

SUSTAINABILITY

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Apologies

Our sincerest apologies from O&G Magazine's Editorial team to Dr Marilla Druitt and Sue Croft OAM for editorial errors in their articles: *How to manage pain pre-operatively* by Dr Marilla Druitt and *A physiotherapy perspective* by Sue Croft OAM in the Autumn 2024 edition of O&G Magazine. The updated articles can be found at: www.ogmagazine.org.au

RANZCOG acknowledges and pays respect to the Traditional Custodians of the lands, waters and communities across Australia, on which our members live and work, and to their Elders, past, present and future. RANZCOG recognises the special status of Māori as tangata whenua in Aotearoa New Zealand and is committed to meeting its obligations as Te Tiriti o Waitangi partners.

From the President



Dr Gillian Gibson
President

The term sustainability is synonymous with the environment. It brings to mind how we live, work and travel, and a gnawing anxiety about future generations. As a baby boomer, I grew up without much thought for how the climate impacts the way we live, and now it is at the forefront of everything we do. Every week I face the dichotomy of repurposing and recycling at home, getting to work by electric vehicle, only to watch a large disposal bin fill with plastic after a day in the operating theatre.

Considering the high healthcare carbon footprint, what is our responsibility as clinicians and what is the role of the College? The challenge is to balance sometimes competing and overlapping objectives. Among RANZCOG's strategic priorities¹ we aim to ensure our organisation is sustainable. This commits us to "embed social and environmental sustainability practices to all the College operations", but at the same time "to make considered decisions on all financial outlays, balancing the needs of the College against the members' and trainees' fees required to cover these costs".

The increasing rate of natural disasters placing strain on health systems and hospitals was highlighted recently at the 15th Biennial Pacific Society of Reproductive Health (PSRH) conference in Auckland. We also heard about the burden of cancer for Pacific women and efforts towards cervical cancer elimination, as well as the lack of education and access to sexual and reproductive health care. I was reminded how crucial it is that RANZCOG continues to help sustain women's health in the Pacific through educational scholarships and upskilling options in Australia and New Zealand through our longtime affiliation with PSRH.

We are aware of the threat to sustainability of O&G services and dependence on overseas trained specialists to address workforce gaps, particularly in Aotearoa New Zealand, and crucial to our subspecialties. The maternity care model in Aotearoa New Zealand is under scrutiny with an acute midwifery workforce shortage, and recognised burnout among obstetricians. RANZCOG will continue to advocate for the development of a women's health strategy in Aotearoa New Zealand which is enshrined in health legislation but has not, as yet, had the attention it deserves. This is fundamental for predicting future workforce needs.

The closure of private maternity services in Australia, has often precipitated gaps in access to care in regional and rural areas. We have continued to advocate to the Commonwealth Government the importance of a thriving maternity service to sustain medical services in regional and rural areas. Reform is underway following the Kruk report², streamlining accreditation "to fast track more cohorts from countries with similar regulatory systems". RANZCOG has

been selected by the Australian Medical Council, along with RACGP, ANZCA and RANZCP in the first tranche to adapting our current processes. The Council of Presidents of Medical Colleges (CPMC) is advocating strongly for colleges to remain involved in future Specialist International Medical Graduate assessment pathways.

In March, RANZCOG hosted the third Women's Health Summit in Canberra gathering stakeholders from across Australia. The Assistant Minister for Health and Aged Care Ged Kearney spoke about gender bias in health care, as well as sustaining a workforce in the regional, rural, and remote Australia. You may have seen National news coverage with RANZCOG Vice-President Nisha Khot recommending closing the gender gap with the Medicare Benefits Schedule in Australia, which delivers higher out of pocket costs for women compared to men in reproductive health care.

As doctors we come under the spotlight as contributors to healthcare carbon emissions with air travel for continuing professional development and educational purposes. Much of the College's work is achieved thanks to a large voluntary member group and while most of this happens online, the value of in-person meetings shouldn't be underestimated. This is particularly true for advocacy efforts with external stakeholders like the government. Given the volume of travel associated with the President's role, I have committed to flying economy class between New Zealand and Australia as much as possible — more sustainable for the environment, not to mention the College budget!

I hope you enjoy this winter issue of *O&G Magazine* focused on sustainability in obstetrics and gynaecology.

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From the CEO



Vase Jovanoska
Chief Executive Officer

Sustainability is a subject that can be looked at through many lenses. When we talk about sustainability, it can refer to environmental sustainability, sustainability of the workforce, the O&G specialty, or the College as an organisation. In our work here at RANZCOG, we are always striving to ensure the future of O&G and the College through a range of initiatives.

A key piece of work at the College in recent months has been ongoing engagement with the government in relation to ensuring a sustainable medical workforce into the future. We are having continuing discussions with key stakeholders about the ongoing challenges relating to the long-term sustainability of O&G workforce.

In May, the College hosted a roundtable discussion with a broad range of stakeholders to discuss the shortage of medicines and medical devices, particularly those that are used in obstetrics and gynaecology. This is an issue that has been widespread and is having a serious impact on women's health services in Australia and New Zealand. This roundtable is just one way that the College is advocating for the ongoing sustainability of women's health care. Other recent advocacy efforts have focused on calls for a review of the MBS to address gender inequities, involvement in the Victorian Inquiry into Women's Pain, access to services in rural and remote areas, and improved support for private practitioners, and sustainability of private practice. Our advocacy efforts continue to grow here at the College, and I encourage any members interested in participating in this work to get in touch.

In order to achieve our long-term vision for our members and women's health, it is essential that we consider the sustainability of the ongoing operations of the College. One way in which we have secured an additional source of ongoing revenue is through the Assessment, Learning and Examinations Centre at Djeembana. Through the operations of ALEC, we are less reliant on membership fees to continue optimal operations. As the political climate changes, so do

the regulatory demands on the College. We will continue to look at different options for resourcing to meet these demands into the future. I also want to acknowledge our volunteer workforce; we rely on our members to donate their time to College work to advance women's health and our specialty. I am conscious that this creates additional time pressures for the membership, and I speak on behalf of all of us here at the College when I say how grateful we are to your ongoing commitment to the College's work and the future of O&G.

Looking at environmental sustainability, I am pleased to announce the formation of the Environmental Sustainability Working Group, led by Dr Kris Barnden. This group will develop and advise the College on practices and strategies for future environmental sustainability, both as an organisation and impact on women's health. Every organisation needs to be conscious about climate change and their climate footprint, RANZCOG is no exception.

As such, the College has partnered with the Qantas Future Planet Program, offsetting our greenhouse gas emissions associated with corporate travel emissions and affirming our commitment to environmental sustainability. Through this partnership, the College is participating in the Fire with Fire Project, funding Aboriginal land and bushfire management in Arnhem Land, and supporting Aboriginal people in returning to, remaining on, and managing their country. A healthy climate will ultimately lead to a healthier population, including women and babies into the future.

I hope you enjoy this edition of O&G Magazine, and thank you for your continued interest in the College.

LEADERS FOCUS



Professor Kirsten Black
MBBS, MMed, FRANZCOG, DUU, FFSRH PhD,
Chair RANZCOG Sexual and Reproductive Health Committee

This feature sees Professor Kirsten Black in conversation with women's health leaders in a broad range of leadership positions. We hope you find this an interesting and inspiring read.

Join the conversation on Twitter
#CelebratingLeadership @RANZCOG



Dr Kris Barnden
FRANZCOG, DDU

Kris, you have emerged as a leader in climate and sustainability within RANZCOG, what drove you to ensure these issues were addressed by the College?

I became involved with environmental advocacy because I was feeling a lot of grief and anger, and doing nothing wasn't an option anymore. As an obstetrician, it's a natural fit for me to focus my energies on the intersections between women's health and rights and the environmental crisis. I was inspired by the leadership shown by the Australian Medical Association (AMA) and other medical colleges, and I wanted RANZCOG to be part of that.

Where do you feel RANZCOG can have the biggest impact in the sustainability field?

I don't think most of us appreciate how respected the medical colleges and doctors are among policymakers and the public. We can show leadership by supporting the science around environmental threats and how these harm women's health, and promoting the actions needed to minimise those harms. We can build an ethos

of sustainability that enables fellows and members to make changes in their professional and private lives and become leaders in their communities. There's a push to get sustainability embedded in medical school and specialty training curricula and I think we should embrace that. The health system is a major contributor to greenhouse gas emissions and waste, and probably the most effective thing we can do about that is to practice evidence-based medicine with an emphasis on prevention and avoiding unnecessary interventions.

What are some "low-hanging fruit" items that the College could achieve?

Nitrous oxide is a potent greenhouse gas and leakage from piped systems is a major source of health system emissions, as well as being an occupational health hazard for midwives especially. I'd like to see RANZCOG provide resources and encourage fellows to raise the issue with their institutions.

It's not low-hanging fruit, but something we need to look at urgently are the specific challenges that women and women's health services face in times of crisis. With extreme weather events and natural disasters such as floods and fire becoming more frequent and severe, we all need to be aware of the vulnerabilities of our patient populations and workplaces and have strategies in place. I can see a clear role for the College here.

How do you describe your leadership style?

I think of myself as a facilitator rather than a leader—although I guess that's a form of leadership. I love helping people become involved in ways that chime with their passions and skills and linking them in with other people who have similar or complementary interests.

Who do you look up to for inspiration or mentorship in the climate and sustainability arena?

Professor Linda Giudice from the USA has been an incredible force in conducting research and raising awareness about environmental threats to reproductive health. Christiane Figueras is an international leader in climate negotiation, and also, when you listen to her podcasts "Mothers of Invention" and "Outrage and Optimism", she is very grounded and very funny. Bob Brown is another huge source of inspiration. But those are just the famous ones. I'm inspired by people around me daily. One of the most rewarding things about the environmental groups that I've been involved in is the lack of hierarchy. I've been especially inspired by the kids who organised the school strikes for climate, and the group of medical students I worked with to organise the 2019 Doctors for the Environment Australia conference in Hobart.

How do you maintain optimism regarding the issues of climate change and sustainability?

Right now, I'm working on acceptance, because there's such a huge discordance between how the world should be and how it is. It's easy to stay in our privileged bubble, and it's easy to be paralysed by nihilism and despair. I ask myself

what it means to live with dignity in a time of crisis, and how I'm going to justify myself to my grandchildren.

I try to focus my attention on the places where I have some agency and might make a difference, and to find a balance between working on individual change and systemic issues. For mental health, I find it helps to be part of a community of people with shared concerns, to practice gratitude, and to get out into nature as much as possible. And I've found it enormously rewarding to step outside of the Western scientific paradigm and explore other ways of understanding environmental and social issues – historical perspectives, indigenous world views, literature and poetry.

How can RANZCOG fellows get involved in climate and sustainability through RANZCOG?

We're in the process of forming a RANZCOG Environment and Sustainability Working Group. Expressions of Interest are currently being sought through RANZCOG Connect, and will stay open until after this edition of O&G magazine is published. I'm hoping one of the group's first projects will be to set up a network within RANZCOG that members can access for resources and share their concerns, experiences and stories.

Meet your councillors



Dr Vicki Carson
MBBS, FRANZCOG, DDU, Grad Cert Clin Edu

I currently work and reside in Naarm (Melbourne) and work full time across both public and private obstetrics. My O&G career surprised even me – initially as a junior doctor I was convinced I was going to be a physician. A surgical career held no interest for me at that point.

In my internship, I found myself happily but surprisingly pregnant earlier than I had planned. I followed my pregnancy with excitement, and it reminded me of how much I had loved women's health as an undergraduate. After my son was born, I made the decision to apply for the training program and was lucky enough to be successful, starting my training at the Royal Women's Hospital (RWH).

Having grown up in rural Victoria I was keen to return and took the opportunity to return to my hometown of Warrnambool for my country rotation (with my then second child who was four-months old) and again as a senior registrar (having my third child there!). I returned as a consultant to Warrnambool, working as a generalist. I was lucky enough to be given the opportunity while there to become the Deputy Director of the brand new Deakin clinical school and completed a degree in clinical education – a passion of mine.

I returned to Melbourne where I commenced work in both public and private, starting a group private practice. I continued to challenge myself and completed a DDU, chaired the SMS and became one of the two ITP coordinators at RWH. Gynaecology became less of my practice and early upon my return to Melbourne, I made the decision to stop doing major gynaecological surgery – a difficult decision but the right one.

Gradually, I have reconfigured my career and am now HOU of one of the maternity units at RWH and working in a different group practice, delivering at Head of Unit, Frances Perry House in the same building as my public work. I have had time to reflect over recent years on what I can give back to a specialty that has given me so much joy. I never thought I would take on leadership roles or give up surgery but have slowly realised that my contribution lies in mentoring, clinical governance and practice improvement. I continue private practice selfishly because the connection and relationships with patients truly makes me happy. I have recently become involved with the College and this is my first council term. I felt compelled to learn more about what the College does and how I could help. So here I am – learning how it all works and hoping to represent my colleagues who, like me, love the job and are equally surprised at where they ended up!



Dr Uchechukwu Ijeneme
MBBCh, MRCOG, FACOG, FRANZCOG

I am one of the Councillors representing Western Australia. My journey in obstetrics and gynaecology started in Nigeria, where I obtained my MBBCh from the University of Calabar.

I worked as a medical officer with the Catholic Mission Hospital before starting residency training in obstetrics and gynaecology in May 2006. In 2008, I moved to the United Kingdom where I did my specialisation and obtained my CCT in 2019. The journey of life brought me to Australia in October 2019. During the process of coming to Australia I had a good experience in my dealing with the College.

I decided to become a Councillor because I believe in collective responsibility. We can only effect changes positively by participating in the process. The College is very dynamic and responsive, these attributes are what drew me to the College after completing my period of oversight as an SIMG. As an SIMG that has had both sides of the world, I felt my contribution will contribute towards the goals of the College.

Member engagement is one of the issues of the College and, it's not particular to Western Australia. It's a work in progress and it will never be over, but we can always manage it by being receptive to the needs and goals set out by the College.

Western Australia will also benefit from having a second training centre as it will increase the needed workforce at every level of our specialty for the ever-increasing population of the region. The region is looking forward to the support of the College towards this.

A lot has been achieved by the College through our collective efforts in women's health, training, global health, and advocacy. We are being challenged in the world right now by natural disasters and man-made disasters, our collective response is needed. We have done it before, and we will continue to do it. Do you know why? It's because of your support and engagement with the College.



Dr Uchechukwu Ijeneme is a Consultant at Fiona Stanley Hospital, Murdoch, Western Australia. Photo: Supplied by Dr Uchechukwu Ijeneme



Dr Vicki Carson with her dog, Willow, a 10-year-old Cavoodle. Photo: Supplied by Dr Vicki Carson

RANZCOG's historical collection



Greg Hunter
Archivist/Historical Collections Administrator

In this issue of O&G Magazine, we take a look at a series of papier-mâché gestational models held in the College's historical collection.

In the early 19th century, a French medical student named Louis Thomas Jérôme Auzoux was frustrated in his studies of anatomy. Cadavers deteriorated quickly, and wax models for study were not readily available, making study and learning difficult. It was clear, for the advancement of medical education, that there was a need for "a life-like model that presented anatomical details, could be used repeatedly by students, was easily accessible to users and was relatively affordable."

After encountering a moveable wooden model at the Paris Academy of Medicine, Auzoux was alerted to the possibility of developing "a fully moveable anatomical body." Wood, however, warped and "was difficult to paint realistically." – something more durable, and more realistic, was needed. Inspired, Auzoux went to work, visiting "sculptors, painters and modellers for advice" and taking inspiration from everyday objects. In 1819, Auzoux encountered the work of Jean-Francois Ameline, a professor of anatomy who made papier- mâché models, and realised he finally had his answer.¹



An Auzoux model with woollen placenta cord. Photo: Jess Bacon

By 1822, Auzoux had completed his first model and presented it to the Paris Academy of Medicine, and by 1825 had established a workshop in France to manufacture his models². Auzoux developed a special paste for his models which used "flour glue, finely shredded paper, chopped rags, oakum, calcium carbonate...and powdered cork". This substance was "highly malleable when wet and hardened as it dried so that it retained whatever shape it had been given." In addition, the organic nature of the material contributed to the realistic feel of the models.¹

The models were designed to be dissected and taken apart, and Auzoux claimed that people could learn anatomy by using his models without needing an instructor³. The models had detailed labels, to assist with learning, as well as numbered labels to demonstrate the assembly order for the model. Auzoux's models were a huge success, and by the 1860s his business had become "ostensibly an international empire."¹



An internal view of one of Auzoux's papier-mâché models. Photo: Jess Bacon

The College is fortunate to hold a series of eight models produced by Auzoux's factory. Donated to the College by Dr Nic Jools in 2003, these models show the life stages of a foetus as it develops, from implantation of the egg and sperm in the ovary to full term.

The body of each model is papier-mâché, with placentas made of felt wool, and brass hooks. Model parts are numbered and labelled for identification on all of the models, and to assist with learning. There is also a lid to the uterus on each model, allowing for an internal as well as external view.

Beautifully designed, and finely detailed, these models provide a window into medical education in the 19th century and are an elegant example of a sustainable innovation to medical practice.



An external view of one of Auzoux's papier-mâché models. Photo: Jess Bacon

All of Auzoux's papier-mâché models were kindly donated by Dr Nic Jools in 2003. They are currently on display at Djeembana College Place in Naarm Melbourne. Members and trainees are invited to visit the College to view these fascinating insights into obstetrics history.

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The Auzoux models are amazingly intricate and well-designed. Photo: Jess Bacon

Brian Spurrett Oration 2024

Making a difference: We in the PSRH can do it



Emeritus Professor Peter Stone

MBChB, DipObs, MD, FRCOG, FRANZCOG

This is an edited version of the Brian Spurrett Oration delivered at the Pacific Society for Reproductive Health 15th Biennial Conference held in Auckland, Aotearoa New Zealand from 18 – 22 March 2024 by Emeritus Professor Peter Stone, with the support of Brian's family and the Pacific Society for Reproductive Health (PSRH)

As a long-standing member of PSRH myself, it was a great honour to have been asked to deliver this year's Brian Spurrett Oration. As well as acknowledging the Maori of the land here, and my own maunga (Mangere, where I grew up), I want to especially acknowledge all those today who have had adverse pregnancy or perinatal outcomes, as well as those who have been victims of domestic violence.

I want to start with a story. In 1975, I excitedly went to Apia, Samoa for my sixth-year elective. It was a chance to learn paediatrics as well as have a good time in the Pacific. But I was shocked, not by the potholed road from the airport to the old, dilapidated hospital, but what I saw in that hospital. I could not believe it. I saw children with diseases of malnutrition including kwashiorkor and marasmus. How could this be? What was happening? There was fruit on the trees, taro growing everywhere, the Saturday market was full of produce. Why were these infants being brought into the hospital with these diseases?

Some were sick from infections, or from the use of formula (due to problems preparing and storing powdered milk, especially after it has been made up) instead of breast milk because it was believed to be better. Some had parents caught up in personal family and financial struggles. Some children survived, some did not. As a young impressionable trainee intern not used to death, this was truly shocking. I asked myself what will happen to the survivors. How will these children grow up? What are the consequences of this? Let's have a look first at global infant mortality.

New Zealand too has a problem with infant mortality. New Zealand ranks the ninth highest in the OECD nations¹. Who are the children who are dying? As New Zealand's national mortality data collection shows, all-cause mortality in 0–14-year-olds (excluding neonates) from 2014–2018 were Maori and Pacific infants aged 0–4 years and those from low-income families¹. There are over 300,000 children living in poverty and severely constrained conditions in New Zealand. The vast majority of these children are Maori or from the Pacific region¹.

Tackling child poverty

So, how do we address child poverty? My medical school friend and colleague paediatrician Dr Johan Morreau and Dr Felicia Low at the University of Auckland's Koi Tū – The Centre for Informed Futures have just published a paper, Early investment: A key to reversing intergenerational disadvantage and inequity in Aotearoa New Zealand², which presents approaches to tackling the issues of poverty and its effects. For the best chance of breaking the cycle of intergenerational disadvantage, New Zealand urgently needs to invest in young people before they become parents, in pregnant women and their families, and in babies and children. The data from the University of Auckland modelling and literature review shows unequivocally that investment in prenatal programs and early years programs yield most return on the investment in human capital.

How can this be done? How do we find out what the woman's and parents' needs are? We can adopt a He Korowai Manaaki approach (pregnancy wraparound care) so that our clinics and home visits are places for shelter, care and nurturing.

I was part of a project set up in Wairoa on the east coast of the North Island of New Zealand, a small, isolated town with a proud history but suffering from rural decline. There are 120 births each year in a community that is 80 per cent Maori. We set up a pilot project to deliver high-quality ultrasound in the clinic, where pregnant women also met with midwives. Based on the success of this pilot, we have just completed a randomised controlled trial of two forms of pregnancy care, comparing outcomes of standard care to wraparound care. It appears that vaccination rates, contraceptive use after pregnancy, linkage to social agencies and engagement with general practice after the birth are all improved with wraparound care, demonstrating that parents-to-be engaging with the maternity system as early on in the pregnancy as possible is essential.

It is not only in pregnancy that we can make a difference. We have work to do with intrapartum care as well. We have a neonatal encephalopathy group in New Zealand which analyses and publishes data. This group has shown that there are indeed modifiable factors, which if addressed, would improve the outcome for our children, as has been shown in work by Dr Lynn Sadler and others³.

After birth we also have work to do to make a difference. We need to promote safe sleeping practices, no smoking around babies, and the use of the wahakura (pepi-pod) so that we can reduce sudden unexpected death in infancy (SUDI) in culturally appropriate ways. It is sad to note that, according to the New Zealand Ministry of Health, the number of infants who die from sudden unexpected death is not declining and that the rate of SUDI is higher for babies who are Māori or who live in areas of high deprivation⁴.

Maternal mortality and gender-based violence

We have talked a lot about our offspring. But what about women? Maternal mortality remains high in the Pacific. In New Zealand, the maternal mortality ratio (MMR) is nearly twice that of Australia or Sweden. And in Pacific nations that do report to UNFPA, such as Papua New Guinea, Solomon Islands and Kiribati, the MMRs are well above the very conservative Sustainable Development Goal of a MMR of 70 per 100,000 live births⁵.



Emeritus Professor Peter Stone and RANZCOG President Gillian Gibson at the 2024 PSRH Conference. Photo: Carolyn Poljski

And maternal death is not the only issue. We cannot hide from gender-based violence. The horrifying figures from the recent Women's Refuge Annual Report in New Zealand⁶ should make for very uncomfortable reading. There were 50,000 referrals to Women's Refuge last year in New Zealand. Of these, 20,000 women were pregnant. Forty percent of women were assaulted during pregnancy and 14% had been coerced into changing their pregnancy plan. Figures from the Pacific suggest even higher rates of violence against women in some countries.

How else can we make a difference? What are our obligations to people in our region? For starters, we can all try to practice the three Cs:

Care: delivery of quality care

Compassion: always showing compassion and kindness

Creativity: thinking outside the square to find solutions to problems.

How can we better support women? In the words of Professor Caroline Homer: "Midwives are at the forefront of providing social and emotional support that women having a baby can get access to essential services." In addition to midwives, we need to ensure women have access to social and support workers.

We can make a difference as professionals, including following accepted guidelines from organisations such as WHO and UNFPA. They provide use with a good structure from which to base our practice. We also need to audit our outcomes. We need to know how we are doing and where we can make improvements and be transparent with our patients. We need to keep data so we can observe change over time. And we need to keep up to date, including attending PSRH Biennial Meetings and other educational activities.

What can PSRH do specifically? PSRH can play a role in education, mentoring and making political submissions. We need to be political, lobbying members of Parliament or funders.

So, friends, if you remember nothing else from this oration, please remember that you can make a difference starting with the three Cs.

Emeritus Professor Peter Stone, MBChB, DipObs, MD (Bristol), FRCOG, FRANZCOG, School of Medicine, University of Auckland and Honorary Professor, National Hospital for Maternal and Child Health, Mongolia, delivered the Brian Spurrett Oration with support from the RANZCOG Women's Health Foundation.

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A lasting legacy

Dr Mukhtiar Sidhu

MBBS, FRCOG, FRANZCOG (Ret)

“Australia welcomed my family and I with open arms in 1976, and this endowment is one way my wife and I would like to return the gesture with gratitude.”
- Dr Mukhtiar Sidhu

Earlier this year, the College received a generous bequest from retired fellow Dr Mukhtiar Sidhu and Mrs Raghbir Kaur Sidhu and the Sidhu family. Thanks to this bequest, the College will support and deliver The Mukhtiar and Raghbir Sidhu RANZCOG Asian and Pacific developing Countries Education Grant. Here, Dr Mukhtiar Singh Sidhu shares some memorable moments from his lifetime commitment to O&G work and what he and his family hope the Grant will achieve.

Tell us a bit about your family & background

I was born in a small village in the state of Punjab, India, in 1937. My father had emigrated to Singapore, where he was working on the British Naval Base in Sembawang, in the north of the island state. My mother and I joined him by boat in 1941, shortly before the fall of Singapore to the Japanese. So, I spent some of my early years living under Japanese occupation, then started school at the age of nine once the region returned to British governance. We were part of a close-knit Indian Sikh diaspora that provided personnel on the Naval Base including guards, police officers and dock workers (my father was a crane driver at the Naval Base). I grew up in Singapore, attending school and then university there, which was achieved through a combination of good academic results, effort, and various bursaries and scholarships.

Why did you choose to pursue a career in O&G?

I graduated from university in late 1962, and at the time there were two main public hospitals in Singapore: a general and maternity hospital, Kendang Kerbau. I spent my first six months as a graduate “houseman” at the general hospital, and my second six months at Kendang Kerbau (KK) Hospital, and there I remained! At first, this was primarily driven by doctor shortages and where I was needed most but I enjoyed the specialisation and decided to pursue it.

What were the early days of your career like?

My experience at the KK hospital in the early days of my career stands out the most. In around 1963, this hospital had around 44,000 deliveries in one year (which equates to an average of 120 births a day) and I was one of a small handful of trainee doctors working with other staff to achieve this. As trainees, we covered all routine and complex situations including caesarean sections, forceps

and breech deliveries alongside a range of gynaecological procedures. It was an incredibly high pressure, high workload, and high-time commitment period in my career. I believe that the statistic of 44,000 deliveries was noted in the Guinness Book of Records. It was a quality training environment though; when the UK College of Obstetrics and Gynaecology visited around that time to audit the hospital, it was impressed with the standards and the low maternal and neonatal morbidity and mortality rates, and approved the hospital to provide 18 months out of the then two-year specialist training period (with the remaining six months and final examinations conducted in the UK).



Dr Mukhtiar Sidhu and Mrs Raghbir Kaur Sidhu. Photo: Supplied Dr Mukhtiar Sidhu

You gained your degree in the UK, what made you decide to settle in Australia?

I was fortunate that the Singapore government was offered scholarships for specialist training in the UK as part of the Colombo Plan. So, in 1967 I was able to complete my specialist training and exams in the UK, working at St Bartholomew’s (England’s oldest hospital) and Hammersmith. At 2,000 deliveries a year, the pace at St Bart’s was somewhat more manageable and I found that I was relatively experienced given the range of cases I had been trained to handle at the KK Hospital. After that, I returned to Singapore and continued to work in the public hospital system, eventually becoming a consultant and deputy head of a unit. By the mid-1970s, my wife Raghbir and I were very comfortably settled in our respective

professional lives (she was a teacher), but we felt that a more balanced and equitable education system would benefit our three young children. Although familiar with the UK, we had friends who had migrated to Australia and recommended it to us, and it felt like it would have more familiar and tolerable weather to boot. After investigation we made the call, and I accepted a position as Director of OBGYN at the Townsville General Hospital in 1976. In the process I believe I became the first doctor with an MBBS from Singapore to be accepted for registration in Queensland.

Any stand-out memories from your O&G career?

I have already mentioned my trainee time at KK Hospital and will add that by the time of my final specialist exams I had already performed 670 C-sections. One specific case that stands out is a C-section I conducted in 1974. I discovered a full abdominal pregnancy that had successfully gone to full term – both mother and baby survived.

I was pleased to have established, with fellow OBGYN Dr Noel Cassells, a purpose-built medical specialist centre in Townsville in the early 1980s. This centre ultimately housed an ophthalmologist, psychiatrist, neonatal paediatrician, gastroenterologist, and Dr Cassells and I as OBGYNs. It was fulfilling to be part of a multi-disciplinary centre, as we could discuss between us, as relevant, the needs of our patients and their children, and refer patients to each other.

I primarily practiced in a private practice in Townsville from 1977-1990 and in 1991 moved to Brisbane. There, I was Director of OBGYN at QEII and Logan hospitals in a time of expansion of OB and GYN departments and community needs on the Brisbane southside. As both the QEII GYN and



Dr Mukhtiar Sidhu's graduation ceremony at the Royal College of O&G in 1968, London, UK. Photo supplied by Dr Mukhtiar Sidhu

Logan hospital OBGYN departments grew exponentially. I took up the position of Director of GYN at QEII from 1996 to my retirement in 2012 at the age of 75. I relished the combination of clinical gynaecological work alongside evolving the administrative and operational functioning of the department. It was fulfilling to achieve progress such as establishing a uro-gynaecological subspecialist practice, and specialised laparoscopy and colposcopy clinics alongside our general clinics. I would like to acknowledge the contribution of all my staff and colleagues from this time, in particular Dr Michael Beckmann and Dr David Salter.

Tell us a bit about the Grant

The objective of the Grant is to fund activities aimed at improving maternal mortality or morbidity and assisting in fetal surveillance in developing Pacific and Asian countries. The Grant can be used to support current OBGYN trainees from these regions to participate in a 1–4-week clinical observership in any tertiary OBGYN department in Australia or New Zealand. This opportunity will allow participants to gain clinical knowledge which can be applied in their practice settings.

The Grant can also be used to support the provision of workshops and educational programs for midwives, doctors, and specialists in obstetrics or related fields in developing Pacific and Asian countries. The Fetal Surveillance Education Program (FSEP) can use the funding to deliver courses regularly in areas of need. Over time, it is hoped that we will see an improvement in maternal mortality and morbidity as a direct result of these educational courses being made available.

What inspired you to create the Grant and what are your main hopes for it?

My wife Raghbir and my intentions are two-fold. One, to make a contribution that pays forward after what has been a wonderful professional and personal life in Australia, and secondly, to harness the power of education. Education has been a very empowering factor in both of our lives and in our extended families and communities. Supporting the good work of the College was our way of paying forward within our adopted country. After discussion with the College, we felt that there was scope to support its efforts regionally to improve mother and child morbidity, and mortality through education.

We intend that the grant is perpetual, so it covers the breadth of countries across the South and Southeast Asian and Pacific region, evolving as different needs present themselves. Ultimately, we hope that the grant supports a positive legacy and contribution to enhancing women's and infants' health.

Find out more about The Mukhtiar and Raghbir Sidhu RANZCOG Asian and Pacific Developing Countries Education Grant here: www.ranzcog.edu.au/resources/mukhtiar-raghbir-sidhu-grant

A sacred connection with the land



Bailey Parata Thomas
Māori Women's Health Advisor

In the heart of te ao Māori (Māori world view), the concept of 'whenua' holds deep significance, a significance that extends to the essence of birth and the interconnectedness of land, ancestry, and identity. Understanding the dual meaning of 'whenua' in te reo Māori offers insights into the holistic view held by many wāhine Māori, and the broader cultural context in which childbirth occurs¹.

Whenua encompasses more than just physical land; it extends to the essence of birth, life, and the interconnectedness of all living things. In te reo Māori, 'whenua' has a dual meaning. Whenua refers to the physical land and landscape. This interpretation speaks to many aspects of the environment that sustain and nourish life. However, whenua extends beyond this one translation. It also has meaning tied to birth and ancestry. In this context, whenua represents the placenta, this connects a person to their ancestral land. The whenua is traditionally buried in the whenua (land) of the child's ancestors, symbolising a spiritual bond between the individual, their ancestral roots, and the land they have walked on.

The connection of people and land is evident in many aspects of te ao Māori². In the ceremony of pōwhiri (traditional welcome onto Māori land), visitors are formally welcomed onto the land, acknowledging their connection to the whenua and the ancestors who inhabit it. This ritual serves as an expression of the permanent bond between the people and their land, a bond that exceeds time and space. Similarly, the concept of kaitiakitanga (guardianship) underscores the Māori commitment to protecting and preserving the whenua for future generations. As guardians of the land, Māori regard themselves as caretakers entrusted with the responsibility of safeguarding the whenua for the benefit of all living beings.

In the rapidly evolving healthcare landscape, it is important that the challenges faced by wāhine Māori patients are not forgotten. Urbanisation, environmental destruction, and the loss of traditional practices pose significant obstacles to preserving the cultural nuances of childbirth experiences. RANZCOG needs to actively engage with our Māori communities to address these challenges and ensure that culturally safe care is a cornerstone of practice³.

Through collaborative efforts with community leaders, cultural advisors, and healthcare organisations, RANZCOG can advocate for policies and practices that support the preservation of Māori traditions during childbirth. By integrating cultural competency training into professional development initiatives, RANZCOG members can be equipped with the knowledge and skills needed to provide respectful and culturally safe care to all patients. There is unique opportunity to support and empower our Māori

patients in preserving their cultural practices during childbirth. By facilitating discussions and providing options for placental burial that align with cultural beliefs, this can ensure that the childbirth experience is meaningful and respectful of patients' cultural backgrounds by embracing the dual meaning of 'whenua' in te reo Māori, clinical practice is enriched and allows the fostering of deeper connections with whānau.

The practice of returning the placenta to mothers after childbirth is rooted in various cultural beliefs and traditions worldwide. In many cultures, the whenua is considered a sacred and vital organ symbolising the bond between mother and child, and its return to the mother is seen as a way to honour this connection. Some cultures view the whenua as a spiritual or life-giving entity and returning it to the whānau is believed to promote the health and wellbeing of both mother and baby⁴.

In addition to its symbolic significance, the placenta also holds practical value in certain cultures. For example, in traditional Chinese medicine, the placenta is believed to contain nourishing properties that can benefit postpartum recovery and overall health. Similarly, in other Indigenous cultures, the placenta has ritual and great value placed upon it⁵.

When returning whenua to whānau after birth, endeavouring to make sure the whenua is delivered promptly and safely is vital. If whānau cannot take it home soon after birth, it should be stored in a refrigerator that does not contain any food. Another alternative is to keep the placenta in a container on ice and in a portable cooler bag for no more than 48 hours prior to burial. If the whenua is needed for further examination and cannot be taken home by the whānau, communication of where the whenua is going, what is being examined, and when it can be collected will help whānau feel included and respected throughout the process.

However, it is important to recognise that not all Māori or Indigenous mothers may wish to participate in this practice, or non-Indigenous mothers may want to take their whenua home. Healthcare providers should always respect the individual preferences and beliefs of their patients. Cultural competence and safety are key in providing respectful and inclusive care to mothers from diverse cultural backgrounds, whether they choose to retain their placenta or not. By honouring and accommodating cultural traditions surrounding childbirth, healthcare providers can help implement cultural safety and support for mothers during labour and postpartum⁶.

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The practice of returning the placenta to mothers after childbirth is rooted in Māori culture. Photo: Adobe Stock

RANZCOG's Consumer Network



Tara Forde

RANZCOG's Consumer Network Working Group Member

Tara Forde (she/her) is a member of RANZCOG's Consumer Network Working Group and is an avid fan and user of O&G services. She is a proud mum to two toddlers and a public servant in Wellington, Aotearoa. She looks forward to living in a world with a stable climate.

Bringing new life into the world is a momentous life-changing event. For me, my baby, and my whānau. But this shouldn't come at the expense of the planet. How to integrate sustainability into childbirth is something new parents are increasingly thinking about. I want to bring my children into the world in ways that uphold my values. And of course, I want my baby here safely and well too.

Having strong environmental values is increasingly something that society expects more. We know climate change is real, we know we all need to take action to reduce our greenhouse gas emissions. Australia's health system contributes approximately 7% of the nation's CO₂ emissions — an output equivalent to the whole of South Australia.¹ Aotearoa's health system is estimated to emit between 3 and 8% of the country's carbon emissions.² The health sector knows it is facing challenges with sustainability. The five most significant sectors within healthcare in Australia regarding total CO₂e emissions were: public hospitals 34%, private hospitals 10%, other medications 9%, benefit-paid drugs 9%, and capital expenditure for buildings 8%.³

The good news is that health systems are part of both the problem and the solution. New Zealand is leading the developed world on phasing out a potent greenhouse gas used in surgeries⁴. Desflurane is one of a cluster of gases used in healthcare to put patients to sleep for surgery. All-coal boilers are being removed in New Zealand hospitals, at considerable government investment. What is good for the environment is also good for health. People shouldn't be going to hospitals to be exposed to dirty particulate matter that makes them sick.

Each of these steps towards environmental sustainability and lowering carbon emissions has required leadership and concerted efforts of people working together. People at each stage of their health journey are now starting to ask about the environmental footprint. As a consumer, I am increasingly seeking to ensure my actions and planetary impact are aligned with the values I profess. I think this is challenging in O&G specialties, but particularly relevant.

When I have birthed my babies, I will freely admit the environmental consequences were not my first thought. I have been vulnerable and confused, in pain and needing relief, and then flooded with love. I have wanted and required medical assistance and oversight to keep things on track. I may want less waste and safely reusable medical

instruments but it won't be me driving it on my big day. Consumers alone cannot bring about these changes in the health system.

It will be the people at work, the medical professionals who hold sway and have the power to change these things. It requires structural change and will require medical professionals' leadership. It will require your advocacy, involvement, and decision making, to ensure patient and planetary needs are met. It will require diversity of actions, from action plans, investments, working groups, hospital committees, government intervention, baseline monitoring and reduction, supply chain investigation and whatever other creative expression we can wrangle to impact change. I urge you to get involved and use your abilities as we are in the fight of our lives to maintain a liveable planet.

As a patient, I am aware there is always a prioritisation and balancing of needs that goes into so many decisions within healthcare. It does make me uncomfortable to think that my healthcare would be compromised in pursuit of sustainability. There will be challenges of ensuring patient voice and experience is still heard in this time of change. Having patients involved in these decisions will ensure people further trust the care and provision of our health system. The trade-offs made must uphold the ethos of do no harm. And if compromises are to be made, I want to know it is for a significant and meaningful change in our health system, and ideally, I want to be involved as a consumer in those decisions.

The health system cannot afford to see itself as above these challenges. Of course, when you need medical treatment, you want the best. So, what structural changes can we make to enable better individual decision making in the moment? We know there are social determinants of health that drive so many of the cases that end up needing intensive intervention. As I am sure you are aware, these are long-term and structural issues that aren't going away. We can always do better. I am asking O&G specialists to consider what ability they have to impact change and use that power. And consider how the patient's interests are being represented in that process. And then let's all mahitahi (work together) to make it happen.

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Updates from our Research & Policy team



Professor Cindy Farquhar
Dean of Research & Policy

Who doesn't love a great clinical guideline? You may not know that RANZCOG has a Research and Policy Team, who are responsible for the development and upkeep of our evidence-based clinical guidance documents. There are approximately 80 existing clinical statements – 50 are for obstetric topics and 30 are gynaecological and sexual and reproductive topics. We know from survey data that the fellows appreciate the statements, but we also know that there are many overlaps. The team has undertaken the challenge to rationalise and update clinical guidance documents by consolidating existing statements by topic.

The process of developing and updating RANZCOG clinical guidance documents changed in 2022. It involves an initial expression of interest for fellows, GP obstetricians /associates, trainees, community representatives (such as midwives and consumers), and other stakeholders affiliated to the College to participate in working groups. These Statement and Guideline Development Groups, alongside the Team, prepare clinical questions, review evidence searches and undertake quality appraisals to develop evidence-based recommendations and practical advice for clinicians. The documents are reviewed by the Women's Health Committee and a range of internal and external stakeholders through consultation. Final approval is provided by the Committee and College Council.

In 2023-24 we published the following updated statements:

- C-Gyn 1 Female genital mutilation/cutting
- C-Obs 2 Home births
- C-Obs 20 Placenta accreta spectrum
- C-Gyn 25 Management of the adnexa at the time of hysterectomy
- C-Obs 31 Care in labour in the absence of pregnancy complications
- C-Obs 39 Caesarean birth on maternal request
- C-Obs 44 Pre-pregnancy and pregnancy related vaccinations
- C-Obs 61 Early pregnancy screening and prevention of pre-term preeclampsia and related complications

There have also been interim updates of the following statements:

- C-Obs 12 The use of Misoprostol in obstetrics and gynaecology
- C-Obs 23 Timing of elective caesarean section
- C-Obs 32 Responsibility for neonatal resuscitation at birth
- C-Obs 46 Subclinical hypothyroidism and hypothyroidism in pregnancy

And two updates of Workforce statements:

WPI-14 Position Statement on the Provision of Obstetric Anaesthesia and Analgesia Services

WPI-18 Fatigue and the Obstetrician Gynaecologist (full update led by a working party)

In October 2023, we also published the first RANZCOG guideline on Abortion Care. The document was launched at the ASM and has had over 4,000 visits in the first six months since publication. We also prepared a decision aid to help with deciding between surgical and medical abortion.

We are currently updating the existing Australian clinical practice guideline for the diagnosis and management of endometriosis. This is intended to be a 'living evidence guideline' by mid-2025.

Thank you to all members of the Statement and Guideline Development Groups and RANZCOG members who have provided feedback during consultation periods. All members who take part in working groups receive CPD hours (Outcome Measurement Domain).

Updating statements and guidelines is an ongoing activity, so look out for the next call for expressions of interest to be involved in working groups supporting this process.

We have also published a Handbook for Statement and Guideline Development and two short training videos. Please contact the team at womenshealth@ranzco.edu.au if you would like to see any of these resources.

You can access our clinical guidance documents at: ranzco.edu.au/resources/statements-and-guidelines-directory.

Meet the Research & Policy team

Professor Cindy Farquhar – Dean of Research & Policy
Katie Coulthard – Research & Policy Lead
Kate Smith – Project Officer, Endometriosis
Angela Hunter – Research and Policy Senior Coordinator
Anita Kosterlitz – Administration Officer



From L to R: Kate Smith, Katie Coulthard, Professor Cindy Farquhar. Photo: RANZCOG

Obituaries

Obituary by Dr Graham Hamdorf in honour of Dr Ken Rollond OAM

Dr Ken Rollond OAM
B: 28th June 1940 Mt Pleasant Hospital SA
D: 24th October 2023 at home in Glenelg SA aet 83

Ken Rollond grew up on his family's farm in the Adelaide Hills township of Tungkillo. His father (Ellis) was a farmer, and his mother (Freda) was a schoolteacher. He attended Tungkillo Primary School (which had 18 pupils in total), then Birdwood High School and later he attended Prince Alfred College in Adelaide for his final two years of schooling (1956/57).

He commenced medical school at Adelaide University in 1960, followed by an internship. He then travelled to the UK to gain experience in paediatrics and anaesthetics. He did an obstetrics and gynaecology internship in Peterborough before completing his Membership of RCOG in London. He gained further O&G experience in Birmingham before returning to Adelaide.

Ken met and married RAH nurse, Anne Freeman, in 1969. They have two children Fiona and Bill. The young couple moved to Whyalla, north of Adelaide to practice O&G in a large general practice for six months. Ken returned to Adelaide, had appointments at QVH (Obstetrics) and RAH (Gynaecology). His public appointment at RAH continued for 50+ years. Ken combined his public commitment with a very successful private obstetric practice, delivering over 1,000 babies.

Ken somehow found time for his other interests which included his houseboat on the Murray River and skiing (by all accounts he was quite an accomplished skier). His other serious interest, commencing in the early 2000s, was community involvement as a local councillor and ten years as Lord Mayor of Holdfast Bay — a seaside council where he and Anne raised their children.

Sadly, soon after his retirement, Ken was diagnosed with a cerebral lymphoma which he battled for many years, only to succumb to the disease in October 2023. Ken will be remembered as a very popular, kind and gentle, caring Obstetrician. Also, a dedicated and community orientated citizen of Glenelg with his involvement in council affairs for over a decade.

Ken leaves behind a loving family Anne, Fiona, Bill, grandchildren Madeleine and Amelia, son-in-law Andrew.

Vale to my friend and colleague,
Dr Graham Hamdorf

Editorial



Dr James Brown
RMBBS MPH FRANZCOG, Obstetrician & Gynaecologist

It may seem strange for O&G Magazine to dedicate an issue to sustainability, but sustainability and women's health are intimately interlinked.

Medicine modernised under the microscope. Discovering a whole universe of cells and genetics oriented our attention to the very small. Over these decades we have seen a revolutionary acceleration in research that led to a historic improvement in world and women's health. However, our current century now contends with the very big.

Climate change is an existential shadow that threatens current and future global health. Our lives cannot benefit from centuries of medical progress on a planet that isn't liveable. This is the new context in which medicine is practiced and there are admirable vanguards leading the way in weaving this into everyday work. This issue seeks to highlight just some of those clinicians and thinkers advocating for a sustainable women's healthcare system in Australia. Whether it's carbon neutral clinics, green anaesthesia, or promoting breastfeeding as a way to mitigate the impact of climate change — you are fortunate to soon read how sustainability is relevant to all of women's health.

However, sustainability is not only an antidote to climate change, but to the inevitable inequalities of infinite growth. It would seem a world flush with so much would find a water-level of distribution; a bell-curve of wealth. Instead, we find more and more concentrated into the hands of fewer and fewer. Sustainability is a way of approaching the world where we define what is enough, so that we can free up the rest for others. In the case of climate change, this is using our current resources wisely so that future generations can enjoy their share. Sustainability is just as relevant to biodiversity, nutrition, and reproductive rights.

And this is why, as an editorial team, we felt so strongly about dedicating an entire issue to the topic of sustainability.

Sustainability challenges inequalities in much the same way women's health has over the last century. Political rights led to greater representation, which led to important advancements in contraception, abortion availability, and birth choices (among myriad others).

The social progress in women's health is linked to progress in gender equality. As reproductive rights improve so too does gender equality, and as gender equality improves, so follows reproductive rights.

Gender equality is still a work in progress and there is a lot to achieve. Recent changes to abortion law and reproductive care in the United States show how vulnerable these improvements are, and how they still need vigilant defence.

The global inequalities that sustainability seeks to address will inevitably affect women disproportionately, and therefore makes these initiatives an inherent interest of our college and colleagues. The pandemic was a clear example of how women are always asked to carry the largest burden when crises occur.

More recently, the emerging narrative around declining birth rates is already implicating reproductive choice as a cause — suggesting that women are somehow responsible for a complex global phenomenon. Big complex problems ask more of women than anyone else, and there are many big problems on the horizon. Sustainability is an attempt to stem these issues before they fulminate.

Inside this edition, you will read stories from a variety of experts working diligently on sustainability research and initiatives relevant to women's health. Each may have a specific perspective, but all are united by the underlying goals of sustainability. Together they are greater than the sum of their parts and can hopefully inspire you to use the resources you have towards equality in women's health.



Book review



Dr Kris Barnden
FRANZCOG, DDU

Hard to Bear is a book about miscarriage. It's written for anyone who may be affected by miscarriage – women at any stage of their pregnancy journey, family and friends, doctors and midwives, administrators and policy makers and educators. And it covers miscarriage from just about every imaginable angle. Very few authors could have pulled it off as well as Oderberg has. As an experienced journalist (her work has appeared in *The Age*, *Sydney Morning Herald*, *The Guardian*, ABC and Meanjin), she is an accomplished interviewer, researcher, and storyteller. She has also experienced seven early pregnancy losses, and her own story, told with humour and emotional honesty, is woven through the book. It is an understatement to say that she is passionate about her subject.

A major theme of the book is the many ways in which society is failing women who have miscarriages. Oderberg writes about the silence that surrounds miscarriage, the lack of education and support, differences in care between the public and private systems, poor or non-existent data collection, and the relative paucity of scientific research. She also explores ethical and sociological aspects, including concepts of personhood, the commercialisation of pregnancy, and how feminism has struggled to reconcile the fight for abortion rights with support for women who experience pregnancy loss.

A notable feature of the book is the care that Oderberg has taken to include multiple perspectives. There is a chapter on how miscarriages are experienced by partners, family, friends and co-workers, and another that advises how best to support a mother through miscarriage. She discusses (and normalises) the wide spectrum of reactions women can have to pregnancy loss, from relief to intensely grieving a biochemical pregnancy. Importantly, she also includes the perspectives of people whose backgrounds or identities pose additional challenges, such as people who are gender diverse, live with disabilities, or are from different cultures. A chapter on the specific challenges experienced by Aboriginal and Torres Strait Islander people is co-written with Cherisse Buzzacott, an Arrernte midwife and mother. Oderberg interviewed many people for the book, and her compassion and curiosity shine through her storytelling.

Reviewing causes of miscarriage and options for treatment, Oderberg does an excellent job of translating technical terms and concepts into language accessible to the general reader. She has interviewed some of the foremost experts in the field, in Australia and internationally, and presents their interpretations of the evidence and recommendations. The chapter on environmental causes of miscarriage is meticulously researched and utterly frightening.

Oderberg is sympathetic to the pressures under which frontline caregivers work, but she does not hold back from critique of systemic issues and the many casual and unexamined assumptions that healthcare-workers hold. I recognised some of my own with discomfort, but it is a rare privilege to have a mirror shone back on you by such an empathic and articulate writer. *Hard to Bear* empowers, educates, and entertains, and offers countless valuable insights that will help us provide better care. I recommend it to anyone whose life is touched by miscarriage—which, as Oderberg points out, is nearly everyone.



Hard to Bear written by Isabelle Oderberg was published by Ultimo Press in 2023.

How to be a carbon-neutral O&G practice



Dr Melanie Johnson
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We have the great privilege of serving the women and families of the Adelaide Hills on Peramangk and Kaurna country. A low carbon footprint was a priority from the inception of our practice and some creative thinking has been necessary to achieve our goal of becoming carbon neutral.

What does carbon neutral mean? For a person or company to be carbon neutral they must balance the carbon they emit with the amount they absorb or remove from the atmosphere. To be certified as carbon neutral a practice must:

- measure their carbon emissions (and have this data verified)
- set a plan to reduce emissions where possible
- purchase carbon offsets for the remaining emissions
- be independently validated as carbon neutral and then publicly report on this achievement.

A medical practice could choose to take many of the steps outlined here without seeking formal carbon neutral accreditation and still have a substantial impact on their environmental footprint. In general, steps that a practice can take to lower their overall carbon emissions fall into two categories – energy production and waste. A lower carbon output then minimises the amount of carbon offset required if carbon neutrality is desired.

Energy production

Energy can be obtained through the grid or produced on site with solar. We chose to install 20kw of on roof solar panels and a 13kw battery on site. This allowed us to offset more energy than we used. A battery also acts as a backup for our vaccination fridge eliminating the need for a generator, or the need to throw out vaccine stocks during power outages. In 2021 we used 11.9MWh of energy but produced 17.4MWh. During the carbon accounting process detailed below this carbon negative impact was considered when time came to purchase our offset.

We utilised the immediate tax write off for the solar and battery assets further decreasing the post-tax cost to us. We also used the same to install an electric car charger at the practice for use of patients and staff to encourage the transition to electric vehicles.

Alternatives to this strategy could be sourcing all energy from renewable sources. This is often a commercially available option with energy suppliers.



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Limiting waste

Ultimately, limiting the amount of waste we create decreases the amount of carbon we need to offset during the carbon accounting process. Utilisation of other carbon neutral business' does not add to our own footprint (e.g. our medical records company is certified carbon neutral).

Linen – we could not find an affordable commercially available linen solution. To utilise our own solar produced energy and to decrease transport costs from sending linen offsite we wanted to launder on site. Sarah Anne and Little Lion (sarahanneandlittlelion.com) made hundreds of over-lap throw towels & water absorbent "blueys". The white towelling has performed extraordinarily well over thousands of washes and is well received by patients.

Equipment – non disposable is the key with an onsite steriliser. This allows us to use our own energy for the sterilising and removes transport costs. We avoid using plastic speculums and single use equipment where possible, and instead purchased stainless steel speculums, biopsy forceps and IUD insertion equipment that can be autoclaved in our steriliser.

Consumables – we use carbon neutral brands (like ZeroCo & Who gives a crap) and digitise everything so that we produce as little waste as possible.

Foodstuff – we have an onsite, in ground, compost solution (solar cone). All our coffee grounds and staff food waste is placed into it. Alternatives could be an on bench Bokashi or even a staff member with chickens.

Recycling – we separate all our recycling into paper/card recycling and general mixed recycling. We use a variety of recycling programs including kerbside council and TerraCycle (masks, gloves).

Carbon accounting process

We chose the Climate Active program to become carbon neutral certified. We wanted a rigorous process to certify us. Climate Active is an ongoing partnership between the Australian Government and Australian businesses to drive voluntary climate action. The process involves not only identifying existing carbon production but a commitment to reduce this over the coming years. Starting off with the end in mind has made this a more difficult task for us as we need to show an ongoing reduction.

A practice wanting to go through the Climate Active program can do so by engaging a consultant to walk them through the process or by submitting to the program having done the work themselves. We chose the former and engaged Sustainable Business Consultants based in Adelaide to take us through the process. They started by taking a detailed carbon inventory, including a survey of our staff to determine the emissions from commuting. After determining our net emissions, we were presented with a number of options for carbon credit purchase. We were also provided with a number of ways to achieve carbon emission reduction goals in the future.

Carbon credits

We chose Trees for Life and Aboriginal Carbon Foundation to offset our emissions. Trees for Life is a local revegetation project and has dedicated carbon plantings that aim to replicate local native forests. This also has the benefit of restoration of habitat for native wildlife and improvement in soil/water condition. They estimate five trees offset one tonne of carbon over the trees' lifetime. Aboriginal Carbon Foundation is an Aboriginal owned not-for-profit that was established to create economic independence, including through carbon farming credits.

Cost

We often get asked what this all costs. The answer can be split into two halves – the carbon neutral certification itself and the infrastructure we purchased. The carbon neutral certification cost us approximately \$10 000 including our first 3 years of offsets. This could be substantially lower (although with a huge learning curve) without the use of a consultant. The infrastructure cost to us – the solar, the battery, the car charger, the steriliser, the washer/dryer, the compost and the linen cost approximately \$45,000 (all of which was an immediate tax write off for the business).

Future hopes

We hope that we can continue to provide practical information and encouragement to other practices to reduce their own carbon footprint. There is not one way to do this given the large variety of practice structures and locations. It takes a little creativity and a little motivation to achieve but it is possible.

Useful resources

- Doctors for the Environment Australia: dea.org.au
- Climateactive.org.au
- Trees for life: treesforlife.org.au/tfl-carbon
- Aboriginal Carbon Foundation: abcfoundation.org.au
- Sustainablebusinessconsultants.com.au



Adelaide Hills O&G clinic is carbon-neutral. Photo: JKTP photography

Why the environment matters for women's and children's health



**Associate Professor
Kenneth D Winkel**
MBBS, BMedSci, PhD, FACTM



Adjunct Associate Professor Marion Carey
MBBS (Hons), MPH, FAFPHM

Few of us would be completely untouched by the escalating climate and biodiversity crises. Human activities have raised the atmosphere's carbon dioxide content by 50% in less than 200 years and the concentration of methane, a more powerful greenhouse gas, has more than doubled over that period¹. Consequently, the earth's average surface temperature is now the highest since written records began. Such heating drove the unprecedented fires of 2019-20, incinerating billions of animals and large swathes of landscapes, adversely impacting soils, forests, water and air quality. We then plunged into a global quarantine in response to the COVID-19 outbreak, followed, in 2022, by some of the worst flooding yet recorded.

Now, in 2024, the Great Barrier Reef is undergoing one of the worst bleaching events on record, threatening unique biodiversity, human wellbeing and livelihoods. As doctors our training equips us to keep patients within 'safe' physiological operating conditions to maintain health. Beyond individual biology, the social determinants of health such as income, education, and social inclusion, play crucial roles in both individuals and populations. Less commonly do we recognise the environmental determinants of health and the need to operate within 'safe' planetary resource boundaries. Yet the health of the biosphere is a 'superdeterminant' of all maternal and child health². The interlinked climate and biodiversity crises have common origins in our disregard for our collective responsibility to 'care for country', and their compounding adverse effects on human and planetary health. This challenge is being increasingly articulated by leading medical journals, governments and professional societies³. Indeed, our immediate response to this threat is a multidimensional ethical issue that will echo in the health of future generations⁴.

We recently explored the importance of such biodiversity-related 'ecosystem services' for human health and how these are deteriorating in Australia⁵. Beyond its classic role as sources of new medicines ('provisioning' benefits), healthcare is increasingly also recognising the therapeutic value of nature for physical and mental wellbeing ('cultural' benefits)⁶. The gut microbiome, a form of endemic human biodiversity, and the health effects of its depletion or dysbiosis, has previously been discussed in this magazine in an article written by Prof Peter Vuillermin Director of Research, Barwon Health Chair in Medicine, Deakin University titled 'Microbial maternity: the importance of the gut microbiome in pregnancy'. The article examined how microbial exposures in the perinatal period may have

lifelong and even transgenerational consequences. Similar themes are evident regarding the impacts of environmental pollutants⁷.

According to the World Health Organisation⁸, 24% of global deaths (and 28% of deaths among children under five) are due to modifiable environmental factors. It is estimated that environmental causes account for 6% (1–11%) of all adverse perinatal conditions in high-income countries, and for 11% (2–27%) in low-income countries. Widespread air, water and soil pollution, in part related to the chemical derivatives of fossil fuels, as well as from their combustion as fuels, are growing concerns for all of us, but especially for the most marginalised populations. Pregnant women and young children are acutely vulnerable to such toxicities — children have unique exposure pathways, and often experience higher exposures to pollutants. Their bodies may handle these exposures differently due to immature detoxification capacities, immune and thermoregulatory systems and are subject to critical windows of vulnerability.

For example, hydrocarbon combustion, via road traffic, coal and gas fuels, has adverse health and developmental impacts via both air pollution with gases (including sulphur and nitrogen oxides) and particle matter (PM), as well as, indirectly, through the climate impacts of greenhouse gas emissions⁷. This affects the physiology of the placenta and umbilical cord⁹. Breathing in PM and other pollutants may be compared to passive cigarette smoking. The health risk of living on a major freeway has been estimated as equivalent to ten passively smoked cigarettes daily¹⁰. A recent meta-analysis estimated a 22g lower birth weight (95% CI: 12–32), 11% higher risk of low birth weight (1.07–1.16) and a 12% higher risk of pre-term birth (1.06–1.19) each per 10 mg/m³ increase in ambient PM 2.5^{9,11}. Such toxicants can impair foetal and post-natal lung function and growth, promoting sensitisation of the airways leading to asthma and other respiratory illness and have also been linked to neurodevelopmental disorders⁷.

Hence, it is no exaggeration to say that children are existentially threatened by our current addiction to fossil fuel use⁸. Closing coal-fired power plants is a positive development, but replacing these with gas is not the answer. Indeed, "natural" gas is no more natural than other hydrocarbons and is neither "clean" nor healthy. Beyond further greenhouse gas emissions, unconventional gas development poses health risks from pollutants in air and water. Moreover, chemicals used or generated in the fracking process are potentially damaging to the foetus

and young children. This includes higher risks of low birth weight, pre-term birth, some types of congenital malformation such as heart defects and increased risks of asthma exacerbations¹².

Beyond the direct toxicity of such fuels, additional, and compounding risks arise from extreme weather event driven water and food insecurity, heat stress, emerging infectious diseases, mental ill-health and population displacement with concomitant disruption of healthcare access. As discussed elsewhere in this issue, climate change is also driving unprecedented bushfire events and associated respiratory and pregnancy complications. Extreme heat events are increasing in frequency and severity as climate change worsens. Pregnant women are particularly vulnerable as extreme ambient heat can contribute to a range of adverse outcomes including pre-term and stillbirth, low birth weight, and congenital anomalies¹³.

Increasing temperature, rising sea levels and flooding are transforming the patterns and geographical extent of vector-borne diseases¹⁴. Complex interactions between vectors, reservoir hosts, human behaviours and pathogens may promote or inhibit such diseases. In Australia, we have already seen the unprecedented outbreak of Japanese encephalitis, resulting from a flavivirus infection spread by Culex mosquitoes, that followed the 2021-2022 flooding in the Murray-Darling Basin — the potential for endemic transmission is now considered 'likely'¹⁵.

Another concerning aspect of the degradation of our natural environment is the now ubiquitous chemical pollution. Microplastics and endocrine disrupting chemicals are key areas where our knowledge is still limited. It is estimated that 79% of all plastic waste produced ends up in landfill, or elsewhere in the environment, while 12% is incinerated and only 9% recycled¹⁶. Microplastics in the environment (plastic particles smaller than 5mm) degrade, generating potentially toxic modified products, and they can also act as carriers for a diverse group of chemicals¹⁷. They have been found in food and drinking water, and recently in the human placenta and breast milk, leading to concerns that they may engender adverse pregnancy outcomes.

Small changes in hormonal balance can have important effects on both the mother and the developing foetus¹⁸. Endocrine-disrupting chemicals (EDCs) are a group of exogenous chemicals that may alter hormonal and homeostatic systems. Heterogeneous in nature, they include industrial solvents and their by-products, plastics, plasticisers, pesticides and more. Many chemicals used during gas extraction processes are EDCs, as are flame retardants, and Bisphenol A (BPA) used in manufacturing, food packaging, and previously, in baby feeding bottles. Studies to date suggest that EDCs affect prenatal growth, thyroid function, glucose metabolism, obesity, puberty, and fertility¹⁹.

It's time to recognise how connected to the natural environment and the web of life we are, and how, despite the existential threats implied by these problems, there is a way forward. We can get our healthcare house in order and become part of the solution rather the problem. We can prepare future doctors for these threats through education. We can advocate for legislative protections for our native species and the environment, and for the expansion of renewable energy. We can join groups with similar goals. The International Federation of Gynaecology and Obstetrics (FIGO), and the Asia and Oceania Federations (AFOG) have climate change and pollution committees working to reduce healthcare waste and pollution²⁰.

Indeed, 50 years ago, such an advocate was our Federal Minister for the Environment and Conservation: the late Dr Moss Cass, a Melbourne University medical graduate, who was responsible for the most important of all post-war environmental legislation. His summarised ethos was: "We have not inherited this earth from our parents to do with it what we will. We have borrowed it from our children, and we must be careful to use it in their interests as well as our own"²¹.

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Sustainable practices in midwifery



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The Australian College of Midwives (ACM), Australia's peak professional body for midwives is at the forefront of promoting environmentally sustainable practices within the midwifery profession. ACM recognises the urgency of action to mitigate climate change and has taken significant steps to integrate sustainability into its operations and advocate for a greener future. This article describes ACM's actions to promote sustainability among midwives and highlights the organisation's initiatives in line with its environmentally conscious approach.

Environmental sustainability initiatives

ACM acknowledges the urgent need to address climate change and its impact on maternal health. In our submission on the National Health and Climate Strategy¹, we emphasised the importance of midwives' role in understanding and mitigating the effects of climate change. The organisation believes that midwives can play a crucial part in educating women, their families, and the profession about the impact of climate change on childbearing women and steps to reduce its impact.

Our approach is to emphasise the importance of protecting and supporting breastfeeding, especially during climate-related events. Citing the imperative to prioritise the wellbeing of women and children by mitigating the disproportionate impact of climate change shocks. By doing so, ACM believes that communities' overall health and resilience can be improved.

ACM promotes breastfeeding as the best approach for infant feeding and nutrition. This position is reflected in ACM's facilitation of the Baby Friendly Health Initiative¹¹ (BFHI) program nationally. In line with the Australian National Breastfeeding Strategy and Beyond⁹, Priority 2.1, ACM recommends that the BFHI accreditation program be integrated into all maternity, newborn care facilities and community settings nationally to promote and sustain breastfeeding rates and thereby improve long-term health outcomes and reduce the excessive manufacturing and disposal of plastics required for artificial feeding.

Virtual assessments & reviews

ACM has embraced virtual platforms to reduce our carbon footprint and increase efficiency. The Breastfeeding Friendly Health Initiative (BFHI) assessments and Midwifery Practice Reviews (MPR) have transitioned to virtual platforms, eliminating the need for assessors and reviewers to travel

long distances. This shift has significantly reduced the kilometres flown by assessors and reviewers, resulting in a substantial decrease in carbon emissions.

Remote work & digital solutions

In response to the COVID-19 pandemic and subsequent lockdowns, ACM implemented remote work policies. This enabled staff to work from home reducing commuting-related emissions and promoting a healthier work-life balance. ACM recognises that this shift was not only a response to the pandemic but also an opportunity to adopt more sustainable work practices. The organisation has embraced digital solutions, such as virtual meetings and online collaboration platforms, to minimise the need for physical travel and paper use, and office spaces to store paper-based records.

Digital publications & online education

ACM has made significant strides in reducing its paper usage by offering a digital version of its magazine, Australian Midwifery News (AMN), to its 5,300-plus members. This shift not only reduces waste but also allows for more accessible and timely information dissemination. ACM's International Journal Women and Birth is the highest-ranking journal for Midwifery in the world, publishing on women's health and maternity care. The editorial team have recently made the decision to be a primarily digital journal. Additionally, ACM has embraced online webinars and virtual courses over the past three years, minimising the environmental impact associated with in-person events. These initiatives have allowed ACM to reach a wider audience while reducing our carbon footprint.

Place of birth & environmental impact

Home birth is recognised as a setting associated with low environmental impact negligible waste⁹. The environmental benefits of home birth include reduced transportation emissions and resource consumption compared to hospital births. ACM acknowledges the ecological advantages of midwifery care, especially in home birth settings, and encourages midwives to prioritise sustainable practices in their work. Individual health providers' ability to measure their waste impact and calculate emissions may lead to a stronger commitment to reduce carbon footprint and contribute to both the individual and collective organisation level climate strategy adherence resulting in a more significant impact¹.



A home birth taking place in Woombye, Australia. L-R: Midwife Tani Paxton, Claire Farrelly and Andi Durkin. Photo: Midwife Terri Schaumberg

Leading by example

As a not-for-profit organisation, ACM holds itself to high environmental standards, aligning our values with being environmentally aware, sustainable, flexible, and forward-thinking. ACM encourages other peak health professional organisations to assess their environmental footprints and implement sustainable practices within their operations. Clinical waste management is not standardised or measured nationally and there are barriers to recycling accessibility and capability in local, regional, and state jurisdictions across Australia, worsening with remoteness of geographical location¹.

A recent study 'The Green Maternity Project' resulted in a successfully implemented midwifery-led program in postnatal ward waste reduction¹⁰. By sharing our experiences and successes as well as our vision for improvement, ACM aims to inspire others in the healthcare industry to adopt environmentally conscious approaches.

The Australian College of Midwives is dedicated to championing sustainability within the midwifery profession. Midwives provide care across the life course from pre-pregnancy, antenatal, labour and birth, postnatal and interconception periods. Scope of practice extends to sexual and reproductive health; child, family, and maternal health; and the first 1,000 days of life. Midwives are experts in the provision of primary maternity care and therefore provide a critical link to the establishment of a climate strategy that will impact across the lifespan¹.

Drawing on the strengths of a collaborative network is the most effective way to advance climate and public health policy. This could involve developing a shared understanding of the importance of addressing climate change and its impact on maternal health, as well as identifying shared goals for emissions reduction and sustainable healthcare practices.

Engaging the health workforce collaboratively in conversations about climate change is an essential step towards climate action. Through virtual assessments and reviews, remote work policies, digital publications, and online education, we have reduced our carbon footprint and embraced sustainable practices at ACM. By promoting

environmentally friendly initiatives and encouraging other organisations to follow suit, ACM is fostering a greener future for midwifery and maternal health. Although working towards climate solutions is ACM's priority, this is also an opportunity for a multidisciplinary approach. ACM encourages doctors, other stakeholders and peak health professional organisations to consider their – and their practices – impact on the environment. You can calculate your environmental footprint here: carbon-calculator.climatehero.org and share this resource with your members.

Tani Paxton also wrote: An exploratory study of women and midwives' perceptions of environmental waste management – home birth as climate action for Science Direct. Find the article at: www.sciencedirect.com/science/article/abs/pii/S0266613823002474

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Spotlight on: menstruation and the environment



Dr Alice Whittaker, MBBS, FRANZCOG

Every month around the world, 1.8 billion people menstruate and to accommodate for this, a staggering quantity of disposable menstrual products are used. Annually in Australia, 300 million tampons and 500 million pads are sold, and 45 billion period products are discarded each year worldwide¹. Concurrently, there is growing access to period products in developing nations, a positive change for period equity, but one that is creating a new waste and pollution issue on an enormous scale. With the current world population at 8 billion, set to peak at 10.4 billion by 2080², the demand for menstrual products will rise further over our lifetimes. Women and girls around the world have the right to effective, safe and affordable menstrual products but we also must think of how to do this sustainably.

When considering the environmental impact of period products, we need to consider the raw materials for the products and their packaging, the energy and water used in the manufacturing process, the carbon footprint of product distribution and sales, how these products are disposed of and what happens after they are put in landfill.

Non-organic tampons are usually made from rayon and viscose and non-organic pads are usually 90% plastic with a top layer that is a plastic polymer such as polyethylene and a core that may be cellulose but may also be a super absorbent polymer or "super foam". Breakdown time is six months for a cotton tampon and a projected 500 years for non-organic pads. In the process of degradation, plastic-based menstrual items release breakdown products into water sources and landfill, including microplastics (small pieces of plastic less than 5mm in size) and then ultimately to nanoplastics, which can be found inside cells and can bioaccumulate. Both microplastics and nanoplastics are a recognised major threat to marine and human health. Products that don't make it to landfill can be washed into oceans and onto beaches. Plastic tampon applicators for example are a recognised pollutant on beaches and can also commonly be found in sea bird stomachs³.

Reusable menstrual products including menstrual cups, period underwear and reusable pads have recently become available for women on a large scale with growing uptake, particularly in younger women. In a 2023 survey of 600 Victorian women aged 15-29, 24% had used period underwear for their last period and 17% a menstrual cup⁴. This bodes well for the environment; in an analysis across US, France and India, menstrual cups had the lowest impact score compared to non-organic products; period

underwear placed second. Non-organic pads had the worse score⁵.

As for finances, reusable products have a higher initial outlay but will save money in the long term. Cups cost between \$AUD30-80 but last on average two to five years and a pair of period underwear costs between \$AUD25-50, lasting six months to two years. Given the average woman spends \$12,800 in their lifetime on disposable period products, a switch to cups would come with big savings. Seeing as gynaecologists are experts in periods, let's take a deep dive into these re-useable products.

Period underwear

Wearers can bleed directly onto their waterproof and highly absorbent period underwear⁶, without the need for a bulky pad. They are worn for up to 6-12 hours whereupon they are rinsed and can then be put into a normal washing machine cycle. There are various absorbencies and styles including bike-short style for very heavy flow or at night, and swim and gym wear which offers many practical advantages for women. An added bonus – they are great for women managing with urinary incontinence too. Given the synthetic fibres in period underwear, breakdown time can be long and similar issues of micro and nanoplastics arise.

Menstrual cups

Menstrual cups are reusable silicone or plastic cups around 4cm wide and 6cm long that sit in the vagina, cupping the cervix to collect blood rather than absorbing it. They have a small tail on the distal end for removal, whereupon the blood is emptied down the toilet or sink, and the cup is washed with warm soapy water. Some cups are smaller and very pliable for use in women who haven't been sexually active. Plastic cups can be recycled at the end of their lifetime, silicone cups can't be.

Cups are practical for menorrhagia. While a regular pad or tampon can hold 5ml of blood and a super pad or tampon 10ml, a cup can hold 10-40ml, meaning it can be changed once or twice a day. This means fewer interruptions to a school or workday with fewer embarrassing accidents. The maximum recommended duration of insertion is 12 hours for hygiene reasons⁷.

Cups come in a variety of dimensions and volumes, to accommodate different anatomy and in 2019, there were 199 different cups available for sale¹. Women can



Menstrual cups come in varying shapes and sizes. Photo: Adobe Stock

do a short quiz (there's lots online) to help them find the right cup for them. Even with the best fitting cup, it can take a few attempts to get it sitting correctly and comfortably.

A menstrual disc is very similar in concept, though is shallower and wider without the tail on the distal end and allows women to have intercourse while on their period. A 2019 systematic review in *The Lancet* analysed the available literature on menstrual cups and found they are an effective and safe option. 2-13% of users report leaks, usually with heavy menses. Rare complications include vaginal pain, urinary complaints, skin rashes/allergy that require clinician assistance to remove a device, as well as a rate of toxic shock syndrome (TSS) similar to tampon use at 1/100,000 users, though one study reported a higher rate at 0.15%^{1,8}.

A 2024 statement from the Therapeutic Guidelines of Australia now mandates information on TSS appears on the packaging of all menstrual cups sold⁷. There are no clear guidelines on the need to sterilise cups to reduce this risk of TSS, but it is common sense to consider this. Cup sterilisers can be purchased to sterilise a cup in a microwave, though a 2022 study looked at different cleaning techniques and found washing with soap then steeping in a cup of boiled water (with a small plate for a lid) for five minutes was equally as effective in getting bacterial colony forming units to zero⁹. Practically, I recommend to my patients sterilising their cup(s) before and after each period at the very least.

Finally, there is likely an association between IUD expulsion and menstrual cup use. A randomised controlled trial of 200 cup users with Copper IUDs over a two-year period found an odds ratio of 3.8 for expulsion when a cup is used concomitantly¹⁰, though a 2023 systematic review reviewed other papers with conflicting data, overall reporting a "probable association" needing more research¹¹. Given the rising use of cups in young women, it seems prudent to add this to patient information after IUD insertion.

Menstrual health and hygiene are inextricably linked to environmental issues, climate change and sustainability. Considering a switch (for us or our patients) to reusable products such as menstrual cups and period underwear will be good for both people and the planet.

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Environmental sustainability in anaesthesia



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The science is unequivocal. Increasing levels of anthropogenic greenhouse gases (GHGs) carbon dioxide, methane, and nitrous oxide in the atmosphere are causing the climate crisis¹. The climate crisis is a health crisis which will continue to worsen as GHGs accumulate². Many Australian healthcare organisations have released or endorsed public statements on climate change^{3,4,5} calling for action. However, healthcare is contributing to this situation. In Australia, healthcare is responsible for 7% of our national emissions⁶, while 5% of global GHG emissions stem from healthcare⁷.

Hospitals are the largest sector of Australia's healthcare emissions, and operating theatres are the most emissions-intensive area within hospitals. Anaesthetists are involved in some of the most environmentally damaging healthcare settings. As such, they are uniquely positioned to drive improvements in these areas, both within our specialty and within the practices of other groups that we interact with day-to-day, particularly surgical teams. As healthcare professionals, we have a duty to reduce our environmental impact for the health of the global population – while maintaining high-quality clinical care. High-value healthcare is low-carbon healthcare⁸.

Environmentally sustainable healthcare is about providing the same level of exceptional clinical care, for as little environmental impact as possible. A simple framework for considering the environmental impact of healthcare is to look at either associated carbon dioxide equivalent (CO₂e) emissions, or the associated physical waste. There is overlap between these two areas, but it can be useful as a way of envisioning the problem, identifying targets for intervention, and communicating both to staff. There is significant overlap between the environmental issues of anaesthesia and O&G.

Anaesthetic gases

Arguably the most important environmental target in anaesthesia are anaesthetic gases. When these are mentioned, frequently nitrous oxide (N₂O) is forgotten in favour of other agents, including sevoflurane and desflurane. N₂O is the most impactful of these on the greenhouse effect and therefore our climate crisis. With its global warming potential of 273 times that of carbon dioxide it would be assumed to be less impactful than our other gases, but its long atmospheric lifespan of 110 years, use in greater concentrations, at higher flow rates, and across wider settings by multiple clinical groups result in much higher quantities entering the atmosphere and having a longer-

lasting effect. Within anaesthesia itself, its use has been consistently and progressively decreasing over the past several decades. Its use in other areas of the hospital is only recently coming under scrutiny in efforts to reduce its environmental impact. When used in anaesthesia, it occurs within a "closed" breathing circuit; because exhaled gas can be used for the next inhalation to a considerable extent, the volume of N₂O used can be significantly reduced when its administration is felt appropriate.

However, in other settings, such as birth suite for labour analgesia, or ED or wards for procedural sedation including in paediatric populations, it is used in "open" breathing circuits, meaning that exhaled gases are not captured, and higher gas flows are required. This results in higher volumes of nitrous oxide used per clinical situation. Wong et al⁹ calculated that when N₂O is used for labour analgesia, the average N₂O volume per birth is approximately 500L, compared with approximately 60L per paediatric case in the emergency department, and 50L per theatre case. Importantly, in the last five years researchers have found that N₂O infrastructure frequently leaks, resulting in large proportions of purchased N₂O being lost to the atmosphere before it reaches patients^{10,11,12}. This issue needs obstetric and midwifery engagement in efforts to address this problem. These systemic leaks can be more than 70% of total N₂O purchasing (i.e. only 30% N₂O is actually being clinically used). Clinical use of N₂O still has a considerable environmental impact, and it's important to rationalise our clinical use alongside efforts to address N₂O leaks.

In the obstetric setting, this includes using it at no higher than 50% concentration for labour analgesia, as evidence suggests that higher concentrations have no greater analgesic effect, but increased rates of side effects. Access to N₂O does not appear to change the rate of epidural use¹³; for those patients who request epidurals, we should be providing these promptly, which requires coordinated efforts from midwifery, obstetric and anaesthetic teams. When N₂O is used, use of catalytic cracking devices could be considered to mitigate the impact of the exhaled gas; this new technology captures the exhaled gas and breaks it down into nitrogen and oxygen, which do not produce the greenhouse effect. Our other inhalational anaesthetic agents are still relevant, as all in current use are greenhouse gases. Desflurane has the highest global warming potential, with 2,640 times the effect of carbon dioxide. Its use is reducing, with increasing numbers of Australian hospitals choosing not to supply it. Desflurane was the subject of recent controversy with the well-publicised

expression of a dissenting view on its importance, but the majority of those involved in improving the environmental sustainability of anaesthesia, view reduction of its use and its removal from practice as imperative in our climate action.

Sevoflurane is widely used for maintenance of anaesthesia, and its effects have been mitigated with the practice of ultra-low flow anaesthesia – the reduction of fresh gas flows, and therefore the amount of sevoflurane used – becoming increasingly common. The use of the total intravenous anaesthesia (TIVA), most commonly with propofol, has dramatically increased in the past decade, and avoids the use of these gases altogether. While not without CO₂e, TIVA is environmentally beneficial compared with inhalational anaesthesia, and with additional clinical benefits.

Single-use items

Single-use disposable equipment in healthcare not only produces enormous amounts of waste, but has associated emissions both before use, in its production, packaging, sterilisation, and transport. Also, many items may be disposed of in clinical waste streams, requiring incineration or chemical treatment. While the reprocessing of reusable items does have associated emissions, these can be diminished or eliminated if electricity and transport are powered by renewable sources¹⁴. General aims in this area should be to minimise the use of single-use items; replacing these with reusable items and minimising the use of equipment. One ever-present example in both anaesthesia and O&G is the use of “blueys” – single-use disposable absorbent pads. They are energy, chemical, and water intensive to produce, and take over 100 years to break down. They have good indications for use, but have reusable alternatives. In anaesthesia, they can be replaced with towels, pillowcases, or already opened packaging, all of which avoid a new single-use product being consumed^{15,16}.

In birth suite, often reusable absorbent pads (“Kylies”) are appropriate and can reduce the number of blueys used. We engaged with a local linen supplier to develop a reusable alternative to the bluey, ensuring it met the requirements of birth suite in consistency of weight for weighing blood loss.

Surgical procedures

Surgical procedures are both CO₂e and waste intensive. While we can address this by sourcing electricity for the hospital from renewable sources, avoiding opening unnecessary equipment, changing single-use items to reusable items, and ensuring that anaesthetic practices to reduce environmental impact are employed; avoidance of unnecessary operations has a far greater impact and has positive effects beyond the environmental. This is almost entirely within the remit of the proceduralist, though anaesthetic practitioners may be involved pre-operatively for complex elective cases, or in emergency situations. This principle can be extended in O&G to ensuring access to contraception, examining the caesarean rate/indications and considering procedures that could occur in non-hospital settings without general anaesthesia.

Reproductive choice

Each and every human has a significant environmental impact. Despite a slowing rate¹⁷, global population growth remains an ongoing issue and contributor to environmental degradation. Supporting and defending our patients’ reproductive choices and rights is of paramount importance to protect the ethical principle of autonomy, but also has secondary environmental benefits. Access to contraception, termination of pregnancies, and permanent

sterilisation options when requested and appropriate are crucial. This area is primarily the remit of obstetricians and gynaecologists, but can involve anaesthetists too, in ensuring provision of adequate access to both surgical termination lists and surgical sterilisation procedures.

Environmental sustainability is crucial in healthcare. This is supported by international and national bodies but requires individual clinicians to champion this cause and consider it in their daily work, as well as push their organisations to take action. There are changes required at every level, from individual clinicians to our Government. Collaboration between specialties and craft groups is essential to our success; we must scrutinise our own specialty and identify the practices with the greatest environmental impact, and work with those around us to improve our footprint.

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* Photo credit for Dr Emily Balmaks profile picture: Julia Nance*

The benefits of a sustainable diet



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This article will explain why sustainable diets are essential for human and environmental wellbeing, and our survival on this planet. We'll also take a look at some of the harms, benefits and health implications of our current food systems, as well as steps we can take towards positive change.

A failing food system

The UN Food and Agriculture Organisation defines sustainable diets and sustainable agriculture as having low environmental impacts, while promoting the health and food security of present and future generations. They must preserve biodiversity and ecosystems, be culturally acceptable, affordable, and nutritionally safe, while optimising natural and human resources¹.

Unfortunately, what has evolved instead is a network of extractive systems, covering 40% of Earth's land surface and most of the oceans, aimed at maximising profits and yields, while promoting eating patterns which are far from sustainable. It is heavily dependent on fossil fuels, synthetic chemicals and fertilisers, while rapidly depleting our soil and water.

Agriculture generates at least 30% of human greenhouse gas (GHG) emissions, half of which are due to the grazing of over two billion ruminant livestock. It is also the biggest cause of habitat destruction, species decline and extinction, including fish and pollinators². Vast crop monocultures, giant concentrated animal feed lots, and long supply chains make this system productive in the short term, but extremely vulnerable to diseases, extreme weather, rising oil prices, armed conflicts, and other long-term challenges.

At present, we're producing enough to feed the world's 8 billion people, an impressive achievement. However, a full third of all this food is wasted, and distribution is strongly skewed towards wealthier nations. As a result, two billion people are malnourished or even starving, while 2.5 billion are overweight or obese². Even in Australia, a net food exporter, around 3.7 million households are food insecure³. These systemic failures have serious environmental and social consequences.

The global spread of the Western diet

Australia, like other wealthier nations, has seen a slow shift away from kitchen gardens and home cooking, towards excess meat and ultra-processed foods (UPFs), high in fat, salt, and sugar. The global spread of this Western diet

since the 1960s correlates with new food technologies, and business decisions taken within the food industry, to promote products with cheaper ingredients, longer shelf lives, and higher profit margins. Their advertising budget of around \$550 million annually in Australia is poorly regulated and often targets children⁴.

The NOVA food classification system

1. Minimal or no processing e.g. meat, milk, vegetables, fruit, eggs, fish, grains.
2. Basic food additives e.g. spices, herbs, garlic, olive oil, vinegar, sugar, salt.
3. Simply processed, fermented, or canned e.g. tinned fish, ham, bread, cheese.
4. Ultra-processed foods. These are novel, industrial products with up to twenty ingredients, including enzymes and artificial flavouring. They no longer resemble any of the foods in the first three categories. High in fat, salt, sugar. Cheap to produce at scale, intensely flavoured, intensely marketed, high profit margins. e.g. Infant formulas, sugar sweetened and energy drinks, power bars, crisps.

Large food corporates promoting UPFs also generate most of the world's plastic waste. Coca-Cola alone makes over 100 billion single-use plastic bottles every year, which usually end up in landfill or waterways⁵.

A meaty issue

Meat is a good source of nutrients including protein, haem iron, zinc, and B12, particularly for younger age groups, women, and during pregnancy. However, there are strong health and environmental reasons to reduce our meat intake. A main drawback, especially of beef, is a heavy environmental footprint, and relatively low protein yield. Per 100-gram of dietary protein, beef produces 50kg of GHG equivalents (a quantity of GHG can be expressed as CO₂e by multiplying the amount of the GHG by its GWP), compared to pig at 7.6kg/100gm, poultry 5.7kg/100gm, and tofu 2kg/100 gm protein.

Despite this, around 80% of the world's farmland is devoted to either livestock grazing, or growing livestock food crops like soya and corn. Consumption is wealth and culture related, with Australians among the world's biggest meat

eaters at over 100kg per person per year, half of which is poultry. Bangladesh averages 4kg per person per year². Australian Dietary Guidelines recommend eating no more than 20kg of red meat per year. Processed meats such as bacon and salami, are Class 1 carcinogens, increasing the risk of breast and bowel cancer⁷.

How Western diets are impacting our health

Western diets, and the systems that underpin them, are also a major factor in the global rise of overweight and obesity, which has tripled in the past 50 years to around 2.5 billion adults worldwide. Australia ranks in the top ten, with one third of adults overweight, another third obese, with higher rates in Indigenous populations¹¹. It has given rise to thousands of weight-loss products, diets, and treatments, including almost 40,000 bariatric surgical procedures annually⁸. Obesity costs our health system around \$11.8 billion each year, a figure that is expected to rise to \$88 billion by 2032 if current trends continue⁴.

UPFs displace healthy foods, and the higher the intake, the higher the risk of weight gain and obesity. Each 10% increase in dietary UPFs may be associated with a more than 10% risk of heart attack and stroke⁹. One recent survey of household food budgets showed that 60% was spent on UPFs¹⁰.

Non-communicable diseases (NCDs) account for around 90% of all deaths in Australia, with being overweight second only to smoking as the greatest risk for prolonged disability and early death¹¹. Obesity is also linked to a range of conditions including hypertension, stroke, ischaemic heart disease, diabetes, fatty liver, sleep apnoea, arthritis, and ten common cancers. Treating these conditions consumes a considerable amount of Australia's health budget.

Women are more likely to develop polycystic ovary syndrome and experience reduced fertility if they are overweight. This is linked to chronic raised insulin, and decreased levels of sex-hormone binding globulin. These conditions are likely to improve with dietary changes, including a modest 5% weight loss¹². Pre-pregnancy obesity increases the risk of gestational diabetes and of maternal preeclampsia, while healthy plant-rich diets seem to have a protective effect¹³.

Calling for a better future for all

"Improving the nutrition and eating habits of Australians must become a priority for all levels of government (which) need to consider the full complement of measures open to them...ranging from increased nutrition education and food literacy programs, through to mandatory food fortification, price signals to influence consumption and restrictions on food and beverage advertising to children." (AMA. Nutrition-2018)

So how do we move towards having a healthier and more sustainable diet? Prevention is key. Virtually all our major health and medical associations are calling for action and have strong public support. A "National Obesity Strategy 2022-2032" exists, but we still lack basic measures such as a sugary drinks tax, mandatory food health labelling, and a ban on the predatory advertising of UPFs to children. At least 50 other nations have successfully enacted such measures, but in Australia, industry interference, fragmented advocacy and conflicting political agendas have delayed effective action. Backing healthy lifestyle messaging with effective legislation would return around \$6 per public health dollar invested, with triple bottom-line benefits to health, the environment, and budgets. Updated NHMRC and Australian Dietary Guidelines must underpin a national approach to

healthy sustainable diets, with provision of a free national online counselling service, like Quitline for smokers¹⁷. The education and involvement of health professionals has been, and remains, absolutely critical. Role models include Dr James Muecke AM, Dr Gary Fettke, and Dr Sophie Scamps MP, who recently proposed a national bill to protect children from unhealthy food advertising⁴.



A sustainable diet is better for our health and for the planet. Photo: Adobe Stock

Sustainable diets are the single best way to optimise human and environmental health. To reflect environmental as well as health impacts, Western dietary patterns must transform to plant-rich or planetary¹⁴ diets, with at least twice the proportion of minimally processed plant-based foods, including fruits, greens, legumes, nuts, and grains, and less than half the meat. This simple switch creates significant gains in health and life expectancy¹⁵, while helping alter priorities in the farming and retail sector, away from centralised industrial towards more localised low-impact networks of agroecological production¹⁶, potentially halving GHGs from the food sector⁴. We face many challenges, including climate change, food insecurity, increasing NCDs and stretched budgets, but one thing is certain — shifting to sustainable diets and food systems is an essential step towards economic security, environmental repair, and flourishing good health for all.

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Sustainability in healthcare



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We can all easily appreciate the necessity of sustainability in healthcare. Doing our jobs in a manner that allows long term viability is a sensible pragmatic approach that should make sense to us all as clinicians. We can also easily appreciate the need to consider our own environmental footprint within the sphere of sustainability, recognising that while we increasingly need to treat the health impacts of our changing climate, we are contributing to them due to the emissions of our healthcare system.

The tricky bit is getting our governments, our institutions and ourselves to make the changes we need to have a truly sustainable healthcare system that works in the best interests of the communities we serve. Given the seriousness of the climate health emergency, we all have a responsibility to be part of this change. As the World Health Organisation's Director-General Dr Tedros Adhanom Ghebreyesus states: "The climate crisis is a health crisis... We need transformative solutions to wean the world off its addiction to fossil fuels, to reimagine economies and societies focused on well-being, and to safeguard the health of the planet on which human health depends."¹ Our ethical duty of non-maleficence² dictates that we must do everything in our power to not contribute to, nor aggravate, this global health crisis. This includes getting our own house in order.

Healthcare is a carbon intensive industry, accounting for 4.4% of total global emissions,³ meaning that if we were a country we would be the fifth largest emitter in the world.⁴ In Australia, we emit more than the global average. Our healthcare system is estimated to cause between 5.3 and 7% of our country's carbon footprint^{5,6}, with the hospital system being the largest emitting sector. These calculations include our direct and indirect emissions, i.e. those occurring on site in our hospitals and medical practices, and those occurring upstream and downstream of our workplaces.⁵ Looking at these different sources allows us to enable different avenues to reduce emissions, but before we do that, let's take a moment to reflect on how global heating and climate change is impacting patient outcomes in obstetrics and gynaecology.

The 2023 MJA–Lancet Countdown report on health and climate change, states that the "Excess Heat Factor" in Australia has risen by 35% in the last 20 years,⁷ increasing the incidence of heat-related illness. Mounting evidence indicates that heat exposure during pregnancy places women at greater risk of complications including prematurity, low-birth weight and stillbirth,⁸ pre-eclampsia⁹ and maternal morbidity.¹⁰ Bushfires, also increasing as our

planet heats,¹¹ are linked with low-birth weight, prematurity, gestational diabetes and gestational hypertension.¹² Both heat and bushfires aggravate mental illness. Heatwaves increase suicidal ideation and hospital attendance for mental health presentations¹³ and it is far from surprising that anxiety, depression and PTSD are associated with bushfires.⁷ Coupling this with the high mental health incidence in our postpartum populations raises significant concerns regarding climate change and health for mothers of newborns.

These are just three examples where climate change is relevant to the disciplines of obstetrics and gynaecology, illustrating why we have an obligation as clinicians to reduce emissions and advocate for sustainable healthcare.

Regarding our clinical practice, the essence of reducing emissions is recognising that everything carries a carbon footprint and adding a consideration of this in our clinical decision making. Take imaging as an example, MRIs are the most carbon intensive and ultrasounds the least intensive forms,¹⁴ so let's avoid ordering them unnecessarily and choose the lower emitting option when we can.

The same applies to pharmaceuticals, where we can tackle their impact via avoiding overprescribing, using lifestyle prescriptions and addressing non-adherence and routine prescriptions.¹⁵ Big carbon savings comes from practising preventative medicine, keeping people well with healthy diets, exercise and immunisations,⁵ and thereby reducing the need for expensive high carbon hospital-based care.⁶

We can all take these opportunities to make a difference as practitioners. However, none of us practice in total isolation, and to achieve meaningful reduction in emissions we need to look at the bigger picture.

Doctors for the Environment Australia (DEA) and the Australian Medical Association (AMA) are jointly calling for the healthcare sector to achieve net zero emissions by 2040, with an 80% interim reduction target by 2030.¹⁶ Eighteen medical organisations, including the Australian and New Zealand College of Anaesthetists (ANZCA) and the Royal Australian College of Surgeons (RACS) have joined our call, accepting their responsibility to work towards sustainable health care. DEA's "Net Zero Emissions: Responsibilities, pathways and opportunities for Australia's healthcare sector report,"¹⁷ written in 2020, provides guidance on how to achieve these targets.

Pathways include:

- Renewable energy supply to our hospitals
- No new gas installations or upgrades in our hospitals
- Reducing healthcare demand through prioritising preventative and primary care
- Procurement of medical equipment and goods with low carbon footprints
- Reduction of travel emissions through uptake of telemedicine, e-vehicles and active transport.

As doctors, we can all advocate at the hospitals and medical practices in which we work to achieve these pathways. We are a powerful voice within these institutions, and the experience of DEA members is that much can be achieved through internal advocacy. Having conversations with our colleagues and hospital administrators, highlighting the ethical need for action as well as the financial savings that can be made, makes a material difference. My personal experience at my suburban general practice means we have solar panels, an EV charging station, sensible tree planting and improved waste management.

DEA has long advocated for a National Health and Climate Strategy (NHCS) and an accompanying Sustainable Healthcare Unit¹⁸ and we are very pleased that in December 2023 the federal government released the National Health and Climate Strategy,⁵ with its supporting National Health, Sustainability and Climate Unit (NHSCu). This high-level policy document's vision is for 'Healthy, climate-resilient communities, and a sustainable, resilient, high-quality, net zero health system'. It outlines a sensible, responsible pathway for our industry to achieve this vision and names workforce mobilisation as a key precondition for its success.

Currently DEA is advocating for budgetary support of the NHCS.¹⁹ While there is a small allocation for support of the NHSCu (\$3.7 million over 3 years) and \$5 million for research,²⁰ considering the annual health budget of \$105.8 billion,²¹ this is a drop in the ocean for what has been described as the greatest health issue facing humanity.²²

As I said, recognising the need for sustainability is easy. Unfortunately, making a sustainable healthcare system is a complex and wicked problem requiring the input of federal and state governments, health departments, the hospital system and community care. As workers within that system we can make a difference, not only by the way we practise medicine but also by accepting our ethical responsibility to advocate for change. None of us can solve this problem individually, but if we all play our part, collectively we can. At least, we need to try.

2023 was the hottest year in recorded history.²³ People's health and wellbeing are suffering due to climate change now;²² and this suffering will only get worse as our planet continues to heat. We doctors must exercise our duty of care to advocate for climate action, ensuring that people's needs are at the heart of decision making by our governments and health institutions, because fundamentally the climate crisis is a health crisis, and we need to treat it.

Dr Kate Wylie is a GP and the Executive Director of Doctors for the Environment Australia.

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Can breastfeeding mitigate the impact of climate change?



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Policies for sustainable health systems often focus on the carbon footprint of technologies and buildings. The 2023 National Health and Climate (NHC) Strategy¹ goes beyond these initiatives, with a package of climate change mitigation and adaptation measures that cover nutrition standards, waste reduction, supply chains and models of care. These measures include attention to regional and preventative health, emergency and disaster planning, food security and communicable disease risks, including antimicrobial resistance. Breastfeeding is relevant to most of these measures, but often overlooked as a powerful means to build climate-resilient health systems. This article summarises the contribution of breastfeeding to sustainability, using recent evidence. However, lifting rates of breastfeeding nationally requires institutional support and investment from the top, not more pressure on individual mothers. Health professionals interested in sustainable health systems can influence government in two key areas: funding for the 2019 Australian National Breastfeeding Strategy² and the regulation of marketing of infant formula and toddler milks³, currently before the Australian Competition and Consumer Commission⁴.

O&Gs have key leadership roles to champion breastfeeding and models of maternity care that protect and support it. In doing so, they contribute to “the highest quality, local, sustainable first-food system for generations to come”.⁵

Breastfeeding as climate change adaptation

Increasing breastfeeding builds national capacity to adapt to climate change. At the population level, breastfeeding prevents infant and maternal illness⁶, reduces health system costs⁷⁻⁹, and builds a climate-resilient health sector. Breastfeeding provides antibodies and other immunologically protective factors that reduce the incidence of infections in infants and young children^{6,10} — issues that are relevant to the threat of antimicrobial resistance. However, many mothers do not live and work in environments that provide the social and institutional support necessary to breastfeed. Despite the intentions to breastfeed by the vast majority of Australian mothers (over 90%), many face multiple obstacles¹¹⁻¹⁶. For example, only 21% of Australian maternity hospitals are Baby Friendly Hospital Initiative (BFHI)-accredited¹⁷⁻¹⁹. The reasons for inadequate breastfeeding are complex and include under-investment in breastfeeding support for mothers²⁰ and insufficient protection from inappropriate marketing of commercial milk formulas²¹. These problems are compounded by inadequate health professional training

in breastfeeding and unsupportive social, childcare and workplace environments^{20,22,23}. Consequently, more than two thirds of Australia’s infants and young children are fed commercial milk formulas^{24,25}. These products include infant formula (for ages 0–6 months) and follow-on formula (6–12 months), toddler formula (13–36 months) and special requirements formula (0–6 months).

Breastfeeding is disrupted whenever infants are separated from their mothers. In addition to unsupportive work environments, breastfeeding is threatened by separation through medical emergencies, hospitalisation and incarceration²⁶, and hospital protocols, as seen in the early stages of the COVID-19 pandemic²⁷. Breastfeeding is disrupted when models of maternity care or medical conditions limit breastfeeding, for example maternal obesity, diabetes type 2 and premature or caesarean birth^{28,29}. Many of these conditions are associated with social disadvantage, compounding the first food insecurity of these communities¹¹⁻¹⁶.

Barriers to breastfeeding follow social gradients, and mothers of higher socioeconomic status are better equipped to sustain breastfeeding than mothers in lower socioeconomic groups, culturally and linguistically diverse communities and regional areas³⁰⁻³². For Australian Aboriginal and Torres Strait Islander mothers, rates of breastfeeding may vary with cultural knowledge, remoteness, culturally safe models of maternity care and breastfeeding support within Aboriginal controlled health services³³. Social inequities explain why poor households are the least likely to breastfeed, despite having the least capacity to afford commercial milk formula, a situation referred to as the ‘breastfeeding paradox’ in the food security literature^{34,35}.

Infant feeding in natural disasters & emergencies

Climate change is predicted to increase the frequency and intensity of natural disasters, wars and civil unrest. Health districts and communities with high rates of breastfeeding are better placed to withstand these challenges. Community resilience to emergencies and disasters requires the short supply chain and health benefits of breastfeeding. Breastfeeding provides the shortest possible food ‘supply chain’ for infants and young children. However, this supply chain is readily disrupted when breastfeeding is not protected, promoted and supported. Emergencies and natural disasters highlight the extreme vulnerability of infants and young children to acute food

insecurity and infection if they are not fed properly, and disadvantaged population groups are more exposed to harm. Breastfed infants are food secure as long as they are with their mothers, and the mother's health and wellbeing are prioritised. In bushfires, cyclones, floods and other disasters supplies of commercial milk formula and their hygienic preparation may be compromised by disruptions to transport, clean water and electricity. These hazards make bottle feeding unsafe and rapidly create conditions that expose non-breastfed infants to increased risks of infection, which may be life threatening.

However, Australian disaster management plans have been slow to include policies for feeding infants and young children, despite extensive international guidelines³⁶. These plans need to include protocols to protect and support breastfeeding and ensure that non-breastfed infants are fed safely. In contrast to the short 'supply chain' of breastfeeding, supply chains for commercial milk formula are complex, globalised and highly vulnerable. These supply chains are subject to logistic disruptions and recalls that affect availability^{37,38}. For instance, in the United States in 2022 a recall of a major infant formula brand and reported deaths of three infants resulted in a crisis arising from shortages of milk formula products³⁹.

Breastfeeding can lower carbon footprints

Breastfeeding has long been recognised as an environmentally sustainable way to feed infants and young children, because it does not generate the substantial greenhouse gas emissions, water and fertiliser consumption, contamination and other environmental degradation, (including land fill) associated with the dairy industry and the manufacture, transport and packaging of commercial milk formulas^{40,41}. The production of commercial milk formulas doubles the 'carbon footprint' of breastfeeding. Annual emissions for commercial milk formulas range from 4-14 kg CO₂ eq across the full life cycle of product production and use^{1,5,42}. In addition, each kilogram of formula requires 6280L of water (including 699L of 'blue' water and rainwater for fodder for raw milk production⁴³.

The sustainability of diets is a new initiative in the current review of the Australian Dietary Guidelines, with the NHMRC forming a Sustainability Working Group⁴⁴, to advise on "accessible, affordable and equitable diets with low environmental impacts." Priority areas in the review includes the effects of maternal diet on pregnancy and breast milk production and food security⁴⁵. While the review's scope excludes infant feeding, it includes children older than 12 months and the effects of diet on children's allergies, growth (including overweight/obesity) and development, in which breastfeeding plays a role. The review will also examine evidence surrounding ultra-processed foods, a classification applied in some countries to infant formula and "toddler milk"^{46,47}.

'First food security' recognises the centrality of breastfeeding to food security of infants and young children in households every day and during emergencies³⁷, based on concepts of breastfeeding as the 'first food system'^{48,49}. Breastfeeding has the potential to fulfil every aspect of food security, defined by the United Nations and others in terms of appropriateness, (a crucial factor for developing infants), and food availability, accessibility (which includes affordability), utilisation, stability and sustainability³⁷. Food security came to national attention during the



Breastfeeding is a secure, sustainable way to feed infants and children as long as they're with their mothers and the mother's health is prioritised.
Photo: Australian Breastfeeding Association

recent bushfires, floods and COVID-19 pandemic, which disrupted the labour force and food supply chains and was investigated in a recent parliamentary Inquiry into Food Security in Australia⁵⁰. The relevance of breastfeeding to national food security was argued in a detailed submission to the inquiry by the World Breastfeeding Trends Initiative Australia and the Australian Breastfeeding Association⁵¹. Breastfeeding was recognised as 'first food security' in the inquiry's recommendations for a National Food Security Strategy⁵², and food security is prioritised in the scope of the current review of the Australian Dietary Guidelines⁵³. Global reporting on food security now includes breastfeeding⁵⁴.

Decarbonising the health system

To 'decarbonise the health system' and help build community and health system resilience to climate change, we need the government to take urgent action and invest in Australia's national capacity to breastfeed. How? By protecting breastfeeding from the influence of commercial milk formula companies in policy making, the health system and homes by strengthening, in law, Australia's implementation of the WHO International Code of Marketing of Breastmilk Substitutes and subsequent World Health Assembly resolutions. This action is critical, following the review of the Marketing in Australian of Infant Formula (MAIF) Agreement, (a report released on 11 April 2024)⁵⁵, in response to the Australian Competition and Consumer Commission (ACCC)'s concerns about the marketing toddler milks⁵⁶.

Rolling out the 2019 Australian National Breastfeeding Strategy. This is long overdue: we need an implementation plan and funding for all sections of the strategy in federal budgets. Single actions are not enough: a national boost to breastfeeding needs coordinated investment over ten policy areas, not "cherry-picked" policy and funding. The importance of breastfeeding to climate health, makes it highly relevant to planning the implementation of the National Health and Climate Strategy¹ and consistent with the National Women's Health Strategy 2020-2030⁵⁷ – a 'win' for all.

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* Approximately 6.6kg raw milk is used to produce 1kg of commercial formula.

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Breastfeeding has long been recognised as an environmentally sustainable way to feed infants and young children. Photo: Adobe Stock

Air pollution and pregnancy



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FRANZCOG, DDU

In Tasmania in January 2019, an out-of-control fire in the Tahune forest reserve blanketed the nearby town of Geeveston with thick, choking smoke. Sarah lived with her partner and child on the outskirts of town, in a caravan at the back of her parents' house. I remember her telling me this when she came to our antenatal clinic for a routine 24-week visit. Her first pregnancy had been uncomplicated, and she had no obvious risk factors for obstetric complications, but two weeks after that appointment, Sarah came to hospital in pre-term labour. Her baby girl died soon after birth.

In January 2019, air pollution was something that I'd never really thought about, although I knew it could exacerbate asthma and cause cardio-respiratory problems. But I couldn't help but wonder if there was anything I could, or should, have done to help Sarah. As the smoke slowly cleared from Tasmanian skies and then returned later the same year in the most extreme and widespread fires South-Eastern Australia had ever seen, I started to do some reading.

One story stood out. The first person ever in the world to have officially died of air pollution was 9-year-old Ella Aduo-Kissi-Debrah, who lived 25 metres from one of London's busiest roads and died after an acute asthma attack in 2013. It took seven years of campaigning and evidence from high-profile expert witnesses before a coroner ruled that air pollution had contributed to Ella's death¹. The significance of the finding cannot be overstated: humans are moved to action by their emotional response to individual stories while large, abstract numbers — such as the roughly 8 million premature deaths worldwide attributed to air pollution each year² — are impossible to process and easy to ignore.

We can't know for certain what role air pollution played in Sarah's pre-term birth. However, an unholy combination of bushfire smoke, heat and stress was likely at play, each amplifying the pro-inflammatory effects of the others. There is overwhelming evidence that pregnant women exposed to air pollution are at increased risk of pre-term birth and fetal growth restriction³. But our inability (or unwillingness) to directly attribute causation in individual cases is one thing that prevents us from grappling with the issue. Although one in three pre-term births globally is associated with air pollution⁴, and a study published in 2023 estimated that over 14% of pre-term births in NSW between 2016 and 2019 were related to wildfire smoke exposure⁵, the Australian Pre-term Birth Prevention Alliance website does not list air pollution among the potential causes of pre-term birth⁶.

Another problem is that we seem to feel there is nothing we can do to make a difference — we accept air pollution as an unfortunate but inevitable part of urbanisation and industrialisation. But Government policy and regulation have the power to significantly influence air quality. In the USA, the net economic benefits (mostly derived from health co-benefits) of the Clean Air Act are over two trillion dollars annually, 32 times the cost of the regulations⁷. But because many of the costs are born by industry, clean air legislation is constantly being challenged and flouted.

The World Health Organisation (WHO) recognises air pollution as the single biggest environmental threat to human health. In 2021, the WHO revised its air quality standards to reflect emerging evidence about health effects of even relatively low levels of pollution. They now estimate that 99% of the world's human population is regularly exposed to unhealthy air⁸. Of the 1% who enjoy clean air, many live in Australia and New Zealand. But we cannot be complacent. Bushfires, which are becoming more frequent and severe with global heating, can expose large numbers of people to extreme levels of air pollution for extended periods. Other people are exposed to air pollution through residential proximity to industry or heavy traffic, occupation, or poor-quality housing. In Australia and New Zealand and all over the world, the people most likely to be exposed to air pollution tend to live in lower socio-economic areas, are more vulnerable to its health effects due to co-morbidities and interacting exposures, have less capacity to modify their exposure and are less able to advocate for themselves. Air pollution is a social justice issue.

Air pollution tends to be a mix of gases and particulate matter (including black carbon, heavy metals, and polycyclic aromatic hydrocarbons (PAH)). Sources of outdoor (ambient) air pollution include fossil fuel extraction and combustion, other industrial and agricultural activities, bushfires and dust storms. Sources of indoor air pollution include heating and cooking with solid fuels, smoking, candles and incense, mould, off-gassing from new furniture or carpets, fragrances, and cleaning products. Whether indoor or outdoor, and regardless of the source, health effects derive from a complex interplay of increased oxidative stress, systemic inflammation, and immune dysregulation. Many pollutants also act as endocrine disruptors. In adults, this leads to increased rates of cardio-respiratory disease, diabetes and metabolic dysfunction, kidney disease, autoimmune disease, cancer, and neurological and psychiatric disorders⁹. Particulate matter is the most significant cause of health effects; larger particles up to 10 microns in diameter (PM10) are

responsible for visible haze and immediate symptoms such as eye and skin irritation and cough, while smaller particles less than 2.5 microns in diameter (PM_{2.5}) reach the alveoli and enter the bloodstream. Effects on pregnancy are predominantly placentally mediated, secondary to inflammation, oxidative stress, epigenetic changes or endocrine disruption. Ultrafine particles can also cross the placenta into the fetal circulation, where they act directly on developing organs^{10,11}. Studies performed in regions where there are chronic, high levels of air pollution consistently show increased risks of pre-term birth, low birth weight and small for gestational age, and stillbirth³. The increase in individual risk is relatively small, but it represents a significant public health issue due to the ubiquity of air pollution. Studies also support a likely or possible increase in gestational diabetes mellitus and hypertensive complications of pregnancy¹², and infertility and miscarriage¹³.



*In-utero exposure to air pollution can have adverse health effects on children.
Photo: Adobe Stock*

Even in the absence of adverse pregnancy outcomes, in-utero exposure to air pollution is associated with disorders of the respiratory system, immune status, brain development, and cardiometabolic health in children¹¹. Studies of exposure to airborne polycyclic aromatic hydrocarbons demonstrate associations with developmental delay, reduced IQ, symptoms of anxiety, depression and inattention, ADHD, deficient maturation of emotional self-regulation capacity, and poorer social responsiveness in childhood. In a review of the adverse effects of fossil fuel combustion on child health, and the magnifying effects of climate change and socio-economic deprivation, Federica Perera writes: "Unless strong action is taken now, our children and their progeny will inherit an increasingly unsustainable and unfair world in which they, their families and communities will not be able to survive, adapt, grow and transform where needed."¹⁴

Australian women are most likely to be concerned about episodes of bushfire smoke exposure. The largest studies of bushfire smoke to date have been undertaken in the USA. A Colorado study of over 500,000 exposed pregnancies, showed that for every 1mcg/m³ (trimester average) additional PM_{2.5} exposure, there was a 5.7g decrease in birth weight, an odds ratio of 1.132 for pre-term birth, and increased risks of gestational diabetes and hypertension¹⁵. To put this into context, average PM_{2.5} levels in Newcastle and Sydney increased from 10mcg/m³ to 26 mcg/m³ over

the three months from November 2019 to January 2021. A Californian study of over 3 million births found a 3.4% increase in risk of pre-term birth before seven weeks after seven days of smoke exposure. They also showed that the prime driver of pre-term birth rates was days of very high smoke intensity¹⁶.

What can we, obstetricians and gynaecologists, do?

Education is vital. First, we need to educate ourselves. A 2018 USA study of patient-provider discussions around strategies to limit air pollution exposure found that 0% of 250 obstetricians surveyed reported ever discussing air pollution with their patients. I would like to think we can do better in Australia and New Zealand, but we have some work ahead of us¹⁷.

During the 2019/2020 bushfire season, public health advice was provided specifically to pregnant women on only one occasion, and women reported additional stress due to lack of knowledge about potential effects on pregnancy¹⁸. My informal review of official websites found that none gave details relevant to pregnant women, although a minority included pregnant women in lists of vulnerable groups of people. For future bushfire events, the infographic 'Impact of bushfire smoke on pregnancy outcomes' (pictured on page 41), developed as part of the Asthma in Pregnancy Toolkit is a valuable resource¹⁹.

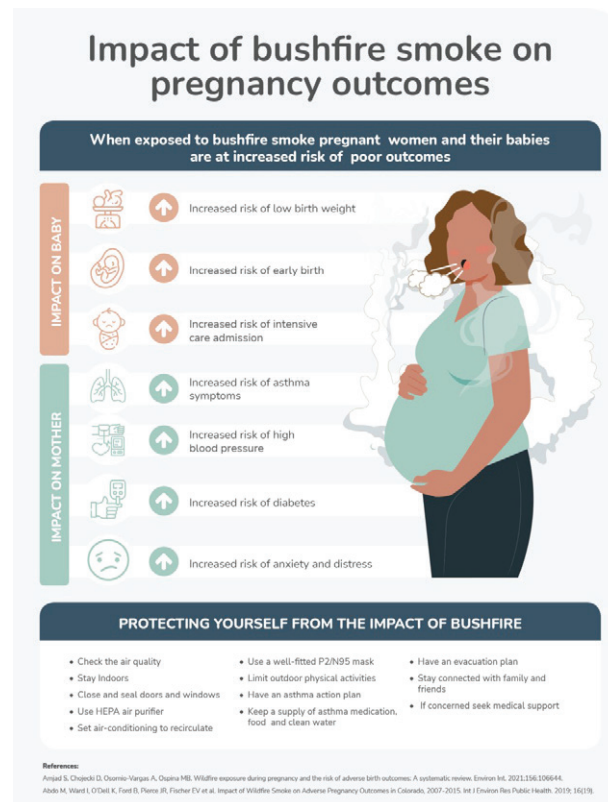
There is a lot of general advice we can give women about protecting themselves from outdoor air pollution, including bushfire smoke. Possibly most important is an awareness that air pollution levels can fluctuate markedly over time and space. Apps such as Air Rater can help women plan when it is safe to go out and when to stay inside. When levels of outdoor air pollution are high, women should stay inside with doors and windows shut and attempt to minimise sources of indoor air pollution. A 'clean air' room with an appropriately sized HEPA filter can help during prolonged episodes.

But no building can completely protect against air pollution, so it is important to open doors and windows again once outdoor levels have improved. If women do need to go outside, properly fitted P2 or N95 masks provide a level of protection, and staying even a block or two back from busy roads can make a significant difference. More detail can be found in the RANZCOG statement on Air Pollution in Pregnancy, available through the RANZCOG website²⁰.

We can use our knowledge and our influence to advocate for individual women at risk of air pollution due to (for example) mouldy housing or occupational exposure. We can advocate at government level, whether local, state, or federal, for policies that address air quality control, housing availability, retention of green space, and action on climate mitigation and adaptation.

What will happen the next time I meet someone like Sarah? A National Climate Adaptation Plan is currently being developed. I hope that the RANZCOG submission to the Issues Paper²¹ will have raised awareness of the specific vulnerabilities of pregnant women.

I hope that climate adaptation planning will include the needs of people like Sarah. I hope I can pick up the phone and get her to a safe place.



This 'Impact of bushfire smoke on pregnancy outcomes' infographic was developed as part of the Asthma in Pregnancy Toolkit by Centre of Excellence Treatable Traits. Photo: Supplied by The Asthma in Pregnancy Toolkit

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Testing for nitrous oxide leaks in Australian hospitals



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Nitrous oxide has an established place in clinical care, particularly in obstetric and paediatric services. However, it is also a powerful greenhouse gas. It is now known that the infrastructure used to deliver nitrous oxide through hospital pipelines to patients is prone to large leaks. As our understanding of this problem grows, so must our resolve to systematically detect and fix nitrous oxide leaks, which contribute to global warming without any contribution to patient care.

A pressing issue

The most recent Intergovernmental Panel on Climate Change report¹ concludes that urgent action is needed to limit global warming in order to prevent catastrophic outcomes for the planet and all its inhabitants. The Lancet Countdown of health and climate change states that "climate change is increasingly impacting the health and survival of people worldwide"². As healthcare providers, we have a responsibility to reduce carbon emissions wherever possible, for the health of our current and future patients.

In Australia, the healthcare sector is responsible for 7% of the country's total carbon emissions³. Carbon dioxide equivalent emissions from medical nitrous oxide use in Australia was estimated to be 300 kilo tonnes in 2020/21⁴, which is the equivalent of emissions from approximately 67,000 one-way Sydney-London economy flights (according to the myclimate.org carbon calculator).

Nitrous oxide is a potent greenhouse gas with a global warming potential 273 times that of carbon dioxide. It has a long atmospheric lifetime of 110 years, so nitrous oxide released today will have warming effects into the next century.

In hospitals, nitrous oxide is commonly supplied from large cylinders in a central store, or manifold, and delivered to the point of patient care through a network of rigid pipes. Australian hospitals which have passed the recommended Australian Standards for commissioning and maintenance testing of their nitrous oxide pipelines have subsequently been shown to have major leaks^{5,6,7,8}. There is great concern among anaesthetists and other expert groups about unmeasured and ongoing leakage of nitrous oxide from hospital infrastructure, both in Australia and overseas.

Evidence of the problem

Interest in addressing nitrous oxide leaks began in the NHS in 2020, where an audit of 16 hospitals in one region found that, on average, over 90% of nitrous oxide being purchased



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was wasted via leaks⁹. This has led to the decommissioning of nitrous oxide infrastructure in a number of hospitals, with ongoing clinical use supported by the provision of portable cylinders to the point of care.

In Australia, significant leaks have been detected across multiple hospitals when specific testing has been performed. These leaks have been detected only when specifically looked for by interested clinicians and engineering departments, reflecting that current Australian Standards for medical gas pipeline testing and maintenance are inadequate.

In 2021, Footscray Hospital in Melbourne found leakage of 75% of total purchased hospital nitrous oxide⁵. This was equivalent to >75,000kg of carbon dioxide emissions per year, or driving 600,000 km in an average car, and was found to be due to a leaking O-ring at a wall outlet.

At Sir Charles Gairdner Hospital in Perth, investigators found that there was no service contract in place to regularly assess the nitrous oxide infrastructure. In addition, the hospital's map of the nitrous oxide pipelines was out of date, and when updated it revealed active outlets in areas where the gas was no longer used, including a library⁶. They have since detected and repaired multiple leaks.

Methods of testing for leakage

A multidisciplinary approach to testing should be used, involving clinical, engineering, and infrastructure staff. Investigation for possible nitrous oxide leaks can be done in several ways, as outlined below. Identified leaks should be fixed, with ongoing scheduled testing put in place to ensure new leaks are detected promptly. Piped nitrous oxide should be removed from areas where it is not clinically necessary, and consideration should be given to replacing pipelines with portable nitrous oxide cylinders in areas where it is required.

Method 1: discrepancy

This method was utilised by The Nitrous Oxide Project, based in the UK⁹. The amount of nitrous oxide used clinically is compared to the amount of nitrous oxide purchased; the discrepancy between the two represents the size of the leak. This method does not identify where the leaks are in the system. For settings in which clinical use occurs without measuring and recording gas flow rates or duration of use, the clinical use data will need to rely on estimations. A study based at Sunshine Hospital in Melbourne found that, when

used in labour, an average of approximately 500 litres of nitrous oxide was used per labour⁷.

Method 2: cylinder weighing

A single cylinder is attached to the manifold, rather than a bank of cylinders, and weighed over a period of zero clinical administration. A reduction in weight represents a leak. Alternatively, it can be weighed over a period of time and the depletion in weight compared to the clinical administration over the same time period; the discrepancy between the two represents the leak. This method was developed at the Alfred Hospital, Melbourne⁸.

Method 3: pressure testing

This method detects leaks by measuring a drop in pressure in the fixed volume pipeline during a period of no clinical use. The method was developed in Western Australia, and their protocol is available on the Green Theatres website¹⁰.

Method 4: flow monitoring

This method utilises purpose-built flow meters and can be used to quantify the amount of nitrous oxide used in an area of the hospital, and or to detect nitrous oxide leaks in that area. It was developed at Sunshine Hospital⁷, Melbourne, and is currently being adapted for use in Sydney Children's Hospital Network and at the Royal Women's Hospital, Melbourne.

Looking ahead

Investigating for possible nitrous oxide leaks can be done in several ways, but it currently depends on individuals at each hospital becoming aware of the problem and finding the resources required to do the work. Even when the problem is raised by clinicians, hospitals may not consider additional testing to be a priority for them if current Australian standards are currently being followed. Nitrous oxide may be one of the highest single clinical sources of emissions for hospitals, so reductions in its use – or its wastage – can be highly impactful.

There is a need to raise awareness of this problem nationally, and to ensure all hospitals are taking steps to measure and control leaks in their infrastructure. Centralised state and nation-wide databases of nitrous oxide purchasing, clinical use, leaks, and other initiatives would help guide efforts to mitigate the greenhouse gas impact of medical nitrous oxide.

This is an opportunity for the Australian healthcare system to substantially reduce harmful greenhouse gas emissions. Unlike some other measures, the required changes can be undertaken with no impact on clinical care. It is just one of the ways we must step up and ensure that we are providing a responsible and sustainable healthcare system, both for our patients today and in the future.

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