



University
of Glasgow

Health Economics and Health Technology Assessment

ANNUAL REPORT 2022

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From the Director

Welcome to the 2022 Health Economics and Health Technology Assessment (HEHTA) Research Group's Annual Report. The past year had been a year of transition, when we emerged from work-from-home exclusively to re-engaging with our colleagues in-person. As I reflect on the past year of adapting to the new normal, there are many highlights I would like to share.

One of the key highlights was our NIHR Global Health Research Group on Arthritis, led by Professor Emma McIntosh has successfully delivering a substantial programme of research after five years. In addition to a large number of high-quality academic outputs, the team also focused on tailored dissemination and stakeholder engagement. In August last year, the team hosted a series of dissemination events to local communities and policy makers in Tanzania. We are very proud of the achievements of this collaboration with the Kilimanjaro Clinical Research Institute in Tanzania, the Malawi Epidemiology and Intervention Research Unit, University of Bristol and the Northumbria Healthcare NHS Foundation Trust. The team is now working on developing proposals for the next phase of research to extend their work to other parts of Africa.

In the meantime, we continue to expand our research portfolio in Global Health Technology Assessment (HTA). Most notable is our new collaboration with our Glasgow colleagues at the Wellcome Centre for Integrative Parasitology, and colleagues from Malaysia, Burkina Faso and Paraguay on 'Optimal Deployment of Wolbachia for Dengue Control' (£5m award funded by Wellcome). This exciting multidisciplinary project is due to commence in 2023.

The year of 2022 was also a year of great personal achievements for many of our HEHTA team members. At HEHTA, we are firmly committed to supporting the career development of all our researchers. We were delighted to celebrate Drs Janet Bouttell, Eleanor Grieve and Nicola McMeekin – our HEHTA researchers, in graduating with PhDs. We also celebrated the promotions of Dikshyanta Rana, Francesco Manca and Dr Giorgio Ciminata, who joined the team as trainees and PhD student, and were promoted to Research Associates; Drs Manuela Deidda and Janet Bouttell, who have been building programmes of research on Economics of Population Health and Early HTA respectively, were promoted to Research Fellows; and Dr Evi Germeni, who has been leading outstanding research on integrating mixed methods in HTA and health economics has been promoted to Senior Lecturer.

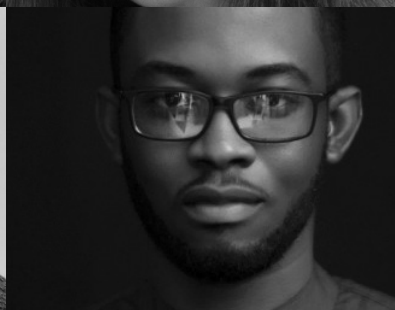
As the team continues to expand, we welcomed one new researcher, four new trainees and one new PhD student to the team. They are all settling well into the team and we look forward to reporting on their and the wider team's activities in our annual report next year

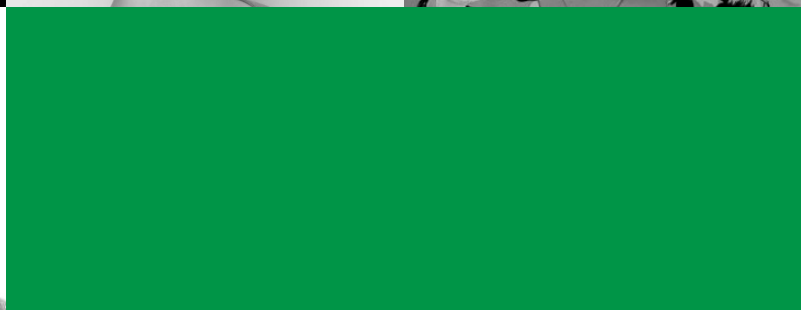
I hope you enjoy our 2022 annual report.



Olivia Wu, Director
Health Economics and Health
Technology Assessment
(HEHTA)

A handwritten signature in black ink, appearing to read 'Olivia Wu'.





Research Themes



Analysis of Linked Health Data (ALDA)

This programme encompasses all research at HEHTA that is associated with statistical, epidemiological and economic analysis of linked health data sets. Our team has a wealth of expertise and experience in this field – for example data manipulation and identifying cohorts within linked data sets; regression modelling of panel data sets; outcome measurement, costing and developing decision analytic models using linked data sets.

Decision Analytic Modelling and Simulation for Evaluation in Health (DAMSEL)

This programme encompasses research associated with conducting an evaluation using modelling or simulation methods. Modelling can be used as the whole framework for an evaluation, or as part of a clinical trial-based evaluation to extrapolate intermediate trial endpoints to final health economic outcomes. DAMSEL cuts across and interacts with many of the other themes of HEHTA.

Economics of Population Health (EPH)

This programme is concerned with the development of methods and related empirical work associated with the economic evaluation of population health interventions, including those that may be delivered outside conventional health services. The theme is particularly interested in the evaluation of 'up-stream' influences, such as early life experiences, the social and economic conditions in which people live and environmental exposures affect wellbeing.

Incorporating Perspectives and Experiences (IPE)

This programme aims to promote the use of qualitative approaches in HTA. Qualitative research can provide valuable insights into stakeholder perspectives, needs and experiences, as well as contextual aspects of evaluations and HTA. Research in this programme focuses on the development and application of qualitative methodologies to conceptual modelling, trial recruitment and design, developing measures, evidence synthesis, identifying attributes and levels for stated preference discrete choice experiments and process evaluation.

Evidence Synthesis (ES)

This programme comprises all research associated with combining multiple sources of evidence for clinical and economic evaluations in the context of HTA. Alongside the NIHR Complex Reviews Support Unit (CRSU), this programme explores challenges in combining complex data types and structure, through methodological and applied research.

Economic Evaluation alongside Clinical Trials (EEACT)

This programme includes all research associated with conducting an economic appraisal as part of a clinical trial. Although modelling methods may still be required to provide a comprehensive appraisal, the characterising feature is the inclusion of an economic component to the trial and the availability of experimental data on both costs and effects of treatment.

Global HTA (GHTA)

This programme draws upon HEHTA's research from a global perspective, working with multi-disciplinary collaborators to evaluate a range of interventions including public health and novel low-cost diagnostic tools in countries across Africa and Asia. In addition, alongside the One Health agenda, our research applies methodology that quantifies the cross-sectorial costs and benefits to promote its development in practice.

Economics of Precision Medicine (EPM)

This programme directly aligns with the College of Medical, Veterinary and Life Sciences (MVLS) role as one of the six regional centres of excellence created by the Precision Medicine Catapult. The EPM programme focuses on understanding of the 'strata' of responses and the genetics of the diseases, and effective and cost-effective forms of treatment for different patient groups, methodologically underpinned by subgroup analyses. In addition, we are investigating the implications of precision medicine for study design and technology pricing.



Global HTA at HEHTA

Theme Lead: Eleanor Grieve

The use of Health Technology Assessment (HTA) continues to grow internationally. Whilst resources are finite in every setting, there is much diversity in the role and application of HTA.

The Global HTA programme critiques HTA in different contexts, exploring variation between high-income countries as well as looking in-depth as to how and why decision-making in healthcare may differ amongst low- and middle-income countries (LMICs). Given the global reach of HTA, methodological implications are also considered with a particular focus on LMICs. The theme draws upon HEHTA's research from a global perspective, working in particular with major stakeholders including the National Institute for Health and Social Care Research (NIHR), the Bill and Melinda Gates Foundation (BMGF), Wellcome, the Medical Research Council (MRC), and Engineering and Physical Sciences Research Council (EPSRC), involving collaborations across multiple countries and disciplines as well as utilising

staff members' expertise in delivering training in HTA beyond the UK.

Major projects under the Global HTA theme include:

The NIHR Global Health Research Group (GHRG) project 'Estimating the prevalence, quality of life, economic and societal impact of arthritis in Tanzania, led by Emma McIntosh in collaboration with the Kilimanjaro Clinical Research Institute (KCRI);

The Centre for Global Development (CGD) project 'Estimating the Return on Investment of Health Technology Assessment India' (HTAI_n) involving Eleanor Grieve and Pankaj Bahuguna.





Research Spotlight

NIHR Global Health Research Group on Arthritis

Overview

The £2.5 million National Institute for Health and Care Research (NIHR) Global Health Research Group (GHRG) project 'Estimating the prevalence, quality of life, economic and societal impact of arthritis in Tanzania' led by Professor Emma McIntosh, Deputy Director of HEHTA, and Professor Blandina Mmbaga, Director of Kilimanjaro Clinical Research Institute (KCRI), commenced in April 2018 and brought together a team of international researchers from clinical sciences, social sciences and health economics in the UK and Tanzania. Emma and the team were also successful in securing additional funding to research the attributes of capability wellbeing and bringing in new partners from the University of Bristol and the Malawi Epidemiology & intervention Research Unit (MEIRU) in 2021. This Global Health research group officially came to an end in September 2022 and the team are currently working up their next application for an NIHR Global Health unit (2024).

Background

To date, most health research in Africa has been focused on infectious diseases. However, Africa is currently facing a preventable crisis caused by the rapid rise in people developing non-communicable diseases (NCDs) i.e. non-infectious diseases. In Tanzania, NCDs now account for 27% of all deaths. This burden is recognised by the Tanzanian Ministry of Health, with development of a strategic plan to prevent and manage NCDs. However, the focus on NCDs has been dominated by other diseases such as cardiovascular, cancer and diabetes, with little attention paid to musculoskeletal (MSK) disorders, including arthritis. This is entirely out of proportion to the impact that musculoskeletal disorders have on disability. Worldwide, MSK disorders are ranked the second most common cause of disability. A large global study reported that MSK diseases accounted for 20% of all years lived with disability in low and middle income countries, yet plans to reduce NCDs do not include MSK disorders. An ageing population has made this MSK burden much worse. Lack of data exists on the frequency, economic, social and quality of life impacts of MSK disorders in developing countries. Another major gap that has been recognised in Tanzania is a lack of capacity for social science research and intervention science. Such capacity is needed for better management of NCDs and for improving the design of treatments for existing infectious disease problems. In addressing capacity gaps for NCD and intervention science research, this proposal addresses two priority areas for development of health research capacity in Tanzania. Our vision was for an enhanced Tanzania social science research capacity with an initial goal to measure the health and economic burden of arthritis, paving the early stages to better management.



Organisation Partners

Kilimanjaro Clinical Research Institute (KCRI), Tanzania

Malawi Epidemiology and Intervention Research Unit (MEIRU)

University of Bristol

Northumbria Healthcare NHS Foundation Trust

Work Packages

WP1: Identify the burden of arthritis in the hospital setting in Tanzania

WP2: Identify & feasibility test diagnostic instruments for classifying arthritis symptoms

WP3: Conduct population census in Hai, Tanzania with embedded arthritis/joint pain prevalence survey

WP4: Explore local categorisations of joint pain/ arthritis & measure support-seeking experiences

WP5: Identify existing resource use & preference-based quality of life measures for Tanzania

WP6: Identify, measure & value the quality of life & health care resource use impacts of arthritis in Tanzania

Extended study 1

Evaluation of new clinic responding directly to current unmet clinical need

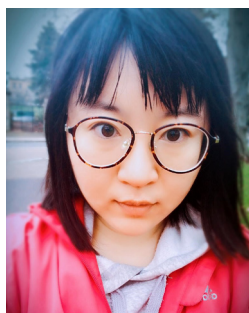
Extended study 2

Identifying culturally relevant attributes of capability wellbeing

Findings

**From project manager,
Yujin Du:**

'We have met, and we believe exceeded, our short, medium and long-term objectives. We have answered all our research questions and delivered all our training and capacity building. In addition, we have set up the first ever musculoskeletal (MSK) clinic in Tanzania. We secured a costed extension to our NIHR funding and additional knowledge exchange funding to develop clinical training materials for the African setting. Specifically WP1: We completed both a retrospective and prospective survey of the burden of arthritis in the hospital setting in Tanzania. For the retrospective audit, 8003 files of patients were recorded, of those 185 (2.3%) had a diagnosis



of one joint conditions including arthritis. The majority, 102 (56.2%) were patients aged 60 years and above, 54.1% were females, and 43.2% were farmers. Patients aged 60 years and above, had twice higher odds of having arthritis, compared to those aged 18-45 (OR:2.1;95CI:1.41,3.01). Females had 30% higher odds of having arthritis compared to their male counterparts. The majority of the patients with recorded arthritis had other comorbid disease conditions. More than half of the patients who presented with joint disease symptoms had no records of musculoskeletal review/examination. 65% of people attending hospital funded their treatment through cash payments. WP2: We identified & feasibility tested GALS and REMS clinical screening tools for classifying arthritis symptoms. WP3: We identified, measured and quantified the clinical, economic and quality of life impacts of musculoskeletal disorders in the Hai district using a community-based cross-sectional survey conducted in 15 villages (N=over 2,500 households).

Clinical screening tools (GALS and REMS) were used to screen people with MSK diseases and possible arthritis through a tiered system approach found that joint pain is very common in the community with 5.8% of participants having confirmed joint problems. Women and older people are more likely to experience joint pain. About 1 in 20 people had degenerative 'wear and tear' arthritis, most commonly involving knees, fingers, hips and lower back with associated pain and restriction of movement. We found that 1 in 100 people had evidence of inflammatory arthritis, most often Rheumatoid Arthritis (RA) (similar to high income countries).

We discovered that very few people with RA had sought medical advice, and even fewer were on appropriate treatment. Those with arthritis and joint problems experience significant detrimental economic impacts & have approximately two to three times higher healthcare costs compared to those who do not have arthritis. People with arthritis spend more

than 10% of their total income on healthcare; WHO calls this level of expenditure 'catastrophic'.

WP4: We completed rapid ethnographic assessments and focus groups/semi-structured interviews to identify local schemes of classification relating to joint pain.

WP5: Identification of resource use and quality of life measures is complete. Multiple sources were accessed to design the bespoke health economics resource use and productivity questionnaire. Capability wellbeing (ICECAP), quality of life (EQ5D Swahili) and disability assessment scale (WHODAS) instruments were identified to measure generic quality of life.

WP6: The instruments identified in WP5 were embedded in the community survey. During feasibility testing, the planned ICECAP capability wellbeing instrument was identified as not being suitable for the Tanzanian context. Our External Advisory Board specifically commended us on our approach to ensuring an equitable partnership.

The Final dissemination event: Moshi, Tanzania August 2023

The UK team travelled to Moshi, Tanzania for one week in August 2022 to work alongside their Tanzanian colleagues to disseminate the research findings to local stakeholders including community leaders, village enumerators and policymakers etc. In the dissemination week, a series of internal and external meetings/events were held. Following the dissemination week, a dissemination report was created, detailing the three level of engagement and dissemination approaches and their underlying principles conducted by the NIHR global health research group. The dissemination week was well received by participants and a few soundbites were quoted below to evidence the impact of this dissemination trip.

Dr Aifello Sichelwe, Chief Medical Officer

'This study is very useful because of the set up and design - it involved the community and reflected the real problem of arthritis.'

Sarah Maongezi, Former Deputy Director for Non-Communicable Diseases (NCDs) in Tanzania

'This project is going to complement what the government is doing and see how best to strengthen referral pathways for patients with arthritis.'

Dr Bruno Sunguya, Director of Research and Publications at MUHAS

'The studies that have been conducted are so important; they start to shed light on how big the problem is.'

- **Dissemination event in Hai District**

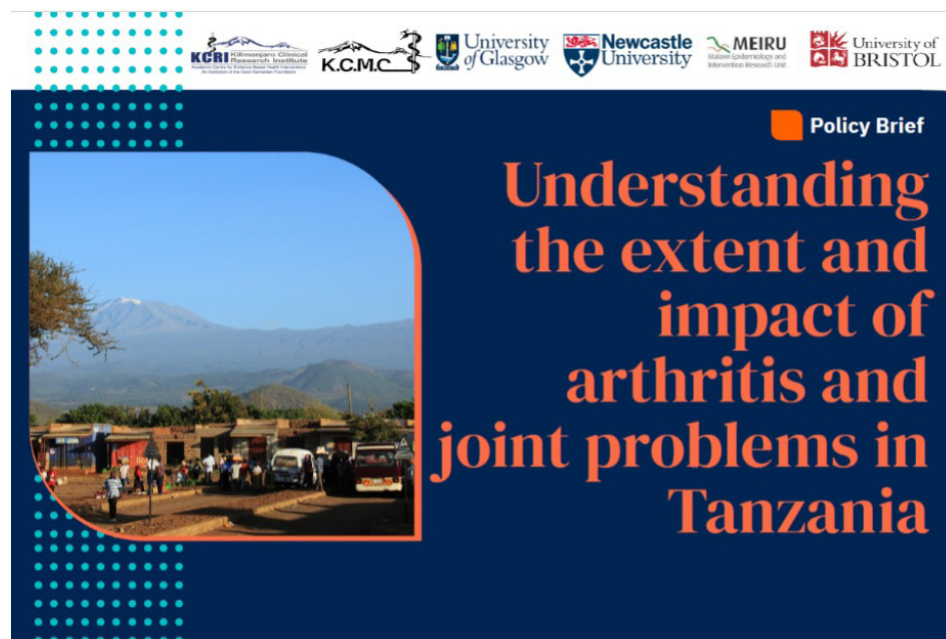
The dissemination event was held in the Hai District, Moshi (where the study was conducted) to inform attendees of the effect of chronic illness and joint problems on people and put forward suggestions on treatment and early intervention/diagnosis. The team also sought recommendations from attendees on how to use the correct words and terms to make the community flyer culturally fit for low resource settings. Following this dissemination event (in March 2023) a community flyer was subsequently designed and distributed to residents of the Hai District.

- **Policy brief meeting**

A policy brief meeting with key stakeholders was hosted in Moshi in August 2022 to introduce the research to the policymakers and generate discussion on policy recommendations to raise awareness of economic and social impact of arthritis on people in Tanzania. A range of national stakeholders including

Dr Aifello Sichelwe, Chief Medical Officer, Sarah Maongezi, Former Deputy Director for Non-Communicable Diseases (NCDs) in Tanzania attended the meeting to listen to a series of presentations made by team members and exchange their views with researchers through interactive activities specially designed by team members to develop a pathway to improved MSK awareness, diagnosis and treatment. A policy brief with key research findings and policy recommendations was created and circulated to assist with these discussions.

Policy brief



Dissemination Report



Community flyer

Ugonjwa yabisi/maumivu ya viungo ni nini?

Neno 'yabisi', limetumika kuelezea maumivu, uvimbe, ulaini na/au ugumu kwenye kiungo au viungo. Ugonjwa yabisi unaweza kuhitaji msaada wa kutafuta sababu yake. Sehemu kubwa ya sababu zake zinaweza kusaidiwa vizuri zikigundulika mapema.

Zaidi ya watu milioni 350 duniani wana ugonjwa yabisi (Mtandao wa Global Rheumatoid Arthritis, 2021)

Asante!

Asanteni nyote mlioshiriki katika utafiti huu.

Ushiriki wenu kwenye mradi huu umetusaidia kupata maarifa ya muhimu sana na uelewa katika kukadiria kuenea kwa maumivu ya viungo na jinsi inavyoathiri watu.

Maelezo haya ni muhimu kwasababu tutayatumia kuwaeleza watunga sera kuhusu athari pana za maumivu ya viungo kwenye maisha ya watu.

Athari za ugonjwa yabisi na maumivu ya viungo kwa watu wanaoishi wilaya ya Hai

Ufanye nini kama unafikiri una ugonjwa yabisi?

Kama una maumivu ndani ya viungo au kuzunguka viungo ambayo hayaondoki baada ya siku chache, muone daktari ambaye ana uwezo wa kujua kwa uhakika iwapo ni tatizo na kulishughulikia.

Hatua zinazofuata za mradi:

Matokeo ya mradi huu yatashirikishwa kwa wafanyakazi wa afya na pia kwa watunga sera Tanzania.

Ni matumaini yetu kwamba kuwashirikisha matokeo haya kunaweza kusaidia katika hatua za kwanza za kuboresha uelewa na tiba ya matatizo ya viungo Tanzania.

Kwa wale wenye uhitaji, kuna kliniki ya viungo katika hospitali ya KCMC kila alhamisi kuanzia saa tatu asubuhi hadi saa tisa jioni ambayo inakuwepo kwa ajili ya mtu ye yote mwenye matatizo ya viungo, misuli na mifupa.

Mradi huu unafadhiliwa na Taasisi za Uingereza za Utafiti wa Afya (NIHR) na unafanywa kwa ushirikiano kati ya Chuo Kikuu cha Glasgow, Scotland na Taasisi ya Utafiti wa Kitabibu Kilimanjaro (KCRI) Tanzania

Kujua ni kitu gani kinasababisha maumivu kwako ni jambo la msingi katika kupata tiba sahihi na ushauri wa namna ya kujisaidia mwenyewe







Next steps

The team is currently working on finalising their publications and training video as well as working on a follow-up grant (NIHR Global Health Unit) with a view to conducting some replication studies in other parts of Africa, feasibility testing interventions to improve the quality of life and income/productivity of agricultural workers, strengthen rheumatology teaching and training in Africa, increase social science training and capacity, conduct a valuation exercise for the new capability wellbeing instrument and run a set of extensive MSK community awareness events.

MOSHI

Publications (under submission)

Title	Authors
Morbidity and mortality pattern of medical admissions at a zonal consultant hospital, Northern Tanzania; three years retrospective study	Febronia Shirima, Nateiya M Yongolo, Baraka Moshi, Rosalia E Njau, Sanjura M Biswaro, Manasseh Mwanswila, Clive Kelly, Alice Andongolile, Jo Halliday, Blandina Mmbaga, Stefanie Krauth, Kajiru Kllonzo, Stefan Siebert
Estimating the prevalence, quality of life, economical and societal impact of arthritis in Tanzania	Kajiru Kilonzo, Shadrack Dare, Nateiya Yongolo, Emma McIntosh, Richard Walker, Stefan Siebert, Stef Krauth, Jo Halliday , Kiula Kiula, Clive Kelly, Manasseh Mwanswila, Elizabeth F. Msoka, Victor Katiti
The prevalence of musculoskeletal disorders in northern Tanzania: A community-based study	Stefanie Krauth, Nateiya Yongolo, Emma McIntosh, Blandina Mmbaga, Richard Walker, Clive Kelly, Stefan Siebert, Jo Halliday, Manasseh Mwanswila, Elizabeth F. Msoka
Estimating the economic impact of Musculoskeletal disorders in Tanzania: results from a community-based survey	Manuela Deidda, Emma McIntosh, Shawn Hsuein, Eleanor Grieve, Stef Krauth, Jo Halliday, Nateiya Yongolo, Sanjura, Kiula Kiula, Stefan Siebert
Measuring the impact of arthritis on quality of life	Eleanor Grieve, Emma McIntosh, Shawn Hsuein, Manuela Deidda, Jo Halliday

Title	Authors
Understandings and Responses to Joint Pain: a Rapid Ethnographic Assessment in Northern Tanzania- Rheumatology? (REA Data)	Elizabeth Msoka, Perry Msoka, Nateiya Yongolo, Emma Laurie, Sally Wyke, Christopher Bunn, Emma McIntosh, Kiula Kiula
Capability wellbeing in Tanzania and Malawi	Victor Katiti, Edith Chikumbu, Chris Bunn, Mia Crampin, Emma McIntosh, Blandina Mmbaga, Elizabeth Msoka, Sally Wyke, Jo Coast,
Experiences of Joint Pain in Northern Tanzania: a qualitative study	Emma Laurie, Elizabeth Msoka (joint lead authors), Perry Msoka, Nateiya Yongolo, Christopher Bunn, Sally Wyke
Trends of frequency, mortality and risk factors among patients admitted with stroke from 2017 to 2019 to the medical ward at Kilimanjaro Christian Medical Centre hospital: a Retrospective Observational study	Baraka Moshi, Nateiya M Yongolo, Sanjura Biswaro, Febronia Shirima, Manasseh Mwanswila, Rosalia Njau, Linus Sakanda, William Ngekuye, Kajiru Kilonzo, Richard Walker, Stefan Siebert

Publications (under submission)

Title	Authors
Estimating prevalence and predictors of musculoskeletal disorders in Tanzania – A pilot study	Nateiya M Yongolo, Jo Halliday, Christopher Bunn, Benson Mtesha, Clive Kelly, Stefanie Krauth, Anthon Mwingwa, Sanjura Biswaro, Stefan Siebert, Asia Hemed, Richard Walker, Emma McIntosh, Blandina T. Mmbaga.
Trends of frequency, mortality and risk factors among patients admitted with stroke from 2017 to 2019 to the medical ward at Kilimanjaro Christian Medical Centre hospital: a Retrospective Observational study	Baraka Moshi, Nateiya M Yongolo, Sanjura Biswaro, Febronia Shirima, Manasseh Mwanswila, Rosalia Njau, Linus Sakanda, William Ngekuye, Kajiru Kilonzo, Richard Walker, Stefan Siebert

Publications (accepted)

Title	Authors
The spectrum and burden of in-patient paediatric musculoskeletal diseases in Northern Tanzania	Rebecca B Walsh, Anthony Mwingwa, Nateiya M Yongolo, Sanjura M Biswaro, Manasseh Joel Mwanswila, Clive Kelly, Blandina T Mmbaga, Faith Mosha, William K Gray, Emma McIntosh, Richard W Walker

Presentations



Title	Presenter	Events/Conference
Estimating the economic impact of Musculoskeletal disorders in Tanzania: results from a community-based survey	Manuela Deidda	The 15th IHEA World Congress on Health Economics
Perceived Dimensions of a Good Life in Tanzania and Malawi: Constructing Domains of Capability Wellbeing for Adults	Nateiya Yongolo	The 15th IHEA World Congress on Health Economics
Estimating the Quality-of-Life Impact of Musculoskeletal Disorders in Tanzania: Results from a Cross-Sectional Community-Based Survey	Eleanor Grieve	The 15th IHEA World Congress on Health Economics

Title	Presenter	Events/Conference
Trends of frequency, mortality and risk factors among patients admitted with stroke from 2017 to 2019 to the medical ward at Kilimanjaro Christian Medical Centre hospital: a Retrospective Observational study	Sanjura Biswaro	NCD conference Tanzania
Understandings and Responses to Joint Pain: Findings from a Rapid Ethnographic Assessment in Northern Tanzania	Elizabeth Msoka	NCD conference Tanzania
Prevalence associated factors and disability impacts of musculoskeletal joint problems in the community setting in Hai District, Northern Tanzania	Nateiya Yongolo	NCD conference Tanzania
A qualitative study of capabilities associated with quality of life in Tanzania and Malawi	Victor Katiti	NCD conference Tanzania
The health, economic and societal burden of musculoskeletal disorders in Tanzania: Results from a community-based cross-sectional survey	Emma McIntosh	African Research Universities Alliance 2021 Annual Conference
Estimating the prevalence and predictors of musculoskeletal disability in Tanzania: a pilot stud	Nateiya Yongolo	British Society for Rheumatology Conference
A retrospective survey of arthritis among inpatients at a consultant hospital in Northern Tanzania from 2017 to 2019	Stefanie Krauth & Nateiya Yongolo	British Society for Rheumatology Conference & Arusha NCD
Estimating the quality of life and economic impact of arthritis in Tanzania	Eleanor Grieve	British Society for Rheumatology Conference
Rheumatology and health economics in developing countries: Experiences from Tanzania	Emma McIntosh & Stefan Seibert	SCR (Scandinavian Rheumatology) 2021



Understanding the effectiveness and underlying mechanisms of lifestyle modification interventions in adults with intellectual disabilities: a mixed-methods systematic review

Background

Adults with intellectual disabilities (AID) are individuals diagnosed as experiencing impairments in intellectual and adaptive functioning during their developmental period (<18 – 22 years). AIDs have considerably poorer health compared to adults without ID and have a significantly higher likelihood of experiencing a reduced life expectancy by 20 years caused primarily by respiratory, circulatory, and heart diseases. While a move towards community-based living from long-term institutions is less restrictive, it exposes AIDs to various societal and environmental pressures which lead to adoption of health risk behaviours which often occur in clusters and adoption of one behaviour can increase the likelihood of adopting another, potentially



contributing to, or exacerbating physical and mental health conditions. It can also create additional challenges in personal safety and interpersonal relationships. Thus, improving the health and wellbeing of AIDs is crucial to address the wide range of preventable health risks, reduced life expectancy and inequalities.

Complex lifestyle modification interventions (CLMIs) or programmes developed to target unhealthy lifestyle behaviours can prevent or reduce their negative health consequences. However, it can be difficult to determine the mechanisms by which CLMIs target behaviours and generate effectiveness due to its complex single or multiple interacting core components. The existing body of literature synthesising the effectiveness of CLMIs is limited, unevenly distributed across target health behaviours and outcomes, and consists of few pairwise meta-analysis that treat CLMIs as homogenous, often lumping them together for comparison against standard care.

Therefore, there is an urgent need for a comprehensive synthesis of CLMIs for all the behaviours contributing to unhealthy lifestyles in AIDs. Our aim is to investigate the effectiveness and underlying mechanisms of lifestyle modification interventions in adults with learning disabilities.

Method

We conducted a mixed-methods evidence synthesis co-produced by academic researchers and patient and public involvement (PPI) group with lived experiences from the non-profit organisation, People First Scotland. People First helps give people with ID a voice, advocates for their rights and is controlled by people with ID.



A systematic review and meta-analysis were undertaken to determine effectiveness of interventions targeting health risk behaviours. Major electronic databases, clinical trial registries, and grey literature were searched in January 2021 (updated in February 2022). We included randomised and non-randomised controlled trials (RCTs) targeting alcohol consumption, smoking, low physical activity, sedentary behaviours, and poor diet in AIDs (aged ≥ 18 years). Appropriate tools were used to code the extent of theory and behaviour change technique in CLMIs and assess the risk of bias in studies. Core components were identified. We conducted an intervention-level meta-analysis including a pairwise and network meta-analysis (NMA) of RCT-based weight management outcomes using a random-effects model to determine the effectiveness of CLMIs compared to usual care and each other. Component NMA (CNMA) was conducted using an additive model, which assumes the effect of a multicomponent intervention is the sum of individual effects of each component, to identify the most effective components of CLMIs.



A realist evidence synthesis was undertaken to provide an in-depth understanding of how lifestyle modification interventions for AIDs work, for whom they work, as well as why they may work in particular circumstances and not in others. Initially, a draft programme theory was developed based on non-systematic searching of the literature, input from the project team, including PPI members. Following this, formal searches were conducted simultaneously with the systematic review; but the realist synthesis incorporated additional qualitative and mixed methods literature. These studies were appraised for relevance to the programme theory and methodological rigour using pre-selected quality appraisal tools. Data were synthesised using context mechanism outcome configurations (CMOCs) to form a programme theory

explaining complex causal mechanisms and their interactions with social context to produce outcomes.

A logic model, a tool which graphically represents the theory of how an intervention produces its outcomes, was developed to integrate the findings of all three methods.

Results

The systematic review included 80 studies with 4,805 participants, which generally lacked methodological and reporting rigour. CLMIs targeting alcohol and smoking behaviours showed effectiveness, though based on limited evidence. The effectiveness of CLMIs on low physical activity, sedentary behaviours, and poor diet was mixed. The intervention-level pairwise and NMA found no statistically significant change in weight management outcomes when comparing interventions to treatment-as-usual and each other. The CNMA yielded similar results.

The realist synthesis included 79 studies, involving over 3,604 AIDs and 490+ caregivers. The resulting programme theory highlighted the contexts and mechanisms relating to support involvement, negotiating the balance between autonomy and behaviour change, fostering social connectedness

and fun, the accessibility and suitability of intervention strategies and delivery, along with the broader behavioural pathways to lifestyle change. It also emphasised the value of collaborating with people with lived experiences in intervention development and evaluation. The logic model, combining findings from both syntheses, offers guidance for designing future interventions.

Conclusions

This study was the first comprehensive mixed-methods evidence synthesis to explore lifestyle modification interventions targeting multiple unhealthy lifestyle behaviours in adults with learning disabilities. Our quantitative and qualitative findings complement each other. We conclude that existing CLMIs are not appropriately tailored for AIDs, especially adults with severe or profound IDs. Future research should be participatory in nature and consider the varying needs, wants, and abilities of AIDs. There is a need for population-specific evaluation and reporting frameworks, high-quality research with appropriate outcomes to address methodological variability, and a focus on qualitative and mixed methods research to better understand CLMIs.

Publications*

Rana, D., Westrop, S., Gemeni, E. et al. Understanding the effectiveness and underlying mechanisms of lifestyle modification interventions in adults with learning disabilities: protocol for a mixed-methods systematic review. *Syst Rev* 10, 251 (2021). <https://doi.org/10.1186/s13643-021-01808-0>

*The NIHR report and separate papers on the systematic review with meta-analysis and realist evidence synthesis will be published in 2023.

Completed Projects

Project title	HEHTA PI	Duration	Total project value	Funder	Research Theme
Smoking Cessation in Pregnancy Incentives Trial (CPIT): A phase III Randomised Controlled Trial	Kathleen Boyd	2017-2022	294,974	CSO	DAMSEL
Novel low cost diagnostic tools and their impact in Africa	Emma McIntosh	2018-2022	1,686,271	Engineering and Physical Sciences Research Council (EPSRC)	GHTA, EPH
NIHR Global Health Research Group on estimating the prevalence, quality and life, economic and societal impact of arthritis in Tanzania: a mixed methods study at University of Glasgow	Emma McIntosh	2018-2022	2,018,520	NIHR	GHTA
A large randomised assessment of the relative cost-effectiveness of different classes of drugs for Parkinson's disease ('PD MED')	Emma McIntosh,	2018-2022	3093251	NIHR	EPH
No to Na. Tackling cardiovascular risk in the adolescent life-course through a schools' salt-reduction intervention in sub-Saharan Africa	Emma McIntosh, Kathleen Boyd	2018-2022	1031458	Medical Research Council (MRC)	GHTA, EPH
The BHF FAMOUS-NSTEMI long-term follow-up study	Olivia Wu	2018-2022	144306	British Heart Foundation	DAMSEL

Project title	HEHTA PI	Duration	Total project value	Funder	Research Theme
The Impact of Minimum Pricing of Alcohol on Ambulance Call-outs in Scotland	James Lewsey	2019-2021	240321	NIHR	ALDA
Understanding the mechanisms and effectiveness of lifestyle modification interventions in adults with learning disabilities.	Olivia Wu	2020-2022	306449	NIHR	ES
Scottish Ambulance Service drug overdose call-outs (mixed-methods study).	James Lewsey	2020-2022	99996	NIHR	ALDA
Reversal of T2DM to normal glucose tolerance using non-surgical weight management with low-energy liquid- diet and long-term maintenance, within routine NHS care: study extension	Neil Hawkins	2020-2022	250742	Diabetes UK	DAMSEL
Economic Case for self-reporting vascular grafts	Neil Hawkins	2021-2022	30000	University of Glasgow	EPM
Clinical and economic burden associated with not anticoagulating eligible patients with atrial fibrillation (AF)	Claudia Geue	2021-2022	90744	BMS Pfizer	ALDA

Ongoing Projects

Project title	HEHTA PI	Duration	Total project value	Funder	Research Theme
Randomised control trial of surveillance and no surveillance for patients with Barrett's oesophagus - BOSS (Barrett's Oesophagus Surveillance Study)	Andrew Briggs	2009-2023	1,710,981	NIHR	EEACT
SurgiCal Obesity Treatment Study (SCOTS)	Andrew Briggs	2012-2026	1443837	NIHR	EEACT
BALLAD - A global study to evaluate the potential benefit of adjuvant chemotherapy for small bowel adenocarcinoma.	Kathleen Boyd	2013-2025	686749	CRUK	EEACT
NIHR Complex Reviews Support Unit (CRSU)	Olivia Wu	2015-2023	2000000	NIHR	ES
The Best Services Trial (BeST?): Effectiveness and cost-effectiveness of the New Orleans Intervention Model for Infant Mental Health	Emma McIntosh, Kathleen Boyd	2016-2024	3437346	NIHR	EPH, EEACT
How can we increase the number of people cycling regularly?	Emma McIntosh	2018-2023	164,952	British Cycling Federation	EPH, IPE
Supporting the National Action Plan for Antimicrobial Resistance (SNAP-AMR) in Tanzania	Emma McIntosh	2018-2023	140,789	Medical Research Council (MRC)	GHTA

Project title	HEHTA PI	Duration	Total project value	Funder	Research Theme
A randomised, double-blind placebo controlled trial of the effectiveness of the beta-blocker bisoprolol in preventing exacerbations of chronic obstructive pulmonary disease (BICS)	Olivia Wu	2018-2023	2535731	NIHR	DAMSEL
Health Economics Analysis to Scottish Medicines Consortium	Kathleen Boyd	2019-2024	69,420	Healthcare Improvement Scotland	ES, DAMSEL
Cancer Medicines Outcomes programme	Olivia Wu	2019-2023	1000000	Scottish Government	ES
Living Lab: Driving Economic Growth in Glasgow through Real-World Implementation of Precision Medicine	Neil Hawkins	2020-2005	38076472	UKRI	EPM
Early Supported Discharge in patient admitted to hospital with Heart Failure; ESD-HF	Olivia Wu	2020-2023	519122	SQ innovation AG	ES
Football and gambling: a feasibility study and pilot for an intervention to reduce gambling involvement among football fans	Manuella Deidda	2020-2023	521442	NIHR	EPH
Integrating digital pathology and genomic analysis to optimise and streamline colonic surveillance within the Scottish Bowel Screening Programme (SBoSP) to enable early detection of Colorectal neoplasia.	Neil Hawkins	2020-2023	1134505	Innovate	EPM

Project title	HEHTA PI	Duration	Total project value	Funder	Research Theme
Evaluating later or expanded premises hours for alcohol in the night-time economy (ELEPHANT)	James Lewsey	2020-2023	1042653	NIHR	ALDA
A clinical trial of FFR-CT guided management vs standard invasive management in patients with known or suspected coronary heart disease	Olivia Wu	2020-2025	2367658	BHF	DAMSEL
Saeboglove therapy for severe Upper limb disability and Severe Hand Impairment after stroke	Olivia Wu	2020-2023	277075	CSO	ES
BEhavioural weight management: COMponents for Effectiveness	Olivia Wu	2020-2023	500000	NIHR	ES
New care home admission after hospitalisation - understanding trajectories and predictors using linked health and social care data	Claudia Geue	2020-2023	72342	Dunhill Medical Trust	ALDA
A phase II RCT to measure the cost and consequences of Dyadic Developmental Psychotherapy compared with 'usual treatment' for children referred with maltreatment-associated	Kathleen Boyd	2020-2024	2628211	NIHR	DAMSEL

Project title	HEHTA PI	Duration	Total project value	Funder	Research Theme
Cervical Ripening at Home or In-Hospital prospective cohort study and process evaluation (CHOICE Study)	Kathleen Boyd	2020-2022	782967	NIHR	DAMSEL
Tailored Intervention at home for patients with moderate-to-severe COPD and Co-morbidities by Pharmacists and Consultant Physicians (TICC PCP): pilot randomised controlled	Emma McIntosh	2021-2024	158862	CSO	EPH
Accelerated cardiovascular magnetic resonance in coronary artery disease	Olivia Wu	2021-2023	246761	NIHR	DAMSEL
Optimising a digital diagnostic pathway for Heart Failure in the community (OPERA)	Olivia Wu	2021-2022	768000	Astra Zenica	DAMSEL, ES
A Randomised Placebo-Controlled Trial of Antenatal Corticosteroids for Planned Birth in Twins: STOPPIT-3	Kathleen Boyd	2021-2025	346604	NIHR	DAMSEL
Quantum-Inspired Imaging for Remote Monitoring of Health & Disease in Community Healthcare	Emma McIntosh	2021-2026	4713164	ESPRC	EPM, EPH
REDIRECT: REremote Diet Intervention to REDuce long Covid symptoms Trial	Emma McIntosh	2021-2023	1009963	NIHR	EPH
KTP Health Economics to assist translation of molecular pathology tests	Neil Hawkins	2021-2023	180131	Innovate UK	EPM

Project title	HEHTA PI	Duration	Total project value	Funder	Research Theme
KTP Health Economics to assist translation of molecular pathology tests	Neil Hawkins	2021-2023	88721	BioClavis Ltd	EPM
Healthcare and Socio-economic Impacts of COVID-19 on Patients with Diabetes in Tanzania and Kenya	Manuela Deidda	2021-2023	800000	NIHR	EPH
The clinical utility of cardiac magnetic resonance imaging in patients with angina but no obstructive coronary disease (CorCMR): a diagnostic study and nested randomised trial.	Olivia Wu	2021-2024	296404	BHF	DAMSEL
A randomised controlled trial of a facilitated home-based rehabilitation intervention in patients with heart failure with preserved ejection fraction and their caregivers: the REACH-HFpEF Study	Emma McIntosh	2021-2024	2078742	NIHR	EPH
Personalised Exercise-Rehabilitation FOR people with Multiple long-term conditions (multimorbidity)-The PERFORM trial	Emma McIntosh	2021-2027	2561774	NIHR	EPH
Impact of OAC discontinuation in patients with atrial fibrillation (AF)	Claudia Geue	2021-2023	83562	BMS Pfizer	ALDA

Project title	HEHTA PI	Duration	Total project value	Funder	Research Theme
Effectiveness and cost effectiveness of an automated text message intervention for weight management in postpartum women with overweight or obesity: the Supporting MumS (SMS) Randomised Controlled Trial	Emma McIntosh	2021-2025	2563509	NIHR	EPH

New Projects

Project title	HEHTA PI	Duration	Total project value	Funder	Research Theme
Oxybutynin for the treatment of vasomotor symptoms associated with menopause	Olivia Wu	2022-2026	1973277	NIHR	ES
Glasgow as a Living Lab Accelerating Novel Transformation -GALLANT	Emma McIntosh	2022-2026	10166893	NERC	EPH
What works in social care	Kathleen Boyd	2022-2023	310058	WWCSC/ WWCSC	DAMSEL
Evaluating Public Health Interventions Using Non-Randomised Study Designs: Thrombectomy Service And Police Carriage Of Naloxone	James Lewsey	2022-2024	287949	CSO	ALDA
PHaCT Trial: Preventing Homelessness, improving health for people leaving prison: a pilot randomised controlled trial of a Critical Time intervention	James Lewsey	2022-2024	744144	NIHR	ALDA, EPH
Dengue control - woolbachia	Olivia Wu	2022-2027	4999582	Wellcome Trust	ES
A feasibility study to test the peer-led 'A Stop Smoking In Schools Trial' intervention (ASSIST) in three culturally different middle income countries	Nicola McMeekin	2020-2023	351026	MRC	DAMSEL

Project title	HEHTA PI	Duration	Total project value	Funder	Research Theme
Healthy Dads Healthy Kids in Prisons: a feasibility study and pilot for a intervention to improve mental health and wellbeing and father-child relationships	Nicola McMeekin	2020-2023	438494	NIHR	DAMSEL
Health Economics Analysis to Scottish Medicines Consortium	Kathleen Boyd	2022-2024	80000	Healthcare Improvement Scotland	ES, DAMSEL
Personalised Exercise-Rehabilitation FOR people with Multiple long-term conditions (multimorbidity)-The PERFORM trial	Emma McIntosh	2022-2028	2561774	NIHR	EPH
Maximising the public health benefits of smokefree prisons	Kathleen Boyd	2022-2024	577194	NIHR	DAMSEL
Early Vasopressors in Sepsis (EVIS)	Olivia Wu, Evi Germeni	2022-2025	3077443	NIHR	ES

Highlights of 2022

January

TIPS Study Shows Smoke-Free Prisons Policy is Effective

The NIHR report 'Process and impact of implementing a smoke-free policy in prisons in Scotland: TIPS mixed-methods study' showed a comprehensive smoke-free prison policy can substantially reduce second-hand smoke.

Kathleen Boyd and Nicola McMeekin undertook the economic analysis, including a cost consequence, cost utility analyses, demonstrating cost-effectiveness in the long term.

This ground-breaking multidisciplinary and complex evaluation will contribute to the international literature and public health understanding of tackling smoking in prisons for many years to come.

HEHTA Gets Blogging

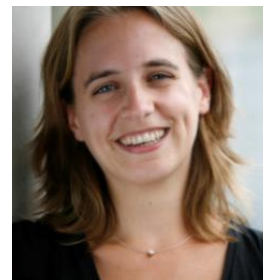
Researcher Dikshyanta Rana successfully launched HEHTA into the blogosphere at the start of 2022. Francesco Manca wrote the team's first blog on his impactful ambulance callout study, followed by Janet Bouttell penning a piece on 'Features, process and methods of development-focused health technology assessment: a proposed framework and application to diagnostic technologies'.

In April, our first guest blogger and GhESS seminar speaker Janneke Grutters from Radboud University Medical Centre shared her insights into HTA.

February

Dr Janneke Grutters Presents GhESS Seminar

On 22 February, Dr Janneke Grutters presented 'The Early Evaluation of Healthcare Innovation' as part of the Glasgow Health Economics Seminar Series (GhESS). Dr Grutters works as associate professor at the departments for Health Evidence and Operating Rooms at Radboud University Medical Centre, Nijmegen, the Netherlands. Her key research interest lies in the early evaluation of innovations in healthcare.



March

Using Health Technology Assessment in Support of Universal Health Coverage

In Spring, we launched a new ExpertTrack online course, offered via FutureLearn, which explores the theory of health economics to understand how scarcity and resources affect decision-making. In bite-sized chunks, students will discover the use of health technology assessment (HTA) as one of the tools for priority setting. This knowledge will help learners start thinking like a health economist and how we can ensure decisions are based on evidence and the best outcomes. It is taught via the FutureLearn online

platform and can be completed at the learner's own pace and in their own time for only £36 per month. Led by Eleanor Grieve, we hope that the course will appeal to individuals operating in a lower-and-middle-income-country (LMIC) setting.

April

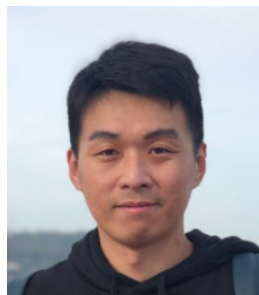
Graduation Celebrations

In April, we were delighted to finally be able to celebrate the in-person graduations of our PhD students Janet Bouttell, Eleanor Grieve and Nicola McMeekin, as well as MSc HTA student Mariana Al-Adwan. The graduates celebrated their success with the rest of the team at One Devonshire Gardens after the ceremony.



Viva Success for Shawn

In April, our much-loved PhD student Ping Hsuan Hsieh AKA Shawn successfully defended his thesis on 'The Cost of Rheumatoid Arthritis'. Shawn has been with the team since 2017 and was supervised throughout his studies by Olivia Wu, Claudia



Geue, Stefan Siebert and Emma McIntosh. Shawn completed his viva remotely from his home country of Taiwan, where he previously worked as a pharmacist at the Tri-Service General Hospital before joining HEHTA.

KCRI Team Visit Glasgow



At the end of April, the NIHR Global Health Research Group team members from the Kilimanjaro Clinical Research Institute (KCRI) visited Glasgow for the British Rheumatology Society (BSR) conference. Nateiya Yongolo, Kajiru Kilonso and Sanjura Biswaro attended the three-day conference with the group's Glasgow team members and found time to enjoy some Scottish hospitality at The Òran Mór.

May

NIHR CRSU London Symposium

On 23 May, the NIHR CRSU held a well-attended symposium in London titled 'NIHR CRSU - Evidence Synthesis: Navigating an Evolving Landscape'. Speakers included Karla Soares-Weiser, Nichole Taske, Christine Fletcher, Terry Quinn, Neil Hawkins, Joshua Pink and Alex Sutton.

June

PHaCT Trial Tackles Prison Leavers Homelessness

Jim Lewsey and Manuela Deidda, with a team from the Universities of Glasgow, Cardiff, Heriot-Watt and Glyndwr, are piloting a randomised trial to see whether a housing-led 'critical time intervention' (CTI) works in preventing homelessness and improving health in a population of male prison leavers.

The research, funded by the National Institute for Health and Care Research (NIHR), will take place across four male prisons. The study has been designed in consultation with co-applicant Hannah Green, a Communications and Lived Experience Specialist from the Centre for Homelessness Impact. This pilot randomised controlled trial (RCT) will test if the CTI and the research methods are possible, acceptable and has good potential to provide value for money.

July

Promotion Success

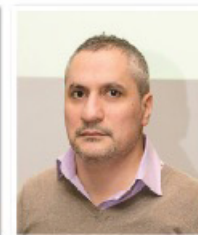
In July, we were delighted to announce a bumper round of promotions! Dikshyanta Rana, Francesco Manca and Giorgio Ciminata, who joined the team as trainees and PhD student respectively, have all been promoted to research associates. Manuela Deidda and Janet Bouttell, who have built impressive programmes of work in economics of population health and early HTA respectively, have been promoted to Research Fellows. And Evi Germeni, who is leading outstanding research in integrating mixed methods in HTA and health economics, has been promoted to Senior Lecturer.

Learning Disabilities Dissemination Event

An NIHR-funded project researching healthier lifestyles for adults with learning disabilities held an innovative presentation of its findings in July.

The team behind 'Understanding the Effectiveness and Underlying Mechanisms of Lifestyle Modification Interventions in Adults with Learning Disabilities' held a drama performance and presentation involving people with learning disabilities from patient and public involvement (PPI) group People First Scotland.

The research was done by the University of Glasgow, University College London, Leeds Beckett University and People First (Scotland). Team members Olivia Wu, Laura Wood and Sophie Westrop were part of the research and support team.



August

Summer Graduations



We were delighted to be able to celebrate the graduations of PhD student Yulia Anopa and MSc student Nateiya Yongolo as the summer drew to a close!

NIHR GHRG Hosts Policy Meeting in Tanzania

At the culmination of the NIHR GHRG project on arthritis in Tanzania, team members from the UK and Malawi joined their Tanzanian colleagues in Moshi, Kilimanjaro for a week of dissemination activities and a final policy meeting.

The team was hosted by project partner Kilimanjaro Clinical Research Institute (KCRI) in Tanzania, which also runs the project's arthritis clinic.

The meeting showcased the group's final results via a range of insightful presentations and encouraged stakeholder participation through innovative group activities. Stakeholders agreed about the importance of the group's research on the impact of arthritis on Tanzanians.



HEHTA Away Day

In August, things took a frosty turn at the team's away day at Greenacres Curling Club where staff took to the curling rink to sweep and slide. The day was rounded off by a series of short presentations by the team's theme leads.

September

Director Visits MUHTA



In September, Olivia Wu visited the Health Technology Assessment Postgraduate Programmes (MU-HTA) and Faculty of Pharmacy at Mahidol University in Thailand.

Olivia delivered a series of guest lectures to students and shared thesis advice. She was hosted by Associate Professor Surakit Nathisuwan, the Dean, and Associate Professor Dr Usa Chaikledkaew, the Deputy Dean for International and Public Relations and the Director of Graduate Program in Health Technology Assessment (MU-HTA), Associate Professor Dr Montarat Thavorncharoensap and Assistant Professor Dr Sitaporn Youngkong.

HEHTA @ SHE



Our researchers were out in force at the Scottish Health Economics (SHE) conference in Dundee on 6 September. Robert Heggie and Claudia Geue presented, with ten other team members in attendance at the event.

After the event, presenter Robert Heggie penned the blog post [The Value of In-person Conferences](#) and Claudia Geue blogged about the [Use of Routine Data to Examine Social Care Issues](#). The conference was the first in-person SHE event post-Covid where researchers were able to come together to share research and expertise under the theme of routine data in health economics.

November

ISPOR Europe 2022

Olivia Wu, Neil Hawkins, Andrew Davies, Jim Lewsey and Giorgio Ciminata attended ISPOR Europe 2022 in the beautiful city of Vienna, Austria. Giorgio Ciminata had an in-person poster presentation [Augmenting Atrial Fibrillation Risk Prediction Tools. How Does Risk Differ by Prior Stroke Type?](#), while Jim Lewsey taught a short course to ISPOR attendees.

December

Flagship Course in Third Year

At the end of 2022, we had a successful third year of our flagship course 'Maximising the Value of Clinic Trial Data: Advanced Analysis for Economic Evaluation and Modelling'. Taught in a live, online format with lectures and tutorials held over three weeks, we were grateful to welcome participants from Switzerland, Japan and Thailand among others. The online format of this course has helped make our teaching more accessible to a wider audience and we welcome the global diversity this brings to the experience! Participants shared positive feedback and we hope to keep improving the course and welcoming more students in 2023.

Teaching & Supervision



MSc Student Focus Rachel Ricketts

“Choosing to study the MSc in Health Technology Assessment (HTA) at the University of Glasgow has been one of the best decisions I have ever made. The course has been thorough, with a great selection of elective modules, where I was able to tailor the MSc to my interests. The teaching staff have been incredibly supportive and supplied great learning material, which I was able to work through at my own pace.

One of the highlights of this course has been the community. Even though it’s been largely virtual, chatting with students from around the world has truly enriched my academic experience.

As someone juggling a full-time job, the flexibility this course offers has been excellent. Being able to study during hours that suit me best, combined with the option to pursue the course part-time, was one of the main reasons why I was attracted to this course in the first place.



The learnings from this course haven’t just been academic. They’ve opened doors for me professionally. The teaching staff were very kind to share their career highlights with me, offer advice, and utilise their connections in order to help me kick start my career. Excitingly, I’m getting ready to start a new role as a Health Economist for the SMC at Healthcare Improvement Scotland. It’s a testament to how this MSc has equipped me with the tools and knowledge I needed to secure this role.”

Graduate Focus – MSc Student Naoki Numajiri

I'm so glad I decided to apply for the MSc Health Technology Assessment (HTA) programme at the University of Glasgow back in 2019. I was not sure at first whether I could finish this programme as this was my first attempt to study on a remote basis, but I found myself enjoying this learning experience throughout thanks to all the support from supervisors, lecturers, administrators and course mates. I believe this program is one of the best ways to learn HTA from the basics to advanced knowledge. In addition, many courses in the program place a focus not only on passive learning but also on active applications so people like me who are involved in HTA at work are greatly benefited.

Though there are many things I like about the programme, the best one is that it's designed to motivate students to learn by themselves not only during the program but later on too. Indeed, I'm more motivated to learn HTA even after graduating and I am now doing self-directed learning.



I will always recommend this program when people ask a good place to learn HTA.

Graduate Focus – PhD

Nicola McMeekin



Tell us a little about your PhD

My PhD looked at using conceptual models in economic evaluations to provide additional information from trial data, this resulted in a novel method of further analysing the trial data. I carried out a scoping review to identify methods and approaches to developing methodological frameworks and published this review. I used results from this scoping review to develop a framework for designing conceptual models, then applied this framework to 2 case studies to illustrate the novel method. I also highlighted the benefits of using conceptual models in economic evaluations in general.

What attracted you to undertake your PhD at HEHTA?

I completed the HTA MSc at HEHTA in 2015, and started working in HEHTA when I finished the MSc. Soon after starting work I was offered the opportunity to undertake a PhD alongside my work; I really liked this approach to completing a PhD as I am an older worker and I didn't want to take time out of work to study full-time for a PhD. I feel incredibly lucky that I had this opportunity to study for a PhD whilst working, and the support from my supervisors and other HEHTA team members was invaluable.

What skills have you learned that you think will help your future career?

This is a hard question as I have learnt so many skills! Alongside gaining knowledge of economic evaluation and scoping review methods, the main skills were resilience, communicating and managing time.

Resilience: My PhD took 6 years and I had many ups and downs; carrying out a PhD means following thoughts and ideas – often down a rabbit hole – and starting again! I learnt that just because an idea does

not come to fruition it is useful to rule things out. Most of all I learnt to just keep on going and moving forward, my mantra to myself was 'any progress is good', even if that meant only writing one paragraph.

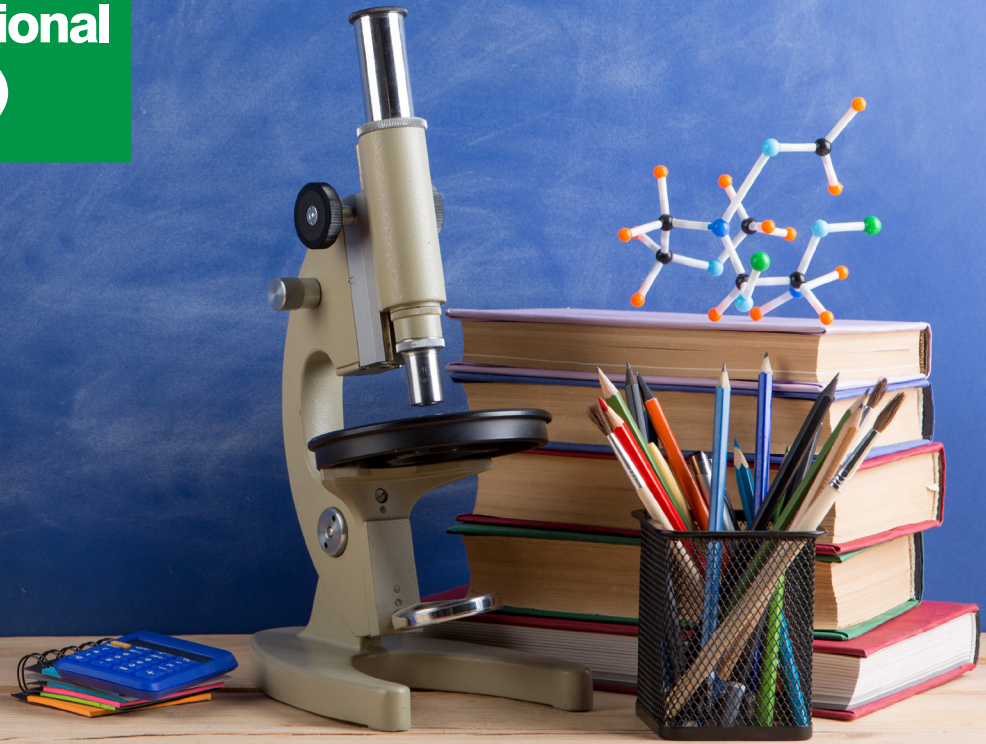
Communication: I learnt to explain my PhD verbally, something I really struggled with to begin with. I also improved my writing skills; both writing my thesis, making it a clear and coherent, and writing journal articles, condensing the important information and telling a story. I also learnt how to visually present results, frameworks and conceptual models, this was perhaps the most enjoyable part of my PhD as it allowed me to be creative and create a figure or diagram from the beginning which I found very satisfying.

Time management: Doing a PhD alongside full-time work is demanding, particularly when you factor in non-work responsibilities, plus you DEFINITELY need to set aside time to relax and have fun away from studying! I learnt how I work best and efficiently and used this knowledge to my advantage. I had to be very focussed and disciplined.

Can you see how you will transfer the skills learned to your own setting?

All the skills I learnt benefit me in my current work in HEHTA – the knowledge of economic evaluation, writing and communication skills, and managing time. I work on several studies at a time and need to communicate through writing and presenting, I attend meetings where I feed back information on progress, and I manage my workload. Resilience really helps me both at work and outside work. One of the things I like most about my job is supporting master's students through their journey writing dissertations; having completed a masters and PhD I appreciate the challenges facing current students.

Continuing Professional Development (CPD)



HEHTA's CPD courses attract students worldwide each year. Our digital learning platform allows students to study with us online, no matter where they are in the world. Designed to work around existing work and family commitments, our courses, which are modules of our MSc Health Technology Assessment (HTA) programme, continue to be a popular choice for people who wish to gain new skills in HTA, health economics, data science, survival analysis and modelling.

Our Research Trainee Abril Erika Seyahian was a CPD student who is now a research trainee at HEHTA. Here she talks about her experience of being a CPD student and then becoming part of the HEHTA team.

From CPD to Research Trainee

By Abril Erika Seyahian

I am an inquisitive person who is eager to learn and understands the importance of being updated in their field. As such, I am always looking for training to develop new skills. I am from Argentina, and while the fields of Health Economics and Health Technology Assessment are developing, there is still a lack in specific training in these areas. This led me to look for education opportunities in Europe, particularly in the UK.

I came across the courses offered by the University of Glasgow and was immediately drawn to the course 'Maximising the Value of Clinical Trial Data: Advanced Analysis for Economic Evaluation & Modelling'. I soon discovered enrolling was the right choice. The course is fantastic: extraordinary teachers, great classes, I deeply enjoyed it.

After the course, and investigating a little more about HEHTA, I started to wonder whether it would be possible to join the group. I was convinced my health economics skills needed further development and the UK was certainly the right place for it.

When a suitable job posting came along that I thought fitted what I was looking for, I did not hesitate in applying. I did not have much hope, but still thought it was worth trying. I honestly could not believe it when Claudia Geue told me I had gotten the position and would join HEHTA as a Trainee Health Economist. I was over the moon.

After a stressful move, including 11,279 km journey - and a great rush to find a suitable apartment!

- I have not been disappointed. HEHTA is in fact wonderful: incredibly knowledgeable people, willing and

committed to sharing everything they know and encouraging trainees to learn new skills. Colleagues are always willing to support and help you. It's a great environment to work in.

Do not hesitate to experience what HEHTA has to offer. Whether through the MSc Health Technology Assessment (HTA), a CPD course, or just applying for a job (who knows, you might get as pleasant a surprise as I did) - you won't regret it



Our CPD Courses

We asked our CPD course coordinators to talk a little more in depth about the courses we offer and how they can benefit prospective students.

Health Economics for HTA

By Course Coordinator Dikshyanta Rana

As healthcare costs continue to rise and new technologies emerge, understanding the principles of health economics and their role in informing healthcare decision-making has never been more important.



Our Health Economics for HTA course provides a comprehensive introduction to this field, the fundamental concepts of health economics and their practical application in health technology assessment. The course is a fully immersive learning experience of 10 weeks with 10 lectures, practical exercises, and discussions with our academic leads.

Our course provides learners with critical skills needed for understanding the distinctive economic characteristics of healthcare and its impact on demand and supply of healthcare services. On completion, students will be able to apply economic concepts to a variety of health sector issues. They will also learn to appraise economic studies of healthcare interventions and use appropriate health economic evaluation techniques. This includes technical ability to analyse inputs and outputs from economic evaluation. Ultimately, they will be able to evaluate the contribution of health economics to health care decision making.

This course is suitable for healthcare professionals looking to broaden their understanding of health economics, or students seeking to expand their skill set.

HTA in a Global Context

By Course Coordinator Eleanor Grieve

It's not just about being NICE!

A growing commitment to universal health coverage (UHC) is promoting the role and institutionalisation of Health Technology Assessment (HTA) globally. Institutionalisation of HTA is seen as pivotal to supporting UHC as a means of supporting better allocation of resources and the maximisation of health.



HTA is science-based and value laden. Whilst the scientific assessment may be similar, HTA agencies may consider different elements of value and the frameworks in which they are appraised vary:

- Which countries are cost-per-QALY embracers, the sceptics, and those that outlaw its use?
- Which countries ignore the budget, consider it, or are dominated by it?
- What approaches are adopted to consider aspects of value (eg disease severity, rarity, end-of-life, equity) and how do they differ?

On this course, we look at HTA and its use in supporting UHC through the lens of different countries and HTA agencies. We will explore the current landscape of HTA and illustrate key concepts using case studies. We consider how context underpins the evidence and the values, the methods and the processes used; and explore geographical variation

between HIC as well as looking more in-depth about how and why decision-making in healthcare may differ in LMIC.

HTA: Policy and Principles

**By Course Coordinator
Eleanor Grieve**



“There is nothing a government hates more than to be well-informed; for it makes the process of arriving at decisions much more complicated and difficult.” (John Maynard Keynes)

Health technology assessment (HTA) is a tool that is used worldwide to determine the value of health interventions. This is relevant to decisions on the adoption of new medicines, medical devices, diagnostics tools, and/or public health and health policy programmes, through universal coverage.

Would you like to learn about the multidisciplinary nature of HTA? Are you curious to explore the following questions?

- Does a particular technology/intervention work?
- Does it work for all?
- Is it safe?
- Does it provide value for money?
- What should we compare the technology/intervention to?

Our 10-week course ‘Health Technology Assessment – Policy and Principles’ will fully explore and teach the role of HTA in policy making, introducing the different elements involved in the process of HTA. We need to fully understand the different factors behind the economics of healthcare and how health interventions can lead to trade-offs between benefits and costs.

Such knowledge is crucial for professionals working in healthcare aiming to achieve an equitable, efficient, and high-quality health system.

Decision Analytic Modelling & Early HTA

**By Course Coordinator Janet
Boutell**



This course is aimed at developers of medical technologies or those working in the assessment of technologies during their development. Students will leave the course with the ability to develop a decision model in Excel using decision trees and Markov models. They will also understand the concept of early health technology assessment (HTA).

Through practical examples, experienced practitioners will introduce learners to the tools of HTA and how they are used to advise developers of health technologies in matters such as design, placement, pricing and evidence requirements. They will learn the critical importance of seeking the views of clinicians, patients and other stakeholders in early assessment and how to approach a decision model when there is little direct evidence about the performance of the technology. Early HTA is increasingly used to inform policy makers as well as developers about the potential of a technology in development.

In an era where it is more important than ever to make sure valuable research and development resources are directed appropriately, this course equips students to advise developers and other decision makers about whether and how to proceed with their development. This course is presented by academics from the University of Glasgow and Radboud University Medical Centre, the Netherlands.

Meet the Team



Director

Olivia Wu
William R Lindsay Chair of Health Economics

Deputy Director

Emma McIntosh
Professor of Health Economics

Professors

Neil Hawkins
Professor of Health Technology Assessment
James Lewsey
Professor of Medical Statistics

Reader

Kathleen Boyd

Senior Lecturers/Health Economists

Andrew Davies
Claudia Geue

Lecturers

Evi Germeni
Eleanor Grieve

Researchers

Janet Bouttell
Giorgio Ciminata
Manuela Deidda
Eleanor Grieve
Houra Haghpanahan
Robert Heggie
Francesco Manca
Nicola McMeekin

Dikshyanta Rana
Jose Antonio Robles-Zurita
Ciaran Kohli-Lynch
Sahar Sharif
Sayem Ahmed
Keila Meginnis
Heather Fraser
Nishant Jaiswal
Pankaj Bahuguna
Sayem Ahmed

Trainee Health Economists

Abril Erika Seyahian
Samuel Owusu-Achiaw
Benjamin Gregory
Nurnabi Sheikh

PhD Students

Yulia Anopa
Ping-Hsuan Hsieh
Ryan Field
Lisong Zhang
Suthasinee Kumluang
Joan Quigley
Hanin Farhana Binti Kamaruzaman
Fabiola Lemus Villafuerte
Septiara Putri
Yuejiao Duan
Sheila Szabo
Yuanta Huang
Watcharakorn Riabroi

Administration

Alieda McKinney
Yujin Du
Rebecca Stewart
Laura Wood
Miriam Yentumi

Affiliates

Peter McMeekin
Associate Professor, Northumbria University
Andrew Briggs
Professor of Health Economics, London School of
Hygiene and Tropical Medicine

Honorary Staff

Henry Glick
Professor, Perelman School of Medicine, University of
Pennsylvania
Julie Ratcliffe
Professor of Health Economics, Institute for Choice,
University of South Australia
Karen Ritchie
Senior Health Services Researcher, Healthcare
Improvement Scotland
James Robinson
Chair in Health Economics and Policy, Berkeley Public
Health, University of California
Mark Robinson
Public Health Intelligence Principal, NHS Health
Scotland
Sara Twaddle
Former Director of Evidence, Healthcare Improvement
Scotland

Visiting Researchers

Hye-In Jung
Panida Yoopetch

My Visit to HEHTA

Hye-In Jung



In December, Hye-In Jung came to HEHTA as a visiting researcher. Hye-In has a Pharm.D. degree from South Korea and is a third-year PhD student at the College of Pharmacy, Sungkyunkwan University in South Korea. Her research focuses on global trends in health technology assessment (HTA) policy and statistical analysis of real-world data on healthcare services.

What attracted you to visit HEHTA?

HEHTA is well known for its advanced level of research in HTA. Having the chance to learn from great professionals and work with them was a great opportunity for me.

What skills have you learned that you think will help your future career?

Analysing linked health data allows me to enhance my statistical analysis skills and ability of critical thinking. I have learned various methods to perform comparative outcomes research on unequal population. Moreover, I'm getting sensations about how to deliver your thesis well with confidence. Through all the high-quality seminars and everyday networking with great colleagues, I'm learning how good communication could contribute to better research.

Can you see how you will transfer the skills learned here to your own setting?

As I would continue my future career in the academic field (ongoing PhD student in South Korea), I assure skills and experiences I had from here would surely be my big building block. Not only the technical skills I learned but also the enthusiasm and networks would all be applied to me.

Welcome to the Team

In 2022 we welcomed...

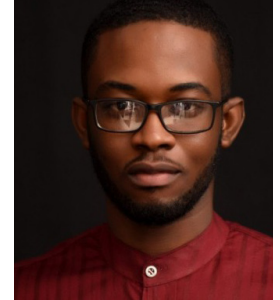
Pankaj Bahuguna

Pankaj joined as a new research associate in April. He has over 15 years' experience and holds a postgraduate degree in statistics and PhD in health economics. He was previously affiliated with Department of Community Medicine & School of Public Health Post Graduate Institute of Medical Education and Research, Chandigarh, India as Economic Evaluation Specialist. His past work focused on health technology assessments, impact evaluations and healthcare costing of public health programs/ facilities in India. He has 60+ publications in leading international and national journals.



Samuel Owusu Achiaw

In February, Samuel became one of our new research assistants. Samuel holds a BSc in Human Biology and an MBChB (Bachelor of Medicine and Bachelor of Surgery) from the Kwame Nkrumah University of Science and Technology in Ghana. He also holds a Master of Public Health degree (Distinction) with a specialism in health economics from the University of Glasgow. With prior experience as a clinician in a developing country, Samuel is interested in health economics research and health technology assessment particularly within a global context and within low- and middle-income countries. Outside of academia, Samuel is also interested in fine art, classical music and creative writing.



Abril Erika Seyahian

Erika joined us as a trainee health economist in September. She holds a PhD in Pharmacy and Biochemistry and a Master in Health Evaluation and Market Access.

After completing her PhD and before joining HEHTA Erika held various roles working in the pharmaceutical industry.

Yuantao Huang

At the end of September, Yuantao Huang joined us as a PhD student supervised by Evi Germei. Yuantao will primarily focus on qualitative health evidence in his research. He is interested in health technology assessment (HTA) and patient involvement.



Yujin Du

In August, we welcomed our new project manager Yujin Du. Yujin manages HEHTA-lead grants including the National Institute for Health Research (NIHR) Complex Reviews Support Unit (CRSU) and the NIHR Global Health Research Group (Arthritis). She also provides support and specialist advice for post-award research management, including project tracking, delivery, and reporting, impact management and engagement. Prior to joining HEHTA, Yujin worked for several well-established multi-million research centres as a research project manager.



Hye-In Jung

In December, we were delighted to welcome visiting researcher Hye-In Jung. Hye-In is a third-year PhD student at the College of Pharmacy, Sungkyunkwan University in South Korea. Her research focuses on global trends in HTA policy and statistical analysis of real-world data on healthcare services.

Nurnabi Sheikh

Nurnabi Sheikh joined HEHTA as a trainee health economist. He is also a PhD candidate at the University of Strathclyde. Nurnabi holds Master's degrees in statistics, health economics and public health. Prior to joining HEHTA, Nurnabi worked for the Health System team at the World Health Organization country office in Bangladesh. He also worked in the health economics and financing research group at the International Centre for Diarrhoeal Disease Research, Bangladesh. His research interests include health economics modelling, costing for healthcare interventions, measuring health, economic evaluation, healthcare financing, health insurance, and health policy and management.



In 2022 we said goodbye to...

Panida Yoopetch

Panida, a pharmacist and PhD student from Mahidol University in Thailand, joined us for a short visit in June to work on her PhD research.



Houra Haghpanahan

In July, we bid a fond farewell to our lovely colleague, researcher Houra Haghpanahan, who left HEHTA for a new adventure abroad.



Suthasinee Kumluang

In September, we bid a fond farewell to PhD Suthasinee Kumluang (Toon), who returned to her research post at HITAP in Thailand while completing her PhD studies.



Keila Meginnis

Mid-September, we also said goodbye to Keila Meginnis who left her position as a lecturer in one health and environmental economics to join Evidera as a research associate.



Membership of Expert Bodies 2022

Olivia Wu

- Chair NIHR HTA Clinical Evaluations and Trials Funding Committee
- Member of NIHR Senior Investigator Appointment Committee
- Associate Editor, Value in Health
Member of sub-panel 2 (Public Health, Health Service and Primary Care) for REF 2021

Emma McIntosh

- Board Member, Glasgow Centre for Population Health
- Member, National Health Economists Study Group (HESG)
- TSC member, NIHR HTA, Prepare for Kidney Care: a randomised controlled trial of preparing for responsive management versus preparing for renal dialysis in advanced kidney disease
- CALM Trial Data Monitoring and Ethics Committee (Marshman)
- TSC member, Positive Choices Trial (Bonnell)
- TSC member, Effectiveness of Surveillance Technologies to Prevent Suicides at High-Risk Location (Mackenzie)

Janet Boutell

- Member of the Evidence Review Group for the Scottish Health Technologies Group
- Associate editor at the International Journal of Technology Assessment in Health Care

Evi Germeni

- Member of the Health Technology Assessment international (HTAi) Association
- NIHR Methodology Incubator, Steering Committee Member & Co-Lead of the Qualitative Workstream
- HTAi Interest Group for Patient and Citizen Involvement, Member

James Lewsey

- Chartered Statistician, Royal Statistical Society
- Member of NHS Health Scotland Minimum Unit Pricing for alcohol consumption and health harm evaluation advisory group
- Member of NIHR PHR funding committee

Neil Hawkins

- Vice Chair of the National Institute for Health and Care Excellence Diagnostics Advisory Committee (DAC)
- Member of the National Institute for Health and Care Excellence Antimicrobials Evaluation Committee (2022)
- Member of the National Institute for Health and Care Excellence Medical Technologies Advisory Committee
- Member of the National Institute for Health and Care Excellence COVID-19 In-Vitro Data Expert Advisory Group (IVAG).
- Member of the Board of Directors and Finance Committee of the International Society of Pharmacoeconomics and Outcomes Research (ISPOR) 2019—2021
- Chartered Statistician, Royal Statistical Society

Claudia Geue

- Member of Evidence Review Committee for Scottish Health Technologies Group, Healthcare Improvement Scotland
- Panel Member for CSO Early Postdoctoral Fellowship Scheme

Eleanor Grieve

- iHEA 2023 Scientific Committee Review Panel
- Recognising Excellence in Teaching Fellow

Kathleen Boyd

- Advisory Board Member, Beatson West of Scotland Cancer Care Clinical Trials Unit
- MRC-NIHR Better Methods Better Research Panel, Guest panel member, May 2022
- NIHR HTA Research Programme Steering Committee member 'SHORTER' project, 2022 (NIHR 134101)
- NIHR HTA Research Programme Steering Committee Board member: IVY project NIHR 12740
- Review Editor for Frontiers in Medical technology - Regulatory Affairs journal
- Scottish Medicines Consortium, New Drug Committee, Expert Reviewer



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Xin Y, Gray E, Robles-Zurita JA, Haghpanahan H, **Heggie R** et al (includes **Lewsey J** and **McAllister D**). From spreadsheets to script: experiences from converting a Scottish cardiovascular disease policy model into R. *Applied health economics and health policy*. 2022 Mar 1:1-0.

Presentations

Boyd K A. Health Economics Bristol Seminar Series. *The MRC and NIHR framework for developing and evaluating complex interventions: Economic Considerations.* 18 January 2022.

Meginnis K. International Choice Modelling Conference. *Where are pollution reductions most valued? A transboundary choice experiment study for the UK and US.* 23-26 May 2022.

Lai T J. *Robotic versus Conventional Surgery: An Overview of Systematic Reviews for Clinical Effectiveness with Quality Assessment of Current Evidence.* HTAi Annual Meeting 2022. 27 June 2022.

Bouttell J. *Economic Evaluation of Molecular Diagnostics – A Review and Future Directions.* HTAi Annual Meeting 2022. 28 June 2022.

H F Kamaruzaman. *Disinvestment Initiatives in Healthcare: A Scoping Review of Systematic Reviews.* HTAi Annual Meeting 2022. 28 June 2022.

Rana D. *Understanding the effectiveness and underlying mechanisms of lifestyle modification interventions in adults with learning disabilities.* EuHEA, Oslo. 7 July 2022.

Heggie R. *Overcoming the limitations of the cost-utility framework using a cost-consequence analysis.* EuHEA, Oslo. 8 July 2022.

McMeekin N. *Economic impacts of implementing a national smoke-free prison policy: results from the Tobacco in Prisons (TIPs) study.* EuHEA, Oslo. 8 July 2022.

Meginnis K. Discover Economics Event for High School students. *Economics of Climate Change.* May 2022.

McIntosh E. *An introduction to NIHR Global Health Research Group on estimating the prevalence, quality of life, economic and societal impact of arthritis in Tanzania.* NIHR Arthritis Meeting. 31 August, Moshi, Tanzania.

Grieve E. *Economic and quality of life impacts of arthritis.* NIHR Arthritis Meeting. Moshi, Tanzania. 31 August 2022.

Geue C. *Use of routine data to examine social care issues.* Scottish Health Economics Meeting, Aberdeen. 5 September 2022.

Ciminata G, Geue C. *Augmenting Atrial Fibrillation Risk Prediction Tools - How Does Risk Differ by Prior Stroke Type?* ISPOR Europe 2022. November 2022.

Manca F. *Evaluating the impact of minimum unit pricing (MUP) of alcohol on road traffic accidents in Scotland: a controlled interrupted time-series study.* Public Health Science conference 2022. Glasgow, UK. November 2022.

McIntosh E. *Advances in Public Health Economics.* Guest Lecture: Annual Welsh Health Economics Meeting. December 2022.

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