UCL MRC DTP BIRKBECK

UKRI Medical Research Council

Health of the Public

Project Booklet 2024-25

Professor David Bann

Position: Associate Professor in Population Health
Department: Social Research Institute, UCL
University UCL
Faculty: Institute of Education
Profile: https://profiles.ucl.ac.uk/24151-david-bann
Email contact: david.bann@ucl.ac.uk
Theme: Health of the Public

Research overview

I have a broad interested in epidemiology: understanding the distribution of health, its causes, and the application of this knowledge to improve public health. My background spans multiple disciplines: Epidemiology (PhD), Psychology (BSc), and Biology (BSc+M.Res). Areas of recent interest: health inequality; epidemiology of: obesity, physical activity, mental health, genetical informed research; comparative research.

Rotation project **(including a brief outline of how this will develop into a PHD project)**

Leveraging the DNA Revolution to Better Understand How Nature and Nurture Work Together to Influence Health Using unique data from a series of UK birth cohorts and genetically informed approaches, we will explore the evolving roles of environmental and genetic factors in health and social outcomes. Key health outcomes are influenced by both social and genetic factors. However, little is known about how these social and genetic factors interact. Do they exert their effects independently, or can favorable social environments mitigate genetic predispositions to certain health conditions? Students joining this project will: Work with comprehensive datasets from UK birth cohorts Learn to apply genetically informed research methods Contribute to research that may inform future health policies Develop skills in data analysis, genetics, and social science This research aims to provide insights into the complex interplay between nature and nurture, potentially leading to more effective public health strategies and a deeper understanding of human health.

Relevant publications 1

https://journals.plos.org/plosgenetics/article?id=10.1371/journal.pgen.1010233

Relevant publications 2

https://www.science.org/doi/10.1126/science.aan6877

Dr Jo Blodgett

Position: Research Fellow
Department: Research Dept Targeted Intervention
University UCL
Faculty: Medical Sciences
Profile: https://profiles.ucl.ac.uk/58333-jo-blodgett
Email contact: joanna.blodgett@ucl.ac.uk
Theme: Health of the Public

Research overview

Based within the Institute of Sport Exercise & Health, our research group use existing data from large studies to investigate determinants and outcomes related to physical activity and population health. Data sources include British birth cohort studies, ProPASS (an international consortium of ~20 studies); and a new women's health data app (Kynisca)

Rotation project **(including a brief outline of how this will develop into a PHD project)**

One of the core objectives at the Institute of Sport, Exercise and Health (ISEH) is to understand how sport and exercise research for elite athletes can be interpreted and used for the benefit of general public health. The population health theme focuses on the large-scale impacts of the many biological, behavioural and psycho-social processes that influence population groups over the course of a lifetime. PhD rotation projects and subsequent PhDs can fall under 1 of 2 themes. 1) Women's health theme: this can include a focus on the elite athlete or general population health perspective. Current research in athletes is exploring how menstrual cycle may influence injury risk, inflammation and biomechanics. Current research in population health utilises data from menstrual experiences across the life course from menarche through to menopause. There are opportunities both for data collection and analysis of existing data (including involvement with a new women's health innovation app). 2) Physical activity and wearables: Using wearable data (e.g.24-hour research grade accelerometers), this theme focuses on how time spent in behaviours across the 24-hour day such as sleep, sedentary time, activity type may be associated with various health outcomes. Outcomes can cover cognition, cancer, cardiovascular disease, mental health, etc. Data resources include UK Biobank, British birth cohort studies, ProPASS consortium, or novel collection of 24-hour movement for a new research question.

Relevant publications 1

Barlow A, Blodgett JM, Williams S, Pedlar CR, Bruinvels G. Injury Incidence, Severity, and Type Across the Menstrual Cycle in Female Footballers: A Prospective Three Season Cohort Study. Med Sci Sports Exerc. 2024 Jun 1;56(6):1151-1158. doi: 10.1249/MSS.0000000000003391. Epub 2024 Jan 11. PMID: 38227488.

Relevant publications 2

Blodgett JM, Ahmadi MN,..., Stamatakis E, Hamer M; ProPASS Collaboration. Device-measured physical activity and cardiometabolic health: the Prospective Physical Activity, Sitting, and Sleep (ProPASS) consortium. Eur Heart J. 2024 Feb 7;45(6):458-471. doi: 10.1093/eurheartj/ehad717.

Professor Daisy Fancourt

Position: Professor of Psychobiology & Epidemiology
Department: Behavioural Science and Health
University UCL
Faculty: Population and Health Sciences
Profile: https://profiles.ucl.ac.uk/44526-daisy-fancourt
Email contact: d.fancourt@ucl.ac.uk
Theme: Health of the Public

Research overview

The Social Biobehavioural Research Group explores how our health is influenced by social connections and behaviours and the biological mechanisms underpinning this. The large interdisciplinary team provides opportunities for developing research skills and experience in research translation and impact.

Rotation project **(including a brief outline of how this will develop into a PHD project)**

Project Title: Understanding the biological signature of social connections Substantial research has shown that social connections (like social isolation, loneliness and social support) are associated with diverse immune, cardiometabolic, anthropometric and stress-related biomarkers. But there are still major research gaps. Rotations are available on projects that would explore some of these biological gaps in more detail and consider their implications for disease and longevity. Including: 1. Clinical biomarker clusters: Using machine learning approaches in the English Longitudinal Study of Ageing (ELSA), we have identified unique clusters and shown how they differentially relate to reported measures of mental health (e.g. depression and anxiety symptoms). In this project, the student will apply the novel clusters to a range of biomarker data depending on their particular interests (e.g. triglycerides, cholesterol, CRP, fibrinogen, WBCs, DHEA, IGF-1, cortisol, BMI, waist circumference etc). 2. Proteomics: Proteins are the main function molecules in the body, and many are involved in the promotion or regulation of inflammation. But to date, just one paper (by this team) has looked at which proteins are affected by loneliness and social isolation. This project will extend this work by using recently released data from the UK Household Longitudinal Study (UKHLS), which has protein data available for 6,180 individuals alongside rich data on the structure, function and quality of social relationships. The student will be involved in conducting statistical analyses to look for signals that relate to both loneliness and isolation within two assay panels (cardiovascular and neurological). 3. Epigenomics: Rate of biological ageing can be measured by epigenetic clocks, which are constructed on a set of cytosine-phosphate-guanine (CpG) sites whose DNA methylation levels are associated with chronological age or ageing-related health outcomes. Several different epigenetic clocks have been developed based on different CpG combinations, trained on chronological age (e.g. Horvath and Hannum clocks), mortality prediction (e.g. PhenoAge and GrimAge clocks), and on multiple biomarkers (e.g. DunedinPACE). This project will use data from the UK Household Longitudinal Study (UKHLS), which contains multiple epigenetic clocks (including some new ones currently being added) for c3,600 participants.

Relevant publications 1

Walker, E., Ploubidis, G., Fancourt, D. (2019). Social engagement and loneliness are differentially associated with neuro-immune markers in older age: time-varying associations from the English Longitudinal Study of Ageing.. Brain Behav Immun, doi:10.1016/j.bbi.2019.08.189

Relevant publications 2

Gong, J., Preminger, Z., Steptoe, A., Fancourt D., (under review) Protein signatures associated with loneliness and social isolation: plasma proteome analyses in the English Longitudinal Study of Ageing, with causal evidence from Mendelian randomization

Professor Eirini Flouri

Position: Professor of Developmental Psychology
Department: Psychology and Human Development
University UCL
Faculty: Institute of Education
Profile: https://profiles.ucl.ac.uk/48099-eirini-flouri
Email contact: e.flouri@ucl.ac.uk
Theme: Health of the Public

Research overview

I am a developmental psychologist seeking to understand how cognition and mental health develop across childhood in the general population. I have a strong interest in the role of the built environment (indoor and outdoor) in child outcomes. I am also keen to explore how children's cognition and mental health are interlinked.

Rotation project **(including a brief outline of how this will develop into a PHD project)**

Project title: The early home environment and children's cognitive, socio-emotional and health outcomes across the childhood years. Abstract This project will use data from a large UK birth cohort to explore the role of the indoor and outdoor home environment (measured early in childhood using independent observations, parent reports and objective data) in children's cognitive and socio-emotional development as well as physical health from early childhood until the end of the primary school years. The environment will be measured in terms of physical characteristics and emotional atmosphere, with robust controls for related constructs such as the home learning environment and home chaos (i.e., home confusion and disorganization).

Relevant publications 1

36. Francesconi, M., Flouri, E., & Kirkbride, J. B. (2022). The role of the built environment in the trajectories of cognitive ability and mental health across early and middle childhood: Results from a street audit tool in a general-population birth cohort. Journal of Environmental Psychology, 82, 101847 https://doi.org/10.1016/j.jenvp.2022.101847

Relevant publications 2

48. Oloye, H. T., & Flouri, E. (2021). The role of the indoor home environment in children's self-regulation. Children and Youth Services Review, 121, 105761, https://doi.org/10.1016/j.childyouth.2020.105761

Associate Professor Jennifer Hall

Position: Professor of Reproductive Health
Department: Institute for Women's Health
University UCL
Faculty: Population and Health Sciences
Profile: https://profiles.ucl.ac.uk/35640-jenny-hall
Email contact: jennifer.hall@ucl.ac.uk
Theme: Health of the Public

Research overview

My reproductive and women's health research focuses on enabling people to have the children they choose, avoiding unwanted pregnancies (contraception) and improving preconception health. Our team is internationally renowned in these areas. I'm an epidemiological and an expert in measurement. I co-direct the NIHR Policy Research Unit in Reproductive Health.

Rotation project **(including a brief outline of how this will develop into a PHD project)**

The are a range of opportunities in our department, including working with the Policy Research Unit at the research/policy interface on reproductive health data. You could contribute to analyses of datasets including the national Reproductive Health Survey, or to public deliberation events on linking reproductive health data. Separately we are receiving new large maternity services datasets with which we aim to conduct causal analyses of unplanned pregnancy to adverse outcomes, and there are opportunities to conduct work on these data across a range of topics, building a health data science PhD. Reproductive autonomy and its relationship with contraceptive use and pregnancy intentions is under-researched. Building a conceptual model of these relationships and testing it with our existing data is another possible project. Jointly supervised by myself and Prof Harron, a rotation project would explore the utility of ECHILD for reproductive/women's health topics. There are opportunities to develop PhD projects to carry out analyses related to reproductive/women's health including educational attainment and to also explore linkage with other data sources.

Relevant publications 1

https://www.thelancet.com/series/preconception-health

Relevant publications 2

https://srh.bmj.com/content/early/2023/01/18/bmjsrh-2022-201685

Professor Mark Hamer

Position: Professor Sport and Exercise Medicine
Department: Division Surgery and Interventional Science
University UCL
Faculty: Medical Sciences
Profile: https://profiles.ucl.ac.uk/1431-mark-hamer
Email contact: m.hamer@ucl.ac.uk
Theme: Health of the Public

Research overview

We investigate the importance of physically active lifestyles in preventing major chronic diseases. Current approaches to improve population physical activity have had limited success. Our work will be utilising novel digital health approaches to improve physical activity across a diverse range of participants.

Rotation project **(including a brief outline of how this will develop into a PHD project)**

The current physical activity guidelines encompass a “one size fits all” approach largely reliant on participation in structured sport/exercise. It is becoming increasingly clear this approach is ineffective for most adults and not compatible with modern day society. There is also recognition that health benefits could be better achieved through considering the full spectrum of movement across the 24 hr day (ie, sleep – sitting – light incidental activity – moderate to vigorous activity). With the rapid and ongoing technological advances in consumer wearables there is an opportunity to develop targeted interventions, and more feasible patterns of physical behaviour that can be adopted and sustained by larger parts of the population to improve health. We will undertake a series of studies to develop novel approaches for promoting lifestyle physical activity. a) To develop and evaluate a personalised movement guidance tool based around 24 hr behaviour composition. We will develop an interactive online tool to provide targeted guidance about different ways to change behaviours (e.g. replace 15 min of sitting with 15 min of walking) according to individual characteristics. b) To design novel approaches for integrating short bouts of physical activity into everyday life. People accrue most of their daily movement through incidental short bouts of activity that can be captured on wearable movement trackers. Experimental approaches in real life settings are currently lacking. We will utilise novel approaches such as virtual reality and consumer wearables to promote incidental activity. We will evaluate the intervention in early proof of principle trials.

Relevant publications 1

https://academic.oup.com/eurheartj/article/45/6/458/7343176

Relevant publications 2

https://www.nature.com/articles/s41591-022-02100-x

Professor Katie Harron

Position: Professor of Statistics
Department: Population, Policy and Practice
University UCL
Faculty: Population and Health Sciences
Profile: https://profiles.ucl.ac.uk/28950-katie-harron
Email contact: k.harron@ucl.ac.uk
Theme: Health of the Public

Research overview

There has been enormous progress over recent decades in childhood cancer survival worldwide. However, survivors of cancer face ongoing challenges throughout childhood, including physical and cognitive effects, and psychosocial effects arising from their cancer or cancer treatment. Their families will also feel these impacts. This project will explore mental health outcomes for children diagnosed with cancer and their siblings.

Rotation project **(including a brief outline of how this will develop into a PHD project)**

Aim The aim of this study is to evaluate mental health and educational outcomes (including absences, attainment and Special Educational Needs [SEN]) for childhood cancer survivors and their siblings. Objectives: 1. To evaluate the association between childhood cancer and mental health conditions, including stress-related presentations at school age 2. To evaluate how developmental outcomes, including school attainment, absences and SEN, of siblings of children with cancer compare to those of children whose siblings have not had cancer 3. To explore the wider determinants of outcomes in both children with cancer and their siblings, including cancer treatment type, cancer-related mortality, and sociodemographic risk factors Methods We will use ECHILD data, which links hospital and school records for all children born in England since 1984. We will create cancer phenotypes based on diagnosis codes to identify a cohort of children up to age 16 with cancer (and specific diagnoses). We will obtain mental health outcomes from inpatient hospital records and through linkage with Mental Health Services data. Outcomes for siblings of children with cancer will include school attainment, SEN and absences. We will use statistical models to evaluate outcomes, exploring relevant confounders (e.g. ethnicity, deprivation, birth characteristics) and clustering of outcomes within schools. We will explore the use of quasi-experimental approaches (e.g. propensity score matching or target trial emulation) to compare outcomes for children with and without cancer (or their siblings).

Relevant publications 1

https://pubmed.ncbi.nlm.nih.gov/31601570/

Relevant publications 2

https://doi.org/10.1093/ije/dyae065

Professor Juan Pablo Kaski

Position: Professor of Paediatric Inherited Cardiovascular Medicine
Department: Institute of Cardiovascular Science, Department of Children's Cardiovascular Disease
University UCL
Faculty: Population and Health Sciences
Profile: https://profiles.ucl.ac.uk/24981-juan-kaski
Email contact: j.kaski@ucl.ac.uk
Theme: Health of the Public

Research overview

My research programme focuses on clinical/genetic characterisation, identification of early phenotypic expression and prevention of sudden cardiac death and other disease-related complications of cardiomyopathies and other inherited cardiovascular diseases in childhood. Our work is underpinned by advanced phenotyping, multiomic characterisation and outcomes/data linkage methodologies, aiming to develop personalised therapeutic strategies.

Rotation project **(including a brief outline of how this will develop into a PHD project)**

Potential projects will take advantage of a unique dataset from the International Paediatric Hypertrophic Cardiomyopathy Consortium (IPHCC), which we established in 2016, comprising detailed phenotypic and genetic data from over 2000 children with hypertrophic cardiomyopathy (HCM) from over 60 centres worldwide, and representing the largest childhood-onset HCM dataset in the world. These projects have the potential to be developed into full PhD projects, with scope to align with specific interests of the student and supervisors. Examples include: -Modelling disease trajectories and predicting outcomes in childhood-onset non-obstructive HCM; -Exploring sex differences in childhood-onset cardiomyopathies; -Modelling heart failure-related outcomes in childhood-onset HCM; -Assessing the impact of left ventricular outflow tract obstruction and septal myectomy on survival in children with obstructive HCM

Relevant publications 1

Norrish G, Cleary A, Field E, Cervi E, Boleti O, Ziółkowska L, Olivotto I, Khraiche D, Limongelli G, Anastasakis A, Weintraub R, Biagini E, Ragni L, Prendiville T, Duignan S, McLeod K, Ilina M, Fernandez A, Marrone C, Bökenkamp R, Baban A, Kubus P, Daubeney PEF, Sarquella-Brugada G, Cesar S, Klaassen S, Ojala TH, Bhole V, Medrano C, Uzun O, Brown E, Gran F, Sinagra G, Castro FJ, Stuart G, Yamazawa H, Barriales-Villa R, Garcia-Guereta L, Adwani S, Linter K, Bharucha T, Gonzales-Lopez E, Siles A, Rasmussen TB, Calcagnino M, Jones CB, De Wilde H, Kubo T, Felice T, Popoiu A, Mogensen J, Mathur S, Centeno F, Reinhardt Z, Schouvey S, Elliott PM, Kaski JP. Clinical features and natural history of preadolescent nonsyndromic hypertrophic cardiomyopathy. J Am Coll Cardiol 2022;79:1986-1997

Relevant publications 2

Norrish G, Ding T, Field E, Ziolkowska L, Olivotto I, Limongelli G, Anastasakis A, Weintraub R, Biagini E, Ragni L, Prendiville T, Duignan S, McLeod K, Ilina M, Fernandez A, Bokenkamp R, Baban A, Kubus P, Daubeney PEF, Sarquella-Brugada G, Cesar S, Marrone C, Bhole V, Medrano C, Uzun O, Brown E, Gran F, Castro FJ, Stuart G, Vignati G, Barriales-Villa R, Guereta L, Adwani S, Linter K, Bharucha T, Garcia-Pavia P, Rasmussen TB, Calcagnino M, Jones CB, De Wilde H, Toru-Kubo J, Felice T, Mogensen J, Mathur S, Reinhardt Z, O'Mahony C, Elliott PM, Omar RZ, Kaski JP. A novel prediction model for sudden cardiac death in childhood hypertrophic cardiomyopathy (HCM Risk-Kids). JAMA Cardiol 2019;4:918-927

Professor James Kirkbride

Position: Professor of Psychiatric and Social Epidemiology
Department: Division of Psychiatry
University UCL
Faculty: Brain Sciences
Profile: https://profiles.ucl.ac.uk/43555-james-kirkbride
Email contact: j.kirkbride@ucl.ac.uk
Theme: Health of the Public

Research overview

Psychiatric epidemiology and public mental health, applying traditional and causal inference methods in epidemiology to population data to better understand the social determinants of severe mental illness

Rotation project **(including a brief outline of how this will develop into a PHD project)**

This rotation will be based in the PsyLife research group, directed by Professor James Kirkbride. The rotation will immerse the student in applied research using psychiatric epidemiology methods to evaluate electronic health record data from a novel registry of psychosis known as EPICare. This newly-established registry will collect core clinical and population health data on all people treated for psychosis for the first time in England. The initial data will come from one major urban site, Birmingham Women's and Children's NHS Trust. The student will be responsible for cleaning, summarising and validating the data, identifying missing data patterns, conducting preliminary analyses on the data including the estimation of incidence rates and identification of potential inequalities by person and place to inform the social determinants of psychosis in England. EPICare (2024-2028) is supported by a major strategic investment from the Office for Life Sciences and NIHR to provide a national digital registry for psychosis to transform patient care and public mental health for psychosis. There is potential for the rotation student to base their PhD on this new dataset to understand the epidemiology of psychotic disorders in England and evaluate the real-world effectiveness of psychosis treatments on patient outcomes. The student will learn methods in data management, multiple imputation, regression modelling and psychosis epidemiology. They will be part of the vibrant, active PsyLife research group in the Division of Psychiatry, and receive high quality supervision and develop transferable skills throughout their rotation.

Relevant publications 1

https://www.researchprotocols.org/2024/1/e50177

Relevant publications 2

https://pubmed.ncbi.nlm.nih.gov/27771972/

Dr Wallis Lau

Position: Lecturer
Department: Research Department of Practice and Policy, UCL School of Pharmacy
University UCL
Faculty: Life Sciences
Profile: https://profiles.ucl.ac.uk/64205-wallis-lau
Email contact: wallis.lau@ucl.ac.uk
Theme: Health of the Public

Research overview

I am a Pharmacoepidemiologist with a background in Statistics. My research focuses on using large electronic databases to answer important clinical questions regarding the safety and effectiveness of medications, particularly those used in cardiovascular diseases, neurological diseases, and mental health conditions.

Rotation project **(including a brief outline of how this will develop into a PHD project)**

I am the principal investigator of the PharmAlliance-funded project (https://www.pharmalliance.org/2022/01/13/two-collaborations-funded-in-2022-pharmalliance-grant-cycle/) to look at multimorbidity and medication use in people with dementia using large electronic health records from the UK, US, and Australia. This rotation project will focus on using the UK Clinical Practice Research Datalink (CPRD) to examine the utilisation of medications in people with dementia and if progress allows, also emulate a target trial to study the outcomes of discontinuing medications. The project would be developed into a full PhD by focusing on certain medications and disease areas, with the potential of expanding it into a multinational databases project.

Relevant publications 1

Luo H, Lau WCY, Chai Y, et al. Rates of Antipsychotic Drug Prescribing Among People Living With Dementia During the COVID-19 Pandemic. JAMA Psychiatry. 2023;80(3):211-219.

Relevant publications 2

Lau WCY, Torre CO, Man KKC, et al. Comparative Effectiveness and Safety Between Apixaban, Dabigatran, Edoxaban, and Rivaroxaban Among Patients With Atrial Fibrillation : A Multinational Population-Based Cohort Study [published correction appears in Ann Intern Med. 2023 Jan;176(1):144. doi: 10.7326/L22-0482]. Ann Intern Med. 2022;175(11):1515-1524. doi:10.7326/M22-0511

Dr Claudia Manzoni

Position: Lecturer in Translational Neuroscience
Department: School of Pharmacy
University UCL
Faculty: Life Sciences
Profile: https://profiles.ucl.ac.uk/27087-claudia-manzoni
Email contact: c.manzoni@ucl.ac.uk
Theme: Health of the Public

Research overview

Complex neurodegenerations are multifactorial disorders for which we lack both early diagnostic measures and therapeutic solutions. This is mainly due to lack of specific biomarkers and missing knowledge of molecular mechanisms to target. We are interested in personalized medicine using machine learning and systems biology methods to scan large datasets and identify disease signatures for both diagnostics and drug development purposes.

Rotation project **(including a brief outline of how this will develop into a PHD project)**

Patient stratification and precision medicine are fundamental for the progress of healthcare, however, we are still working to understand how these approaches could be achieved and implemented in real life settings. We have access to a large, multi-omics (proteomics, genomics, transcriptomics, clinical metadata) cohort for Parkinson's Disease (PD) that can be used to develop machine learning (ML) strategies to optimize a computer based diagnostic procedure to differentiate cases vs controls but also different subtypes of PD cases. The rotation project will make use of some of these data to generate a simple ML model (based on logistic regression) to see if we can differentiate PD cases vs controls using data specifically related to cytokines. The PhD project will expand on the rotation project by improving on the ML techniques and by incorporating more data for the classification. It will also generate models for the classification of different types of PD, disease stages and disease progression.

Relevant publications 1

doi: 10.1212/WNL.0000000000010914

Relevant publications 2

doi: https://doi.org/10.1101/2023.09.12.557373

Professor Naaheed Mukadam

Position: Clinical Associate Professor
Department: Division of Psychiatry
University UCL
Faculty: Brain Sciences
Profile: https://profiles.ucl.ac.uk/35905-naaheed-mukadam
Email contact: n.mukadam@ucl.ac.uk
Theme: Health of the Public

Research overview

Identifying the potential for disease prevention for non-communicable diseases

Rotation project **(including a brief outline of how this will develop into a PHD project)**

Systematic review of economic modelling studies that have studied the impact of preventing or treating cardiovascular risk factors such as hypertension on non-communicable diseases.

Relevant publications 1

https://www.thelancet.com/article/S0140-6736(20)30367-6/fulltext

Relevant publications 2

https://www.thelancet.com/journals/lanhl/article/PIIS2666-7568(20)30004-0/fulltext

Professor Linda Partridge

Position: Professorial Research Fellow
Department: Genetics, Evolution and Environment
University UCL
Faculty: Life Sciences
Profile: https://profiles.ucl.ac.uk/9759-linda-partridge
Email contact: l.partridge@ucl.ac.uk
Theme: Health of the Public

Research overview

We are interested in the biology of ageing and the ways in which we might target its mechanisms to prevent age-related impairments and diseases. Some of our work is experimental, with animals, and some based on computational analysis. We collaborate with epidemiologists to analyse data from humans.

Rotation project (including a brief outline of how this will develop into a PHD project)

This computational project is joint between Linda Partridge, a biologist, and Mika Kivimaki, an epidemiologist. Mechanisms of ageing are becoming increasingly well understood and are known at the hallmarks of ageing. They include impairments such as loss of control of gene expression, cellular senescence, impaired stem cell function and inflammation. They are malleable to genetic, environmental and pharmacological interventions in laboratory animals, and inhibiting them can lead to broad improvement resistance to multiple age-related problems. The hallmarks are present in the development of human age-related diseases, and diseases associated with specific hallmarks tend to co-occur in patients. During ageing people often start to lose resilience to stresses such as infections, falls or a hospital admission, known as frailty. Frailty leads to serious loss of quality of life and often of independence. This project will use scientific literature and human data to investigate the role of hallmarks of ageing in frailty.

Relevant publications 1

Kivimäki M, Frank P, Pentti J, Xu X, Vahtera J, Ervasti J, Nyberg ST, Lindbohm JV, Jokela M, Partridge L. Obesity and risk of diseases associated with hallmarks of cellular ageing: a multicohort study. Lancet Healthy Longev. 2024 Jul;5(7):e454-e463. doi: 10.1016/S2666-7568(24)00087-4. PMID: 38945128.

Relevant publications 2

Fraser HC, Kuan V, Johnen R, Zwierzyna M, Hingorani AD, Beyer A, Partridge L. Biological mechanisms of aging predict age-related disease co-occurrence in patients. Aging Cell. 2022 Apr;21(4):e13524. doi: 10.1111/acel.13524. Epub 2022 Mar 8. PMID: 35259281; PMCID: PMC9009120.

Professor Praveetha Patalay

Position: Professor of Population Health and Wellbeing
Department: Population Health and Experimental Medicine
University UCL
Faculty: Population and Health Sciences
Profile: https://profiles.ucl.ac.uk/32767-praveetha-patalay
Email contact: p.patalay@ucl.ac.uk
Theme: Health of the Public

Research overview

My main areas of research include: (1) Mental health and wellbeing through the lifecourse, antecedents and consequences (2) Inequalities in mental health and wellbeing and the drivers of these inequalities (3) Contextual factors and mental health (with a focus on time and place) (4) How mental health is conceptualised, measured and valued

Rotation project **(including a brief outline of how this will develop into a PHD project)**

Although around 90% of the world's children and young people live in low and middle-income countries, over 95% of what we know about how mental health develops, risk factors and their mechanisms comes from a small handful of high-income, White majority countries. Hence, the current evidence base is not informative to most of the world's young people and we currently have little understanding of which factors are relevant everywhere, which are context-specific, and to what extent. Identifying which risk factors are context-specific or common across settings, their relative contributions to increased risk and the context-specific combinations in which they act is necessary for a mental health science that aims to identify and support vulnerable young people in all parts of the world. In this rotation (and subsequent PhD), the focus will be on widening the evidence-base by using longitudinal data from LMICs and working with collaborators from a range of countries to better understand the development, risk factors and mechanisms for the development of depression and anxiety in a range of contexts.

Relevant publications 1

Campbell, O., Bann, D., & Patalay, P. (2021). The gender gap in adolescent mental health: a cross-national investigation of 566,829 adolescents across 73 countries. Social Science and Medicine - Population Health, 100742.

Relevant publications 2

Steare, T., Lewis, G., Evans-Lacko, S., Pitman, A., Rose-Clarke, K., & Patalay, P. (2024). Food insecurity, adolescent suicidal thoughts and behaviors, and country-level context: a multi-country cross-sectional analysis. Journal of Adolescent Health, 74(3), 545-555.

Associate Professor Snehal Pinto Pereira

Position: Associate Professor in Population Health & Applied Statistics
Department: Department of Targeted Intervention
University UCL
Faculty: Medical Sciences
Profile: https://profiles.ucl.ac.uk/30897-snehal-pinto-pereira
Email contact: snehal.pereira@ucl.ac.uk
Theme: Health of the Public

Research overview

Recent interests include understanding how: (i) obesity, physical activity, cardiorespiratory and muscular fitness are interlinked, (ii) child maltreatments are related to outcomes in adulthood and (iii) the clinical phenotype and prevalence of 'Long COVID' in adolescents. I try to use the best possible statistical methodology to answer my research questions.

Rotation project **(including a brief outline of how this will develop into a PHD project)**

Each rotation project could be developed into a full PhD. All projects will develop transferable skills in epidemiology and advanced statistical methods. I strongly believe PhD students should have enthusiasm for their projects; I am therefore happy to discuss possible projects that fit both our interests. 1. Genetics, physical activity, cardiorespiratory fitness and muscle strength: exploring hypothetical interventions with causal inference methods. Our genetics are fixed and cannot be changed. However, in some instances, they are causally associated with complex phenotypes and diseases. Therefore, we should consider how to minimize the genetic burden of adverse outcomes. A health interventional disparity approach is appropriate here, as it shifts attention away from genetic burden of poor outcomes. Instead, it focuses on how much disparity due to genetic risk would remain if a potential intervention targeted a downstream mechanism (e.g., physical activity). Many projects could be undertaken under this theme depending on the student's interests. 2. Using the Children & young people with Long Covid (CLoCk) dataset many projects can be undertaken (depending on student's interest). For example, can examine whether physical and mental health symptoms during the pandemic and ensuing lockdowns differed by ethnicity or socioeconomic status. The project is highly interdisciplinary and will be supervised across several UCL Faculties (with Prof Sir Stephenson & Prof Shafran). This is an excellent opportunity for a student interested in quantitative research to gain experience in analysing data to address public health needs. The student would join a supportive, diverse and highly collaborative team.

Relevant publications 1

Project 1: Herle M, Pickles A, Micali N et al. Parental feeding and childhood genetic risk for obesity: exploring hypothetical interventions with causal inference methods. Int J Obes doi:10.1038/s41366-022-01106-2

Relevant publications 2

Project 2: Pinto Pereira SM, Shafran R, Nugawela MD et al. (2022). Natural course of health and well-being in non-hospitalised children and young people after testing for SARS-CoV-2: A prospective follow-up study over 12 months. Lancet Regional Health: Europe doi:10.1016/j.lanepe.2022.100554

Professor Irene Petersen

Position: Professor of Epidemiology and Health Information
Department: Primary Care & Population Health
University UCL
Faculty: Population and Health Sciences
Profile: https://profiles.ucl.ac.uk/6525-irene-petersen
Email contact: i.petersen@ucl.ac.uk
Theme: Health of the Public

Research overview

Antidepressant treatment in the year after childbirth

Rotation project **(including a brief outline of how this will develop into a PHD project)**

Who are the women who have antidepressant treatment for the first time after childbirth? Depression is common among women of childbearing age and many women receive antidepressant treatment. Thus, it is estimated that each year, around 3 in 100 women aged between 18 – 39 years start new antidepressant treatment. However, in our recent research we found that women who have just given birth are twice as likely to receive antidepressant treatment antidepressant treatment for the first time in the year following birth. In this rotation project we want to use electronic health records to further understand if there are certain characteristics associated with some women being more likely to initiate antidepressant treatment for the first time after childbirth. For example, we will explore socio-demographic factors such as age, ethnicity and social deprivation. This project has the potential to develop into a PhD project. The student will work together with other team members using various electronic health record data sources to further investigate antidepressant usage in the first year after childbirth.

Relevant publications 1

https://bmjopen.bmj.com/content/bmjopen/8/10/e022152.full.pdf

Relevant publications 2

https://pubmed.ncbi.nlm.nih.gov/27539294/

Professor Henry Potts

Position: Professor of Health Informatics
Department: UCL Institute of Health Informatics
University UCL
Faculty: Population and Health Sciences
Profile: https://profiles.ucl.ac.uk/823-henry-potts
Email contact: h.potts@ucl.ac.uk
Theme: Health of the Public

Research overview

Prof Potts' work focuses on digital health and the use of technology. His main work has been on the evaluation of digital health products, and understanding how people interact with digital health beyond expected responses. He also worked on public behaviour during COVID-19 as a member of SAGE sub-committees.

Rotation project **(including a brief outline of how this will develop into a PHD project)**

How do people experience predictions about their health? Modern AI offers many predictions, but while we generally presume that predictions will be useful, that may not be how they are experienced. Predictions may be based on simple guides, with no personalisation to the individual, or they may rely on sophisticated algorithms using large volumes of personal data. All predictions, however, are uncertain, although they are often not presented as being so. Predictions are generally seen as an unalloyed good, part of informed decision-making. They are often welcomed by users. However, predictions may be experienced in a variety of ways. They can create stress and uncertainty, especially if predictions are inaccurate. They may lead to fatalism or anger. As an initial case study, the project will examine how menstrual tracking apps predict the user's next period. Some individuals are delighted with their menstrual tracking apps and plan their lives around the predictions made. However, we also have preliminary data showing users can find alerts oppressive or fatalistic about how their day will be. The project will then take a user-centred approach, using qualitative methods to understand usage "in the wild". The study can draw on a flexible mix of methods: interviews, diaries, surveys, analysing online discussion. The study could also involve some (largely quantitative) surveys or scrape online discussion in social media etc. The project can expand to a PhD by considering more case studies, e.g., recovery from physiotherapy, mental health. They may also be opportunities to study app developers' views.

Relevant publications 1

Faisal, Blandford, Potts (2013). Making sense of personal health information: Challenges for information visualization. Health Informatics Journal. doi:10.1177/1460458212465213

Relevant publications 2

Prentice, Peven, Zhaunova et al. (2024). Methods for evaluating the efficacy and effectiveness of direct-to-consumer mobile health apps: A scoping review. BMC Digital Health. doi: 10.1186/s44247-024-00092-x

Professor Caroline Sabin

Position: Professor of Medical Statistics and Epidemiology
Department: Institute of Global Health
University UCL
Faculty: Population and Health Sciences
Profile: https://profiles.ucl.ac.uk/1944-caroline-sabin
Email contact: c.sabin@ucl.ac.ul
Theme: Health of the Public

Research overview

Analyses of the 'Pharmacological and clinical Outcomes of PeoPle over fiftY' (POPPY) study, a cohort study that aims to increase our understanding of the clinical and mental health needs of people with HIV in the UK and Ireland as they age

Rotation project **(including a brief outline of how this will develop into a PHD project)**

Recent studies have suggested that people living with HIV may experience a speeding up of the aging process, with reports of increases in the rates of several co-morbidities, including cardiovascular disease, cancers, and end-stage liver and renal disease. The POPPY Study began in 2013 as the first large-scale study to describe the clinical outcomes of people living with HIV over the age of 50 in England and Ireland, and to assess whether these were different from those seen in people without HIV with similar demographics and lifestyles. The cohort includes participants from 7 clinics in the UK and one in Ireland. The cohort initially included three groups: 699 people with HIV aged >50 years; 374 people with HIV aged <50 years; and 304 people without HIV aged >50 years. To ensure that findings are robust, the group of older people with HIV was selected to ensure that it was broadly representative of older people with HIV in the UK/Ireland while the two other groups were frequency-matched on a range of demographic and lifestyle characteristics. Findings from the study are helpful for the development and implementation of evidence-based recommendations for the management and clinical monitoring of older people with HIV. Study results have also contributed to the design of future national and international studies. The study has supported several PhD projects but there are many new research questions which would be suitable for a rotation project – the team is happy to discuss ideas with those who may be interested.

Relevant publications 1

Bagkeris E, Burgess L, Mallon PW, et al. Cohort profile: the Pharmacokinetic and clinical Observations in PeoPle over fiftY (POPPY) Study. Int J Epidemiol 2018; 47:1391-1392e.

Relevant publications 2

Doctor J, Winston A, Vera JH, et al. Anticholinergic medications associated with falls and frailty in people with HIV. HIV Med 2023; 24:1198-1209.

Professor Lion Shahab

Position: Professor of Health Psychology
Department: Department of Behavioural Science and Health
University UCL
Faculty: Population and Health Sciences
Profile: https://profiles.ucl.ac.uk/6545-lion-shahab
Email contact: lion.shahab@ucl.ac.uk
Theme: Health of the Public

Research overview

Our group aims to integrate population and individual approaches to quitting smoking and reducing alcohol consumption by a) providing insights into population-wide influences on smoking and alcohol consumption and b) advancing the scientific foundation and development of interventions aimed at promoting smoking cessation and helping people reduce their alcohol consumption.

Rotation project **(including a brief outline of how this will develop into a PHD project)**

Evaluating the public health impact of novel nicotine delivery devices. This project involves a lab-based assessment of genetic, epigenetic and multi-omic salivary markers in users of e-cigarettes to establish a risk profile of these products. The project seeks to find novel biomarkers that go beyond standard tobacco-based measure to assess the health impact of e-cigarettes. This project also provides a unique opportunity to work with the Smoking Toolkit Study (STS), which involves monthly, face-to-face, computer-assisted household surveys with adults aged 16+ in England, representative of the adult population of smokers in England. The surveys include detailed questions on smoking and cessation, and demographic characteristics and has included close to 400,000 participants since 2006.As part of the STS, we are now collecting data on past regular and ever e-cigarette use and propensity to smoke. The rotation project could be worked up into a full PhD project to evaluate the impact of e-cigarette availability on e-cigarette and cigarette use trajectories among young people to determine the behavioural – in addition to the health – impact of novel nicotine delivery devices. PhD students would develop experimental and lab-based research skills and gain experience in big data analysis and transdisciplinary research. The project involves collaboration with UCL researchers (Prof Jamie Brown, Dr Emma Beard, Dr Dimtra Kale) as well as researchers from the University of Bristol, Toronto and Ohio.

Relevant publications 1

Shahab L, Goniewicz ML, Blount BC, et al. Nicotine, Carcinogen, and Toxin Exposure in Long-Term E-Cigarette and Nicotine Replacement Therapy Users: A Cross-sectional Study. Ann Intern Med 2017;166(6):390-400. doi: 10.7326/M16-1107

Relevant publications 2

Richmond RC, Sillero-Rejon C, Khouja JN, et al. Investigating the DNA methylation profile of e-cigarette use. Clin Epigenetics 2021;13(1):183. doi: 10.1186/s13148-021-01174-7

Professor Nicola Shelton

Position: Professor of Population Health
Department: Research Department of Epidemiology and Public Health, IEHC
University UCL
Faculty: Population and Health Sciences
Profile: https://profiles.ucl.ac.uk/8373-nicola-shelton
Email contact: n.shelton@ucl.ac.uk
Theme: Health of the Public

Research overview

I'm the Director of the Health and Social Surveys Research Group: we host and conduct research with nationally representative data focusing on population health including the Health Survey for England and the ONS Longitudinal Study supported by CeLSIUS. I have wide-ranging research interests including health geography and health and work.

Rotation project **(including a brief outline of how this will develop into a PHD project)**

The project will look at obesity by occupational and industry groupings in England to see if workers in certain occupations and industries are more or less at risk of higher levels of obesity and more generally poor health. . The focus will be on occupations and industries where there is exposure to the food environment. The rotation will be completed using pooled cross-sectional data from several years of the Health Survey for England up to and including 2019. The Health Survey for England monitors trends in the nation's health and care, providing information about individuals living in private households in England for over 30 years since its inception in 1991. The data are safeguarded and available from the UK Data Service. It will be developed into a PhD looking at health outcomes in the ONS Longitudinal Study (LS). The longitudinal research will look at life course occupational histories between 1971 and 2021 and limiting long term illness, general health, cardiovascular and all cause mortality and cancer incidence and mortality. The ONS LS contains linked decennial census and life events data for a 1% sample of the population of England and Wales. It contains records on over 500,000 people usually resident in England and Wales at each point in time and it is largely representative of the whole population. The LS is the largest longitudinal data resource in England and Wales. The data are secure data and available to approved researchers with approved projects in secure settings.

Relevant publications 1

Is studying medicine good for your health? Long-term health outcomes of a cohort of clinical medicine graduates in England and Wales in the ONS Longitudinal Study 2021 BMJ Open11(3):e041224 Shelton N, Duke-Williams O, van der Erve L, Britton J, Xun W

Relevant publications 2

Are 'healthy cohorts' real-world relevant? Comparing the National Child Development Study (NCDS) with the ONS Longitudinal Study (LS) 2020 Longitudinal and Life Course Studies Archer G, Xun WW, Stuchbury R, Nicholas O, Shelton N

Professor Andrew Steptoe

Position: Professor of Psychology and Epidemiology
Department: Behavioural Science and Health
University UCL
Faculty: Population and Health Sciences
Profile: https://profiles.ucl.ac.uk/5619-andrew-steptoe
Email contact: a.steptoe@ucl.ac.uk
Theme: Health of the Public

Research overview

I am a psychologist and epidemiologist, and director of the English Longitudinal Study of Ageing (ELSA). I work on issues such as links between social factors and biology, cognitive ageing, cross-national studies of healthy ageing, social isolation and loneliness, and positive emotional wellbeing and health.

Rotation project **(including a brief outline of how this will develop into a PHD project)**

Positive psychological wellbeing and physical health Negative emotional states such as depression and anxiety have long been known to contribute to the incidence and prognosis of physical health conditions such as coronary heart disease, diabetes, and frailty. Research over the past 20 years has suggested that positive psychological wellbeing (which can be divided into components such as affective and eudemonic wellbeing) is health protective. Interestingly, these factors appear to reduce health risk even when negative states such as depression are taken into account. Pathways linking positive wellbeing with physical health include both biological factors such as inflammation and neuroendocrine dysfunction, and health behaviours like physical activity. Much of this work has relied on self-reported physician diagnoses of health conditions. This project will take advantage of linkage between ELSA and Hospital Episode Statistics to provide a more precise perspective on the role of psychological wellbeing in the incidence and progression of major physical health conditions. It could be developed into a programme of studies in several directions, including analysis of novel biological pathways such as proteomics, studies of factors such as socioeconomic disparities, or research on methods of intervening to reduce risk.

Relevant publications 1

Steptoe A. (2019). Happiness and health. Annual Review of Public Health¸ 40, 339-359. doi: 10.1146/annurev-publhealth-040218-044150.

Relevant publications 2

Steptoe A, Fancourt D. (2019). Leading a meaningful life at older ages and its relationship with social engagement, prosperity, health, biology, and time use. Proc Nat Acad Sci USA. 116, 1207-1212. doi: 10.1073/pnas.1814723116.

Professor Alastair Sutcliffe

Position: Professor of General Paediatrics
Department: Population, Policy & Practice, Great Ormond Street Institute of Child Health, UCL
University UCL
Faculty: Population and Health Sciences
Profile: https://profiles.ucl.ac.uk/4341-alastair-sutcliffe
Email contact: a.sutcliffe@ucl.ac.uk
Theme: Health of the Public

Research overview

The prevalence, trajectories and outcomes of UK children prenatally exposed to drugs of abuse and/or alcohol remain largely unknown. This study aims to investigate prevalence, health, educational and social & judicial outcomes of individuals who have been prenatally exposed to alcohol and / or drugs in the United Kingdom.

Rotation project **(including a brief outline of how this will develop into a PHD project)**

The prevalence, trajectories and outcomes of UK children prenatally exposed to drugs of abuse and/or alcohol remain largely unknown. A recent UK health and social care committee referred to alcohol exposure in pregnancy as a "hidden epidemic". The overall study will consist of parallel work programs, including planned co-production phase, epidemiological, biochemical and clinical study phases. During the 'rotation' phase of this project, it is proposed that the student would undertake a systematic review investigating current knowledge of the extent and character of this problem in the UK. This review would sit alongside the patient public involvement (PPI) phase, which it is proposed they would also take part in. This phase involves working with two major UK charities to co-produce the overall project. This PPI phase is particularly important as individuals exposed to drugs or alcohol in the UK have historically been difficult to identify, their medical needs often misdiagnosed or ignored. Ascertaining their needs and opinions are vital in directing research. Through this work, the student would participate in shaping their eventual PhD project. It would be proposed that the student undertake the epidemiological phase of this project as their main PhD project. Evaluating/ analysing and linking national data sources to investigate this problem on a national scale, alongside developing the next planned phases. They would be co-supervised by Associate Professor Carrie Williams who is presently building a team to do research in this area. The team has expertise in clinical community paediatrics, epidemiology and data linkage, including publications in NEJM & BMJ.

Relevant publications 1

Rees P, Carter B, Gale C, Petrou S, Botting B, Sutcliffe AG. Cost of neonatal abstinence syndrome: an economic analysis of English national data held in the National Neonatal Research Database. Arch Dis Child Fetal Neonatal Ed. 2021 Sep;106(5):494-500. doi: 10.1136/archdischild-2020-319213. Epub 2021 Feb 24. PMID: 33627328.

Relevant publications 2

Williams CL, Bunch KJ, Stiller CA, Murphy MF, Botting BJ, Wallace WH, Davies M, Sutcliffe AG. Cancer risk among children born after assisted conception. N Engl J Med. 2013 Nov 7;369(19):1819-27. doi: 10.1056/NEJMoa1301675. PMID: 24195549.

Professor Nicolas Szita

Position: Professor of Bioprocess Microfluidics
Department: Biochemical Engineering
University UCL
Faculty: Engineering Sciences
Profile: https://profiles.ucl.ac.uk/4963-nicolas-szita
Email contact: n.szita@ucl.ac.uk
Theme: Health of the Public

Research overview

This exciting project combines human neural stem cell biology with microfluidic (Organ-on-Chip) technology development to generate new in vitro models which elucidate the interaction between abnormal metabolic states and human disease; it will also provide robust interdisciplinary training in cutting-edge engineering and stem cell-based technologies.

Rotation project **(including a brief outline of how this will develop into a PHD project)**

Patient-derived induced pluripotent stem cells (hiPSC) provide the exciting opportunity to generate human neural tissue-like disease models in 2D (2-dimensional) and 3D cultures (better reflecting tissue cytoarchitecture) to further our understanding of mechanisms of disease and damage responses in the human nervous system. These models will underpin development of new therapeutic strategies and provide a platform for drug screening. Fine control of the environment for neural stem cell (NSC) growth and differentiation is essential to establishing meaningful and reproducible models. In this 4-month rotation project, the student will work with an existing microfluidic device, evaluate the fluid flow in the device using food-dyes, learn the laboratory protocols to culture hiPSCs and neural stem cells, compare their behaviour in traditional culture ware and in the microfluidic device. Time permitting, the student will also become familiar with setting up 3D cultures, using one of the established protocols for neuronal and glial differentiation of human NSC in 2D and test them in the current microfluidic device. To this end, the student will monitor oxygen in the chamber, investigate different flow rates, consider design modifications required to optimise cell growth and differentiation, and measure glucose/lactate concentrations in the effluent. The methods and results will provide the foundation for the PhD project.

Relevant publications 1

Super et al., Biotechnology Journal (2016), Real-time monitoring of specific oxygen uptake rates of embryonic stem cells in a microfluidic cell culture device DOI: 10.1002/biot.201500479

Relevant publications 2

Vagaska, B., Gillham, O., Ferretti, P., 2020. Modelling human CNS injury with human neural stem cells in 2- and 3-Dimensional cultures. Sci Rep 10, 6785.

Dr Shema Tariq

Position: Principal Clinical Research Fellow
Department: Institute for Global Health
University UCL
Faculty: Population and Health Sciences
Profile: https://profiles.ucl.ac.uk/51518-shema-tariq
Email contact: s.tariq@ucl.ac.uk
Theme: Health of the Public

Research overview

A range of short-term rotational projects to support ongoing research studies within the NIHR HPRU in Blood Borne and Sexually Transmitted Infections.

Rotation project **(including a brief outline of how this will develop into a PHD project)**

The NIHR HPRU in Blood Borne and Sexually Transmitted Infections (STIs) is led by UCL in partnership with the UK Health Security Agency (UKHSA). The unit conducts research to improve the health of the population, and to help develop practical policy guidelines for those working in health protection, with a focus on understanding risk and risk reduction, reducing the burden of under-diagnosis, and improving care and management of those diagnosed with infections. Our multi-disciplinary team includes clinicians, epidemiologists, statisticians, social scientists, mathematical modellers and laboratory scientists, drawn from across UCL and UKHSA. We have been brought together to create an innovative culture of working across different disease areas, populations, and institutions. At any one time, we are working on many different studies relating to STIs (syphilis, gonorrhoea, chlamydia), HIV and viral hepatitis (hepatitis B and C), and these provide many opportunities for PhD studentships and rotation projects across a range of disciplines. Projects might include, for example, systematic and scoping reviews, secondary analyses of surveillance datasets, qualitative studies or modelling work. Our team would be happy to discuss any ideas with you.

Relevant publications 1

Sonubi T, Sheik-Mohamud D, Ratna N, Bell J, Talebi A, Mercer CH, Sinka K, Migchelsen SJ, Folkard K, Mohammed H. STI testing, diagnoses and online chlamydia self-sampling among young people during the first year of the COVID-19 pandemic in England. Int J STD AIDS. 2023 Oct;34(12):841-853. doi: 10.1177/09564624231180641. Epub 2023 Jun 7. PMID: 37287231; PMCID: PMC10251181.

Relevant publications 2

Solomon, Danielle, et al. "Inequalities in sexual and reproductive outcomes among women aged 16–24 in England (2012–2019)." J Epidemiol Community Health 78.7 (2024): 451-457.

Professor Claire Thorne

Position: Professor of Infectious Disease Epidemiology
Department: UCL Great Ormond Street Institute of Child Health
University UCL
Faculty: Population and Health Sciences
Profile: https://profiles.ucl.ac.uk/52-claire-thorne
Email contact: claire.thorne@ucl.ac.uk
Theme: Health of the Public

Research overview

My research focuses on infectious disease epidemiology in relation to maternal and child health, including (re)emerging / pandemic infections. I lead several cohort and surveillance studies on infections in pregnancy. This includes the Integrated Screening Outcomes Surveillance Service (ISOSS) which monitors HIV, syphilis and hepatitis B infections in pregnancy and related outcomes in England, and the pregnancy component of the European Pregnancy and Paediatric Infections Cohort Collaboration (EPPICC).

Rotation project **(including a brief outline of how this will develop into a PHD project)**

In the UK, screening for HIV, syphilis and HBV is strongly recommended in pregnancy because of important health benefits for maternal and infant health. Re-testing later in pregnancy is recommended for women at risk of an incident infection. However, knowledge and/or recognition of risk by women and/or the antenatal care team are pre-requisites for re-testing and the extent to which re-testing occurs in the UK, and barriers and facilitators for this are uncertain. Knowledge gaps include the extent of sexual health discussions by antenatal screening teams (including use of "Negative Now" messaging when giving negative screening results), how pregnant women engage with sexual health services, and their sexual health promotion needs more generally. These gaps are important to address to improve women's health and because incident syphilis and HIV infections in pregnancy following a negative screening result contribute to potentially preventable congenital syphilis and vertically-acquired HIV infections. The rotation project comprises a scoping review to identify knowledge gaps and map existing literature, including types of evidence available on sexual health promotion in pregnancy, re-testing for screened for infections, and sexual health-seeking behaviours. Co-supervision will be provided by Dr Marthe Le Prevost (MRC CTU). This could develop into a full mixed-methods PhD, with qualitative work including a social media analysis, focus group discussions and interviews with key stakeholders, addressing barriers and facilitators for sexual health promotion and different testing options for infections in pregnancy. Statistical analysis of national screening data will investigate incident syphilis, HIV or HBV infections in pregnancy.

Relevant publications 1

https://www.gov.uk/government/publications/idps-isoss-hiv-outcome-report-2023/isoss-hiv-report-2023

Relevant publications 2

https://www.gov.uk/government/publications/idps-isoss-syphilis-outcome-report-2023

Professor Jonathan Wells

Position: Professor of Anthropology and Pediatric Nutrition
Department: UCL Great Ormond Street Institute of Child Health
University UCL
Faculty: Population and Health Sciences
Profile: https://profiles.ucl.ac.uk/11465-jonathan-wells
Email contact: jonathan.wells@ucl.ac.uk
Theme: Health of the Public

Research overview

I am a nutritionist focusing on growth, body composition and energetics. My background spans both biological and social anthropology. I have extensive experience using stable isotope probes to assess body composition and energy expenditure in diverse settings, both in epidemiological analyses and in randomized trials addressing undernutrition.

Rotation project **(including a brief outline of how this will develop into a PHD project)**

I am happy to discuss projects to fit your interests – two potential areas are listed below, either could be developed into a full PhD. Both projects benefit from unique databases coordinated by the International Atomic Energy Agency on energy expenditure (doubly-labelled water method) and body composition (isotope dilution method) through the life course (https://www.iaea.org/resources/hhc/databases). Modelling human energy requirements: The database on total energy expenditure (TEE, >10,000 measurements, birth to old age) can be used to model population energy needs. Starting with adults, the rotation will first model the association of TEE with body mass index (BMI). We will then statistically manipulate the shape of the BMI distribution to simulate how obesity interventions could potentially reduce global energy needs and hence benefit planetary as well as human health. The full PhD can develop this approach, modelling the energy needs to improve the prevention / treatment of child undernutrition, and global dietary water requirements. The impact of malnutrition on children's body composition: The database on body composition (BC, <25,000 measurements, birth to old age) contains data from diverse of low- and middle-income countries. The rotation will focus on children, and evaluate fat-free mass and fat mass across different categories of malnutrition, including stunting (short height for age), wasting (low weight for height), and overweight/obesity (high BMI for age). The full PhD could provide further insight into these patterns, by taking into account variability in geography and climate, ethnicity, age and sex. A full PhD could also combine elements of these approaches.

Relevant publications 1

https://pubmed.ncbi.nlm.nih.gov/34385400/

Relevant publications 2

https://pubmed.ncbi.nlm.nih.gov/31767002/

Professor Jenny Woodman

Position: Associate Professor in Child and Family Policy
Department: UCL Institute of Education Social Research Institute
University UCL
Faculty: Institute of Education
Profile: https://profiles.ucl.ac.uk/25041-jenny-woodman
Email contact: j.woodman@ucl.ac.uk
Theme: Health of the Public

Research overview

Health visiting is a universal service for the under 5s led by public health nurses which can reduce childhood inequalities and improve maternal health. We have a portfolio of health visiting studies, working closely with the Department of Health and Social Care (DHSC), commissioners, Directors of PH and clinical service leads.

Rotation project **(including a brief outline of how this will develop into a PHD project)**

This is an opportunity for a student interested child health inequalities, maternal health, whole family health, universal services, the early years, disseminating research evidence to policy colleagues. During the rotation project, the student will use a cohort of 50,000 children born in 10 local authorities containing linked records from 2016-2020 from the Community Services Dataset (CSDS health visiting contacts) and Hospital Episodes Statistics (HES, linked mother-child data on hospital admissions). This cohort has already been developed and cleaned (see publication 2, a big job!). The student will analyse how the additional contacts are temporally patterned over the first year of life (e.g. are they largely clustered within the first 8 weeks of life?) and how this varies across family characteristic (ethnicity, socio-economic status, history of maternal hospital admission for adversity) and geographically. Results will be shown to DHSC. The student will benefit from our cross-Faculty, cross-disciplinary team led by Professors Jenny Woodman (social science, UCL Institute of Education) and Katie Harron (Statistics/epidemiology, UCL GOS Institute of Child Health) which combined expertise in analyses of linked administrative data, health economics and qualitative methods. A full PhD project would describe how health visiting was delivered to children and families in England in more recent data (after 2020) and how this varies by family characteristic and geographically using the same administrative datasets. DHSC and our practice colleagues tell us they need this more up-to-date evidence. We would encourage a mixed methods PhD, with in-depth qualitative work to understand and explain the quantitative findings

Relevant publications 1

https://ijpds.org/article/view/2382

Relevant publications 2

https://www.ijpds.org/article/view/2385