Our research focuses on five primary themes:

- Mental health
- Alcohol and other drugs
- Chronic illness, ageing well and supportive care
- Health professions education
- Longitudinal studies

These themes focus across:

- Rural health workforce development, supply and retention
- Equitable access to services
- Innovative and effective service delivery models
- Research capacity building for rural health services and communities.

Rural and regional life is built upon strong relationships, collaborations and partnerships. Across our regional Victorian footprint, we have sought to develop and strengthen our partnerships, with the ultimate aim of improving health outcomes for Victorians. Almost all of the research undertaken in 2019-2020 is underpinned by robust collaborations, between Monash Rural Health staff and our rural and regional health service partners in Gippsland, Bendigo and Mildura.

The work has been further strengthened by collaborations with colleagues and partners based in metropolitan Victoria, other Australian states, and internationally. For example, our medical and allied health workforce tracking studies have relied upon multiple Australian university partners, particularly our inaugural partnerships with the University of Newcastle and Deakin University. The development of a research collaboration across the four Victorian University Departments of Rural Health (Deakin, La Trobe, Melbourne and Monash) will lead to many research partnerships and opportunities in the future. We see important benefits in building large teams of like-minded researchers, leveraging each other’s knowledge and resources to deliver better outcomes than we could working on our own.

We also appreciate our rural and regional profile as a strength and advantage that we might lend to our urban colleagues. Equally, their international research reputations and excellence have developed and strengthened many individual Monash Rural Health researchers and research projects in the process. VMAX and the Hazelwood Health Study are excellent cases in point.

We thank all of our partners for this reciprocal support and the shared intent to deliver better health outcomes for rural and regional Victorians.

Finally, I would like to thank the research administration team, Mandy Grinblat and Marilyn Harkness, the Research Committee and the entire research team for their commitment and work, particularly during the very challenging times we have faced in 2020.

Professor Darryl Maybery
Director of Research, Monash Rural Health

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Our funding sources included the National Health and Medical Research Council, Victorian Government and Primary Health Networks (PHNs).

*Excludes ongoing funded research, such as longitudinal studies.

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Our 2019-20 Impact

Funding

$2.16m+

Research funding awarded by

12 Funding bodies to Monash Rural Health researchers*

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Our 2019-20 IMPACT

<table>
<thead>
<tr>
<th>Funding</th>
<th>Publications</th>
</tr>
</thead>
<tbody>
<tr>
<td>$2.16m+</td>
<td>221 articles</td>
</tr>
<tr>
<td>RESEARCH FUNDING AWARDED BY</td>
<td>PUBLISHED BY</td>
</tr>
<tr>
<td>12</td>
<td>63 Staff</td>
</tr>
<tr>
<td>FUNDING BODIES TO</td>
<td>11 Students</td>
</tr>
<tr>
<td>MONASH RURAL HEALTH RESEARCHERS*</td>
<td>&amp; 13 Adjuncts.</td>
</tr>
</tbody>
</table>

Our 2019-20 RESEARCH COMMITTEE

Professor Darryl Maybery
Director of Research

Dr Alison Beauchamp
Graduate Research Coordinator

Dr Matthew Carroll
Theme Lead Chronic Illness, Ageing Well and Supportive Care

Zoe Duncan
Graduate research student representative

Mandy Grinblat
Research Administration Manager

Dr Anton Isaacs
Theme Lead Mental Health

Associate Professor Rebecca Kippen
Theme Lead Longitudinal Studies

Dr David Reser
Honours Coordinator

Dr Eli Ristevski
Theme Lead Chronic Illness, Ageing Well and Supportive Care

Dr Tammy Smith
Theme Lead Health professions education

Dr Bernadette Ward
Theme Lead Alcohol and Other Drugs
How to raise the village to raise the child

Dr Melinda Goodyear is a part of a local and global team of multidisciplinary researchers awarded £3 million over four years to conduct research that aims to support sensitive identification and enhance child-focused (in-) formal support for children when their parents have a mental illness in a rural setting. The research group are submitting a new proposal for a 5-year grant to develop new co-designed practice approaches. The team has been able to implement the co-designed practice approaches identifying children and providing village facilitators to support workers similar to the village facilitators. As part of a recommendation for providing young carers with access to formal support for children when their parents have a mental illness in rural Australia. This project is one of the first worldwide to apply OIS approaches to social science research, in order to make meaningful changes to the lives of people affected by mental illness.

The research team are more than halfway through the grant, and have been able to implement the co-designed practice approaches identifying children and providing a village of support across six sites in rural Austria. The introduction of COVID-19 lockdowns have led to significant developments in the use of technology in the practice approaches. The research group are submitting a new proposal for a 5-year grant to continue the work, focusing on the perinatal mental health system.

In 2021, the village project was portrayed as a suggested model in the final report of the Royal Commission into Victoria’s Mental Health System, as part of a recommendation for providing young carers with access to support workers similar to the village facilitators.

Publications include:


Contact melinda.goodyear@monash.edu

Parental mental illness: reducing the cycle of illness in families

There have been two core areas of research in the parental mental illness area during 2019-2020. The first, in collaboration with Professor Andrea Reupert, involved the ongoing development and evidence for an online intervention, mi spot, that aims to support young people whose parents have a mental health and/or substance use concern. A pilot randomised controlled trial showed that mi spot participants reported improvements in wellbeing, reductions in mental illness symptoms and improvements in help-seeking and coping including active coping, planning, positive reframing and acceptance. The intervention reduced participants’ mental illness symptoms by approximately 25% over time.

The second area is focused upon developing a survey instrument to measure carer and family engagement with mental health services. This work in progress involves a group of international researchers and aims to develop a survey instrument to better understand the impact of family and carer engagement by psychiatric services.

Contact darryl.maybery@monash.edu

Family focused mental health care

Our researchers have collaborated with practitioners to gain a deeper understanding of family-focused mental health care and develop a model of care. In 2019, the team built upon the initial work and explored how this approach could be used to support consumers who use methamphetamine. This work on mental health recovery has been used to underpin evidence in the Manitoba Mental Health Strategic Plan, the development of a practice framework for strengthening recovery when mental health consumers are parents (EASE) and is cited in the 2019 Submission to the NSW Special Commission of Inquiry into the Drug ‘Ice’, to highlight the role of family and peer support networks in a person’s recovery from drug use.


Contact bernadette.ward@monash.edu

Critical environmental and social determinants of mental health problems and their care

Social determinants are the factors in the social environment that have a significant influence on an individual’s health. Social determinants also impact the mental health of populations, and those who are poor and disadvantaged are at greater risk of mental disorders. A team of authors, including Dr Anton Isaacs, contributed to a chapter on the critical environmental and social determinants of mental health problems and their care, in the new edition of a leading reference on mental health in Australia.

The chapter makes use of the life course framework for these considerations, demonstrating that experiences during the perinatal period, early and late childhood, working age, family life and old age can all contribute to one’s mental health. In addition, community-level contexts including environment and health care systems; and finally, country-level contexts including political and economic factors, cultural norms, and specific policies play a part in the mental health of populations.

Assessing access to services in rural areas

Dr Bernadette Ward has collaborated with internationally renowned primary health care researchers, Dr Grant Russell and Dr Riki Lane from the Monash University Department of General Practice, to examine how contextual factors influence health service access arrangements across Australian models of primary health care. Funded by the Murray Primary Health Network, this work has been used to develop a deeper understanding of access arrangements in primary health care for consumers who use methamphetamine.

This study and the manuscript have been completed. The findings have also been incorporated into the following textbook chapter, widely used to educate health professionals about rural health.


Contact bernadette.ward@monash.edu or keith.sutton@monash.edu

ALCOHOL AND OTHER DRUGS

UNDERSTANDING METHAMPHETAMINE USE IN VICTORIA

Funded by the National Health and Medical Research Council (NHMRC), VMAX is a 5-year longitudinal study investigating behaviours of methamphetamine users in rural and metropolitan Victoria. The study focuses on patterns of methamphetamine use, service use, criminal justice interactions, and risk behaviours. Dr Bernadette Ward and Dr Keith Sutton, in collaboration with researchers from the Burnet Institute, have been recruiting participants across rural Victoria and Melbourne using a combination of respondent driven, snowball and convenience sampling. With more than 800 participants to date, VMAX is the largest community-based study of methamphetamine smokers.

Consenting participants undergo an interview every six months, and the study has ethics approval to link Medicare, pharmaceutical, alcohol and other treatment service use, public mental health, emergency department, hospital stay, National Death Register and ambulance attendance records to participants’ survey data.

The initial focus areas have been on the characteristics of the cohort at baseline and the experience of parenting when using methamphetamine. The study found that of the participants who were parents, 76% did not have any children living with them – a statistic much higher than previously reported. Findings show more support is required for parents who use methamphetamine and understanding of the long-term patterns, what factors play a role in their decisions to access support and what support they are looking for, will enable us to further improve services.

Currently underway is analysis on the prevalence of drug driving, accessing services, social supports and the mental health of people who use methamphetamine. Additional questions have been added to the survey to determine the impact of COVID-19 on participants. As the study progresses, the research team will explore the longer-term outcomes of this population, rates of spontaneous cessation, accessibility of services, changes in risk behaviours, and changes in the market characteristics of methamphetamine.

The following articles have been published and attracted significant media attention:


This work has also been the basis of another grant from the Medical Research Future Fund, which includes employing a consumer to provide lived experience expertise. The study will examine how parents who use methamphetamine can be supported.

Zoe Duncan, a research assistant on the VMAX study, has now commenced her PhD examining the mental health status of VMAX participants. Zoe’s work will provide much needed evidence to inform the planning and delivery of mental health services for people who use methamphetamine.

Contact bernadette.ward@monash.edu or keith.sutton@monash.edu

Theme Lead: Dr Bernadette Ward

Assessing access to services in rural areas

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Contact bernadette.ward@monash.edu or keith.sutton@monash.edu
CHRONIC ILLNESS, AGEING WELL AND SUPPORTIVE CARE

ADVANCE CARE PLANS ACROSS THE HEALTH SYSTEM IN RURAL VICTORIA

Advance care planning (ACP) enhances the quality of end-of-life care. However, in rural Victoria the uptake of ACPs is low and the communication of advance care plans between primary care services and regional hospitals is unknown. This results in unnecessary, expensive and often distressing hospitalisations, and consumers and their families have little choice and control over medical treatment and end-of-life decisions.

Funded by Better Care Victoria, Dr Bernadette Ward, Dr Pam Harvey and Dr Dennis O’Connor, partnered with Bendigo Health, Murray Primary Health Network, and general practices to explore how to identify and address the barriers and enablers to the uptake of ACPs across the health system for consumers aged 75 years and over. The research has been highly productive and enabled our honours students to experience some of the intricacies of the Australian healthcare system. We are grateful for the support provided by Bendigo Health and general practices in central Victoria. This was an excellent project to build our health service research partnerships and support one of our talented Bachelor of Medical Science (Honours) students, Laura Panozzo. Laura received a high distinction for her thesis on this topic and in addition to working as a research assistant on several projects, is now leading a project examining the prevalence of advance care plans in Victorian hospital inpatients. Laura commences her intern year in 2021 and is an excellent example of growing our own future research leaders.

This work resulted in three publications and numerous presentations about advance care planning to local health practitioners, as well as international audiences.


Contact bernadette.ward@monash.edu

Optimising engagement in cardiac secondary prevention: a health literacy approach

Managing one’s own health after a heart attack can be challenging, especially for more socially disadvantaged groups. Health literacy may play a major role by enhancing people’s ability to find, understand and use health information. However, there are no long-term studies examining health literacy and cardiac outcomes, and it is not known whether health literacy can be improved after a heart attack. Funded by the NHMRC, this 5-year Investigator Grant awarded to Dr Alison Beauchamp aims to establish a cohort study of 450 people with Acute Myocardial Infarction (AMI) across three health services in both metropolitan and rural settings. Participants will be followed for two years to determine whether health literacy is related to cardiac outcomes. Working with health providers and consumers, the research team will also co-design equitable health literacy interventions that aim to improve self-management of risk factors after a heart attack.

Contact alison.beauchamp@monash.edu

After-hours telephone triage for palliative care in rural and regional settings

Dr Eli Ristevski, in collaboration with the Gippsland Region Palliative Care Consortium and Gippsland Primary Health Network, is investigating the implementation and use of a novel electronic telephone triage tool for after-hours support for community palliative care clients and carers. Using electronic question prompt and answer algorithms, the triage tool supports clinicians to deliver a consistent and evidence-based approach to symptom management for palliative care clients and their carers. The triage tool will be trialed by nurses working in hospitals, community health centres, bush nursing centres, aged care facilities and general practice clinics across the Gippsland region. The information in this study will provide essential information to assist health service planning across the Gippsland region, ensures telephone advice is evidence-based and there is appropriate client and carer referral and follow-up.

Contact eli.ristevski@monash.edu

A regional cancer survivorship program: improving care coordination and service delivery for people with cancer

With the health care system already stretched and the number of cancer survivors continuing to grow, finding new models to support them is essential. Dr Eli Ristevski and Dr Michael Leahy, in collaboration with the Latrobe Regional Hospital, Gippsland Regional Integrated Cancer Services, Barwon Regional Health Service and Gippsland Southern Health Service, have established a cancer survivorship shared care program in the Gippsland region. Funded by the Victorian Department of Health & Human Services’ Victorian Cancer Survivorship Program Phase II Grants Scheme, the program established a nurse-led cancer survivorship clinic and a teledhealth clinic. Preliminary results of the nurse-led clinics show the model is acceptable to cancer survivors and oncology professionals. The cancer survivorship nurse also liaises with cancer survivors to develop survivorship care plans which are shared with medical specialists and GPs. GPs reported the plans were useful for the ongoing care of the patient and were positive about shared care with specialists, seeing the benefits for patients and practitioners. Further research is needed to examine communication systems and the resourcing of patients and practitioners.

Contact eli.ristevski@monash.edu

Optimal care pathways for Aboriginal and Torres Strait Islander people with cancer: health professional learning and practice needs

In conjunction with Gippsland Regional Integrated Cancer Services and Grampians Integrated Cancer Service, Dr Eli Ristevski has surveyed health professionals providing oncology care from medical, nursing and allied health staff to identify their learning and practice needs to implement a new Optimal Care Pathway (OCP) for Aboriginal and Torres Strait Islander people diagnosed with cancer. The OCP was released in 2018 with the aim of improving the significant disparities in cancer survivorship outcomes and treatment experiences of Aboriginal and Torres Strait Islanders. Preliminary data shows gaps in cultural safety training and widespread learning needs across the whole optimal care pathway and further work will examine the OCP’s implementation.

Contact eli.ristevski@monash.edu

Care coordination can reduce unmet needs of persons with severe and persistent mental illness

People with severe and persistent mental illness (SPMI) have multiple and complex needs, many of which are not health related. Mental health services are unable to address these needs without collaboration with other agencies. In the absence of this collaboration, those with SPMI often fall through the system cracks and are unlikely to experience recovery. This study aimed to ascertain whether a care coordination model adopted in Australia’s Partners in Recovery (PiR) initiative in Gippsland was able to reduce unmet needs in people with SPMI and if meeting accommodation needs is associated with meeting other needs. Our results showed that care coordination is a useful way to address multiple and complex needs of those with SPMI and that while addressing needs, priority must be given to meeting accommodation needs.


Contact anton.isaacs@monash.edu

2020 Leon Piterman Early Career Researcher Publication Prize for Social and Educational Research

Theme Leads:
Dr Matthew Carroll and Dr Eli Ristevski
A key focus of our 2019-2022 research development strategy is to provide training to Monash clinical staff and health service personnel across our footprint in research, evaluation and quality improvement. This comprehensive training scheme builds essential research skills for health services in these areas, across our regions.

Delivered by Professor Darryl Maybery, Dr Alison Beauchamp, Dr Anton Isaacs and Dr Melissa Hopgood, this involved two separate days of face-to-face training and follow-up individual mentorship support.

In 2019-20, twenty-six workers from health services and seven Monash staff from Mildura, Bendigo and Gippsland participated in the training which included developing research and evaluation knowledge and skills, program logic, research design and a research protocol.

Contact darryl.maybery@monash.edu

Teach-back for consumers

Effective communication between patients and providers is a fundamental requirement of safe health care, yet many studies show that patients walk away from health appointments not fully understanding what they need to do. This study, funded by Safer Care Victoria, will develop an online learning resource for patients about how they can check their understanding using an approach called ‘teach-back’. The project is co-designed with consumers, including an expert panel and inclusion of consumers in filming of videos demonstrating use of teach-back.

Interviews are being conducted with consumers from four different health services, both rural and metropolitan, about their experiences of communicating with health providers. These findings will guide the content of the learning module, expected to be completed mid-2021.

Contact alison.beauchamp@monash.edu

Hospital medication errors: a cross-sectional study

Medication errors (MEs) are among the most common types of incidents reported in hospitals around the world. There is no uniform method of reporting and reducing these errors. This study aimed to identify the incidence, time trends, types and factors associated with MEs in a large regional hospital in Australia. Our findings suggest that the inexperience of health professionals and nurse–patient ratios might be the fundamental challenges to overcome. It was recommended that specific training of junior staff in prescribing and administering medication and nurse workload management could be possible solutions to reducing MEs in hospitals.


Contact anton.isaacs@monash.edu
Research Highlights

The fire in the Morwell open cut brown coal mine adjacent to the Hazelwood Power Station is believed to have caused community concern within Morwell and the broader community. In response to these concerns, and following extensive community consultation, the Hazelwood Health Study was established to examine the impacts of the mine fire.

The Hazelwood Health Study is the largest environmental health study of its kind in the world and involves multiple research streams targeting different health outcomes and different vulnerable groups. The study is led by Professor Michael Abramson (Monash Public Health and Preventive Medicine) and Dr Matthew Cancl. The Hazelwood Health Study was established to examine the impacts of the mine fire.

In 2020, Monash Rural Health researchers conducted a follow-up survey to the 2016-2017 adult survey. Over 700 people completed the survey, yielding insights into the ongoing mental health and wellbeing of the community following the Hazelwood event. Importantly, the survey was rolled out at the same time as the 2019-20 bushfire season which resulted in considerable smoke exposure. This will provide new insights into the impact of a current smoke event on a community already impacted by a previous event.

Contact matthew.carroll@unimelb.edu or visit hazelwoodhealthstudy.org.au

Monash Rural Medical Workforce Tracking study

The Monash Rural Medical Workforce Tracking study follows the career trajectory of Monash rural medical students who commenced their degree in 2004 onwards. It explores areas including characteristics at program entry, program exposure, and graduate outcomes. The study has data linkages to key datasets including the Australian Health Practitioner Regulation Agency (Ahpra), Medical Schools Outcomes Database (MSOD) and the Federal of Rural Australian Medical Education (FRAME). Findings from this study continue to inform aspects and offerings of the medical program at Monash.


Contact laura.major@monash.edu

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Contact laura.major@monash.edu

Supervision of high-risk early consultations in GP training

The project, funded by an education research grant from The Royal Australian College of General Practitioners, was a partnership between Monash Rural Health and Murray City County Coast GP Training (MCCG). This research explored how patient safety can be ensured during early GP registrars placements and developed a feasible and acceptable approach to the supervision of high-risk clinical situations in early GP training. The project concluded in 2020 and resulted in a call for help list for use in general practice, workshops to assist GP supervisors in implementing the list and the following publications:


Contact rebecca.kippen@monash.edu

Understanding, tracking and addressing the needs of Australian GP supervisors

This project is funded by General Practice Supervisors Australia (GPSA) under the Australian General Practice Training Program, and is a partnership between GPSA, Monash Rural Health and the University of Queensland. It involves the collection and analysis of a range of quantitative and qualitative data, with work to continue in 2021.


Contact rebecca.kippen@monash.edu

Longitudinal studies of historical Australian populations

This research stems from a number of projects funded by the Australian Research Council (ARC), and involves studying the demographic circumstances and long-term health and mortality outcomes of Australian populations in the nineteenth and twentieth century. These populations include convicts transported to Tasmania in the first half of the nineteenth century, the Koori population of nineteenth- and twentieth-century Victoria, and Australian men who served in the First World War.


Contact rebecca.kippen@monash.edu
Completions

Dr Rebecca Alitchin
Developing an implementation model to sustain family focused practice in mental health services.

Dr Rouve Jan Forbes
"Tales from the ashes": Exploring young people’s health and well-being in the aftermath of the 2009 Gippsland bushfires.

Dr Michael Naughton
The bidirectional impact linking a parent(s) mental health illness. and young person when both struggle with a mental health problem.

Journeys

Eliza Meggetto
Improving organisational health literacy in rural health services.

Jonine Naughton
Choice and partnership approach (CAPA): Are CYMHS services improved with this model of practice?

Natali Cvetanovska
Health communication: Empowerment and the role of the patient.

Likke Putri
Factors associated with rural and remote practice for early-career doctors in Indonesia.

Kylie Cocking
Making children explicit in the design of integrated system approaches to domestic violence.

Zoe Duncan
The levels and trends of anxiety and depression in a community recruited cohort of people who regularly use methamphetamine.

Simon Jones
The spiritual path: the benefits of spirituality in nature for mental health, wellbeing and recovery.

Clare McHugh
Factors affecting the delivery of, and engagement in, community participation interventions for stroke survivors.

Narelle McPhee
Barriers to participation in clinical trials for metropolitan and rural/regional cancer patients.

Ongoing

Tim Campbell
How child and adolescent mental health services (CAMHS/CYMHS) can best respond when a young person attending their service has a parent who also experiences a mental health problem.

Elyssia Meggetto
Improving organisational health literacy in rural health services.

Jonine Naughton
Choice and partnership approach (CAPA): Are CYMHS services improved with this model of practice?

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BACHELOR OF MEDICAL SCIENCE (HONOURS)

The Bachelor of Medical Science (Honours) is an opportunity for our medical students to undertake a one-year independent research project which exposes them to a wide range of real-world clinical and basic science problems.

This project culminates in a 15,000-word thesis, that is critically reviewed by expert researchers within the School. Students gain skills in research design and methods, analysis, and communication, enhancing their experience upon returning to medicine, and making them highly sought-after candidates for later training programs.

We congratulate our 2020 cohort for their contributions to Monash Rural Health through their outstanding research projects:

Nicola Ivec
What are the indicators of graduate paramedics entering the rural workforce?

This study explored the relationship between background, placements during tertiary studies, and principal practice position after graduation amongst paramedicine students and graduate paramedics. It also examined the practice intentions of paramedicine students, and the factors which influence principal place of practice after graduation. In addition, it sought to identify how the findings reflect factors known to influence practice location decision making in other health professions.

We found that rural-origin paramedicine students were less likely than their metropolitan counterparts to have rural placements during their degree. Rural background significantly predicts practice in a rural location as a graduate; however, the number of rural placements during study does not. Practice intentions of students are stable during their studies, with a majority preferring to practice in major urban centres regardless of year level or place of origin.

Nathan Dalton
Short- and long-term outcomes of Medical Emergency Team calls at an Australian regional hospital.

A medical emergency team (MET) is a group of clinicians in a hospital setting with specific training, skills and resources which enable them to respond to timely and appropriate fashion to clinical deterioration occurring in patients outside of the intensive care unit. The aim of this study was to investigate the short- and long-time mortality outcomes of patients who had a MET call at Bendigo Health and to describe the associated patient and MET call characteristics. Our study included 6,499 eligible patients. Factors significantly associated with both higher 30-day and long-term mortality included increasing age, male sex, medical admission, presence of limitation of medical treatment (LOMT) before first MET call and LOMT instituted by the MET. To our knowledge, this is the first study to document the characteristics associated with long-term mortality risk in MET patients.

Yode Jayachandran
To accurately predict axial lengths from widefield retinal images using a neural network.

Convolutional Neural Networks (CNNs) have been successfully used in many areas of ophthalmology, such as diabetic retinopathy, AMD, glaucoma and retinal detachment. Our aim was to use a CNN to accurately predict axial length from widefield retinal images. Data images were collected from patients who had undergone ocular biometry and had widefield retinal imaging between 2001–2020. Our work demonstrated for the first time that axial length can be predicted from a retinal image by a CNN, with moderate accuracy in most eyes and high accuracy in some eyes. There is potential for this technology to aid ophthalmologists as a cross-check mechanism for axial lengths before cataract surgery. Countries with underdeveloped medical resources may use this inexpensive technology in satellite clinics to measure eyes for cataract surgery if gold-standard techniques are not accessible, or possibly to screen for axial length related pathology such as nanophthalmos and high myopia.

Dr David Reser
Honours Coordinator: Dr David Reser

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Dr David Reser
Honours Coordinator: Dr David Reser

GRADUATE RESEARCH

We are proud to nurture the next generation of rural health researchers. In 2019-20, six new students commenced their PhDs with Monash Rural Health. This brings our cohort of graduate research students to 14 as of December 2020.

In 2020, we introduced monthly online meetings for our PhD students. These include presentations from an academic or student, followed by an informal get-together to provide an opportunity for students to catch up and share experiences with each other. Congratulations to Simon Jones for representing Monash Rural Health in the Three Minute Thesis (3MT) Faculty Final.

We congratulate our 2020 cohort for their contributions to Monash Rural Health through their outstanding research projects:

Nicola Ivec
What are the indicators of graduate paramedics entering the rural workforce?

This study explored the relationship between background, placements during tertiary studies, and principal practice position after graduation amongst paramedicine students and graduate paramedics. It also examined the practice intentions of paramedicine students, and the factors which influence principal place of practice after graduation. In addition, it sought to identify how the findings reflect factors known to influence practice location decision making in other health professions.

We found that rural-origin paramedicine students were less likely than their metropolitan counterparts to have rural placements during their degree. Rural background significantly predicts practice in a rural location as a graduate; however, the number of rural placements during study does not. Practice intentions of students are stable during their studies, with a majority preferring to practice in major urban centres regardless of year level or place of origin.

Nathan Dalton
Short- and long-term outcomes of Medical Emergency Team calls at an Australian regional hospital.

A medical emergency team (MET) is a group of clinicians in a hospital setting with specific training, skills and resources which enable them to respond to timely and appropriate fashion to clinical deterioration occurring in patients outside of the intensive care unit. The aim of this study was to investigate the short- and long-time mortality outcomes of patients who had a MET call at Bendigo Health and to describe the associated patient and MET call characteristics. Our study included 6,499 eligible patients. Factors significantly associated with both higher 30-day and long-term mortality included increasing age, male sex, medical admission, presence of limitation of medical treatment (LOMT) before first MET call and LOMT instituted by the MET. To our knowledge, this is the first study to document the characteristics associated with long-term mortality risk in MET patients.

Yode Jayachandran
To accurately predict axial lengths from widefield retinal images using a neural network.

Convolutional Neural Networks (CNNs) have been successfully used in many areas of ophthalmology, such as diabetic retinopathy, AMD, glaucoma and retinal detachment. Our aim was to use a CNN to accurately predict axial length from widefield retinal images. Data images were collected from patients who had undergone ocular biometry and had widefield retinal imaging between 2001–2020. Our work demonstrated for the first time that axial length can be predicted from a retinal image by a CNN, with moderate accuracy in most eyes and high accuracy in some eyes. There is potential for this technology to aid ophthalmologists as a cross-check mechanism for axial lengths before cataract surgery. Countries with underdeveloped medical resources may use this inexpensive technology in satellite clinics to measure eyes for cataract surgery if gold-standard techniques are not accessible, or possibly to screen for axial length related pathology such as nanophthalmos and high myopia.

Dr David Reser
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