MONASH University

PUBLIC HEALTH AND PREVENTIVE MEDICINE

ANNUAL REPORT 2020

This Annual Report covers the 2020 calendar year. It is designed to be read in conjunction with the **SPHPM Capability Booklet**, which provides a comprehensive overview of the School's ongoing activities.

This document has been designed to be primarily digital, and contains hyperlinks throughout.

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HEAD OF SCHOOL'S REPORT

Not long after I commenced leadership of SPHPM in early 2019, Deputy Heads Professor Sally Green and Professor Danny Liew joined me in preparing for what we thought would be several years of continuing service to public health and health care policy and practice through our school's commitment to research and education.

We engaged with School staff in a collaborative project to update our values and mission, channelling a renewed focus and energy to our activities. We created a five-year plan for the School, to bring structure and purpose to our work, and we consulted on the School's organisation, a project that culminated in delivering a new structure that better serves our plan and mission.

In early January 2020, Eastern Australia's catastrophic bushfires gripped our attention. Our environmental health researchers swung into action, initiating projects investigating the health impacts of exposure to the fires and smoke. Planetary health seemed destined to be the overarching theme of 2020.

By March, the novel coronavirus had well and truly arrived on our shores and our focus changed to join the global effort of facing the many challenges posed by the COVID-19 pandemic. The groundwork laid in 2019 and our new mission focused our resolve, and we turned that to tackling COVID-19. The reviews and restructures, whilst not yet fully implemented, had brought colleagues together in new and creative partnerships, to ensure renewed energy and commitment. Our School was agile and determined, and we had the structures to support us in maximising our contributions.

Our skilled, tireless educators and their support staff galvanised to deliver fully online teaching to our students, on a huge scale and at daunting speed. They offered increased support to students who struggled in the face of the pandemic. As clinical placements for Monash medical students evaporated under social distancing restrictions, our researchers stepped up to welcome over 90 Scholarly Intensive Placement students for the inaugural year of the program.

Many of our researchers pivoted their existing capabilities to launch to a diverse range of priority COVID-19 projects. These included exploring the mental health, physical health, and economic impacts of the pandemic; modelling projections of the likely efficacy of large-scale social distancing restrictions on controlling viral spread; monitoring impacts on the health system and health workers, seeking better ways of identifying and triaging patients likely to have COVID-19; trialling new treatments and protective devices; and harnessing new methodology to rapidly incorporate the latest medical knowledge into 'living' clinical guidelines. A number of our staff were seconded to the Victorian Department of Health and Human Services to assist in delivering the public health response to COVID 19, most notably Professor Allen Cheng as Acting Deputy Chief Health Officer.

We also recognised the need for the continuation of our established research program addressing other significant health challenges such as chronic diseases, ageing and environmental health. While these issues may seem to have been of lesser global focus in 2020, our work addressing chronic disease, women's health, environmental and occupational health, cardiovascular disease and cancer continued.

In 2021, I look forward to a gradual COVID-safe return to our workplace, and continuing to lead the collaborative, innovative and dedicated researchers, educators and professional staff who collectively work together as the School of Public Health and Preventive Medicine to deliver our vision of '*Sustainable, equitable health and wellbeing for people and communities in Australia and across the globe*'.

Professor Sophia Zoungas

Professor Sophia Zoungas

SCHOOL OVERVIEW

Public health approaches health and healthcare in the context of communities and populations. We are Monash University's home of epidemiological and biostatistical knowledge, specialising in research projects that provide evidence to underpin solutions to some of the most complex and urgent health questions on the planet. We're also a leading provider of public health education in the Asia-Pacific region.

In 2020, Monash University's indicators of health and medical research improved across numerous University ranking systems. Monash's health and medical research outputs rose four places to 48 in the National Taiwan University Rankings, rose 11 places to 48 on the US News & World Report Rankings, and rose 11 places to 31 in the world, and second in Australia, on the Times Higher Education Rankings.

We're home to some of the most knowledgeable and skilled public health researchers and educators on the planet, with expertise across biostatistics, research design and governance, clinical trials, clinical registries and cohort studies, evidence synthesis, qualitative methods, health economics, health promotion and implementation science. Our team apply these frameworks and skills to a staggering array of specialty areas including infectious diseases, transfusion science, planetary health, global health, women's health, injury and trauma, chronic disease and ageing, forensic science and more.

We apply an outcomes-focussed approach to our projects and programs, and continually challenge ourselves to ensure our work involves and flows back to the community. Our diverse research portfolio is anchored in real-world problems.

We house numerous NHMRC-funded Centres of Research Excellence, and we're Australia's largest manager of clinical quality registries, entities that can drive evidence-based quality and safety improvements across many aspects of medical care. We conduct large-scale, multinational clinical trials with ground-breaking impact felt around the world.

Cochrane Australia is housed within the School, providing world-leading analysis and synthesis of medical literature, and educating practitioners and the public on evidence evaluation.

Finally, we build upon our legacy of having provided Victoria's first Master of Public Health through our extensive public health education program. We deliver two undergraduate courses, manage a substantial honours program, offer postgraduate courses in eight public health disciplines, and at any one time have approximately 180 graduate research students enrolled. We also provide a short course program to professionals wishing to expand or update their knowledge. Our graduates leave with the knowledge, skills and confidence needed to carve a successful career in clinical practice, research and policy.

In 2020 we welcomed a new research group to the School – The Melanoma and Skin Cancer (MASC) Research Centre, a powerful network of almost 2,000 professionals who represent the many disciplines critical to the work of MASC Trials. With expert support from advisories and trials staff, and funding largely from NHMRC and MRFF grants, MASC Trials leads and designs research and clinical trial development, and provides project management for funded trials and other initiatives.

This report focuses on achievements and highlights from the 2020 calendar year. It complements the **School's Capability Booklet,** a comprehensive overview of our ongoing activities and strengths.

2020 IN NUMBERS

$75 MILLION RESEARCH FUNDING

2 HIGHLY-CITED AUTHORS

1,193 PUBLICATIONS

1,200+ STAFF

STUDENT NUMBERS

175 GRADUATE STUDENT COHORT (BY DEC 2020)

50 NEW GRADUATE STUDENTS ENROLMENTS

26 GRADUATE COMPLETIONS

1,754 UNDERGRADUATES TAUGHT VIA OUR UNITS

218 UNDERGRADUATES ENROLLED IN OUR BACHELOR DEGREES

780 POSTGRADUATE STUDENTS ENROLLED

86 INTERNATIONAL STUDENTS IN OUR POSTGRADUATE COURSES

COVID-19 PANDEMIC RESPONSE

Our expertise across infectious diseases epidemiology, mental health and social sciences, occupational health, public health education, evidence synthesis, clinical trials, health systems, intensive care and trauma research put us at the forefront of Australia's management of the pandemic. A number of our staff were seconded to government to assist with pandemic management and training public health personnel, others contributed to advisory committees and guideline development. Many of our researchers pivoted their projects to answer important questions about the pandemic.

Infectious Diseases Epidemiologist Prof Allen Cheng became a familiar face to Victorians as **Deputy Chief Health Officer for Victoria**, contributing to policy and engaging with media, and served on the Australian Health Protection Principal Committee (AHPPC), the key decision-making committee that spearheaded Australia's national approach to the pandemic.

Many of our staff were seconded to Victoria's Department of Health and Human Services (DHHS), where they provided high-level advice and support across the spectrum of pandemic management. Our educators took on senior roles in training doctors and health professionals in public health principles, and we opened enrolment to a number of relevant units to DHHS staff members.

REMAP-CAP is a major multinational adaptive clinical trial driven from within our Australian and New Zealand Intensive Care Research Centre, evaluating therapies to treat critically ill COVID-19 patients. The project received MRFF funding, $2 million in philanthropic funding from the Minderoo Foundation and significant overseas funding, including a €50 million grant from European stakeholders.

The REMAP-CAP team had numerous high-ranking publications demonstrating the efficacy/futility of hydrocortisone (**JAMA**), IL-6 receptor antagonists tocilizumab and sarilumab (**NEJM**), convalescent plasma, and contributed data to a major WHO meta-analysis on corticosteroids (**JAMA**).

The study was one of three cited as key national COVID-19 studies by the Chief Medical Officers of all UK nations. The results have influenced clinical practice worldwide.

The ***How Are You?*** survey by our Global and Women's Health Unit measured the psychological impacts of physical distancing restrictions over time. It was the largest survey undertaken during the first month of nationwide lockdown in Australia, with nearly 14,000 participants. Results were shared widely through media, and through webinars to industry and advocacy groups, informing recovery strategies. Several important papers were generated, revealing a two- to three-fold increase in whole-of-population symptoms of depression and anxiety among Australians living under COVID-19 restrictions (**The MJA**), rates of alcohol use during lockdowns (**Journal of Affective Disorders)**, and overeating during lockdown (**Public Health Nutrition**). The last paper was selected by the UK's Nutrition Society as December 2020's Paper of the Month.

The Australian and New Zealand Intensive Care Research Centre's SPRINT-SARI is a **national observation study** that captures data on Australians with COVID-19 who require critical care, and was approved by DHHS as an official surveillance process to monitor health system capacity and analyse patient outcomes. The database sees critical care researchers collaborate with data experts from the School's Registry Science and Research Unit. SPRINT-SARI data informed publications including outcomes data for smokers who were critically ill with COVID-19, and a **comparison of ICU occupancy and patient outcomes** between the current pandemic and 2009's H1N1 outbreak.

The **COVID-19 Work and Health Study**, jointly funded by Monash University and icare Foundation NSW, investigated the physical and mental health impacts of Australians experiencing work loss or reduction due to social distancing restrictions, tracking the experiences of a single cohort over time. They provided evidence of significant psychological distress, routine healthcare avoidance, and workforce concerns about returning to worksites. They fed results back to governments an d employer groups, helping ensure recovery programs and resources map to genuine community needs.

Our **epidemiological modelling team** pivoted to predict the likely impact of behavioural interventions designed to limit viral spread, such as school closures, and shared these with State and Commonwealth governments to aid decision-making around lockdowns and restrictions. The team also secured over **$1 million in joint funding from MRFF, WHO, Monash University and industry partners** for completion of a partially developed modelling platform and simulation pipeline to model the COVID-19 pandemic across Australia in real-time for direct policy translation. The finished platform will be extended into a full open-source collaboration available to external developers.

Monash Centre for Health Research and Implementation (MCHRI) Head Prof Helena Teede also spearheaded a successful MRFF Coronavirus Research Response grant late in the year to address an overall failure to capture the potential of data and digital health innovations, by working towards a National Learning Health System for optimal healthcare delivery.

MCHRI researchers also scoured online parenting forums to reveal a **lack of COVID-19 information** for women in the perinatal period, and a need for specific support resources during this crucial life period.

Trauma researcher A/Prof Gerard O'Reilly **identified loss of taste and smell** as a key indicator of likely infection among those presenting to Australian emergency departments, enabling better identification and triaging of potentially infectious patients.

PhD student Dr Peter Chan engaged in a world-first study that delivered **evidence of the ineffectiveness of an untested and unregulated device** designed to protect frontline staff from infection during intubation of patients. His study was cited by the American Food and Drug Administration when they withdrew approval for use of the equipment.

Our transfusion researchers contributed to a **world-first rapid COVID-19 diagnostic test**, able to provide results within 20 minutes, in the early days of the pandemic.

Cochrane Australia convened the National **COVID-19 Clinical Evidence Taskforce** in March 2020, to **create 'living' clinical guidelines** around COVID-19. Based within our School, Taskforce experts sourced, evaluated and synthesised the latest peer-reviewed COVID-19 research from around the world on a weekly basis, ensuring Australian doctors could provide people with COVID-19 with the most current, evidence-based care available.

By December, 200 leading experts from 32 national peak health organisations were contributing to the effort, the Taskforce had published 118 living guideline recommendations, 10 living clinical flowcharts, and answers to over 100 clinical questions. The Taskforce website has been viewed more than 270,000 times, with 170,000 individual users from 180 countries around the world.

The project further leveraged the expertise of researchers across the School, such as transfusion researcher A/Prof Zoe McQuilten who collaborated on **living guidelines around convalescent plasma use**, and infectious diseases experts Prof Allen Cheng and Prof Karin Leder, who sat on numerous panels.

NATIONAL COVID-19 CLINICAL EVIDENCE TASKFORCE IN 2020

32 PEAK CLINICAL BODIES	35 WEEKLY UPDATES	260+ CONTRIBUTIONS
14,000+ VOLUNTEER HOURS	16 EXPERT GROUPS	117 GUIDELINE RECOMMENDATIONS
7,000+ STUDIES	170,000+ GUIDELINE USERS	180 COUNTRIES

The School secured $1.4 million for **Coronavirus in Victorian Health and Aged Care Workers** (COVIC-HA), a multi-disciplinary study looking at the impacts of COVID-19 on 1,500 frontline health workers and carers. Its aim is to better understand viral transmission in this cohort, the mental health impacts on frontline workers, and evaluate pandemic preparedness at a health service level, all of which can assist in future pandemic management.

Aged care researcher Prof Joseph Ibrahim developed a **clinical screening tool** for identifying COVID-19 infection in older people dwelling in residential aged care services, which was implemented in Victoria. He was also an expert witness at the Royal Commission into Aged Care Quality and Safety, sharing reports on the nature and breadth of aged care research in Australia (**Journal of the American Geriatrics Society**), and a proposal for a new model for residential aged care in Australia (**Australasian Journal on Ageing**). He also made recommendations on priorities for optimising preparation and management of outbreaks in aged care (**MJA**), and was a **tireless advocate for residents in the media.**

Our epidemiological modelling team provided the Victorian government with state-level projections of the requirements for hospital and ICU capacity, deaths, and case numbers during the state's second wave of COVID-19. These were included in the national forecasts provided to the AHPPC. They also provided advice, technical support and modelling for COVID-19 policy to the World Health Organization's Western Pacific Regional Office, the Malaysian Ministry of Health, and the Philippines Department of Health, and joined colleagues calling for a clear national definition and policy around suppression versus elimination of the SARS-CoV-2 virus (**MJA**).

The EXCEL Registry, which captures data on the use of extra corporeal membrane oxygenation in Australia, pivoted to include COVID-19 related datapoints, which were harmonised with international registries.

Many staff contributed to the creation of guidelines, policy or consensus statements pertaining to COVID-19:

- Prof Helen Skouteris joined the **National Culturally and Linguistically Diverse Communities COVID-19 Health Advisory Group,** established to support evidence-based health responses to the impact of COVID-19 on CALD communities.
- Prof Helen Skouteris, Prof Karin Leder and Prof Jane Fisher AO were among those who contributed to the independent **COVID-19: Roadmap to Recovery** report produced by more than 100 subject matter experts drawn from Group of Eight Universities, and shared with the Commonwealth and State governments.
- A/Prof Zoe McQuilten and Prof Erica Wood from the Transfusion Research Unit led and contributed to the **National Consensus Statement on the Management of Haematology and Oncology Patients During the COVID-19 Pandemic.**

Throughout the year our researchers provided extensive media comment on a variety of angles about COVID-19, covering the virus and transmission, health impacts from living under social distancing restrictions, efficacy of behavioural interventions to prevent spread, and the crisis in the aged care sector, among many, many other topics.

EDUCATION

EDUCATION LEAD: PROFESSOR DRAGAN ILIC

We provide public health and epidemiological education through formal award degrees and short courses convened through the School, and through collaborative teaching within the Faculty, including teaching and coordinating several units into the University's popular medical (MD) and biomedical sciences programs.

The pandemic brought revolutionary changes to the way we taught in 2020, and our education teams worked tirelessly to develop accessible and engaging course content and adapt assessment protocols whilst minimising disruption to students, and providing additional pastoral support.

With just one week's notice in February our administrators, coordinators, lecturers and tutors worked together to pivot to a fully online learning model. Our lecturers learned or improved existing skills with technologies including Zoom, Moodle, Panopto and Teams, and developed a new way of teaching. Many moved from a traditional hour-long lecture format to creating bite-sized thematic content for students to watch at their leisure, a move enthusiastically embraced by many pupils.

Pastoral care was extended via a series of workshops throughout the year designed to bring the student body together in a relaxed, open atmosphere. This was expanded via an open invitation for students to book one-on-one Zoom calls with administrative staff when needed, a format that was taken up far more frequently than the face-to-face meetings it replaced.

Key events including Open Day, Change of Preference, and our annual undergraduate and postgraduate networking events for final year students were delivered digitally. Our Medical Education Research and Quality (MERQ) team's annual Teaching Symposium was also delivered online for the first time, facilitating sharing of the latest knowledge and ideas around best teaching practices whilst staff were in lockdown.

Communication among education staff was also overhauled as a result of remote working and learning.

While the year was extremely challenging, it has also sparked positive changes and learnings for our team. New ways of presenting content in smaller segments are being explored, and better ways to facilitate group learning over video link are being tested.

Professor Dragan Ilic

UNDERGRADUATE PROGRAM

UNDERGRADUATE EDUCATION LEAD: ASSOCIATE PROFESSOR BASIA DIUG

monash.edu/medicine/sphpm/study/undergraduate

Two hundred and eighty-three students were enrolled across the suite of undergraduate degree courses offered by our School during the year. Thirty-four were enrolled in our Bachelor of Public Health degree, designed for students committed to a career in public health, while 235 were enrolled in our Bachelor of Health Sciences degree, which provides a more generalised curriculum offering flexibility across the broader health field. The remainder were later-year students enrolled in a suite of legacy courses currently in teach-out phase.

School staff coordinated 33 units throughout the year, with 3,244 enrolments. Our units cover the full range of public health specialties, including epidemiology and biostatistics, global health, social and cultural determinants of health, research methods, medical law, health promotion and more.

These units were offered via the above-mentioned degree courses coordinated through our School, or were taught into relevant courses coordinated by other Schools and Faculties.

Associate Professor Basia Diug

UNITS TAUGHT INTO OTHER MONASH COURSES

BIOMEDICAL SCIENCE

The popular Bachelor of Biomedical Sciences (BMS) degree is a major source of honours students choosing to conduct their projects within our School. We teach two units into the degree. Our highly popular *Public Health and Preventive Medicine* unit continues to thrive, with 794 students learning core biostatistics, epidemiology and research theory this year. Our *Biomedical Basis and Epidemiology of Human Disease* unit taught the principles of evidence-based medicine and systematic review methods alongside the biological basis of disease to 503 BMS students.

MONASH MD

The Monash MD program is the University's medical degree, and is offered as a five-year program for school leavers or a four-year post-graduate degree.

Our School continued to make a substantial contribution to teaching in the MD program in 2020. Dr Helen Ackland stepped up to fill the gap left by Prof Robin Bell's semi-retirement as Curriculum and Assessment Lead for Theme II: Society, Population, Health and Illness. Dr Ackland brings a wealth of research and education experience to the position.

We teach nearly all of the Theme II content into the Monash MD program, across all year levels. These include units on health and society, population health, health promotion, evidence-based medicine and clinical practice, occupational and environmental health, health systems management, international health, midlife women's health and a health economics unit taught in collaboration with the Faculty of Business and Economics.

This year saw rapid changes as our educational designers assisted unit coordinators in pivoting teaching and assessment to a fully online model, and developing resources for the change. In particular our second-year units in evidence-based medicine, health promotion, evidence-based clinical practice and occupational medicine underwent large restructuring.

A major planned change in 2020 was the launch of a new research immersion experience for final year students, called the Scholarly Intensive Program (SIP). Students can choose to do a clinical research project in the clinical school where they are based or a project in another school including our own. In 2019 our researchers prepared projects for 60 students anticipated during the year, but as clinical placements evaporated in the face of social distancing restrictions, we were called upon to supervise a further 27 students, and provide support to another 13.

Our staff accommodated these additional students at short notice, and in doing so launched an incredibly successful program at volumes far exceeding initial planning. Many of our SIP students ended their placements with peer-reviewed publications, including **Tess Aitken** who evaluated pandemic preparedness of countries, **Susan Tu** who estimated the economic cost of migraines, and **Michael McLure,** who investigated discrepancies in global anaphylaxis treatment guidelines.

Finally, Dr Darshini Ayton laid the groundwork for a new offering rolling out in 2020, a combined MD and Master of Public Health degree, which will save students six months of study. The course will provide new doctors with the confidence and skills to interpret the latest medical literature, or participate in research.

FORENSIC EVIDENCE AND MEDICAL LAW

The Department of Forensic Medicine continued teaching Medical Law into the Undergraduate Law program in 2020, during which time they pivoted to a fully online model. They also continued to update teaching styles and on-board tutors with diverse experience across medical law sub-specialties. Two notable inclusions for the year were the introduction of an additional rural site into the program, allowing Mildura-based students to take part, and a new engagement with final year medical students through the MD program's existing 'back to base' activities.

OTHER

Team members from the Centre of Research Excellence in Preconception and Pregnancy: Prevention of Maternal Obesity developed six **'healthy lifestyle' modules** which will be embedded into Monash's undergraduate midwifery curriculum. The modules build student's capacity and skills to support healthy lifestyle modification during pregnancy.

POSTGRADUATE PROGRAM

POSTGRADUATE EDUCATION LEAD: PROFESSOR JANE BANASZAK-HOLL

monash.edu/medicine/sphpm/study/postgraduate

The School continued to deliver postgraduate education across Graduate Certificate, Graduate Diploma and Masters level qualifications.

Over 800 students were enrolled across the following study domains, via our multi-modal and online platforms:

- Public Health
- Health Management
- Clinical Research
- Biostatistics
- Occupational and Environmental Health
- Forensic Medicine
- Clinical Medicine

A global health virtual practicum unit was added to our Master of Public Health suite in 2020, providing students with a chance to embed themselves in a health or wellbeing project coordinated by our School or one of our partner groups around the world, such as Warwick University.

Our Clinical Leadership and Management course opened enrolments from Victorian Department of Health and Human Services staff, providing them with upskilling in this area, vital to pandemic management.

Our Biostatistics course continued to cater for those wishing to forge a career in this in-demand field. Taught in conjunction with the Biostatistics Collaboration of Australia, the course provides access to some of the leading biostatistics lecturers and mentors around Australia.

Our Health Management courses continued providing training to those already working in healthcare who wish to progress into management, or solidify skills relevant to healthcare and health service management.

The specialist Master of Forensic Medicine course reached an all-time high of over 90 student enrolments in 2020. The course continued to offer streams in clinical forensic medicine, forensic medical science and forensic odontology.

Professor Jane Banaszak-Holl

GRADUATE RESEARCH PROGRAM

GRADUATE RESEARCH LEAD: PROFESSOR SALLY GREEN

monash.edu/medicine/sphpm/study/graduate-research

Our significant Graduate Research program continued throughout 2020, led by School Deputy Head (Research) Professor Sally Green. The program enrolled 50 new candidates, with a total cohort of 176 PhD and MPhil students by years' end, and a further 10 under examination. They conducted wide-ranging projects across a range of subject domains, and utilising a wide spread of research methods. Twenty-six completions took place during the year, testament to the strength of our supervision and mentorship. **A full list of our 2020 theses is available here.**

One of our students received a highly competitive $10,000 Monash Graduate Excellence Top-Up Award in 2020. A further six students won publication awards, which extended their candidature stipend to allow them to complete further publications while their main thesis is under examination. Two received Graduate Research Completion Awards, providing support for students with projects affected by the pandemic.

The School received 16 International Research Training Program Stipends (RTPS) with Tuition Sponsorships, an increase of four on 2019, reflecting the quality of our international scholars. We also won 16 Domestic RTPSs. These outcomes are testament to the strength of our robust and supportive program.

Professor Sally Green

DR PETER FRANSQUET PHD, GRADUATED 2020

Peter came to his PhD following undergraduate study in biotechnology and biomedicine. He completed an honours project under the supervision of our Head of Biological Neuropsychiatry and Dementia, A/Prof Joanne Ryan, who at that stage was based at the Murdoch Children's Research Institute. When she moved to Monash, Peter followed and engaged in a PhD to see how far he could push his research interests.

"The move to Monash opened up an incredible opportunity to conduct research using the ASPirin in Reducing Events in the Elderly (ASPREE) dataset.

"My interest was in finding new epigenetic biomarkers for dementia. These are signals that the body produces that indicate they may have very early stage dementia, even prior to symptom onset. By using them to identify people with very early dementia or at heightened risk of developing dementia, we can triage them into the appropriate care streams and services, early in their disease.

"Biomarkers can be found in all sorts of body tissues and fluids. Prior to my PhD, most research that had been done in this field used post-mortem brain tissue. We know that the brain changes associated with dementia can begin 20-30 years before symptoms start, but post-mortem tissue typically displays advanced disease patterns which won't be present in these younger, seemingly healthy people. Obtaining brain tissue from a living person for diagnosis is also quite obviously extremely medically and ethically challenging, so what we really need is to find a safe and simple to source biomarker that can be seen in these very early stage people. Blood is ideal.

"The ASPREE dataset contains thousands of people who were monitored over time for dementia symptoms, and because the on-boarding health screens included cognitive function tests, we know they didn't have dementia symptoms at the start. But during the time they participated, a number of them were diagnosed with dementia. Around 12,000 ASPREE participants provided blood samples, from which we can extract epigenetic information. By finding epigenetic differences between those who did and those who did not develop dementia, we may find biomarkers that could one day be commercialised into routine blood tests to indicate pre-symptomatic dementia.

"There's a lot of false starts in this type of research, a lot of potential targets look promising at first, but the more you investigate them the less useful they are. However, I did find a couple of promising candidates that are worth following up."

Peter spent much of his final year of study in lockdown due to COVID-19. He says while it was tough, he valued the support from his supervisor, and the University, which granted a six-month extension to all PhD students.

"One of the great things about this project was working alongside the ASPREE team and with the data itself. ASPREE was a living, breathing project, very grounded in the community and the participants. Even though my work largely involves crunching numbers in a computer, I felt very connected to this disease in the real world."

As for his next steps, celebrating his conferral in a post-pandemic setting is a well-deserved goal, and one we hope arrives soon. As for his research:

"Because of the length of time ASPREE followed participants, anything we find in the ASPREE cohort could yield a biomarker that gives about a five-year lead time on dementia symptoms. The next step for me is to secure funding to replicate the results in another cohort, to see if these hold up. If they do, in future we'd like to use a dataset that's collected blood on people who have been tracked for an even longer time period than ASPREE, to really draw out the lead time as much as possible."

DR AMANDA JOHNSON PHD, GRADUATED 2020

Amanda Johnson had spent a number of years working with large private consultancy firms in IT system development, off the back of her undergraduate economics degree. After a career break for family reasons, she returned to study, completing a Masters in Geospatial Information Systems (GIS), computer systems for capturing, storing, checking, and displaying data related to positions on Earth's surface.

Such systems have a wide array of applications, including town planning, locating minerals for mining, and mapping patterns of disease by location. It can be particularly applied to health issues arising from exposures to highly mobile pollutants, such as those in toxic smoke driven by wind.

It was an interest in using GIS for public health purposes that drove Amanda to conduct her PhD within our Division of Occupational and Environmental Sciences. Team members take overall responsibility for the Hazelwood Health Study, a longitudinal study monitoring health outcomes among people exposed to smoke from the 45-day long Hazelwood Mine Fire in Victoria's Latrobe Valley in 2014.

Under the supervision of planetary health researcher Professor Yuming Guo, respiratory and public health physician Professor Michael Abramson, environmental epidemiologist Dr Martine Dennekamp (now based at Environmental Protection Authority Victoria), and landscape ecologist/spatial scientist Dr Grant Williamson (from the University of Tasmania), Amanda conducted a series of projects looking at associations between smoke exposure and health.

Spatial data provided by CSIRO was used to underpin estimates of smoke concentrations by location, which was in turn mapped against a location diary completed by study participants, and a variety of health indicators collected by the project team. Amanda was able to link exposure with self-reported symptom data from participants, as well as drawing on MBS and PBS data indicating level of engagement with health services for respiratory, cardiovascular and psychiatric complaints and medication dispensing respectively.

Amanda says, "One of the loveliest things about doing my PhD with this team was bringing such broad and disparate specialty areas together, as you can see from my supervisor's backgrounds. It really was a novel and unusual experience, and one that I'm glad has generated some good for the impacted community. The importance of teamwork is one of the most valuable things I learnt from my studies.

"My supervisors were also remote from one another, and I was in regular contact with people via Zoom long before the pandemic made it du jour. The high-spec AV facilities at MonCOEH's Melbourne offices made this so easy for me, so I learned an unexpectedly valuable skill just in time!"

Since graduating, Amanda has found a use for her skills working with the Victorian Department of Health and Human Services on their COVID-19 response.

PROFESSIONAL EDUCATION PROGRAM

PROFESSIONAL EDUCATION LEAD: DR DANIJELA GASEVIC

monash.edu/medicine/sphpm/study/professional-education

The School offered a restricted portfolio of short-form courses throughout 2020, focussing on those that were easily adapted to an online format without loss of integrity. Our courses are designed for participants wishing to refresh or reinforce existing skills or knowledge, or gain a taste of new areas.

Courses run in 2020 included *Introduction to Health Economics, Designing and Using Surveys and Questionnaires for Clinical Practice, Qualitative Research Methods, and Ethics and Good Research Practice.*

A number of new courses planned to be launched in 2020 were held over until 2021 due to the pandemic: *Clinical Trial Fundamentals, Healthcare Evaluation and Principles of Personal Injury Scheme Design.*

Dr Danijela Gasevic

OTHER EDUCATION ACTIVITIES

Staff from the Monash Centre for **Health Research and Implementation (MCHRI**) ran several massive open online courses in healthcare improvement and women's health, reaching over 1,000 international participants.

They also provided implementation science and healthcare improvement education offerings including a two-day masterclass, an online Future Learn program, an online six-week program and a six-month module integrated into the Masters of Health Services Management. The team also ran the Monash Partners-funded Good Clinical Practice short course, and the MCHRI Women in Leadership short course, which runs three times a year.

The Department of Forensic Medicine's A/Prof Soren Blau was an invited guest lecturer to the Victoria Police Detective Training School, while Women's Health Research Program leader Prof Susan Davis led the development of **IMPART**, a free online educational program for healthcare practitioners on the delivery of care to menopausal women, offered in numerous languages. **Cochrane Australia** ran workshops and courses on best practice for systematic reviews to over 200 participants. One was a new course on qualitative evidence synthesis, and four courses focussed on using GRADE to summarise evidence for policy and guideline development.

IMPACT AND TRANSLATION

Our researchers share their discoveries, knowledge and ideas with policy-makers, healthcare service providers and professionals, and the wider community, to ensure findings are translated into practice. They also generate visibility on little-known health issues and empower people to improve their health.

Many staff contributed to policy, guidelines and translation work regarding COVID-19. Their work is captured in the COVID-19 Pandemic Response section on page 6.

POLICY, ADVOCACY AND EDUCATION

Aged care researcher Professor Joseph Ibrahim continued to advocate for aged care reform, publishing **five articles in The Conversation**, and conducting Australian media engagement reaching more than 12.5 million people.

Professor Helen Skouteris joined the National Children's Digital Health Collaborative's working group to define clinical content for **National Child Digital Health Records (5-14yrs)**, and VicHealth's Childhood Obesity Prevention Leadership Group. She also drove the formation of the **Collaboration for Enhanced Research Impact**, a partnership of four NHMRC Centres of Research Excellence to enhance the impact, profile and value-add of prevention research in Australia. She was also an invited guest at the Global Salzburg Seminar on halting childhood obesity in late 2019, where she joined a working group that published their perspective paper in 2020 (**Maternal and Child Nutrition**).

Occupational researchers produced an important update for **Safe Work Australia** detailing the resurgence of occupational lung diseases once thought eradicated, including Black Lung and Silicosis.

In her capacity as Academic Lead for the Australasian Pelvic Floor Procedure Registry, Professor Susannah Ahern provided evidence to the South Australian Parliament Social Development Committee for the Surgical Implantation of Medical Mesh in South Australia inquiry.

Dr Karin Hammarberg worked with the Australian Primary Health Care Nurses Association and colleagues from Monash's CRE-SPHERE on the development and evaluation of an online education module for primary care nurses designed to increase initiation of reproductive health discussions with patients.

The first national **Return to Work Strategy 2020 – 2030** was released by Safe Work Australia in 2020, with an accompanying measurement framework, covering more than 90% of the national workforce. Research underpinning the strategy was provided by the Insurance Work and Health Group.

Dr Paul Lacaze helped develop the government-endorsed **National Strategic Action Plan for Rare Diseases** through his role as a member of the Scientific and Medical Advisory Committee of Rare Voices Australia.

A 2019 study into cyclist safety, led by Dr Ben Beck and colleague Dr Marilyn Johnson and in partnership with the Amy Gillett Foundation, was used as evidence to support **Victorian legislation**, announced in late 2020, that forces motorists to leave a minimum distance when passing cyclists. The study was also used to support an £85 million investment in protected cycling lanes in the UK.

Work by Monash Centre for Health Research and Implementation researchers around **alcohol intake during the preconception period** was used by the Foundation for Alcohol Research and Education in their successful bid to have a bill passed mandating warning labels on alcohol that advise of risks in the pre-pregnancy period.

Professor Belinda Gabbe was appointed the Academic Lead for the New Zealand Major Trauma Network, and led the implementation of routine follow-up of major trauma patients in New Zealand.

Researchers and students in the gambling and social determinants space continued to draw attention to the effects of gambling in papers looking at **impacts on the community**, and the links between **political donations and policy.**

PEAK BODY LEADERSHIP

Professor Susan Davis ended her two-year term as President of the International Menopause Society in October 2020. A highlight of her tenure was chairing a landmark consensus of leading international women's care organisations to create evidence-based guidance on the use of testosterone for women.

Professor Erica Wood assumed the presidency of the International Society of Blood Transfusion in June 2020. She was also appointed to the World Health Organization's Working Group on Haemovigilance Tools during the year.

Dr Ben Beck was re-elected as President of the Australasian Injury Prevention Network for a further two years, and contributed to the development of the Australian National Injury Prevention Strategy. He was also appointed to the United Nations Green and Healthy Sustainable Transport Taskforce and VicHealth's Walking and Bike-Riding Post COVID-19 Working Group.

Professor Allen Cheng was elected President of the Australasian Society of Infectious Diseases.

Cochrane Australia Head Professor Sally Green continued in her elected role on Cochrane's International Governing Board.

Dr Jessica Kasza from our Biostatistics team was elected President of the Statistical Society of Australasia, a role she will hold for two years.

Dr Jessica Kasza

ADVISING GOVERNMENT AND INDUSTRY

Professor Alex Collie advised the Department of Veterans Affairs on the **mental health impacts of compensation claims processes**. In 2020 the Department responded to his report, describing how they are changing practice and policy as a result. He and colleagues also completed a report for the State Insurance Regulatory Authority of NSW on **work-connected interventions for people with psychological injury**.

Professor Erica Wood and Associate Professor Zoe McQuilten contributed to a Medical Services Advisory Committee assessment on **secondary hypogammaglobulinaemia unrelated to haematological malignancies, or post-haemopoietic stem cell transplantation.**

Associate Professor Ingrid Hopper advised the European Union Scientific Committee on Health, Environmental and Emerging Risks on breast implant-associated anaplastic large cell lymphoma, continued her work with the Therapeutic Goods Administration Anaplastic Large Cell Lymphoma expert advisory panel and served on the executive committee of the International Collaboration of Breast Registry Activities group, which brings breast implant registries together to work towards international post-market surveillance of breast devices.

Insurance Work and Health Group (IWHG) researchers completed the Recovery Blueprint Project in conjunction with WorkCover Queensland, introducing evidence-based risk screening into workers' compensation case management. Phases I and II of the new model are in roll-out, with Phase III in development.

IWHG members also released reports six and seven of the **Driving Health** study in 2020, laying bare high levels of physical and mental health problems among their cohort of 1,400 truck drivers.

Professor Helen Skouteris worked on a Victorian Government evaluation of Mackillop Family Services' rollout of the **Family Preservation and Reunification Response,** supporting vulnerable children and families through a strengthened partnership with Child Protection.

Cochrane Australia's Dr Sue Brennan was elected to the GRADE Guidelines Group in 2020, the body that approves all GRADE guidance and policies. GRADE is the most widely used system for grading the quality of evidence and strength of recommendations in systematic reviews and guidelines.

Dr Tari Turner was a member of the Scientific and Technical Advisory Group (STAG) to the UNDP-UNFPA-UNICEF-WHO-World Bank Special Programme of Research, Development and Research Training in Human Reproduction, in the Department of Sexual and Reproductive Health and Research at the World Health Organization.

Associate Professor Charles Livingstone continued his work with the WHO Expert Group on Gambling and Gambling Disorder, searching for effective interventions. He was also appointed as a Commissioner of a new The Lancet Public Health Commission into gambling harm and prevention in late 2020.

Professor Susannah Ahern sat on multiple expert advisory groups in 2020:

- the Clinical Principal Committee Clinical Quality Registries Expert Advisory Group (Australian Department of Health), which informed the development of a **national strategy for Clinical Quality Registries**
- the Clinical Quality Registries Framework Review Advisory Group, of the Australian Commission of Safety and Quality in Healthcare
- the Clinical Quality Registries Working Group of the Victorian Agency for Health Information, which aims to integrate clinical quality registry data and reporting within Victoria's quality and safety performance framework
- the Breast Implant Expert Working Group of the Therapeutic Goods Administration.

Associate Professor Denise O'Connor and Professor Rachelle Buchbinder AO worked with Wiser Healthcare and the Commonwealth Department of Health to optimise use of feedback for reducing low-value imaging for musculoskeletal conditions in general practice.

GUIDELINES AND CONSENSUS STATEMENT DEVELOPMENT

The landmark DECRA trial, driven by critical care researchers and biostatisticians within our School, was cited as one of two trials underpinning the Brain Trauma Foundation's **2020 update to the Guidelines for the Management of Severe Traumatic Brain Injury.**

Professor Susan Davis conducted an invited independent review of **The US National Academies of Sciences, Engineering, and Medicine Report** from the Committee on Clinical Utility of Treating Patients with Compounded Bioidentical Hormone Replacement Therapy.

Monash Centre for Health Research and Implementation team members provided expert advice around lifestyle, weight stigma and other topics for the 2020 update of **Clinical Practice Guidelines for Pregnancy Care**, led by the Department of Health.

Progress made on living guidelines for diabetes management was the subject of this **MJA Perspective,** written by diabetes and evidence synthesis experts in our School, a number of whom are collaborating with relevant consumer health groups, medical bodies and the Commonwealth Department of Health on developing the guidelines.

Professor Jane Fisher AO co-chaired the World Health Organization Guideline Development Group for Postpartum Care (2020 – 2021), joining more than 60 international participants in evaluating the evidence and forming recommendations about optimal care for women who have recently given birth and their newborns.

The Australian and New Zealand Musculoskeletal Clinical Trial Network worked with Cochrane Musculoskeletal to develop living clinical practice guidelines for the pharmacological management of adults with inflammatory arthritis, and released the **first set of recommendations** for public consultation.

A/Prof Janet Bray contributed to the three-year pilot project to build and evaluate **living guidelines for stroke management.** She also assisted with the **International Liaison Committee on Resuscitation's Consensus on Science and Treatment Recommendations.**

Forensic researcher A/Prof Soren Blau contributed to the 2020 update of **The Use of Forensic Anthropology, Forensic Entomology and Forensic Odontology Evidence in Court**, a document supporting forensic practitioners in developing conclusions, and helping the legal community to better scrutinise forensic evidence.

Dr Paul Lacaze was a co-author on **Integrated Guidance for Enhancing the Care of Familial Hypercholesterolemia in Australia**, endorsed by major national medical bodies including Heart Foundation and Human Genetics Society of Australasia, major multinational groups and overseas peak bodies across the USA and Europe.

A **systematic review** led by Cochrane Australia researchers examined dose-response relationships between levels of alcohol consumption and long-term cognitive effects, and informed the 2020 update to the NHMRC's **Australian guidelines to reduce health risks from drinking alcohol.**

PUBLICATION HIGHLIGHTS

Our researchers produced diverse and topical research that featured in high-impact peer-reviewed journals and generated numerous citations. In total, our researchers were involved in producing more than **1,200 publications, which you can browse here.** Here is a just a small selection of publication highlights throughout 2020:

Prof Rachelle Buchbinder AO and Prof Rinaldo Bellomo AO were among Web of Science's Highly Cited Authors for 2020, Rachelle's third consecutive year and Rinaldo's seventh. This distinguished list celebrates the production of multiple highly cited papers that rank in the top one per cent for field and year in Web of Science. Prof Buchbinder was the only woman from Monash University on this prestigious list.

A/Prof Joanne Ryan and ASPREE colleagues produced the first evidence from a large-scale clinical trial of the effects of low-dose aspirin on Alzheimer's Disease, mild cognitive impairment and cognition. ASPREE data showed aspirin to have no protective effects, despite previous observational data suggesting otherwise **(Neurology)**.

Prof Yuming Guo and PhD candidate Rongbin Xu highlighted health threats from wildfires under climate change, shared current knowledge and gaps around associated risks, and profiled the challenges of developing and implementing strategies for reducing those risks **(NEJM)**.

Data analysis from the Grollo Ruzzene Study, led by Prof Susan Davis, revealed that 50% of young Australian women have sexually-related personal distress and that one in five have at least one sexual dysfunction **(Fertility and Sterility)**. They further established that sex hormones have only a weak association with sexual function in premenopausal women **(The Lancet Diabetes & Endocrinology)**.

A review by Dr Briony Hill and colleagues showed women generally do not change their lifestyle behaviours when planning pregnancies, information with important implications for preconception care and obesity prevention **(Journal of Midwifery and Women's Health).**

Biostatisticians under the guidance of Prof Andrew Forbes and Dr Jessica Kasza produced a methodological study that resolved long-standing issues about sample size when longitudinal studies are combinations of cohort designs and repeated cross-sectional designs **(Statistics in Medicine).**

School experts led by Prof Susannah Ahern and Dr Darshini Ayton collaborated on the development of clinical quality indicators for an Australian Pilot Dementia Registry **(The Journal of Alzheimer's Disease).**

Critical care researcher Dr Tomoko Fujii led researchers investigating the effect of combinations of Vitamin C, hydrocortisone and thiamine to treat septic shock as part of the VITAMINS study. The paper has already been cited 65 times and has had nearly 150,000 pageviews **(JAMA).**

Dr Paul Lacaze co-led the largest whole genome sequencing study ever undertaken in Australia, providing a genomic description of 2,570 healthy elderly people captured in the Medical Genome Reference Bank **(Nature Communications).** He and colleague Jane Tiller also demonstrated their growing leadership at the intersection of genetic testing and ethics **(MJA).**

The Driving Health Study reported on patterns of health service use among injured truck drivers, and pioneered the use of health service use data from workers compensation records **(The American Journal of Industrial Medicine).**

Prof Alex Collie and Dr Ross Iles led team researchers on a project demonstrating the high prevalence of mental health problems in workers with physical injury, and a low rate of mental health service provision, in this paper that has since been cited in multiple policy documents **(Journal of Occupational Rehabilitation).**

PhD candidate Michael Di Donato collaborated with musculoskeletal expert Prof Rachelle Buchbinder AO on a study that found that income support systems impact the functional capacity of injured workers with low back pain in a multitude of ways, and should be considered by policy designers **(Pain).**

Dr Elizabeth Moore and A/Prof Zoe McQuilten from the Transfusion Research Unit's pilot My-PROMPT randomised controlled trial, the world's first blood cancer registry-based study to include Patient Reported Outcome Measures, published results this year **(American Journal of Hematology).**

Dr Ella Zomer and PhD candidate Feby Savira led a team of health economics experts from the Centre of Cardiovascular Research and Education in Therapeutics (CCRET), in applying the team's novel measure of disease burden – the Productivity-Adjusted Life Year (PALY) – to show that if all new cases of coronary heart disease were avoided over the next 10 years, 14,000 premature deaths could be avoided and the Australian economy would benefit by over $21 billion in GDP **(European Journal of Preventive Cardiology).**

A/Prof Ilana Ackerman and A/Prof Zanfina Ademi, also from the CCRET, published a budget analysis of a national non-surgical management program for moderate-severe knee osteoarthritis, which has consistently remained on the journal's 'Most Downloaded' section since September 2020 **(Osteoarthritis and Cartilage Open).**

Dr Denise O'Connor led researchers from Cabrini Epidemiology in analysing 531 reviews, encompassing findings from 6,911 randomised controlled trials, mapping the extent and nature of synthesised evidence around healthcare delivery that provides insights into how health systems can deliver more efficient care **(BMJ Open).**

Prof Rachelle Buchbinder AO and colleagues produced two papers exploring the impact of the landmark three-part Lancet Series on Low Back Pain that she led in 2018. The first, published in **The Lancet,** explored the extensive media coverage of the series, while the second, published in **Pain,** provides an update on progress in addressing the global burden of low back pain since the series.

Cardiac researcher A/Prof Janet Bray contributed to multiple publications in Resuscitation in 2020, including a scoping review on improving clinical outcomes from out-of-hospital cardiac arrest in low-resource settings **(Resuscitation),** a systematic review of the impact of emergency medical service practitioner experience and exposure to out of hospital cardiac arrest on patient outcomes **(Resuscitation),** and a retrospective study describing long-term survival in out-of-hospital cardiac arrest **(Resuscitation).**

Infectious diseases epidemiologists Dr Sarah McGuinness and Prof Karin Leder published an assessment of household water management and hygiene practices and E. coli contamination in rural India **(Environmental Science and Technology),** and Prof Allen Cheng led an investigation of influenza vaccine effectiveness against mortality among Australian hospitalised patients **(Clinical Infectious Diseases).**

Researchers from the School's new MASC Research Centre group led a consensus paper that lays a platform to progress international multidisciplinary care and research around Merkel cell carcinoma, especially with regards to the role of immunotherapeutic treatments **(Asia Pacific Journal of Clinical Oncology).**

A/Prof Soren Blau worked with leading international forensic researchers on a guide to best practice in managing Disaster Victim Identification operations with fragmented, burned and/or commingled remains, designed to accompany INTERPOL guidelines **(Forensic Sciences Research).**

A/Prof Lisa Moran and colleagues published a key evidence summary of lifestyle management in women's health, relating to evidence-based care for women with polycystic ovary syndrome, consistent with international guidelines **(Obesity Reviews).**

Gambling researchers Dr Cassandra de Lacy-Vawdon and A/Prof Charles Livingstone published a systematic review on the commercial determinants of health **(BMC Public Health).**

Prof Belinda Gabbe led a survey describing the preparedness of trauma centres in Australia and overseas to cope with increasing frequencies of mass casualty incidents, identifying gaps in surge capacity, human resources and post-disaster recovery **(The Lancet EClinicalMedicine).**

Dr Darshini Ayton led researchers on a paper outlining their use of codesign to develop MyCare Ageing, a program that will train volunteers to provide psychosocial support to older people with dementia and/or delirium in hospital and at home when discharged from hospital **(BMJ Open).**

Dr Nathan Papa and Dr Arun Azad led the Prostate Cancer Outcomes Research team on this paper providing the first report on Australian uptake of Docetaxel, a recently emerged standard-of-care for metastatic hormone-sensitive prostate cancer **(Internal Medicine Journal).**

FUNDING

The School secured over AUD$75 million in research income during 2020 from a variety of government, industry and philanthropic sources, much of it derived from competitive grant schemes. Our researchers also contributed to numerous successful collaborative grants, beyond those described below, to which they will lend their significant expertise.

Here are some examples of the impactful research that will be rolled out in 2021 and beyond as a result of these successful funding applications.

The Climate, Air Quality Research Unit secured an NHMRC e-Asia grant to investigate current impacts, future risks and health benefits of strategies to mitigate climate change in Asia, and an ARC grant to lead a multi-country study on the health effects of bushfire associated air pollution.

The Insurance Work and Health Group secured grants from diverse sources for projects including exploring allied health practitioner certification, physical activity programs in psychological injury, and a Comcare grant to measure the movement of people between income support systems and improve outcomes.

The Prostate Cancer Outcomes Registry, in collaboration with the Peter MacCallum Cancer Institute, received funding from the Victorian Cancer Agency to investigate cancer survivorship, and were funded by the Victorian Agency for Health Information and Movember to create the BroSupport pilot program, a web-based interface offering information to Victorian men recently diagnosed with prostate cancer.

Our biostatistical experts secured funding for methodological research, including an ARC Discovery grant to increase efficiency and interpretability of stepped wedge trials, funding for a simulation study to guide choice of within-cluster correlation structure for cluster randomised and stepped wedge trials, and another exploring handling of missing disease information due to death in trial endpoints that need two visits to diagnose.

The National Gynae-Oncology Registry (NGOR) **received $3.5 million in MRFF funding** that will allow expansion of the pilot ovarian cancer clinical quality registry into a national registry. The full registry will incorporate Patient Reported Outcome Measures, improving quality of life and quality of care for women diagnosed with ovarian cancer Australia-wide.

The Global and Women's Health Unit secured funding from Australian and international sources for projects exploring the success of interventions to build parental skills and engagement in child development in Vietnam, and to measure program impact of Masada Private Hospital's Early Parenting Centre.

Transfusion Researchers secured a five-year NHMRC grant for almost $2 million to generate knowledge and capacity to improve transfusion outcomes, and over $5 million from pharmaceutical giant Janssen-Cilag over five years to expand the Asia-Pacific Myeloma and Related Diseases Registry into other countries.

Led by the Monash Centre for Health Research and Implementation (MCHRI), a team of School researchers **received $2.5 million in MRFF funding** to conduct research into healthy lifestyle in the preconception, pregnancy and postpartum periods, focussing on the intersection of personalised medicine and public health during the first 2,000 days of life.

Prof Stephen Nicholls from the Victorian Heart Hospital was awarded $1.4 million for a clinical trial looking at how a person's DNA may determine their risk of heart disease and how they may achieve better control of their disease with statin therapy. He's leveraging our School's expertise in clinical trials and the subject matter expertise of our Head of School, Professor Sophia Zoungas, and the grant will be administered through our School.

Cardiac researchers secured $1.8 million in Partnership funding from the Heart Foundation, NHMRC, the Victorian State Government and Ambulance Victoria for Heart Matters, a Heart Safe Communities partnership to improve cardiovascular awareness and response to symptoms in regions at highest risk of heart attacks. A/Prof Janet Bray also scooped up a Heart Foundation Fellowship, and project funding to improve survival from out-of-hospital cardiac arrest in Australia and New Zealand.

The Heart Foundation also awarded grants to **a number of School researchers** to investigate the use of inotropic drugs in treating cardiogenic shock, the screening and management of women with cardiometabolic conditions during pregnancy, and long-term outcomes of heart failure patients treated with extra corporeal membrane oxygenation.

Public Health Genomics were awarded funding from the MRFF Genomics Health Futures Mission, to monitor the genetics and life insurance moratorium in Australia over the next three years. Team members conducted significant advocacy work to help secure the moratorium, which commenced July 2019. Unit leader Dr Paul Lacaze also secured a Heart Foundation Future Leader Fellowship to investigate genetic protection against cardiovascular disease in the healthy elderly.

Our Sustainable Mobility and Safety Research team received an ARC Discovery Grant to develop a world-leading cycling exposure data platform. Using advanced spatial statistical and machine learning techniques, this platform will transform our ability to implement cycling infrastructure where it is most needed, enhance safety and equity, and increase participation in cycling.

School education researchers, together with colleagues at the Monash Faculty of Information Technology, won an ARC grant to use sensor-technology to explore teamwork and communication as a key component of an effective, patient-centred healthcare delivery system.

Forensic researchers secured funding from the Royal College of Pathologists Australasia to conduct a quality review of forensic medical and scientific data entered into the National Missing Person and Victim System database, and an ANSTO grant to access the radiocarbon dating laboratory to prepare samples for Accelerator Mass Spectrometry analysis.

Researchers in the Australian and New Zealand Intensive Care Research Centre were awarded trial funding via MRFF's Rare Cancers, Rare Diseases & Unmet Needs scheme. **BONE ZONE** will investigate the efficacy of two drugs – commonly prescribed to community-based post-menopausal women – in preventing bone loss among women admitted to intensive care units. The **ARISE:FLUIDS** study will determine if treatment with restricted IV fluids and earlier introduction of blood pressure medication, compared to usual-care IV fluid with later blood pressure medication, produces better clinical outcomes for critically ill patients with septic shock.

Our trauma team received an NHMRC Ideas Grant to investigate the value of artificial intelligence and deep learning in predicting outcomes after wrist fracture.

The Monash Centre for Occupational and Environmental Health team were awarded a World Health Organization grant to undertake a systematic review of the long-term effects of radiofrequency exposure on cognition.

Cabrini Epidemiology researchers were funded for a raft of projects that will drive the Cochrane Musculoskeletal Review Group, health professional education in arthritis, the development of evidence-based quality improvement strategies to reduce low-value colonoscopies, and the development of a minimum national dataset to globally study the burden of low back pain. Group leader Professor Rachelle Buchbinder AO also secured a Level 3 NHMRC Investigator Grant.

Health and Social Care researchers led a successful NHMRC Investigator grant application to drive a stepped wedge cluster randomised controlled trial of a patient-centred volunteer program for people with dementia called MyCare Ageing. The program, rolled out in three Melbourne hospitals in 2019 in conjunction with BaptCare, sees trained volunteers provide companionship and support to dementia patients in a bid to improve outcomes for this cohort. The funding will allow them to build an evidence-base to support future expansion.

IN THE NEWS

Media coverage is an important way to share new knowledge and expertise with the public and healthcare professionals, and advocate for improved health. Here are just some of the media hits our researchers achieved during 2020.

Professor Joseph Ibrahim and Briony Murphy recommended three ways to reduce the problem of suicide in Australia's nursing homes in this article **(The Conversation).**

Prof Robin Bell was interviewed by Virginia Trioli after the Women's Health Research Program issued research results showing that nearly half of their cohort of 7,000 young women were stressed about their sex lives, largely driven by self-image **(ABC Radio).**

A/Prof Julian Elliott featured heavily in this opinion piece on the possibilities for better diabetes management in society offered by a 'living' guidelines approach **(The SMH).**

Atmospheric researcher Prof Yuming Guo discussed potential links around air pollution, including that from bushfires, and increased risks from COVID-19 **(The Age).**

Prof Carol Hodgson shared insights into the use of ECMO to treat some of the sickest COVID-19 patients **(The SMH).**

Dr Ben Beck joined others calling for safer walking and cycling spaces during the pandemic **(The Conversation)**.

Dr Karin Hammarberg explained how the pandemic had disrupted assisted reproductive services for Australians **(The Conversation)**, and provided guidance on planning a pregnancy during the pandemic **(The SMH)**.

Prof Alex Collie commented on job security, financial security and mental and physical health during the pandemic **(The Guardian).**

Prof Allen Cheng cited SPRINT-SARI findings as part of this debunking fact-check article about use of the drug for COVID-19 **(ABC Fact Check)**.

A/Prof Zoe McQuilten was interviewed about potential roles for convalescent plasma to treat COVID-19 **(ABC 7.30)**.

Prof Steve Webb was featured in numerous media articles throughout the year profiling the work of the REMAP-CAP study, including this one **(The SMH)**.

Dr Paul Lacaze talked about the role protective genes may play in preventing the onset of disease in people with cancer-causing genetic mutations **(News Corp)**.

Dr Tomas Rozbroj shared insights into vaccine hesitancy and vaccine denial **(Courier Mail)**.

Prof Jane Fisher AO spoke about the disenfranchised grief experienced by many Australians as part of the pandemic **(ABC)**.

Dr Suzanne Mahady spoke about the risks of gut bleeding from daily low-dose aspirin **(7 News)**.

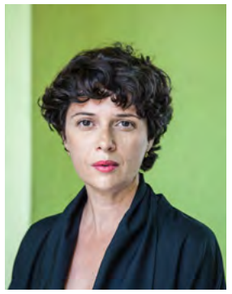
A/Prof Gerard O'Reilly shared the subtle but important symptoms of COVID-19 Australians should be aware of **(3AW)**.

A/Prof Zanfina Ademi was interviewed about an investigation showing the financial impact of migraines on the Australian economy **(Herald Sun)**.

The Driving Health team featured in a number of articles around results from their landmark study into the health of Australia's truck drivers **(ABC)**.

A/Prof Charles Livingstone discussed the likely future of Crown Resorts in Australia after NSW authorities delayed the planned December 2020 launch of Sydney's Barangaroo Casino **(The Conversation)**.

A/Prof Julian Elliot



A/Prof Zanfina Ademi

Dr Karin Hammarberg

Dr Tomas Rozbroj

GLOBAL HEALTH IMPACT

Working with resource poor nations as they strive to deliver high quality healthcare is a key part of the School's mission, and we achieved this through a number of programs and projects in 2020.

The Centre of Cardiovascular Research and Education in Therapeutics helped develop capacity in health economics and productivity research across Indonesia, Bangladesh and Thailand, through a series of workshops about their newly developed Productivity-Adjusted Life Year metric.

The Global and Women's Health Unit continued to conduct research into the experiences of women around the world, and advocate for access to better healthcare. Together with former PhD student Dr Goma Khatri, they discovered that **pregnant women who experienced the 2015 Nepal earthquake,** exhibiting mental health problems as a consequence, delivered babies with significantly lower birthweights than those who did not. Other team members provided **first evidence** of previously unrecorded, but widespread, intimate partner perpetrated violence against pregnant women in Vanuatu.

In January 2020 Prof Jane Fisher AO and Dr Jayagowri Sastry attended a co-investigator's meeting at the Jawaharlal Institute of Postgraduate Medical Education and Research, a medical college and hospital in Pondicherry in India, to prevent the disrespect and abuse of mothers during childbirth.

Epidemiological Modelling Unit members will **project the effects of tuberculosis control programs across Pacific Islands**, our region, and the world, after the University of Sydney received a $4.25 million MRFF grant on which group leader A/Prof James Trauer is a Chief Investigator. The experience gained through this project will drive future builds of robust, data-driven models for disease control at these geographical levels.

The Asia-Pacific Myeloma and Related Diseases Registry continued collecting data on epidemiology, treatment and outcome trends for patients with multiple myeloma in participating regional countries including Korea, Singapore and Taiwan. By the end of 2020 they'd registered 271 patients across six contributing sites.

Infectious Diseases researcher Prof Karin Leder continued her role on the **RISE program's** Executive Team in 2020. RISE is a collaborative program led by Monash University to improve water and sanitation management in urban informal settlements in Fiji and Indonesia. In 2020 the RISE team completed nearly 700 health surveys in Fiji, and 500 in Indonesia. Despite closed laboratories and country borders, she worked with colleagues to develop pathogen testing for paired environmental and human faecal samples, work with potentially global implications. Prof Leder and colleagues have also driven plans for establishing inaugural laboratory research capacity in both countries for detecting pathogens and antimicrobial resistance genes.

A/Prof Joanne Ryan completed a **pilot study** in 2020 exploring the transgenerational effects of maternal post-traumatic stress disorder on cortisol reactivity and epigenetic regulation in children born to women who experienced violence during the Balkan wars of the 1990s. Additional funding to move into a larger intervention was secured.

Epidemiological Modelling Unit

CLINICAL TRIALS

The School manages a substantial portfolio of clinical trials, including large multi-national and multi-site trials. Many of our existing trials maintained their research focus, undergoing extensive adaptations to continue operating under a COVID-safe remote model. In doing so, these researchers have ensured that when the immediate threats of the current pandemic have faded, the ongoing health of Australians has not been overlooked.

For our COVID-19 related clinical trials, see the COVID-19 Pandemic Response on page 6.

The flagship **STAtins in Reducing Events in the Elderly (STAREE)** randomised controlled trial team worked hard to convert trial delivery to a remote model. The ability to continue engagement with the study despite lockdowns and movement restrictions proved extremely popular with participants, many of whom were isolated. At the close of 2020, over 1,200 GP practices and 3,000 individual GPs were registered with the study, and over 7,500 participants had been randomised into intervention or control groups.

The ASPREE mega-trial follow-up study, ASPREE-XT, continued national activities throughout 2020, thanks to incredible flexibility by team members to adapt to constantly shifting physical distancing restrictions and border closures that saw permissible activities vary from state-to-state. Many participants completed planned assessments and activities remotely, while some attended in-person visits at a study centre, medical practice or at home.

Important findings based on ASPREE trial data were published in high-ranking journals, adding to medical knowledge across a huge range of healthcare issues relevant to the elderly. Findings include:

- An association between low-dose aspirin use in older adults and a higher risk of being diagnosed with, and dying from, advanced cancer. There was no significant difference in risk for all incident cancers in the aspirin and placebo groups, and it is unclear if findings apply to initiation of aspirin in earlier years **(Journal of the National Cancer Institute)**.
- Daily low-dose aspirin did not reduce the risk of Alzheimer's disease, mild cognitive impairment, or cognitive decline during a median 4.7 years of intervention **(Neurology)**.
- Body weight, BMI, waist circumference or lean body mass did not moderate aspirin's effect on cardiovascular disease, which does not support weight-adjusted aspirin dosing in older adults, which was recommended based on recent results from a widely publicised meta-analysis **(Circulation)**.
- Daily low-dose aspirin is not protective against depression in older adults **(JAMA Psychiatry)**.
- Daily low-dose aspirin increases both upper and lower gastrointestinal haemorrhage, with advanced age, smoking, hypertension, obesity, chronic key disease and NSAIDs increasing bleeding risk **(Gut)**.
- Low-dose aspirin did not reduce incident Activities of Daily Living (ADL) disability, but it did show some evidence of reducing ADL disability that persisted longer than six months **(Journals of Gerontology: Series A)**.
- A lack of evidence to support the use of low-dose aspirin as a primary prevention strategy to reduce the burden of sepsis in community dwelling older adults **(The Lancet Respiratory Medicine)**.
- High levels of complementary medicine usage were reported in the baseline ALSOP sub-study questionnaire **(MJA)**.

Dr Thach Tran continued leadership of a school-based, parallel group, cluster randomised controlled trial of the Resourceful Adolescent Program (RAP) for adolescent mental health in Vietnam. He and colleagues translated and culturally adapted the RAP for Vietnam during the year, and initiated the trial in eight schools comprising 1,204 participants in Hanoi.

The TAME randomised controlled trial explores whether maintaining carbon dioxide in the blood at a higher level than standard practice can improve oxygen supply to the brain among cardiac arrest patients, by encouraging blood flow. In 2020 the study reached 80 per cent of their recruitment target, with participants sourced from more than 55 sites in 16 countries. The study's safety interim analysis triggered the green light to recruit to completion, which they will do in 2021.

The Transfusion Research team continued to manage a suite of clinical trials throughout the year. **TREATT** is an NHMRC-funded randomised controlled trial in collaboration with the University of Oxford and NHS Blood and Transplant, investigating efficacy of tranexamic acid to treat thrombocytopaenia. They recruited 100 patients in 2020, closing the year just 17 patients shy of recruitment completion. They also published a protocol paper in **Trials**.

Their international REDDS2 collaboration explores a novel approach to red cell transfusion for myelodysplasia patients, with the aim of stabilising average haemoglobin levels through weekly transfusions of matched red cells. They opened recruitment in Australia and the Netherlands in 2020, with the United Kingdom set to commence in 2021.

Their RATIONAL randomised controlled feasibility trial to compare the efficacy of prophylactic immunoglobulin (IVIG) with prophylactic antibiotics in patients with acquired hypogammaglobulinemia secondary to haematological malignancies completed patient follow-up in 2020, and researchers prepared for data analysis. If patients could be managed with oral antibiotics to prevent infection, rather than IVIG, millions of dollars could be saved each year.

The Transfusion Research Unit also conducted clinical trials embedded within clinical registries in 2020 – see page 41 for details.

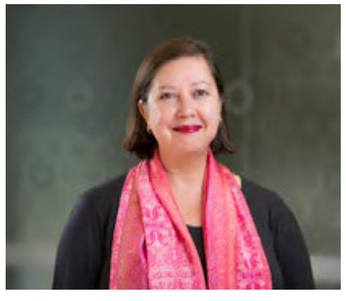
The OptimalMe program, a partnership between researchers from the Monash Centre for Health Research and Implementation and insurance giant Medibank, began recruitment in July, and by the end of the year had completed more than 75 per cent of its recruitment target of 300 women. The intervention consists of online modules for preconception, pregnancy and postpartum health, and tailored phone counselling to assist with healthy behaviour changes.

The Cabrini Epidemiology team completed final follow-up data collection on their randomised controlled trial comparing the effectiveness of three different treatments for ultrasound-proven lateral epicondylitis, with a publication in progress for 2021. They also began recruitment for their new randomised placebo-controlled trial, the first such trial to investigate decompressive surgery for central lumbar spinal stenosis, a common cause of pain, reduced function and quality of life in older adults.

The MelMarT-II Trial, run by the School's new MASC Research Centre, is a phase III, multi-centre, multi-national randomised controlled trial comparing the safety of one centimetre versus two-centimetre excision margins for primary cutaneous melanoma, with smaller excisions potentially leading to better quality of life. They began recruitment late in 2019, and by the end of 2020 had activated 12 recruitment sites and randomised 100 participants.

The same group also managed the I-MAT Trial, a phase II randomised controlled trial of pembrolizumab and avelumab as adjuvants in early stage Merkel cell carcinoma. The drugs have previously been shown to be effective as a first line treatment; researchers are investigating their role as adjuvants on recurrence-free survival at 24 months. Recruitment began in October 2020, and by year's end eight sites had been activated, with eight participants recruited.

Finally, 2020 saw the closure of the Caulfield Clinical Trials Centre, which has been key to some of the School's flagship community-based trials including ASPREE, ANBP2 and more. Ongoing trials were transferred to our partner site at the Alfred Hospital, and key staff are continuing their research activities across the School and wider University.



Transfusion Research Unit leader Professor Erica Wood

STAREE leader Professor Sophia Zoungas

HEALTH ECONOMICS, PROGRAM DELIVERY AND EVALUATION

Health economics experts are embedded in many teams throughout our School, with a number concentrated in the Centre of Cardiovascular Research and Education in Therapeutics (CCRET). Their work helps decision-makers make evidence-based choices that support high-value healthcare across the community. We also have a wide array of researchers with program delivery and evaluation expertise, who deliver and assess health programs, ensuring valuable time and resources aren't lost on ineffective healthcare.

Health economics experts within the CCRET collaborated with subject domain experts on a range of cost-effectiveness analyses in 2020, all of which help government agencies and healthcare providers make evidence-informed decisions about treatments and preventions. Among their outputs were:

- Adjuvant use of PCSK9 inhibitor inclisiran to reduce LDL-C and reduce cardiovascular events in patients with cardiovascular disease, while clinically effective, was not cost-effective within the Australian healthcare system **(PharmacoEconomics)**; conversely, adenosine triphosphate citrate lyase inhibitor bempedoic acid was found to be a cost-effective adjuvant for the same purpose, where acquisition cost is at or under $600 per annum **(Journal of Clinical Lipidology)**.
- Therapeutic agent dapagliflozin was found likely to be cost-effective when used as an adjunct therapy to standard care compared with standard care alone for the treatment of chronic heart failure and reduced ejection fraction. The drug has previously been shown to reduce hospitalisations **(European Journal of Preventive Cardiology)**.
- A collaboration with Swedish researchers that found novel hyperkalaemia therapy Patiromer may be cost-effective in the Swedish context when used in chronic kidney disease patients who are at risk of hyperkalaemia as a side-effect of treatment with renin–angiotensin–aldosterone system inhibitors **(PharmacoEconomics)**.
- Collaborations with reproductive health experts at the Monash Centre for Health Research and Implementation (MCHRI) on two systematic reviews looking at the cost-effectiveness of lifestyle interventions during pregnancy. The first found a lack of research and conflicting evidence with regards to **interventions aimed at preventing excessive gestational weight gain**; the other found evidence of likely cost-effectiveness of **interventions to reduce gestational diabetes, hypertension and related complications**.

Prof Helen Skouteris led a series of program evaluations during 2020, including reviewing the success of a psychotherapy program for carers of children in residential out of home care. During 2020 her team obtained ethics approval and completed a systematic review, with retrospective data currently being analysed and impact of treatment on workplace stability.

She also developed a research protocol and began data collection for a family violence pilot program on behalf of Good Shepherd Australia, developed a model of care for people impacted by participation in the Disability Royal Commission on behalf of Relationships Australian Victoria, and consulted to Anglicare's Family Violence team to assist in the development and evaluation of their Men's Family Violence interventions.

The **HEALing Matters program** continued roll-out throughout Victoria during 2020, providing online training for out-of-home workers and carers to provide best care around nutrition and physical activity to vulnerable young people, and winning an award in the process (see Staff Distinctions on page 53).

The Australian and New Zealand Intensive Care Research Group conducted a **review of economic evaluations of sepsis treatments**, finding wide variation in cost-effectiveness and large gaps in knowledge around this medical event that carries high economic and social burdens. Another analysis, in collaboration with transfusion researcher A/Prof Zoe McQuilten, reviewed studies of **incentivised and non-incentivised tactics to increase blood donation**, finding that phone calls and letters were the most effective strategies.

The Monash Centre for Occupational and Environmental Health delivered the Victorian Stonemason's Screening Project on behalf of WorkSafe Victoria. During 2020, 324 Victorian workers from the stone benchtop industry were screened for silica-associated disease, a lung condition that has increased in recent years with the popularity of stone benchtops. Of the cohort, 65 per cent had clinical abnormalities indicative of the condition, with machinists most at risk. The project will continue its screening activities into 2021. The project complements the Silica-associated Disease Registry, which captures medical information on workers with possible or diagnosed silicosis and other silica-associated conditions from all industries (see page 42).

A/Prof James Trauer and colleagues analysed the effectiveness and cost-effectiveness of scale-up of tuberculosis programs in the Asia-Pacific region, including completion of their 2019 analysis for Mongolia, and involvement in an update to a previous analysis for the Philippines. Key recommendations included expanded contact tracing, use of the GeneXpert diagnostic tool as the first-line diagnostic test, and transitioning to a short-course regimen for the treatment of multi-drug resistant tuberculosis.

Health Economist Associate Professor Zanfina Ademi

HEALing Matters leader Professor Helen Skouteris

CLINICAL REGISTRIES

monash.edu/medicine/sphpm/registries

The School is home to 35 clinical registries that collect standardised data to measure and drive improvements in quality of care, and monitor variance in service and safety. Administration of these is often managed by clinical domain experts, all of whom may benefit from the expertise found within our dedicated Registry Science and Research Unit (as of January 2021, rebranded as **Clinical Outcomes Data Reporting and Research Program)**, who also manage some registries directly. The team provides advice and assistance in registry development and management across funding; ethics; governance; stakeholder management; and data collection, storage and analysis.

Two emerging foci of many of our registries are the use of data for clinical trials, and the incorporation of Patient Reported Outcome Measures (PROMs), integrating quality of life and quality of care measures into the standardised registry environment, and enabling registries to deliver feedback and recommendations matched to patient wants and needs.

Our registries span medical devices, drugs, procedures and disease states. A full list is available here in the **2019 Registry Portfolio.**

REGISTRY SCIENCE AND RESEARCH UNIT

Unit members continued to manage clinical quality registries within their portfolio, educate and advocate for increased utilisation of registries in healthcare and provide advice and support to clinical quality registries managed by clinical domain experts within in our School. Members were seconded to Victoria's Department of Health and Human Services to assist with the state's COVID-19 response, and data analysts from the team developed and prepared health service and government reports for SPRINT-SARI database, which provided regular information regarding clinical care and outcomes of COVID-19 patients at Australian ICUs (see page 6).

REGISTRIES AND CLINICAL TRIALS

Registries are emerging as a robust platform on which to run clinical trials, and we have several registries currently performing this function.

The EXCEL Registry, under Prof Carol Hodgson, monitors long-term outcomes of critically ill patients requiring extracorporeal membrane oxygenation (ECMO), and four clinical trials are embedded in the registry: BLENDER, a randomised controlled trial exploring oxygen saturation; ECMO Energy, an observational study exploring energy expenditure by patients; OBLEX, an observational study exploring blood coagulation; and new in 2020 is ECMO CARD, a prospective/retrospective multi-centre short period incidence observational study of intensive care unit patients with COVID-19.

The Transfusion Research Unit runs two MRFF-funded clinical trials embedded within clinical registries. DIAAMOND leverages the Aplastic Anaemia Registry to trial avatrombopag for severe aplastic anaemia. It's the first Australian trial in over 30 years of a new therapy in this rare and often deadly disease. The trial closed 2020 with 27 participants from 12 hospitals, and team members presented an update at the **Maddie Riewoldt's Vision Patient and Family Forum** in August.

Their other registry-embedded trial is FRAIL-M, trialling frailty-adjusted treatment for myeloma, utilising data from the Myeloma and Related Diseases Registry in collaboration with the Australasian Myeloma Research Collaboration. They opened their tenth recruitment site in 2020 and by year end had recruited their first ten patients.

Registry Science and Research Unit leader Professor Susannah Ahern

REGISTRY HIGHLIGHTS FOR 2020 INCLUDE:

The Australian National Diabetes Audit (ANDA) delivered an online survey to understand the impact of COVID-19 and how diabetes centres were changing the management of patients with diabetes. Around 70 centres contributed data at three timepoints, and results were fed back to participating centres, with a final report delivered to the government. The team also published data on associations between **smoking status, glycaemic control and diabetes complications**, as well as the use of **technology to monitor glycaemic control** among people with diabetes.

The Silica-associated Disease Registry identified 108 workers with silicosis from the stone benchtop industry in Victoria during its first year of operation, 87 of those being diagnosed through the WorkSafe Victoria stonemason health assessment programme (see page 39). A report was provided to Worksafe Victoria and key results published in **BMJ Occupational and Environmental Medicine**. Notable findings included typically normal lung function at the point of diagnosis, supporting a screening program to drive early detection; and an extremely high rate of exposure to dry processing of artificial stone, a process strongly associated with accelerated silicosis.

The Thyroid Cancer Registry reached several milestones in 2020, producing its **first annual report on clinical outcomes,** enrolling its 1,000th participant, and registering their 30th data contribution site. The team also piloted a semi-automated data importing tool to reduce data duplication, and undertook qualitative research to identify and evaluate relevant PROMs for inclusion, a project that will continue into 2021.

The Australian Breast Device Registry released its **2019 Annual Report**, provided feedback to participating sites and surgeons, and wrote a range of reports for government and industry. The team released or contributed to a number of publications, including a study to drive **international harmonisation of breast device registry datasets,** and a paper outlining their experience of **collecting PROMs via text message**. They also reached a significant milestone, with 100,000 breast devices registered as of December 2020.

The Prostate Cancer Outcomes Registry (PCOR) continued management of two registries housed within our School, the Victorian state PCOR-VIC registry and the regional PCOR-ANZ registry, as well as contributing to the global TruNTH registry. In addition to the highlights below, they also began development of the new BroSupport program (see page 44).

PCOR-ANZ initiated clinician and institution quality indicator reports throughout Australia and New Zealand, allowing these entities to benchmark and track their performance over time and compared to their peers on a risk adjusted basis. Uniquely, a main focus of these indicators was measurement of patient reported quality of life. They also produced an **annual report**.

PCOR-VIC staff were on the working party for the Victorian Integrated Cancer Services tumour summit on prostate cancer, where they contributed to workshop design, provided data and gave plenary talks.

The TruNTH Global Registry, of which the PCOR Group serves as the data processing centre, initiated distribution of a set of 30 indicators of quality clinical care across 12 different countries, including developing countries, and encompassing over 60,000 patients.

The National Gynae-Oncology Registry secured funding to extend the existing pilot Ovarian Cancer module, and expanded to include data from South Australia and Western Australia during 2020, surpassing 700 participants in total. The year also saw the development of modules for endometrial, cervical and vulval cancers which are now ready for piloting. They also completed semi-structured interviews exploring treatment decision-making with 16 women with ductal carcinoma in situ, diagnosed through mammographic screening.

The Victorian Cardiac Outcomes Registry produced their **2019 Annual Report** last year, generated nine publications, and data from the registry supported 27 research projects. The team progressed the development and implementation of strength of indication criteria for cardiac implantable electronic devices, and incorporated COVID-19 related measurements into their data collections.

The ANZSCTS Cardiac Surgery Database Program Registry also issued a **2019 Annual Report**, and continued to expand with a further 14 hospitals across Australia contributing data. The team secured funding to develop new risk-adjustment models to enhance benchmarking activities, supported 22 ongoing research projects and saw seven publications.

The Cystic Fibrosis (CF) Data Registry collaborated with international CF registries to collect and report in real time the incidence and outcomes of people with the condition who were infected with COVID-19. **The resulting paper** has been cited multiple times and the collaboration has sparked two other publications, showing the power of international collaborations for rare disease registries. The registry also marked its first year of funding from a five-year data quality assurance collaboration with Vertex Pharmaceuticals. As part of this collaboration, data analysts from our Registry Science and Research Unit undertake post-market analysis to evaluate real-world clinical outcomes of disease modifying treatments for registry participants for regulatory review by the Therapeutic Goods Administration.

The Australian Dementia Network Registry commenced patient recruitment in 2020, and by year's end had recruited over 100 participants from six memory clinics and services around Australia.

The Australian Pelvic Floor Procedure Registry, established in mid-2019, developed its minimum data set including PROMs tools, in preparation for commencing data collection in early 2021.

The Australian Spine Registry produced its **second Annual Report** which included over 1,000 patients.

Preparatory work for the Neonatal Outcomes Network Australia registry commenced in 2020.

The EXCEL registry opened their fourth clinical trial in 2020, the COVID-19 related ECMO CARD, and generated publications including a **survey of practice in Australian ICUs,** and **barriers and facilitators to ECMO implementation** in Australia.

The Myeloma and Related Diseases Registry registered their 4,000th participant during the year and over 500 samples have now been added to the registry's Myeloma 1000 Biobank. A number of clinical trials are embedded in the registry including FRAIL-M. They also continued building relationships with consumer advocacy groups Myeloma Australia and Rare Cancers Australia.

Spin-off registry the Asia-Pacific Myeloma and Related Diseases Registry received significant industry funding during 2020, allowing it to expand into China and other countries in the region. At the close of 2020 it had 271 patients registered, ethics approval across six sites, and six sites activated.

The Lymphoma and Related Diseases Registry reached a recruitment milestone of 4,000 participants in 2020, drawn from 26 sites across Australia. The team also secured funding from industry to continue and expand operations during the year.

The Aplastic Anaemia Registry rebranded to the Aplastic Anaemia and Other Bone Marrow Failure Syndromes Registry during the year, reflecting their expanded scope covering all bone marrow failure syndromes (BMFS), including germline predisposition to haematological malignancy. They launched a new REDcap database to include all BMFS, and registered their 200th patient during the year, making it one of the largest cohorts internationally. In partnership with Biobanking Victoria and other Monash University and Monash Health researchers, they were awarded funding from Maddie Riewoldt's Vision to establish the Australian Marrow Failure Biobank (AMFB), a national biobank that will contribute to the improvement of treatments in a range of bone marrow failure conditions.

The Myelodysplastic Syndromes Pilot Registry captures Australia's first detailed national data on clinical management and outcomes of this blood cancer that frequently necessitates long-term transfusion support. The pilot reached 100 participants in 2020.

The Haemoglobinopathy Registry captures data on people in Australia with hereditary conditions thalassaemia and sickle cell disease (SCD), the latter of which is on the rise here as a consequence of increasingly mixed ethnic diversity via migration. Novartis provided funding in 2020 for a study into baseline prevalence data and disease complications that will inform future clinical trials of treatments in their pipeline. Registry custodians grew the number of SCD patients in the registry from 167 to 328 during the year, and total patients on the registry including those with thalassaemia, from 510 to 706.

The Australian Rheumatology Association Database produced two publications in 2020, one investigating use of oral complementary medicines among people with inflammatory arthritis, the other investigating selection and perception of methotrexate treatment information in people with rheumatoid arthritis.

QUALITATIVE, MIXED METHODS AND IMPLEMENTATION RESEARCH

The School is home to a range of qualitative and mixed methods researchers, and people with implementation science knowledge, many of whom work within our Global and Women's Health group and the Monash Centre for Health Research and Implementation. Here are some of our milestones and highlights from 2020:

STAREE formed the basis of a **collaborative study led by University of Tasmania PhD student** Zhen Zhou, who conducted extensive interviews with 30 participants who had discontinued the trial medication. The authors found that severity and impact on daily life of perceived adverse events were the major reasons that participants discontinued medication, and that tolerance of perceived adverse events was lowered during challenging life circumstances, such as moving house or illness. Anticipating participant-reported adverse events and concerns at trial entry, and offering timely assistance and support should they occur, may be useful to reduce drug discontinuation rates in future studies.

The Prostate Cancer Outcomes Registry led the development of the BroSupport project, a collaboration between the Victorian Agency for Health Information, Monash University, Movember and Alfred Health. The project will create a web-based portal that provides advice on cancer survivorship and information to men diagnosed with prostate cancer in Victoria. 2020 saw the launch of the initial discovery and design phase, with team members pivoting to online platforms to deliver four focus groups with 39 health professionals, and seven workshops involving 33 consumers. Completed in September, this input will inform the second phase of content and portal construction, which began in late 2020 and will continue until launch and evaluation in 2021.

Researchers from the Women's Health Research Program recontacted 32 randomly selected participants of the Midlife Women's Health Project who had consented to be contacted for future research, to inform their qualitative study of Australian midlife women's understanding of menopause, **published in 2020.** Analysis of their semi-structured interviews revealed that while these women have a good understanding of the immediate effects of menopause, their lack of knowledge of the long-term consequences is concerning. Despite the effectiveness and safety of Menopausal Hormone Therapy, the overall attitude to it remains negative.

Living with arthritis was the focus of two qualitative projects that concluded in 2020, one identifying challenges in the **workplace experiences of young people with arthritis**, the other finding significant **personal financial burden and distress** as a result of living with the condition. Some of the researchers involved also contributed to **mixed-methods research** that found that personal factors (age, sex, marital status and more) were more strongly predictive of falls and fractures among people living with osteoarthritis than condition-related impairments, environmental factors, activity limitations, and participation restrictions, showing the importance of incorporating such questioning when assessing falls risks among these patients.

Dr Maggie Kirkman continued to work with Dr Claire Stubber on their Ann Hyams/Grenet Foundation funded website for people considering having heart or lung transplants. **They video recorded interviews with organ recipients** and have edited them so they are searchable by topic. The videos were published to the **Heart and Lung Transplant Trust of Victoria's website** during the year, where they've been well utilised.

Dr Heather Rowe led a series of consultations with health professionals and parents of infants, to co-design and evaluate a new resource to strengthen capacity of primary care practitioners to recognise and respond effectively to postpartum mental health problems experienced by women who have recently given birth in Victoria.

Trauma researcher Prof Belinda Gabbe leads the BE-FIT project, an ambitious mixed methods study using interviews, photovoice, behavioural mapping, linked data modelling and economic analysis to evaluate the impact of the introduction of a new, purpose-built trauma ward at the Alfred Hospital, and the accompanying active rehabilitation model-of-care. The project will inform future allied health resource allocation and trauma ward design, setting a national and international benchmark for models of early trauma rehabilitation. Data collection for the first two phases was completed prior to COVID-19 disruptions, with the third and final stage delayed until November 2020. The project will be completed in mid- to late-2021.

The Insurance Work and Health Group (IWHG) conducted 16 in-depth interviews and 340 telephone surveys with **Driving Health Study** participants, plus interviews with a further nine relatives of participants, in order to dive deeper into the health risks faced by Australian truck drivers. Their results informed the sixth and seventh study reports, which garnered national media attention.

The **EML/Monash Ageing Workforce Project, also led by IWHG researchers,** combines literature review, data analysis, workshops and focus groups to design an intervention to support recovery at work or return-to-work of injured healthcare workers. In 2020 the researchers completed the literature review and data analysis occurred, with workshops scheduled for early 2021.

They also **assessed a new tool to improve identification of delayed return-to-work** in the first two weeks of a workers' compensation claim, to address the needs of the small proportion of people who experience ongoing difficulties in returning to work. This small cohort consumes the vast majority of resources available to support those injured and unable to work. The team found that the recently developed Plan of Action for a Case (PACE) tool had a good ability to identify injured workers at risk of delayed return-to-work, enabling case managers to act early and improve outcomes.

Cabrini Epidemiology researchers conducted **focus groups and interviews** that revealed factors influencing allied health professionals' implementation of upper limb sensory rehabilitation for stroke survivors, informing knowledge translation in the field. They also completed a number of qualitative and mixed methods studies, including an exploration of barriers, enablers and acceptability of home-based rehabilitation following elective hip or knee replacement at a private hospital.

Prof Joseph Ibrahim and colleagues completed recruitment, intervention roll-out and data collection for a project to prevent unwanted sexual behaviour in Residential Aged Care Services. The intervention comprised a multi-modal training course for aged care nursing staff. Data analysis will continue into 2021, with publications to follow.

BE-FIT leader Professor Belinda Gabbe

Women's Health Research Program leader Professor Susan Davis

BIOSTATISTICS, RESEARCH METHODOLOGY AND TECHNOLOGY

Biostatistics and epidemiology are at the heart of much of our work. Our talented biostatisticians bring their expertise to large-scale and complex projects within our School, conduct methodological research and advance the field through the leadership of professional networks and groups. Our researchers constantly embrace and assess innovative methods and technologies to improve healthcare and medical understanding.

The **AusTriM Network** launched in 2020, uniting Australia's leading biostatisticians holding expertise in trials together with investigators who conduct landmark trials across a range of health and medical disciplines. They fostered innovation in biostatistics and trial methodology via a series of workshops on Bayesian adaptive trial designs led by US-based experts Dr Lorenzo Trippa and Dr Steffen Ventz; webinars on registry-based trial design, adaptive trial design and Data Safety Monitoring Boards; and the launch of interest groups in cluster randomised trials, adaptive trials and trials analysis methods. They also provided five seed funding grants to early- and mid-career researchers for methodological projects.

Dr Shandy Li and PhD candidate Wenhua Yu led a modelling project using Queensland data that explored long-term exposure to low levels of fine particulate air pollution (PM2.5, particles with a diameter <2.5microns). The results, published in **PLOS MEDICINE**, showed that even at levels well below World Health Organization air quality recommendations, long-term exposure was associated with total, non-accidental, cardiovascular and respiratory mortality.

Their group leader, Professor Yuming Guo, also drove statistical research to progress atmospheric health research, **comparing statistical methods** of estimating daily concentrations of fine particulate air pollution.

Researchers from the Prostate Cancer Outcomes Registry utilised novel techniques of geospatial analysis (Getis-Ord gi*) to identify and quantify geographic "hotspots" in Victoria where men are experiencing poorer quality of life following cancer treatment. Their results were fed into a report presented as part of a Victorian Cancer Authority report. The same team embraced spatio-temporal models to disentangle the effects of individual- and area- level factors in cancer outcomes in the peri-operative period. This is unique work that has not previously been examined in a prostate cancer context.

Researchers from our Epidemiological Modelling Unit completed an updated review into the effectiveness of the BCG vaccination to protect against tuberculosis, taking into account the degree of protection, time since vaccination and background intensity of Mtb transmission. They concluded by proposing that BCG vaccine protects against exposure to Mtb that occurs shortly after vaccination, but may increase risk of disease with later exposure.

Investigators from the PEPTIC trial continued to publish in 2020, with a **paper in JAMA** looking at the use of stress ulcer prophylactics to prevent or reduce gastrointestinal bleeding among critically ill patients. The PEPTIC trial is a landmark cluster randomised cross-over trial using study design methodology developed by staff from our Biostatistics Unit. It was the largest randomised trial conducted in the intensive care setting, and had precision equivalent to a 27,000 patient individually randomised trial.

AusTriM Network team members

Our Forensic Medicine researchers began work in 2020 on a series of projects exploring future roles for Artificial Intelligence and advanced data analytics in the forensic and coronial setting, driving faster conclusions with better evidence. The Department of Forensic Medicine, in conjunction with the Victorian Institute for Forensic Medicine, leveraged its new Human-in-the-Loop-Analytics Graduate Research Industry Partnership to begin explorations into using machine learning algorithms to search their extensive image and computed tomography (CT) databases, and visualisation of medical imaging. Other projects in progress include:

- augmented Reality visualisation of post-mortem CT (PMCT) imaging
- Natural Language Processing for finding similar cases in their database, but which use different terminology in descriptive text
- **automated ballistics trajectory and injury evaluation**
- placing science around facial reconstruction through automated processes using the PMCT database
- evaluation of the ability of facial recognition to recognise and correctly identify deceased individuals, with particular application in mass casualty scenarios.

The Research Governance Committee launched the updated **8th edition of the Guide to Good Research Practice** in 2021, featuring new checklists and templates, the Data Governance Framework and copies of the new Data Management Tool. They also launched the online version of their Ethics and Good Research Practice training package, made available for the first time to fee-paying researchers outside the School.

EVIDENCE SYNTHESIS

Evidence synthesis involves collating results of multiple studies on a particular topic, assessing the strength of evidence and where possible, synthesising results to form powerful conclusions that can underpin healthcare policy and clinical practice. Our School is home to Cochrane Australia, who are at the forefront of evidence synthesis in our region. An emerging focus for the group is the development of 'living' guidelines, clinical guidelines that are rapidly updated to include the latest peer-reviewed evidence. The value of this approach became clearly evident this year through the work of the National COVID-19 Clinical Evidence Taskforce (see page 6). Impactful systematic reviews and meta-analyses are conducted by researchers across our entire School.

The Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA) statement is the pre-eminent reporting guideline for systematic reviewers. Over the last three years, led by School researchers from Cochrane Australia and our Biostatistics Unit, the statement has been extensively revised and updated. The PRISMA 2020 update was posted to metaArXiv in September 2020 and will be co-published by five journals, including BMJ and PLOS Medicine in 2021.

Cochrane Australia team members

The Insurance Work and Health Group collaborated with the Monash Addiction Research Centre, Turning Point and WorkSafe Victoria to examine opioid prescription patterns and risk factors for longer-term opioid prescribing among Victorians with workers' compensation claims. They applied a novel group-based trajectory model to longitudinal medicine payment data from the Victorian workers' compensation scheme to describe opioid prescriptions, and examine the relationship with opioid use and injury outcomes. They found a high prevalence of long-term opioid use in workers with musculoskeletal conditions and fractures, despite clinical guidelines recommending against long-term opioid use for chronic non-cancer related pain.

The Biological Neuropsychiatry and Dementia team were among the co-authors of a meta-analysis summarising the evidence that lifestyle factors can modify biological age. Exposures to infection, environmental pollution, mental health disorders, stress, physical activity and tobacco and alcohol consumption were among many variables included, with results showing that body mass index was most strongly associated with biological age as measured by the degree of DNA methylation in the body. This important publication, in **The Journals of Gerontology**, grows a field of research with the potential to slow the ageing process and prolong healthy life.

Musculoskeletal health researchers collaborated with productivity experts on a suite of arthritis-related systematic reviews in 2020, one of which revealed poor work outcomes for younger adults living with arthritis **(BMJ Occupational & Environmental Medicine)**, and another – an invited review – saw researchers update an earlier review of adult measures of general health and health‑related quality of life (HRQOL) commonly used in rheumatic disease settings **(Arthritis Care and Research)**.

Cabrini Epidemiology houses the Cochrane Musculoskeletal and Back and Neck Editorial Base, and a satellite of Cochrane Effective Practice and Organisation of Care (EPOC). Through these groups they have continued to edit Cochrane Reviews and lead their own reviews. This included a **Cochrane Review** finding very few clinically important benefits of shock wave therapy for rotator cuff disease, and uncertainty regarding its safety; finding evidence of the success of **mass media campaigns in improving beliefs about low back pain**; and a review of international guidelines on **radiology reporting**, with the aim of enhancing clinical and patient understanding.

The group also completed a **Cochrane Review** investigating the effectiveness of implementation strategies to encourage healthcare professionals to use evidence in stroke rehabilitation. They also conducted two qualitative syntheses, one investigating patient and public understanding of over-testing and over-diagnosis, and the other exploring factors influencing clinician prescribing of disease modifying anti-rheumatic drugs for inflammatory arthritis. Both have been submitted for publication.

Epidemiological modellers led the way on a systematic review of models used to account for heterogenous infectiousness of active tuberculosis patients. Infectiousness varies widely, with a small proportion of individuals responsible for a large proportion of onward transmission, suggesting models that stratify risk should be deployed **(Epidemics)**.

Researchers from the Women's Health Research Program contributed to a number of reviews during the year, including this one that found that menopausal hot flushes and night sweats have been reported in **49 different ways in clinical research**, and that a core outcome set is urgently required. They also contributed to a review of trends in **all-cause mortality among people with diabetes**.

OBSERVATIONAL AND COHORT STUDIES

Observational and cohort studies are a useful tool to study rare exposures, including multiple exposures, and gain a clear indication of the temporal relationship between exposure and outcome. Our occupational and environmental researchers use them to great effect to monitor health outcomes among high-risk workers and communities experiencing hazardous exposures. They are also used by researchers across the School to track outcomes of particular groups of people over time.

The Hazelwood Health Study marked its sixth year investigating the health impacts of smoke from the 2014 Hazelwood coalmine fire. During 2020 the study undertook substantial analyses of collected data, and progressed a number of scientific papers toward publication. Whilst the adult Psychological Impacts Stream was able to complete planned follow-up data collection before COVID-19 restrictions were imposed, the Community Wellbeing, Early Life Follow-up and adult Respiratory Streams were forced to delay data collection until 2021.

Some key findings arising from 2020 analyses include:

- An increased risk of injury-related deaths during the first 30 days of the mine fire, followed by an increased risk of cardiovascular-related deaths in the following six months, but no longer-term association with cardiovascular disease.
- An association with immediate and longer-term increases in the use of respiratory-related medications and health services, and respiratory symptoms.
- Exposure to mine fire smoke during pregnancy was associated with higher incidence of gestational diabetes mellitus; and increased respiratory symptoms, respiratory-related healthcare consultations and diagnoses among children two to four years post event.
- A moderate level of distress was detected across the community five years after the fire.

The Insurance Work and Health Group monitor **health service use and return-to-work outcomes for all NSW-based coal miners** who have an accepted workers' compensation claim, with study results informing recommendations on best management. Participants were tracked throughout 2020 and publications and reports are due in 2021.

A/Prof Ilana Ackerman led a multi-centre cohort study investigating the wellbeing and work-related impacts of persistent shoulder pain. Eighty-one participants were recruited, and clinical, quality of life and productivity data was collected during the year. **Baseline data released** suggests work-related impacts should form a routine part of patient assessment and rehabilitation. 2021 will see the analysis of twelve-month follow-up data.

Professor Allen Cheng continued his work with the FluCAN project in 2020. The project is a national sentinel surveillance program for severe influenza in both adults and children. FluCAN formed part of the Australian Paediatric Influenza Immunisation Research Group, which successfully advocated for Australia's first-ever nationwide childhood influenza immunisation program, a policy win that saw the group make the finals for a prestigious 2020 Australian Museum Eureka Prize.

The 20+ year-long Healthwise Study was re-funded for a further five years in 2020. Healthwise was initiated by Alcoa, and is one of the longest, largest and most comprehensive occupational health studies in Australia, monitoring the links between work and health among Alcoa of Australia Limited's staff across numerous high-risk working environments.

Biological Neuropsychiatry and Dementia researchers continued to lead the molecular studies on the Australian Temperament Project Generation 3 Study, one of the longest running studies of social and emotional development in Australia, with 30 years of data collected on over 1,000 families across three generations. The study generated two papers during the year. Group leader A/Prof Joanne Ryan also continued her co-leadership of French study ESPRIT-VIE, determining biological underpinnings of neuropsychiatric disorders in a large older cohort who have been followed over 19 years. Five papers were published exploring the long-term physical implications of experiencing psychological distress or trauma.

The Transfusion Research Unit continued stewardship of two National Blood Authority-funded cohort studies during 2020, both of which reached target recruitment during the year. IMPROVE, a sub-study of the wider Myeloma and Related Diseases Registry (see page 43 for details), recruited it's 300th and final participant, while ICAN, a sub-study of the Lymphoma and Related Diseases registry, recruited their 500th and final participant. The two studies collect data on Australian immunoglobulin use in response to infections among these cohorts. They'll shed light on current practice across Australia, costs, and outcomes that will be vital to managing this costly resource.

Women's Health Research Program researchers advanced the Sex Hormones in Older Women (SHOW) ASPREE sub-study in 2020. The cohort involves around 7,000 eligible women who took part in the main ASPREE study. During the year they found evidence **supporting the use of estrone** in studies in examining associations between estrogen levels and health outcomes in postmenopausal women, and that **testosterone concentrations in women aged 70+ were more likely to increase than decrease**, but that whether this confers a survival advantage needs further investigation.

The group also continued their work on the Grollo Ruzzene Foundation Younger Women's Health Study, exploring the physical and psychosocial health of 6,986 premenopausal Australian women. Analyses published during 2020 included two profiled in the Publications section on page 26, and papers exploring **androgens in the reproductive years**, the relationship between **serum androgen levels and body hair**, a prevalence study of **low sexual desire dysfunction across the adult lifespan**, and risk factors for **depressive symptoms and antidepressant use** in young Australian women.

Planetary health researchers led a study looking at the links between increasing global temperatures, hospitalisations and socioeconomic factors in Brazil. They found that less developed cities displayed stronger associations between heat exposure and all-cause hospitalisations and certain types of cause-specific hospitalisations. This may exacerbate the existing geographical health and socioeconomic inequalities under a changing climate.

A/Prof Ilana Ackerman

A/Prof Joanne Ryan

Hazelwood Health Study leader
Professor Michael Abramson

STAFF DISTINCTIONS

Australia Day Honours were provided to the following individuals:

- Prof Rachelle Buchbinder AO for distinguished service to medical education in the fields of epidemiology and rheumatology, and to professional associations.
- Prof Stephen Cordner PSM for forensic medical and scientific services to Victoria through his role leadership of VIFM.

Prof Allen Cheng was awarded a President's Award from the Public Health Association of Australia, for his work advising the Federal Government via his role on the Australian Health Protection Principal Committee. He also contributes to the Australian Paediatric Influenza Immunisation Research Group, nominated for a prestigious Eureka Prize.

Several School researchers were listed as the top of their field by a special research report by **The Australian** newspaper. Prof Sophia Zoungas, Prof Helena Teede, Prof Alex Collie and A/Prof Craig French were all named.

Prof Andrew Forbes was **elected as a Fellow** of the Australian Academy of Health and Medical Sciences for his years of leadership in Biostatistics at an international level.

Prof Susan Davis became an Honorary Life Member of the Endocrine Society, received a Distinguished Service Award from the International Menopause Society.

Prof Helena Teede was acknowledged as a world-leading Endocrinologist through a prestigious **2021 Laureate Award** from the Endocrine Society. She was also awarded the annual Honorary Royal Australian and New Zealand College of Obstetrics and Gynaecology Fellowship.

REMAP-CAP lead investigator Prof Steve Webb was nominated by the Australian Newspaper as a candidate for their Australian of the Year for his work driving major international research into COVID-19.

Prof Yuming Guo, Head of the Climate, Air Quality Research Unit, received the International Society for Environmental Epidemiology's Tony McMichael Award for 2020, and was named **Victoria's Young Tall Poppy of the Year 2020** by the Australian Institute of Policy and Science.

A/Prof Dion Stub won the Heart Foundation's 2020 Ross Hohnen Award for most outstanding and innovative Vanguard Grant application.

Dr Jia Zheng received an International Society of Gynecological Endocrinology Travel Award.

Dr Alejandra Martinez Garcia received an International Menopause Society Young Investigator Greenblatt Award.

The HEALing Matters team won the Monash Faculty of Medicine, Nursing and Health Sciences Dean's Award for Excellence in Research (Social and Economic Impact) and were finalists for the same award under the Vice Chancellor's remit.

Dr Rakibul Islam received an Australasian Menopause Scientific Award, and the John McNeil Early Career Researcher Best Publication Prize for Public Health Research.

PhD candidate Marta Woolford won the 2019 International Journal of Older People Nursing Award for Outstanding Scholarly Contribution to Gerontological Nursing Practice for her article, *Recommendations for the Prevention of Deaths Among Nursing Home Residents with Unexplained Absences*.

A/Prof Zoe McQuilten received both the Monash University Dean's and Vice-Chancellor's Excellence Awards for Research Excellence by an Early Career Researcher.

Prof Jane Fisher AO and colleagues won the World Bank Group's Development Innovation Marketplace Award, via a competitive application process from a global field of 240 applicants, for their successful grant application to run and evaluate Learning Clubs in Vietnam.

PhD candidate Daye Gang won the International Bar Association's Outstanding Young Lawyer Award 2020, a global award that recognises career excellence and commitment to professional and ethical standards. She was recognised for her research on restorative justice for sexual and family violence, and her fight for accountability for international crimes in North Korea.

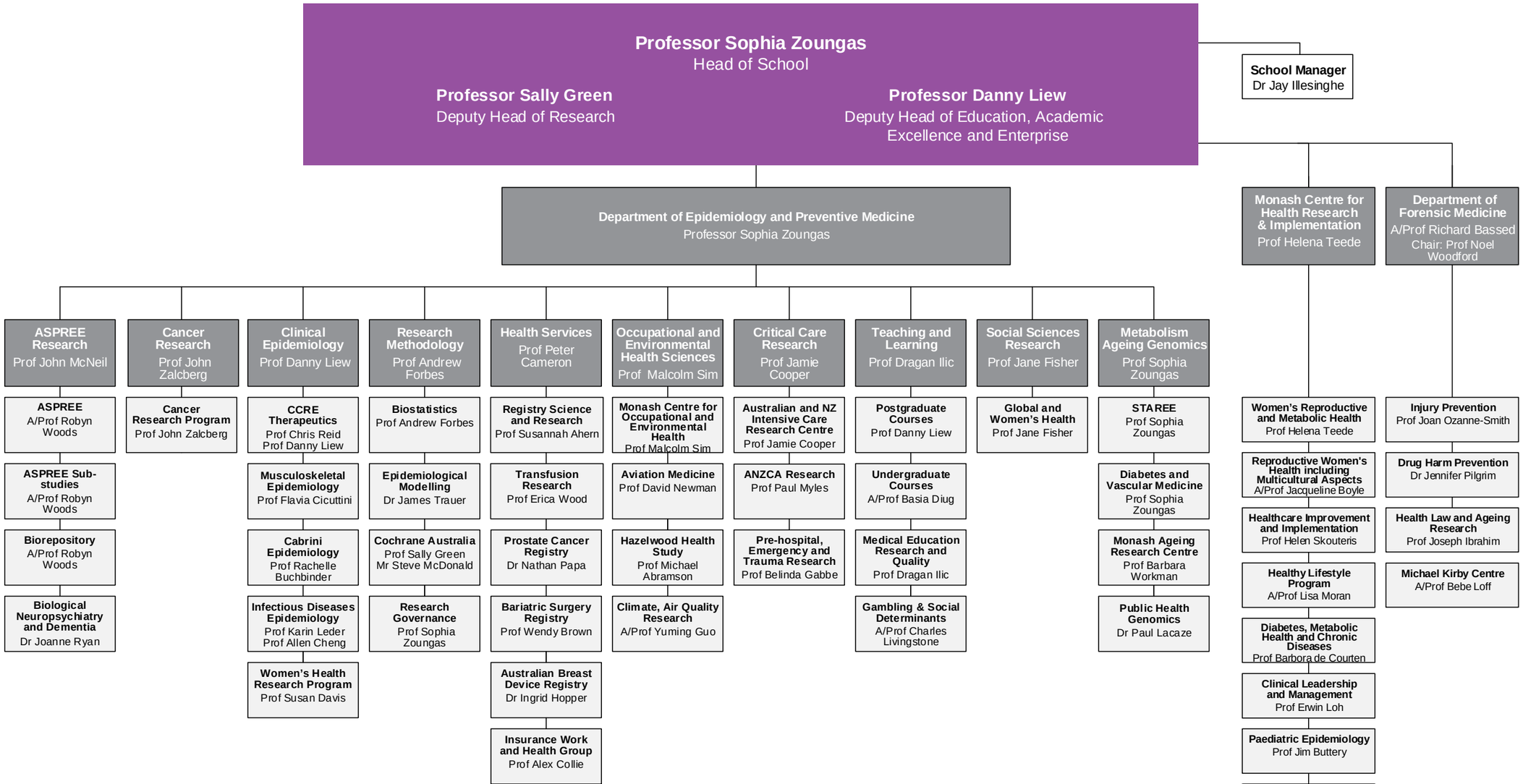
Prof Rachelle Buchbinder AO was named as the Monash University representative on The Educator Higher Education Hot List 2020.

Dr Kalin Kempster awarded the Resus 2020 New Investigator Award.

Dr Samantha Rowbotham won a Churchill Fellowship to support the development of guidelines for best practice skeletal trauma analysis in forensic anthropology.

A/Prof Soren Blau was competitively selected to join the 2020 Victorian Endowment for Science, Knowledge and Innovation (VESKI) **inspiring women STEM sidebyside** program.

SCHOOL ORGANISATIONAL CHART 2020



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