



Translational Research

Alcohol • Drugs • Toxicology

Annual Report

2020

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About the Edith Collins Centre

The Edith Collins Centre (ECC) was established this year as a partnership between Sydney Local Health District (SLHD) and the University of Sydney to increase clinical research capacity in alcohol, drugs, and toxicology.

ECC conducts translational research in the fields of alcohol, drugs and toxicology to drive change in policy and practice and to improve the health of those affected by alcohol, drugs and poisoning.

Our multidisciplinary research encompasses a broad range of disciplines including clinical toxicology, addiction medicine, public health, epidemiology, hepatology, mental health, and Aboriginal and Torres Strait Islander health. Our research ranges from early interventions for drug and alcohol use, through to genetic and molecular mechanisms of tissue injury and clinical trials in the treatment of substance use disorders.

ECC comprises several highly successful research groups conducting nationally and internationally leading work in these areas, achieving world-first outcomes in their fields, including the establishment of notable international collaborations and consortia and large multi-national cohorts.

Our work is mainly supported by external peer-reviewed grants. ECC Staff Specialists also provide leadership and teaching in the speciality of Addiction Medicine at the University of Sydney.

Research overview

ECC research is aligned across the following five key areas of research:

- **Clinical Toxicology and Pharmacology** (Prof Andrew Dawson, Prof Nick Buckley, A/Prof Darren Roberts)
- **Indigenous Health and Substance Use** (Prof Kate Conigrave, A/Prof Kylie Lee, Dr Michael Doyle)
- **Alcohol Biology, and Genetics of Liver Disease** (A/Prof Devanshi Seth, Prof Paul Haber)
- **Clinical Research in Alcohol, Addictive Behaviours & Treatment** (A/Prof Kirsten Morley, Prof Paul Haber, Prof Andrew Baillie, Dr Warren Logge)
- **Illicit Drug Use** (A/Prof Carolyn Day)

Clinical Toxicology includes acute and chronic medicine and chemical poisoning, serious adverse prescribed and non-prescribed drug reactions, and toxicology that contributed to a substantial source of morbidity and mortality across the world.

The team, led by Professors Andrew Dawson and Nick Buckley, has established large prospective cohorts of acute poisoning and developed treatment guidelines resulting in national and international policy and regulatory changes.

Much of their national research is based on detecting early signals of significant drug toxicity and measuring the public health impact of regulatory change. This group has led the development of the NSW Poisons Information Centre research program and used data to describe many developing trends in poisoning including pharmaceuticals and drug use.

The team has been funded by NHMRC Program and CRE Grants (CRE in Medicines Intelligence, and CRE in Translational Venom and Antivenom Research) along with project grants and other forms of support.

Recent activities

- The Australian Toxicology Monitoring (ATOM) and Australian Snakebite Projects (ASP), which identify the clinical effect and response to treatment from various poisonings and snakebites.
- An evaluation of the patterns of use and poisoning with various substances like codeine, paracetamol, pregabalin, etc.
- A randomised stepped wedge trial of scaling up of a community-based alcohol education program in rural Sri Lankan villages, and its effects on alcohol use, associated harms, depression and social capital.

Indigenous Health and Substance Use research, led by Professor Kate Conigrave, Associate Professor Kylie Lee and Dr Michael Doyle, involves developing culturally appropriate, accessible and innovative approaches to prevent or treat alcohol or other drug use disorders among Aboriginal and Torres Strait Islander peoples and other priority populations.

Founded on longstanding partnerships with these communities and services across Australia, their focus is on culturally appropriate and relevant work.

Recent activities

- A Centre for Research Excellence (CRE): Indigenous Health and Alcohol was opened in May 2017 to recruit and support Indigenous Australian researchers. The CRE, funded by the NHMRC, aims to reduce alcohol harm experienced by Indigenous Australians, and works to draw on the diverse range of skills among the investigators and the Indigenous research trainees. It combines cultural, community, health service, research, and policy expertise. To date the CRE has mentored 9 post-graduate research students, 3 early career researchers, and 3 trainees, all of whom are of Aboriginal descent.
- The design of a world-first iPad App that has been shown to be an accurate and acceptable tool to help Aboriginal and Torres Strait Islander peoples to self-report their drinking and provides them with immediate tailored feedback on the App ('brief intervention').
- Support of Aboriginal community-controlled health services, to manage alcohol problems in practice: this study trials a model of support across 22 health services.

Clinical Research in Alcohol, Addictive Behaviours and Treatment is a major area of interest with ongoing randomised control trials, including comorbid substance use and suicide risk.

The team, led by Associate Professor Kirsten Morley, Professor Paul Haber, Prof Andrew Baillie and Dr Warren Logge, is leading world first research into alcohol dependence, alcoholic liver disease and their associated psychological comorbidities, with the NHMRC Centre of Research Excellence in Mental Health and Substance Use.

The team is currently conducting a number of randomised clinical trials testing novel treatments for alcohol addiction, and how to optimise the response to treatment and improve translation of evidence-based approaches into practice.

Recent activities

- Two NHMRC-funded world-first trials investigating novel pharmacotherapies for the treatment of alcohol dependence: A NHMRC project grant defining the clinical role of Topiramate, and an NHMRC project grant exploring the efficacy of oxytocin.
- The team are also conducting a trial of NAC (an antioxidant agent that restores glutamatergic tone) for comorbid depression and liver disease and two trials of cannabidiol (CBD) including one examining the neurobehavioural mechanisms of CBD.
- The group recently finished the largest trial in the world for the treatment of alcoholic liver disease with Baclofen. This work was a collaboration between DHS research, Brain Mind Centre, SLHD and other clinical sites.

- Improving management of comorbid mental and substance use disorders (funded by NSW Health Translational Research Grants and Fellowship Scheme). Pathways to Comorbidity Care (PCC) is a multi-modal training program for improving management of comorbid mental disorders in drug and alcohol settings, and is being adapted for management of substance use in mental health settings.
- The team are also piloting a new tele-health pathway to care for patients with substance use problems that self-harm including collaborations with RPA Virtual hospital and NSW Poisons Information Centre.

Alcohol biology and genetics of liver disease is an important area of research at DHS within the Alcoholic Liver Disease Research Program, led by Associate Professor Devanshi Seth, and Professor Paul Haber.

Clinical and basic research into liver disease aims to understand the mechanisms of how alcohol injures the liver and identify potential genetic and non-genetic biomarkers as therapeutic and/or diagnostic agents.

The team is investigating the cellular and molecular mechanisms of liver cirrhosis and compensatory liver regeneration in clinical specimens and in experimental models of alcohol-induced liver injury.

The multinational GenomALC Consortium led by A/Prof Seth is investigating the genetic/genomic factors associated with the risk of alcoholic cirrhosis. The GenomALC Consortium has established the world's largest biobank (blood & DNA) from ~6700 drinkers with a linked clinical database through funding from National Institutes of Health (NIH)/National Institute on Alcohol Abuse & Alcoholism (NIAAA).

The Genome-Wide Association Study (GWAS) analysis has identified novel gene polymorphisms/mutations and clinical factors that predispose some drinkers to cirrhosis and protect others from liver injury. The group also collaborates closely with Professor Nick Buckley on microRNA profiling for acute kidney injury.

Recent activities

- Following a collaboration between the alcohol biology and genetics team with the Clinical Pathology Department at Royal Prince Alfred Hospital, a new state-of-the-art biochemical test of phosphatidyl ethanol (PEth), ethylglucuronide (EtG) and ethylsulfate (EtS) (direct metabolites of alcohol), is available for the first time in Australia at RPAH. These new tests using Ultra-High Performance Liquid Chromatography-tandem-Mass Spectrometry (UHPLC-MS/MS) of blood/serum to assess alcohol consumption in patients with alcohol use disorders (AUDs), including alcohol-induced liver disease and liver transplant patients.
- A novel variant in FAF2 gene was discovered by the team, which is associated with a reduced risk of alcohol induced liver cirrhosis in drinkers and links lipid biology as a key player in the development of cirrhosis. Research is underway studying the mechanisms of action for these genes in lipid biology using gene-editing tools (Crispr-Cas9) in a zebrafish model of alcohol-induced liver injury.
- A new predictive model using genetic and clinical risk factors is being generated as a novel means to identify and stratify drinkers by risk of cirrhosis development. This has been built utilising the team's multinational GenomALC Consortium GWAS data from thousands of drinkers

Illicit Drug use team, led by Associate Professor Carolyn Day, examines substance use and related harms in vulnerable populations. In particular it evaluates the influences and improvements to service use and delivery in this area. The program includes the Sydney Women's and Drug

Research group (SWaDR) as well as close connections with NGOs including Uniting Sydney Medical Supervised Injecting Centre and the NSW Alcohol and Drug Foundation.

Recent activities

- Development of a model of care for substance use in pregnancy and parenting for Sydney Local Health District.
- Understanding driving-related safety for individuals who receive opioid agonist treatment (OAT).
- The ADM users into treatment (ADMiT) study: linking people who use automatic dispensing machines with the hepatitis c cascade of care Characteristics and needs of women seeking treatment for substance use disorders in NSW.
- Understanding the factors facilitating or hindering utilisation of drug and alcohol services for the Muslim and Arabic speaking community in Sydney.
- Suicide prevention project at Uniting Medically Supervised Injecting Centre (Uniting MSIC).
- Evaluation of drug and alcohol services for young people in Sydney including client and practitioner perspectives, cultural competency and the role of agency and aspiration in youth treatment.

Research collaborations

DHS Research has a number of Translational Research projects that aim to increase uptake of evidence-based treatment.

These projects are funded by NHMRC and NSW Health and include:

- increasing uptake of evidence-based treatment for alcohol problems in Australia's First Peoples
- improving the management of comorbid mental health and substance use with an integrated approach (including a multi-modal training package to several sites across NSW Health LHD's)
- a shared care pathway for the treatment of alcohol use disorders in primary care.

DHS boast many collaborations with external groups:

- Clinical Services of SLHD (Gastroenterology/Liver Services, Emergency Department, Nursing, Pharmacy, Women and Babies Services, Women Children and their Families Institute, Pain Management Services at RPAH and Concord Hospitals, Mental Health Services, Public Health, Community Health, Oral Health and Aged Care, Aboriginal Health)
- HIV and Related Programs (HARP)
- Health promotion
- Other Local Health Districts (South Eastern Sydney LHD, Hunter New England LHD, Northern Sydney LHD and South West Sydney LHD)
- The University of Sydney Matilda Centre
- Brain and Mind Centre
- United Medically Supervised Injecting Centre
- NSW Poisons Information Centre
- National Drug and Alcohol Research Centre (NDARC)
- Centenary Institute of Cancer Medicine and Cell Biology
- South Asian Clinical Toxicology Research Collaboration (SACTRC)
- Burnett Institute, Melbourne
- NSW Alcohol and Drug Foundation
- Network of Alcohol and other Drug Agencies (NADA)
- Redfern Legal Centre
- Youth INsearch
- Blackdog Institute
- NSW Users and AIDS Association (NUAA)
- Aboriginal Drug and Alcohol Council, South Australia

- School of Medicine, Kufa University, Iraq.

DHS is also an active member of the NSW Drug and Alcohol Clinical Research and Improvement Network (DACRIN), which is a collaborative network of NSW Local Health District and Health Network services engaged in clinical research in the alcohol and other drug (AOD) sector.

Medical education and training

Medical Education is a key focus of the Research Unit. The fields of substance use and related health and social consequences are major topics for undergraduate programs in Medicine and the Health Sciences due to the high prevalence of these issues and their major impact. Our staff are currently teaching in Addiction within the Universities' Faculty of Medicine and Health, across Dentistry, and Pharmacy and Public Health and the brain and mind sciences. A/Prof Day has coordinated addiction medicine education in the Sydney Medical Program since 2007.

All groups are involved in continuously training and teaching medical and science graduates (Honours, Masters, MPhil and PhD) and students in Aboriginal health promotion (GradDiplIndigHP). Group members are engaged in the placement of overseas trainees/students, teaching/training of GPs and Aboriginal drug and alcohol workers and other clinicians across Australia. We have developed a Masters in Clinical Toxicology distance learning course and Open-source curriculum, Master of Public Health unit of study "Alcohol, Drugs and Health" and the Addiction unit of study in the Brain and Mind Centre (BMC) post-graduate program. There are opportunities to undertake postgraduate studies in the above areas, from basic science, clinical or public health perspectives.

ECC achievements in 2020



40 active grants



Over \$41 million of active fundings



135 peer-reviewed journal publications



1 book



13 book chapters



19 national and international conference presentations

Key achievements

- Evaluation and improvement of comorbid substance use and mental illness management with the aim of facilitating the implementation into Local Health Districts across NSW Health. (Prof P Haber, A/Prof K Morley)
- Established new, sophisticated testing for recent alcohol use using ultra-high performance liquid chromatography-tandem-mass spectrometry (UHPLCMS/MS) at Royal Prince Alfred Hospital. New testing can be used for identification of the direct biomarkers (Peth EtG and EtS) of alcohol consumption. Select specialists at Royal Prince Alfred Hospital are now using the testing in routine care. (A/Prof D Seth, Prof P Haber and Prof D Sullivan)
- Updated the guidelines for the management of paracetamol poisoning in Australia and New Zealand. (Dr A Chiew, Prof NA Buckley)
- Part of expert group developing Australian Toxicology & Toxicology Guidelines. In eTG Complete: Melbourne: Therapeutic Guidelines Limited; 2020. www.tg.org.au (Prof NA Buckley (chair), Dr A Chiew, Prof AH Dawson).
- Part of team awarded NHMRC Centre of Research Excellence in Medicines Intelligence (Prof NA Buckley)
- Awarded Australian Research Data Commons: Australian Data Partnerships grant - Boosting public health research with a national poisoning dataset. (Dr R Cairns, Prof AH Dawson, Prof NA Buckley, Dr A Chiew, A Huynh, J Brown)
- Chaired NHMRC Alcohol working group, which revised the Australian drinking guidelines. These were released in December 2020. (Prof K Conigrave)
- Updated the Australian guidelines for treatment of alcohol problems (Prof P Haber, A/Prof K Morley, Prof A Baillie)
- Provided training and disseminated resources in 10 Aboriginal community-controlled health services around Australia on screening and care for unhealthy alcohol use. (Prof K Conigrave)
- Validated an iPad App for helping Aboriginal people describe what they drink. This App includes a tailored brief intervention for participants at the end. (A/Prof K Lee, Prof K Conigrave, Adjunct A/Prof Scott Wilson)
- By the end of 2020, nine Aboriginal post-graduate research students around Australia, and three trainees have been a part of the NHMRC Centre of Research Excellence: Indigenous Health and Alcohol.
- Building on the results of a previous project distributing naloxone, NSW Health has provided additional funding to continue this intervention in routine care. This project will soon be extended to other high-risk populations.
- Expanded the Health Justice Partnership between Sydney Local Health District and Redfern Legal Centre. (A/Prof C Day)
- Development of a model of care for substance use in pregnancy and parenting for Sydney Local Health District. (A/Prof C Day).

Awards

- Awarded NSW Ministry of Health Funded Addiction Medicine Registrar Training Position (Dr C Tremonti)
- Centenary award for publishing in highest impact factor journal within Centenary (2020 Q2) (A/Prof D Seth)
- Awarded Best Oral presentation at Centenary Showcase (Ms FS Haniffa Salahudeen)

Research Output

- Number of HREC applications in 2020: 16
- Number of participants enrolled in 2020: 810
- Number of new clinical trials in 2020: 3
- Number of active trials in 2020: 35
- Bio-banking: Yes

Staff

Academic staff (n=23)

- Professor Andrew Baillie, Professor, Allied Health (USYD); Clinical Psychologist (SLHD)
- Professor Nicholas Buckley, Professor, Clinical Pharmacology (USYD); Clinical Toxicologist
- Dr Kate Chitty, Research Fellow
- Professor Kate Conigrave, Senior Staff Specialist (SLHD); Director, Centre of Research Excellence in Indigenous Health and Alcohol (USYD); Conjoint Professor, Addiction Medicine (USYD)
- Dr James Conigrave, Research Fellow, Speciality of Addiction Medicine (USYD)
- Professor Andrew Dawson, Senior Staff Specialist (SLHD); Clinical Professor, Pharmacology and Toxicology (USYD)
- Associate Professor Carolyn Day, Research Education Academic Director, Faculty of Medicine and Health (USYD)
- Dr Michael Doyle, Senior Research Fellow, Centre of Research Excellence in Indigenous Health and Alcohol (USYD)
- Professor Paul Haber, Clinical Director, Drug Health Services (SLHD); Head, Speciality of Addiction Medicine (USYD)
- Associate Professor Kylie Lee; Deputy Director, Centre of Research Excellence in Indigenous Health and Alcohol (USYD); Visiting Fellow Centre for Alcohol Policy Research (LTU); Adjunct Associate Professor, National Drug Research Institute (Curtin University)
- Dr Warren Logge, Post-doctoral Research Officer
- Dr Maja Moensted, Post-doctoral Research Officer
- Dr Lauren Monds, Academic Fellow, Specialty of Addiction Medicine (USYD)
- Associate Professor Kirsten Morley, Specialty of Addiction Medicine (USYD)
- Dr Firouzeh Noghrecchi, Statistician
- Dr Jacques Raubenheimer, Statistician
- Dr Sharon Reid, Career Medical Officer (SLHD); Senior Lecturer, Specialty of Addiction Medicine and School of Public Health (USYD)
- Dr Ben Riordan, Post-doctoral Research Officer
- Dr Amanda Roxburgh, Post-doctoral Research Associate
- Clinical Associate Professor Devanshi Seth, Principal Scientist (SLHD); Head, Alcoholic Liver Disease Laboratory (Centenary Institute); Specialty of Addiction Medicine and Specialty of Clinical Medicine (USYD)
- Dr Bethany White, Research Manager, Clinical lecturer
- Adjunct Associate Professor Scott Wilson, Joint-Director, Centre of Research Excellence in Indigenous Health and Alcohol (USYD)
- Dr Danni Zheng, Statistician/Epidemiologist

Professional staff (n=22)

- Claire Adams, Research Assistant
- Zein Albedeen Ali, Research Assistant
- Susan Anderson, Clinical Research Nurse
- Farah Al Ansari, Research Assistant
- Mustafa Al Ansari, Research Assistant
- Annabelle Chidiac, Research Assistant
- Karen Conroy, Clinical Research Nurse
- Dr Heidi Coupland, Post-doctoral Research Officer
- Elizabeth Dale, Research Assistant
- Bebe DeSouza, Research Assistant
- Monika Dzidowska, Research Program Manager
- Brennan Geiger, Research Assistant
- Holly Hardress, Research Assistant
- Tristan Hurseler, Research Assistant
- Sophia Little, Research Officer
- Summer Loggins, Research Administrative Assistant
- Eva Louie, Research Assistant
- Janaka Pushpakumara, Research Officer, Psychologist
- Taleah Reynolds, Research Administration Assistant
- Natalie White, Research Assistant
- Daniel Winter, Research Officer
- Catherine Zheng, Research Assistant

Clinical staff (n=4)

- Dr Nazila Jamshidi, Staff Specialist (SLHD); Clinical Senior Lecturer, Central and Western Clinical Schools
- Dr Chris Tremonti, Advanced Trainee
- Dr Anastasia Volovets, Staff Specialist in Gastroenterology and Hepatology, Addiction Medicine and Toxicology
- Dr Vicki Giannopoulos, Research Officer

Higher Degree Students (PhD and MPhil) (n=22)

- Mustafa Al Ansari, PhD student
- Jared Brown, PhD student
- Dr Angela Chiew, PhD student
- Elizabeth Dale, PhD student
- Monika Dzidowska, PhD student
- Fathima Shihana Haniffa Salahudeen, PhD student
- Kristie Harrison, PhD student
- Tristan Hurseler, PhD student
- Alanna Huynh, PhD student
- Douglas James, PhD student
- So Bi Kim, PhD student
- Jessy Lim, PhD student
- Sophia Little, PhD student
- Eva Louie, PhD student
- Tammy Merrick, PhD student

- Van Long Nguyen, PhD student
- Dr Varan Perananthan, PhD student
- Gemma Purcell-Khodr, PhD student
- Dr Natalie Thurtle, PhD student
- Teagan Weatherall, PhD student
- Susan Welch, PhD student
- Daniel Winter, PhD student

Masters/Other Post Graduate Students (n=18)

- Sean Brannon, Masters of Public Health
- Rachel Braude, Doctor of Medicine
- Felicia Cao, Doctor of Medicine
- Patrick Chung, Masters of Psychiatry
- Quinn Cretney-Ross, Doctor of Medicine
- Leo Matthew Dunstan-Potter, Doctor of Medicine
- Lyra Egan, Masters of Public Health
- Tessa Katherine Eves, Doctor of Medicine
- Benjamin Higbotham, Doctor of Medicine
- Rachael Louise Loutfy, Doctor of Medicine
- Lauren Malouff, Masters of Psychiatry
- Graham Newling, Masters of Public Health
- Rengen Parlane, Doctor of Medicine
- Aiden Roberts, Doctor of Medicine
- Vincent Tran, Doctor of Medicine
- Natalia Uthurralt, Masters of Public Health
- Vivian Yian Tao, Doctor of Medicine
- Stan Zovko, Doctor of Medicine



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Edith Collins Centre
King George V Building
Missenden Road
Camperdown
NSW 2050