



THE UNIVERSITY OF
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Centre for Health Policy,
Melbourne School of Population and Global Health

Health Economics Unit Newsletter

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Foreword

Greetings from all of us in the Health Economics Unit (HEU) to all our colleagues in Australia and around the world!



In this newsletter we highlight some of our recent achievements and the exciting programme of work we have planned for the coming year. The last six months have brought unexpected challenges - but have also been exceptionally productive for us as a team. I am very proud of the way that my HEU colleagues managed to quickly adapt to the challenges of remote working and teaching online. Work programmes were rapidly rearranged to accommodate new research priorities relating to the pandemic - while pausing other projects where data collection was rendered impossible by the circumstances. And all of this was achieved, in many cases, while working around a crowded kitchen table, juggling child-care and home-schooling – or, for others, dealing with the strangeness of extended periods alone, or ‘stuck’ overseas.

COVID-19 and government responses to it around the world, raise fundamental questions about how health is valued, the relationships and feedback loops between health and wealth, and the trade-offs societies are prepared to make. In the March issue of ISPOR’s [Value and Outcomes Spotlight](#) I outlined just some of the research questions the pandemic raises for health economics and outcomes research. Health economics has never been more relevant – yet the pandemic also highlights some limitations of our methods of economic evaluation, most of the focus of which has been on assessing the cost effectiveness of new technologies. The pandemic required whole-country interventions and public policy initiatives, with social and economic costs and consequences far beyond the narrow ‘health care perspective’ typically adopted in evaluation. In my view, this highlights the need for economic evaluation to do more to address cross-sectoral trade-offs and spill-overs - and to incorporate effects on inequalities in health and wealth. I believe it also highlights the need for health economics to focus more on public health and prevention, and to improve evidence available on value for money across the whole health care system.

HEU has taken on a number of COVID-19 projects in recent months. Natalie Carvalho joined a WHO WPRO initiative to investigate the implications of the pandemic on non-COVID 19 deaths over the next 18 months, in order to inform health system planning in the Western Pacific Region. Jemimah Ride took part in a costing study of drive-through testing facilities for COVID-19. Ilias Goranitis is investigating the impacts of the lock-down on parents coping with children with severe disorders. Kim Dalziel is supporting two clinical trials relating to COVID-19 vaccines and COVID-19 hospital monitoring. Philip Clarke published an article exploring ways of [reopening economic activity](#). And HEU has helped to design a global survey, [‘How Are You Going?’](#) in collaboration with the Nossal Institute.

While the higher education sector in Australia faces considerable challenges in the coming year, HEU is excited about the future. We have a wonderful new cohort of PhD students. We have an established early career group, and a new ISPOR Victoria/Tasmania student chapter. We have had some very significant ‘wins’ in research grants in recent months, which will allow us to push forward health economics research in areas of importance to the Australian health care system. And we are publishing more than ever, in high impact journals.

We hope you enjoy our newsletter – and hope you stay safe and well.

Professor Nancy Devlin

Head of the Health Economics Unit

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Upcoming Health Economics Courses

The Health Economics Unit is offering two short courses in the second half year of 2020.

31st August 2020 - Evaluating Public Health Interventions using epidemiological and economic methods

A one-day short course designed for policy makers and researchers seeking a better understanding of how one can quantify impacts of public health interventions from a national and global perspective.

8th September 2019 - Introduction to Cost-Effectiveness Analysis in Health

A one-day short course aiming to provide participants with an understanding of how economic analysis can be used to evaluate health programs and aid decision making.

[More info & register here](#)

Featured News

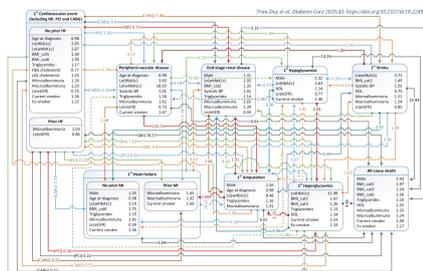
The personal utility and uptake of genomic sequencing in pediatric and adult conditions: eliciting societal preferences with three discrete choice experiments

A study led by [Dr Ilias Goranitis](#) was recently published in *Genetics in Medicine*. Dr Goranitis and colleagues from [Australian Genomics](#) elicited preferences and values from 1913 members of the Australian public to estimate the demand and value of genomic testing in childhood and adult genetic conditions. The study found substantial value, particularly for childhood conditions, where the willingness-to-pay for genomic testing ranged between \$5-15k depending on the risks and benefits involved. The study demonstrated that society values highly the diagnostic, clinical, and nonclinical benefits of genomics, which challenges the current HTA evaluation frameworks in Australia.

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A new tool for health economic evaluation in type 1 diabetes: A patient-level model derived from a nationwide population



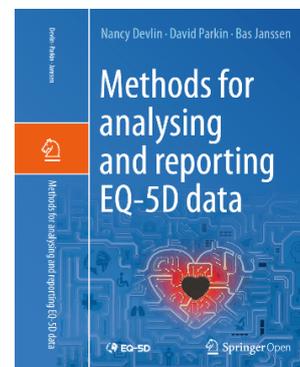
A study recently published in *Diabetes Care*, led by [Dr An Duy Tran](#) and co-authored by [Dr Josh Knight](#), [Prof Andrew Palmer](#) and [Prof Philip Clarke](#), provides a comprehensive picture of the interdependencies between risk factors of type 1 diabetes-related complications and death, history of complications and future adverse events. These interdependencies were characterised by 13 equations predicting the risk of adverse events and 10 equations projecting risk factor progression, derived entirely from a nationwide longitudinal registry containing nearly 28,000 patients with type 1 diabetes in a 10-year follow-up period. These equations were integrated into a patient-level simulation model which underwent a rigorous face and internal validation. For a patient with specific baseline risk factors, the simulation model can be used to estimate life expectancy and predict the occurrence of complications including heart attack, PCI, CABG, stroke, amputation, hyperglycaemia, hypoglycaemia, heart failure, peripheral vascular disease and end-stage kidney disease over the lifetime of the patient. When combined with costs and quality of life for events, the model can serve as a tool for economic evaluation of new treatments for type 1 diabetes. [Dr An Duy Tran](#) is currently developing a stand-alone C++ application for the model, and working with [Prof Philip Clarke](#) and other scientists at the University of Oxford

to create a user-friendly interface for the application. This modelling tool will be made available to third parties under specific conditions of use and copyright.

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New book – Devlin N, Parkin D, Janssen B. (2020) Methods for Analysing and Reporting EQ-5D data. Springer. Expected date of publication: July 2020.

The EQ-5D is one of the most widely used Patient Reported Outcomes questionnaires world-wide – yet to date there has been no guidance available to users on how to analyse the data that it produces. Authored by [Prof Nancy Devlin](#), Prof David Parkin and Dr Bas Janssen, this Open Access book provides practical, clear and comprehensive guidance on analysing EQ-5D data. In five concise chapters, the book describes how the questionnaire data – the EQ-5D profile and EQ VAS – can be analysed in various ways to generate important insights into peoples' health. We also show how the value sets which accompany EQ-5D instruments can be applied to summarise patients' data. The final chapter deals with advanced topics in the analysis of EQ-5D data, including the use of Minimally Important Differences, case-mix adjustment, mapping, and more. The methods can be applied to any EQ-5D instrument and many of the methods described will be equally relevant to other Patient Reported Outcomes instruments.



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Child versus adult EQ-5D-Y health state preferences recently published



Max Catchpool and [A/Prof Kim Dalziel](#) published a validation study on the EQ-5D-Y in the journal *PharmacoEconomics* titled: **Feasibility and validity of adolescent and adult health state preferences for EQ-5D-Y states in Australia and Spain: an application of best-worst scaling.** The aim of the paper was to evaluate whether adolescent preferences were valid to inform health states from the EQ-5D-Y when compared to adult preferences. A profile case best-worst scaling (BWS) online survey was conducted. Results showed that adolescents aged 11-17 years were able to provide valid preferences. There were important differences in how Australian adolescents and adults rated the health states, suggesting the age-related differences in elicitation values for the EQ-5D-Y.

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Co-morbidities and sex differences in long-term quality-of-life outcomes among patients with and without diabetes after total knee replacement

A recent [article](#) by [Michelle Tew](#), [A/Prof Kim Dalziel](#) and [Prof Philip Clarke](#) at the Centre for Health Policy has been published in the *Journal for Clinical Medicine*. This study used annual quality-of-life measures collected from total knee replacement (TKR) patients captured in the St. Vincent's Melbourne Arthroplasty Outcomes (SMART) Registry over a 5-year period to examine if and to what extent quality-of-life trajectories differ between patients with and without diabetes and what patient characteristics or subgroups were related to poor QoL outcomes. The findings showed important differences in longer term quality-of-life outcomes between patients with and without diabetes following TKR surgery. This difference was more pronounced among females and in patients with concurrent respiratory and mental health disorders. These findings highlight the need for a better understanding of patient and physiologic differences and for tailoring management to optimise patient outcomes.



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New Funding and Awards

Health Economics Unit MRFF grant success: Measuring and valuing changes in child health to facilitate robust decision making

Prof Nancy Devlin, together with HEU's A/Prof Kim Dalziel and colleagues from UTS, Flinders University, Curtin University, the Royal Children's Hospital and Monash University, have been awarded a \$2.35 million [MRFF grant to improve the way child health is measured and valued in health technology appraisal](#). Methods conventionally used to measure and value adults' health related quality of life (HRQoL) do not work well in valuing paediatric HRQoL and preclude asking children for their views. We provided an overview of these issues in [Devlin \(2020\)](#). Given these problems, there has been low uptake of these tools in the evidence used to inform healthcare decisions. **The resulting gap in evidence risks significant misallocation of funds, potentially denying access to effective and cost-effective paediatric interventions.**



Our research will comprehensively address these issues in measuring and valuing child health for use in assessing effectiveness and cost effectiveness. Deliverables will include (1) a database of paediatric HRQoL data across different questionnaires and diseases, (2) improved methods for self-and proxy-report of child HRQoL, (3) state of the art methods for valuing child health states, including producing Australian value set for at least one widely used paediatric HRQoL questionnaire, and (4) evidence on the weight placed on child vs. adult QALYs by patients, the general public and decision makers. This three-year project will run June 2020 to mid 2023.

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Associate Professor Kim Dalziel awarded a 2021 NHMRC Investigator Grant

We are pleased to announce [A/Prof Kim Dalziel](#) was successful in obtaining a 2021 NHMRC Investigator Grant titled: **Advancing health economic evaluation measurement and design to support priority setting for vulnerable children**. The aim of this fellowship is to develop a new program of research that directs health funding decisions for children to ensure they are fair and efficient with the following aims: (1) Make possible the generation of quality adjusted life years (QALYs) in economic evaluation of interventions for young children. Develop new empirical research so that Pediatric Quality of Life Inventory (PEDsQL) scores can be used in economic evaluation. (2) Quantify inequities in the design and financing of the Australian health system for vulnerable children including those with high needs. (3) Bring advanced pediatric health economics methods alongside clinical research and strength translation to policy, thus reducing waste and improving fairness.



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Elizabeth and Vernon Puzey Fellowship awarded to Dr Jemimah Ride

[Dr Jemimah Ride](#) has been awarded the "Elizabeth and Vernon Puzey Fellowship" for 2020 by the Faculty of Medicine, Dentistry and Health Sciences. This fellowship is awarded to an outstanding doctoral graduate in an area of research priority for the faculty, particularly targeted at researchers who have the potential to build and lead cross-disciplinary collaborative research. During the two years of her fellowship, Jemimah will be examining unmet need for mental health care in children. The aims are to (1) Identify supply- and demand-side sources of unmet need for mental healthcare among Australian children, particularly disadvantaged children, and (2) Use economic evidence to develop healthcare reform and practice strategies to reduce inequalities and tackle unmet needs.



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More new funding

Dr Ilias Goranitis and Murdoch Children's Research Institute colleagues, A/Prof Zornitza Stark and Dr Christopher Gynge, were successful in obtaining just under \$5.5 million in funding from the Medical Research Future Fund - Genomics Health Futures to develop a National rapid genomic diagnosis program for critically ill children and a Centre for Ethics of Paediatric Genomics to Improve Paediatric Care. The two complementary projects will aim to develop and evaluate a national rapid genomic diagnosis program for critically ill children with genetic conditions, and to generate new knowledge about the ethical, legal and social implications of rapid genomic sequencing. Dr Goranitis will lead the health economics components, involving economic evaluation and discrete choice experiments.

Dr Natalie Carvalho was awarded the 2020 Medicine, Dentistry and Health Sciences (MDHS) Faculty Research Fellowship for her work in the development of new methods for, and application of economic evaluation of new vaccines and other maternal and child health-related interventions.

Dr Tessa Peasgood and Prof Nancy Devlin have been involved for the last three years with an international research project, entitled 'Extending the QALY', to develop a new quality of life measure for economic evaluation (<https://scharr.dept.shef.ac.uk/e-qaly/>). The project is coordinated at the University of Sheffield in the UK. A new 25-item instrument has been developed which aims to capture the benefits of interventions in health care, care for people with a disability, aged care and for informal carers. Tessa is involved in ongoing work funded by the EuroQol Research Foundation to score the instrument. This work uses both standard approaches to preferences elicitation to score a shortened 9-item classifier and alternative psychometric methods to score the full 25-item instrument. The developers hope the instrument will now be widely tested to evaluate its validity and sensitivity to changes in quality of life.

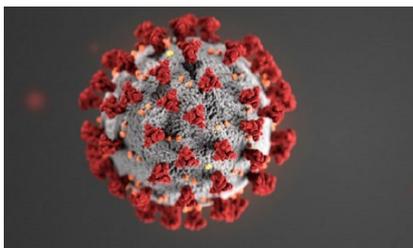
Dr Xinyang Hua was nominated as a finalist for the 2020 Premier's Awards for Health and Medical Research

Dr Xinyang Hua, our recent PhD graduate from the Health Economics Unit, Centre for Health Policy was nominated as one of the finalists for the 2020 Premier's Awards for Health and Medical Research, in recognition of her exceptional contribution to Health Service Research in her PhD study. Xinyang's PhD research was themed around health economics and chronic disease with a specific focus on diabetes, under the primary supervision of Prof Philip Clarke. Xinyang conducted six studies during her study, which filled in important evidence gaps in costs of chronic disease and provided practical tools to improve resource allocation and the better targeting of treatments for chronic disease.



Research Engagement

Dr Natalie Carvalho takes part in a think piece on non-COVID mortality for the WHO Western Pacific Regional Office



In April-May 2020, Dr Natalie Carvalho was invited to take part in a think piece for the World Health Organization (WHO) Western Pacific Regional Office (WPRO) to look at the impact of the COVID-19 outbreak on non-COVID 19 deaths in the next 12-18 months. Alongside a multidisciplinary team from across different sectors within WHO, they applied a futures approach to explore possible scenarios related to the COVID pandemic. The team is making recommendations to WHO WPRO on what WHO and countries in the region need to do to prepare for and be resilient to the worst-case scenario.

ISPOR Victoria and Tasmania Student Chapter launched

A Victorian and Tasmanian chapter of the Professional Society of Health Economics and Outcomes Research (ISPOR) student network has been launched, fostering the development of future leaders in health economic and outcomes research. [Martin Vu](#), of the University of Melbourne [Cancer Health Services Research group](#), and a team of students from Monash University, Deakin University and University of Tasmania have recently established the [Student Chapter](#). In particular, the Student Chapter will be focusing on building an environment where students can network and connect with members of the pharmaceutical industry, health-related organisations, and academia. The Student Chapter was conceptualised and supported by the current ISPOR President [Prof Nancy Devlin](#) at the Centre of Health Policy, and ISPOR Student Network Past Chair [Dr Koen Degeling](#), also from the Cancer Health Services Research group.

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More Research News

Parental health spillover effects of paediatric rare genetic conditions



A recent [study](#) on the health impact of rare genetic conditions on families has been published in the Quality of Life Research, co-authored by [You Wu](#), [Dr Ilias Goranitis](#) and Dr Hareth Al-Janabi. This study used health-related quality of life (HRQoL) outcomes collected from children with rare genetic conditions and their parents to examine the health utility loss in the affected parents and the relationship between child's and parent's HRQoL. Substantial spillover effects were found across genetic kidney diseases, mitochondrial diseases and neurodevelopmental disorders. The findings of this study highlight the

importance of incorporating family health spillover effects into economic evaluations of genomic technologies and personalized medicine in the rare disease context.

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Out of hospital care for single-ventricle children

Surgery is the cornerstone of treatment for single-ventricle congenital heart disease, but a package of care, including the critical role of primary care and out-of-hospital specialist physician visits and appropriate medication, is required for ongoing best practice. Led by [Dr Li Huang](#) and [A/Prof Kim Dalziel](#), this [study](#) quantified for the first time the current state of out-of-hospital health care use across childhood for Fontan survivors using data from Australia. The optimal package of care is yet unknown, however an overarching understanding of the patterns of out-of-hospital care is a critical step forward as we struggle with what the future medical needs really look like for the single-ventricle population.



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Exploring the Impact of Quality of Life on Survival: A Case Study in Total Knee Replacement Surgery

[Michelle Tew](#), recently published another [paper](#) examining the impact of incorporating quality-of-life (QoL) measures when extrapolating survival in Medical Decision Making. The study aimed to investigate the effect of accounting for the relationship between QoL (baseline and change) and mortality when extrapolating outcomes to a lifetime horizon illustrated with a case study in total knee replacement surgery. The results showed that correlations between QoL and mortality can influence health outcomes such as life expectancies and quality-adjusted life years (QALYs) and consequently incremental QALYs. Although observable differences in LE and QALYs were small, this could translate into an important difference in incremental QALYs and can be relevant in cost-effectiveness calculations. Therefore, future approaches to estimate survival for economic evaluations should consider the inclusion of QoL.

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Staff and Student News

Welcome Dr Tessa Peasgood



Dr Tessa Peasgood has joined the Health Economics Unit at the Centre for Health Policy as a Senior Lecturer where she will be coordinating across the health economics/ economic evaluation specialisation within the MPH. Her teaching interests lie broadly across health economics, welcoming opportunities to show the value of bringing an economic approach to considerations of current public health policy. Tessa's research interests lie predominantly in measuring and valuing health and wellbeing and the use of utility values within health technology appraisal. For the last four years she has been one of the lead researchers on an international project to develop a new outcome measure for use in economic evaluation across health and social care (The 'Extending the QALY' project). She continues to be involved in work to value this new measure and test its validity.

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Welcome Patrick Abraham



Patrick Abraham has joined the Health Economics Unit at the Centre for Health Policy as a Research Assistant. He is currently working with Dr Natalie Carvalho on an economic evaluation of Meningococcal vaccines in Fiji. He has also worked with Dr Carvalho and Prof Tony Blakely on an economic impact study of the differing strategic responses to COVID-19, and with Dr Jemimah Ride on a costing study of a drive-through COVID-19 testing facility. Patrick is a recent Master of Public Health graduate, University of Melbourne, specialising in health economics and global health. Patrick has a passion for health equity and has a particular interest in low- and middle-income countries.

Welcome our new postgraduate students

We are excited to have a new wonderful cohort of PhD students and exchange student starting with the Health Economics Unit this year!

Lachlan Cameron Lachlan's PhD is focusing on how gambling behaviour and the existence of problem gambling relate to mental illness, particularly depression and suicidality. He has Dr Jemimah Ride as his primary supervisor, as well as Prof Nancy Devlin and Prof Jane Pirkis as his co-supervisors. He completed his Bachelor of Commerce, with honours in economics, at the University of Melbourne.

Marie-Anne Boujaoude Marie-Anne's PhD project aims to develop and apply equity-based methods in the context of health technology appraisal in Australia, under the primary supervision of Dr Natalie Carvalho and co-supervision of Prof Nancy Devlin and A/Prof Kim Dalziel. A methodological and empirical study of equity in economic evaluation will build upon two newly developed economic evaluation methods. Marie-Anne has a Master of Health Economics and Management and Master of Sciences in Biology.

Emma Watts Emma's PhD research will focus on vaccine programs in LMIC and include a distributional cost effectiveness analysis of rotavirus vaccine introduction in Indonesia. Additionally, within a study of severe health events in Lao, sources of household vulnerability to catastrophic health expenditure, and financial coping mechanisms will be explored. She is supervised by Dr Natalie Carvalho and Prof Fiona Russell (Murdoch Children's Research Institute). Emma's previous experience is in clinical research on infectious diseases in the Asia Pacific Region.

Nienke Neppelenbroek Nienke is an epidemiology master student from Netherland, conducting a six-months research project with main supervisor Dr Natalie Carvalho. Her project is regarding the application and reporting of utility and disability weights in cost-utility analyses of childhood vaccines.

Selected Publications

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