health technologies. Sensitivity analysis was conducted to ascertain the impact of model input uncertainty on model outcomes.

Results: Implementation of the non-surgical management program resulted in lifetime cost savings of $AUD 498,975,449 ($7,952 per individual) compared to usual care. Usual care resulted in 277,735 QALYs gained (0.44 QALYs gained per individual) compared to non-surgical management. Net monetary benefit of the non-surgical program decreased from $5,689 at 5-years, to -$765 at 10-years and -$4,438 at the lifetime horizon. Subgroup analysis revealed that cost savings were greatest and incremental QALY losses lowest following non-surgical management in individuals with'no/mild pain' at baseline (NMB= -$691). Findings were sensitive to health-related quality of life utilities following non-surgical management.

Conclusions: Implementation of a national non-surgical management program for knee osteoarthritis is cost-effective within the first 10-years but may not represent value for money over a lifetime horizon. Opportunities may exist to invest early cost-savings into other effective interventions (eg. weight management) to improve the efficiency (ie. reduce surgical waiting lists) and cost-effectiveness of late-stage knee osteoarthritis outcomes.

To pee or not to pee: Economic evaluation of treatment by alternative providers for uncomplicated urinary tract infections in women in Australia

Jean Spinks, The University of Queensland

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Background: Pharmacists can prescribe antibiotics to treat uncomplicated urinary tract infections in women in a number of countries including the United Kingdom, New Zealand, Canada and recently Australia (in the state of Queensland). This is consistent with allowing treatment of minor ailments by pharmacists and nurses, which is designed to increase access to care for patients and decrease doctor's workloads. However, peak doctor groups have raised concerns about the possibility of misdiagnosis and increased anti-microbial resistance due to inappropriate prescribing. There is currently limited evidence of the comparative cost-effectiveness from a third-party insurer perspective of pharmacists providing this service. Thus, additional evidence is required by policy makers in other jurisdictions in Australia who are considering policy change similar to Queensland.

Aim: To assess the relative cost-effectiveness of treatment options in primary care for women with a suspected uncomplicated urinary tract infection.

Methods: We use a decision analytic model incorporating three main treatment strategies: pharmacist led treatment, doctor-led treatment and "wait and watch". We assume the treatment protocol adopted in Queensland, Australia for the pharmacist-led arm. There are two treatment outcomes of interest, cost per symptom-free day and the number of cases of antimicrobial resistance, based on local resistance patterns. Data for treatment choices and outcomes for the pharmacist-led arm come from the key evaluation trial undertaken in Queensland, and for the doctor-led arm, come from general practice data. Sensitivity analyses are undertaken to explore key drivers of model.

Results: Similar to previous studies, empiric treatment was found to be the least costly strategy available. However, results are sensitive to local antimicrobial resistance patterns as well as different prescribing patterns by doctors and pharmacists. The current gold-standard of mid-stream specimen of urine (MSU) testing is called into question given recent advancements in genomic analysis to detect uropathogens, such as rRNA gene sequencing.

Conclusions: Pharmacist-led treatment of uncomplicated urinary tract infections is a cost-effective strategy under a range of assumptions. Given the rise in antimicrobial resistance worldwide, regular audits of prescribing of antibiotics by all health professionals should be ongoing, alongside monitoring and reporting of drug resistance rates. A framework for continuous quality improvement mechanisms, led by Primary Health Networks, is proposed.

Precarious employment and health in Australia: What are the roles of energy poverty and financial fragility?

Jonas Fooken, The University of Queensland

We study the relationship between employment precarity and health using 20 waves of the longitudinal Household, Income and Labour Dynamics in Australia (HILDA) survey, using the SF-36 measures of general and mental health and a multidimensional measure of employment precarity. Our results indicate that individuals in precarious employment report general and mental health levels that are 2.327 and 2.138 points lower than their non-precariously employed counterparts, relative to mean general and mental health scores of 69.653 and 73.025, respectively. These findings are confirmed across different quasi-experimental methods, and robust to alternative measures of general health, mental health, and employment precarity. Our findings reveal stronger effects on general health for women and stronger effects on mental health for men. We also show that energy poverty and financial fragility serve as potential channels via which employment precarity transmits to general and mental health.

Informal Care and Financial Stress: Longitudinal Evidence from Australia

Isaac Koomson, The University of Queensland

Co-authors: Sabrina Lenzen; Clifford Afoakwah

Objectives: The study examines the effect of informal care on financial stress. Subsampled analyses are done to investigate the heterogeneities in the effect of informal care on financial stress for males and females, rural-urban residents and people facing different socioeconomic disadvantages. Finally, we assess the mediating roles of financial fragility and social isolation to explore nuances in the channel of effect in the informal caregiving–financial stress nexus.

Methods: The analyses in this study are done using 17 waves of longitudinal data obtained from the HILDA survey, an annual nationally representative survey which commenced in 2001.

The association between informal care and financial stress of the caregiver is first examined using two panel data econometric strategies—Pooled OLS and Fixed Effects (FE) models. The FE model accounts for individual unobserved heterogeneity while the Pooled OLS does not.

To establish causality, we address the endogeneity problem by using fixed effects instrumental variable (FE-IV) estimation which resolves both issues of omitted variables and reverse causality. The FE-IV is implemented by using injury/illness to a close relative in the previous year as an instrument.

Results: Our finding can be summarised in threefold. First, we find that informal care is associated with an increase financial stress, irrespective of the indicator used. Second, the adverse effect of informal care on financial stress is greater among males, those living in rural and remote areas and those facing greater socioeconomic disadvantages. Finally, our mediation analyses show that financial fragility and social isolation are important channels through which informal caregiving affects financial stress.

Conclusions: Considering that the number of people providing informal care is increasing in Australia, it will be prudent for policymakers to design and streamline existing policies on informal care in order to reduce its potential impact on financial stress. For instance, some labour market considerations such as flexible work arrangements can help reduce the level of financial stress among informal carers who are working. Also, the means-tested Carer Payment policy for informal carers of children under 7 years can be revised to benefit all forms of informal carers irrespective of the age of one needing care.

Retirement Combat Depression

Lanjie Wang, Singapore Management University

This study examines retirement's short-term effects on older adults' mental health. I use regression discontinuity design and find a positive effect of retirement on depression indicators in older adults' mental health, as evidenced by increased self-identity and decreased stress, sadness, and fear. I find males dominate that retirement effect but insignificant among females. Retirement helps people with higher education to increase their sense of self-identity and happiness and reduce stress, depression, loneliness, and fear; however, people with low education increase their loneliness after retirement. The results suggest that reforms that prompt people to delay retirement should consider the positive effects of retirement to reduce depression and increase the frequency of social activities among older people.

Digging Deeper into the Effects of Emotional Cues on Violence Against Women

Sara Hutchinson Tovar, Monash University

Co-authors: Umair Khalil, Sonja DeNew

We investigate the effect of emotional states on the incidence of intimate partner violence (IPV). We leverage quasi-random variation in emotional cues generated by unexpected results in the Mexican football league. Our results indicate that the probability of a woman experiencing any type of IPV increases by around 2.5 percent after exposure to an additional unexpected loss. Conversely, for an additional unexpected win, the estimated effect on IPV is negative (2.1 percent). Furthermore, we find strong impacts on both physical and non-physical abuse against women. We document the profound role that exposure to violence in childhood by men plays in explaining our findings. Households where male partners experienced physical and emotional abuse during their childhood show a 2.8 percent increase in physical IPV after exposure to a negative emotional cue, whereas this effect is statistically insignificant for couples without violent childhood experiences. We also document that households where women have low bargaining power witness higher IPV in the wake of negative cues.

Room C Organised Session: Generating new economic evidence of lung, prostate and colorectal cancer across screening, treatment and end-of-life care

Evaluating the cost-effectiveness of lung cancer screening strategies incorporating new therapies

Jackie Roseleur, Flinders University

Co-authors: Kevin ten Haaf; Harry de Koning; Jonathan Karnon

Background: Lung cancer is a significant global health burden, and screening programs are a potential tool for early detection and improved patient outcomes. However, economic evaluations of lung cancer screening strategies often face challenges in incorporating new therapies and accounting for their impact on cost-effectiveness. This study aimed to address this methodological gap and assess the cost-effectiveness of lung cancer screening strategies considering the representation of new therapies, including immunotherapies and targeted therapies.

Methods: To evaluate the cost-effectiveness of lung cancer screening strategies, we adapted the MIcrosimulation SCreening ANalysis (MISCAN) Lung model using historical smoking and outcomes data. A total of 432 screening strategies were simulated, incorporating various combinations of screening intervals, starting and stopping ages, and smoking histories. Pragmatic methods were employed to capture the potential benefits and costs associated with new therapies. It was hypothesized that the inclusion of new therapies would enhance the cost-effectiveness of screening, considering the stage shift resulting from early detection.

Results: The inclusion of new therapies yielded improved cost-effectiveness, as indicated by incremental cost-effectiveness ratios that were approximately 5% lower compared to scenarios without new therapies. Additionally, the analysis revealed a range of lung cancer screening strategies with comparable average cost-effectiveness ratios compared to no screening. This finding highlighted the need for additional factors to be considered in decision-making processes. The Medical Services Advisory Committee (MSAC) adopted a pragmatic approach by defining a subset of strategies deemed equivalent in terms of cost per quality-adjusted life year (QALY). Furthermore, the MSAC incorporated a diverse set of model outputs to inform their recommendation, acknowledging the importance of various factors beyond incremental cost-effectiveness results.

Conclusions The results of this study underscore the complexity of decision making in lung cancer screening strategies, especially when incorporating new therapies. Our findings demonstrate that the inclusion of new therapies improves the cost-effectiveness of screening, highlighting the potential benefits of early detection through a national lung cancer screening program.

Cost-effectiveness analysis of the Navigate online treatment decision aid for men with prostate cancer compared to usual practice

Daniel Lindsay, QIMR Berghofer Medical Research Institute

Co-authors: Penelope Schofield, Matthew Roberts, John Yaxley, Louisa Gordon

Background: Prostate cancer is the most commonly diagnosed cancer in men worldwide, with primary management options for localized prostate cancer including active surveillance and invasive treatments. Each management option has costs and benefits, and decision aids can assist patients and their families decide their preferred management option by providing evidence-based information to elicit their preferences and values. We examined the cost-effectiveness of the Navigate online decision aid compared to usual practice for guiding the choice of primary management option for Australian men with prostate cancer.

Methods: A decision-analytic cohort model with Markov chains was constructed with a 10-year time horizon. Navigate randomised control trial data (n = 302) and relevant published literature were used for model inputs. Incremental costs and health effects, including quality-adjusted life years (QALY) and years of life lost, were quantified for the two strategies with costs taking a government healthcare perspective. One-way and probabilistic sensitivity analyses were undertaken to address uncertainty in model inputs, with scenario analyses used to compare cost-effectiveness for Navigate across various countries.

Results: On average, the Navigate strategy was estimated to cost AU$8,789 (95% Uncertainty Interval (UI): $7,410 - $10,273) and produce 7.08 (95% UI: 6.72 - 7.36) QALYs compared with AU$9,373 (95% UI: $8,081 - $10,808) and 7.03 (95% UI: 6.67 - 7.30) QALYs for the usual care group. The Navigate strategy dominated usual practice as it produced cost-savings and higher QALYs, although differences were small for both outcomes over 10 years. The findings were sensitive to the uptake of active surveillance, the cost of active treatment and the probability of disease progression after active treatment, but variation in these did not alter the overall findings. The likelihood of Navigate being cost-effective at a threshold of AU$50,000 per QALY gained was 99.8%. Scenario analyses found the Navigate intervention was most cost-effective in countries with higher rates of active surveillance as the primary management option for prostate cancer.

Conclusion: Using an online decision aid to guide men making decisions around their primary management option once diagnosed with prostate cancer appears to be cost-effective in the Australian healthcare system relative to usual practice, driven by the higher acceptance and uptake of active surveillance.

Factors affecting treatment costs for colorectal cancer

Ou Yang, University of Melbourne

Co-authors: Yuting Zhang, Fanny Franchini, Judith Liu, Richard To, PRIMCAT team

Background: Colorectal cancer (CRC) is the second leading cause of cancer-related deaths globally in 2020. In Australia, CRC is the second most prevalent cause of cancer mortality, with over 15,000 new cases reported annually. Understanding the factors that influence CRC treatment costs is crucial for effective healthcare planning and resource allocation.

Methods: We examined individual data on medical and pharmaceutical expenses for patients diagnosed of CRC in 2010-2019 and registered in the Victorian Cancer Registry. We linked comprehensive administrative records from all hospitals in Victoria with the Pharmaceutical Benefits Schemes (PBS) and Medical Benefits Schedules (MBS) in the Medicare data. We investigated the costs associated with different stages of the disease and explore potential socioeconomic factors that influence healthcare utilization, including age, gender, socioeconomic status (SES), and regional disparities.

Results: In our sample, patients with CRC were diagnosed at four stages with similar proportions: 26% at stage I, 28% at stage II, 27% stage III and 19% at stage IV. However, costs treating CRC vary substantially by stage at the diagnosis. The average cost to treat someone diagnosed at stage IV is $33,555, of which $17,737 was on average spent in the initial year, and for those still alive 14,160 in year 2, 12,178 in year 3, 9,818 in year 4, and 8,653 in 5th year. Average treatment costs for patients diagnosed earlier are much smaller: $3,757 at stage I, $4,569 at stage II, and $8,363 at stage III.

Medicare protects patients from catastrophic medical expenses, covering approximately 95% of the total cost for stage IV patients, and 67% for stage I patients. Patients' out-of-pocket (OOP) expenses remained relatively similar across four stages, roughly $1300 per patient.

Treatment patterns also differ by diagnosis stage. For stage IV patients, pharmaceutical expenses accounted for 85% of the total cost. In contrast, for stage I patients, drug spending only contributes to 6% of the total cost, while medical expenses (MBS) constituted the remaining 94%.

Our regression models show that, holding other factors constant, the average annual cost of treating stage IV patients is approximately 150% higher than that of stage I patients; older patients incur lower costs than younger patients in both MBS and PBS expenses. Furthermore, patients diagnosed in regions with higher SES experience higher overall costs; and males have significantly higher PBS costs compared to females.

Conclusion: Our study demonstrates both clinical and patient characteristics affect CRC treatment costs. Patients are protected by Medicare against catastrophic healthcare expenses.

Costs of palliative care for cancer patients in the public acute healthcare setting: results from a Queensland population data linkage study (COS-Q)

Katharina Merollini, University of the Sunshine Coast

Co-authors: Louisa Gordon, Joanne Aitken, Michael Kimlin

Background: Increasing numbers of individuals are diagnosed with cancer worldwide. Although survival outcomes have improved over time, some people will require palliative care at the end of life. The objective of this research was to quantify palliative care costs of cancer patients in the public acute care setting in Queensland, Australia.

Methods: The study cohort comprised population-level data of Queensland residents, diagnosed with a first primary malignancy between 1997 and 2015 who underwent palliative care in a public acute hospital setting between July 2012- December 2016. Administrative databases were linked with cancer registry records to capture health service utilization. Health service costs were analysed using a bottom-up costing approach on a cohort as well as patient-level.

Results: A total of N=17,012 individuals with a history of cancer underwent palliative care in a public acute setting during the study period, of which 94.7% received palliative care due to cancer and 76% died in hospital. Total expenditure on a cohort level over 4.5yrs was AU$262.6 million (weighted mean of AU$55.2m/year) with highest total palliative care costs for lung (AU$49 m), colorectal (AU$31.5 m) and prostate cancer (AU$27.8m), making up 41.3% of the overall cost. Mean patient-level costs across all episodes of palliative care were AU$15,435 (SD:19,226) with mean length of stay (LoS) of 8.8 days. Highest mean cost per person were incurred by individuals with a history of brain (AU$21,950, SD 23,370) and cervical cancer (AU$19,424, SD 22,629) which had the longest mean LoS per patient hospital episode (13.3 and 10.3 day, respectively). Palliative care costs were the highest for younger age groups 0-24yrs (AU$20,951 mean total cost, SD 29,150) and steadily decreased with age (lowest for 90yrs+ (AU$12,293, SD 14,291) despite a shorter mean LoS for younger age groups (AU0-24yrs: 6.0 days, 25-49yrs: 8.4 days, 50+yrs: ~9days). Individuals accessing palliative services in major cities and inner regional areas had lower mean costs and shorter LoS (AU$14,800, LoS: 8.3 days) compared to patients in outer regional (AU$18,000, LoS: 11.1 days), remote (AU$22,350, LoS: 13.2 days) and very remote areas (AU$28,000, LoS: 14.3 days).

Conclusions: Palliative care was accessed by around ~4,000 cancer patients/year. The majority of patients deceased during an episode of hospital care, with highest overall economic burden caused by lung, colorectal and prostate cancer (high case numbers) and highest patient-level costs incurred by brain and cervical cancer (longest LoS). Palliative care costs per person decreased with age but increased with geographical remoteness category. More research is needed to determine causality of these factors. This research may contribute to future research, support programs and investments in end-of-life care to optimise patient outcomes and to reduce the economic burden.

Room D Organised Session: Social values and equity weighting in healthcare priority setting

Australian public's view of the value of health gains in children compared to adults: results from Person-Trade-Off

Udeni De Silva Perera, Monash University

Background: Health economic evaluations typically assume that equal health gains for different patients hold the same social value. Emerging evidence suggests the public may attach greater importance to health improvements for children and young people, although these findings are not always consistent. Willingness to prioritise health gains for children might vary depending on specific age comparisons, and the nature of the gain (extending life or improving quality of life). The Person Trade Off (PTO) method can be used to estimate social value weights for health gains by presenting respondents with choices between treating patient groups that differ in terms of patient characteristics and size.

Objective: This study aims to inform Australian decision makers about public views on the social value of child and young person health gains relative to adult health gains. We aim to estimate the average relative weight for child and young person gains relative to adult gains for different types of gain (extensions in life years, improvements in quality of life across domains of pain, mobility and low mood/anxiety).

Method: An online survey was conducted with participants answering seven PTO questions. The questions involved choosing between treating children/young people (aged 1 month, 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22 and 24 years) or adults (aged 40 or 55). The initial question compared 100 patients in each group, and subsequent questions adjusted this number to approximate the point of equivalence. In one study arm, respondents could choose 'no preference' between groups while in the other arm a clear preference was required. Attitudinal questions on health care prioritisation were also completed. PTO ratios were aggregated for each age comparison using both the ratio of the means (ROM) and the median of the individual ratios (MOIR).

Results: 2041 respondents completed the survey, of which 50% were female, with a mean age of 48.2 (range 16-90). Preliminary results suggest that, on average, health gains for children and young people hold greater relative weight than those for adults. The weights for infants (aged 1 month or 2 years old) are an exception with less weight given to their health gains unless treatment is alleviating pain. The ROM and MOIR for most child/young person to adult comparisons fall between 1 and 1.5. Respondents gave multiple and varied reasons to explain their trade-off choices. In the general attitudinal questions, less than a third of respondents reported support for prioritising children.

Discussion: Results suggest society supports a higher priority being placed on health gain in children than adults. However, this did not extend to very young children. The PTO results were not consistent with responses to general attitudinal questions on healthcare, where most expressed the view that age should not affect priority. This disconnect poses a challenge for interpreting the policy implications of such results.

Eliciting equity weights: a comparison between Discrete Choice Experiment (DCE) and "Person-trade-off (PTO)" approaches

Jinhu Li, Australian National University

Co-authors: Yuanyuan Gu, Emily Lancsar, and Cam Donaldson

Objectives: In health care priority setting, a fundamental question to address is whether the social value of a quality-adjusted life-year (QALY) can differ across characteristics of targeted beneficiaries, such as age and severity, and across different QALY types, emanating from different combinations of life-extensions and quality of life (QoL) improvements. This study aims to test whether Discrete Choice Experiment (DCE) and Person Trade-off (PTO), two of the most popular methods for preference elicitation in health care priority setting, produce different results in the distributional weights for QALYs across such characteristics.

Methods: A novel DCE survey was developed to explore the relative weights for different QALY types and recipients' characteristics. The DCE includes five attributes, including: age of targeted treatment beneficiaries; two attributes relating to severity (life expectancy and quality of life without treatment); and two attributes describing what would be gained with treatment (essentially, number and types of QALYs gained). The survey was then adapted to mimic a PTO approach, by reducing the characteristics across which respondents could trade off to include age and severity only.

Data were collected from individuals randomly drawn from the Australian population, with a sample size of 1000 for the DCE arm and 500 individuals for the "PTO" arm. Conditional logit models were estimated to compare respondent preferences between the DCE and the "PTO" arms. The Swait and Louviere (S&L) test was applied to test for scale and preference heterogeneity between the two arms, with weights derived using an adapted compensating variation method.

Results: Preliminary results show that the preference parameters differ significantly between the DCE and the "PTO" arms, reflected both by the estimated coefficients and the S&L test result. We compared distributional weights between the DCE and the "PTO" arms by age group, by quality of life without treatment and by life expectancy without treatment. Results suggest weights generated from "PTO" overall have a larger range than those from DCE. Further, the DCE arm and the PTO arm generated slightly different ordering in terms of relative importance of the four younger age groups, and substantially different ordering in terms of relative importance of different quality-of-life levels and of different life-expectancy levels.

Conclusions: As will be discussed in the paper, our results provide new evidence on reconciling the differences in distributional weights generated from the DCE and the PTO approaches.

A Priority-setting framework for value-based healthcare: Evidence from NSW

Mona Aghdaee, Macquarie University

Co-authors: Olukorede Abiona, Henry Cutler, and Yuanyuan Gu

Background: The Australian healthcare system is undergoing a transformation towards value-based healthcare (VBHC), with several Australian states, including New South Wales (NSW), adopting VBHC principles in healthcare delivery. The plan is to realign health systems with the following elements of VBHC. These elements include (i) improving health outcomes that matter to patients; (ii) improving patient care experiences, (iii) improving provider experiences; and (iv) improving care effectiveness and efficiency.

Aim: This study aims to understand public preferences for priority setting within the VBHC framework in NSW, shedding light on resource allocation strategies that align with patient priorities and increase value in healthcare programs and interventions.

Methods: Mixed research methods were employed, including literature review, semi-structured interviews with local health district administrators and executives, and a Discrete Choice Experiments (DCE) survey. Interviews provided insights into decision-making processes and provider experiences in efficient budgetary allocation of VBHC resources. The DCE survey, conducted with 300 participants (Pilot stage), captured public preferences.

Results: The findings emphasise the significant importance of patient experience in decision-making. Increasing patient experience, defined as proportion of patients that have good or very good experience while receiving care, from 65% to 75% resulted in a 73% higher likelihood of selection, while further increasing it to 85% raised the likelihood by 86%. Health outcomes also played a vital role, with improvements leading to higher likelihoods of selection. For instance, increasing health outcomes from 75 to 85 (out of 100) raised the likelihood by 59%, and further increases to 90 and 95 showed respective likelihood increases of 31% and 57%. Care efficiency, measured by cost savings, was valued by participants. Savings of $50,000, $100,000, and $150,000 for every $1 million spent in healthcare corresponded to likelihood increases of 42%, 73%, and 68%, respectively.

Conclusions: The study's findings provide important insights into public preferences for prioritising VBHC attributes. Effective priority-setting within the VBHC framework is crucial for successful program implementation and resource allocation strategies. The results can inform decision-makers at the local health district and hospital levels in NSW on how to allocate resources in alignment with patient priorities and increase value in healthcare delivery.

Shall we pay more for rare disease drugs? Assessing decision makers' preferences by a sequential Discrete Choice Experiment approach

YuanYuan Gu, Macquarie University

Co-authors: Shan Jiang, Haiyin Wang, Shunping Li

Objective: This study aims to investigate the preferences of public health insurance decision-makers in China, who serve as representatives of the general population for resource allocation decisions, regarding the possibility of increasing insurance premiums to cover rare disease drugs. Furthermore, we explore the specific circumstances that influence these preferences and assess their willingness to raise health insurance premiums for the purpose of covering treatments for rare diseases.

Methods: We employed two discrete choice experiments (DCEs) incrementally. The first DCE is a labelled DCE comparing common and rare disease treatments. Five attributes were considered, including: severity, age of onset, catastrophic expenditure, availability of alternative drugs, and treatment benefit (qualitative). The second DCE is unlabelled with the same five attributes except that the last one being changed to QALY gains. A sixth attribute was also included, representing the level of public insurance premium increment. The conditional logit model was adopted for the estimation.

Results: The data collection is currently in the process and our target sample size is 120. Preliminary data was collected from 24 decision-makers involved in the National Reimbursement Drug List decision-making process. The first DCE revealed that, decision-makers did not support a higher weight for rare disease drugs, all aspects being equal. However, when other attributes were considered such as the rare disease condition being severe and the common disease condition being mild, decision-makers supported prioritising the former. The second DCE suggested that decision-makers were willing to increase the monthly insurance premium by RMB 1.59 (95% CI, 0.15, 4.34) per insurance payer per annum for the more undesirable rare disease conditions (severe, childhood onset, catastrophic expenditure, and no alternative treatments). This equates to a reimbursement ICER threshold of around 1XGDP per capita in China.

Conclusion: The findings of this study suggest that Chinese decision makers do not exhibit a strong inclination to prioritize the reimbursement of rare diseases over common diseases when all health conditions and treatments are considered equal. However, there is evidence of their willingness to support rare disease drugs in certain circumstances, particularly in cases of severe rare disease conditions. These results offer valuable quantitative insights for health insurance systems, aiding in the establishment of reimbursement thresholds for rare disease drugs.

Room E Organised Session: How should we be measuring quality of life in children with different health conditions and their caregivers?

How does the psychometric performance of common generic paediatric health-related quality of life instruments compare in children with different health conditions? Results from the Australian Paediatric Multi-Instrument Comparison (P-MIC) Study

Renee Jones, University of Melbourne

Co-authors: Brendan Mulhern, University of Technology Sydney; Rachel O'Loughlin, The University of Melbourne; Nancy Devlin, The University of Melbourne; Harriet Hiscock, Murdoch Children's Research Institute & The Royal Children's Hospital; Kim Dalziel, The University of Melbourne; in collaboration with the Quality Of Life in Kids: Key evidence to strengthen decisions in Australia (QUOKKA) project team.

Objective: To compare the psychometric performance of common generic paediatric health related quality of life instruments in children with different health conditions.

Methods: Data from the Australian Paediatric Multi-Instrument Comparison (P-MIC) study (2021/22) were used. P-MIC study participants completed PedsQL generic core 4.0 (PedsQL), EQ-5D-Y-3L, EQ-5D-Y-5L, and Child Health Utility 9D (CHU9D) in an online survey. Participants were also asked to complete a follow-up survey at 4-weeks. Children aged 5-18 years from the following P-MIC condition specific samples were included in analysis – autism spectrum disorder (ASD) (n=510), asthma (n=487), eating disorders (n=186), epilepsy (n=272), recurrent abdominal pain (n=392), sleep problems (n=346), and tooth problems (n=490). Children from the P-MIC general population sample, who didn't have a condition and reported an EQ VAS ≥70, were included as a healthy reference (n=1,259). The psychometric performance of the PedsQL, EQ-5D-Y-3L, EQ-5D-Y-5L, and CHU9D was assessed by condition sample. Psychometric attributes evaluated included acceptability (self-reported difficulty), floor and ceiling effects, known group validity (differences in instrument total score between healthy reference and condition groups) and test-retest reliability (agreement, measured using Intraclass Correlation Coefficient (ICC), between initial and follow-up instrument total score where child had no change in health). Responsiveness analyses are also planned.

Results: Within each condition sample, self-reported difficulty completing was similar for all instruments, however, the EQ-5D-Y-5L had the highest proportion of participants reporting it as 'very easy' to complete in all condition samples except for the recurrent abdominal pain sample, where CHU9D had the highest proportion. No instrument demonstrated floor effects in any condition sample. The PedsQL and CHU9D did not demonstrate ceiling effect issues in any condition sample. The EQ-5D-Y-3L and EQ-5D-Y-5L demonstrated ceiling effect issues, particularly in the asthma and tooth problem samples. All instruments were able to differentiate between healthy children and children from each condition sample (mean difference with a p value <0.001), indicating known group validity. Known group effect sizes (ES) were large (ES ≥0.8) for all instruments in all condition samples except asthma and tooth problem samples, where ES were moderate (ES 0.5-0.79). Test-retest reliability varied by instrument and condition sample, however, the EQ-5D-Y-5L and CHU9D were the most reliable, with moderate reliability (ICC 0.5-0.7) for 5/7 and 6/7 condition samples respectively. Responsiveness results will be presented.

Conclusion: Instrument performance varied by child health condition and psychometric property. Future instrument users may need to consider which psychometric attributes are of importance to them when selecting which instrument is most appropriate for their planned use.

Comparing the psychometric performance of generic paediatric health-related quality of life instruments in children and adolescents with ADHD, Anxiety and/or Depression.

Rachel O'Loughlin, University of Melbourne

Co-authors: Renee Jones, The University of Melbourne; Gang Chen, Monash University; Brendan Mulhern, University of Technology Sydney; Harriet Hiscock, Murdoch Children's Research Institute & The Royal Children's Hospital; Nancy Devlin, The University of Melbourne; Kim Dalziel, The University of Melbourne; in collaboration with the Quality Of Life in Kids: Key evidence to strengthen decisions in Australia (QUOKKA) project team

Objective: To examine the validity, reliability and responsiveness of common generic paediatric health-related quality of life (HRQoL) instruments in children and adolescents with mental health challenges.

Methods: Participants were a subset of the Australian Paediatric Multi-Instrument Comparison (P-MIC) study, comprising n=1,013 children aged 4-18 years whose caregiver reported they had been diagnosed with Attention-Deficit/Hyperactivity Disorder (ADHD) (n=533), or anxiety and/or depression (n=480). Participants completed an online survey including a range of generic paediatric HRQoL instruments (PedsQL, EQ-5D-Y-3L, EQ-5D-Y-5L, CHU9D, AQoL-6D, and HUI3) and mental health symptom measures (SDQ, SWAN, RCADS-25). The psychometric performance of each HRQoL instrument was assessed regarding acceptability/feasibility; floor/ceiling effects; convergent validity; known group validity; responsiveness and test-retest reliability.

Results: Overall, we found strong psychometric performance by the CHU9D, PedsQL, EQ-5D-Y-3L, and EQ-5D-Y-5L, which were all deemed easy to complete by a majority of participants; showed no floor effects; differentiated most known groups; showed good convergent validity and fair/good test-retest reliability. However, relative strengths and weaknesses of each instrument were observed across psychometric properties, and within subgroups of age, gender and type of mental health condition.

Conclusions: Results of the study provide a detailed summary of the comparative performance of HRQoL instruments for use in children and adolescents with ADHD, anxiety and/or depression, with strong performance observed across a number of commonly used generic paediatric HRQoL instruments. However, careful consideration of the choice of instrument is advised, as this may differ dependent on the intended use of the instrument, and the age, sex and type of mental health condition of the population in which the instrument is being used.

Assessment of health-related quality of life in children with or without health conditions using pictorial patient-reported outcome measures: A systematic review

Christine Mpundu-Kaambwa, Flinders University

Co-authors: Norma Bulamu, Flinders University; Lauren Lines, Flinders University; Gang Chen, Monash University; David GT Whitehurst, Simon Fraser University; Kim Dalziel, The University of Melbourne; Nancy Devlin, The University of Melbourne; Julie Ratcliffe, Flinders University.

Objectives: Children may face difficulties self-reporting their health using patient-reported outcome measures (PROMs) presented in text format because of their age or reasons related to a health condition. Pictorial formats for PROMs may offer a valid alternative. This study aimed to identify health-related pictorial PROMs developed for self-report in children aged ≤18 years, evaluate their characteristics and development methods, and summarise their measurement properties.

Methods: Preferred Reporting Items for Systematic Reviews and Meta-Analyses guidelines were followed. Six electronic databases were searched from inception to 1 March 2023. The characteristics (design and format) and development methods (content generation) of the identified PROMs were evaluated against the Professional Society for Health Economics and Outcomes Research (ISPOR) good research practice guidelines. Measurement properties, including reliability, validity, and responsiveness, were described.

Results: Twenty-two pictorial PROMS, including 28 unique versions, were identified: two preference-weighted measures and 26 non-preference-weighted measures. Response options were frequently represented using Likert scales (n = 27, [96%]) with pictorial anchors, e.g., happy-sad faces. Methodological approaches to developing the pictorial PROMs included literature reviews, expert consultation, and interviews. Children's participation was sought during the development of 14 (50%) of the PROMs. Over half of the studies reported the PROMs' measurement properties using psychometric indices.

Conclusion: A comprehensive list of PROMs that use pictorial illustrations to assess children's quality of life and their characteristics is provided. The study results show that the use of pictorial PROMs for children allows younger children to self-report and improves psychometric characteristics compared to text-only instruments. The findings have research and clinical practice implications when choosing PROMs for children who find reading and understanding words challenging due to being young or having health conditions.

Psychometric performance of the EQ-HWB-S (EQ Health and Wellbeing Instrument) for measuring quality of life in parents of children with health conditions

Cate Bailey, The University of Melbourne

Co-authors: Kim Dalziel, The University of Melbourne; Renee Jones, The University of Melbourne; Harriet Hiscock, Murdoch Children's Research Institute & The Royal Children's Hospital; Nancy J. Devlin, The University of Melbourne; Tessa Peasgood, The University of Melbourne.

Objectives: When evaluating the impact of child health interventions, the importance of also including the impact on parent quality of life (QoL) has become increasingly clear. The EQ-HWB (EQ Health and Wellbeing) is a new instrument to measure the health and wellbeing of care recipients and their caregivers. The short form (EQ-HWB-S), with 9 items, has been developed for use in economic evaluation. It is now important to validate the instrument in a range of populations. In this study, we investigated the validity of the EQ-HWB-S for parents of children with a range of health conditions, including, mental health, abdominal pain, epilepsy, asthma, dental, and autism spectrum, attention deficit/hyperactivity, sleep and eating disorders.

Methods: We obtained data from the Australian paediatric multi-instrument comparison (P-MIC) study which included parent quality of life (EQ-HWB-S), parent and child demographic variables, child health condition variables. Baseline data was compared between parents of children with health conditions (n= 4,432 (71%)) and the general population (n=1825 (29%)) sample. To measure whether the instrument was able to detect differences between groups, known groups validity analysis was conducted across 3 child health variables for parent EQ-HWB-S sum scores (total score of all items) and parent preference-weighted scores (from a pilot UK value set) using t-tests. Cohen's d was used to measure effect size. We explored differences in QoL between participants of children with a range of healthcare conditions. Differences in EQ-HWB-S were identified between child health condition groups at baseline, so a regression analysis was conducted to test whether differences between groups were maintained when controlling for child and parent demographic variables.

Results: Using parent EQ-HWB-S sum-scores and parent EQ-HWB-S index scores, we detected significant differences between known groups as hypothesised; all tests were significant at $p<.001$ with moderate effect sizes. Effect sizes were similar between female and male parents. In the regression analysis, the child health conditions variable (children with health condition versus general population) remained significant in regression analysis after controlling for parent age, gender, income and adversity (healthcare card). Parents of children with autism spectrum, eating, or sleep disorders had the highest EQ-HWB-S scores (lowest QoL). Data were limited to one time point; thus, further research should investigate responsiveness to change and test-retest reliability in this population.

Conclusion: The EQ-HWB-S could distinguish between parents with a higher caring burden (parent of child with and without a health condition), and between child conditions (parents of children with Autism spectrum, eating and sleep disorders had the lowest QoL), lending support for the use of this instrument in caregiver populations.

Parallel Session 5

Room A Economic Evaluation and Cost Effectiveness 5

Economic evaluation of the cost and benefits of air pollution control: a systematic review

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Co-authors: Rong Song, Gian Luca Di Tanna, Zhiwei Xu, Stephen Jan, Mingsheng Chen, Lei Si

Background: Air pollution poses a significant public health challenge globally. Although there exists broad mitigation policies, an understanding for the economic consequences is lacking. We systematically reviewed existing economic evidence of the costs and benefits of these interventions.

Methods: We searched PubMed, Scopus, Cochrane Library, Embase and CEA registry databases for studies that assessed the costs and health benefits of control strategies aimed at reducing air pollution without limitations on study design, region, or time. Evidence was narratively summarised based on principle economic evaluation measurements including net benefits and benefit-cost ratios.

Results: 96 studies were included in this review, with most studies from China (n=24) and the US (n=21). Almost all studies adopted a risk assessment approach by using dose-response parameters to model health outcomes from pollution exposure. The impact of particle matter on all-cause mortality was the most widely assessed pair of exposure-effects relationship (n=42). Overall, 70 studies reported that the intervention was good value for money. More studies assessed the value of outdoor interventions to improve ambient air quality, and 54 out of 67 of which reported positive outcomes. 13 out of 20 studies found similar results for indoor interventions. Commonly employed control methodologies were regulatory, fiscal, or end-of-pipe. Subgroup analysis across intervention types and control methodologies showed that climate change policies assessing health co-benefits generally reported positive outcomes (n=9). In addition, we found that studies that adopted a broader social framework of benefits (n=26), including those to the environment, ecology, and society all reported positive or partially positive evidence. Despite these results, studies also highlighted some policy flaws with regard to equity, optimization, and uncertainties.

Conclusion: Overall, we found board economic support across various control strategies with more than 70% of the interventions reporting good value for money. However, future air pollution control designs also need to address some of its current existing limitations.

The cost-effectiveness of preserving independence in people with dementia

Rachel Elliott, University of Manchester

Co-authors: Luke Paterson, Elizabeth M Camacho

Objective: Dementia is estimated to affect 1.5 million people in the UK by 2050, with growing formal and informal care costs for people with dementia (PwD). Interventions that enable people with dementia to retain some independence in activities of daily living (ADL) may delay transitions into residential care and help to maintain quality of life (QoL). Little is known about the long-term costs and health benefits of preserving PwD's independence in ADL. The aim of this study was to estimate how effective a hypothetical intervention needs to be at retaining independence in conducting ADL compared with care as usual (CAU) to be cost-effective.

Methods: A decision-analytic model was constructed with health states: low dependence, moderate dependence, high dependence, and dead. Parameters were derived from the SENSE-Cog study (a randomised controlled trial (RCT) of a complex non-pharmacological intervention for PwD), secondary analysis of data from the AD2000 study (an RCT of donepezil versus placebo), and published literature. The base case perspective was the health and social care provider, and a societal perspective was explored. A 10-year time horizon was used to approximate the life-expectancy. Costs of the hypothetical intervention (one-off at model entry) and health, social and informal care resource use (over the entire time horizon) were included in the model. Intervention cost was based on the SENSE-Cog intervention (£520), alternative costs were tested. Health benefit was measured as quality-adjusted life-years (QALYs), derived from EQ-5D-5L data for people with the respective levels of dependence from the SENSE-Cog study. Costs and QALYs were discounted by 3.5%. The threshold commonly used by decision-makers in the UK (£20,000/QALY) was used to evaluate cost-effectiveness. The effect of the intervention was operationalised at the sample level by varying the proportion of people who entered the model in the high and moderate dependence health states. Scenario analyses explored uncertainty in the model.

Results: The hypothetical intervention was cost-effective when the effect size was 7.5% compared with CAU (i.e. this proportion of people entered the model in a lower dependence health state) with an ICER of £8,690/QALY. When an effect size of 10% was assumed, the intervention dominated CAU. An intervention which costs £1000, would require an effect size of 12.5% to be cost-effective. Preserving dependence delays entry into residential care. As such, costs are higher from a societal (compared with provider) perspective. From a societal perspective, an effect size of 10% had an ICER of £8,792/QALY.

Conclusion: This study demonstrates that interventions which preserve independence in PwD may be cost-effective at realistic levels of effectiveness. The intervention costs and effect sizes presented here can be used as an approximate guide by people designing independence-preserving interventions for PwD.

Cost-effectiveness of eight system-level strategies for enhancing youth mental health: a system dynamics modelling and simulation analysis

Paul Crosland, University of Sydney

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Objectives: Mental health conditions and substance use disorders are the largest contributor to the burden of disease for young Australians aged 15 to 24 and suicide is the leading cause of death in this age group. Economic evidence can guide resource allocation decisions on the introduction or scaling up of interventions to support the mental health and wellbeing of young people. Economic evaluation using dynamic simulation modelling accounts for dynamic populations and processes, non-linearity, feedback, interaction, adaption, emergent outcomes and unintended consequences. We constructed a system dynamics (SD) model to conduct cost-utility analysis of eight interventions, individually and in combination.

Methods: A participatory model-building approach over the course of three workshops with a diverse range of stakeholders, including the expert knowledge of those with lived experience of mental ill-health and carers, was used to build a SD model of the mental health care system in the Australian Capital Territory. The model captures population and demographic dynamics, social determinants of mental ill-health, pathways to youth mental health care, service interactions and workforce capacity. The model was validated through face validity among stakeholders and by observing its ability to reproduce historic trends across observed data from the previous ten years. Both health care and societal perspectives were adopted, including productivity impacts.

Results: Family education, an online parenting program and multi-cultural informed care were dominant interventions. Technology-enabled integrated care was cost effective with an incremental cost-effectiveness ratio (ICER) of $1,572/QALY gained. The implementation of all four cost-effective interventions concurrently was anticipated to result in synergistic effects by achieving a greater degree of health impacts and overall economic gains than they would in isolation. Scenario analyses of improvements in the social determinants of health, and changes to services capacity growth rates, were also conducted.

Conclusions: The implementation of technology-enabled integrated care, family education, an online parenting program and multi-cultural informed care is supported on economic grounds. The remaining four interventions are unlikely to be cost effective unless they are accompanied by meaningful increases in services capacity growth. The advantages of taking a SD modelling approach to this economic evaluation were: accounting for the characteristics of complex dynamic systems, including the impacts on unintended consequences such as disengagement from waiting lists; the ability to quickly and easily test combinations of interventions, allowing the identification of synergistic or antagonistic effects; quantifying the consequences of increases in service capacity growth, either alone or in combination with interventions; and an interactive user interface to test scenarios.

Within trial cost-utility analysis of treatment initiation with subcutaneous ketamine for treatment resistant depression – The KADS Study

Cathy Mihalopoulos, Monash University

Co-authors: Mary Lou Chatterton, Jo Perez, Thao Thai, Jan Faller, Anthony Rodgers, Colleen Loo on behalf of the Ketamine for Adult Depression Study (KADS) Group

Objectives: Report a within trial cost-utility analysis of racemic ketamine for treatment resistant depression (TRD) from health sector (primary) and societal perspectives.

Methods: The analysis was incorporated into a phase 3, double-blind, randomised, active-controlled, multicentre efficacy trial. 179 participants with TRD received twice-weekly subcutaneous racemic ketamine or midazolam (active control) for 4 weeks. Initial dosing was fixed (Cohort 1, 73 participants), but changed to response-guided dosing (Cohort 2, 106 participants). Health sector perspective included the intervention (medication, administration, monitoring time) and additional non-trial healthcare costs. The societal perspective added transportation, carers' time, and lost productivity costs. A self-reported questionnaire at baseline, end of randomised treatment (4-weeks) and 8-weeks was primarily used to assess resource use. The costing reference year was 2018/2019 AUD. The AQoL-8D was used to derive utility values and QALYs. Base case 1 analysis included all participants randomised to Cohort 2 receiving at least one treatment (modified intention to treat) and included control arm midazolam and monitoring costs. Base case 2 excluded control group intervention costs (not routine treatment). Generalised linear models were used to estimate differences between groups for total costs and QALYs. Incremental cost-effectiveness ratios (ICERs) were calculated as the difference in average total cost divided by the difference in average QALYs between trial arms. An imputation and bootstrapping resampling method estimated 95% confidence intervals for ICERs. Sensitivity analyses varied the key parameters.

Results: After 4 weeks of randomised treatment, utility values were significantly higher for ketamine (0.435 vs. 0.352 $p<0.05$), becoming non-significant at 8 weeks. In base case 1, the 4-week health sector ICER was dominant (95% CI: dominant to $240,063/QALY gained), and the probability of falling below $50,000/QALY was 89%. At 8 weeks the health sector ICER was dominant (95% CI: dominant to $232,973 per QALY gained) with a 90% probability of falling below $50,000/QALY. Base case 2 4-week ICER was $249,250/QALY (95% CI: $261,093 to $5,411,254) and $94,125/QALY (95% CI dominant to $4,362,530) at 8 weeks. The probability of falling below $50,000/QALY was 0% at 4 weeks and 9% at 8 weeks. The results from the societal perspective are being prepared and will be presented.

Conclusions: The four-week initiation treatment phase with subcutaneous racemic ketamine would be likely considered dominant from a health care perspective when including control arm costs. When control arm costs were removed, ketamine would not be considered cost-effecting using the $50,000/QALY threshold generally accepted in Australia. Given that continued treatment would be required to maintain clinical response, additional research is required to estimate the longer-term cost-utility of this treatment.

Room B Organised Session: Economic evidence for understanding and preventing suicidal ideation and self-harm

The Impact of Child Abuse on Suicidal Ideation in Children: Evidence From South Korea

Elcin Tuzel, University of Queensland

The parent-child relationship is important to a child's mental health. In this study, we focus on suicidal ideation as an indicator of poor mental health and aim to estimate the impact of child abuse on the suicidal ideation of adolescents between the age of 9 and 21 using the Korean Youth Panel Survey (KYPS) data. We simulate an experimental counterfactual by constructing a control group as similar as possible to the treatment group using a matching method and using the event study methodology that allows testing the critical assumption (i.e., common trend assumption across the treatment and control groups) to justify the method, and further apply fixed effects (FEs) to account for unobserved individual-specific, time-invariant heterogeneity.

We show that child abuse, on average, is associated with an increase in suicidal ideation of children by approximately 6.5% in the year of the abuse, but it has no discernible effects in the following years. Our results show that being abused over multiple years, especially in consecutive years, increases the probability of suicidal ideation compared to being abused in a single year. Furthermore, child abuse is found to be associated with a higher probability of suicidal ideation in lower income families. In addition, we obtain that for children who do not have a social network in the form of sports teams, teachers or neighbours, the estimated impact of child abuse on suicidal ideation is around 2 to 4 times stronger than the effect for the children who do have a social network.

Association between geographical accessibility of electronic gaming machines and the prevalence of suicide

Lachlan Cameron, The University of Melbourne

Suicide is one of the leading causes of death worldwide. Gambling is hypothesised to be a predictor of suicide through increased financial harm and mental health problems. However, the causal impact of gambling on suicide remains unclear. Electronic gaming machines are a common form of gambling. This is particularly so in Australia, the world-leader in gambling losses per capita, due to their abundance outside of casinos. The widespread nature of electronic gaming machine venues in Australia results in a large percentage of the population living in areas with high geographical accessibility to them. Greater geographical accessibility of these venues is associated with higher rates of insolvency and mental health problems. This indicates that greater geographical accessibility of these venues may increase the risk of suicide. This study explores this relationship, investigating whether greater geographical accessibility of electronic gaming machine venues is associated with higher prevalence of suicide. This has two key contributions: it extends knowledge on the effects of high geographical accessibility of electronic gaming machines, and it improves understanding of suicide as an outcome of gambling.

This study combines data on the exact location of electronic gaming machine venues and residence of people who died by suicide for two Australian states (Victoria and Queensland) from 2001 to 2018. A grid made of 2km by 2km squares was created, spanning both states. The data sources were used to create a panel dataset of the number of electronic gaming machine venues and suicides per year in each square. A fixed effects spatial lag model, controlling for the number of electronic gaming machine venues in neighbouring squares, was used to estimate the association between a change in the number of electronic gaming machine venues in a square and a change in the number of suicides in that square. The model included fixed effects at the individual square level to account for unobserved characteristics specific to that square's geographical location that remained constant over time, and year and local government area level fixed effects to account for characteristics of the broader area that change over time.

An increase of one electronic gaming machine venue in a square predicted a 10.7% increase in suicides in that square ($p<0.01$). The evidence of an association between greater geographical accessibility of electronic gaming machine venues and higher rates of suicide suggests that reducing the prevalence of electronic gaming machine venues, or implementing interventions to limit harmful gambling at these venues, can reduce suicide rates. It also provides evidence for suicide as an outcome of gambling, highlighting the need for policy to limit gambling harm.

Preventing suicidal ideation from going 'under the radar': Understanding men's preferences for suicide prevention services to increase uptake and effectiveness

Anam Bilgrami, Macquarie University

Around 50-60% of individuals who die by suicide do not seek prior support, with these people going 'under the radar'. Currently, little is known about people experiencing suicidal thoughts who do not reach out for support. We are undertaking research to identify barriers to, and facilitators of, seeking support for Australian men within this target population. A discrete choice experiment (DCE) will be used investigate this population's preferences for suicide prevention services. A list of service attributes and levels has been constructed based on a literature review and refined through interviews with men with lived experience (N=7). The final list of attributes selected include out-of-pocket cost, service type (i.e. self-help resources, peer support, counselling, healthcare), service mode (i.e. online, phone, face-to-face), waiting time, availability, service environment (i.e. individual or group) and service linkage (i.e. to services helping with employment, finances, housing, relationships). After piloting, the final DCE will be run using a sample of 200 men from the target population.

The ultimate aim of this project is to enable the future tailoring and design of suicide prevention services to meet men's preferences. The objective is to promote increased uptake and effectiveness of suicide prevention services, prevent people with suicidal thoughts from going 'under the radar' and help optimise the use of resources dedicated to mental health care and suicide prevention. The research will also investigate preference heterogeneity across different population groups based on age, cultural background, personality traits, health status and employment situation.

Changing patterns of healthcare use and cost from LifeSpan: A complex, multi-strategy suicide prevention model to reduce self-harm

Olukorede Abiona, Macquarie University

The LifeSpan project encompasses a stepped-wedge trial approach to implement nine suicide prevention interventions across four high-priority suicide regions by the Black Dog Institute, UNSW within New South Wales (NSW), Australia. The interventions include creating awareness, reducing access to means of suicide, training frontline workers and creating clear referral pathways to provide additional support and engagements for mental health patients and the workforce. The implementation of the program took place between April 2017 and March 2020 across treatment sites.

The primary objective of this research is to investigate if LifeSpan has changed the pattern of healthcare resource use and costs by impacting help seeking behaviour and health outcomes.

We use linkage datasets from the NSW hospitalisation and emergency datasets to examine hospital admission and emergency presentations. We also administrative healthcare data records – MBS and PBS. To achieve causal inference of the estimated impacts, we use multiple data matching approaches between the intervention and control groups in combination with difference-in-differences (DiD) method. This includes synthetic control and entropy balancing methods to create natural experiment across observations.

We estimate the treatment effects of the program for utilisation and costs across linkage datasets outlined above. Hospital admissions decreased but hospitalisation costs per utilisation increased. This may indicate a reduction in self harm that would otherwise lead to hospitalisation or more hospital services are being delivered per episode. The later may also imply increased length of hospitalisation due to awareness of danger putting back into the community without support. Finally, hospitalisation results may serve as a pointer to change in the distribution of people hospitalised to older (more complex) patients. Emergency department visits were unchanged. This suggests the decrease in hospital admissions was derived from hospitals becoming less likely to admit. A reduced likelihood to admit could have resulted from a greater awareness / access to after care services from hospital staff

The use of MBS subsidised services increased but the average cost of each service decreased. This could mean that more people could be seeking care earlier (in a less complex state) due to increased awareness. Earlier care means less intense services delivered, such as a reduction in time spent with a GP. The use of PBS subsidized medicines decreased, along with the prescription fee and average cost per patient. The use of PBS subsidises medicines decreased, along with the prescription fee and average cost per patient. Seeking earlier care or reduced self harm rates may have reduced initial scripts issued and repeat scripts. Also, those using medicines maybe accessing cheaper medicines emanating from shift in medication management from GPs or shift in the distribution of those filling scripts.

Women are leading the socioeconomic gradient transition in non-communicable diseases in China: longitudinal national data analysis between 1991 and 2020

Xuemei Zhang, University of Melbourne

Background: Non-communicable diseases (NCDs) are a major contributor to health and economic burden. Analysis indicates a positive relationship between SES and NCDs in low-income countries, but the relationship becomes negative in high-income countries. This reversal of the SES-NCD gradient in different stages of economic development has been labeled the ""reversal hypothesis"". This study aims to examine the SES-NCD gradient over the past 30 years in China and further clarify the gender difference and explore the possible contributors to the difference.

Methods: Using nine waves of the China Health and Nutrition Survey (1991-2015) and six waves of the China Family Panel Studies (2010-2020), we investigated the SES-NCD gradient among participants aged 18 years and above. We used self-reported doctor-diagnosed conditions to identify NCDs and used educational attainment as the proxy of SES. Multivariable logistic regression models were used to examine changes in the SES-NCD gradient, and the Blinder-Oaxaca (BO) decomposition was used to explore the contributors to the difference.

Results: The results show that NCD prevalence increased from about 3% in 1991 to nearly 14% in 2020 in China. NCD prevalence was always lower among higher SES women compared to low SES women, whereas the prevalence was in general similar between high SES and low SES men. The regression results show that the relationship between SES and NCDs are shifting from positive to negative over the past 30 years, whereas an earlier reversal happened among women compared to men. The preliminary BO decomposition results indicated that the difference in NCD prevalence is significant at the 5% level among high and low SES women, but not among high and low SES men in most survey years. Most of the differences between high and low SES groups in men and that in women were attributed to the different distributions of explanatory variables included in the model. However, the most important contributing factors affecting the difference between high and low SES groups were different in women and men. Specifically, the differential distribution of age (positive), overweight (positive), employment status (positive), insurance (positive), region (positive), and residency (negative) contribute most to the disparity among low and high SES groups in women, whereas the differential distribution of age (positive), overweight (negative), drinking (negative), smoking (negative) and employment status (negative) contribute most to the disparity among low and high SES men.

Conclusion: Our findings suggest China has experienced a reversal in the SES-NCD gradient and women are leading the transition. Compared with men, the factors that cause the difference within women are more complex and significant. Targeted policy response is required to reduce the burden of NCDs in the transition economy, especially among low SES women.

The temporal change in life expectancy of CLL patients in Australia

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Objectives: Chronic lymphocytic leukemia/small lymphocytic lymphoma (CLL/SLL or CLL) is a common lymphoid neoplasm, however, the burden of CLL remained unrevealed in Australia. It was aimed to examine the economic burden of CLL over the past decade in Australia.

Methods: All CLL cases registered in four state/territory cancer registries (Victoria, Tasmania, ACT and Queensland) with the last follow-up by December 2018 were identified using International Statistical Classification of Diseases (ICD-10- AM code C83.0/C91.1 and histology code 9823). The data were divided into three 3-year periods (2009-2011, 2012-2014, 2015-2017) for survival analysis. Kaplan-Meier survival curves for overall survival were constructed to estimate overall survival by year and the defined periods. To extrapolate the overall survival during the follow-up periods to the lifetime time horizon (i.e. to 30 years), six parametric survival distributions (i.e. Exponential, Weibull, Log-normal, Log-logistic, Generalised-gamma, and Gompertz) were fitted to the individual patient level data against the Kaplan-Meier curve. The best fit distribution was selected based on goodness-of-fit statistics (AIC and BIC criteria). TreeAge Pro Healthcare 2021 was used to construct a two-state Markov model (e.g., alive and dead). The time to event (or life years remain) of CLL patients was calculated from the combination of mortality from the parametric survival analysis and the Australian background mortality by age. In addition, the utility weight and disability weight of CLL patients were used to estimate the quality-adjusted life years (QALYs) and disability adjusted life years (DALY), respectively. Extensive model validation was undertaken to examine the robustness of base-case results.

Results: A total of 7894 patients (predominantly males 62.77% and aged 60+ ≈80%) were included in the analysis. The incidence of CLL increased steadily in period 3 compared to periods 1 and 2 (28.46 vs 21.21 and 20.89 per 100,000 person-years). The base case results suggested a slight increase in the remaining life expectancy for CLL patients over the three periods: 10.67 years (2009-2011), 10.80 years (2012-2015) and 12.83 years (2015-2017) respectively. The QALYs showed a similar trend 9.065 (2009-2011), 9.178 (2012-2015) and 10.905 years (2015-2017) separately, while DALY decreased over the same periods: 7.970 (period3) vs 9.026 (period 1) and 9.137 (period 2). Taking period 1 as the reference period, the incremental remaining life expectancy, QALY and DALY were 0.132, 0.112, 0.111 (period 2) and 2.164, 1.839, –1.026 (period 3) respectively.

Conclusions: The life expectancy and QALY for CLL patients increased over the past decade, accompanied by reduced DALY loss in the latest period in Australia. It well reflects the improvement in CLL treatment, including standard rituximab combination therapy and the availability of new agents (such as BTKi) in recent years.

The Economic Burden of Autosomal Recessive and X-Linked Conditions Associated with An Extensive Gene Panel Screening in Australia

Tianjiao Wang, Griffith University

Co-authors: Tianjiao Wang, Paul Scuffham, Josh Byrnes, Martin Downes

Aim: Autosomal recessive (AR) and X-linked (XL) conditions are individually rare but collectively common and the burden of these conditions is unclear. The aim of this chapter is to investigate the economic burden of conditions screened by the Mackenzie Mission carrier screening panel.

Methods: The information associated with carrier frequency, lifetime cost, and life expectancy were collected for each selected gene on the Mackenzie's Mission list based on available sources.

Results: The ten most frequent conditions and their associated genes were: thrombophilia due to protein C deficiency (PROC), thrombophilia due to protein S deficiency (PROS1), CF (CFTR), Charcot-Marie-Tooth disease type 4D (NDRG1), emphysema-cirrhosis due to AAT deficiency (SERPINA1), combined pituitary hormone deficiency type 2 (PROP1), congenital primary aphakia (FOXE3), septo-optic dysplasia (HESX1), SMA (SMN1), and phenylketonuria (PAH). In terms of lifetime cost, there were three conditions and their associated genes exceeding $10 million: glycogen storage disease II (GAA), perinatal lethal Gaucher disease (GBA), and mucopolysaccharidosis II (IDS), which carrier frequency ranked as 23rd, 48th, and 1,189th respectively. There were 36 genes and their associated conditions with zero life expectancy, and the range of lifetime cost was from $31,421 to $516,960. None of them exceeded $1 million.

Conclusion: Carrier frequency is a key factor when considering the burden of the screened conditions but using as a single criteria may exclude important conditions with less carrier frequency but with higher lifetime cost. As the advances of medical technologies, more effective but extremely expensive treatments will be developed, which will dramatically increase the economic burden for treating these conditions. Future studies investigating the lifetime cost are needed.

Substantial health economic benefits with increased access to Multiple Sclerosis Specialist Nurses in Australia: Policy implications for healthcare resource decision makers

Julie Campbell, University of Tasmania

Co-authors: Jing Chen, Belinda Bardsley, Sue Shapland, Bruce Taylor, Fiona McKay, Ingrid van der Mei

Objectives: Multiple sclerosis (MS) is a high cost/burden chronic neurological disease with accelerating prevalence (33,335 cases in 2021, 30% increase from 2017), costing Australian society $2.5 billion in 2021 (direct costs and lost productivity; average of $73,457 per person with MS). Australian MS Specialist Nurses (MS Nurses) play an integral role in the care and support of people with MS and their families. MS Nurses care has been shown to expedite clinical reviews, avoid unnecessary emergency presentations and hospital admissions. We aimed to: 1) describe the patterns of MS Nurse care provision; 2) describe the value and effects of MS Nurse care for consumers, and 3) estimate the cost savings resulting from MS Nurse care.

Methods: The 2020 MS Nurses Survey was disseminated within the Australian MS Longitudinal Study (AMSLS). Sociodemographic/clinical data, and patterns of access for MS Nurse care were collected. We estimated potential cost savings from a health payer and societal perspective if people without access to a MS Nurse had access. Costs were calculated using a mainly bottom-up costing methodology and average costs attributed to people living with MS-related no disability, mild, moderate, and severe disability were inflated using the Reserve Bank of Australia's Inflation Calculator (2021 AUD). We estimated the proportions of people without access to a MS Nurse across the disability severity categories and assumed avoided costs if people without access to a MS Nurse service had access. Assumed cost reductions of 5%, 10%, 15% or 20% included avoided direct medical costs from reduced GP/neurologist appointments, reduced admitted patient or emergency department episodes, and improved health outcomes leading to improved health-related quality of life and work productivity.

Results: N=1417 AMSLS participants were included in the study. Mean (SD) age was 58 (11.3) years, 79.6% were female (typical of MS), and 31.5% did not have access to a MS Nurse. Regarding the difference it would have made if they did not have access to a MS Nurse service over the past 12 months, 21.2% would have seen their GP more, 21.1% would have asked to see their neurologist more, and 5.3% would have presented to the hospital or the emergency department. We estimated that if access to a MS Nurse service was provided to those people living with MS currently without access (n=7,938), then societal cost reductions of 5%, 10%, 15% and 20% would generate annual cost savings of $32.2, $64.3 $96.5 and $128.7 million respectively (2021 AUD).

Conclusions: substantial annual costs savings to Australian society would be realised with a relatively small allocation of funding to employ more MS Nurses. Based on our MS Nurses study, MS Australia has sought an additional $6.5m per year from the Australian Government to provide access to 65 more MS Nurses. If we assume a 15% cost reduction, this generates almost $90m in savings per year to Australian society.

Income Shocks and Human Capital Development

Sundar Ponnusamy, Monash University

Objectives: Economic opportunities are a key deciding factor of early human capital development, especially in developing countries, which generally lags compared to developed economies. In this study, I examine the effects of income shocks, proxied by rainfall, on various outcomes related to a child's physical and cognitive development in Pakistan. The focus of this study is two-fold: First, the primary aim is to understand the effects of contemporaneous income shocks on a child's cognitive development. Here, I provide insights into potential causal pathways through which rainfall shocks can affect student learning. Second, as better physical conditions can help cognitive development, I explore the effects of early-life rainfall shocks (1000-day critical cycle) on a child's early physical development.

Data and Estimation Method: The outcome variables related to child cognitive development are from the Annual Status of Education Report (ASER), which provides arithmetic and reading abilities for around 670,000 children aged 5—16, and their current schooling enrolment status for the years 2012-2016. Information on child physical development, such as height-for-age and weight-for-age, is from Multiple Indicator Cluster Surveys (MICS). Finally, weather data is sourced from Willmott and Matsuura (2020), Version 5.01.

Then, using a standard difference-in-differences style framework, I investigate the effects of income shocks on children's cognitive and physical development.

Findings: I identify that agricultural income shocks affect children's learning outcomes, with considerable heterogeneity based on age. Results suggest that the better income years result in lower test outcomes among older children (aged 11-16), especially among boys, whereas the younger children (aged 5--10) seem unaffected. Increases in child employment and decreases in school attendance during better rainfall years are found to be potential mechanisms behind the adverse effects observed for older children.

Second, I examine the effects of early-life rainfall shocks (in-utero year, birth year, and age one) a child has faced on their physical development. Children (age 0—4) born during better early life rainfall years exhibit higher levels of physical development, i.e., less likely to be malnourished or stunted. Girls are affected the most long-term. This also implies that droughts have adverse consequences on children's physical development, which can negatively affect cognitive development in the later stages.

The Effect of Cyberbullying Victimisation on Adolescent Mental Health: Evidence from Australia

Keshini Muthukuda, The University of Queensland

Co-authors: Claudio Mezzetti, Haishan Yuan

Background: The prevalence of cyberbullying among adolescents in the digital age has become a critical problem with severe consequences for their mental health. While previous studies have shown a negative association between cyberbullying victimisation during adolescence and mental health outcomes, the extent of its impact on specific mental health outcomes remains relatively unexplored.

Objective: This study aims to quantify the impact of cyberbullying victimisation on adolescent mental health.

Data: We use nationally representative data from the Longitudinal Study of Australian Children (LSAC). Our sample represents a balanced panel of 1,470 adolescents who are observed from age 10 to 15 years. Our measure of mental health is based on the Strength and Difficulties Questionnaire (SDQ), a validated questionnaire that is highly predictive of mental illness.

Method: Our identification strategy relies on a within-individual fixed effects model, enabling us to capture unobserved time-invariant heterogeneity. To account concerns of reverse causation between cyberbullying and mental health, we control for the pre-existing mental health conditions of the child. Additionally, we complement our analysis by applying the method proposed by Oster (2019) for selection on unobservables and Arellano and Bond's (1991) estimator to address potential issues of omitted variable bias and reverse causality.

Results: We find that cyberbullied adolescents experience poorer mental health outcomes compared to non-victims. This effect is stronger for boys than girls. We also find that double victimisation, which involves both traditional and cyberbullying, as well as instances of violent cyberbullying, have a significant negative impact on the mental health of adolescents.

Policy Implications: The findings underscore the importance of implementing policy measures aimed at preventing and addressing cyberbullying, with a particular focus on adolescents. Additionally, policy efforts should prioritise addressing instances of violent cyberbullying and provide mental healthcare support for adolescents who experience double victimisation.

Maternal involuntary job loss and child mental health in Australia

Dao Nguyen Dinh, The University of Queensland

Co-authors: Luke Connelly; Stephen Birch; Ha Nguyen

Existing literature records significant impacts of unemployment and layoffs on individuals' health. However, few studies investigate the causal effect of parental job loss on children's health (Schaller and Zerpa, 2019), particularly mental health. Child health is an important indicator that reflects a potential mechanism for the intergenerational transmission of financial shocks. This study aims to estimate the impact of maternal involuntary job loss on the mental health of Australian children under 16.

The study used the Longitudinal Study of Australian Children (LSAC), a nationally representative dataset on children collected every two years since 2004 with two cohorts (B-infant and K-child cohorts). Each cohort's LSAC sample consists of approximately 5,000 children collected with a two-stage clustered sampling technique with postcodes as the primary sampling unit. We restrict our analysis to a subset of children residing with their biological mothers. We also limited the sample to mothers working in Wave 1 to lessen the bias resulting from their prior unemployment history.

Maternal involuntary job loss is defined as mentioned reasons for stopping work including economic reasons, dismissal, health-related reasons, or the end of temporary or seasonal employment. This definition has been extensively used in the literature. In addition, our outcomes for evaluating child mental health are based on the Strengths and Difficulties Questionnaire (SDQ), focusing on hyperactivity/inattention, emotional problems, and conduct disorders.

We are concerned about the endogeneity issue due to bias from omitted variables, reverse causality, and measurement error. We propose using the two-way fixed effects (FE) estimator with the local unemployment rate as the instrumental variable (IV). We found a weak correlation between the local unemployment rate and maternal involuntary job loss, invalidating the IV. Therefore, we use Lewbel's (2012) method combining with FE to construct instruments by exploiting heteroskedasticity in available regressors.

The results indicate maternal involuntary job loss is detrimental to children's mental health, as measured by hyperactivity problems and conduct disorders. The effect of maternal job loss on these health outcomes decreases when we account for maternal health, maternal smoking habits, and maternal parenting. Single mothers are more likely to experience involuntary job loss and more significant mental health damage to their children. In addition, the results indicate that maternal involuntary job loss has more significant effects on boys. The results are robust to a series of sensitivity and robustness tests.

Lewbel, A. (2012). Using heteroskedasticity to identify and estimate mismeasured and endogenous regressor models. Jour of Business and Economics Statistics, 30(1), 67-80.

Schaller, J., & Zerpa, M. (2019). Short-run effects of parental job loss on child health. American Journal of Health Economics, 5(1), 8–41.

Agricultural Shocks and Child Health: The Impact of Desert Locust Outbreaks on Child Health in Ethiopia

Douglas Kazibwe, Deakin University

Co-authors: Jinhu Li

Background: Agricultural shocks in developing countries may lead to detrimental impact on child health and cast long-lasting shadow on socio-economic outcomes. Ethiopia is one of the countries located within the locust recession areas, where locust outbreaks often threaten livelihoods and food security. The frequency and severity of locust outbreaks are on the rise in recent years due to the changing climate. The Food and Agriculture Organization (FAO) has reported major outbreaks in Ethiopia in 1987, 2007 - 2009, and the recent crisis in 2020-2021, where an upsurge started in 2019. We evaluate the impact of prenatal exposure to locust during the 2007-2009 outbreaks on child health and explore potential channels.

Methods: Our identification strategy exploits variations in exposure to locust outbreaks across different birth-cohorts and across geographic locations. We employ a Difference-in-Differences approach to estimate the causal impact of locust outbreaks on child health, using detailed data on the geographical and temporal incidences of locust swarms extracted from FAO Locust Hub and child anthropometrics data extracted from Demographic and Health Surveys (DHS). We calculate the distance between DHS enumeration clusters and locust swarm events to determine if an area (defined by a DHS survey cluster) is affected. In the main results, locust exposure is defined as the presence of a locust swarm event within 10 km radius of a survey cluster.

Essentially, we compare child health outcomes between the treatment and control groups, where the treatment group consists of cohorts exposed in-utero to locust outbreaks (i.e., children born between April 2007 and May 2010 in a locust affected area) and the control group consists of children not exposed in-utero to locust outbreaks.

Results: Children exposed in-utero to locust outbreaks have on average a height-for-age that is 1.1 points lower the unexposed, representing about 18% decrease among sampled children. In-utero exposure to locust outbreaks increased stunting rates by 25 percentage points (pp) and increased underweight rate by 12 pp. These translates into an increase of about 15% and 7% of the average stunting and underweight rates. The impact on wasting is not statistically significant. These estimates are not sensitive to the distance threshold chosen in our main specification (i.e., 10-kilometre radius), with the effects remaining statistically significant but decreasing in size as the threshold increases progressively from 10 to 70 km.

Conclusion: This study provides new evidence on the consequences of agricultural shocks on child health. Our findings have relevant implications on policies aiming at improving food security, agricultural investment, and the provision of safety nets to households within areas prone to locust invasions.

Room E Organised Session: Enhancing Measurement and Valuation of Health-Related Quality of Life in Children and Young People: Challenges and Knowledge Gains

A longitudinal evaluation of the psychometric properties of the PedsQL GCS in children with common childhood health conditions

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Background: The Paediatric Quality of Life Inventory™ v4.0 Generic Core Scales (PedsQL GCS) is one of the most widely used generic instruments to assess health-related quality of life (HRQOL) of the general childhood population. The PedsQL GCS was developed for children and adolescents aged 2–18 years old, but there is a lack of information about its psychometric performance in children of different ages. This study assessed the psychometric properties of the PedsQL GCS in children with common health conditions in early childhood (2–5 years old), middle childhood (6–11 years old), and adolescence (12–17 years old).

Methods: The study used data from the Longitudinal Study of Australian Children (LSAC), for children aged 2-17 years, with at least one of the following six parent-reported health conditions: eczema, overweight or obesity, vision problems, attention deficit hyperactivity disorder (ADHD), hearing problems, and learning difficulty. The performance of the parent proxy-reported PedsQL GCS for each psychometric property (acceptability, reliability, validity, and responsiveness) was assessed against established criteria.

Results: The study sample included 9,317 children and 50,934 longitudinal observations with analyses conducted cross sectionally by age group for all psychometric properties except known group validity, which accounted for the longitudinal data using general estimating equations. Preliminary results indicate that across the six health conditions, acceptability of the PedsQL GCS

measured through missing data was poor (>5%) in early childhood, variable in middle childhood, and acceptable in adolescence; floor and ceilings effects were acceptable (<10%) throughout childhood and adolescence (floor effects=0%; ceiling effects range=0–5%). The PedsQL GCS total score scale and the four summary score subscales showed strong internal consistency (Cronbach's alpha (α) ≥ 0.7; item-total correlations ≥ 0.2) across the six health conditions throughout childhood and adolescence (α range=0.72–0.93; item-total correlations range=0.28–0.80), except for the school functioning subscale in early childhood for most of the conditions (α range=0.52–0.80; item-total correlations range=0.18–0.71). Known group validity was strong for the PedsQL GCS throughout childhood and adolescence for children with and without overweight, obesity, and learning difficulty. There was also strong known group validity for conditions measured only in middle childhood and adolescence, including ADHD, vision problems, and hearing problems. The responsiveness of the PedsQL GCS was variable for most of the six conditions across childhood and adolescence.

Conclusion: This study builds on previous work and extends the evidence base for psychometric performance of the PedsQL GCS over the childhood life course. Overall the PedsQL GCS demonstrates good measurement properties for a range of common childhood health conditions and across ages groups.

A systematic review of the relative social value of child health and adult health

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Objectives: The purpose of this review was to synthesise knowledge on the social value for health gains for children and young people (less than 18 years) compared to adults.

Methods: Quantitative and qualitative studies that evaluated the willingness of the public to prioritise treatments for children and young people over adults were included. A search to December 2021 was undertaken. Quality of reporting was assessed using a checklist derived from the best-practice recommendations for stated preference studies by Johnston et al (2017). Findings were tabulated by study type (matching/person trade off (PTO), discrete choice experiment (DCE), willingness to pay (WTP), opinion survey or qualitative). The proportion of studies providing evidence in favour of prioritising children were considered in total, by type of health gain (length of life or quality of life), study methodology and respondent characteristics.

Results: In all 85 studies were included; classified as WTP (n=9), matching/PTO (n=12), DCEs (n=29), opinion surveys (n=21) and qualitative (n=14), with one study simultaneously included as an Opinion Survey. There were areas of concern regarding quality of reporting, particularly in relation to generalisability and ensuring that the scenarios and questions were understood. From 85 studies 80 results could be ascertained. There was a high degree of heterogeneity in age categories for children and adults across the studies including use of descriptive terms (e.g. ‘child’, ‘adult’), broad and narrow age ranges and discrete ages. Across all studies irrespective of method or other characteristics, 42 findings supported prioritising children, while 12 provided evidence favouring adults in preference to children. The remainder supported equal prioritisation or found diverse or unclear views. Of those studies considering prioritisation within the under 18 age group, nine findings favoured older children over younger children (including for life saving interventions), six favoured younger children, and five reported diverse views.

Conclusion: The balance of evidence suggests the general public favours prioritizing children and young people (<18 Years) over adults, but this view was not found across all studies. There are several key methodological considerations that continue to contribute to the uncertainties in quantifying social preferences. Of particular importance is the influence of question framing, and contextual detail provided to respondents. This is not limited to positive and negative framing but also the extent to which concepts of opportunity costs and trade-off between equity and efficiency are captured and understood. Despite the large number of studies there are research gaps in understanding the public’s views on the value of health gains for very young children and the motivation behind the public’s views on the value of child relative to adult health gains.

Are Quality Adjusted Life Year (QALY) gains in children of similar value to those in adults? A qualitative exploration with young people and adults

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Objectives: To explore the views of the Australian public on whether children and young people's (CYP's) health gains should be valued as equivalent to gains for adults in health technology assessment (HTA) processes. We also sought to describe how the public believes decision-makers should navigate these social values in practice, specifically regarding the funding of health technologies for CYP compared to adults.

Methods: Individual in-depth, semi-structured interviews were conducted with 10 young people (aged 15-17 years) and 20 adults from the general population. Participants were purposively sampled for age, gender, self-described general health, parental status, and Relative Socio-economic Disadvantage of their area of residence (SEIFA). Prior to the interviews, participants completed an information survey to familiarize themselves with key concepts. The interviews, ranging from 30–63 minutes, followed a semi-structured guide. Transcripts were analysed using constant comparison.

Results: The findings suggest that the public varies considerably in the extent to which they believe health gains in CYP are equivalent to adults and the relevance of CYP status within a social values framework. When the status of CYP was considered relevant, participants were divided about whether health gains in CYP should carry greater weight compared to other individual characteristics in HTA processes. While most disagreed with such weighting and emphasized the importance of considering contextual factors and case-by-case assessment, those who supported weighting did so primarily based on principles of equity. They believed that this approach could serve as a mechanism to address social and economic disparities and restore health equity for those specific groups within society. Additionally, participants who did not support weighting also considered equity important but framed it in terms of the individual health needs of those affected, rather than the broader demographic(s) they belonged to. Notably, young people placed greater importance on equity considerations compared to adults, some of whom believed that all individuals should be treated equal in HTA processes. However, few adults and none of the younger participants considered CYP status as the most important factor under equity considerations, as they identified disadvantaged minority groups, such as Aboriginal and Torres Strait Islander people, as being more relevant to equity than CYP status.

Conclusions: This study highlights the complexities involved in navigating social values within HTA processes, particularly in relation to submissions for CYP compared to adults. While participants recognised the importance of social values and accounting for equity considerations in the funding of health technologies, they also preferred flexibility over rigid decision-making criteria. There was disagreement whether CYP should be isolated as a criterion for decision-making about the value of health gains.

Social value of a QALY: Exploring potential spill-over benefits

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Background: A key normative question in societal health care decision-making is whether QALY gains generated from treatment for children and young people should be valued differently to QALY gains generated from treatment for adults. To date, the literature has primarily focused on social values regarding the type and size of health gain, age, and severity. When thinking about the benefits of treatment for children, it is also important to consider potential for spill-over benefits for education participation and carers' wellbeing. This study builds on previous work by not only investigating preferences and relative weights assigned by adults in the general population to QALY gains, beneficiary age, severity and type of QALY gain, but also explores social preferences for potential benefits to the beneficiary's own education or the lives of their carers. It also explores social values for a wider range of age groups.

Methods: A Discrete Choice Experiment (DCE) was conducted online with 500 adults in Australia. Respondents compared two treatments for medical conditions and chose the treatment they preferred to be funded. Think aloud one-on-one interviews with 7 adults from the general population informed the DCE design. Attributes included: QALY gain, type of QALY gain, age, quality of life without treatment, life expectancy without treatment, participation in education and impact on carers lives. Choice data were analysed using a mixed logit model to determine preferences and calculate the relative weights.

Results: Preliminary results indicate individuals preferred to fund treatments providing greater QALY gains. Respondents prioritised treatments that increased participation in education and improved carer wellbeing. Children were prioritised over adults and younger adults were preferred over older adults. Across the ten age groups considered, children 1-5 year olds were most preferred. Severity, expressed in terms of quality of life states if untreated were prioritised, while remaining life expectancy without treatment, was not a significant predictor of preferences. The type of QALY was also important, with respondents favouring treatments that generated a mixture of life extension and improvement in quality of life compared to treatments that extended life but resulted in reduced quality of life.

Conclusion: Despite usual results such as larger health gains being preferred, gains to children were preferred over those for older groups. The results also indicate a willingness to trade off health gains for non-health benefits in education and to the lives of carers, indicating a social value attached to spill-overs beyond direct health benefits to the individual receiving treatment.

Parallel Session 6

Room A Healthcare Cost 1

Counting the Costs: A Comprehensive Study of Cancer-related premature mortality and its effects on India's Economic Productivity

Koushik Roy Pramanik, IIPS

Background and Objectives: Over two-thirds of the world's 8.2 million cancer deaths occur in low and middle income countries. The burden of cancer in developing countries has been described using incidence, mortality, and survival. Also economic costs incurred due to productivity, necessitating policy measures. Our aim was to estimate the value of productivity lost in 2020 due to cancer-related premature mortality in India.

Methods: Using the human capital approach, we employed an incidence-based framework. The Friction Cost Approach was developed to assess actual rather than potential productivity loss in response to critiques of this Approach. We used annual adult cancer deaths from GLOBOCAN2020 to estimate the years of productive life lost between cancer death and pensionable age in India, valued using ILO and World Bank data for wages, and workforce statistics. Sensitivity analyses examined various methodological assumptions.

Findings: The total cost of lost productivity due to premature cancer mortality in India in 2020 was $7.5 billion, representing 0•36% of its gross domestic product. Proportional to country's population size, India had 5.6 million YPLL (Years of Productive Life Lost), with $21,939 per cancer death. In India, total costs and cost per death among females (total $2.1 billion, $11,988 per death) were less than half of those of males (total $5.4 billion; $32,950 per death). Total productivity losses were greatest for lip and oral cavity cancers ($0•75 billion) in India. In India, increasing female employment participation by 1% annually led to an increase in productivity losses and enhanced equity between male and female productivity losses.

Policy Implications: In such developing economies like India, specific localized methods are needed to lessen the financial toll of cancer. The public health and economic performance of India might be significantly improved by concentrating on tobacco control, vaccine campaigns, and cancer screening, along with availability of adequate treatment.

What is the full cost of physical (in)activity related conditions, including mediated effects and injuries?

Emily Bourke, Australian Institute of Health and Welfare

Co-authors: Tony Blakely, Ralph Maddison

Background: Physical activity is associated with a range of health benefits, which have flow-on effects in terms of avoided health spending. On the other hand, physical activity can cause injuries that are associated with substantial health spending. Preliminary estimates suggest that participation in physical activity saves the health system $484 million per year on diseases associated with inactivity, while injuries from physical activity cost substantially more ($1.4 billion). However, the benefits of physical activity are under-estimated, as the full range of benefits associated with activity are not included in current models. Further research indicates physical activity has a protective effect on depression, anxiety, and falls, while also reducing blood pressure, cholesterol, plasma glucose, and maintaining bone mineral density.

This study investigated the association and related costs between physical activity and the risk of high body mass index (BMI), blood pressure (BP), cholesterol, fasting plasma glucose (FPG), and low bone mineral density (BMD) in adults, which are each risk factors for a range of additional chronic diseases. It also estimated the associated costs for depression, anxiety, and falls.

Methods: A systematic review was undertaken using the MEDLINE, ProQuest Central, Scopus, EMBASE, SPORTDiscus, and Cochrane Library databases up to 1 June 2022. We included systematic reviews reporting physical activity levels as an exposure and at least one of high BMI, BP, Cholesterol, FPG and BMD as outcomes.

Relative risks from the systematic review were then used in a comparative risk assessment framework to estimate burden of physical inactivity through metabolic risk factors (BP, FPB, BMD) to their associated chronic diseases, and directly to depression, anxiety and falls, for Australian adults. Activity levels were grouped into sedentary, low, moderate and high based on METs/week undertaken. The population attributable fraction calculated for each risk factor and condition was applied to disease cost data in the AIHW disease expenditure database, by age and sex.

Results and conclusion: This work is currently ongoing, and estimates will be made publicly available on 7 September 2023 through the AIHW website.

Studies using direct associations to estimate attributable burden underestimate the health burden due to insufficient physical activity and the importance of undertaking regular physical activity for public health. Our analysis indicates that a large proportion of burden from inactivity is mediated through other risk factors, with additional burden also experienced from mental health and falls. Including a wider range of outcomes for activity will improve public health models, and highlights the importance of undertaking regular physical activity to prevent chronic disease.

People with chronic conditions' experiences of out-of-pocket costs in Australia: findings of a systematic review of the qualitative literature

Jane Desborough, Australian National University

Co-authors: Xin Wang, Shelley Wang, Anne Parkinson, Danielle Butler, Kamania Butler, Jillian Kingsford Smith, Hsei Di Law, Vanessa Fanning, Fiona Hodson, Elisabeth Huynh, Samar Ibrahim, Emily Lancsar, Julie Veitch, Leanne Watts

Objectives: Compared with many developed nations, Australians have substantial out-of-pocket (OOP) health costs, despite having universal health insurance coverage. This significantly impacts access to care and subsequent wellbeing, particularly for priority populations, including those on lower incomes or with multimorbidity and chronic illness. However, little is known about the subjective experiences of people with chronic conditions in managing OOP costs. Our aim was to gain an overview of the experiences of people with chronic diseases in Australia regarding OOP costs for healthcare and medicines, including the decisions they are faced with and the trade-offs they make to manage their health.

Methods and Analysis: We conducted a systematic review of the qualitative literature in accordance with the PRISMA guidelines (PROSPERO: CRD42022337538), searching: Pubmed, CINAHL Complete (EBSCO), Cochrane Library, PsycINFO (Ovid) and EconLit databases. Studies were included if they reported experiences of non-hospital-based treatments in Australia, from 1999 to present, and included at least one of 10 key chronic conditions as defined by the Australian Institute of Health and Welfare. Both deductive and inductive analysis was supported through the use of NVivo 12 software.

Results: Of 853 studies screened, 32 were included for analysis. We identified four categories, within which the subjective experiences of OOP costs for people living with chronic disease in Australia were described: 1) Managing direct and indirect disease-attributable costs; 2) Navigating the system for financial support; 3) Decision-making and trade-offs; and 4) Emotional, physical, and temporal costs of chronic conditions. Sub-categories were identified within each of these. Overall, people with chronic conditions described substantial challenges in accessing healthcare, including lack of access to bulk billing, unaffordability of gap payments for consultations, and the high cost of medications. For many, ill health resulted in reduced or lost employment, compounding these challenges. Management strategies included reliance on family and charities, and required personal cost-benefit analyses regarding potential trade-offs between receiving optimal health care and foregoing necessities, many of which also impacted their health and families. Some people described no OOP challenges, largely due to their favourable financial circumstances.

Conclusions: This review provides critical evidence to understand the daily impacts of OOP health costs on individuals and families in Australia. It provides insight into factors that differentiate those who battle to afford these costs from those who do not. At this time of Australian health policy reform, this research provides new and important evidence to inform health financing and may enhance the equity and progressivity of the health system. It will also inform attribute development for a related discrete choice experiment.

Room B Organised Session: Smoking, quitting, and vaping – new insights from health economics

Cost-effectiveness of preoperative smoking cessation to prevent surgical complications in people undergoing oesophageal cancer surgery

Nikki McCaffrey, Deakin University

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Introduction: People living with cancer who smoke have an increased risk of postsurgical complications. Quitting smoking significantly improves surgical outcomes, shortens hospital stays, and reduces the risk of cancer recurrence and death. Contemporary population estimates of the shorter term economic benefits of routinely providing smoking cessation care in health services for people undergoing cancer surgery are unknown. Consequently, this analysis evaluated, for the first time, the cost effectiveness of providing preoperative smoking cessation interventions to prevent surgical complications in people undergoing oesophageal cancer surgery in Australia.

Methods: A decision tree model was developed to estimate the incremental cost per postsurgical complication avoided from offering brief smoking cessation advice or brief smoking cessation advice plus behavioural counselling and nicotine replacement therapy (NRT) compared with standard care, from a hospital provider perspective. The model included the cost (2019 $AUD) and effectiveness of providing brief advice (systematic review, expert opinion) or brief advice plus behavioural counselling and NRT (systematic review), and the incidence and cost of hospitalisations with and without postsurgical complications in people undergoing oesophageal cancer surgery (observational study).

Results: Preliminary, deterministic analyses suggest brief preoperative smoking cessation advice, and brief advice plus behavioural counselling and NRT cost less than standard care and reduce complications, i.e., the interventions were dominant compared to standard care. For brief advice, there was a 0.34% difference in postsurgical complication rates compared with standard care (40.7% vs 41.1%), whereas for brief advice plus behavioural counselling and RT there was a 3.99% difference (37.1% vs 41.1%). The estimated cost of brief advice, and brief advice plus behavioural counselling and NRT was $13 and $29 respectively. Behavioural counselling sessions were assumed to have no cost post-referral from a hospital provider perspective given freely available call-back telephone counselling provided through Quitline and individual and federal government funded NRT. Overall

expected hospital-provider costs were slightly lower for brief advice, and brief advice plus behavioural counselling and NRT ($38,647 and $37,821 respectively) compared with standard care ($38,713). The impact of uncertainty around the model input values using probabilistic sensitivity analysis (10,000 Monte Carlo simulations) will also be estimated.

Conclusions: The preliminary findings suggest that implementing brief advice to quit smoking, with and without behavioural counselling plus NRT in patients undergoing oesophageal cancer surgery could reduce postsurgical complications and morbidity for patients and save hospital provider costs. Communicating shorter term economic benefits could help promote adoption of evidence-based practice in health se.

The impact of psychological distress and smoking on household expenditure

Anita Lal, Deakin University

Co-authors: Shiva Ganjali, School of Medicine, Faculty of Health, Deakin University; Michelle Scollo, Cancer Council Victoria; Nikki McCaffrey, Nikki McCaffrey, Deakin University, Deakin Health Economics, Institute for Health Transformation, School of Health and Social Development, Deakin University and Cancer Council Victoria; Mohammadreza Mohebbi, Biostatistics Unit, Faculty of Health, Deakin University

Background: Countries with best practice tobacco control measures have experienced significant reductions in smoking prevalence, but inequalities in smoking rates for people with mental illness remain. Adults with a mental illness have higher rates of smoking and higher financial burdens from smoking than the general population. This study aims to explore the joint impact of psychological distress and smoking on household expenditure in Australia.

Methods: Daily smokers of tobacco products and ex-smokers were compared using the Household, Income and Labour Dynamics in Australia Survey, over 3 waves. Adults who never smoked were not included. Participants were continuing sample members across waves. Psychological distress was indicated using the Kessler Psychological Distress Scale (K10) (low, moderate, high, and very high). Expenditure variables investigated included groceries, alcohol, motor vehicle fuel, health practitioners, insurance, education, and meals eaten out. Regression models using the generalized estimating equation technique were employed to compare expenditure data aggregated across the waves while accounting for within-participant autocorrelation and controlling for socioeconomic position, level of education, age, and gender.

Results: The rates of smoking by level of psychological distress were 11% low, 14% moderate, 23% high and 46% very high. Adults with very high levels of psychological distress who smoked had significantly lower expenditure per year compared to ex-smokers in the following categories: groceries ($920), (95%CI: $190–$1650), meals out ($739) (95%CI: $329–$1149), motor vehicle fuel ($656) (95%CI: $180–$1132) and health practitioners ($681) (95%CI: $273–$1089).

Conclusions: Smoking cessation for those with high levels of psychological distress could lead to reallocation of spending which could have positive impacts on households and their local communities.

Systematic review of population policy modelling studies of e-cigarette regulations

Louisa GordonGanguly, QIMR Berghofer Medical Research Institute

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Introduction: Evidence on the safety and the long-term harmful effects of e-cigarettes is gradually-emerging. Public policy makers are deliberating on how to manage the duality of allowing nicotine vaping products to be accessed by smokers wanting to quit smoking versus stemming the sharp uptick in adolescent use who have never smoked. Health economic simulation modelling of hypothetical policy scenarios can assist in determining the long-term population consequences of e-cigarette use in the wider context of tobacco policy.

Methods: A systematic review was undertaken and registered with PROSPERO. The research question was 'Do population-based policies that restrict the use of e-cigarettes have net benefits or net losses to health systems compared with policies that allow less restrictive or unrestricted access?'. English language studies were searched from six online databases (the Cochrane Library (NHSEED), EconLit, Embase, PubMed, Scopus and Web of Science). No restriction on dates were made. Included articles were independently assessed for quality of reporting and scientific methods by two reviewers. The quality of reporting will be assessed using Erdemir's (2020) credible practice 10 rules for modelling and simulation in healthcare.

Results: Seven studies were identified covering the populations of Canada, US, UK, Singapore, Australia and New Zealand. All countries have advanced tobacco control policies towards the goals of the World Health Organization Framework Convention for Tobacco Control, yet all have diverse e-cigarette policies ranging from complete bans of e-cigarettes (Singapore) to laissez-faire approaches (New Zealand). All studies involved lifetime Markov simulation models. Differences included the use of open vs closed cohort models, different critical input values, definitions of smokers/vapers, cohort ages and other structural differences. Overall, the findings showed mixed results from less restrictive e-cigarette policies with some predicting net population harms (years of life lost and higher costs) while others showed net benefits. The quality of the studies varied.

Conclusions: Opposing health economic conclusions for supporting restricted versus unrestricted population access to e-cigarettes arose from substantial differences in approaches, assumptions about model inputs and model structures. In the presence of such high uncertainty about behavioural and scientific evidence populating these models, adequate sensitivity analyses were lacking. Further work is needed to strengthen policy modelling for e-cigarettes and help understand the impact of newly announced Australian regulations on curbing e-cigarette supply and banning non-nicotine e-cigarettes.

Room C Organised Session: Assessing Medicare Programs: Evidence, Impacts and Policy Perspectives

The anticipatory effects of Medicare Pharmaceutical Benefits Schemes' Safety Net program

Yuting Zhang, University of Melbourne

Co-authors: Karinna Saxby

Objectives: Australians can obtain subsidized prescription drugs listed on the Medicare's Pharmaceutical Benefits Schemes (PBS). In addition, once patients' spending on medications reach certain thresholds in a calendar year, they can obtain medications at reduced cost for the rest of the year under the PBS's Safety Net program. Currently, the PBS Safety Net threshold for patients with a concession card is $262.8 and $1,563.5 for general patients. The threshold is applied to a family unit. After reaching the Safety Net threshold, general patients pay for further PBS prescriptions at the concessional co-payment rate and concession card holders are dispensed PBS prescriptions for free. We study how people respond to reaching their safety net. Specifically, how they change their medication consumptions after reaching the threshold, and whether they anticipate reaching the threshold and change their behavior before.

Methods: We use 2011-2021 national Medicare PBS data linked with the Australian Census data. We identified general patients and concession card holders because their copayments and safety net thresholds differ. We calculated proportions of people reaching the safety net thresholds each year and examined their medication use patterns each month before leading to and after reaching the safety net thresholds. We also conducted difference-in-differences analyses to study the effect of reaching the safety net on their medication consumption, as well as anticipatory effects of the safety net program.

Results: About one third of Australians did not fill any PBS prescriptions in 2021. Among those who filled at least one PBS script in 2021: 39% held concession cards, i.e., paying $6.8 instead of $42.5 copayment per monthly script; and about 11% reached the safety net in 2021, similarly for general and concessional patients. Proportions of patients reaching the safety net increased slightly over time, ranging from 8-11% per year from 2011-2021. In 2021, patients not reaching the safety net filled 23.5 scripts per year on average, while those reaching the safety net filled 75 scripts per year. The total annual spending on medications were $3504 vs $1361 among those reaching the safety net or not, and majority of spending is paid by Medicare.

Individuals use more medications after reaching the safety net because medications are cheaper. More interestingly, people also anticipate reaching the safety net and increase their consumption one to three months before leading up to reaching the thresholds. Other factors affecting the use of medications include gender, age, state, and whether they live in rural or disadvantaged areas.

Conclusions: A relatively small proportion of people reach the safety net. Reaching or anticipating reaching the safety net increases medication consumption. Future research is needed to examine whether individuals are protected by the safety net program and to which extent individuals forego essential medicines.

The impact of targeted healthcare reform on mortality: Evidence from Australia's Indigenous Practice Incentives Program

Karinna Saxby, University of Melbourne

Co-authors: Zoe Aitken; Dennis Petrie; Amal Trivedi; Yuting Zhang

Background: Globally, Indigenous populations experience poorer health but use less primary healthcare than their non-Indigenous counterparts. With the explicit aim of reducing these inequities, in May 2010, the Australian government introduced the Indigenous Practice Incentives Program (IPIP). This reform reduced prescription medicine co-payments and provided financial incentives for GPs to manage chronic disease care for Indigenous peoples with, or at risk of developing, chronic conditions. Using newly available whole-of-population death records, this study aimed to identify whether this reform did indeed close the gap in life expectancy among Indigenous peoples.

Methods: We source whole-of-population death records from the Australian Bureau of Statistics' Multi-Agency Data Integration Project (MADIP) between 2007 to 2019. Applying a difference-in-difference design, we compare trends in age at death among Indigenous peoples (n=37,416) pre and post reform to non-Indigenous Australians (n=2,019,927) over the same period. We additionally investigate whether the reform effects varied by cause of death (chronic or non-chronic) and level of IPIP uptake.

Results: Preliminary results indicate that post IPIP the mean age at death increased among Indigenous peoples from 53.00 [95%CI 51.18; 54.18] years pre-reform to 57.90 [95%CI 51.18; 54.18] years post-reform. The concurrent trends among non-Indigenous Australians were 76.08 [75.09;76.90] years pre-reform and 77.39 [76.36;78.66] post-reform, yielding a difference-in-difference estimate of 3.58 [2.78;4.66] years, or 16% of the pre-reform gap. Effects were more pronounced for chronic conditions than non-chronic conditions (20% and 12% of pre-reform age at death gap respectively) as well as in areas with higher uptake of IPIP. Extended models suggest that areas with higher pre-reform gaps in age at death benefited the most, suggesting that the reform was generally well targeted in terms of reducing health inequities.

Conclusions: We find evidence that the IPIP closed the gap in mean age at death between Indigenous and non-Indigenous Australians, with greater benefits for those with chronic conditions. While disparities remain, on aggregate, enhancing access to primary healthcare and prescription medications among Indigenous peoples appears to be an effective strategy to improve health outcomes among Indigenous peoples.

Impacts of the Better Access Initiative on Psychologists

Trong-Anh Trinh, Monash University

Co-authors: David Johnson

This study evaluates the impacts of a major mental health policy intervention on the psychology workforce. The Better Access Initiative (BAI) was introduced in Australia in 2006 to improve the treatment of mental disorders by providing Medicare rebates for selected services, particularly for psychological therapy. Uptake of these rebates was high, and the total cost to government is now over one billion dollars annually. Our study uses Census data and longitudinal Australian Taxation Office records to explore BAI's workforce effects. Applying a difference-in-differences approach, we estimate that the BAI had no significant impact on psychologists' work hours, but increased psychologists' annual income by approximately 10%. This income effect implies that roughly 30% of the initiative's benefits were appropriated by psychologists. The BAI also increased the likelihood of psychologists practising in regional and rural areas, suggesting improved treatment access. These findings highlight the unintended supply-side implications of the BAI, serving as a crucial consideration for future health policy design.

Room D Organised Session: Alcohol harms in Australia: modelling the avoidable burden and cost-effectiveness of policy interventions

Avoidable health and economic burden related to alcohol consumption in Australia

Mary Wanjau, Griffith University

Co-authors: Linda Cobiac; Mishel Shahid; Leopold Aminde; Siti Asfia; Moosa Al Subhi; Phuong Nguyen; Mary Rose Angeles; Jaithri Ananthapavan; Lennert Veerman

Background: Excessive use of alcohol is one of the leading risks for mortality and disability globally. In Australia, 4.5% of the disease burden was related to alcohol use, which cost approximately $66.8 billion in 2017/2018. At the request of governments and NGOs in Australia, we developed a simulation model to assess the impact of potential alcohol-harm reduction policies on avoidable alcohol-related disease and injury burden and potential healthcare cost savings in Australia.

Methods: A previous version of the proportional multistate life table model was updated, adapted, and implemented in R software. The model uses Australian demographic and epidemiological data to simulate the long-term health impacts of harmful alcohol consumption over the lifetime of the 2019 Australian population. By comparing a reference population with 'business as usual' alcohol consumption levels to an identical population with reduced alcohol consumption, the model estimates gain in health-adjusted life years (HALYs), and changes in incidence, prevalence and mortality from related diseases and injuries. Using cost data from the Australian Institute of Health and Welfare and epidemiological estimates of the modelled conditions, we calculate the expected healthcare cost savings. Overall healthcare costs for all other health conditions are included as reduction in alcohol consumption is expected to prolong life and thus additional health expenditure. In this session, we will present results for 'no alcohol consumption' as the counterfactual.

Results: The modelling is currently underway, and the results will be provided at the conference. Results on the potential health and economic impacts of eliminating alcohol consumption at the population level by age and sex in Australia will be reported. Changes in incidence, prevalence, and mortality will be estimated. HALYs and healthcare costs are given over the lifetime and over different time periods. For all outcomes, mean estimates with 95% uncertainty intervals are given, and sensitivity analyses are reported.

Conclusions: This model quantifies the potential health impacts and healthcare cost savings from changes in alcohol consumption in Australia. A limitation of this model is that health care costs are either linked to incidence or prevalence while in fact they are associated with both. It also does not account for common end-of-life costs. Nevertheless, our estimates help inform investment in preventive health policies that address the burden of alcohol-related harms in Australia.

Economic Evaluation of a Uniform Volumetric Tax on Alcohol in Australia

Jaithri Ananthapavan, Deakin University

Co-authors: Moosa Al Subhi; Phuong Nguyen; Mary Rose Angeles; Siti Asfia; Linda Cobiac; Mary Wanjau; Mishel Shahid; Leopold Aminde; Lennert Veerman

Introduction: Alcohol taxation system in Australia is incoherent and does not adequately reflect the risks of consumption of different products and is not well suited to reduce alcohol-related social harm. In Australia, stakeholders including health experts, the Health Promotion foundation, and the Productivity Commission are calling for a volumetric tax that imposes a uniform rate of tax on the alcohol content of all beverages. This research aims to assess the potential cost-effectiveness of introducing a volumetric tax equal to a 10% increase in the tax rate for off-trade spirits applied to all alcohol types in Australia from a limited societal perspective.

Methods: The cost-effectiveness of a tax of A$1.20 per standard drink applied to all alcoholic beverages compared to the current taxation system was modelled for the 2019 Australian population over a lifetime time horizon. Baseline alcohol intake in the population by alcohol category were taken from the 2011-12 Australian Health Survey data. Baseline mean price per standard drink (on/off premise) was taken from 2013 Australian estimates and inflated to 2019 values. Baseline 2019 alcohol taxation rates were obtained from the Australian Taxation Office and the Australian Distillers Association. Published own and cross price elasticities for on- and off-premise alcoholic drinks (by Jiang et al. 2016) were used to estimate the change in consumption resulting from the new tax. Taxation revenue was also calculated. Intervention costs were estimated for government (parliamentary legislation, auditing, monitoring, and one-off education campaign) and industry (compliance costs) only. Costs were adjusted to 2019 prices using the total health price index or gross domestic product index. A proportional multistate lifetable model implemented in R will be used to estimate the long-term health impacts (quantified as health-adjusted life years gained), and associated healthcare cost savings resulting from the change in alcohol consumption.

Results: The intervention was estimated to reduce the overall mean alcohol consumption by 25.7% (95% UI: 25.2% to 26.1%). The intervention costs were expected to be A$23.6M (95% uncertainty interval (UI): A$22.9M to A$24.4M) to the government and A$27.7M (95%UI: A$19.2M to A$35.9M) to the alcohol industry. The results related to the total healthcare cost savings, total HALYs gained, net costs, and incremental cost-effectiveness ratios will be presented at the conference.

Conclusion: Imposing a uniform tax rate on alcohol equal to a 10% increase to the baseline tax on off-premise spirits would potentially reduce overall consumption of alcohol and therefore also alcohol-related harm.

Economic evaluation of a policy to restrict density of licensed premises

Mary Rose Angeles, Deakin University

Co-authors: Phuong Nguyen; Lennert Veerman; Linda Cobiac; Leopold Aminde; Mary Wanjau; Mishel Shahid; Siti Asfia; Moosa Al Subhi; Jaithri Ananthapavan

Introduction: Alcohol accessibility is one controllable factor that can influence alcohol consumption and alcohol-related harms. One intervention to tighten alcohol availability is restricting liquor outlets. The cost-effectiveness of such an intervention has not previously been examined. This study examines the cost of restricting outlet density in New South Wales (NSW) and Victoria (VIC) and its and effectiveness in reducing alcohol consumption, using a limited societal perspective.

Methods: We conducted an economic evaluation of implementing a policy to restrict additional alcohol outlets in NSW and VIC, compared to a status quo (current practice) scenario. This study focuses on people living in metropolitan areas in NSW and VIC aged 15 years and older. Intervention effectiveness was estimated by comparing the projection of current population consumption without density restrictions to the expected consumption levels if the number of liquor licences remained at 2019 levels over a 10-year period, instead of increasing annually. According to Foster et al. 2020, each additional liquor license within a 1.6km neighbourhood is associated with an additional 0.15 grams of alcohol consumed per person (p=0.002). The current number of liquor licenses together with evidence that 82% of the target population live within 1.6km of any alcohol outlet was used to estimate the potential number of people who would be exposed to a new liquor licenced venue. The projected increase in the number of liquor licences over the 10-year period was informed by regression analysis based on the increase in liquor licences from 2010 to 2022.

Using a micro-costing approach, the cost of policy development, community consultation and revenue losses resulting from not issuing additional liquor licenses were calculated based on the best evidence in the literature. All costs are presented in 2019 Australian dollars and discounted at 3%. A proportional multistate lifetable Markov model will be used to assess the cost-effectiveness of this intervention over the lifetime of the modelled population.

Results: The projected weighted average change in population alcohol consumption in NSW progressively reduced from -0.45% in 2019 to -1.31% by 2029 for the intervention compared to status quo. The cost of the intervention amounted to approximately A$10 million. In VIC, it is estimated that the population's alcohol intake would reduce from -0.08% in 2019 to -0.45% by 2029. The projected total discounted cost of the intervention in VIC was A$6 million. The results related to the total healthcare cost savings, total HALYs gained, net costs, and incremental cost-effectiveness ratios will be presented at the conference.

Conclusion: The result of the economic evaluation is currently underway. The findings will contribute to understanding the health impact and value for money of liquor licensing restrictions.

Economic evaluation of artificial intelligence to enhance breast cancer screening

Joanne Scarfe, University of Sydney

Co-authors: Luke Marinovich, Nehmat Houssami, Alison Pearce

Objectives: Breast cancer screening in Australia involves two radiologists reviewing each mammogram with discordant results resolved by a third radiologist. Artificial intelligence (AI) algorithms for interpreting mammograms have the potential to improve the effectiveness of population breast cancer screening programs if they can reduce the number of cancers 'missed' by radiologists. AI may also address radiologist shortages and reduce costs to ensure screening programs are sustainable. Our objective was to explore the cost-effectiveness of integrating AI into breast cancer screening from an Australian health care system perspective.

Methods: We assessed the incremental cost per additional cancer detected for simulated integrated AI-human screen reading (replacing one of two initial radiologist reads with AI) compared with standard practice in a retrospective cohort of 108,970 consecutive mammograms from unique, biennial screens of women aged 50-74 years from 2013-2016 in a population breast screening program in Western Australia. A decision-analytic model with a two-year time horizon incorporated cancer detection rate (CDR) and recall outcomes. The primary outcome was an incremental cost-effectiveness ratio (ICER). Average per-patient costs for screening, reading and assessment procedures were estimated for each screening strategy using published costs (2022 Australian dollars). Costs and outcomes were discounted at 5%. Deterministic one-way sensitivity analysis was undertaken for the range of uncertainty for costs (95% CI or +/- 20%) and effects (95% CI).

Results: The average cost per cancer detected was $A158 for AI-human screen reading and $A160 for standard practice. The ICER was in the south-west quadrant ($40,731 per additional cancer detected), indicating that integrating AI into screen reading was less costly but also somewhat less effective than standard practice. Uncertainty around the cost per screen reading for each screening strategy had the greatest effect on the ICER.

Conclusions: This study represents one of the few economic evaluations comparing integrated AI reading of digital mammograms with human reading, and the only health economic evaluation which has used patient-level data in a real-world population breast cancer screening setting. CDR may have been underestimated in these retrospective data simulating AI-human reading; improved CDR and/or recall may improve cost-effectiveness. We are also exploring cost-effectiveness of alternative implementation scenarios. These results may be used to inform AI technology adoption in population breast cancer screening.

Combining Artificial Intelligence Driven Adaptive Trials and Value of Information Analysis for Optimised Decision-Making

Antonio Ahumada-Canale, Macquarie University

Co-authors: Bonny Parkinson, Alicia Norman, Sunil Gupta, Svetha Venkatesh, Helen Christensen, Henry Cutler

Background: Adaptive trials have been increasingly used to overcome traditional randomised controlled trials (RCTs) challenges such as high costs, intensive resource use, extended follow-up durations, and underpowered to detect differences between subgroups when comparing multiple interventions. Artificial intelligence (AI) sequential adaptive trials have the potential to overcome these challenges by conducting 'mini-trials', where incremental information can be fed into an algorithm adapting recruitment in each future mini-trial. The algorithm allocates a higher number of patients to more effective interventions as more information is fed to it. This design can lead to better estimates with fewer patients, consequently saving costs and avoiding the opportunity cost of making the wrong decision and not providing an effective intervention sooner. However, there is scarce information comparing AI-sequential adaptive trials with traditional RCTs. Value of information (VOI) analysis assesses the value of future research by evaluating the potential reduction of decision uncertainty and can compare the proposed study design with a traditional RCT.

Objective: To determine the VOI from conducting an AI-sequential adaptive trial compared to a traditional RCT.

Methods: The VOI analysis will comprise two stages. First, an ex-ante analysis establishing the potential VOI of an AI-adaptive group sequential randomised controlled trial using a multi-arm bandit algorithm compared to a traditional RCT. This will be based on estimates from the literature comparing three smartphone-delivered interventions (physical activity, mindfulness, and sleep hygiene) and an active control (ecological momentary assessment) to reduce psychological distress in university students. The population expected value of perfect information (EVPI), population expected value of sampling information (EVSI) and the expected net benefit of sampling (ENBS) will be estimated for both a potential adaptive trial and a traditional RCT. Second, an ex-post VOI analysis will be conducted using data from the Vibe Up trial, an AI-adaptive sequential randomised trial using a multi-arm bandit algorithm comparing the interventions described above. EVPI results using Vibe Up trial data will be compared to a simulated traditional RCT data to determine which design reduced uncertainty the most and thus provided the lowest EVPI of additional research.

Results: Population EVPI, EVSI and ENBS for the ex-ante analysis will be reported for the adaptive design and traditional RCT. The population EVPI will be reported for both strategies in the ex-post analysis. The Vibe Up trial has been completed, and data is currently being analysed.

Conclusions: We expect the VOI analysis will provide insights into the value of AI-sequential adaptive trials to promote the efficient use of research resources and decrease the opportunity cost of uncertain decision-making.

Assessing health consumer acceptance of Artificial Intelligence Use in Australia: A Discrete Choice Experiment

Vinh Vo, Monash University

Co-authors: Gang Chen, Maame Esi Woode

Background: Artificial Intelligence (AI) has made significant advancements in healthcare, assisting with patient monitoring, diagnoses, clinical trials, and robot-assisted surgeries. In Australia, evidence about how health consumers prefer AI use in healthcare is still limited. We aim to quantify and compare Australian health consumers' preferences for AI acceptance across two different health conditions.

Methods and expected results: An initial list of 12 potential attributes was derived from our systematic review of preferences for AI use in healthcare. The final attribute list was developed through repetitive discussion among experts and consumers. The five attributes include data sharing, physician-patient interaction, funding source, predictive/personalised recommendations capability, and explanation of AI results. To evaluate the understandability, relevance, and importance of each attribute, we conduct pre-testing with 8 respondents to incorporate their feedback and responses.

Our experiment includes two health conditions (heart failure and depression) and two AI applications (diagnostics and personalised recommendations). Each participant will be randomly allocated to two DCEs, either with the same health conditions (and different applications) or with the same applications (and different health conditions)

We are in the process to recruit 1,200 participants in Australia to share their views and preferences. The DCE data will be analysed with mixed logit and latent class conditional logit models to allow for potential preference heterogeneity. The analysis is expected to reveal how different attributes impact public preferences for AI use in healthcare across different health conditions and AI applications.

Conclusions: Understanding health consumer preferences for AI in Australia is crucial for policymaking as it enables the development of policies that align with societal values, promote trust, address ethical and social implications, facilitate informed consent, and promote equity and accessibility.

Parallel Session 7

Room A Economic Evaluation and Cost Effectiveness 7

Cost-consequence analysis of deprescribing to optimise health outcomes for frail older people: A within-trial analysis

Charles Okafor, The University of Queensland

Objective: Deprescribing is one strategy to address inappropriate polypharmacy and suboptimal prescribing. This study aimed to evaluate the costs and consequences of deprescribing in frail older people living in residential aged care facilities (RACF) in Australia.

Methods: A within-trial cost-consequence analysis (March 2014 – February 2019), based on a double-blinded randomised-controlled trial – the Opti-Med trial, that recruited n=303 participants who lived in participating RACF, eligible to be considered for deprescribing. It was conducted from the healthcare payer's perspective. Participants were followed-up for 12 months from the date of randomisation. Three groups, the blinded control, the blinded intervention, and an open intervention were compared. The Opti-med intervention targeted medicines for withdrawal according to a structured deprescribing protocol. Health economic outcomes assessed include mortality rate, cost saved from deprescribed medications, health utilities, quality-adjusted life-years, rate of hospitalisation, falls and fractures, physical function (Modified Barthel Index), frailty index, and cognitive impairment.

Results: There was no statistically significant difference in the health outcomes across the three groups within the trial period except for cognitive impairment measured at 12 months follow-up ($p = 0.006$). The total cost of the Opti-med intervention was $126.48 per participant. The cost of deprescribed medications over 12 months after adjusting for mortality within the trial period was $467.32 per participant in the blinded intervention participants and $498.85 in open intervention participants. The cost of the intervention was offset by the cost saved from reduced medicines acquisition.

Conclusion: Deprescribing for frail older people living in RACF is a cost-saving intervention. However, it did not provide evidence of improved health outcomes due to the age of the cohort. Deprescribing is likely to be cost-effective, and system-wide implementation of deprescribing across RACF in Australia has the potential to generate substantial cost savings for the health system.

Waste in clinical trials

Chris Schilling, The University of Melbourne

Co-authors: Michelle Tew, Cade Schadbolt, Samantha Bunzli, Francesco Paolucci, Peter Choong, Michelle Dowsey, Philip Clarke

Background and Objective: Waste in clinical trials remains rife. We developed an economic model to estimate the cost of trials based on input costs, duration, power, number of sites, recruitment eligibility and consenting rates.

Methods: We parameterised the model for three proxy placebo-controlled surgical trials using data from a systematic review, a bespoke cost survey, and from the literature. We used the model to compare target and actual trial performance for (i) a trial that was completed on time but with more sites, (ii) a trial that completed after a time extension, and (iii) an incomplete trial.

Results: Successful trials more accurately anticipated the true recruitment rate that they achieved and those that overestimated this were most likely to fail. The costs of overestimating recruitment rates were dramatic: all proxy trials had significantly higher costs than planned, with additional funding of at least AUD$600,000 (50% above budget) required for trials that completed after adding more sites or more time, and over AUD$2 million (260% above budget) for incomplete trials.

Conclusions: This model highlights the trade-offs between time and cost in recruitment, and the implications on one or both when recruitment is lower than anticipated. To reduce waste in clinical trials, we recommend that data about realistic recruitment rates should be made available to both those planning and reviewing trials. Additionally, funding should be made conditional on demonstrating recruitment.

Modelled cost-effectiveness of a general practitioner-training program for adolescent depression

Cindy Liang, The University of Melbourne

Co-authors: Jemimah Ride, Kim Dalziel

Background and objectives: Adolescent major depression is a key public health issue, and early detection is important for timely access to treatment. A comprehensive general practitioner training program targeting adolescent health in Australia has shown early evidence for improved detection of psychological distress – a common indicator for major depression - among adolescent patients. However, it has not been evaluated for cost-effectiveness. The aim of this study was to model the cost-effectiveness of this training program for adolescent major depression.

Methods: A decision analytic model was developed to determine the cost-effectiveness of the comprehensive program compared to a simple seminar on youth friendly care. We used decision tree and Markov components to build a model and simulate major depression disease progression for a cohort of adolescents aged 14-24 years presenting to primary care. The time horizon was 5 years. The model compared the costs (from a public sector perspective) and quality adjusted life years (QALYs) for the intervention versus comparator through an incremental cost-effectiveness ratio (ICER). We performed one-way deterministic sensitivity analysis for key variables to explore uncertainties, including intervention effectiveness in detection of distress, depression treatment uptake and effectiveness, population prevalence, and various time horizons. In the lead up to the conference, we will perform additional probabilistic sensitivity analysis.

Results: The ICER of the comprehensive training compared with a single seminar was A$8965/ QALY gained after 5 years. Using the assumed threshold of A$50,000/QALY gained as a benchmark, the base ICER estimate is well below the threshold and suggests the intervention could be cost effective. Additionally, threshold analysis for the detection rate of distress found that only a small improvement in detection (0.0014) would be needed for intervention to be cost-effective. Further sensitivity analysis found that the key drivers of the ICER estimate related to treatment following detection – particularly the uptake rate and effectiveness of major depression treatment.

Conclusions: This analysis provides early evidence that comprehensive training for general practitioners on adolescent health risks can be good value for money when major depression outcomes are considered. Notably, the treatment uptake and the effectiveness following detection are the key drivers of cost-effectiveness. Hence, it is important for policy makers to consider the accessibility of effective treatments when making decisions about implementing this training intervention to improve detection. The model will be used to evaluate the next iteration of this intervention, which involves a financial incentive provided to GPs to conduct health assessment in adolescents.

AIHW Health Economics: report and analysis

Geoff Callaghan, Australian Institute of Health and Welfare (AIHW)

In this session, the AIHW's Health Economics, will present on the following reporting and analysis:

- Key finding from the Health expenditure Australia reporting including time series analysis of spending by area (e.g.. Hospitals, primary care, public health) and by funding source (e.g. federal government, states and territories and individuals).
- Disease expenditure analysis by the burden of disease categories and broken down by age, sex, and by jurisdiction. The analysis includes allocation of expenditure for COVID-19 over the last three years.
- GP attendance rates and OOP costs: this analysis looks the potential drivers of the recent changes in the GP attendance rate by local government area, in particular looking at the impact of OOP costs.
- Emergency care (ED) versus GP costs for low urgency care: it is often assumed that a trip the ED is more costly, this analysis however shows that this can vary depending on the presentation type.
- Emerging analysis on potentially preventable hospitalisations.

Cost Analysis of COVID-19 in Australia

Imalka Rath, University of Southern Queensland

Co-authors: Rasheda Khanam, Mohammad Mafizur Rahman

Severe Acute Respiratory Syndrome (SARS-COV-19) can be categorised as an outlier, which has severe health impacts with macroeconomic implications. This paper aims to evaluate the direct and indirect costs of the COVID-19 pandemic in Australia with an analysis of the macroeconomic impact from 2020 to 2022. Access to accurate and reliable information on the cost of COVID-19 can help with economic policy decisions. Therefore, this study is motivated by the ongoing coronavirus pandemic and its cost to economies worldwide. In particular, the direct costs of the COVID-19 pandemic to the Australian economy are examined and policy directions are suggested to mitigate their magnitude. Evaluation of economic costs and the burden of a pandemic are crucial in developing resource allocation and prioritisation strategies for public health and economic resilience. There is no publicly available information on the input costs of testing and treatments for COVID-19 in Australia. It is necessary to estimate the approximate direct health cost spend by government funding, public or private health insurance, patient out-of-pocket expenses, or a combination of these. These estimations of the cost of coronavirus disease in a country may not only support policymakers in effectively allocating resources and prioritising disease control activities, but it is also paramount to the long-term planning for sustainable financing in similar future conditions. (1) A micro-costing approach is performed using historical cost data for one year. All direct medical inputs were determined in quantities and monetary values for Covid-19 inpatients in the hospital. (2) The WHO CHOICE model is used to estimate the factors that affect determine inpatient hospital costs per day. (3) The impact of COVID-19 on various macroeconomic variables is evaluated using macroeconomic data. Based on different treatment methods for COVID-19, the study calculates the direct cost by narrow downing cost factors and establishing possible assumptions. As a result, an inpatient's per-day unit cost is estimated to be AUD 836. It is the minimum cost per day that is compensated for COVID-19 inpatients by government funding, public or private health insurance, patient out-of-pocket expenses, or a combination of all be used to cover the cost of treatments in Australia. The hospital bed occupancy rate is a highly significant proxy for the cost of a COVID-19 patient. The GDP per capita for a state has a positive effect on inpatient costs. Higher admissions have small positive effects on cost. The findings of indirect impact GDP fell significantly to 1.9% below its No-COVID level in 2021 Q1. The reduction continued to -1.8% by the 3rd quarter of 2021. Important policy recommendations are then suggested based on the empirical results. This research is critical for national and local governments to strengthen efforts to collect, analyse, and use data on health system resources use and efficiency.

Heart Health Hub virtual care pilot program for heart failure patients, Queensland, Australia; A cost consequence study

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Co-authors: Alicia McClurg, Shannon Wallis, Johanne Neill, Rebecca Tomlinson, Hannah E. Carter

Objectives: The management of heart failure (HF) patients is complex and requires patients to attend frequent appointments with health services over several months. The Heart Failure Service at West Moreton Health (WMH), Queensland, Australia, provides clinical care for HF patients over a vast geographic area. This is particularly challenging as patients and health providers need to travel significant distances for face-to-face appointments or home visits. In response to these challenges, and the COVID-19 pandemic, a pilot virtual model of care, the Heart Health Hub (HHH), was introduced to improve titration rates and patient access to services. This study aims to evaluate the costs and consequences of the pilot HHH program.

Methods: A single-arm retrospective cohort study design was adopted. All patients who enrolled in the HHH virtual care pilot between 1st July 2020 to 31st June 2021 were included in the study. Demographic and clinical characteristics, patient satisfaction data and drug titration details were obtained from routinely collected health service data. Health service use for each patient, including HHH service interactions, other outpatient appointments, and hospital admissions, were extracted for a period of 12 months following enrolment in the HHH program. Costs were estimated based on activity-based funding revenue, including HHH program delivery costs and broader health service use.

Results: A total of 89 HF patients were included in the evaluation. The participants' age ranged from 21 years to 80 years. Most patients were male (77.5%). The program was associated with high levels of patient satisfaction, with more than 98% of survey questions receiving a positive response. The program was delivered within the existing resources of the HF service and comprised a mean cost of $3,069 in nurse practitioner appointments and $690 in equipment and consumable costs per patient. HHH participants attended an average of 15.8 service appointments over a mean 2.49 months enrolment period, of which 62% were delivered virtually. There were 63 inpatient admissions recorded across 33 participants, with 33 were cardiac-related admissions. The average cost per admission was $6,097 (95% CI $3,853 to $8,342) and $6,499 (95% CI $3,050 to $9,948) for all inpatient and cardiac-related admissions, respectively. Approximately 94% of the patients reached either guideline-recommended target doses or maximum tolerated doses for prescribed medications. A comparison of key performance indicators with the Queensland Cardiac Outcomes Registry data showed substantially improved achievement relative to statewide averages.

Conclusion: The HHH virtual care program achieved high levels of patient satisfaction and good titration outcomes within existing health service resources. Further research from experimental studies is needed to compare outcomes with usual face-to-face models of care.

Economic Costs of Responding to Residential Fire Incidents in New South Wales

Fahmida Rahman, Western Sydney University

Background: In 2021, 21% of all fires in Australia were residential fire incidents. Of these, more than one-third occurred in New South Wales (NSW). To respond to these incidents, Fire and Rescue NSW (FRNSW) and NSW Rural Fire Service (NSWRFS) predominantly have the role of containment with urban and rural oversite, respectively. FRNSW responds to 90% of all residential fires and works closely with the NSWRFS and other agencies, including police and ambulance. Despite the high number of residential fire incidents in NSW and the considerable involvement of the response agencies, there is a paucity of data on the economic costs of responding to residential fires. The limited research has focused mainly on fire service agencies, with very little looking at other entities.

Objective: This study aims to determine the economic cost of all responders to residential fires, including FRNSW, police, ambulance, State Emergency Service (SES), utility providers, other businesses, and the government for attending residential fires in NSW.

Method: FRNSW administrative data from the Australian Incident Reporting System (AIRS) was used from January 2005 to March 2015. During the study period, 44,623 residential fire incidents were recorded in the AIRS data. The data was supplemented by data from the Industrial Relations Commission (IRC), Australian Bureau of Statistics (ABS), Australian Taxation Office (ATO), and industry experts. Micro-costing was undertaken for each incident based on the agencies involved, length of time attended for the incident, and resources used.

Result: Over the 10 years, the average time FRNSW personnel spent each year managing a residential fire was 130 minutes, with 8 personnel on average. The annual average cost to FRNSW, including personnel and resources, was AU$ 5,071,195 and that of for other agencies was AU$ 1,765,255. Of the other agencies, ambulance personnel attended more than one-third of all incidents. The average cost of ambulance, including personnel and resources, was AU$ 286,149 per annum and per incident was AU$ 66. There was a 28 percent and 51 percent rise in the calculated total cost, including personnel and resources, for FRNSW and other response agencies in 10 years. For the study period, the estimated total cost, including personnel and resources, of all response agencies is AU$ 70,073,615 which moved up by 33 percent over the time. The total cost of responding per incident was AU$ 1,570.

Conclusion: This is the first study to estimate the cost of responders to residential fires. The study found that the cost of other response personnel in responding to residential fires was notable at 30%. These estimated costs will assist in appropriate and adequate allocation of funds among the response agencies. Moreover, it will help the policymakers to plan for preparedness for residential fires and associated consequences, recognising that the true costs of residential fires extend beyond the primary agency.

Measuring health-related quality of life in older adults with low bone mass and obesity in clinical trials of exercise: Are widely used instruments fit for purpose?

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Background: There is interest in the psychometric characteristics of the EQ-5D (both 3L and 5L) to assess health-related quality of life (HRQL) in randomised controlled trials. One area where the EQ-5D is broadly utilised is in exercise clinical trials aimed at improving physical function and body composition in older adults with low bone mass and obesity. Preference-based scores provided by the EQ-5D can be used to evaluate the cost-effectiveness of exercise interventions. Such exercise trials typically use the EQ-5D alongside other profile measures to assess HRQL. However, it is unclear which patient-reported outcome measure(s) are most appropriate for use in this setting and for economic evaluation.

Aim: To conduct psychometric assessment of both EQ-5D adult instruments in exercise clinical trials, in comparison to the Centre for Disease Control and Prevention (CDC) Healthy Days measures, and Modified Falls Efficacy Scale (MFES). Four datasets of exercise trials aimed at improving musculoskeletal health in older adults with low bone mass and obesity (total N=210) were analysed.

Methods: Classical psychometric methods were applied to each dataset individually to assess convergent and known-groups validity, and responsiveness (using standardized response means (SRM)) of the EQ-5D, CDC Healthy Days measures and MFES. Analyses were conducted at the item/dimension and value set levels.

Results: Correlations between EQ-5D index scores and average MFES scores indicated moderate to strong convergence ($r=0.45$ to 0.74, all $p<0.01$). EQ-5D index scores were also significantly lower in the group with fear of falling, as measured by the MFES, than without (effect size=1.1 to 3.7). Of the five EQ-5D dimensions, mobility had moderate to strong correlations with most items of the MFES.

There was moderate convergence between EQ-5D-3L index scores and CDC unhealthy days ($r=-0.45$ to -0.54, all $p<0.01$), but not for EQ-5D-5L index scores ($r=-0.01$). Likewise, EQ-5D-3L index scores, but not that of the EQ-5D-5L, were significantly lower in the group with frequent mental distress assessed by the CDC measure than without (effect size=0.98 to 2.25). The EQ-5D-3L anxiety/depression dimension was strongly convergent with mentally unhealthy days ($r=0.53$ to 0.70).

Responsiveness of the EQ-5D varied across exercise (SRM=-0.22 to 0.42) and control arms (SRM=-0.23 to 0.03). In comparison, CDC unhealthy days (SRM=0.21 to 0.49) and individual items of the MFES, such as using steps at home (SRM=0.10 to 0.35), consistently improved in the exercise arms.

Conclusion: The EQ-5D is valid for use in older adults with low bone mass and obesity, but has limited evidence for responsiveness to change in HRQL over time. Profile measures may more adequately detect health-related changes from exercise interventions. Further work is ongoing to explore approaches to psychometrically analysing data from combined datasets, which will improve the generalisability of these results.

Validation of the short form (8 item) PC-QoL instrument, and applicability of use as a health state classification system for a new preference based measure

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Background: Chronic cough in children (> four-weeks) is an important driver of healthcare costs, and a common reason for presentation to healthcare professionals. Despite recent advancements in management of chronic cough, and widespread associated use of the parent-proxy chronic cough quality-of-life questionnaire 8-item (PC-QoL), there remains no condition specific "preference-based measure" (PBM) for estimating health utility and quality-adjusted-life-years (QALYS) specifically in this populations. We aimed to explore the psychometric properties of the PC-QoL and determine its' feasibility as a classification system for a PBM specific for children with chronic cough (CwCC).

Methods: We subjected the PC-QoL responses of parents of CwCC in Australian hospitals to exploratory factor analysis (EFA) and Rasch analysis.

Results: EFA of n=653 responses indicated that the instrument had one underlying domain. All items had a strong loading (>0.72) and the domain explained 59.6% of variance. A preliminary Rasch analysis uncovered threshold disordering in all items, and two demonstrated differential item functioning (DIF) by diagnosis or ethnicity. Items with DIF were excluded from the analysis, and the remaining six were iteratively collapsed to four-levels. This scale satisfied the Rasch analysis assumptions of local independence and uni-dimensionality. It demonstrated acceptable fit to the Rasch model; Item-trait total X2 was 50.44, p=0.056 (> Bonferroni corrected α=0.002). Person and item fit residual standard deviations were acceptable, 1.340 and 1.202 respectively. The person separation index was acceptable (0.810).

Discussion: The PC-QoL can conform to a Rasch model with modifications. It may be a good basis for the classification system of a CwCC PBM, as an additional module for analysing the PC-QoL. A further valuation study is required to estimate preference weights for the 6 retained attributes in the PC-QoL. This PBM module for the PC-QoL will allow its' use in estimating health utility and QALYS in CwCC.

Preferences and values for genomic testing in Atrial Fibrillation: a discrete choice experiment

Cun Liu, University of Melbourne

Co-authors: Stephanie Best; Diane Fatkin; Ilias Goranitis

Atrial Fibrillation is the most common sustained cardiac arrhythmia and is associated with an increased risk of stroke, heart failure and death. Over the last decade, rapid progress has been made in establishing the genetic cause of Atrial Fibrillation. Using genomic testing to predict individuals' risk of AF and its complications, or responses to drug and ablation therapies is now a realistic proposition. Yet, no information exists on the value that people may place on the benefits of genomic testing for the diagnosis and management of Atrial Fibrillation. Our work will provide the first empirical evidence for the value of the diagnostic, clinical, and nonclinical components of genomic testing for Atrial Fibrillation. The findings can be used to understand the heterogeneity of preferences and inform a cost-benefit analysis as part of broader healthcare system implementation.

A multiphase sequential mixed-methods design is employed. Six focus groups were conducted to identify and develop the attributes and attribute-levels. Focus groups are recorded, transcribed, and analysed using inductive content analysis. Two discrete choice experiment surveys were developed to elicit preferences and values for genomic testing in Atrial fibrillation. The surveys will be administrated nationally to members of the Australian public and families with lived experiences of AF. A Bayesian D-efficient explicit partial profile will be used, and data will be analysed using a panel error component mixed logit model. Preference heterogeneity will be explored using a latent class model and fractional logistic regressions.

Feasibility, face validity and content validity of the EQ-5D-5L, EQ-HWB and EQ-5D-Y-5L in adults and children with rare diseases and their carers: a think-aloud qualitative study

Mackenzie Bourke, University of Melbourne

Co-authors: Mackenzie Bourke, James Buchanan, Tessa Peasgood, Brendan Mulhern, Tiffany Boughtwood, Clara Gaff, Clare Stuart, Amy Hunter, Xuemin Zhu, Ilias Goranitis

Background: The measurement of quality of life (QoL) in people experiencing rare diseases is poorly understood. Due to the broad impacts of rare conditions, it is unclear whether currently available QoL measures appropriately capture the important domains of the lived experience of people with rare conditions. As new technologies for the diagnosis and management of rare conditions become increasingly available, it is essential to understand to what extent currently available measures capture these broad impacts in order to inform resource allocation decisions.

Objectives: This project aims to understand the feasibility, face validity and content validity of the EQ-5D-5L, EQ-HWB and EQ-5D-Y-5L in 1) Adults with rare conditions; 2) Carers of children with rare conditions; and 3) Carers of adults with genetic intellectual disability. This is part of a multi-phase study funded by EuroQol to assess validity of measures in rare diseases.

Methods: Participants were purposively recruited into the study with minimum quotas for age, gender, diagnostic status, clinical phenotype, and prognosis. Qualitative interviews are currently being conducted in which each participant is asked to complete the relevant measures whilst thinking aloud. Upon completion, a semi-structured interviewer-led discussion explores the relevance, comprehensiveness, and comprehensibility of the measures. Participants are further asked their instrument preferences. Interviews are recorded and transcribed verbatim. Thematic analysis is being conducted on the transcripts to understand face and content validity. Data from the think-aloud component will be analysed for general and temporal comprehension, decision process and response process to understand feasibility. So far, 20% of the interviews have been completed and we anticipate the full set of interviews will be completed by August. The full results will be presented.

Discussion: This project will provide important insights into how well these measures capture the experiences of people living with rare conditions. This will have important implications for understanding the measurement properties of the health and care-related quality of life measures and inform an Australian-wide survey to explore construct validity and responsiveness of these measures.

This is a EuroQol-funded study conducted in collaboration with the University of Oxford. This work is supported by Australian Genomics, Melbourne Genomics, Mito Foundation and Genetic Alliance UK.

Child's perception of health-related quality of life (HRQoL): A mixed method approach

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Co-authors: Julie Ratcliffe, Kiri Lay, Jyoti Khadka, Christine Mpundu Kambwa

Aims: The EQ-5D-Y-3L is widely used for measuring and valuing HRQoL in paediatric populations. This mixed methods study used the EQ-5D-Y-3L measure and applied a retrospective think-aloud approach to examine the self-report validity in children of varying chronological age.

Methods: A mixed methods study was employed using a convergent design. Community-based sample of children aged 6-12 years (N=39) participated in a semi-structured face-to face interview. A digital self-report version of the EQ-5D-Y-3L was administered to the children using REDCap. Children were encouraged to retrospectively think aloud using minimal verbal probes. The conversation was audio-recorded and transcribed verbatim. Data analysis was performed in NVivo. Two raters used the Tourangeau Response Model framework to identify and clarify response issues according to four main components: comprehension, judgment, recall, and response mapping.

Results: Overall, response issues were detected in n=18 (46%) of the children. The younger age groups had the highest proportion of response issues (6-7 years: 64%, 8-10 years: 62%), while the oldest age group had the lowest (11-12 years: 20%). Moreover, children with response issues demonstrated significantly lower (p-value=0.0007) EQ-5D-Y-3L scores (mean=0.95, se=0.02) as compared to those with no response issues (mean=0.78, se=0.04). Judgement-related issues were the most common, particularly in the 'doing usual activities' dimension, where children tended to respond based on their self-perceived ability to engage in activities rather than health-related limitations. In the 'having pain or discomfort' dimension, some children interpreted the term 'pain' to mean feeling hurt (i.e., emotional pain). The other issue was comprehension-related where children found it challenging to understand the term 'discomfort'. In recall-related issues, responses were influenced by the child's typical tendencies (e.g., being usually worried) or past incidences (e.g., feeling pain sometimes). None of the participants were found to have problems with response mapping. A 'healthy' lifestyle that included diet and exercise was a notable consideration in rating their health on the VAS.

Conclusions: Children in the general community may have different perceptions of HRQoL when responding to the EQ-5D-Y-3L due to their limited experience with health-related challenges. The retrospective think-aloud approach adopted highlighted several response issues. The relatively higher prevalence of response issues in the younger children (ages <11 years) highlights the need for caution in the self-assessment of HRQoL using the current version of the EQ-5D-Y-3L for this age group in this population.

Self-reported Multidimensional Subjective Well-being Measures for Use in Children and Adolescents: A Scoping Review

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Co-authors: Gang Chen; Maame Esi Woode

Background: Subjective well-being is crucial to understanding the economic, social, and health conditions of communities, and aids in shaping public policies. The concept of subjective well-being is not only relevant to adulthood populations but can also be applied to children and adolescents.

Objective: This scoping review aims to identify the measures utilized to assess the subjective well-being of children and adolescents and evaluate their psychometric properties.

Methods: The identification of multidimensional subjective well-being measures for children and adolescents was carried out in two stages. In the first stage, we selected measures from a recent systematic review of PROMs published between 1992 and 2020, following predetermined criteria. The second stage involved a two-step scoping review to search for newly published instruments between 2020 and 2023 and to identify validation studies for the identified measures. The review followed the PRISMA-ScR guidelines for reporting purposes. Eight databases, including PubMed, Medline, Web of Science, Scopus, Embase, PsycINFO, EconLit, and CINAHL were searched. The validated childhood subjective well-being measures developed prior to 1992 and the original instruments of all included measures were identified through a grey literature search or by contacting the authors. The quality of the included instruments' psychometric properties will be rated using the criteria for good measurement properties provided by the COSMIN guideline.

Results: During the first stage, 26 instruments were collected. A further 10 instruments were identified in the second stage. Overall, a total of 36 self-reported multidimensional subjective well-being measures for use in children and adolescents were obtained, with 22 instruments specifically suitable for use in adolescents. These measures commonly capture 15 life domains, including global, living standard, health, achievement in life, relationships, personal safety, school life, community, future security, time use, freedom, where you live, body, self, and quality of the environment. All identified measures have been validated for at least one measurement property; however, none of these measures have been evaluated for all nine psychometric properties recommended by the COSMIN guideline.

Conclusion: Identifying and evaluating self-report multidimensional measures for assessing subjective well-being in children and adolescents, along with their psychometric properties, will provide policymakers and researchers with reliable and valid tools to develop targeted policies and interventions for improving their subjective well-being, contributing to the overall well-being of society.

Keywords: Subjective well-being, Outcome Measures, Children and Adolescents, Psychometric Properties

Parallel Session 8

Room A Oral brief 1

Potential Cost-Effectiveness of Maternal Influenza Immunisation in a Hypothetical Low-Income Country: An Explorative Modelling Study to Guide Future Clinical Research

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Co-authors: Natalie Carvalho, Michelle Giles

Objective: Maternal influenza immunisation (MII) is an effective and safe method to reduce the risk of influenza and its complications among pregnant women and their infants under six months of age. However, few low-income countries (LICs) have a national influenza policy targeting pregnant women. Prior cost-effectiveness analyses showed that introducing seasonal influenza vaccination to pregnant women in LICs may not be cost-effective. However, these studies only considered vaccine specific effects on influenza related outcomes. Some studies from high-income and middle-income countries have reported positive non-specific effects (NSEs) of MII on adverse pregnancy outcomes, including stillbirth (STB) and preterm birth (PTB). This study aims to evaluate the cost-effectiveness of MII in LICs when considering NSEs on adverse pregnancy outcomes - PTB and STB, as well as the vaccine-specific effect on influenza.

Methods: A decision tree model was constructed to assess the cost-effectiveness and expected health outcomes of MII and no MII strategy for one million pregnant women in a hypothetical LIC, assuming MII has a 25% reduction on PTB and 51% reduction on STB in the base case. The time horizon was two years, and we accounted for vaccination program costs, direct medical and non-medical costs, all adjusted to 2021 US dollars. The main outcome was years of life saved, and other outcomes included cases of adverse conditions averted. Incremental cost-effectiveness ratios (ICERs) were compared with average willingness-to-pay (WTP) thresholds among LICs of $150 per life year saved, and ranging from $490 (Zambia) to $70 (Congo).

Results: Base case analysis suggested that introducing MII would save a total of 967,196 years of life, with neonate life years saved accounting for more than 99% in the hypothetical LIC. MII introduction would increase vaccine-related costs by $2,840,984 but reduce overall costs by $2,973,264 and prevent more adverse outcomes, making MII the dominant strategy. Deterministic sensitivity analyses revealed results were most sensitive to PTB-related inputs. Probabilistic sensitivity analyses revealed that with 5% NSEs on both adverse pregnancy outcomes, the minimum acceptable WTP threshold was less than $50, which increased to around $90 when there was 5% NSE on PTB only.

Conclusions: MII introduction may be cost-effective or cost-saving in LICs when considering NSE on PTB and STB, with the magnitude of NSE on PTB being a key determinant. A minimum 5% NSE on PTB would likely render MII cost-effective in a LIC. Due to the uncertainty surrounding the presence or absence of NSEs in LICs, this work rationalises the need for conducting additional clinical research to provide evidence on whether MII has NSE on adverse pregnancy outcomes in LICs, which could substantially influence decision-making on MII introduction in these settings.

A systematic review of economic evaluations of community interventions for child sexual exploitation/sexual abuse

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Co-authors: Genevieve Bloxsom, Julie Green, Mary Rose Angeles, Lisa Gold, Cathy Humphreys

Background: Child sexual abuse (CSA) is a global issue, affecting 8-31% of girls and 3-17% of boys worldwide, with 5% of children and young people experiencing sexual exploitation. This systematic review aims to synthesize economic evidence on the cost-effectiveness of community interventions for CSA/child sexual exploitation to inform decision-making.

Method: A systematic search was conducted on eight databases for studies published until April 2023. Grey literature was searched via Google. The inclusion criteria were economic evaluations of interventions targeted at children/adolescents or perpetrators/offenders or paid carers/carers, addressing CSA/child sexual exploitation. There was no limitation by country, but an English abstract was required. Studies without a specific focus on CSA/child sexual exploitation, such as physical, emotional and domestic violence-related abuse, were excluded. All costs were adjusted to US$ 2023. Quality assessment was conducted using the CHEERS 2022 checklist.

Results: Of 5172 screened articles, 18 were included in the final synthesis, with most from the USA and focused on tertiary prevention. Two were primary prevention, and one covered all prevention levels. Both primary prevention interventions were cost analyses of school-based interventions for children, where the average cost per participant per year was roughly US$22. Of tertiary interventions, nine were for children, or their families, who were sexually abused, and six for offenders. Tertiary interventions for children were found to be cost-effective: multiple interviews yielded cost savings of US$239–974 million annually for all CSA; multi-model treatment and multi-systemic programs reported benefit:cost ratio of up to 12:1; and group therapy was US$2,595 less costly than individual therapy. Interventions targeted at offenders were primarily in-prison rehabilitation programs where the expected economic saving could reach over US$150,000 per treated offender and benefit:cost ratios were up to 58:1. Barnardo's Safe Accommodation project targeted all prevention levels and had a net benefit of US$362,578.

Discussion and conclusion: The findings highlight a small but growing body of economic evidence for CSA interventions. While the intervention components varied across studies, all demonstrated cost-effectiveness. The existing economic evaluation evidence is dominated by tertiary prevention, focusing on offenders and child victims, highlighting the need to evaluate primary and secondary preventative interventions for general and at-risk populations.

Methods to include environmental impacts in health economic evaluations and health technology assessments: a scoping review

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Co-authors: Katy Bell, Rachael Morton, Mbathio Dieng

Objective: The environmental impacts of healthcare technologies are an important factor that should be considered during health technology assessments. This study aims to summarise the evidence that exists about methods to include environmental impacts in health economic evaluations and health technology assessments.

Methods: We identified an existing scoping review on this topic which was used as a starting point for this review. In addition, we conducted a systematic search of academic databases and grey literature up to May 2022. We screened the identified records for eligibility and extracted relevant data from included records using a narrative synthesis approach. The review was conducted following the JBI Manual for Evidence Synthesis and reported according to the PRISMA-ScR.

Results: We identified 1585 records and assessed the full text of 91, of which 50 were excluded primarily for not relating to economic evaluations or health technology assessments. A total of 41 records were included in this review. Seven methods to include environmental impacts in health economic evaluations and health technology assessments were identified. These include converting impacts to dollars and including them in a cost-effectiveness or cost-benefit analysis, converting impacts to quality-of-life units and including them in a cost-utility analysis, incorporating impacts as one criteria of a multi-criteria decision analysis, and considering impacts during health technology assessment deliberation processes.

Conclusions: Methods are available to include environmental impacts in health economic evaluations and health technology assessments. Further research is needed to demonstrate the feasibility of these methods and determine decision-maker preferences for their use.

Model-based economic evaluations of interventions for dementia: An updated systematic review and quality assessment

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Co-authors: Mohsen Ghaffari Darab, Dennis Henzler, Lidia Engel, Michael Lauerer, Victoria Brown, Cathy Mihalopoulos, Eckhard Nagel

Objectives: In line with population ageing, dementia has emerged as a healthcare challenge. Despite the growing focus on prevention strategies (PS) and non-pharmacological interventions (NPI) the most recent systematic review of model-based economic evaluations indicates that only a limited number of studies have been conducted in this area, while they exhibited weaknesses in certain areas of pre-modelling analysis, the justification for model assumptions and data inputs. This study aimed to update a systematic review of model-based economic evaluations of interventions for dementia, critically appraise new methodological advances that impact the analysis of dementia interventions, identify areas for enhancement and to conduct quality assessment of the studies.

Methods: Systematic searches of eight databases including PubMed, Cochrane, Embase, CINAHL, PsycINFO, EconLit, HTA database, and Tufts cost-effectiveness analyses (CEA) Registry were undertaken from Feb 2018. The methodological quality of modelling techniques and reporting in included studies were assessed against the Philips et al. and CHEERS 2022 checklists. The findings were summarised through narrative analysis.

Results: This review comprised 23 studies, reporting the results of 20 (87%) cost-utility, two (9%) cost-benefit and one (4%) CEA. Ten studies (43%) evaluated pharmacological interventions, four studies (17.4%) prevention strategies, four studies (17.4%) non-pharmacological interventions and four studies (17.4%) diagnostic interventions. One study (4.3%) evaluated both diagnostic and pharmacological interventions. The majority of studies (n=15, 65%) employed Markov transition models. Three studies (13%) utilized decision trees, two (9%) employed discrete-event simulation, and one (4%) employed microsimulation and macrosimulation modeling. Two studies (8.7%) did not specify the decision analytic approach they used. Seven of the pharmacological interventions, three of prevention strategies, four of non-pharmacological interventions, two of diagnostic interventions and the only combination of diagnostic and pharmacological interventions were reported as cost-effective. Regarding the quality of the included studies, items pertaining to methods and results sections were the least adequately reported parts across the studies, despite their importance in understanding, replicating, and assessing the validity of economic evaluations. However, the majority of studies substantially developed the decision problem, stated the scope and model type selection of the economic evaluation.

Conclusions: This review provides insights into the landscape of model-based economic evaluations in dementia interventions. The findings inform future research efforts, identify areas for improvement, and guide decision-makers in allocating healthcare resources effectively for dementia management.

Cost-effectiveness of reducing length of stay for total joint arthroplasty

Siddharth Rele, University of Melbourne

Co-authors: Chris Schilling, Cade Shadbolt, Tim Spelman, Nicholas Taylor, Michelle Dowsey, Peter Choong

Introduction: Reducing length of stay has been proposed to accommodate increasing utilisation of total joint arthroplasty (TJA). Globally, this target has meant TJA has been transformed into an outpatient procedure. However, due to community, institutional, and health system barriers, such changes are seldom achieved and reported in Australia. Rather, a more realistic target for large institutions are incremental decreases in length of stay for arthroplasty. As such, we aimed to assess the effect of a one-day reduction in length of stay on the cost-effectiveness of primary TJA at our institution.

Methods: Patients undergoing primary elective total hip or knee arthroplasty performed for osteoarthritis between April 2013 and December 2019 were included from a prospectively maintained, institutional arthroplasty registry. Data from the registry was probabilistically linked to pharmaceutical claims data from the Pharmaceutical Benefits Scheme (PBS), and reimbursement data from the Medicare Benefits Scheme (MBS). We simulated the effects of targeting a one-day reduction in length of stay at our institution from the median, 4-day, length of stay. Analysis was performed from the health system perspective, including costs associated with all healthcare encounters at our institution, and federally subsidised benefits from the PBS and MBS. A one-year time horizon was used for analysis. To ensure clinical equipoise between the 3- and 4-day groups, data were analysed with propensity score overlap weights to adjust for confounding.

Results: A total of 2054 patients were included in the final cohort, of which 733 (35.7%) had a 3-day length of stay. A one-day reduction in length of stay was associated with a US$ 860.8 (95% confidence interval [CI], -263.1 – 1987.8) increase in total costs, and 0.01 (95% CI, 0.00 – 0.02) greater QALYs at one year. The corresponding incremental cost-effectiveness ratio was US$ 67,702 /QALY (95% CI, -17,711 – 2,206,859). A one-day reduction in length of stay was associated with a significant cost saving for index admission, but greater costs associated with inpatient rehabilitation and other costs within 30-days of surgery. No difference in costs were observed after 30-days of surgery.

Conclusion: Under the current arthroplasty pathway, targeting a three-day length of stay was not associated with a cost saving. This target was also not cost-effective. Rather, costs were shifted from the index admission to post-acute care, including inpatient rehabilitation, and health service utilisation within 30-days of surgery. When targeting reductions in length of stay, policy makers and institutions should invest in education and post-discharge support to ensure patients can be discharged directly home after arthroplasty.

Evaluating the Cost-Effectiveness of a New Psychotherapeutic Intervention for Managing Posttraumatic Stress Disorder in Emergency Service Workers

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Background: The most common psychiatric condition to develop following a traumatic event is posttraumatic stress disorder (PTSD). Emergency service workers (ESWs= police and corrective services personnel for this study) are nearly three times as likely to experience PTSD than the national average in Australia. The impact of increased PTSD rates in ESWs has serious health, economic and social implications.

Objective: This economic evaluation aims to establish the cost-effectiveness of an augmented version of a psychological intervention (Cognitive Behaviour Therapy; CBT) compared with standard CBT or wait-list control to reduce PTSD, depression, and alcohol use in ESWs, primarily NSW police.

Methods: Based on data collected from a randomised controlled trial (N=100) comparing augmented CBT (A-CBT) with standard CBT and/or wait-list control, a cohort-level state-transition Markov decision model will be constructed to examine the clinical outcomes and costs associated with the treatment of PTSD. The decision-analytic model will be developed by reviewing existing clinical and economic literature, and a clinical expert will subsequently validate its structure.

The analysis will be conducted from a societal perspective considering health services use and costs, costs associated with productivity loss and improvements in health outcomes. Data on disability claims and health service use costs will be collected from the insurance agency, iCare if data permit. A discount rate of 5 per cent will be used for costs and health outcomes, and a lifetime time horizon will be assumed. This will require measuring the likelihood and associated costs of psychological distress in the treatment and control groups, projected over time. Quality of life data will be derived from mapping psychological distress measured within the trial with a preference-based health related quality of life tool. Several sensitivity analyses will be undertaken to explore uncertainties surrounding key parameters (e.g., time horizon, discount rate, costs, and health outcomes), and the model will be internally validated. TreeAge Pro (version 2023) and Stata (version 17) will be used for economic analysis.

Results: Health outcomes would be expressed as quality-adjusted life years (QALYs) to capture the impacts of the condition and treatment options. Other health outcome measures directly identified within the trial data (e.g., per claim avoided, $ per day of absence avoided) would also be analysed to measure the potential budget savings. The primary outcome of the economic evaluation would be the incremental cost per QALY gained in the form of the incremental cost-effectiveness ratio.

Conclusions: By evaluating the cost-effectiveness of a new intervention for treating PTSD, this study will investigate if a low-resource pragmatic program may reduce PTSD and associated disorders and is cost-effective.

Economic evaluation of type 2 diabetes mellitus T2DM pharmaceutical treatment compared to an alternative, conducted alongside randomized controlled trials: A scoping review

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Objective Diabetes mellitus is recognized as one of the most challenging health conditions facing all healthcare systems around the world and poses a high burden on individuals and society. Prevention of type 2 diabetes via screening programs and accessible, safe, and effective treatments would benefit people who might otherwise suffer decades of drug therapy and disease-related complications, leading to premature mortality, preventable morbidity, and significant economic burden. This study aimed to systematically map existing research on the cost-effectiveness of T2DM pharmaceutical treatment conducted alongside randomized controlled trials (RCT).

Method This scoping review was carried out according to the ""Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews"" and ""Consolidated Health Economic Evaluation Reporting Standards 2022 (CHEERS 2022) "" checklists. Medline, Health & Medical Complete (ProQuest), Cochrane Central Register of Controlled Trials (CENTRAL), and Tufts Global Health Cost Effectiveness Analysis (GH CEA) Registries were searched from January 2010 to January 2023.

Results 205 records were initially identified, and 21 records were selected for full-text review, resulting in the extraction and analysis of data from 13 articles, including 15 studies. Of the included studies, 53% of economic evaluations have been carried out in Europe (Spain, United Kingdom, Sweden and the Netherlands), 27% United States and 20% in China. Two-thirds of included studies used the payer's perspective, three studies adopted a healthcare system perspective, one study used a societal perspective and one did not provide information on the perspective chosen. With the exception of three studies, the remaining investigations were predicated upon a lifetime model.13 studies identify the relevant pharmaceutical treatments are cost-effective. In contrast, one study's result showed that the insulin degludec/liraglutide versus its monotherapy is not cost-effective, and one study deduced that the short-term cost-effectiveness of one-daily liraglutide vs once-weekly exenatide highly depends on the selected source of the clinical data. Among the 12 studies that conducted a sensitivity analysis, three studies employed probabilistic sensitivity analysis, three studies utilized univariate sensitivity analysis, and six studies employed both approaches. The medication cost emerged as the most frequently identified key driver of the outcome.

Conclusion This review may help inform decisions about investment, research, and development of type 2 diabetes pharmaceutical treatment. However, it also clearly demonstrates significant gaps in local evidence in this area and could be used to support ongoing research on this topic.

How supermarket retailers value business outcomes of healthy food retail strategies: a discrete choice experiment

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Introduction: Supermarkets represent the key setting for purchasing food for many people. Supermarkets are businesses and any voluntary changes to increase the healthiness of their food offerings also need to meet retailers' commercial needs. There is good evidence on business outcomes' that may influence food retailer decision-making related to the adoption of healthy food strategies, such as implementation cost and customer satisfaction. There is limited evidence on how retailers value and prioritize these outcomes, and therefore how they make decisions on which health promoting strategies to adopt.

Objectives: (1) To identify key business outcomes (attributes) that influence the implementation of healthy food strategies in supermarkets and grocery stores in Australia; (2) To conduct a discrete choice experiment (DCE) to quantify the value of various business outcomes from the perspective of Australian supermarket and grocery stores.

Methods: Study participants consisted of owners or managers of supermarkets or grocery stores in Australia recruited through Qualtrics panel. A structured online survey was completed by 97 participants to identify the most important business outcomes. Business outcomes were grouped into four domains: (1) commercial viability, (2) retailer's perception, (3) consumer's perception and (4) and outcomes related to purchase of healthy products. Descriptive statistics were used to summarize data and to identify the top two most important business outcomes in each domain. Then, Spearman test was used to assess the correlation and significance between business outcomes. An online DCE will be undertaken by approximately 70 participants. The DCE was designed using survey results, a literature review and discussion with the research team. D-efficient design with 12 choice tasks was created using STATA. Each choice task has three alternatives (including an opt-out option, 6 attributes each with 3 levels. A multinomial logit (MNL) model will be used to analyse the DCE data.

Results: Ninety-seven participants completed the general survey (61% males). Most participants identified as managers (72.2%) or owners (24.7%). The key business outcomes selected by participants within each domain were: (1.1) competitiveness of store offers for healthier products and (1.2) customer loyalty to store (rho = -0.2220, p = 0.0289); (2.1) stakeholders satisfaction and (2.2) ease of implementation for employees (rho=-0.3129, p = 0.0018); (3.1) customer satisfaction and (3.2) customer demand for healthy products (rho = -0.2011, p = 0.0482); and (4.1) proportion of healthy items sold, and (4.2) store's net profit (rho= -0.5354, $p < 0.0001$).

Conclusions: This study identified the key business outcomes that may impact the implementation of healthy food strategies in Australian supermarkets and grocery stores. These findings were used to inform the DCE. The DCE will be undertaken in June and the results will be presented at the conference.

Do consumers prefer over-the-counter oral contraceptive pills in Australia? A Discrete Choice Experiment

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Background: The requirement to obtain a prescription creates a barrier for women initiating and continuing the use of the oral contraceptive pill (OCP) in Australia. Reclassifying the OCPs as over-the-counter (OTC) medication, without the need for a prescription, may improve accessibility and reduce unintended pregnancies. However, it is unclear how Australian women would respond to this new policy if it were implemented.

Objective: We aim to assess women's preferences for accessing non-prescription OCPs from a pharmacy and to estimate the switch rate from participants' status quo (current contraception methods or no contraception at all) to OTC OCP.

Methods and design: The main method is the Discrete Choice Experiment (DCE) which involves presenting participants with different options of accessing OCPs with each described using attributes and levels developed through three rounds of focus groups and an interview with an expert. We divided respondents into four contraceptive user groups including OCP only, condom only, both OCP and condom, and no contraception. Long-acting reversible contraceptives and sterilization method users are assumed not to switch to OTC OCPs and are not included in the DCE. We used NGene to create an efficient design that maximized the Determinant-efficiency, resulting in 12 rows, suggesting each participant will be randomly assigned 12 choice tasks. The DCE is ready for pilot testing, and data collection will be conducted with 1000 respondents with the sample size for each user group determined by their population share. Econometric analyses will be based on the conditional logit and mixed logit models. We will estimate willingness to pay (WTP) using the WTP space model specification, which allows us to specify WTP distributions directly. We will also undertake simulations to predict the switch rates under various scenarios.

Credible findings: The following seven attributes were considered: method of access, total annual cost, privacy, provider training, ability to discuss other health issues, provider attitude, and annual consultation time. We will conduct sub-group analyses to explore observed heterogeneity by interacting preference weights with sociodemographic variables like age, education, and place of residence.

Conclusion: Despite the considerable interest that the reclassification of OCP has received, little is known about the consumers' preference in the hypothetical scenario of the availability of OCP OTC in the Australian context. Measuring an individual's preferences for a certain intervention provides valuable insights to the policymakers to help design the intervention for optimal uptake and adherence. The estimated switch rate will be useful as key inputs in the economic evaluation of reclassifying OCPs.

Relationship between EQ-5D-5L health state utilities with disability and fatigue severity for people living with Myalgic Encephalomyelitis/Chronic Fatigue Syndrome in Australia

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Introduction: Myalgic encephalomyelitis/chronic fatigue syndrome (ME/CFS) is a chronic, complex condition with a mixed profile of symptoms and systemic manifestations. ME/CFS is a debilitating condition that can be worsened by exertion. Optimal performance of the body systems is affected, reducing health related quality of life.

Objectives: This study aims to generate Health state utility values for ME/CFS patients and investigate their relationship with disability and fatigue severity.

Methods: An Australian cross-sectional survey of people with ME/CFS was conducted using the EQ-5D-5L instrument to gauge their health preferences. Mean health state utility (HSU) values were generated using the new Australian EQ-5D-5L tariffs and results were stratified by sociodemographic factors and clinical factors(disability and fatigue severity and comorbidities). The Short Form-DePaul Symptom Questionnaire (SF-DSQ) measured disability and fatigue severity levels. Univariate regression models evaluated the associations between mean HSU scores, sociodemographic and clinical factors. In a separate model we investigated the depth of the association between participant's responses to the five dimensions of the EQ-5D-5L instrument and disability and fatigue severity. Stepwise multivariate regression models evaluated statistically significant variables.

Results: Mean HSU (95% confidence intervals) was EQ-5D-5L: 0.46 (0.42-0.50) and was substantially lower than population norms: EQ-5D-5L: 0.89. Disability and fatigue severity were statically significant predictors of HSU values. Our model showed that four (mobility, self-care, usual activity, and pain/discomfort) of the EQ-5D-5L dimensions were significant predictors of disability and fatigue severity. Age, employment, and income were not consistently significant predictors of HSU values in our stepwise multivariate model.

Conclusion: Associations between EQ-5D-5L HSU values and disability and fatigue severity were observed amongst people with ME/CFS demonstrating the influential impact of the dimensions of the EQ-5D-5L on disability and fatigue severity in people with ME/CFS. These findings are important and could serve as a reference for policy decision makers in improving resource allocation and intervention trajectory.

Construct validity and ceiling effects of EQ-5D-5L and QLU-C10D in individuals undergoing colonoscopy

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Objective: To assess the construct validity and ceiling effects of the generic EQ-5D-5L and cancer specific QLU-C10D in measuring health related quality of life (HRQoL) for individuals undergoing colonoscopy for investigations for colorectal cancer.

Methods: HRQoL was assessed 14 days following colonoscopy using EQ-5D-5L and EORTC-QLQ-C30. Index scores for EQ-5D-5L were generated using the EQ-5D-5L crosswalk tariff and for QLU-C10D by mapping from the EORTC-QLQ-C30. Convergent validity was assessed by calculating the correlation coefficients between index and dimension scores, and the level of agreement using Bland-Altman plots. Discriminant validity between indications for colonoscopy (screening following a positive faecal occult blood test, surveillance and symptoms) was tested using Kruskal-Wallis H tests. Ceiling effects were calculated as the proportion reporting the highest possible level or score for each measure and dimension.

Results: Participants receiving colonoscopy because of symptoms had significantly lower HRQoL as assessed by both EQ-5D-5L 0.71 (0.21) and QLU-C10D 0.67 (0.21), compared to those undergoing colonoscopy following a positive faecal test [(0.80 (0.22) and 0.77 (0.21)], or surveillance [0.78 (0.21) and 0.77 (0.20)]. A strong correlation was observed between the generic (EQ-5D-5L) and cancer specific (QLU-C10D) index scores (r=0.80) as well as EQ-5D-5L anxiety/depression and QLU-C10D emotional function (r=0.78). However, poor agreement (7.1% outside the limits of agreement) was observed between the index scores. Ceiling effects were observed with all dimensions of EQ-5D-5L and QLU-C10D but 21% of participants reporting full health with EQ-5D-5L still had problems with fatigue and sleep on the QLU-C10D.

Conclusion: The cancer specific QLU-C10D had lower ceiling effects compared to EQ-5D-5L, however, there is strong agreement between the index scores assessed by the two measures, indicating their validity in this population. To provide a holistic assessment of HRQoL, both measures should be used alongside each other.