

O&G
MAGAZINE



BIRTHING

Vol. 22 No. 3 | Spring 2020

a RANZCOG publication



Vol. 22 No. 3 Spring 2020

O&G Magazine Advisory Group

Dr John Schibeci Chair and Diplomates Rep, NSW
Dr Sue Belgrave Fellows Rep, New Zealand
Dr Brett Daniels Fellows Rep, TAS
Dr Jenny Dowd Fellows Rep, VIC
Dr Marilla Druitt Fellows Rep, VIC
Dr Fiona Langdon Young Fellows Rep, WA
Dr William Milford Fellows Rep, QLD
Dr Alyce Wilson Trainees Rep, VIC

O&G Magazine Editor

Sarah Ortenzio

Layout and Production Editor

Sarah Ortenzio

Design

Brendan Jones
Mieka Vigilante
Whitehart

Editorial Communications

O&G Magazine Advisory Group
RANZCOG
254–260 Albert Street
East Melbourne, VIC 3002 Australia
(t) +61 3 9417 1699
(e) ranzcog@ranzcog.edu.au

Advertising Sales

Bill Minnis
Minnis Journals
(t) +61 3 9836 2808
(e) billm@minnisjournals.com.au

Printer

Southern Colour
(t) +61 3 8796 7000

O&G Magazine authorised by Ms Vase Jovanoska
© 2020 The Royal Australian and New Zealand
College of Obstetricians and Gynaecologists
(RANZCOG). All rights reserved. No part of this
publication may be reproduced or copied in
any form or by any means without the written
permission of the publisher. The submission of
articles, news items and letters is encouraged.

For further information about contributing to
O&G Magazine visit: ogmagazine.org.au.

The statements and opinions expressed in articles,
letters and advertisements in *O&G Magazine* are
those of the authors and, unless specifically stated,
are not necessarily the views of RANZCOG.

Although all advertising material is expected to
conform to ethical and legal standards, acceptance
does not imply endorsement by the College.
ISSN 1442-5319

Cover image ©seasoning_17

The College

5 From the President

Vijay Roach

9 From the CEO

Vase Jovanoska

11 Leaders in focus

Nisha Khot

Birthing

15 Editorial

Brett Daniels

16 Maternity care for First Nations Australians

Yvette Roe and Sue Kildea

19 Physiological-based cord clamping

Sasha Skinner and Stuart Hooper

22 What does respect for autonomy require in birth?

Naomi Holbeach, Emma Tumilty and Annabelle Brennan

24 Pain relief in labour

Chris McGrath

27 Quality and safety performance reporting

Roshan Selvaratnam and Euan M Wallace AM

30 Training and simulation: labour ward emergencies

Edward Weaver OAM and Rachael Nugent

33 Management of an obstetric emergency

Chris Polchleb and Hayley Messenger

36 The future of monitoring the fetus during labour

Vinayak Smith, Deborah Fox RM, Beverley Vollenhoven
and Euan M Wallace AM

39 Is 39 weeks the ideal time to deliver?

Richard Murphy

41 Methods of labour induction

Michelle Wise

- 43 Homebirth in Australia: from shadows to mainstream**
Miranda Davies-Tuck, Colleen White and Caroline Homer AO
- 45 Woman-centred respectful care**
Lesley Dixon
- 47 VBAC-2: a review of current evidence**
Amanda Whale and Andrew Woods
- 50 Complications of advanced maternal age**
Alice Whittaker
- 53 Twin births: trends and tribulations**
Yizhen (Amy) Liu, Mary-Ann Davey and Euan M Wallace AM
- 56 Instrumental vaginal delivery: a safe choice?**
John Svigos AM, Henry Murray, Stephen Robson and Darren Roberts
- 58 Maternal heart disease in labour**
Fiona Stewart
- 60 Managing pregnancies complicated by obesity**
Glyn Teale

Women's health

- 65 Q&A: How would you manage lichen sclerosis?**
Gayle Fischer OAM
- 68 Case report: Ovarian cancer presenting as haemoperitoneum**
Tanushree Rao, Jyothi Marry and Murad Al-Aker

The College

- 70 Obituaries**
- 72 College Statements update July 2020**
Yee Leung
- 72 Remembering Our Fellows**

RANZCOG New Zealand Committee

Te Kāhui Oranga ō Nuku

Dr Celia Devenish **Chair**

Catherine Cooper **Manager**

Level 6, Featherston Tower,

23 Waring Taylor Street,

Wellington 6011 / PO Box 10611,

The Terrace, Wellington 6143, NZ

(t) +64 4 472 4608

(e) ranzcog@ranzcog.org.nz

RANZCOG State and Territory Committees

Government Relations and National Offices

Mel Pietsch **Head**

Suite 13, 18 National Cct

Barton, ACT 2600

(t) +61 2 6100 1160

(e) mpietsch@ranzcog.edu.au

Australian Capital Territory

Prof Julie Quinlivan **Chair**

Victoria Peisley **Executive Officer**

Suite 13, 18 National Cct

Barton, ACT 2600

(t) +61 2 6169 3993

(e) act@ranzcog.edu.au

New South Wales

Dr Karen Mizia **Chair**

Dee Quinn **Executive Officer**

Suite 2, Ground Floor, 69 Christie Street

St Leonards, NSW 2065

(t) +61 2 9436 1688

(e) nsw@ranzcog.edu.au

Queensland

Dr Thangeswaran Rudra **Chair**

Sylvia Williamson **Executive Officer**

Suite 2, Level 2, 56 Little Edward Street,

Spring Hill, Qld 4000

(t) +61 7 3252 3073

(e) qld@ranzcog.edu.au

South Australia/Northern Territory

A/Prof Rosalie Grivell **Chair**

Tania Back **Executive Officer**

First floor, 213 Greenhill Road

Eastwood, SA 5063

(t) +61 8 7200 3437

(e) sa-nt@ranzcog.edu.au

Tasmania

Dr Lindsay Edwards **Chair**

Madeleine Bowers **Executive Officer**

College House, 254–260 Albert Street

East Melbourne, Vic 3002

(t) +61 3 9114 3925

(e) vic-tas@ranzcog.edu.au

Victoria

Dr Charlotte Elder **Chair**

Madeleine Bowers **Executive Officer**

College House, 254–260 Albert Street

East Melbourne, Vic 3002

(t) +61 3 9114 3925

(e) vic-tas@ranzcog.edu.au

Western Australia

Dr Patty Edge **Chair**

Claire Siddle **Executive Officer**

34 Harrogate Street,

West Leederville, WA 6007

(t) +61 8 9381 4491

(e) wa@ranzcog.edu.au

From the President



Dr Vijay Roach
President

There are many quotes about birth that focus on the arrival of the baby. Certainly, the wonder of new life captivates our imagination, evokes feelings of nurturing, love and hope for a unique being. Those involved in maternity care – midwives, doulas, doctors and birth attendants – share, in my opinion, an even greater privilege: the care of pregnant women. We are gifted with the opportunity to share their journey during pregnancy, birth and beyond. A pregnant woman is the 24-hour life support system for another human being, an extraordinary responsibility. That she places her trust in us to walk alongside her, to guide her and ensure her safety, and that of her baby, is humbling. This issue of *O&G Magazine* focuses on the many medical conditions that can potentially complicate birth, their investigation and management. For most women, the physical experience of birth is uncomplicated, but vigilance is always required and specific circumstances require medical intervention. Specialist and GP obstetricians carry the responsibility to understand the physiology and pathophysiology of the birth process. That is our primary remit and the authors in this issue discuss monitoring, cardiac disease, birth after caesarean section and emergency scenarios. The importance of cultural sensitivity is also explored.

Pregnancy and birth in 2020 is different. Women are older, obesity rates are higher, with associated morbidity, maternal expectations of a 'normal' outcome for themselves, and their babies, is almost absolute. Meeting those expectations places doctors under enormous pressure. Balancing the importance of supporting women's rights to experience the birth that they desire, and delivering a 'perfect' outcome, has meant increased intervention. The merits, or otherwise, of increased rates of monitoring, induction and caesarean section require careful, evidence-based evaluation and avoidance of an ideological, reactive debate. There is greater recognition that the birth experience, with intervention, and even without, can be traumatic for some. The need to inform women, about options and potential outcomes, is a more contemporary legal, ethical and social prerogative.

Birth is more than a physical process and it behoves us to remember that birth is also an emotional

and spiritual experience. American Professor of Sociology, Barbara Katz Rothman, expresses it beautifully 'Birth is not only about making babies. Birth is about making mothers – strong, competent, capable mothers who trust themselves and know their inner strength.'

The COVID-19 pandemic continues to have a devastating impact on our community, our members and our patients. At the time of writing, Victoria is experiencing a full lockdown and cases are rising in NSW. New Zealand, after enduring lockdown and apparently eliminating the disease, may be experiencing a new outbreak. Apart from the obvious economic and social impacts, for healthcare workers there is genuine physical risk and the psychological pressure is enormous. Our trainees are experiencing significant hardship with reduced access to surgery and other teaching opportunities, uncertainty about exams, assessments and progress through training. The College has endeavoured to maintain a high level of communication with those affected. I want to acknowledge the RANZCOG staff who have been working from home since March. Their work ethic, commitment and adaptation to a new and difficult work environment has been exemplary.

The College hosted a Hand-n-Hand Wellbeing Webinar with psychiatrists Dr Kym Jenkins and Prof Brett McDermott, Chair of the RANZCOG Wellbeing Working Group, Dr Paul Howat and Deputy Chair, Dr Katrina Calvert and RANZCOG CEO, Vase Jovanoska. We discussed the psychological impact of the pandemic on all of us, the importance of connecting with each other, the value of kindness and compassion and the need to replenish our happiness 'bucket'. At a time when we're all feeling rather low, when it's hard to see an end to the illness, the restrictions and the economic hardship, one hour of reflection, honesty and validation really made a difference. I'll end on that note, sending a message of gratitude to all of you. Thank you for the support that you have given me, our College, our staff and our trainees. At this time, RANZCOG has clearly demonstrated leadership, advocacy and authority in women's health, a reflection on you, your professionalism and the care that you provide to women in Australia, New Zealand and beyond.

From the CEO



Vase Jovanoska
Chief Executive Officer

The last few months have been very challenging for all of us. As I write this report, Metropolitan Melbourne is at stage four restrictions and in a state of disaster. There is so much uncertainty, and it is very difficult to plan anything. Amongst all the chaos in the world, we try to create some everyday order and routine in our lives as we hope things return to 'normal' in the near future, whatever that may look like.

We have had to adjust to the new normal; we cancelled many of our events/workshops and exams, and we created online workshops and webinars. Zoom has become an integral part of our daily life and how we conduct business, and the way we work together has vastly changed. What has not changed though, is our commitment to the College and to women's health, as we continue to strive to achieve meaningful outcomes through the work that we do.

College work continues against all adversity and challenges we have faced this year. Staff in Melbourne continue to work efficiently and effectively from home – it has been more than five months since we went to working from home conditions – and it is still uncertain as to when we will be able to return to College House in Melbourne. In New Zealand and some States and Territories, we have had a gradual return of some staff back to the office.

The College's new organisational values of Excellence, Education, Respect, Integrity, Advocacy and Kindness were developed by the Organisational Values Working Group (OVWG) in consultation with the broader membership. The new values will be incorporated across the College in everything we do and will form an important part of the College's policies and procedures moving forward.

We are all very excited by the purchase of the new College premises at 1 Bowen Crescent, Melbourne. While the property is in very good condition, some renovation and fit-out is required before we relocate there. We have budgeted that the fit-out and relocation of moving the College from Albert

Street to Bowen Crescent to be cost neutral. We are currently finalising the design phase of the project with construction and fit-out work to follow soon. We aim to move to the new premises by June 2021.

A new governance structure has been put in place for the Curriculum Review Project, and the draft framework was shared for consultation with training committees at the College. Development of a new Learning Management System named Acquire (replacement for CLIMATE) is in progress and is planned to be implemented by the end of the year. Equally, work on Integrate, the replacement for myRANZCOG is progressing well. Development of the new RANZCOG website is also in progress.

Development of the Multi-professional Obstetrics Training in Hospital Emergency Response (MOTHER) course is progressing well. Given the current limitations in face-to-face teaching, we will first focus on the development of online materials, a case library, and delivery of webinars. The online materials will provide the foundation for the course, with readings, video content and activities around communication, teamwork, clinical leadership, workplace culture, and management of emergencies. The overarching objective is to create a more bespoke offering based on the hospital's education requirements.

Recently, the College set up two workforce working groups, one in Australia and the other in New Zealand. Both working groups in Australia and in New Zealand had their inaugural meeting and are starting to work on analysing the current O&G workforce trends, identifying existing challenges, gaps, and possible opportunities for improvement in both countries.

The College has increased its advocacy efforts with key stakeholders in women's health services in regional and remote Australia. We have met the Minister for Regional Services, Decentralisation and Local Government, Hon Mark Coulton on two occasions to discuss the important role of GP obstetricians in regional/rural communities and how

the College can work with the Commonwealth to improve the maternity services in these locations. A considerable amount of public interest has been generated in the College's rural health mapping project. The project aims to produce a comprehensive map that documents the geographic coverage and type of maternal health services available in all rural, regional and remote areas of Australia, as well as the uptake of services by consumers, and barriers to effective service delivery.

Work on the new Reconciliation Action Plan (RAP) has just commenced. The RANZCOG Board and Council recently approved, in principle, representation of Māori and Aboriginal and Torres Strait Islander positions on Council. These changes, amongst other constitution changes, are currently out for wider consultation with all voting members of the College, before they are presented for approval at the College AGM in November.

The Gender Equity and Diversity Working Group (GEDWG) is making significant progress in the pursuit of gender equity across College business. The RANZCOG Board have approved adopting targets as a specific transitional tool to address gaps in gender inequity at College Board and Council level, with a suggested composition of 40% female, 40% male and 20% either gender. The GEDWG will now develop and set a policy for gender equity targets for next year's College Council and Board elections.

The newly established Wellbeing Working Group (WWG) had their inaugural meeting and have begun planning a number of initiatives that will support our members and trainees. The first Wellbeing Information Session and Panel Discussion via Zoom webinar was held in August by a panel of RANZCOG members and external mental health experts.

Wellbeing support has never been more important for us all than it is right now, when we are all under enormous pressure to continue to deliver good quality services but through different modes than we are used to. We need to look after each other and support each other during this time more than ever. It has been an exceedingly difficult time for our colleagues and community in Victoria and we need the support and encouragement of everyone to persevere.

Please stay safe and keep well.

LEADERS FOCUS



Dr Nisha Khot
MBBS, MD, FRCOG, AFRACMA, FRANZCOG

This feature sees Dr Nisha Khot 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 @Nishaobgyn

Prof Caroline Homer AO RM, MMedSc(ClinEpi), PhD

A Birthing-themed issue would be incomplete without a midwife. An obstetrician is not needed at every birth, but every woman needs a midwife to support her during labour. WHO has declared 2020 the International Year of the Nurse and Midwife, so it seems only appropriate to feature a leader in midwifery in *O&G Magazine*. Recently, RANZCOG and the Australian College of Midwives signed a historic memorandum of understanding to promote collegiality between both representative bodies and, hence, between the two professions. In this Leaders in Focus, I interview Prof Caroline Homer AO and talk to her about the future of maternity care in Australia. We discuss the tricky relationship between the two closely allied professions of midwifery and obstetrics and explore global leadership in women's health.

Prof Homer is the Co-Program Director of Maternal, Child and Adolescent Health at the Burnet Institute. She is also a Visiting Professor at the University of Technology Sydney, and an Honorary Professor at Monash University, Deakin University and the University of Melbourne. Prof Homer is a Fellow of the Australian Academy of Health and Medical Sciences. She is Co-Chair of the Australian Commonwealth Department of Health and Ageing National Expert Advisory Executive, Development of National Pregnancy Guidelines. She is a member of the World Health Organization Maternal and Perinatal Health Executive Guideline Development Group and has recently been appointed as Chair of the Strategic and Technical Advisory Group of Experts for Maternal, Newborn, Child and Adolescent Health and Nutrition. She is the President Elect of the Perinatal Society of Australia and New Zealand and has been the President of the Australian College of Midwives.

What does a typical day look like for you?

In COVID time, a typical day is working from home and working on a lot of research to do with COVID, but also my other research programs in the Asia Pacific region. My day begins early in the morning with Zoom meetings with the North Americans and ends late with the Europeans.

In previous years, my day also involved teaching and clinical practice, but these days it is research and development.

Can you tell me about your childhood?

I was born in what was then called Rhodesia, now Zimbabwe. My father was a cattle, tobacco and maize farmer. We lived around 100km north of Harare, the capital of Zimbabwe. We were home schooled in our early years and then went to the local school. By then, the civil war had begun in Zimbabwe. It went from the mid-70s to the 80s, and things became pretty hard and scary. My father was on police reserve, so he was away a lot of the time. We had to move houses to stay safe, we were escorted to school by an armed guard because of the risk of domestic terrorism.

When I was about 11, my parents decided to move to Australia. My father's great-great-grandmother was born in Australia, but the family had moved to England, so he had this one matriarchal relative from Australia. We didn't have any papers or passports, but we were told that Australia would accept us. We left Africa with no money and took a ship to Freemantle. I reckon if we arrived today, we would be sent to Nauru or Manus island. When we landed in Freemantle, we were told that we could only enter Australia if we had a patriarchal relative born in Australia, not a matriarchal relative. Even as an 11-year-old, I can remember thinking how outrageous and unfair that was. But the officer in charge at the port felt sorry for us and gave us these blue books that became our passports. Three years later, we were granted citizenship. My family settled in Queensland and that's where I grew up. The rest of my childhood was pretty normal, but these early experiences shaped my views of social justice.

Could you please take me through your career?

I am a hospital-trained nurse and midwife. This means that I didn't go to university to get an undergraduate degree. I did my nursing training at the Royal Brisbane Hospital and then went to Sydney soon after as a newly graduated nurse. I loved nursing and I was an efficient, well-organised nurse. I was working in a bone marrow transplant unit and really wanted to pursue a career in oncology nursing, but I didn't get into the course and I was quite upset at the time. I was sharing a house with a friend at the time and she asked me to accompany her to St Margaret's and do midwifery. I remembered the time when I had worked in a rural centre in Queensland looking after a family who had a baby at 28 weeks (or maybe earlier, this was 30 years ago so my memory isn't accurate). For some reason that I can't recall, the family had decided not to resuscitate this baby. I sat with them all night watching this baby die and supporting the parents in their grief. This was one of those profound, life changing moments. As a nurse, you didn't get such experiences in the big hospitals. The midwives would take over and protect you from this. When it came to decision-making, I was reminded of this experience and felt that I would make a good midwife. Also, midwifery at the time was a one-year course and you got paid to do it. This was a big advantage as well. I didn't get into St Margaret's but got into the Royal Women's Hospital in Paddington.

Soon after I graduated as a midwife, I went to work in a Mission Hospital in Malawi. I was totally useless there. I used to carry a textbook around and I would quickly read up about breech birth before delivering a breech baby. My training had involved helping and assisting the doctors and here I was, the on-call midwife, expected to do vacuum extractions and having to double-up as the anaesthetist for caesarean sections.

I returned to Sydney and worked in clinical practice. In 1996, I started at St George Hospital in Sydney. This was an incredibly lucky move because I got to work with Lesley Barclay who became my mentor. We worked in a midwifery continuity of care model and I subsequently did my PhD in this. At the same time, I started teaching undergraduate midwifery students and went on to run a research unit. Those ten years of doing clinical work and being on-call was one of the most important things I did. It kept me grounded and it is one of the things I miss most.

I got to where I am today by a combination of luck and bravery. I had to be brave in Africa as a newbie and I have had to be brave taking on research and leadership. I have had some fantastic mentors and teachers who inspired me to be a good role model myself.

You said you learned how to do vacuum births in Malawi. Do you see midwives in Australia doing this in the future?

In Australia, performing vacuum births is not part of the midwifery scope of practice. I do teach midwives to perform vacuum births as part of the ALSO/AMARE courses. In Australia, we are fortunate to work alongside good doctors. As midwives, it is our job to support doctors and to be the safety net for when things are not going well. As midwives, understanding the procedure of vacuum births means that we can remind doctors when they have done three pulls, when there is no descent, when



Prof Caroline Homer AO

the cup has popped off three times. This should not be perceived as criticism but instead should be seen for what it is, a support, a qualified person who can provide some checks and balances in a critical situation. In the context where we work as part of a well-qualified team, midwives don't need to perform vacuum births themselves.

However, there are many situations in low-income countries across the Asia Pacific where a midwife is the only birth attendant. In these situations, yes, midwives do need to perform vacuum births. I think the more crucial skill for both midwives and doctors is to learn when not to do a vacuum (or forceps) birth, to learn when this is the more dangerous option and to learn when they need to ask for help.

We can't shy away from the medical-midwifery conflict. What do you see as a way to resolve this conflict?

The medical-midwifery conflict is a huge disadvantage to providing good care to women. When it happens, it is horrible for everyone involved. And when it doesn't happen, no one seems to notice how well these teams work. Time and again, we see collaborative teams have good outcomes and fewer complaints. Both of our professions need to work out where our boundaries are, and then we need to learn to respect not only those boundaries but each other. We can, and should, support each other to do the best we can for women and babies.

Midwives need to lean in more. It's not okay for midwives to say 'That's a doctor's job. I don't do this.' We are qualified, educated, regulated and accredited by a national body to national standards. We need to step up and do more. At the same time, I ask our medical colleagues to lean out more. They can have confidence that midwives can be trusted to work within their scope of practice and escalate appropriately. Take a step back and be supportive of midwifery skills and knowledge.

I think training together helps develop this mutual respect. There are very few opportunities for midwives and doctors to learn together, especially in the early stages of their careers. I think if we start from the early career stage and grow together, we develop a better understanding of our scope of practice. We understand each other's roles and the difference between them. Junior doctors need to see what midwives do and junior midwives need to see what junior doctors need to achieve to complete their training. We need more multi-professional conferences so that both disciplines learn together. Ultimately, both professions aim to achieve the best outcomes for mothers and babies. We should do this together.

What advice would you give to an intern or a junior doctor who wants to pursue a career in obstetrics?

My advice would be to soak up every single experience and to learn from every experience. Engage with all the disciplines in the hospital at all levels of seniority. I would encourage anyone considering a career in obstetrics to spend some time with the midwives. Attend antenatal clinics with the Midwifery Group Practice midwives, be with a woman throughout her labour, just sit in a corner and watch normal labour and birth, attend a homebirth, accompany the midwife on postnatal visits. This is likely to be the only chance they will have of experiencing normality. As they advance in their training, they will deal with complexity, as they should. They will see complications, deal with postpartum haemorrhage, shoulder dystocia, obstructed labour, pre-eclampsia. But having seen normality, they will remember that at the centre of all the complexity is a woman having a baby. No matter what her medical issues, no matter how many tests we do on her or her baby, no matter what technology we use, this is still a woman having a baby and this is the most significant event in her life. Keeping the woman at the centre of all decisions and plans will come more naturally once doctors have a good understanding of normality. This will make them empathetic and kind obstetricians.

What do you see as the challenges for both obstetrics and midwifery in the future?

Both professions need to work out how to work better with each other. This is no longer optional; it has to happen.

We must also design better systems. We have always designed systems for women. We now need to do this with women. We must be more creative about our systems. Post-COVID, we must build back better. This means keeping the bits of COVID changes that work well and add in the bits from the pre-COVID systems that worked well.

Women must be at the centre of what we do. When women want more options, different options of care, we have to listen to them and deliver these options. We have to be brave enough to leave our own comfort zones, not hide behind the old-fashioned ways of doing things and embrace change instead.

Getting over ourselves and our pre-conceived ideas and come to a mutual position where we can work together effectively will benefit women and babies.

What is your advice to those considering doing a PhD?

I did a PhD almost by accident. I loved it and it has been very useful to me because I learned a whole lot of stuff very quickly. But I don't think everyone needs to do one. Everybody should engage in scholarship, in gathering evidence for change. We should all learn to be critical of the evidence presented to us. There is still some negativity towards midwives doing research, although this is changing rapidly. Both professions should actively engage in research because that's the only way we can provide good care. Instead of midwifery research and medical research, we need to do maternity research together and engage women in our research projects. Most importantly, when research provides us with the evidence for A being better than B, we have a responsibility to ensure that A is the option we choose.

What three words describe your life?

Lucky, exciting and determined.

How do you sustain yourself? What do you do when you are not working?

In non-COVID times, I love bush walking and I have big dinner parties because I love cooking and entertaining. These days, I exercise a lot because that is good for my body and my mind. I have started cooking more. I have a few lockdown cookbooks that I am working my way through, one recipe at a time. I try to keep in touch with people. Since I can't entertain, I have Zoom dinner parties instead. My partner and I both love long walks. Last year, we walked from Kyoto to Tokyo with a group of friends. We did have a walk planned in Portugal next year, but instead, we are going to walk the Flinders Ranges. Walking with friends is good because you can talk if you want to, share stories or walk quietly beside each other. There are no phones, no internet and no emails, so it is a real break from work, and you come back feeling properly refreshed.

What would you tell your younger self if you could go back in time?

I would say, 'Be brave and don't care too much about what people say'. That is not to say be disrespectful. Just don't take things to heart. Being hospital trained, I always felt like I wasn't good enough because I had not been to university. I would tell my younger self to get over it and take on the opportunities that come your way. I must say though, I don't have many regrets at this stage. I think I have been very lucky and have done good work.

I thank Prof Homer for sharing her valuable insights with us. I hope that her words will inspire readers to think of midwifery and obstetrics as two arms of the same body. The body can function with one arm if necessary, but having both arms makes for a much easier and more enjoyable life. I would especially encourage trainees and aspiring obstetricians to find midwifery role models to emulate and to form collaborative relationships with midwifery colleagues.

Editorial



Dr Brett Daniels
BSc, PhD, MBBS, FRANZCOG

There are few experiences that unite all people irrespective of age, gender, wealth or ethnicity, but we have all played a central role in at least one birth. In hospital or at home, by caesarean or vaginally, planned or spontaneous, attended by midwives, doctors, family members – every person reading this magazine has emerged into the world, taken their first breath and begun life separated from their mother.

There is no correct way to give birth, and women and their carers prioritise different aspects of their birth experience and make their own decisions. In my case, I am a white male specialist obstetrician. I practice primarily in a healthy population in private and public hospitals. I do provide vaginal birth after caesarean and vaginal birth of twins where appropriate. I don't perform vaginal breech delivery of singletons and I don't attend births outside of a hospital setting. I endeavour to provide a respectful woman-centred birth experience; my over-riding priority is the safety of the mother and baby. Like all of us, my practice is informed by my location, training, personal beliefs and the beliefs and desires of the people for whom I care. This issue of *O&G Magazine* has the single theme of birthing, but in reality, there is no single template that will work for all women in all circumstances. Reading these articles prior to publication, I found that many informed me of the context of birth across Australia and New Zealand and different approaches to achieve the best outcome for mother and baby.

Where a woman gives birth and who she is attended by is a discussion of primary importance. This issue contains articles regarding the organisation and outcome of maternity care in New Zealand, the drive towards 'Birthing on Country' for First Nations Australian women, and the current experience of homebirth in Australia and New Zealand. Regardless of birth location or choice of attendant, the question of consent to birth and the practices around birth

is faced by all women and their practitioners. The article by Holbeach et al discusses the issue of consent around childbirth and highlights the utility of having these discussions prior to labour.

This issue also provides a number of up-to-date reviews of areas of interest in obstetrics. In the context in which I practice, the articles on pregnancy in women of advanced maternal age and the timing and methods of induction of labour highlight changes in my clinical practice over the last decade. The ideal timing of delivery, and hence induction of labour, a topic brought into sharper relief following the publication of the ARRIVE trial, has also altered practice in many contexts and is relevant to all readers. A similarly emergent practice is physiological or 'delayed' cord clamping, I would encourage all readers to review the article on this topic which provides an excellent account of the physiological changes at this crucial transition. The reviews of cardiac disease in pregnancy and pain relief in labour provide accessible updates of these areas, while the article on fetal monitoring in labour highlights current developments in this field. Obstetricians and other birth attendants must also possess skills to offer assistance to a birthing woman when required. We have included articles on both twin births and instrumental delivery, and accounts of both the response to common obstetric emergencies and the various obstetric emergency training courses available in Australia and New Zealand.

We have the good fortune to spend our working lives caring for women and their babies at what can be the most joyous, but also one of the most dangerous, moments of their life. We should strive to respect their choices, and use our knowledge, skills and empathy to help them be safe and empowered. Read this issue of *O&G Magazine* and even the most experienced obstetrician will find something new to help them in their quest.

Maternity care for First Nations Australians



A/Prof Yvette Roe
PhD, MPH, BA
Co-Director, Molly Wardaguga Research Centre
College of Nursing & Midwifery,
Charles Darwin University
Ngykena Yaruwu Nations



Prof Sue Kildea
RN, RM, BaHSc (Hons) PhD
Co-Director, Molly Wardaguga Research Centre
College of Nursing & Midwifery,
Charles Darwin University

It is well documented that Aboriginal and Torres Strait Islander (hereafter, respectfully, First Nations) people bear an excessive burden of disease, disability and mortality across the lifespan. This starts in the early years and, despite national initiatives such as 'Closing the Gap', for the past 12 years (since targets were set in 2008) there has been little or no improvement in key maternal, newborn and child health (MNCH) indicators when comparing First Nations mothers and babies to other Australian women.¹ Maternal death remains 3–5 times higher,² perinatal deaths 1.7 times higher with preterm birth almost double; and unchanged in 12 years.³ Preterm birth is the largest contributor to child mortality³ and is associated with significant childhood disability² and chronic diseases in adulthood.³

Although many First Nations families live in urban areas, a little-known fact is that approximately 71% of First Nations birthing mothers live in rural, remote and regional areas, compared to only 27% of non-Indigenous women. Our maternity services do not reach into many of these areas and we see the inverse care law in action – where those who

have the highest burden of disadvantage have the poorest access to services.

In the last few months, we have seen the Australian healthcare system adjust and seek innovations to respond to the novel coronavirus by implementing significant changes (such as transition to telehealth) in record time. We could do the same to improve health for First Nations women, babies and families, by taking urgent practical action to support improved access to care. Birthing on Country services provide trialled and tested solutions to fast track significant service redesign in partnership with First Nations communities for maximum health gains.⁸ This service model resulted in a 50% reduction in preterm birth in South East Queensland. Birthing on Country services are recommended in the national Strategic Directions for Australian Maternity Services⁴ and the National guidance for implementing Birthing on Country Services has been endorsed by state and Commonwealth governments.⁵ Australia's response to this pandemic has proved that we are capable of rapid strategic action to safeguard our health: it's time we extend this action to First Nations families to achieve health equity in maternal and infant health.

Birthing on Country services: best start to life

First Nations women across Australia have led the drive to have Birthing on Country for decades. The aspirations and urgency of Birthing on Country becoming a reality is best captured in the following:

'[Birthing on Country should] be understood as a metaphor . . . for the best start in life for Aboriginal and Torres Strait Islander babies and their families because it provides an integrated, holistic and culturally appropriate model of care; 'not only bio-physical outcomes . . . it's much, much broader than just the labour and delivery . . . (it) deals with socio-cultural and spiritual risk that is not dealt with in the current systems.

Birthing is the most powerful thing that happens to a mother and child . . . our generation needs to know the route and identity of where they came from; to ensure pride, passion, dignity and leadership to carry us through to the future; [Birthing on Country] connects Indigenous Australians to the land.' Djapirri Mununggirriti at the National Birthing on Country Workshop 2012.⁶

Birthing on Country services consist of significant service redesign, increased First Nations control of service planning and delivery, increased employment of First Nations people, and continuity of midwifery carer delivered within an integrated system linking primary and tertiary services. The key elements of the Birthing on Country services are described in Box 1.

Birthing on Country services have a profound impact on outcomes

The Birthing on Country service in Brisbane (Meanjin), on the traditional lands of the Turbal and Jagera Nations, reported maternal and infant outcomes

Box 1. Key elements of the Birthing on Country service.⁷**Key elements of the Birthing on Country service**

- First Nations governance of the service.
- Improved integration between tertiary and Aboriginal community-controlled sector.
- Continuity of midwifery carer 24/7 during pregnancy, birth and up to six weeks postnatal.
- Strategy for increasing and capacity building the First Nations workforce: Family Support Workers, student midwifery cadets, new graduate midwifery positions, transport workers, senior management, administration, social worker, psychologist, practice nurse and program manager.
- Cultural and clinical supervision for frontline staff.
- Community-based hub with access to resident or outreach specialised paediatric and women's health services and social and emotional wellbeing team.
- Cultural strengthening and revival programs: culture and connection days, arts program.
- Intensive support for women and families: strong focus on family preservation (keeping families together) and restoration (returning children to parents).
- First Nations Controlled Birth Centres (i.e. choice of birthplace).

that have not been witnessed in Australia for the past decade.¹ The service is called Birthing in Our Community. The improvements are across numerous categories including First Nations workforce, integrated and wrap-around services that are women and baby centred, early community engagement and clinical outcomes (Box 2). They resulted from a partnership between two Aboriginal and Torres Strait Islander Community Controlled Health Organisations and a tertiary hospital: the Institute for Urban Indigenous Health, the Aboriginal and Torres Strait Islander Community Health Service Brisbane and the Mater Mothers' Hospital. The partners worked together to redesign and deliver services from 2012.⁷

The RISE Framework for implementing Birthing on Country

Birthing on Country is a complex intervention that incorporates a redesigned maternal and infant health service for greater quality and safety. It operates within a First Nations governance framework and addresses the determinants of living by rapidly increasing the First Nations workforce and providing comprehensive integrated services to support family's capacities and opportunities.

The RISE Framework is informed by First Nations relationality (interconnectedness) of people, animals, plants, place, time and ceremony. The intersections and synergy that bring First Nations knowledge to the forefront is critical in understanding First Nations aspirations for maternal and infant services and, importantly, how to inform the design of clinically and culturally safe services.¹⁰

The RISE Framework for implementation includes:

- Redesign the health system and services
- Invest in the maternal and infant health workforce to grow the First Nations workforce and ensure the non-Indigenous workforce is culturally safe
- Strengthen family capacity
- Embed community engagement, governance and control over health and research services

The RISE Framework has been informed by learnings from over a decade of research on maternity case studies for First Nations women, babies and families.

The RISE Framework can be locally adapted to the diverse needs of each First Nation community, while also assessing and utilising the available resources such as the workforce, infrastructure etc. However,

there are key areas that if implemented immediately could make a profound difference in maternal and infant outcomes for First Nation mothers, babies and families; these are:

1. Additional funding to Aboriginal Community Controlled Health organisations to employ midwives to work in continuity of care services and embed and monitor cultural safety
2. Immediately implement the recommendations in the Report of the Review of Medicare for Midwives¹⁰ to enable Aboriginal Community Controlled Health organisations to utilise Medicare funding for midwifery services - recommendations were supported by the whole panel included doctors / obstetricians.

COVID-19 provides an example of how things can change rapidly when politicians, health services and the wider community are motivated to unite against a common threat. Concurrently, there has been an international groundswell to support the Black Lives Matter movement. We have demonstrated dramatic improvements in 'black' birthing outcomes. With widespread medical, obstetric and government support, we could all get behind the Birthing on Country movement and show that black babies lives mater too.

Policy makers and healthcare institutions can feel overwhelmed and be slow to act; however, the list below provides things that you can do to help the Birthing on Country movement:

- If you're not sure how to respond, listen. If you're not sure what to do, research. If you're not sure what to do, donate. 'Not sure' becomes 'not my problem' it's not enough to be 'not sure' when First Nations women and babies are dying prematurely, especially when we have the evidence that makes a difference.



The RISE Framework		Implementation phases				
Intervention points	Standard Care		Phase 1	Phase 2	Phase 3	Phase 4
	Redesign maternity care					
	R	Routine care in community or hospital	Specific Indigenous antenatal or postnatal programs	Continuity of carer with caseload midwifery & Indigenous workers	Integrated community-based caseload midwifery & wrap around holistic services	Integrated Service/Hub/ Birth Centre & choice of birth place
	Invest in the health workforce					
	I	No Indigenous identified positions Workforce with limited cultural understanding	Identified positions Cultural capabilities training	Pathways & support for Indigenous staff Measuring progress of cultural capabilities	Indigenous workforce pipeline and mentoring Minimum standards for culturally capable workforce	Culturally and clinically capable (exceptional) workforce
	Strengthen families					
	S	Ad hoc or non Indigenous antenatal or parenting programs	Formal strategies engage families in maternal and infant health programs	Wellbeing framework to strengthen family capacity	Community developed cultural strengthening antenatal & parenting programs	Strong resilient families
	Embed community investment-ownership-activation					
E	No Indigenous engagement strategy	Multi stakeholder engagement e.g. <i>Community Consultation</i>	Formal system of governance e.g. <i>Advisory Group</i>	Transformative and strategic governance e.g. <i>Steering Committee</i>	Indigenous ownership	

Figure 1. The RISE Framework and characteristics of the possible implementation phases.⁹ Reproduced with permission.

- Reach out to your local Aboriginal and Torres Strait Islander Community Controlled Health Service – ask how can you work together, for example: increase the provision of outreach services, explore or support a partnership with the service you work in: let them lead. www.naccho.org.au
- Support the changes that are recommended in the review of Medicare for Midwives so that Aboriginal community-controlled health organisations can employ midwives to provide care for their families.
- Call out racism whenever you see it: silent bystanders allow this unacceptable behaviour to continue.¹¹ Learn how to be a good accomplice to First Nations peoples.¹²
- Amplify First Nations voices whenever you have the chance. If you don't have the chance in your everyday, create one, such as a panel discussion at your workplace ensuring proper remuneration for speakers. Remember to follow up on feedback and recommendations generated from these discussions in a timely manner.
- Ensure you and the staff at the hospital you work at have participated in Aboriginal and Torres Strait Islander-specific cultural safety training, including content on history, colonisation, racism, white privilege, cultural beliefs and protocols; as recommended by Australian Health Practitioner Regulation Agency, Nursing and Midwifery Board of Australia, Congress of Aboriginal and Torres Strait Islander Nurses and Midwives (CATSINaM), Australia Indigenous Doctors Association and Australian Medical Association.
- Ensure your organisation and staff are up to date in implementing recommendations from the National Aboriginal and Torres Strait Islander Health Plan, the Aboriginal and Torres Strait Islander Health Performance Framework, the National Aboriginal and Torres Strait Islander Health Curriculum Framework, the National Safety and Quality Health Service Standards user guide for Aboriginal and Torres Strait Islander health and your state and territories' Aboriginal and Torres Strait Islander-specific policies and implementation plans (eg. Queensland Health Aboriginal and Torres Strait Islander Cultural Capabilities Framework).
- Donate to Waminda South Coast Birthing on Country GoFundMe project: www.gofundme.com/f/birthing-on-country?utm_source=customer&utm_medium=email&utm_campaign=p_cp+share-sheet

References

1. Australian Government. Closing the Gap Report 2020. Canberra: Department of the Prime Minister and Cabinet; 2020. Available from: <https://ctgreport.niaa.gov.au/content/closing-gap-2020>
2. Australian Institute of Health and Welfare. Maternal deaths in Australia 2016. Canberra: AIHW; 2018. Available from: www.aihw.gov.au/getmedia/558ae883-a888-406a-b48f-71f562db3918/aihw-per-99-printable-PDF-of-web-report.pdf.aspx

Full reference list available online

Box 2. Birthing in Our Community outcomes.⁷⁻⁹

Birthing in Our Community outcomes

Increases in:

- First Nations governance and control of maternity services in partnership with the tertiary centre
- First Nations maternal infant health workforce (~550%)
- Integrated wrap-around services that are women and baby centred
- Women presenting earlier and more frequently for care
- Cultural support for frontline workers
- Cultural activities
- Exclusive breastfeeding at discharge

Reduction in:

- Preterm birth by ~50%
- Low birth weight infants
- Caesarean sections
- Admissions to neonatal intensive care

Physiological-based cord clamping



Dr Sasha Skinner
MBBS, BMedSci, FRANZCOG level 2 trainee
Department of Obstetric and Gynaecology
Monash Health, Melbourne



Prof Stuart Hooper
BSc, PhD, NHMRC Principal Research Fellow
The Ritchie Centre Fetal and Neonatal Health
Research Group Head,
Hudson Institute of Medical Research
Monash University, Melbourne

At birth, all newborns must transition from fetal to neonatal life, where the previously liquid-filled lungs must be aerated so they can take over from the placenta as the site of gas exchange. While umbilical cord clamping (UCC) is routinely performed at birth, the impact of abruptly removing the placental circulation during this transition is usually not considered. However, there is increasing evidence that UCC is not an innocuous act. In particular, the timing of UCC in relation to breathing onset may be crucial to optimise the neonatal transition and, for some infants, prevent significant morbidity and mortality.

What is the difference between the fetal and neonatal circulation?

During fetal life, blood returning from the body enters the right ventricle, but instead of being pumped through the liquid-filled lungs, this blood is directed, via the ductus arteriosus, to the placenta for

oxygenation. Oxygenated blood returning from the placenta is shunted through the ductus venosus and foramen ovale, bypassing the right ventricle and lungs, to the left ventricle to be pumped around the body.

In the newborn, breathing onset triggers a major re-organisation of the circulation. Lung aeration at birth substantially reduces pulmonary vascular resistance (PVR), which greatly increases pulmonary blood flow (PBF) by redirecting right ventricular output to the lungs rather than the placenta. Oxygenated blood from the lungs is then delivered to the left ventricle. In this way, the lungs take over from the placenta as both the site of gas exchange and the source of blood volume for cardiac output.

What is the impact of cord clamping during this transition?

After birth, the haemodynamic effects of UCC depend on whether the lungs are aerated. At most births, the neonate quickly establishes breathing, allowing redirection of blood through the lungs to be oxygenated and delivered to the left ventricle.¹ At this point, removing the placenta by UCC does not impact the infant's circulation as elevated PBF can immediately replace blood flow from the placenta as the source of blood volume for cardiac output.¹

However, prior to lung aeration, PVR remains high and so PBF remains low. Thus, If UCC occurs before lung aeration, cardiac output rapidly decreases (by around 60%) as blood supply to the left heart from the placenta is not replaced by an increase in PBF.¹⁻³ Additionally, removing the low-resistance placental circulation abruptly increases systemic vascular resistance and blood pressure.^{1,2} Cardiac output can only be restored by aerating the lungs so that PBF can increase.¹

Do we see the effects of UCC on the neonatal transition in clinical practice?

The adverse effects of immediate UCC increase with time between UCC and lung aeration, as throughout this time cardiac output will remain low. Most babies spontaneously breathe at birth and so this interval is relatively short. Nevertheless, routine immediate UCC significantly reduces neonatal heart rate in otherwise well babies.^{4,5} In preterm infants, who typically take longer to establish ventilation, immediate UCC impairs blood pressure stabilisation and oxygenation, increases rates of intraventricular haemorrhage (IVH), periventricular leukomalacia, necrotising enterocolitis, need for blood transfusion and poor neurodevelopmental outcomes.^{3,6-8}

What about babies that need resuscitation?

Studies assessing neonatal outcomes of immediate versus delayed UCC excluded babies requiring resuscitation, as current guidelines recommend immediate resuscitation away from the mother. These infants are usually hypoxic and so have redirected their cardiac output to protect vital organs, including the brain. As immediate UCC

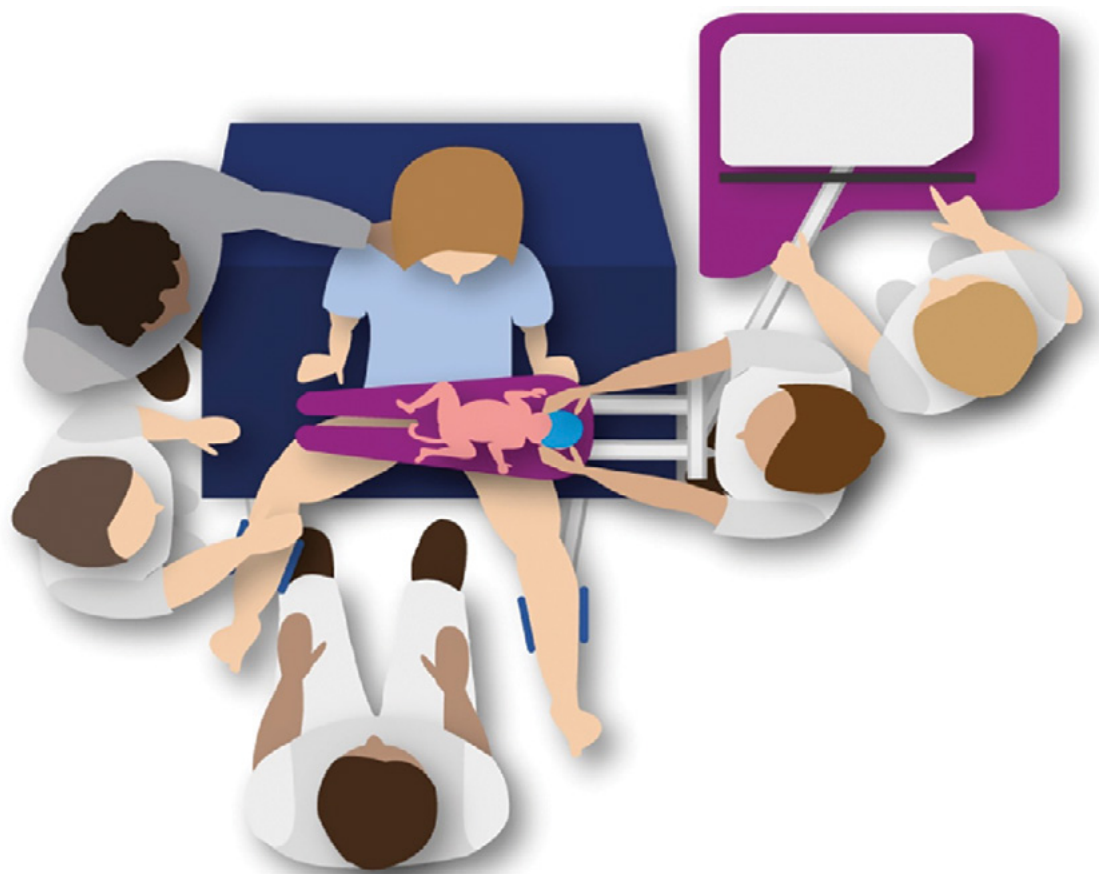


Figure 1. Schematic of physiological based cord clamping approach to neonatal resuscitation. Image courtesy of Knol et al.⁹

dramatically reduces cardiac output, impairing this protective mechanism increases the infant's susceptibility to hypoxic-ischaemic injury.⁷ Thus, infants requiring resuscitation may benefit most from delaying UCC until lung aeration is established – either spontaneously or assisted. However, this requires neonatal resuscitation to occur with the umbilical cord intact.

What is physiological-based cord clamping?

Physiological-based cord clamping uses the infant's physiology to identify optimal timing of UCC (i.e. when spontaneous or assisted ventilation is established). For infants requiring resuscitation, this means providing respiratory support with the umbilical cord intact. Current clinical studies at Monash Medical Centre, The Royal Women's Hospital and in the Netherlands have established equipment and processes to move neonatal resuscitation to the bedside, keeping the umbilical cord intact until adequate ventilation is achieved (Figure 1).^{9,10} Preliminary results demonstrate feasibility, safety and improved stabilisation in the neonate's heart rate and blood pressure.⁹⁻¹¹

Where did immediate cord clamping come from?

Immediate UCC was adopted as a component of 'active' management of third stage, along with controlled cord traction and early uterotonic administration. While active management significantly reduces postpartum haemorrhage (PPH), uterotonic administration is the primary effective component.¹² Indeed, routine immediate UCC does not reduce PPH, including at caesarean section, and

is no longer included in third stage management guidelines.^{4,9} Currently, the main indication for immediate UCC is to provide neonatal resuscitation.

What about placental transfusion?

Placental transfusion refers to net movement of blood from the placenta to the infant after birth. It is unclear what triggers this change from the previously balanced fetal-placental circulation. Placental transfusion is not explained by uterine contractions, gravity, neonatal spontaneous breathing or assisted ventilation in animal studies.^{13,14} One theory is that compression of the neonate during vaginal delivery causes blood to move into the placenta which then re-equilibrates after birth. Regardless of the mechanism, delayed UCC significantly increases infant birth weight, haemoglobin and iron stores with reduced incidence of iron deficiency anaemia persisting up to six months of age.⁴ This is at the expense of increased serum bilirubin, though with conflicting data regarding need for phototherapy.⁴

What about cord milking?

Umbilical cord milking has been proposed to accelerate placental transfusion at birth, although few methods are effective.¹⁵ However, repetitive occlusion and release of the umbilical cord causes large fluctuations in carotid artery pressure and significantly increase the risk of IVH.^{15,16}

What should we do now?

The World Health Organization recommends delaying UCC for at least 60 seconds in both term and preterm infants not requiring resuscitation. Cord milking is not

Table 1. Effects of cord clamping.

Effects of immediate vs physiological-based cord clamping	
Cardiovascular transition	Reduction in: <ul style="list-style-type: none"> • Neonatal cardiac output and heart rate • Cerebral oxygenation
	Increase in: <ul style="list-style-type: none"> • Neonatal systemic vascular resistance and blood pressure
Effects of immediate vs delayed cord clamping	
Term Infants	Reduction in: <ul style="list-style-type: none"> • Neonatal birth weight • Bilirubin levels and need for phototherapy*
	Increase in: <ul style="list-style-type: none"> • Neonatal iron stores and haemoglobin levels • Rates of iron deficiency anaemia persisting to six months old
Preterm infants	No difference in rates of postpartum haemorrhage
	Increased rates of: <ul style="list-style-type: none"> • Intraventricular haemorrhage • Necrotising enterocolitis • Periventricular leukomalacia • Haematocrit, need for blood transfusion • Severe neurological morbidity or mortality • Late onset sepsis*
	Reduction in: <ul style="list-style-type: none"> • Cerebral oxygenation • Cerebral blood flow autoregulation • Neurobehavioral and gross motor function scores

*Conflicting evidence

recommended. Simple measures such as vigorous stimulation of the infant are important as most babies breathe spontaneously with these measures. Currently, babies needing resuscitation require prompt transfer to a Resuscitaire®, thus necessitating early UCC. However, pilot data suggests resuscitation with the umbilical cord intact is feasible and safe and ongoing clinical trials may change the way we provide resuscitation to infants not breathing at birth.

References

1. Bhatt S, Alison BJ, Wallace EM, et al. Delaying cord clamping until ventilation onset improves cardiovascular function at birth in preterm lambs. *Journal of Physiology*. 2013;591:2113-26.
2. Polglase GR, Dawson JA, Kluckow M, et al. Ventilation onset prior to umbilical cord clamping (physiological-based cord clamping) improves systemic and cerebral oxygenation in preterm lambs. *PLoS One*. 2015;10:e0117504-e.
3. Baenziger O, Stolk F, Keel M, et al. The influence of the timing of cord clamping on postnatal cerebral oxygenation in preterm neonates: A randomized, controlled trial. *Pediatrics*. 2007;119:454-9.
4. McDonald SJ, Middleton P, Dowswell T, Morris PS. Effect of timing of umbilical cord clamping of term infants on maternal and neonatal outcomes. *Cochrane Database Syst Rev*. 2013;2013(7): CD004074.

5. Dawson JA, Kamlin COF, Wong C, et al. Changes in heart rate in the first minutes after birth. *Arch Dis Child Fetal Neonatal Ed*. 2010;95:F177-F81.
6. Garg BD, Kabra NS, Bansal A. Role of delayed cord clamping in prevention of necrotizing enterocolitis in preterm neonates: a systematic review. *J Matern Fetal Neonatal Med*. 2019;32:164-72.
7. Vesoulis ZA, Liao SM, Mathur AM. Delayed cord clamping is associated with improved dynamic cerebral autoregulation and decreased incidence of intraventricular hemorrhage in preterm infants. *Journal of Applied Physiology*. 2019;127:103-10.
8. Datta V, Kumar A, Yadav R. A randomized controlled trial to evaluate the role of brief delay in cord clamping in preterm neonates (34-36 weeks) on shortterm neurobehavioural outcome. *Journal of Tropical Pediatrics*. 2017;63:418-24.
9. Knol R, Brouwer E, van den Akker T, et al. Physiological-based cord clamping in very preterm infants – Randomised controlled trial on effectiveness of stabilisation. *Resuscitation*. 2020;147:26-33.
10. Brouwer E, Knol R, Vernooij ASN, et al. Physiological-based cord clamping in preterm infants using a new purpose-built resuscitation table: A feasibility study. *Arch Dis Child Fetal Neonatal Ed*. 2019;104:F396-F402.
11. Blank DA, Badurdeen S, Omar F Kamlin C, et al. Baby-directed umbilical cord clamping: A feasibility study. *Resuscitation*. 2018;131:1-7.
12. Salati JA, Leathersich SJ, Williams MJ, et al. Prophylactic oxytocin for the third stage of labour to prevent postpartum haemorrhage. *Cochrane Database Syst Rev*. 2019;4(4):CD001808.
13. Hooper SB, Crossley KJ, Zahra VA, et al. Effect of body position and ventilation on umbilical artery and venous blood flows during delayed umbilical cord clamping in preterm lambs. *Arch Dis Child Fetal Neonatal Ed*. 2017;102:F312-F9.
14. Brouwer E, Te Pas AB, Polglase GR, et al. Effect of spontaneous breathing on umbilical venous blood flow and placental transfusion during delayed cord clamping in preterm lambs. *Arch Dis Child Fetal Neonatal Ed*. 2020;105:F26-F32.
15. Blank DA, Polglase GR, Kluckow M, et al. Haemodynamic effects of umbilical cord milking in premature sheep during the neonatal transition. *Arch Dis Child Fetal Neonatal Ed*. 2018;103:F539-F46.
16. Balasubramanian H, Ananthan A, Jain V, et al. Umbilical cord milking in preterm infants: A systematic review and meta-analysis. *Arch Dis Child Fetal Neonatal Ed*. 2020. doi: 10.1136/archdischild-2019-318627.



**The Royal Australian
and New Zealand
College of Obstetricians
and Gynaecologists**
Excellence in Women's Health

'Join the
conversation'

facebook.com/ranzcog @ranzcog

au.linkedin.com/company/ranzcog

www.ranzcog.edu.au

What does respect for autonomy require in birth?

Dr Naomi Holbeach
BSc, LLB (Hons), MBBS (Hons), MRMed
RANZCOG Trainee and Graduate Researcher
Melbourne Law School, Vic

Dr Emma Tumilty
BA, PGDipHealSci (Bioethics), PhD
Lecturer and Bioethicist, Deakin University, Vic

Dr Annabelle Brennan
MBBS / LLB (Hons)
Obstetrics and Gynaecology Registrar,
Barwon Health, Vic

The issue has been raised whether it is necessary to consent pregnant people for vaginal delivery. The argument, as it is made, states that there are significant risks associated with vaginal birth and there are alternative options.¹⁻² Therefore, to respect a pregnant person's autonomy requires a formal informed consent process, as it is provided for other medical procedures.¹⁻² We believe that those calling for this step recognise an important issue in the provision of care (informed decision-making) for pregnant people, but their solution takes a hammer to an issue that requires some finer tools.

This case is challenging. As an obstetrician, you are faced with discussing interventions with a patient that she ideally wanted to avoid. Now you must try and balance her goal of minimal intervention with providing a good outcome for her and the fetus. Points to consider:

1. Some intervention will be necessary, how do you communicate this?
2. She's obviously tired, in pain and febrile, and may desire analgesia. How do you navigate possible impaired capacity when communicating information?
3. How different does this case look if you had the opportunity to discuss what might occur in labour, address her specific risks, understand her reasons for minimal intervention (what is she trying to avoid specifically, and why?) and the potential responses to these much earlier?

We hope that this case demonstrates a number of ways in which birth is a unique situation that presents challenges and opportunities for the way care and information is provided and discussed with patients. Antenatal care offers opportunities to have in-depth discussions around a patient's values, goals, and the various options including risks and benefits, on multiple occasions. Amongst the challenges are that once labour has begun, situations can change rapidly and can become emergent, requiring immediate and responsive actions. A patient's capacity may be impaired or fluctuate during labour, and while we want to emphasise that it should not be assumed that labour impairs capacity, it is necessary to assess capacity in relation to decisions as needed.

Doctors learn about informed consent in two ways relevant to this discussion. From an ethical perspective, they are taught that informed consent requires the disclosure of information, the patient must have capacity (where this is considered time- and decision-specific), they must be able to understand information, and they must make a decision voluntarily.³ These discussions focus on

Case

It's 2am on birth suite and a new patient has arrived in labour. She is a 38-year-old woman with a previous caesarean for fetal distress at 8cm with a 4kg baby in occiput posterior position complicated by a 1000ml postpartum haemorrhage. She has had her antenatal care through a local birth centre; while you don't have access to her results, she reports to the midwife that there have been no issues throughout the pregnancy. She has not had third trimester growth scans but has measured appropriately for dates. She has a BMI of 40 and reports no other medical co-morbidities.

She has been contracting regularly for over 24 hours and her membranes have been ruptured for almost 20 hours. Because of concerns regarding COVID-19, she decided to labour at home with the support of her husband, a doula and a midwife.

On vaginal examination at home, the cervix was 8cm dilated and she is attending now as she feels exhausted and would like to consider analgesic options. Prior to seeing the patient, you review her birth plan, which outlines her preference for minimal intervention, including avoiding continuous electronic fetal monitoring and intravenous cannulas and plans for physiological third stage. You've been informed the patient is febrile at 38.4 degrees, but other vital signs are normal. You attend the room promptly to review the patient and discuss her ongoing care.

the need for informed consent in order to respect a patient's autonomy. From a legal perspective we tend to focus on the case of *Rogers v Whitaker*.⁴

That case concerned the duty to warn about risks, which requires a doctor to inform a patient of material risks relating to a proposed treatment. Material risks include risks that the reasonable patient would attach significance to and risks that this particular patient would attach significance to. Failure to do so breaches the standard of care. Viewed this way, the failure to warn and provide information is tied to the quality of the care given and the action in negligence requires that the patient has suffered harm as a result.⁴⁻⁵ Negligence is the mechanism by which the law holds clinicians accountable for harm caused in the course of their work.

Notably, the principles and values that underpin negligence are different to those that underpin the concept of consent, which relates to trespass.⁶ Consent is the permission given by the patient to the doctor to perform a procedure. The threshold for valid consent is that the general character of the specific procedure was communicated and that the consent was given by a person who was competent to make that decision and it was freely given. Autonomy lies at the heart of the action in trespass, but it has a lower standard of information provision. In contrast to negligence, no harm need occur as a result of the trespass because the interference with a person's autonomy is sufficient.⁵

In practice, however, we see that the concepts of consent and negligence are frequently conflated and confused.⁶ The term 'informed consent' combines the requirement that the competent patient gives permission for the procedure and that in doing so the doctor communicates risk to the expected standard. Neither of these legal concepts adequately supports pregnant people's autonomy, ethical practice is required to achieve this.

Doctors are familiar with navigating consent and the duty to warn of risks with respect to procedures. Procedures usually reflect something done to the patient to manage a medical complaint. Proposing that vaginal birth (which is viewed as a natural and inevitable end to a pregnancy) requires consent, challenges our concept of both birth and consent. To some, it threatens the 'naturalness' of vaginal birth, potentially leading to increased medicalisation of birth and an increased caesarean section rate.⁷

If we view information giving within the doctor-patient relationship as part of discharging that duty to warn, rather than an issue of consent, it is less problematic and more aligned with the cases of both *Rogers v Whitaker* and *Montgomery v Lanarkshire*.^{4,8} The obligation to provide information to patients exists separately and is neither removed nor reduced by the unavailability of therapeutic alternatives. We are fortunate to have options available to women who may, when empowered with knowledge about their bodies and birth, choose which consequences they are willing to endure and live with long term.

The reasonable patient would want to know about birth and the consequences of it, and as a result there is a duty to warn of the risks. Some women will have particular concerns or risk factors and require more detailed information on some aspects of birth compared to others. This does not necessarily require a consent form but rather an intentional and tailored discussion throughout antenatal care with the aim to inform patients about the journey ahead.

While some individual procedures during vaginal delivery may require consent, vaginal delivery itself does not. During labour consenting (which may be written or verbal, depending on what is occurring) or keeping a patient informed of what is happening (in an emergent situation) is the end of a process that should have begun long before labour. Hawke⁹ has recently argued that: 'Empowering a woman with the language of consent and offering women choices is key to empowering her in her transformation to motherhood.'

We believe this model conforms to this philosophy by recognising that consent and choices cannot occur without respectful communication within a therapeutic partnership.

The problem is ensuring these early discussions happen, and appropriately. Patient decision-making aids (PDAs) for labour and birth have a good evidence-base showing largely encouraging outcomes. Using PDAs with pregnant persons can increase their knowledge, decrease anxiety, and decrease decisional uncertainty and regret.¹⁰⁻¹² There is some work to indicate that using PDAs early (Trimesters 1 and 2) is most helpful.¹¹ Despite this, they do not seem to be used widely.¹² Additionally, if, as Dietz & Callaghan¹ note, there is a decline in pregnant people who will see a doctor during antenatal care, then finding the opportunity to have this discussion appears difficult. We need to consider the ways in which robust information is provided to pregnant people and their families, before labour, using tools such as PDAs. Early conversations with full disclosure not only help patients and their families understand the process and what they may have to make decisions about, but also helps health professionals understand patient values and goals, which can aid in their clinical decision making. Especially when the experience of not feeling listened to is something generally associated with those who experience birth as traumatic.¹³⁻¹⁴

It is not always possible for the clinician providing care during labour to have had these conversations with the pregnant person, but it is important that patient has had them. Clinicians can ensure they communicate clearly with a pregnant patient and seek consent where necessary, but this is the last step in care conversations. We must make efforts to ensure this process begins much earlier and robustly. This is likely to best be supported through interprofessional collaborations, PDAs and health system resourcing and support.

Research needed

- Barriers to using PDAs in Australian obstetric practice/maternal care.
- Most effective timing of use of PDAs regarding birth and labour options.
- Comparison clinician versus other health professional delivery of option/risk information (via PDA or other means) early in pregnancy (efficacy, cost-effectiveness, etc).

References

1. Dietz HP, Callaghan S. We need to treat pregnant women as adults: women should be consented for an attempt at normal vaginal birth as for operative delivery, with risks and potential complications explained. *ANZJOG*. 2018;58(6):701-3.
2. Dietz HP, Callaghan S. Response to Vaginal delivery: An argument against requiring consent. *ANZJOG*. 2019;59(1):165.
3. Kadam RA. Informed consent process: A step further towards making it meaningful! *Perspectives in Clinical Research*. 2017;8(3):107.

Full reference list available online

Pain relief in labour

Dr Chris McGrath
Consultant Anaesthetist
Anaesthesia and Pain Medicine
Fiona Stanley Hospital, WA

Advances in modern medicine during the 20th century have revolutionised the ability to provide safe and effective analgesia for women during labour. The pain associated with labour and childbirth is recognised as potentially the most significant a patient may ever endure. It is a true marvel of medicine that we now have the ability to mitigate this pain in a safe and controlled manner.

Analgesic strategies and preferences vary between different individuals and cultures. A variety of factors will determine which strategies are used, including access to specialised medical resources, individual choice, societal expectations and cultural factors. As medical practitioners, it is important to consider these issues and to balance them in the context of the best evidence-based therapies that we have in our armamentarium.

This article seeks to outline the common analgesic strategies available to healthcare providers in the context of the labouring woman for childbirth, with reference to the most up-to-date evidence.

Background

The level of pain experienced, and the effectiveness of pain relief used, can significantly influence the woman's overall satisfaction with her labour and the birth. This has the potential to yield long-term emotional and psychological sequelae.¹

Women experience varying degrees of pain in labour and exhibit an equally varying range of responses to it. A woman's experience of the pain of labour can be influenced by her individual circumstances, the environment she is in, her cultural background, previous preparation and education of the process of labour and the support networks available to her during the labour itself.^{2,3}

The requirement for pain relief is also influenced by the type of onset of labour (spontaneous versus induced), the augmentation and duration of labour, as well as complicating factors such as fetal presentation, obstructed labour and the need for medical interventions such as instrumental vaginal delivery and episiotomy.

Available strategies

We can split the available options for pain relief in labour into:

- Non-pharmacological techniques
- Pharmacological techniques

Regardless of the technique used for each individual's circumstance, it is important that it is both effective and safe for both the mother and baby.

Non-pharmacological techniques

A variety of non-pharmacological methods, with varying degrees of supporting evidence, have been summarised in the literature.^{4,5} These may have benefit for different individuals based on their personal preferences or cultural beliefs.

It is important for medical practitioners and caregivers to understand these strategies, appreciate their benefits but also the inherent limitations with what can be potentially less definitive analgesia. Education and informed consent for the patient is of primary importance. Brief points on these techniques include:

Relaxation therapies

- use one's emotional coping mechanisms to help better manage pain

Hypnosis

- involves the patient entering a hypnotic state under supervision from a trained therapist to gain better control over pain

Continuous support

- requires a trained support person to improve the psychological experience of labour
- evidence shows these patients are less likely to have pain relief in labour and be more satisfied with their experience

Acupuncture

- stimulates specific points on the body with fine needles that may inhibit pain signal transmission +/- release natural endorphin

Massage and reflexology

- inhibits pain transmission, provides support and also distraction, with data showing physical and emotional benefits

TENS

- based on the 'gate-theory', it is non-invasive and easy to use
- a systematic review of eight RCTs failed to demonstrate significant analgesic effect⁵

Immersion

- the sensation of warm water is postulated to inhibit pain signals as well as support the gravid uterus

Intradermal injection of sterile water

- involves the injection of 0.1ml sterile water in four points over the sacrum
- potential reduction in pain during labour but other evidence shows women do not rate it as effective as other analgesic strategies

Reported effectiveness of the above techniques varies between different studies. Strategies such as immersion, massage, acupuncture and hypnosis may be helpful therapies for pain management in labour. Other techniques such as aromatherapy and homeopathy may have a role for some patients, but no data has demonstrated definitive benefit.

Pharmacological techniques

Pharmacological analgesic methods include inhalation of nitrous oxide, parenteral opioids and also regional anaesthesia in the form of epidural and combined-spinal-epidural during labour. Non-regional analgesia in labour remains the most frequently used method worldwide.

1. Inhalational methods

Entonox

Nitrous oxide/oxygen mixtures have been used in obstetric practice since 1880. Entonox (50% nitrous oxide in oxygen) is located ubiquitously in obstetric units throughout the world and has a long track record of safety for the labouring parturient. 53% of labouring women used this form of analgesia in Australia in 2018.⁶

Nitrous oxide has a low blood gas solubility, meaning it rapidly equilibrates with blood, is rapidly washed-in during use and rapidly washed-out when ceased. The technique of use is important, with around 10 full breaths or 50 seconds breathing required to achieve maximum effect.

A Cochrane review in 2012 demonstrated that Entonox provided better pain relief than placebo, but was associated with more drowsiness, dizziness, nausea and vomiting. There were no differences in in Apgar scores or caesarean rates between people who used Entonox and those who had a placebo or no treatment.

Other studies have shown more limited benefit with Entonox and it is postulated that even though analgesia may not be significantly improved, maternal satisfaction may be maintained or improved with this technique as it enables the patient to control their own analgesia.

2. Opioids

Pethidine

Pethidine has a long history of use and is the most widely used and investigated opioid. Its typically administered analgesic dose is 1mg/kg IM. Studies have shown midwives rated the efficacy of pethidine more than the women receiving it and it is thought that this may be attributable to some of the side effects for the patient of loss of control, confusion and sedation.⁵ It also causes dose-dependent respiratory depression and hypoventilation.

Pethidine rapidly crosses the placenta and the highest fetal plasma concentrations occur 2–3 hours after maternal administration. Respiratory depression is more likely in the neonate due to immature respiratory centres, greater free-drug concentration and ion trapping.

Morphine

Morphine is another commonly used parenteral opioid that has widespread use for labour analgesia. The dose used is titrated at 2.5–5mg IV or 5–10mg IM. The side effects for morphine are dose-dependent and similar to pethidine, although morphine metabolites do not have convulsant effects like those of pethidine. Morphine rapidly crosses the placenta but rapid maternal elimination results in lower fetal drug load.

Remifentanyl PCA

Remifentanyl patient-controlled analgesia (PCA) is an ultra-short-acting opioid derivative of fentanyl with strong analgesic properties that is rapidly metabolised by red blood cell and tissue esterases. These enzymes are non-saturable, so the drug is short-acting and does not accumulate over time.

Remifentanyl PCA is a useful alternative for the labouring parturient when more definitive strategies such as regional analgesia are unavailable or contraindicated. It does require a higher degree of monitoring, expert midwifery and close medical supervision during set up and ongoing use, to ensure safety.

A typical regimen involves a 30µg IV bolus of remifentanyl delivered over 60 seconds with a two-minute lockout from a dedicated, programmed pump device. Remifentanyl PCA has demonstrated good neonatal outcomes, moderate analgesic effect and high degrees of patient satisfaction.

3. Regional techniques

Epidural analgesia

Epidural analgesia is a nerve blockade technique that involves siting an epidural catheter via Tuohy needle into the epidural space of the lower lumbar region of the spine and the subsequent injection of local anaesthetic (with or without adjuncts such as fentanyl).

The local anaesthetic is delivered close to the spinal nerves that normally transmit painful stimuli from the contracting uterus (visceral pain) and vaginal canal (visceral and somatic pain). Local anaesthetic inhibits nerve conduction by blocking sodium channels in nerve membranes, thereby preventing the propagation of signals along these nerve fibres to the central nervous system, thus aiming to render the woman more comfortable during her labour.

Epidural analgesia was first used in obstetric practice in 1946 and its use in labour has increased in recent decades with around 40% of women choosing it in Australia in 2018.⁶

Epidural local anaesthetic solutions are administered either by bolus, continuous infusion or via patient-controlled pumps. Boluses of higher concentrations of local anaesthetic, as used in the earlier years, have been associated with more dense motor block resulting in reduced mobility, decreased pelvic tone and loss of the bearing-down sensations usually experienced in the second stage of labour.

More recently, a trend to use a lower concentration of local anaesthetic in combination with opioid has seen effective analgesia maintained and also preserved a greater degree of motor function. This enables the patient to move her legs more freely and also preserves her ability to bear down and avoid an assisted vaginal birth, such as the use of forceps.

Combined spinal-epidural analgesia

Combined spinal-epidural (CSE) involves a single injection of local anaesthetic (with or without fentanyl) into the subarachnoid space, as well as subsequent insertion of an epidural catheter.

CSE combines the advantages of spinal analgesia (faster onset of pain relief from the time of injection and more reliable analgesia), with the advantages of epidural analgesia where continuing analgesia is maintained through the remaining duration of labour.

Brief summary of recent evidence

A Cochrane Review⁷ in 2018 set out to assess the effectiveness of all kinds of epidural analgesia (including CSE) on the mother and the baby, when compared with non-epidural or no pain relief during labour. They assessed over 40 trials involving more than 11,000 women that contributed information to the review.

Key Findings⁷

- Low-quality evidence shows that epidural analgesia may be more effective in reducing pain during labour (as expressed by lower pain scores) and increases maternal satisfaction with pain relief compared to other, non-epidural methods
- Early studies demonstrated some women who have an epidural instead of opioid analgesia may be more likely to have an assisted vaginal birth; however, this effect was not seen in studies conducted after 2005, where the use of lower concentrations of local anaesthetic and more modern epidural techniques such as patient-controlled epidural analgesia have been introduced

- Epidural analgesia had no impact on the risk of caesarean section or incidence of long-term backache and did not appear to have an immediate effect on neonatal status (as determined by Apgar scores) or in admissions to neonatal intensive care
- Side effects were reported in patients with epidural, including more hypotension, motor blockade, fever and urinary retention
- Patients with an epidural also endured longer first and second stages of labour, and were more likely to have oxytocin augmentation than women in opioid analgesia groups

Conclusion

Labour and childbirth, in the absence of analgesia, has the potential to be one of the most painful experiences a woman may endure in her lifetime.

Certainly, childbirth should be an extremely rewarding experience. Balancing the needs and expectations of each individual with effective analgesic strategies to ensure safety, maintain satisfaction and to optimise the overall experience for the patient, is important

References

1. Christiansen P, Klostergaard KM, Terp MR, et al. Long-memory of labour pain. *Ugeskrift for Læger*. 2002;164(42):4927-9.
2. Brownridge P. Treatment options for the relief of pain during childbirth. *Drugs*. 1999;41(1):69-80.
3. McCrea H, Wright ME, Stringer M. Psychosocial factors influencing personal control in pain relief. *Int J Nursing Studies*. 2000;37:493-503.
4. Smith CA, Collins CT, Cyna AM, Crowther CA. Complementary and alternative therapies for pain management in labour. *Cochrane Database Syst Rev*. 2006;2006(4):CD003521.
5. Fortescue C, Wee M. Analgesia in labour: non-regional techniques. *Continuing Education in Anaesthesia, Critical Care & Pain*. 2005;5(1):9-13.
6. Australian Institute of Health and Welfare 2020. Australia's mothers and babies 2018: in brief. Perinatal statistics series no. 36. Cat. no. PER 108. Canberra: AIHW.
7. Anim-Somuah M, Smyth RMD, Cyna AM. Epidural versus non-epidural or no analgesia for pain management in labour. *Cochrane Database Syst Rev*. 2018;5:CD000331.



Want to read more?
Find similar articles when
you explore online.

ogmagazine.org.au

Quality and safety performance reporting



Dr Roshan Selvaratnam
MD-PhD student at Monash University and
Safer Care Victoria



Prof Euan M Wallace AM
MBChB, MD, FRCOG, FRANZCOG, FAHMS
Carl Wood Professor and Head of Department of
Obstetrics and Gynaecology, Monash University

Obstetric practice has a long tradition of recording and reporting outcomes. More senior readers may remember the large leather-bound labour ward ledgers into which details of every mother and birth were handwritten each day (Figure 1). In Victoria, those meticulous chronicles provided foundational information to Dr Marshall Allan, newly recruited to Melbourne from Brisbane in 1925, for his inquiry into Victorian obstetric outcomes, commissioned because of quality and safety concerns.¹ Allan's inquiry, and similar activities in New South Wales and Queensland, were the formal beginnings in Australia of obstetric outcome reporting being used to identify

opportunities for improvements in care. Only a few years earlier, Allan had called for the creation of antenatal clinics as an essential measure to improve perinatal and maternal outcomes.² In many ways, Allan and his work established outcome reporting practices that were the forerunner of what would become Victoria's Consultative Council on Obstetric and Paediatric Mortality and Morbidity (CCOPMM), established in 1962. In essence, Allan asked – and CCOPMM continues to ask – 'how good are we?'

In more recent times, as with other branches of healthcare, pregnancy outcome reporting has evolved to embrace performance indicators. There are a number of key features that distinguish performance reporting from traditional outcome reporting. First, performance indicators are, typically, reported at a more granular level – by health service or hospital rather than by state or nation. Second, they provide comparative, so-called benchmarking, data. This has been traditionally done using de-identified data so that an individual hospital knows only its own identity but not that of others, such as in the reports from Health Roundtable or Women's Healthcare Australasia (WHA). However, this is changing. An increasing number of agencies, including government, are seeking identified reporting. Benchmarking allows individual hospitals to ask not only 'how good are we?' but also 'how good are we compared to others?' For example, in Victoria the Perinatal Services Performance Indicators (PSPI) has reported comparative clinical performance data by individual hospital on over ten indicators for almost 15 years.³ New Zealand has had a similar publicly released report since 2012, the New Zealand Maternity Clinical Indicators.⁴ Allan would be proud. He argued for central oversight of health performance, finding that many of the problems in 1920s Victoria were because 'there is no central authority controlling the health affairs of the State.'¹ Very similar findings to Allan's were made nearly a century later in Targeting Zero, a report of Victorian public hospital clinical governance, itself triggered by a maternity service failure.⁵

However, being government-led in itself doesn't ensure that performance reporting leads to improved outcomes. Whether at national, state or territory, or health service level, there can be lack of clarity about how such data drive improvement. So often

95																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
----	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Figure 1. Excerpt of a labour ward birth register, c1870.

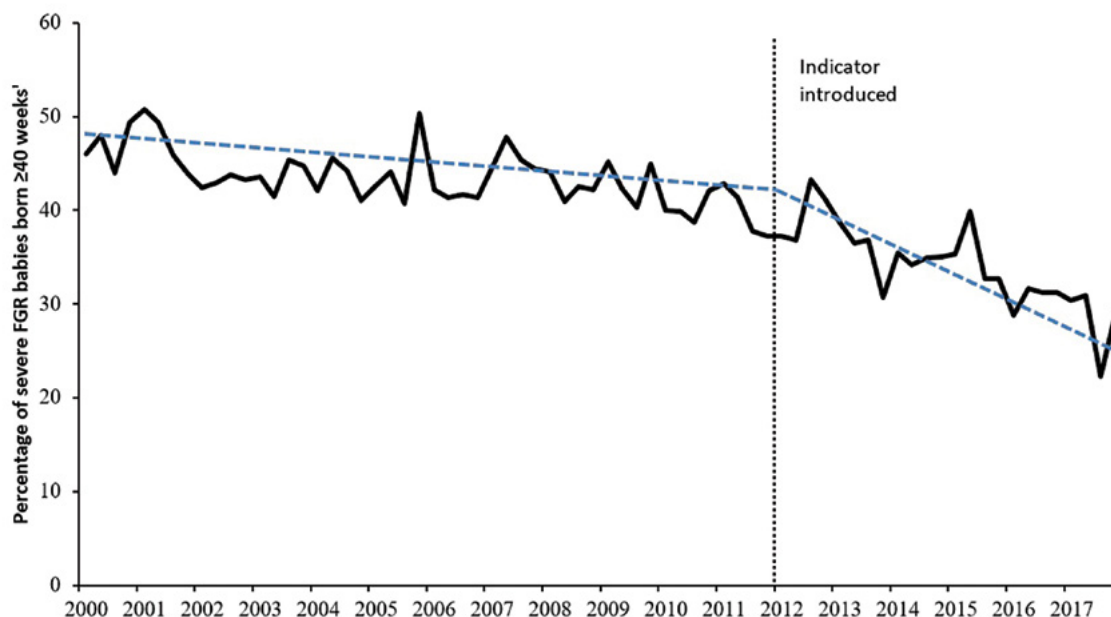


Figure 2. Improvement in severe FGR detection in Victoria.⁶ (adapted from Selvaratnam et al. BJOG. 2019;127:581-9).

in healthcare we are surrounded by data that don't seem useful to the clinician or the consumer – data reporting almost for the sake of reporting. Or worse, for compliance. How are patient outcomes improved by that? As the German philosopher Goethe opined, 'Knowing is not enough. We must apply.'

Over recent years, Safer Care Victoria, the state's healthcare improvement agency, has used performance reporting at the health service level – as published in the PSPI – as one of its key approaches to identifying opportunities for improved care. Central to this approach is engagement with clinicians. From the very beginnings of the PSPI, clinicians decided what data were relevant and how they should be reported. Government then 'lifts the phone' to services where outcomes are poorer than expected, offering insights from other services and support for improvement. But, and this is important, the improvement activities are locally designed and implemented. This has yielded genuine and trusted partnerships between clinicians, health services, government, and, more recently, consumers. Such an approach appears to be working – at least for some indicators. For example, by publicly reporting a measure designed to improve the detection of severe fetal growth restriction (FGR) there has been a four-fold reduction in the rate of babies with severe FGR born after 40 weeks gestation (Figure 2).⁶ As a result, the rate of stillbirth among these babies has fallen by 24%.⁶ Similarly, a longstanding indicator in the PSPI was the rate of antenatal steroid administration before 34 weeks gestation. Performance across Victorian public maternity services increased from 83% in 2001 to 90% in 2008, such that the indicator was retired in 2009 because clinicians advised that it had reached a ceiling.⁷

In more recent times, clinicians have highlighted the need to reduce the rate of obstetric anal sphincter injury (OASI). The rate of third- and fourth-degree tears in standard primiparae has always been reported in the PSPI, but the rate has been rising, not falling (Figure 3). Clinicians advised that the performance indicator wasn't useful, at least in its current form. They wanted better insights into who the women were that were sustaining OASI so that interventions could be better targeted. For the last three years, the

PSPI performance indicator for third- and fourth-degree tears has separately reported the rate for primiparae who have had an unassisted or assisted vaginal birth (Figure 3). This has made more visible the need to reduce OASI among women having an assisted vaginal birth. Applying this knowledge, co-funded by Safer Care Victoria, 10 Victorian hospitals, along with 18 other hospitals in New South Wales, Queensland, South Australia and Western Australia, participated in a Women's Healthcare Australasia and Clinical Excellence Commission (WHA-CEC) national improvement collaborative. The aim of the collaborative was to reduce the rate of OASI by 20%. This introduces the third question that, together with 'how good are we?' and 'how good are we compared to others?', underpins successful quality improvement – 'how good do we want to be?' One of the hallmarks of high performing health services is that they each have a vision for their improvement with clear, measurable goals.⁸ With an improvement goal set, the WHA-CEC collaborative saw an 18% reduction in OASI in women having an assisted vaginal birth.⁹ Almost 500 fewer women sustained a third- or fourth-degree perineal tear in the participating hospitals.⁹ This work is now being spread more widely across other Victorian maternity services, led by consumers and clinicians, supported by government.

So, what are some lessons for the successful use of performance reporting to improve outcomes? First, to be clear about the purpose. It should be for performance improvement, not compliance or regulation. Second, the indicators should be meaningful to those for whom they should matter most. A short list of measures should represent good proxies for outcomes of importance and give clear insights to both consumers and clinicians of what actions or interventions might improve care. This requires the involvement of consumers and clinicians in the very design of the measures. Next, performance reports should identify hospitals or health services by name and be publicly accessible. This allows transparent benchmarking, makes variation in outcomes more visible and accessible to intervention, and, best of all, harnesses the innate desire of clinicians to be as good as they can be. Indeed, we have argued that transparent reporting of outcomes linked to government action may be

all that is required for improvement.⁶ Benchmarking also allows health services and government to set evidence-informed goals for improvement, like the 20% reduction in OASI or the 20% reduction in stillbirth recently established by the Stillbirth Centre of Excellence (CRE) for the Safer Baby Bundle improvement collaborative. This clear and measurable goal to reduce the rate of stillbirth has already been adopted by Safer Care Victoria, the NSW Clinical Excellence Commission, and Clinical Excellence Queensland. This takes us to government action. Central to the improvement agenda is the need for government to not approach underperformance punitively, but rather to act as an enabler of change and improvement. To be successful, improvement initiatives need to be designed by those who are providing the care. Formal improvement collaboratives, such as the WHA-CEC perineal tear collaborative or the Stillbirth CRE Safer Baby Bundle, begin with clinicians and consumers advising on what interventions are likely to work in their environment. Government then plays a critical role in leadership and coordination of shared learning and collaboration across health services, supporting improvement activities and providing training in formal improvement methods.

Another, less visible, benefit of central government oversight is that any unintended consequences of improvement initiatives can be detected quickly. For example, the improved detection of severe FGR in Victoria has come at a cost. The cost has been a four-fold increase in the rate of early delivery for normal grown babies and a doubling in the rate of admission of these babies to the neonatal intensive care unit.⁶ Such unintended consequences are often not readily apparent at an individual health service level but, due to larger numbers at a system level, they are visible to government. This allows the rapid development and introduction of compensating measures – so-called balance measures – whose purpose is to monitor and mitigate unintended consequences. This year, as part of routine reporting in the PSPI, Victorian hospitals will be provided a new balance measure to monitor the unintended ‘collateral’ harm in their detection of FGR. When reported alongside the existing measure of severe FGR detection, hospitals will be able to see both their sensitivity and specificity of FGR detection in tandem. And they will be able to

compare themselves to others, setting new goals for improvement. The next step will be for Safer Care Victoria to identify high performing hospitals and share their strategies with others.

In summary, we have provided a general framework for how performance reporting can drive purposeful improvement. It is not just about reporting outcomes. You can’t fatten a cow by weighing it. It is through the collaboration of all involved in maternity care – consumers (first and foremost), clinicians, health service executives, improvement experts, and government – that performance reporting can be harnessed to target and drive improvement, delivering better and safer births for all women and their babies. This is all just an evolution of the work that Marshall Allan and his colleagues first formally began almost a century ago.

References

1. Allan R. Report on Maternal Mortality and Morbidity in the State of Victoria. *Med J Aust.* 1928;6:668-85.
2. Allan R. The need for ante-natal clinics. *Med J Aust.* 1922;2:53-4.
3. Hunt RW, Ryan-Atwood TE, Davey M-A, et al. Victorian perinatal services performance indicators 2018–19. Melbourne: Safer Care Victoria, Victorian Government; 2019. Available from: betersafer-care.vic.gov.au/sites/default/files/2019-02/Vic%20perinatal%20services%20performance%20indicators%202017-18.pdf.
4. Ministry of Health. New Zealand Maternity Clinical Indicators 2017. Wellington: Ministry of Health; 2019. Available from: www.health.govt.nz/system/files/documents/publications/new-zealand-maternity-clinical-indicators-2017-jul19.pdf.
5. Duckett S, Cuddihy M, Newnham H. Targeting zero: supporting the Victorian hospital system to eliminate avoidable harm and strengthen quality of care. Report of the Review of Hospital Safety and Quality Assurance in Victoria. Melbourne: State Government of Victoria Department of Health and Human Services; 2016. Available from: www.dhhs.vic.gov.au/publications/targeting-zero-review-hospital-safety-and-quality-assurance-victoria.
6. Selvaratnam RJ, Davey M-A, Anil S, et al. Does public reporting of the detection of fetal growth restriction improve clinical outcomes: a retrospective cohort study. *BJOG.* 2019;127:581-9.
7. Department of Health. Victorian maternity services performance indicators 2009-10; 2012. Available from: health.vic.gov.au/about/publications/researchandreports/Victorian%20maternity%20service%20performance%20indicators%202009-2010.
8. Ham C, Berwick D, Dixon J. Improving quality in the England NHS: A strategy for action. England: The King's Fund; 2016. Available from: www.kingsfund.org.uk/sites/default/files/field/field_publication_file/Improving-quality-Kings-Fund-February-2016.pdf.
9. Women's Healthcare Australasia. Reducing Harm from Perineal Tears: Celebrating Success WHA National Collaborative. 2020. Available from: women.wcha.asn.au/collaborative/evaluation.

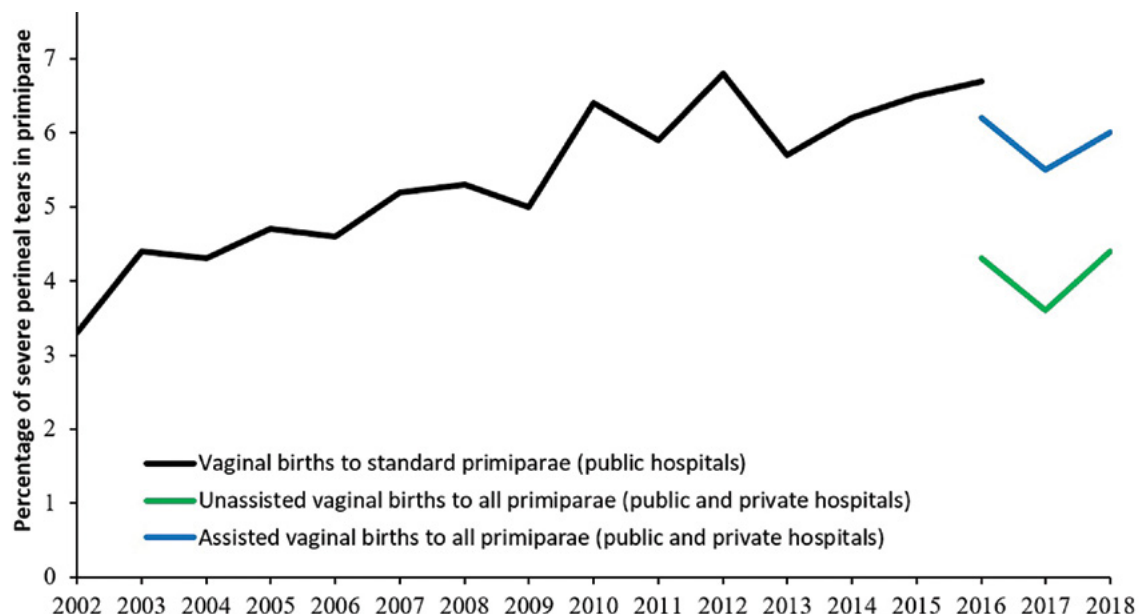


Figure 3. Rates of third- and fourth-degree tears in Victoria. (adapted from PSPI reports)

Training and simulation: labour ward emergencies



A/Prof Edward Weaver OAM
FRANZCOG, FACM(Hon)
SMO O&G Sunshine Coast University Hospital
Clinical Sub Dean
Griffith University School of Medicine,
Sunshine Coast, Qld



Dr Rachael Nugent
BSc, MBBS, MPH, FRANZCOG
SMO O&G Sunshine Coast University Hospital, Qld

'Simulation is a technique, not a technology, to replace or amplify real experiences with guided experiences that evoke or replicate substantial aspects of the real world in a fully interactive manner.'¹

Intrapartum and immediate postpartum obstetric emergencies, where there is a direct threat to the life of a mother or baby, are relatively infrequent. The commonest obstetric emergency is postpartum haemorrhage (PPH); still the biggest killer of women of reproductive age worldwide.² Other intrapartum emergencies, such as placental abruption during labour (less than 0.5% incidence), cord prolapse (less than 0.5% incidence), uterine inversion (less than 0.1% incidence) are infrequent, and many obstetricians and midwives will only see some of these conditions once or twice in a career, if at all. Because of this rarity, maternity care staff routinely train in the correct management of infrequently occurring emergencies, to ensure competence in safe patient care. When used effectively, simulation-based education can result in powerful learning experiences.

Obstetric emergency training courses available in Australia and New Zealand

To provide this sort of teams-based simulation training, a variety of courses in obstetric emergency management have proliferated in Australia and New Zealand (NZ) over the past 10–15 years. Calvert et al estimated that there were 12 different courses available in Australia and NZ in 2013 providing this sort of training locally.³ These include courses such as PROMPT (Practical Obstetric Multi-Professional Training), ALSO (Advanced Life Support in Obstetrics), MOET (Managing Obstetric Emergencies and Trauma), NOVICE, IN TIME, MACRRM (Maternity Crisis Resource Risk Management), and FONT (Fetal, Obstetric, Neonatal Training).

Many of the cited courses share similarities: they are based on Crisis Resource Management (CRM) principles,⁴ and emphasise team training, improved communication, and improved awareness of a deteriorating clinical situation. The courses use simulation in a variety of settings, from teaching competency-based simulations to large, interprofessional immersive simulations. The most widely undertaken course in Australia and NZ is PROMPT, a UK-developed course, now run internationally by the PROMPT Maternity Foundation.

History of PROMPT in Australia and NZ

PROMPT was formally introduced into Australia in 2010, when the Victorian Managed Insurance Agency purchased the Australian Licence for PROMPT from the PROMPT Maternity Foundation UK and gifted the licence to RANZCOG. Uptake since has been variable in different jurisdictions, remaining strong in Victoria and Queensland with less uptake in the other states.

In NZ, the course grew more organically, being championed by some dedicated clinicians and midwives, and has had wide that is likely to continue, utilising the recently upgraded PROMPT 3 program. PROMPT and its peers are designed to improve CRM skills and to ensure that participants are familiar with their working environment and know how to escalate a patient's care in the event of a (rare) emergency.

Interprofessional education and improved patient care

The World Health Organization defines interprofessional education (IPE) as occurring 'when two or more professions learn about, from and with each other to enable effective collaboration and improve health outcomes'.⁵ The recent interest in IPE grew out of the patient-safety movement,⁶ where it was recognised that failures of teamwork and interprofessional communication were, and continue to be, frequent causes of harmful medical errors. A recent meta-analysis showed IPE is associated with a positive impact on collaborative teamwork, and improving knowledge and skills,⁷ and has been shown to reduce the barriers and preconceptions that often exist among healthcare groups.⁸

Staff attending PROMPT have reported significant increases in teamwork,^{9,10} safety and improved perception of management.⁹ Participants in PROMPT report skill acquisition across multiple domains and an improvement in principles communication, leadership and prioritisation in an emergency situation.¹⁰ Training healthcare professionals that know how to adapt within a team to an evolving emergency clinical situation may help to ensure that each patient receives care from the professionals most suited to their needs.

There is accumulating evidence that poor workplace culture can lead to worse patient outcomes.¹¹ Workplace culture can be difficult to change, as it can be a result of poor leadership, ineffective human relations practices, entrenched workplace practices, and a reluctance of staff to complain. Training in simulation, assuming that it is mandated for senior staff to participate, offers an opportunity to tackle these issues in innovative ways.

Clinical outcomes following team training

Despite a clear demonstration of improved teamwork and skill acquisition associated with teams-based simulation training, there is mixed data with respect to improving clinical outcomes. A recent Cochrane review of interactive training of healthcare providers on the management of life-threatening emergencies in hospital found existing evidence was of low or very quality, and suggested uncertainty regarding a change to morbidity rates, change in clinical practice outcomes or change in organisation of care.¹²

The reduction of complications associated with the management of shoulder dystocia appears a clear benefit associated with team simulation training. Twelve-year data published from Bristol showed yearly team training using PROMPT methodology was associated with no cases of permanent brachial plexus injury in the last four years of follow up, involving more than 17,000 vaginal births.¹³ Several other authors have also demonstrated a reduction of brachial plexus injury,¹⁴⁻¹⁶ or trauma¹⁷ associated with the management of shoulder dystocia following simulation training courses.

The impact of simulation training courses on other clinical outcomes is less impressive. Initial retrospective review of the PROMPT Australian pilot suggested an improvement of Apgar 1, cord lactate and baby's length of stay,⁹ while subsequent review of retrospective data examining outcomes pre- and post-delivery of PROMPT in Australia suggested no change in a composite overall outcome.¹⁰ This analysis did demonstrate an increase in rates of transfer to operating theatre (OT) and an increase in rates of Bakri balloon use for management of severe PPH.¹⁰ The described increase in invasive management aligns with findings from a Dutch multicentre randomised controlled trial examining a one-day simulation course, which showed attendance was associated with a two-fold increase of treatment with four or more packed cells of blood transfusion, embolisation or hysterectomy in the case of a PPH.¹⁷

Both authors hypothesised that these outcomes were affected by increased recognition and willingness to escalate management. In the same way that readiness for action can decrease morbidity associated with shoulder dystocia, it can increase medical intervention with respect to PPH.

It is important to recognise that these findings are specific to a high-resource setting. Delivery of a

simulation-based training program in Tanzania resulted in a 38% reduction in PPH from 2.1–1.3%.¹⁸ The authors commented that this is particularly crucial in a region with a high prevalence of anaemia and lack of blood banking. While simulation-based team training can prevent medical intervention in low-resource settings, it is possible that it may increase it in the high-resource environment, particularly with respect to PPH.^{9,17} Further robust research is required to investigate the use of simulation training and its impact on a broad range of maternal and neonatal outcomes.

The MOTHER course

The RANZCOG Board has commissioned development of a Multi-professional Obstetric Training in Hospital Emergency Response (MOTHER) course to address perceived deficiencies in available resources and to specifically enhance the incorporation of simulation, broader multi-disciplinary involvement and online delivery. Further, the Board recognised the need for content that could be readily adapted to meet unique local needs, including Aboriginal and Torres Strait Islander and Māori health and the challenges facing rural and remote healthcare services.

Simulation activities are delivered in different formats, each with different learning goals. MOTHER adopts the ARRON rule (as reasonably realistic as objectively needed),¹⁹ to ensure units of varying acuity and resources can access the materials associated with the course.

MOTHER is designed as a suite of programs to be run in hospitals, primarily as an educational tool to facilitate teams-based training for maternity care providers in their place of work. These resources will feature:

- a. A library of resources to be used for case-based peer-assisted learning. These cases allow exploration of other emergencies not currently covered by PROMPT (e.g. mental health emergencies, occupational violence and difficult patient interactions). Case-based learning will also allow embedding of other training, such as CTG interpretation within the cases.
- b. A suite of resources to use for performing various types of simulations in hospitals, including:
 - Skills-based SIMs to cover skill gaps in various staff, including breech delivery and shoulder dystocia
 - immersive simulations that will be developed and scripted, allowing engagement with other hospital teams who have roles in the team management of obstetric emergencies (e.g. neonatologists, anaesthetists, obstetric physicians, ICU staff, emergency medicine staff).
- c. Workplace familiarisation SIMs, which will be designed to ensure that all staff are familiar with their working environment, can operate emergency equipment, and can easily access workplace instructions, policies and procedures.

A course such as this allows a hospital to work with RANZCOG and develop bespoke courses to undertake activities to address particular workplace needs such as simulating an adverse outcome to see what went wrong, or simulating the rollout of new policy initiatives (e.g. Category 1 CS protocol in a COVID-19 positive woman). The emphasis of MOTHER is on the educational attainment and incremental improvement in the clinical skills of

participants, with clearly outlined learning objectives, and cases of varying complexity to cater to the requirements of the unit.

Summary

Teams-based simulation training plays an important role in modern obstetric emergency training and crisis resource management. Its benefits include improved communication and teamwork arising from IPE as well as improved clinician confidence in the execution of skills-based procedures such as management of shoulder dystocia and breech delivery. It is important to recognise the limited existing evidence to examine the impact of teams-based simulation on clinical outcomes. Further simulation research focused on improving obstetric outcomes should be encouraged, and further analysis of outcomes associated with current models of training examined. While the importance of improving teamwork, communication and procedural competence is evident, the possibility of unintended and unanticipated consequences associated with teams-based simulation training must continue to be assessed.

The introduction of the MOTHER course provides an opportunity for RANZCOG to employ different educational approaches to assist all staff involved in obstetric emergency training to upskill in clinical management and procedural skills, but also to tackle less tangible problems, such as workplace culture and bullying, which has also been shown to lead to poorer mental health in trainees and worse patient outcomes. It is essential that adequate evaluation is linked with the introduction of the MOTHER course to assess both its effectiveness as a training tool, and its impact on clinical outcomes.

References

- Gaba D. The future vision of simulation in health care. *Qual Saf Health Care*. 2004;13(Suppl 1):i2–i10.
- National Maternity Data Development Project. Research brief No 8. Primary Postpartum haemorrhage. Available from: www.aihw.gov.au/getmedia/b59e8c8c-2b78-4f13-8b70-b46814a7e9ee/brief_8_per-82.pdf.aspx
- Calvert KL, McGurgan PM, Debenham EM, et al. Emergency Obstetric Simulation Training. *ANZJOG*. 2013;53(6):509–16.
- Gaba D. Crisis resource management and teamwork training in anaesthesia. *BJA*. 2010;105(1):3–6.
- WHO. Framework for action on interprofessional education and collaborative practice. Geneva: World Health Organization, 2010. Available from: www.who.int/hrh/resources/framework_action/en/
- Institute of Medicine (US). Health professions education: a bridge to quality. Washington, DC: National Academies Press, 2003.
- Guraya SY, Barr H. The effectiveness of interprofessional education in healthcare: A systematic review and meta-analysis. *Kaohsiung J Med Sci*. 2018;34(3):160–5.
- Cusack T, O'Donoghue G. The introduction of an interprofessional education module: students' perceptions. *Qual Prim Care*. 2012;20(3):231–8.
- Shoushtarian M, Barnett M, McMahon F, Ferris J. Impact of introducing practical obstetric multi-professional training (PROMPT) into maternity units in Victoria, Australia. *BJOG*. 2014;121(13):1710–8.
- Kumar A, Sturrock S, Wallace E, et al. Evaluation of learning from Practical Obstetric Multi-Professional Training and its impact on patient outcomes in Australia using Kirkpatrick's framework: a mixed methods study. *BMJ Open*. 2018;8(2):e017451.
- Braithwaite J, Herkes J, Ludlow K, et al. Association between organisational and workplace cultures, and patient outcomes: systematic review protocol. *BMJ Open*. 2016;6(12):e013758.
- Merriel A, Ficquet J, Barnard K, et al. The effects of interactive training of healthcare providers on the management of life-threatening emergencies in hospital. *Cochrane Database Syst Rev*. 2019;9(9):CD012177.
- Crofts JF, Lenguerand E, Bentham GL, et al. Prevention of brachial plexus injury—12 years of shoulder dystocia training: an interrupted time-series study. *BJOG*. 2016;123(1):111–8.
- Dahlberg J, Nelson M, Dahlgren MA, et al. Ten years of simulation-based shoulder dystocia training – impact on obstetric outcome, clinical management, staff confidence, and the pedagogical practice – a time series study. *BMC Pregnancy Childbirth*. 2018;18(1):361.
- Grobman WA, Miller D, Burke C, et al. Outcomes associated with introduction of a shoulder dystocia protocol. *American J Obstet Gynecol*. 2011;205(6):513–7.
- Inglis SR, Feier N, Chetiyar JB, et al. Effects of shoulder dystocia training on the incidence of brachial plexus injury. *American J Obstet Gynecol*. 2011;204(4):322–e1.
- Fransen AF, van de Ven J, Schuit E, et al. Simulation-based team training for multi-professional obstetric care teams to improve patient outcome: a multicentre, cluster randomised controlled trial. *BJOG*. 2017;124(4):641–50.
- Nelissen E, Ersdal H, Mduma E, et al. Clinical performance and patient outcome after simulation-based training in prevention and management of postpartum haemorrhage: an educational intervention study in a low-resource setting. *BMC Pregnancy Childbirth*. 2017;17(1):301.
- Macedonia CR, Gherman RB, Satin AJ. Simulation laboratories for training in obstetrics and gynecology. *Obstet Gynecol*. 2003;102(2):388–92.



Want to read more?
Find similar articles when
you explore online.



ogmagazine.org.au

Management of an obstetric emergency

Dr Chris Polchleb
FRACGP
DRANZCOG Adv candidate
West Gippsland Healthcare Group



Dr Hayley Messenger
FRANZCOG
West Gippsland Healthcare Group

Management of an obstetric emergency is the routine responsibility of everyone involved in maternity care, from junior doctors to specialist obstetricians, midwives and anaesthetists. All staff involved in care of birthing women should be educated in emergency management and, given the incidence of many obstetric emergencies, periodic training and drills should also be undertaken.¹

The fundamentals of early recognition and management can be applied to any obstetric emergency, remembering first to stay calm and call for help. Systematic assessment of danger, airway, breathing, circulation (and haemorrhage control), disability and immediate correction at each step is key. The fetus may be vulnerable to maternal hypotension and hypoxia, requiring attention to both patients. Assessing for danger to the patient and staff is easy to overlook, but at the forefront of our minds amidst the COVID-19 pandemic, alerting us to consider personal protective equipment prior to entering the emergent situation.

The role of the team leader during an obstetric emergency is multi-dimensional, requiring strong communication, decision making and management

skills. This clinician could be from any discipline or seniority level. Observing a team leader effectively manage an obstetric emergency is empowering and inspiring. Calm and clear in their direction, they bring a sense of control to the situation with a confident presence tangible to colleagues and patients. With this situational awareness, they simultaneously assess the patient, escalate care and provide treatment or delegate tasks while communicating with the woman and her support person. They must guard against 'tunnel vision' or task fixation, and have rapport with the clinical team, the birthing woman and her support person, allowing concerns or ideas to be aired, further contributing to an overall coordinating or 'helicopter view' and optimising outcomes.²

Being the only clinician in the hospital to provide first responder management is an everyday reality for our widely dispersed rural and regional healthcare workers. With obstetricians, anaesthetists and theatre teams remotely on call, the threshold to identify an emergency or call for help may need to be lower to consider local resources – sometimes, this can require creativity and role-shifting! In city hospitals, those we call to help may be unavailable and sometimes it can feel just as lonely.

In a complete review of obstetric emergencies, it would be prudent to consider management of internal podalic version and breech extraction, obstetric haemorrhage, neonatal resuscitation, maternal collapse and perimortem caesarean section, amniotic fluid embolism, management of the obstetric trauma patient, eclampsia and epidural or spinal anaesthetic complications. Many of these topics deserve their own focused attention, so we focus here on 'snack-sized' refreshers of less common, specifically obstetric, emergencies with a procedural element.

Shoulder dystocia

Shoulder dystocia is often an unpredictable and unpreventable obstetric emergency with an incidence of between 0.58% and 0.70%.³ The anterior shoulder becomes impacted behind the symphysis pubis during vaginal birth, delaying delivery of the body after the head is born and requiring additional manoeuvres beyond routine axial traction.⁴ Warning signs may include slow progress and crowning or 'turtling' of the head. Neonatal consequences can include Erb's Palsy, fractures and hypoxic injury, with fetal pH falling by between 0.011⁵ and 0.04⁶ per minute after delivery of the head. Maternal morbidity is often related to PPH and perineal trauma.

The most crucial steps in management of shoulder dystocia are stating the diagnosis to the room, directing the call for help and commencement of initial management, which is to improve favourability of pelvic diameters in relation to bisacromial diameters. Gaskin ('all fours') or McRobert's manoeuvre ('knees to nipples' position) may resolve up to 90% of shoulder dystocia⁷ and the former can allow delivery of the posterior shoulder. Subsequent

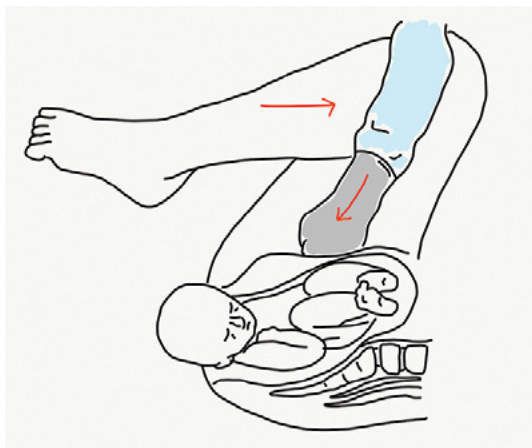


Figure 1. Rubin I manoeuvre.

suprapubic pressure with continuous pressure or slight rocking motion may allow the anterior shoulder to dislodge from under the pubic symphysis (Rubin I) (Figure 1). Delivery of the posterior arm by flexing the elbow and gently pulling the arm from the vagina allows the anterior shoulder to be delivered, and is recommended as a first-line internal manoeuvre (Figure 2).³ Posterior axillary sling traction with an infant feeding tube has been described to 'hook' the posterior shoulder and deliver this first (Figure 3). Rotating the anterior and/or posterior shoulders using Wood's corkscrew manoeuvre, which may be added to Rubin II manoeuvre, or the reverse Wood's screw manoeuvre (Figure 4) can effect delivery. Rescue manoeuvres, such as the Zavanelli manoeuvre (pushing the fetal head up to deliver by caesarean) or purposeful cleidotomy or symphysiotomy, may be considered as last resort.

Many clinicians will use mnemonic devices, such as HELPERR[®] or similar, to ensure they maintain a systematic approach – the goal being timely relief of obstruction with the least morbidity to mother and child. This can require some quick thinking and may be done in any order. It should be remembered that an episiotomy helps only to allow access but will not relieve what is a bony obstruction. Following a shoulder dystocia, PPH should be anticipated along with the requirement for neonatal resuscitation, careful perineal and PR examination and after care.

Cord prolapse

Cord prolapse occurs when the umbilical cord descends with or before the presenting part of the fetus, with an incidence of 0.1–0.6%,⁹ and

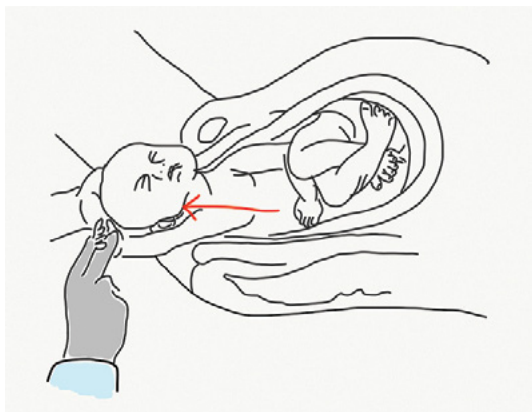


Figure 2. Delivery of posterior arm.

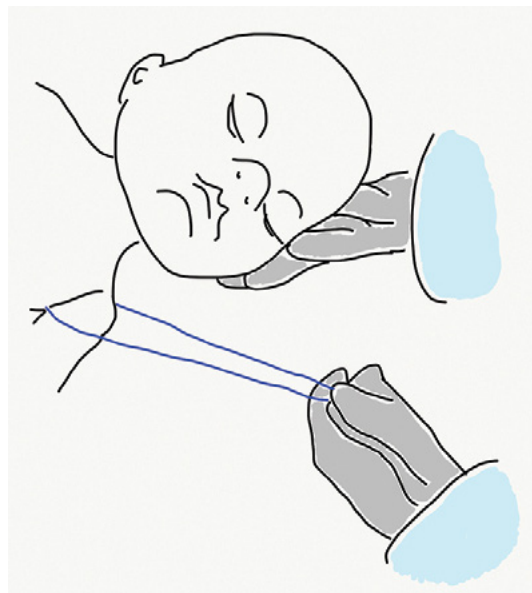


Figure 3. Posterior axillary sling traction.

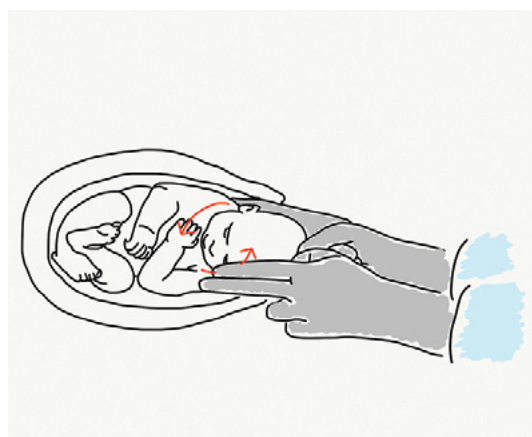


Figure 4. Wood's screw manoeuvre.

necessitates immediate birth. The outcome of undetected or mismanaged cord prolapse can be dire, with fetal hypoxia occurring secondary to cord occlusion. Cord prolapse should be suspected when there is abnormal (especially sudden) fetal heart rate pattern with ruptured membranes: in particular, soon after spontaneous or artificial rupture of membranes.

Cord pressure should be relieved by elevating the presenting part while preparations are made for an emergency caesarean section (or assisted vaginal birth if birth is imminent). While this is done, the woman should be positioned in a deep knees-to-chest position on all fours with their bottom in the air, or on their left side, with their head lower than the pelvis.

In many rural settings, a delay in transfer to theatre for caesarean section should be expected and planned for. In any setting, a cord prolapse box or trolley can be equipped with an indwelling urinary catheter, saline bag and giving set, ready to instil 500ml into the maternal bladder to lift the presenting part off the cord. A full bladder may allow a spinal anaesthetic to be used instead of a general anaesthetic, if fetal heart rate permits, improving safety for the mother.

Uterine inversion

Uterine inversion is a rare obstetric emergency where the fundus turns into the uterine cavity with potential profound ensuing neurogenic and hypovolaemic shock. The most well-established cause of uterine inversion is early or excessive traction being applied to the umbilical cord before separation of the placenta. Other risk factors include uterine atony, fundal implantation of an adherent placenta, manual removal of placenta, precipitate labour, short umbilical cord, placenta praevia and connective tissue disorders.¹⁰

Early detection is imperative to enable immediate manual replacement and resuscitation, with planning to manually remove the placenta only when in a safe environment, where placental adhesive disorder and obstetric haemorrhage can be managed. If cervical shock is evident, atropine should be considered.

Signs include loss of a palpable uterine fundus, an abnormal soft mass on vaginal examination, a uterine fundus visualised externally or any time there is shock disproportionate to haemorrhage.

Johnson's manoeuvre (Figure 5) is first line – grasping the uteroplacental mass, inserting the hand and two-thirds of the forearm into the vagina and raising the fundus above the level of the umbilicus to relax the cervical ring, allowing the passage of fundus through the ring.¹¹ A uterine relaxant can be given to aid manual replacement. If manual replacement fails, the vagina can be filled with warm sterile water (Figure 6) to distend the vagina and push the fundus upwards using hydrostatic pressure (O'Sullivan's method). Surgical methods may be used, such as incising the cervical ring to allow manual replacement, or laparotomy to pull the uterus cephalad by grasping the round ligaments (Huntington and Haultain procedures).^{12,13}

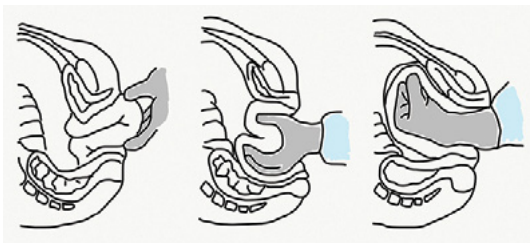


Figure 5. Johnson's manoeuvre.

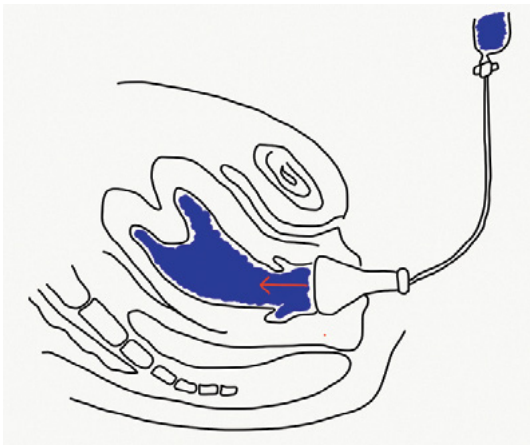


Figure 6. O'Sullivan's method.

Document, discuss, debrief, develop

If staff numbers allow, it is ideal to allocate the role of scribe. This person has an important purpose in keeping track of medications given and time elapsed, and can sometimes act as liaison between the team, directly managing the emergency and support staff (e.g. haematologist, transfusion lab, or retrieval services), as well as allowing contemporaneous documentation.

A discussion about the clinical issues, actions taken, follow up and implications for the future with the woman and her supports at the time of the event is essential, and with most serious events this would be revisited the following day and in a few weeks' time. This is important to aid understanding from the patient's perspective and reassure, as an evolving emergency (even when well managed clinically) can appear rapid, confusing, and frightening for those directly experiencing it. Post-traumatic stress disorders are a potential consequence of birth trauma and debrief may reduce mental distress.¹⁴

Staff, too, may need added support after a critical incident and a formal process to review and discuss emotional responses and team function should be offered.¹⁵ Standardised morbidity and mortality review to capture critical events are needed to identify and support continual quality improvement and inter-professional learning. This is an opportunity to reflect on how best to collaborate as a multidisciplinary team, considering systemic, clinical and human factors as small cogs in the giant wheel of maternity healthcare.

References

1. Singh A, Nandi L. Obstetric Emergencies: Role of Obstetric Drill for a Better Maternal Outcome. *J Obstet Gynaecol India*. 2012;62(3):291-6.
2. Kumar A, Sturrock S, Wallace E, et al. Evaluation of learning from Practical Obstetric Multi-Professional Training and its impact on patient outcomes in Australia using Kirkpatrick's framework: a mixed methods study. *BMJ Open*. 2018;8(2):e017451.
3. Winter C, Crofts J, Laxton C, et al (Eds) Sowter M, Weaver E, Beaves M. PROMPT PRactical Obstetric MultiProfessional Training Course Manual, Australian and New Zealand Edition. 2008.
4. Rodis JF. Shoulder dystocia: Intrapartum diagnosis, management, and outcome. 2019. Available from: www.uptodate.com/contents/shoulder-dystocia-intrapartum-diagnosis-management-and-outcome
5. Leung T, Stuart O, Sahota D, et al. Head-to-body delivery interval and risk of fetal acidosis and hypoxic ischaemic encephalopathy in shoulder dystocia: a retrospective review. *BJOG*. 2010;118(4):474-9.
6. Wood C, Hing Ng K, Hounslow D, Benning H. Time - An Important Variable in Normal Delivery. *BJOG*. 1973;80(4):295-300.
7. RCOG. Green-top Guideline No. 42. Shoulder Dystocia. 2012. Available from: www.rcog.org.uk/globalassets/documents/guidelines/gtg_42.pdf
8. Politi S, D'Emidio L, Cignini P, et al. Shoulder dystocia: an Evidence-Based approach. *J Prenat Med*. 2010;4(3):35-42.
9. RCOG. Green-top Guideline no. 50. Umbilical Cord Prolapse. 2014. Available from: www.rcog.org.uk/globalassets/documents/guidelines/gtg-50-umbilicalcordprolapse-2014.pdf
10. Bhalla R, Wuntakal R, Odejinmi F, Khan R. Acute inversion of the uterus. *The Obstetrician & Gynaecologist*. 2009;11(1):13-18.
11. Johnson AB. A new concept in replacement of the inverted uterus and report of nine cases. *Am J Obstet Gynecol*. 1949;57:557-62.
12. Huntington JL, Irving FC, Kellogg FS, Mass B. Abdominal reposition in acute inversion of the puerperal uterus. *Am J Obstet and Gynaecol*. 1928;15:34-8.
13. Haultain FWN. The treatment of chronic uterine inversion by abdominal hysterectomy, with a successful case. *Br Med J*. 1901;2:974.
14. Axe S. Labour debriefing is crucial for good psychological care. *Br J Midwifery*. 2000;8:626-31.
15. Blacklock E. Interventions Following a Critical Incident: Developing a Critical Incident Stress Management Team. *Archives of Psychiatric Nursing*. 2012;26(1):2-8.

The future of monitoring the fetus during labour



Dr Vinayak Smith
MBBS, MRepMed, DLaw
RANZCOG Trainee/Clinical Research Fellow,
Department of Obstetrics and Gynaecology,
Monash University, Melbourne



Dr Deborah Fox RM
BMid, MSc, PhD
Senior Lecturer, Centre for Midwifery, Child and
Family Health University of Technology Sydney



Prof Beverley Vollenhoven
MBBS, PhD, FRANZCOG, CREI
Deputy Head of Obstetrics and Gynaecology,
Monash University, Melbourne



Prof Euan M Wallace AM
MBChB MD FRCOG FRANZCOG FAHMS
Carl Wood Professor and Head of Department of
Obstetrics and Gynaecology, Monash University

The technology around the monitoring of the fetus during labour has been largely unchanged since the 1970s when some of the world's first randomised clinical trials (RCTs) of intrapartum fetal heart rate (FHR) monitoring were conducted by Carl Wood and Peter Renou in Melbourne.¹ As maternity care providers, we are all too familiar with cardiotocography (CTG) and how it remains regarded by many as the 'gold standard' in the field of FHR surveillance - a process we all refer to as electronic fetal monitoring (EFM). Based on Doppler ultrasound, CTG approximates FHR using an ultrasound wave of 1.5 MHz to isonate fetal heart and subsequently detects the dispersed waveforms through a transducer via the Doppler effect. We describe the FHR as being an approximate measure here since CTG uses autocorrelation techniques to compare and average Doppler waveforms to derive the FHR. Broadly speaking, the rationale that underpins EFM encompasses screening for patterns of FHR changes which occur secondary to fetal hypoxia. The intention behind this is to dynamically guide clinical decision making regarding timing of delivery in order to prevent birth asphyxia.^{2,3}

Although CTG still remains the most widely used method of electronic intrapartum fetal surveillance in high-income countries, there are several, and widely acknowledged, limitations with it as an approach to assessing fetal wellbeing. Some have argued that it has withstood the test of time purely on the basis that there is no suitable alternative. Nonetheless, it is still somewhat surprising that there have been no meaningful advances in the technology that underpins EFM in over 60 years! We seek to change this. We have a vision of pushing the boundaries of technological innovation underpinning intrapartum EFM with the intent of improving both maternal and neonatal outcomes as well as women's birth experiences.

Limitations of current EFM technology

One of the fundamental shortcomings of CTG is the limitation imposed by Doppler ultrasound as a technology itself.⁴ First, the transducer for collecting the FHR requires initial placement, frequent repositioning and subsequent supervision by a clinician. This limits mobility of the labouring woman. Next, there are issues with maternal heart rate (MHR) and FHR confusion as well as signal loss during monitoring, which occurs in as many as 15–40% of labours. Loss of signal or confusion between the MHR and FHR is particularly common in the second stage of labour. These challenges are heightened in overweight or obese women. Beyond these clinical challenges, deficiencies with the signal quality of FHR data due to the approximation process that it uses often compromises the visual outputs generated for the CTG that makes interpretation difficult. These include a lack of true beat-to-beat FHR data, signal artefacts (i.e. double and half counting of the FHR), and the inability to detect fetal arrhythmias.^{5–7}

However, newer technology that has become available over the last decade, such as non-invasive

fetal electrocardiogram (NIFECG), offers promise in solving the clinical and technological challenges. The NIFECG obtains FHR information from the maternal abdomen and provides real time visualisation of the fetal electrophysiological process. To obtain the signal, the wireless device is simply placed on the abdomen like an adherent patch, using surface electrodes similar to those used in adult electrocardiography.⁸ To the clinician, the output may be visually indistinguishable to that obtained from the traditional CTG, but the advantages over the CTG are several fold. Using this, the signal loss and rate of FHR and MHR confusion, both in the first and second stage of labour, are significantly less than occurs with the CTG.^{9,10} The technology is also 'BMI agnostic', unaffected by maternal obesity, and supports full ambulation and mobility during labour.^{9,11,12} The ability to 'set and forget' the NIFECG sensor, instead of the incessant repositioning of a Doppler transducer, allows the clinician to focus more on the woman and less on the machine. A recent multicentre trial of a NIFECG confirmed that it outperforms CTG and even suggested that its closely resembled the performance measures of a fetal scalp electrode (FSE).¹³

Obstetric decision making: computerised CTG

RCTs have consistently failed to show that CTGs improve perinatal mortality or longer-term outcomes associated with injury, such as cerebral palsy. On the contrary, its use has been associated with an increase in obstetric intervention.^{3,14} Proponents of CTGs have often argued that this is largely due to poor interpretation of the CTG rather than technological deficiencies per se. There is no question that there is significant inter- and intra-observational variation in CTG interpretation, even between experts, and those experts may frequently miss the at-risk fetus.^{15,16} No wonder that a significant proportion of obstetric litigation involves the interpretation of the intrapartum CTG.¹⁷

So, could artificial intelligence (AI) be the answer to this very 'human factors' problem? Certainly, computerised CTG is an area of active research that seeks to harness machine learning and neural networks. The long-term vision of this work is a clinical decision support system that affords consistent and reliable CTG interpretation to support and inform expert obstetric decision making. Sadly, as with CTGs per se, RCTs of computerised CTG interpretation have not yet shown them to outperform 'human eyes'. That is not to say that AI should be abandoned - ongoing refinement of the underlying algorithms continues to advance at pace, including the ability of algorithms to learn from the data itself (machine learning/deep learning) as opposed to being 'trained' by the clinicians. It's just not yet ready for prime time.¹⁸⁻²⁰

Identification of the hypoxic fetus

Irrespective of interpretation, CTGs are poor at identifying fetal acidaemia. Whether assessed by AI or by clinicians, there is an urgent need for technology with better sensitivity and specificity for hypoxaemia/acidaemia.^{2,21,22}

ST segment analysis using FSE is one these proposed methods which is based on the premise of identifying dynamic changes in the fetal ST segments that occur in response to hypoxia to prompt delivery. Previously, high-quality evidence for invasive ST segment analysis use during labour did not suggest any advantage over routine CTG in reducing neonatal

acidemia. However, a recent expert opinion piece that reevaluated the evidence with respect to trial design, heterogeneity of outcomes and statistical methods suggested that it was superior to CTG in this regard.^{23,24} Even though the evidence is equivocal at best in this area, NIFECG allows us, for the first time, to replicate this non-invasively. There is increasing work being directed toward using this feature as well as several novel signal metrics intrapartum to identify dynamically evolving intrapartum hypoxia in the fetus. The potential applications for this to extend to the antenatal period with utility also being demonstrated in the screening for intrauterine growth restriction.^{8,25}

Similarly, fetal blood sampling is another commonly used adjunct test to aid in the identification of the hypoxic fetus. The evidence surrounding its utility, however, is largely equivocal with some suggestion that it may reduce the number of caesarean sections when used in consort with the CTG. Much criticism has been levelled towards the test itself however, such as it being unfriendly to the patient and clinician, highly invasive, time consuming and having a high degree of inter- and intra-operator variability. This invariably affects test performance and the subsequent results that are obtained, which may serve to explain these findings. One approach to overcoming these issues is the development of biosensors that can continuously monitor fetal lactate dynamically during labour. The end goal here is a device that can be applied to the fetus transvaginally to monitor lactates continuously during labour. The results could prevent unnecessary caesarean sections or could prompt the decision to expedite birth when a critical threshold is reached. There are several approaches to developing such a lactate biosensor with several groups working on this concurrently. Most of these are in early phase studies, but we can anticipate a fully functional device capable of such functions in the near future.^{26,27}

We hope this review helps shed some light on the current state of the art with respect to fetal monitoring during labour. We would like to reiterate that, at present, these are all considered to be investigational approaches, but with the ability to bear fruit clinically in the near future. Through this, there is a realistic possibility of improving both the clinical management of EFM, reducing unnecessary intervention and increasing the quality of the experience of birth for both mothers and clinicians. We look forward to a future where precision-based techniques can be used in our decision making and move fetal monitoring into the 21st century.

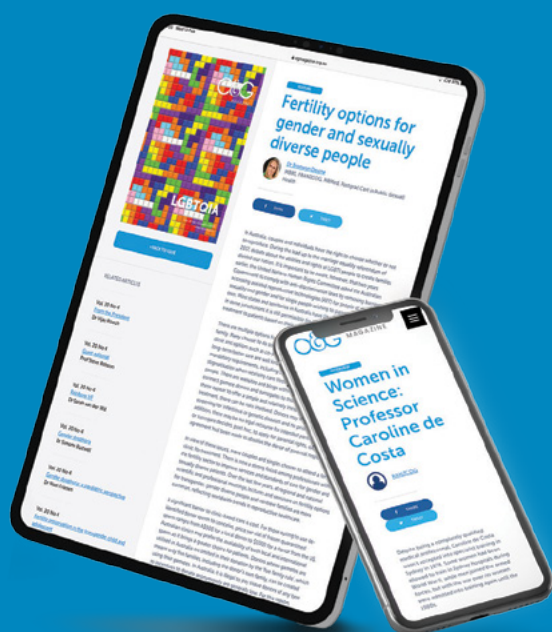
References

1. Wood C, Renou P, Oats J, et al. A controlled trial of fetal heart rate monitoring in a low-risk obstetric population. *Am J Obst Gynecol.* 1981;141(5):527-34.
2. Alfrevic Z, Devane D, Gyte GM, Cuthbert A. Continuous cardiotocography (CTG) as a form of electronic fetal monitoring (EFM) for fetal assessment during labour. *Cochrane Database Syst Rev.* 2017;2(2):Cd006066.
3. Smith V, Arunthavanathan S, Nair A, et al. A systematic review of cardiac time intervals utilising non-invasive fetal electrocardiogram in normal fetuses. *BMC Pregnancy and Childbirth.* 2018;18(1):370.
4. Peters CH, ten Broeke ED, Andriessen P, et al. Beat-to-beat detection of fetal heart rate: Doppler ultrasound cardiotocography compared to direct ECG cardiotocography in time and frequency domain. *Physiological Measurement.* 2004;25(2):585-93.
5. Ayres-de-Campos D, Spong CY, Chandraran E. FIGO consensus guidelines on intrapartum fetal monitoring: Cardiotocography. *Int J Gynecol Obst.* 2015;131(1):13-24.
6. Bakker PC, Colenbrander GJ, Verstraeten AA, Van Geijn HP. The quality of intrapartum fetal heart rate monitoring. *Eur J Obst Gynecol Reprod Biol.* 2004;116(1):22-7.

7. Peters M, Crowe J, Pieri JF, et al. Monitoring the fetal heart non-invasively: a review of methods. *Journal of Perinatal Medicine*. 2001;29(5):408-16.
8. Smith V, Nair A, Warty R, et al. A systematic review on the utility of non-invasive electrophysiological assessment in evaluating for intra uterine growth restriction. *BMC Pregnancy and Childbirth*. 2019;19(1):230.
9. Reinhard J, Hayes-Gill BR, Schiermeier S, et al. Intrapartum Heart Rate Ambiguity: A Comparison of Cardiotocogram and Abdominal Fetal Electrocardiogram with Maternal Electrocardiogram. *Gynecologic and Obstetric Investigation*. 2013;75(2):101-8.
10. Stampalija T, Signaroldi M, Mastroianni C, et al. Fetal and maternal heart rate confusion during intra-partum monitoring: comparison of trans-abdominal fetal electrocardiogram and Doppler telemetry. *J Matern Fetal Neonatal Med*. 2012;25(8):1517-20.
11. Euliano TY, Darmanjian S, Nguyen MT, et al. Monitoring Fetal Heart Rate during Labor: A Comparison of Three Methods. *Journal of Pregnancy*. 2017;8529816.
12. Cohen WR, Hayes-Gill B. Influence of maternal body mass index on accuracy and reliability of external fetal monitoring techniques. *Acta Obstet Gynecol Scand*. 2014;93(6):590-5.
13. Lempersz C, Noben L, van Osta G, et al. Intrapartum non-invasive electrophysiological monitoring: A prospective observational study. *Acta Obstet Gynecol Scand*. <https://doi.org/10.1111/aogs.13873>
14. Alfirevic Z, Devane D, Gyte GM. Continuous cardiotocography (CTG) as a form of electronic fetal monitoring (EFM) for fetal assessment during labour. *Cochrane Database Syst Rev*. 2013;5:CD006066.
15. Knupp RJ, Andrews WW, Tita ATN. The future of electronic fetal monitoring. *Best Pract Res Clin Obstet Gynaecol*. 2020;S1521-6934(20)30031-6.
16. Farquhar CM, Armstrong S, Masson V, et al. Clinician Identification of Birth Asphyxia Using Intrapartum Cardiotocography Among Neonates With and Without Encephalopathy in New Zealand. *JAMA Network Open*. 2020;3(2):e1921363.
17. Nowotny B, Basnayake S, Lorenz K, et al. Using medico-legal claims for quality improvement in maternity care: application and revision of an NHSLA coding taxonomy. *BJOG*. 2019;126(12):1437-44.
18. Balayla J, Shrem G. Use of artificial intelligence (AI) in the interpretation of intrapartum fetal heart rate (FHR) tracings: a systematic review and meta-analysis. *Archives of Gynecology and Obstetrics*. 2019;300(1):7-14.
19. Belfort MA, Clark SL. Computerised cardiotocography - study design hampers findings. *Lancet*. 2017;389(10080):1674-6.
20. Computerised interpretation of fetal heart rate during labour (INFANT): a randomised controlled trial. *Lancet*. 2017;389(10080):1719-29.
21. Ghi T, Chandharan E, Fieni S, et al. Correlation between umbilical vein-to-artery delta pH and type of intrapartum hypoxia in a cohort of acidemic neonates: A retrospective analysis of CTG findings. *Eur J Obst Gynecol Reprod Biol*. 2018;231:25-9.
22. Visser GH, Ayres-de-Campos D. FIGO consensus guidelines on intrapartum fetal monitoring: Adjunctive technologies. *Int J Gynecol Obst*. 2015;131(1):25-9.
23. Amer-Wählin I, Ugwumadu A, Yli BM, et al. Fetal electrocardiography ST-segment analysis for intrapartum monitoring: a critical appraisal of conflicting evidence and a way forward. *Am J Obst Gynecol*. 2019;221(6):577-601.e511.
24. Blix E, Brurberg KG, Reiherth E, et al. ST waveform analysis versus cardiotocography alone for intrapartum fetal monitoring: a systematic review and meta-analysis of randomized trials. *Acta Obstet Gynecol Scand*. 2016;95(1):16-27.
25. Velayo CL, Funamoto K, Silao JN, et al. Evaluation of Abdominal Fetal Electrocardiography in Early Intrauterine Growth Restriction. *Frontiers in Physiology*. 2017;8:437.
26. Cummins G, Kremer J, Bernassau A, et al. Sensors for Fetal Hypoxia and Metabolic Acidosis: A Review. *Sensors (Basel)*. 2018;18(8):2648.
27. East CE, Leader LR, Sheehan P, et al. Intrapartum fetal scalp lactate sampling for fetal assessment in the presence of a non-reassuring fetal heart rate trace. *Cochrane Database Syst Rev*. 2010;(3):CD006174.

O&G

MAGAZINE



A new paradigm

- ✓ Search by keyword, issue, author
- ✓ See 'most viewed' article
- ✓ Feature topical articles from the archive
- ✓ Support multimedia
- ✓ Submit a letter to the editor
- ✓ Contributor pages show all previous articles

Is 39 weeks the ideal time to deliver?



Dr Richard Murphy
MBBS, FRACGP, FRANZCOG
St John of God Hospital Subiaco
Fertility Specialists Applecross

Nowadays, debate on the best time to deliver largely focuses on the timing of vaginal delivery. The timing of caesarean section is less controversial, ideally occurring at 39 weeks unless dictated by individual clinical circumstances, where the risk to mother or baby associated with delaying delivery until 39 weeks justify the increased neonatal respiratory morbidity associated with earlier delivery.¹

The practice of obstetrics has changed enormously over the last few decades. I would recommend all O&Gs in Australia and New Zealand read Dr Margaret Smith's fascinating autobiography, *Now & Then: A Gynaecologist's Journey*,² to get a feel for mid-20th century obstetrics. It is now rare not to have a very accurate due date, know the number of fetuses, position of the placenta and whether any structural abnormalities are present. While vaginal delivery has existed since the dawn of time, it is worth considering some of our entrenched, 'no-brainer', practices. One of these is the idea that the spontaneous onset of labour is ideal. This idea initially evolved from traditional practice, where the due date was often uncertain, the ability to alter the course of a pregnancy and/or manage iatrogenic complications were more limited.

This support for spontaneous labour subsequently found support, incorrectly, from studies comparing women undergoing induction of labour (IOL) with women in spontaneous labour.^{3,4} Choosing the time of spontaneous labour is not a choice any women will ever have. Later retrospective cohort studies comparing IOL with expectant management from the same gestation showed a lower rate of both caesarean delivery and neonatal morbidity.^{5,6}

Following this, randomised controlled trials for specific high-risk groups showed no difference in caesarean section rates with IOL for women 35 years or older⁷ and significantly more vaginal deliveries with less shoulder dystocia and associated co-

morbidities with IOL for fetal macrosomia.⁸ Induction after 36 weeks for gestational hypertension or mild pre-eclampsia showed better maternal outcomes.⁹ IOL in postdates pregnancy results in fewer caesareans compared to expectant management.¹⁰

The ARRIVE trial published in August 2018 is the final piece to this puzzle, looking at induction for low-risk women with no traditional indication for intervention. The authors showed a significant reduction in caesarean delivery with IOL, 18.6% versus 22.2%, RR 0.84, CI 0.76-0.93, as well as less hypertensive disease.¹¹

What of the fetal outcome though? Are babies born at later gestations better placed for later life? Preventing pregnancies progressing beyond 42 weeks is associated with lower rates of stillbirth,¹² and a reduction in perinatal mortality is seen with IOL at every gestation from 37 to 41 weeks.⁵ Cochrane shows a policy of IOL at or beyond term is associated with a significantly lower risk of all-cause perinatal death (RR 0.33) and stillbirth (RR 0.33), as well as caesarean section (RR 0.92). 426 induced deliveries are needed to prevent one perinatal death.⁶

What about long-term neurological outcomes for children after induced labour? Educational achievement has been shown to be the same for children induced at 39 or 40 weeks as those whose mothers were managed expectantly past 39 weeks.¹³

Which patient group benefits the most from IOL? When we look at the median gestation at delivery between the IOL and the expectant management group in ARRIVE, the difference is 39+4 vs 40+0, significantly different but still not much in a 280 day pregnancy. The real difference is in the interquartile range, 39+1 to 39+5 for IOL vs 39+3 to 40+7 for expectant management. It is by intervening in those pregnancies that would otherwise have progressed furthest where the biggest benefit will be found. Unfortunately, there is no way of knowing exactly when labour will start.

There is evidence in women with hypertensive disease at term showing the greatest benefit of IOL is for those that have the most unfavourable cervixes.¹⁴ It is those women who are destined to progress furthest past their due date that are most likely to benefit from IOL, benefiting from decreased risks of caesarean section, hypertensive disease, shoulder dystocia, stillbirth and perinatal death.

As someone who has routinely tried to induce all mothers by their due date for over six years, my initial fear was patients delivering via non-elective caesarean section as a direct result of my intervention and failure to establish in labour. My personal experience is that getting women into labour is not as hard as we have been led to believe. The failure to establish labour is a sign of the unready uterus programmed to deliver at a much later gestation. Considered labour ward management is needed here and often a little

more time to allow the uterus and cervix to upload oxytocin receptors and ready itself for labour is needed. If there is obstruction in labour at 39 weeks, it is hard to see how waiting longer will help this. Even more importantly, those fetuses that declare their unhappiness in labour and are delivered via emergency caesarean represent a vulnerable population, at risk of stillbirth with ongoing gestation. Those women who will always have laboured easily still do so and, in my experience, if a nullipara is induced and has a baby in her arms by lunchtime she is never unhappy. What the induction process ends up doing is standardising labour, removing most of the unpredictability from the process. You suddenly find that meconium and pathological CTGs are rare events.

One of the side benefits of routine induction for low risk women is that IOL for higher risk patients becomes easier. I routinely use the same technique for preterm pregnancies needing induction with pre-eclampsia or growth restriction as I do for low-risk term pregnancies. Similarly, I have had a 45-year-old nullipara deliver very nicely vaginally with a 39-week induction recently.

The science on timing of delivery is clear. Selling this to a public led to believe that induction is almost invariably a bad thing is a challenge for us all as a profession. The art of obstetrics will evolve with time and one of the major tools in everyone's kit will have to be the ability to develop methods of induction acceptable to women, their families and also our midwifery colleagues.

References

1. RANZCOG. Timing of elective caesarean section at term. C-Obst 23. 2018. Available from: [https://ranzco.org.au/statements-guidelines/obstetrics/timing-of-elective-caesarean-section-at-term-\(c-ob](https://ranzco.org.au/statements-guidelines/obstetrics/timing-of-elective-caesarean-section-at-term-(c-ob)
2. Smith M. Now & Then: A Gynaecologist's Journey. Crumplestone Press, 2010.
3. Vardo J. Maternal and neonatal morbidity among nulliparous women undergoing elective induction of labor. *J Reprod Med*. 2011;56:25-30.
4. Dunne C. Outcomes of elective labour induction and elective caesarean section in low-risk pregnancies between 37 and 41 weeks' gestation. *J Obstet Gynaecol Can*. 2009;31:1124-30.
5. Stock S et al. Outcomes of elective induction of labour compared with expectant management: population based study. *BMJ*. 2012;344:e2838
6. Middleton P et al. Induction of labour for improving birth outcomes for women at or beyond term. *Cochrane Database Syst Rev*. 2018;5(5):CD004945.
7. Randomized Trial of Labor Induction in Women 35 Years of Age or Older. *N Engl J Med*. 2016;374:813-22.
8. Boulvain M et al. Induction of labour versus expectant management for large-for-date fetuses: a randomised controlled trial. *Lancet*. 2015;385:2600-5.
9. Koopmans CM, et al. Induction of labour versus expectant monitoring for gestational hypertension or mild pre-eclampsia after 36 weeks' gestation (HYPITAT): a multicentre, open-label randomised controlled trial. *Lancet*. 2009;374:979-88.
10. Hannah M, et al. Induction of labor compared with serial antenatal monitoring in post-term pregnancy. *N Engl J Med*. 1992;326:1587-92.
11. Grobman W, et al. Labor Induction versus Expectant Management in Low-Risk Nulliparous Women. *N Engl J Med*. 2018;379:513-23.
12. Hedegaard et al. Reduction in stillbirths at term after new birth induction paradigm: results of a national intervention. *BMJ Open*. 2014;4:e005785.
13. Werner et al. Association of Term Labor Induction vs Expectant Management With Child Academic Outcomes. *JAMA Network Open*. 2020;3(4):e202503.
14. Tajik P, et al. Should cervical favourability play a role in the decision for labour induction in gestational hypertension or mild pre-eclampsia at term? An exploratory analysis of the HYPITAT trial. *BJOG*. 2012;119:1123-30.

Do you have experience working or volunteering in low- to middle-income countries?

Share your story in O&G Magazine

RANZCOG is committed to improving the health of women and their families, including in the Pacific region.

The College is seeking contributions for **O&G Magazine** about global women's health. Articles and opinion pieces that highlight women's health issues or initiatives in low- to middle-income countries are appreciated.

Don't have time to prepare a written contribution? We can interview you and write the article for you.

Contributions are welcome from all College members.

For more information about contributing to **O&G Magazine**, go to:

www.ogmagazine.org.au/contribute



**The Royal Australian
and New Zealand
College of Obstetricians
and Gynaecologists**
Excellence in Women's Health



Methods of labour induction



Dr Michelle Wise
BSc, MD, MSc, FRANZCOG
Senior Lecturer, Department of Obstetrics and
Gynaecology, FMHS
University of Auckland, NZ

When you move hospitals, let alone countries, you start to question any practice you used to take for granted. I trained in university hospitals in Toronto, Canada, then moved to Whangarei, NZ, then back to Canada to work at a suburban hospital, and now live and work in Auckland. I have noticed several trends in labour induction that made me look up the evidence to support or refute my practice. I also chaired the development of a clinical practice guideline on induction of labour for the Aotearoa New Zealand context¹ presented via RANZCOG webinar (available from <https://ranzcoг.eventsair.com/cmspreview/ranzcoг-webinar-nz/archives>).

I have learned that (a) much of what we do has no high-quality research evidence to support best practice, so it is up to individual clinicians or hospital culture to decide, and (b) there is research to support some elements of labour induction but we still may not implement best practice for a variety of reasons. I would like to summarise the few areas that have moderate quality of evidence to support conditional recommendations, and pose some research questions that could lead to some feasible registrar projects. Finally, I will conclude that we should offer women several different methods of cervical ripening and labour induction and have a shared decision-making model to manage an individual woman's care.

Which methods are supported by research evidence?

There is moderate-quality evidence that cervical ripening with prostaglandins probably improves the chance of vaginal birth within 24 hours for women with unfavourable cervix over oxytocin alone.² Consequently, women with an unfavourable cervix should be offered cervical ripening to increase their Bishop score and hopefully improve their chances of a successful induction.

Some clinicians perform membrane sweeping at the same time as performing a formal labour induction. This is supported by several RCTs showing that concurrent membrane sweeping probably increases the rate of vaginal birth, shortens the induction to birth interval and reduces the exposure of mothers and babies to oxytocin.³

Some hospitals use vaginal PGE2 (dinoprostone) as their preferred prostaglandin. Comparing Cervidil® controlled-release pessary to Prostin® gel, there is moderate to high-quality evidence that these are similar to each other to achieve vaginal birth within 24 hours, with no difference in caesarean section.⁴ Thus, hospitals can offer either or both methods of administration.

Some hospitals use misoprostol, a PGE1 analogue, as their preferred prostaglandin. There is moderate-quality evidence that there is probably no difference in caesarean section rates between vaginal misoprostol and vaginal PGE2, or between oral misoprostol and vaginal PGE2.^{5,6} Misoprostol is not approved for cervical ripening in the setting of induction of labour in NZ¹ and use in childbirth is not an approved indication in Australia.⁷ However, the use of misoprostol in childbirth has been widely researched internationally and endorsed by the World Health Organization. It is supported for use in NZ.¹ If your hospital is considering starting to use misoprostol, consult early with your pharmacy colleagues and local hospitals that have already been through this process.

Balloon catheters are a non-pharmacologic and inexpensive method of cervical ripening. In all trials reviewed here, the balloon catheter remained in situ for 12 hours. There is moderate-quality evidence that there is probably no difference in caesarean section or operative vaginal delivery between balloon catheters and prostaglandins. The main benefit of balloon catheter is that there is less risk of uterine hyperstimulation with fetal heart rate changes compared to prostaglandins.⁸ Although not evidence-based, it makes sense to offer this mechanical method to women where uterine hyperstimulation may be of greater consequence, such as women with previous caesarean section or babies with suspected small for gestational age. In some hospitals, interested midwives are being upskilled to place balloon catheters, which is fantastic.

There is moderate-quality evidence that inflating the single-balloon catheter to more than 30mL probably results in a higher chance of birth within 24 hours compared to low inflation volume, with no difference in caesarean section.⁹ It makes sense to source a Foley balloon catheter that is intended to inflate to 50mL.

There seems to be little difference in mode of birth between single- or double-balloon catheters, but women with double-balloon catheters experienced more pain and less satisfaction.¹⁰ Hospitals can decide which balloon is preferred by hospital staff, accounting for cost.

Which methods are not supported by research evidence?

Regarding vaginal prostaglandin E₂, there is insufficient evidence to make recommendations about duration and repeat doses of controlled-release pessary, nor about dose of gel by parity, repeat doses, total dose or time frame.

Regarding induction of labour for women with previous caesarean section, there is insufficient evidence to make recommendations about safety or effectiveness of any method.

Regarding early versus late artificial rupture of membranes (ARM) (e.g. starting oxytocin with delayed ARM), and combination of ARM/oxytocin versus ARM alone with delayed oxytocin, there is insufficient evidence to make recommendations about the order and timing of these two common induction methods.

Regarding oxytocin, there is insufficient evidence to make recommendations about starting dose, dosing interval, and maximal dose, nor about different protocols for nulligravida versus multipara, for women with previous caesarean section, or for induction versus augmentation.

Regarding setting of induction of labour, there is insufficient evidence to make recommendations about outpatient management. The PINC trial in Australia ended early and did not achieve enough power to show that outpatient balloon was safer for babies than inpatient prostaglandins.¹¹ The OBLIGE trial in New Zealand is ongoing (www.oblige.auckland.ac.nz) and together these trials should better inform us about safety and effectiveness of outpatient balloon catheter induction for both mothers and babies. Some hospitals already offer outpatient balloon catheter induction – although a sensible approach, it's not yet evidence-based.

Research questions

If a registrar approached me to discuss research questions that were important to answer and feasible to achieve within their training timeframe, I would suggest a randomised controlled trial design, with a population of women undergoing induction of labour at 37 weeks or more, with a primary outcome of vaginal birth. These would be my top three comparisons:

1. For women with unfavourable cervix, starting dose of 1mg vs 2mg Prostin gel and next dose 1mg vs 2mg Prostin gel (stratify either by parity or by Bishop score)
2. For women with unfavourable cervix after 12 hours of prostaglandins, either another 12 hours of prostaglandins, or swap to balloon catheter (12 hours in situ)
3. For women with favourable cervix, either early ARM (prior to or within one hour of starting oxytocin) or late ARM (either 12 hours after starting oxytocin or after cervix 6cm dilated or more)

Conclusions

I would suggest that for hospital maternity services that are looking to update their guidelines, that they use the research evidence to underpin any recommendations and acknowledge those practice points that are not evidence based. For the latter, consider broad consultation with doctors, midwives and consumers, and make decisions based on preferences, resources and hospital culture. It makes sense to have one or two prostaglandins and one balloon on offer, with an accompanied decision aid or short video to help women choose based on risks and benefits, and values and beliefs.

If you are reading this in NZ, please consider participating in the OBLIGE research trial¹² – as of the time of writing, we have recruited our 800th participant, towards a sample size of 1550. And if you are interested in a research project, there are so many ideas worth looking at; induction of labour research is feasible, given that one in four women in NZ have an induction.

References

1. Wise MR, et al. Induction of labour in Aotearoa New Zealand; a clinical practice guideline, 2019. Available from: <https://mhsfaculty.auckland.ac.nz/inductionNZ/>
2. Alfirevic Z, Kelly A, Dowswell T. Intravenous oxytocin alone for cervical ripening and induction of labour. *Cochrane Database Syst Rev*. 2009;4:CD003246.
3. Liu J, Song G, Meng T et al. Membrane sweeping added to formal induction method to increase the spontaneous vaginal delivery: a meta-analysis. *Arch Gynecol Obstet*. 2018;297:623.
4. Thomas J, Fairclough A, Kavanagh J, Kelly AJ. Vaginal prostaglandin (PGE₂ and PGF_{2a}) for induction of labour at term. *Cochrane Database Syst Rev*. 2014;6:CD003101.
5. Alfirevic Z, Alfaifel N, Weeks A. Oral misoprostol for induction of labour. *Cochrane Database Syst Rev*. 2014;6:CD001338.
6. Hofmeyr GJ, Gülmezoglu AM, Pileggi C. Vaginal misoprostol for cervical ripening and induction of labour. *Cochrane Database Syst Rev*. 2010;10:CD000941.
7. RANZCOG Statement. The use of misoprostol in obstetrics and gynaecology (C-Obs-12). 2016. Available from: [https://ranzco.edu.au/statements-guidelines/obstetrics/misoprostol-in-obstetrics,the-use-of-\(c-obs-12\)](https://ranzco.edu.au/statements-guidelines/obstetrics/misoprostol-in-obstetrics,the-use-of-(c-obs-12)).
8. Jozwiak M, Bloemenkamp KWM, Kelly AJ, et al. Mechanical methods for induction of labour. *Cochrane Database Syst Rev*. 2012;3:CD001233.
9. Berndt A, El-Chaar D, Murphy K, Macdonald S. Does cervical ripening at term using a high volume foley catheter result in a lower caesarean section rate than a low volume foley catheter? A systematic review and meta-analysis. *J Obstet Gynaecol Can*. 2014;36(8):678-87.
10. Salim R, Schwartz N, Zafran N, et al. Comparison of single and double balloon catheters for labour induction: a meta-analysis and systematic review of randomised controlled trials. *J Perinatol*. 2018;38:217-25.
11. Beckmann M, Gibbons K, Flenady V, Kumar S. Induction of labour using prostaglandin E₂ as an inpatient versus balloon catheter as an outpatient: a multicentre randomised controlled trial. *BJOG*. 2020;127:571-9.
12. Wise MR, Marriott J, Battin M, et al. Outpatient balloon vs inpatient prostaglandin for induction of labour (OBLIGE): a randomized controlled trial. *Trials*. 2020. <https://doi.org/10.1186/s13063-020-4061-5>

Homebirth in Australia: from shadows to mainstream



Dr Miranda Davies-Tuck
BBioMedSci(Hons), PhD
Perinatal Epidemiologist, The Ritchie Centre,
Hudson Institute of Medical Research



Colleen White
RN, RM
Operations Director of Women's, Children's and
Adolescent Health, Peninsula Health, Frankston



Prof Caroline Homer AO
RM, MMedSc(ClinEpi), PhD
Co-Program Director Maternal, Child and
Adolescent Health, Burnet Institute

Meeting the needs of women is a hallmark of a high-quality maternity system. A decade of Australian maternity service reviews have highlighted that women want increased access to models of care, including homebirth.^{1,2} Despite this, the rates of homebirth in Australia are low. In 2018, 0.3% of Australian women gave birth at home.³ In contrast, 3.4% in New Zealand⁴ and approximately 2% of women in the UK⁵ give birth at home each year.

Variation in homebirth rates also differ across Australia with the lowest rates at 0.1% of all births in NSW, and the highest rates at 0.9% in Tasmania.³ Over the past nine years, the rates of homebirth in some jurisdictions (Western Australia, Victoria and South Australia) have fallen, while in others (Queensland, the ACT and Tasmania) have increased.³ The drivers of variation and change in rates are complex but can be broadly classified as relating to demand, supply and/or access.⁶

The majority of women access homebirth options through engaging with privately practising midwives (PPMs). The latest figures, from 2015, identified that there were 241 midwives across the country who attended homebirths as a primary midwife.⁷ The current numbers of PPMs are unknown. Accessing a PPM in Australia is expensive. Medicare is available for antenatal and postnatal care, but not the birth. The average out of pocket cost for women giving birth at home with a PPM is around \$5000. While the majority of PPMs practice in accordance with the ACM guidelines for consultation and referral, individual PPMs may vary in their inclusion criteria with regard to the provision of a homebirth service. This can create additional variation in accessibility of homebirth services for women.

All states and territories in Australia, excluding Queensland, also offer public homebirth options (16 in total), albeit to only a small number of suitable women. For example, in Victoria where approximately 78,000 women give birth each year, only two public Victorian maternity services offer homebirth. Public homebirth models are available only to women with a low-risk pregnancy who live within a defined travel distance to the health service. There are also variations in both the eligibility criteria and requirements of different programs. For example, some public programs exclude nulliparous women, those wishing to have a waterbirth or physiological third stage. For all women accessing a public homebirth, the cost of their birth is free, and they are cared for by midwives employed by the health service.

Concerns relating to the safety of women and their babies are commonly cited as barriers to offering or supporting the availability of homebirth services. These concerns pertain to who is most suitable to give birth at home, who should provide the care and the outcomes when there is a need for urgent medical care that cannot be provided at home.

The evidence for whom homebirth is safest for is now well established. Large population-based studies and subsequent systematic reviews and meta-analyses consistently demonstrate that planned homebirth is a safe option for women with low-risk pregnancies.⁸⁻¹⁰ A recent meta-analysis of women with low-risk pregnancies in high-income countries confirmed that planned homebirth was not associated with an increase in perinatal death and was associated with a lower rate of some maternal morbidities and obstetric interventions.⁸ Specifically, low-risk

women, those free of medical complications, with a healthy singleton pregnancy that have not given birth before by caesarean in the past do not experience a significantly higher rate of stillbirth (Odds Ratio[OR] 0.94; 95% CI 0.76–1.17) or neonatal death (OR 1.00; 95% CI 0.78–1.27) when compared with similar women who plan a hospital birth. Low-risk women planning a homebirth experienced significantly lower rates of severe perineal trauma (OR 0.57; 95% CI 0.40–0.81) and postpartum haemorrhage (OR 0.73; 95% CI 0.55–0.96) and are more likely to have a normal vaginal birth (OR 2.93; 95% CI 2.13–4.03).⁸

The other key concern regarding the safety of homebirth relates to the hospital transfer. It is generally considered that women or babies requiring a transfer to hospital in labour from a planned homebirth are at most risk of adverse outcomes.¹¹ Public homebirth models across the country stipulate women must live within 30 minutes of the health service¹² to ensure fast access to emergency obstetric interventions if required. Studies of low-risk women planning homebirth report intrapartum transfer rates ranging from 9% up to 28%.^{13–17} When nulliparous and parous women are considered separately, the rate of intrapartum transfer ranges from 22% to 52% for nulliparous women and from 3% to 11% for parous women.^{13–17} The rates of postpartum transfers are lower again with between 3–7% of women or their babies requiring transfer following a planned homebirth.^{13–17} Despite the higher rates of transfer experienced by nulliparous women, they do not experience higher rates of adverse outcomes.⁸

Reasons for transfers include for pain relief, slow progress in labour, maternal preference or for potentially urgent reasons. A review of transfers across four Nordic countries identified that around 4% of planned homebirths result in a potentially urgent transfer, contributing to just over one quarter of all transfers women experienced.¹⁶ Reassuringly, a recent Victorian study of 3200 planned homebirths in low-risk women did not identify an increase in the risk of adverse maternal and perinatal outcomes when transfer was required.¹⁵

Homebirth has largely been considered an alternative maternity care option, relegated to the shadows. It is a topic that polarises people, where poor outcomes are the subject of media headlines and social commentary. When homebirths go well, which the majority do, they are invisible to the wider health system. It is therefore understandable that it has been challenging to increase access to homebirth in Australia. Over the past decade, there has been significant gains to address these concerns. We now have a large body of evidence, including Australian-specific data,^{15,18} to define who homebirth is suitable for and the outcomes of women and their babies. The growth of publicly funded models across the country, and reassuring evaluations,^{19,20} also further demonstrate the safety of this model of care. Ultimately, the goal should be to ensure that all women who are suitable and would like a homebirth can access safe evidence-based care, thus bringing homebirth out into the mainstream.

References

1. Commonwealth of Australia. Improving maternity services in Australia: the report of the Maternity Services Review. Canberra, 2009. Available from: www1.health.gov.au/internet/publications/publishing.nsf/Content/msr-report
2. COAG Health Council. Woman-centred care: Strategic directions for Australian maternity services. 2019. Available from: www.health.gov.au/resources/publications/woman-centred-care-strategic-directions-for-australian-maternity-services
3. AIHW. Australia's mothers and babies 2018—in brief Canberra: Australian Institute for Health and Welfare; 2020. Available from: www.aihw.gov.au/reports/mothers-babies/australias-mothers-and-babies-2018-in-brief/contents/table-of-contents
4. Ministry of Health. Report on Maternity 2017. Wellington, 2019. Available from: www.health.govt.nz/publication/report-maternity-2017
5. Office for National Statistics. Birth characteristics in England and Wales: 2017. UK, 2019. Available from: www.ons.gov.uk/releases/birthcharacteristicsinenglandandwales2017
6. Australian Commission on Safety and Quality in Health Care. Medical practice variation: background paper. Sydney, 2013. Available from: www.safetyandquality.gov.au/sites/default/files/migrated/Medical-Practice-Variation-Background-Paper-Oct-2013.pdf
7. AIHW. Nursing and midwifery workforce 2015. Cat. no. WEB 141. Canberra: Australian Institute of Health and Welfare; 2016.
8. Scarf VL, et al. Maternal and perinatal outcomes by planned place of birth among women with low-risk pregnancies in high-income countries: A systematic review and meta-analysis. *Midwifery*. 2018;62:240–55.
9. Hutton EK, et al. Perinatal or neonatal mortality among women who intend at the onset of labour to give birth at home compared to women of low obstetrical risk who intend to give birth in hospital: A systematic review and meta-analyses. *EClinicalMedicine*. 2019;14:59–70.
10. Reitsma A, et al. Maternal outcomes and birth interventions among women who begin labour intending to give birth at home compared to women of low obstetrical risk who intend to give birth in hospital: A systematic review and meta-analyses. *EClinicalMedicine*. 2020:100319.
11. Blix E, et al. Transfer to hospital in planned home births: a systematic review. *BMC Pregnancy Childbirth*. 2014;14:179.
12. Victorian Department of Health. Implementing a public home birth program: Guidance for Victorian public health services. 2015. Available from: www2.health.vic.gov.au/about/publications/policiesandguidelines/implementing-public-home-birth-program
13. Birthplace in England Collaborative Group. Perinatal and maternal outcomes by planned place of birth for healthy women with low risk pregnancies: the Birthplace in England national prospective cohort. *BMJ*. 2011;343:d7400.
14. Bolten N, et al. Effect of planned place of birth on obstetric interventions and maternal outcomes among low-risk women: a cohort study in the Netherlands. *BMC Pregnancy and Childbirth*. 2016;16(1):329.
15. Davies-Tuck M, et al. Planned private homebirth in Victoria 2000–2015: a retrospective cohort study of Victorian perinatal data. *BMC Pregnancy and Childbirth*. 2018;18(1):357.
16. Blix E, et al. Transfers to hospital in planned home birth in four Nordic countries— a prospective cohort study. *Acta Obstet Gynecol Scand*. 2016;95:420–8.
17. Maimburg RD. Homebirth organised in a caseload midwifery model with affiliation to a Danish University hospital—a descriptive study. *Sex Reprod Healthc*. 2018.
18. Homer C, et al. Maternal and perinatal outcomes by planned place of birth in Australia 2000–2012: A linked population data study. *BMJ Open*. 2019;9(10):e029192.
19. Scarf VL, et al. Evaluation of Publicly Funded Homebirth Trial in the ACT. In: Burnet Institute M, editor. 2020.
20. White C, et al. A pathway to establish a publicly funded home birth program in Australia. *Women Birth*. 2019;19:30055–1.

Woman-centred respectful care



Dr Lesley Dixon
PhD
Midwifery Advisor,
New Zealand College of Midwives

Ensuring a positive experience and providing respectful woman-centred care is a fundamental expectation of maternity services in Australia, New Zealand and globally. The pathway to getting to this goal may differ for each woman, so maternity services need to be adaptable and supportive of the woman's context.

During the COVID-19 lockdown many countries reported increased interest from women about homebirth and/or freebirth. Freebirth refers to a woman's intention to give birth at home without the assistance of a health professional. The increased interest in giving birth in out-of-hospital settings was for several reasons:

- Hospitals were considered a locus of infection
- Hospital policies significantly restricted or inhibited visitors or support people
- Women wanted more support people with them when giving birth

Some women considered freebirth because of the unavailability of health professional support for a homebirth. In a recently published paper exploring women's motivation for freebirth (undertaken prior to COVID-19) women identified a desire for autonomy, a previous negative hospital experience and concerns about interruptions and unnecessary interventions during labour and birth as reasons to consider freebirth.¹ However, the desire for autonomy and a positive birth experience is not limited to women choosing out-of-hospital birth settings. Women come from diverse backgrounds and have different needs, expectations and challenges but all want the same thing from maternity care – a healthy baby and a positive childbirth experience.

In maternity hospital settings where a woman may meet a number of different health providers, often for the first time when in labour, how do we ensure that her expectations are met and she has a positive experience?

Organisation of maternity care

Adaptable woman-centred care requires the provision of information and informed decision making in all areas of maternity care. Each woman should be able to choose her care provider, the place of birth and the care that best suits her needs and expectations. In New Zealand, women can choose a midwife, obstetrician or general practitioner to provide her care as her Lead Maternity Carer (LMC), with the majority choosing a midwife (94.1%) and receiving continuity of care through pregnancy, labour and birth and up to six weeks following the birth.² Continuity of care benefits women and babies³ and the midwives providing that care.⁴ Women who have medical, obstetric or neonatal concerns are referred to the secondary maternity team within the hospital but will often also have a midwife LMC, who works collaboratively with the team. The LMC midwife provides elements of the woman's care in the community and often intrapartum care in the hospital.

Maternity care provider

Finding the right midwife for the woman is important for both the woman and the midwife. The College of Midwives provides a website that supports women to find a midwife nationally (www.findyourmidwife.co.nz) in her town/city/area. The website identifies the midwives who are available at the time of the woman's due date, their philosophy of care, their practice colleagues, and the maternity units they access when providing care (includes homebirth, primary units and secondary/tertiary maternity hospitals within the region).

Options for place of birth

New Zealand women have options of homebirth, midwifery-led unit birth, secondary/tertiary maternity unit birth (Figure 1). In addition, there are formal structures for referral and shared care for those women who need obstetric, physician, anaesthetic or neonatal expertise.

Referral for obstetric consultation

The Guidelines for Consultation with Obstetric and Related Medical Services (Referral Guidelines) are used as the basis to support referrals and support consistency of consultation, transfer and co-ordination of care across providers.⁵ Skinner⁶ found

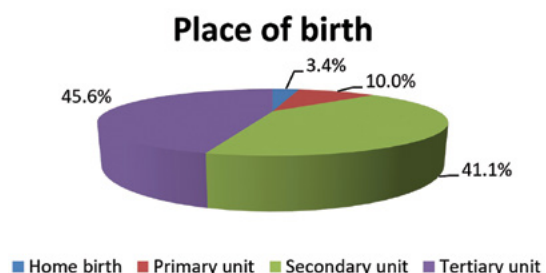


Figure 1. Place of labour and birth in New Zealand in 2017.

that 35% of women were referred to obstetric services for a variety of reasons but that following referral, most midwives continued to provide midwifery care in collaboration with specialist services.

Information sharing and informed choice

During pregnancy, the midwife provides education, information, health promotion, health assessment, screening and care planning. She gets to know the woman and starts to build a partnership based on mutual trust, respect and understanding.

Working with the woman, the midwife develops a birth plan that sets out her individual needs and expectations for labour and birth. Informing women and supporting an informed decision is a consumer right within New Zealand and is reflected in the systems and organisation of maternity care.⁷ Birth plans are adaptable and midwives will discuss the potential for additional or different care dependent on the context and the woman's labour and birth process.

Working as a team to support woman-centred care

Woman-centred maternity care requires that maternity health professionals work together to put the woman at the centre of maternity care and ensure that her needs are met in a connected, cohesive and responsive way. In New Zealand, integrated care refers to the primary-secondary interface which requires referrals from primary care (community midwives) to secondary care (obstetric team) and back again following birth.

Interprofessional relationships

Providing an integrated response can be difficult to achieve when there are different health professionals with different expertise, expectations and philosophies working together. One qualitative exploratory study set in four rural communities in Canada⁸ found that barriers to integrated and collaborative care were often related to the organisation of care and interprofessional tensions between health professionals. These included negative perceptions of midwifery and homebirth and confusion about roles and responsibilities.

The core principles that support the building of professional relationships are collaboration, communication, co-operation and the building of trust and respect.

Collaboration

Collaboration can be defined as the 'process of two or more people working together to achieve a goal'. RANZCOG⁹ identify that collaboration is important to support improved outcomes for women and their babies and maternity services should actively promote participation of different health disciplines so that the individual woman's needs are met. The NZ Referral Guidelines set out the guiding principles for health professionals to ensure clarity and consistency and improve collaboration.

Communication

Effective communication is vital to ensure the exchange of context-appropriate information from one health professional to another. Most LMC midwives in New Zealand will continue to provide care during labour and birth – although some will hand over care to hospital midwives. Good communication is not always intuitive and there are a number of tools that support effective communication. One commonly used in hospitals is the ISBAR – introduction, situation,

Woman-centred care in action

I met Jennifer when she was eight weeks pregnant with her third baby. We discussed her previous two births, both had been induced – for different reasons – her first baby had been an assisted birth and the second a normal birth. She didn't want to be induced again and was hoping for a spontaneous labour this time. Her pregnancy progressed and at almost 42 weeks, she had no signs of labour but was adamant that she did not want to be induced again. We discussed the increased risk of stillbirth if pregnancy passed 42 weeks and explored her reasons for not wanting to be induced. She explained that with her two previous inductions, her body had responded rapidly to the syntocinon and she had started to feel out of control. She felt that the contractions went from zero to 'full on' in a very short time. She asked if it was possible to stop or slow the syntocinon once the induction was commenced. We agreed to discuss this idea with an obstetrician. Following a referral and admission to the birthing suite, we met the on-call obstetrician and, with Jennifer's agreement, I explained her concerns and potential solution. Together we explored the potential benefits and risks – and agreed that we would stop the syntocinon once the labour was established, with the proviso that we would need to start it again if labour stalled.

We commenced the induction and Jennifer started to contract frequently, at which point we stopped the syntocinon. She continued to labour and within hours had given birth to a healthy baby. I debriefed with Jennifer a few days later, with careful questions about how she felt about having an induction. She told me she was very happy with her experience and decision to go ahead with the induction, that she had been listened to and her birth plan had been honoured. Overall it had been a positive experience.

background, assessment and response. Including the woman and her care plans and expectations during the referral is important to ensuring fully informed decision making.

Co-operation and teamwork

Working together to ensure that the woman's needs are met is paramount in any collaboration. In maternity it requires midwives and obstetricians to work together as a team to ensure that the woman's needs are met whilst supporting a safe birth for her and her baby. Team members may include the obstetrician, hospital and community midwife, anaesthetist and paediatrician. Each team member brings their own expertise along with a shared goal and common understanding. Principles involve mutual respect and trust for each professional's perspective and outlook.

Conclusion

Integrated care works best when there are clear guidelines and referral structures and positive and supportive interprofessional relationships. In New Zealand, community midwives provide continuity of maternity care (getting to know the woman and her maternity history), and the maternity system is organised to support referral and transfer of care (when needed) along with an integrated response and respectful care from the hospital team.

Full reference list available online

VBAC-2: a review of current evidence

Dr Amanda Whale
BMed

Dr Andrew Woods
MBBS, MRCOG, FRANZCOG

As a first-year registrar, a woman presented in spontaneous labour planning a trial of labour (TOL) after two previous caesarean sections (CS). Was my initial reaction, of a mild tachycardia and general uneasiness, justified? The woman had engaged in antenatal care, been counselled and reviewed on multiple occasions by a senior consultant. This sparked a couple of questions for me: What does current evidence show about TOL after two or more CS? Should this be something we are discussing with women?

Background

CS is one of the most commonly performed operations worldwide with rates continuing to rise. WHO states that a CS rate up to 10% decreases maternal and fetal morbidity and mortality, while a rate higher than this has no added benefit.^{1,2} In 2019, our departmental average was 33.4% with 60% being

elective repeat. This rate sounds considerably high, but is in keeping with the Australian average of 33% with 85% being elective repeats.³ Whilst there is no questioning a CS can be a life-saving procedure, there is a growing number of operations being performed without a true medical indication. Whilst the procedure is part of daily practice, one cannot ignore the risk of maternal mortality, maternal and fetal morbidity and increased rate of complications in future pregnancies. With one in three pregnancies ending in CS, vaginal birth after caesarean (VBAC) counselling has become something we all feel very comfortable doing, as a successful VBAC has significant maternal and fetal benefits.

Our department

At booking in, if the women's last birth was a CS the doctor completing the first visit completes the NSW Health form 'Antenatal Checklist – Supporting

Table 1. Summary of pooled results from Tahseen and Griffith's looking at VBAC-2, VBAC-2 vs VBAC-1 and VBAC-2 vs RCS(third).

Group	Number	Success	Uterine rupture	Transfusion	Hysterectomy	PND/Asphyxial injury	NNU	Fever
VBAC-2	5666	4064 (71.7)	74/5431* (1.36)	49/2428* (0.55)	14/2512* (0.55)	3/3285* (0.09)	90/1156* (7.78)	
VBAC-2 vs VBAC-1	4565	3276 (71.7)	69 (1.59)	41 (1.99)	8 (0.56)	3 (0.09)	75 (11.2)	
	50685	38814 (76.5)	327 (0.72)	358 (1.21)	42 (0.19)	17 (0.05)	1321 (9)	
VBAC-2 vs RCS	2829		31 (1.09)	47 (1.68)	9 (0.40)	1 (0.09)	90 (8.49)	192 (6.03)
	10897		12 (0.11)	172 (1.67)	51 (0.63)	1 (0.01)	553 (8.85)	630 (6.39)

Values in parenthesis are expressed as percentages

*Varying patient numbers due to different outcomes measured across studies

Table 2. Outcomes of two studies that compared VBAC-2, VBAC-1 and RCS.⁸

Study	Study population	Methods	Labour management	Success rate	Maternal outcome	Neonatal outcome
Marcones (USA 2005) Cohort study comparing VBAC-2, VBAC-1 and RCS	1082 VBAC-2 2888 RCS 12535 VBAC-1 (previous classical excluded)	27% of subjects with two previous CS had a trial and 73% RCS	IOL VBAC-2 30% vs VBAC-1 29% Syntocinon augmentation 34% vs 34%	74.6% VBAC-2, 75.5% VBAC-1, women with previous vaginal delivery were more likely to undergo trial	Uterine rupture VBAC-2 1.8% vs VBAC-1 0.9%, transfusion VBAC-2 0.92% vs VBAC-1 0.68% and 1.18% in RCS Fever 12.7% RCS vs 8.8% in VBAC-2	
Landon (USA 2006) Prospective cohort study comparing VBAC-2 vs VBAC-1 and VBAC-2 vs RCS	975 VBAC-2 (including 84 cases with three previous and 20 with four previous CS) 16915 VBAC-1 6035 RCS after two previous CS (previous classical excluded)	14% of subjects with two previous CS had a trial, 85% RCS	VBAC-2 vs VBAC-1 IOL 23% vs 26% Syntocinon augmentation 25% vs 32% epidural 58% vs 71%	66% VBAC-2, 74% in VBAC-1. Women with previous vaginal delivery more likely to undergo trial	Uterine rupture 0.9% VBAC-2 vs 0.7% VBAC-1. Hysterectomy 0.6% VBAC-2 vs 0.2% VBAC-1, transfusion 3.2% VBAC-2 vs 1.6% VBAC-1 Maternal morbidity comparable to CS	Term NICU admission 11% vs 9%, Term intrapartum stillbirth 0% vs 0.01%, term NND 0.15% vs 0.08%, term HIE 0% vs 0.1%

Women in their Next Birth After Caesarean Section (NBAC).⁴ This checklist is a guide to highlight the woman's wishes, review of previous operation report/s, identify contraindications to VBAC and ensure non-biased counselling of both VBAC and repeat caesarean section (RCS) occurs. Whilst the department doesn't actively promote VBAC in women with two or more previous CS, if they present requesting a TOL they are reviewed and counselled by a senior consultant. We recommend standard considerations for VBAC (intravenous access, continuous electronic fetal monitoring, monitoring of labour progress etc) and collaborative care in labour to optimise birth outcomes. We ensure an individualised care plan exists and encourage spontaneous labour onset, usually avoiding induction and augmentation of labour.

The guidelines

RANZCOG's 'Birth after previous caesarean section' states that there is a lower success rate of vaginal birth after two caesareans sections (VBAC-2) and higher rates of both uterine rupture and maternal morbidity compared to women who have one previous CS.⁵ Maternal morbidity for women undergoing VBAC-2 is similar to that undergoing their third RCS. The data referenced is from a meta-analysis that is reviewed below.⁵ Appendix B of the guideline is a table comparing outcomes of six studies looking at VBAC-2 vs VBAC-1.⁵ The guideline also makes mention of RCOG's Green-top Guideline No. 45 'Birth After Previous Caesarean Birth' and SCOG's 'Guideline for Vaginal Birth After Previous Caesarean Birth'.^{6,7} Both of which come to similar conclusions that TOL in a women with two previous CS is acceptable given they are aware of risks and in an appropriate birthing location.

The evidence

There are no randomised control trials assessing VBAC-2 with VBAC-1 or RCS. The majority of papers are retrospective case series or cohort studies with small numbers. Tahseen and Griffith's paper is most widely referenced.⁸ Seventeen papers were used with a total of 5666 women undergoing a planned TOL after two or more CS. As comparisons, six studies used VBAC-1, eight studies used RCS(third) and two studies used both VBAC-1 and RCS(third). The below table is a summary of results.

Tahseen and Griffith illustrated that TOL in women with two previous CS has a success rate of 71.7% (ranging from 45–85%) compared to 76.5% in VBAC-1 group.⁸ Although these seem comparable, meta-analysis showed this difference to be statistically significant with an OR 1.48 (95% CI 1.23–1.78).⁸ Landon et al also found a significant difference in VBAC-2 success rate 66% compared to 74% in VBAC-2 group.^{8,9} Whilst Marcones et al found no significant difference between groups 74.6% and 75.5% respectively.^{8,10} Adverse maternal outcomes (hysterectomy, blood transfusion and febrile morbidity) rates were comparable between VBAC-2 and RCS (third); however, higher in the VBAC-2 group when compared to the VBAC-1. The neonatal data is limited but there does not appear to be a significant difference between groups.

Great emphasis has always been placed on the rate of uterine rupture, as it is the complication that has the most significant consequences. Tahseen and Griffiths rate of uterine rupture in the VBAC-2 group was 1.36%(0–5.4%). They also acknowledged that uterine rupture is a rare event and the studies reviewed had small absolute numbers making it a difficult outcome to assess. Additionally, the definition for 'rupture'

TOL is acceptable for women who have been counselled regarding

- The general risks of VBAC and RCS
- The VBAC-2 success rate of 71.7%, uterine rupture risk of 1.36% and that maternal morbidity (hysterectomy, transfusion) is comparable to that of RCS(third)
- The increased risk of abnormal placentation with RCS as well as increasing morbidity with increasing number of CS
- Birthing in a facility that can expedite surgical delivery
- Where previous operation reports for uterine incision and indication for CS can be reviewed in advance to ensure suitability
- Individual factors affecting successful vaginal delivery: i.e. previous vaginal delivery, age, BMI, fetal lie and size, diabetes (both gestational or pre-existing) and hypertensive disease
- Their own individual birth plan
- Review of the NICHD MFMU calculator to give a rough estimate of success rate

varied considerably across studies as well as how it was identified (manual palpation of uterine scar after successful VBAC was a common practice in the past). There were patients included who had unknown uterine incisions (i.e. classical and lower vertical) in some studies and IOL/augmentation with syntocinon.

It was identified that women who had a previous vaginal birth was more likely to undergo a TOL and thus a successful VBAC-1 or VBAC-2.^{8,9,10} But given the overall low numbers of uterine rupture, previous vaginal delivery is not considered a prerequisite for TOL with two previous caesarean sections. Limitations of Tahseen and Griffiths cannot be ignored: the timespan of studies included, varying practice over time and regions and inclusion of women with unknown scar type. Additionally, due to the study design, individual patient factors/cohort variants (BMI, age, fetal size) and study bias were unable to be reviewed and assessed which can make extrapolation of the data difficult.

There have been a handful of cohort studies published since the release of Tahseen and Griffiths that come to the same conclusions. On an interesting note, Metz et al found in a small secondary analysis of 359 women in 2015 that the use of the NICHD MFMU calculator for predicting successful VBAC to provide estimates similar to actual rates for women attempting TOL after two previous CS.¹¹

Discussion

Despite the lack of high-powered data regarding VBAC-2, there seems to be a consensus when it comes to TOL after two previous CS, and my initial feelings an over-reaction.

Conclusion

In contemporary maternity care, there is a place for VBAC-2, which can be supported safely achieving both short- and long-term health benefits for women

References

1. World Health Organization, Human Reproduction Programme. WHO statement on caesarean section rates. April 2015. Available from: www.who.int/reproductivehealth/publications/maternal_perinatal_health/cs-statement/en
2. OECD. Health at a Glance 2019: OECD Indicators. OECD Publishing. Paris, 2019. <https://doi.org/10.1787/4dd50c09-en>
3. Australian Institute of Health and Welfare. Australia's Health 2018: In brief. Cat no AUS 222. Canberra: AIHW. 2018. Available from: www.aihw.gov.au/getmedia/fe037cf1-0cd0-4663-a8c0-67cd09b1f30c/aihw-aus-222.pdf.aspx?inline=true
4. NSW Health. Supporting Women in their Next Birth After Caesarean Section (NBAC). Attachment 2: Antenatal Checklist. NSW Kids and Families, 2014. Available from: www1.health.nsw.gov.au/pds/Pages/doc.aspx?dn=GL2014_004
5. RANZCOG. Birth after previous caesarean section. Melbourne, Vic; 2019. Available from: [https://ranzocg.edu.au/statements-guidelines/obstetrics/birth-after-previous-caesarean-section-\(c-obs-38\)](https://ranzocg.edu.au/statements-guidelines/obstetrics/birth-after-previous-caesarean-section-(c-obs-38))
6. Royal College of Obstetricians and Gynaecologists. Birth after Previous Caesarean Birth (Green-top Guideline No.45). London UK; 2015. Available from: www.rcog.org.uk/globalassets/documents/guidelines/gtg_45.pdf
7. The Society of Obstetricians and Gynaecologists of Canada. Guidelines for Vaginal Birth after previous Caesarean Birth. Ottawa, Canada; 2004. Available from: <http://sogc.org/wp-content/uploads/2013/01/155E-CPG-February2005.pdf>
8. Tahseen S, Griffiths M. Vaginal birth after two caesarean sections (VBAC-2)—a systematic review with meta-analysis of success rate and adverse outcomes of VBAC-2 versus VBAC-1 and repeat (third) caesarean sections. *BJOG*. 2010;117:5-19.
9. Landon MB, Spong CY, Thom E, et al. Risk of uterine rupture with a trial of labor in women with multiple and single prior cesarean delivery. *Obstet Gynecol*. 2006;108:12-20.
10. Macones GA, Cahill A, Pare E, et al. Obstetric outcomes in women with two prior cesarean deliveries: Is vaginal birth after cesarean delivery a viable option? *Am J Obstet Gynecol*. 2005;192:1223-9.
11. Metz TD, Allshouse AA, Faucett AM, et al. Validation of a Vaginal Birth After Caesarean Delivery Prediction Model in Women With Two Prior Cesarean Deliveries. *Obstet Gynecol*. 2015;125(4):948-52.

RANZCOG
Patient Information
Pamphlets

Written by experts.



ranzocg.edu.au/patient-information-pamphlets

Complications of advanced maternal age



Dr Alice Whittaker
MBBS (Hons), FRANZCOG
Mater Health Services, QEII Hospital
Brisbane, Qld

Women are delaying childbearing more today than ever before. In Australia, birth rates for women aged 40 and older were at 12.9/1000 births in 2017, compared with 4.4/1000 births in 1980.¹ Improved access to higher education and career opportunities, and a desire to achieve career, educational and financial goals, are some of the biggest reasons cited for later age of childbearing. Reduced relationship stability and later partnering, as well as improved access to contraception and assisted reproductive technology (ART), are other factors.

The term advanced maternal age (AMA) is not clearly defined internationally and varies in the literature between 35–40 and above. There are multiple consequences of AMA, which we will now address.

Fertility

Due to reduced oocyte quality and quantity, fertility begins to fall significantly from around age 32, with a more rapid decline from around age 37. After the age of 35, the advice is for women to seek fertility help after six, rather than twelve months of trying to conceive. For some women of AMA, IVF with their own eggs is not successful and sadly, that will be the end of their fertility journey. Others may be willing to consider donor oocytes. Past age 40, live birth rates per Australian IVF cycle are 1.4–12.5% with autologous oocytes, but improve to 28.6–42.5% with donor oocytes.²

Early pregnancy

AMA is associated with increased rates of:

- Spontaneous miscarriage
- Chromosomal abnormalities, including aneuploidy
- Ectopic pregnancy
- Multiple pregnancy

Chromosomal abnormalities are more common in embryos of women of AMA, attributed to the longer time their oocytes have been suspended in Metaphase 1, where DNA is vulnerable to oxidative stress and telomeres to damage. Chromosomally abnormal embryos explain the majority of the increased spontaneous miscarriage rate seen in AMA (Figure 1).

The risk of a baby with aneuploidy increases drastically from age 35 (Figure 1); aneuploidy screening should be offered, either non-invasive prenatal testing (NIPT) or combined first trimester screening.

The increased risk of ectopic pregnancy is likely due to an accumulation of risk factors over time, such as multiple sexual partners, pelvic infection and tubal pathology.

AMA increases the risk of multiparity (rising FSH levels can result in more than one dominant follicle) but today is mostly due to ART. Australia has an excellent record internationally for low rates of multiparity in the context of ART, with consensus of single embryo transfers when possible.

Second and third trimester complications

As women age, they naturally have higher rates of comorbidities that can complicate pregnancy, such as diabetes, hypertension and obesity. This highlights the importance of pre-conception optimisation of these conditions; however, even after considering comorbidities, parity and multiparity, AMA in otherwise low-risk women is associated with increased rates of:

- Hypertensive disorders of pregnancy (RR 4.1)^{4,5}
- Gestational diabetes (OR 3.7 AMA ≥ 40)⁶
- Placenta praevia (RR 3.16), accreta and abruption⁷
- Pulmonary embolism (OR 2.4 AMA ≥ 40)⁶
- Fetal growth restriction (OR 1.5 AMA ≥ 40)⁶
- Iatrogenic and spontaneous preterm birth (OR 1.5 AMA ≥ 40)⁶

Traditional thinking has sought to attribute much of the above on the abnormal placentation seen as women age.⁸ A greater body of work now suggests the primary event behind defective placentation is a maladaptive cardiovascular response to pregnancy. Studies demonstrate that in pregnancy in women of AMA, uterine artery resistance and peripheral vascular resistance increase and the vascular endothelial cell function diminishes.⁹

The increased risk of gestational diabetes mellitus (GDM) is also due to the fact that pancreatic B-cell function and insulin sensitivity fall with age.⁴

Stillbirth

The relationship between AMA and stillbirth is well established and consistently observed. A large meta-analysis of 44 million births gave an OR of 1.75 for age ≥ 35 .⁶ The risk increases further as women age. Prevalence of stillbirth is 0.9% among mothers aged 40–49 years and 1.0% age 50 years and over, compared to 0.5% aged 20–39 years.¹⁰ The risk increases with advancing gestation, such that women ≥ 40 years of age have the same risk of stillbirth at 39 weeks, as 20-year-olds have at 41 weeks of gestation. As a result, most centres will advise induction of labour (IOL) after 39 weeks for AMA.

Intrapartum complications

AMA is associated with increased rates of:

- Caesarean section (CS) (RR 4.1)⁵
- Postpartum haemorrhage

The increased CS rate is partly attributed to pregnancy complications and a lower threshold for elective or emergency CS. However, independent of this, AMA increases risk of labour dystocia and CS for fetal distress.¹¹

Maternal mortality and long-term maternal cardiovascular complications

Several studies demonstrate an increase in ICU admission and maternal death in women of AMA. Risk factors in the context of AMA are cardiovascular disease (CVD), diabetes, obesity and operative delivery.^{4,5}

After AMA pregnancy, CVD may be higher. It is well established that women who experience pre-eclampsia toxemia (PET) are twice as likely to die of CVD later in life. In addition, it may be that pregnancy at AMA adds additional stress to an aging cardiovascular system.⁹

Short birth interval may further increase risk. Women of AMA ≥ 35 years who had six-month interpregnancy intervals compared with 18-month intervals had higher rates of severe maternal morbidity or mortality. This was not seen in younger women.¹²

Parenting

Finally, some good news? Increasing maternal age is associated with improved health and development in their children, including cognitive ability. Children of older parents have described benefits, including the devotion, patience and attention of their parents, as well as their emotional and financial stability.³

Figure 1. First trimester complications of AMA. Adapted from Fretts et al.³

Age	Combined Risk of T21/T18/T13 on CVS (1:n)	Age	Ectopic Pregnancy (%)	Spontaneous Miscarriage (%)	Age	Spontaneous miscarriage after fetal cardiac activity (%)
20	705	25–29	1.6	11.9	<33	9.9
25	650	30–34	2.8	15	33–34	11.4
30	465	35–39	4	24.6	35–37	13.7
35	180	40–44	5.8	51	38–40	19.8
36	135	>45	7	93.4	41–42	29.9
37	99				>42	36.6
38	72					
39	53					
40	39					
41	30					
42	23					
43	19					
44	16					
45	14					

Pregnancy management tips for AMA

- Preconceptual counselling: warn of risk, optimise medical conditions, preconceptual folic acid and iodine
- Avoid multiple pregnancy if undertaking ART
- Aneuploidy screening: consideration to NIPT given its higher sensitivity and specificity
- Low dose aspirin from 12–36 weeks
- Consider screening for GDM in first trimester
- Warn about risks of GDM, PET and plan a model of care accordingly
- Consider growth ultrasounds
- Make a plan for stillbirth risk prevention: discuss other stillbirth risk factors, encourage smoking cessation, discuss fetal movement patterns and side sleeping
- Make a plan for delivery: IOL at 39 weeks strongly advised. Very advanced maternal age may wish to choose elective CS.
- Discuss interpregnancy interval (from birth to conception) of 12–18 months due to reduction in maternal death¹²

Summary

Women at AMA face a wide range of significantly increased risks across all stages of the fertility, birth and pregnancy journey. The societal factors that have led to the rise in AMA (that is, educational, career and financial advancement in women) are advances our feminist forbearers fought hard for and that we certainly would not want to relinquish. Firstly, as clinicians working with women, our role is to make pregnancy as safe as possible. Secondly, we should be educating women and society about the increased risk AMA brings to a pregnancy. These risks are widely underestimated by the public. Finally, as a society (and a training college) we need to ask ourselves: how can we create opportunities for women to become mothers earlier without disadvantaging them from an educational, career or financial point of view?

References

1. Australian Bureau of Statistics. Births, Australia 2017. Canberra: Australian Bureau of Statistics, 2018.
2. Hogan R, Wang A, Li Z, et al. Having a baby in your 40s with assisted reproductive technology: The reproductive dilemma of autologous versus donor oocytes. *ANZJOG*. 2020. <https://doi.org/10.1111/ajo.13179>.
3. Fretts RC, Wilkins-Haug L, Simpson LL. Effects of advanced maternal age on pregnancy. UpToDate, 2019. Available from: www.uptodate.com/contents/effects-of-advanced-maternal-age-on-pregnancy
4. Pinheiro R, Areia A, Mota Pinto A, et al. Advanced Maternal Age: Adverse Outcomes of Pregnancy, A Meta-Analysis. *Acta Med Port*. 2019;32(3):219–26.
5. Sauer M. Reproduction at an advanced maternal age and maternal health. *Fertility and Sterility*. 2015;103(5):1136–43
6. Lean SC, Derricott H, Jones RL, et al. Advanced maternal age and adverse pregnancy outcomes: A systematic review and meta-analysis. *PLoS One*. 2017;12(10):e0186287.
7. Martinelli K, Garcia EM, Santos Neto E, et al. Advanced maternal age and its association with placenta praevia and placental abruption: a meta-analysis. *Cadernos de Saude Publica*. 2018;34(2):e00206116.
8. Torous V, Roberts D. Placentas From Women of Advanced Maternal Age: An Independent Indication for Pathologic Examination? *Arch Pathol Lab Med*. 2020. doi: 10.5858/arpa.2019-0481-OA.
9. Cooke C, Davidge S. Advanced maternal age and the impact on maternal and offspring cardiovascular health. *American Journal of Physiology*. 2019;317(2):H387.
10. Dongarwar. Stillbirths among Advanced Maternal Age Women in the United States: 2003–2017. *Int J MCH and AIDS*. 2020;9(1):153–6.
11. Kortekaas JC, Kazemier BM, Keulen JKJ, et al. Advanced maternal age: A national cohort study. *Acta Obstet Gynecol Scand*. 2020. doi: 10.1111/aogs.13828.
12. Schummers L, Hutcheon J, Hernandez-Diaz S, et al. Association of Short Interpregnancy Interval With Pregnancy Outcomes According to Maternal Age. *JAMA Intern Med*. 2018;178(12):1661–70.



Change of address?

Visit the my.RANZCOG.edu.au member portal to update your details today.

Twin births: trends and tribulations



Dr Yizhen (Amy) Liu
BMedSci (Hons), MBBS
Monash University



Dr Mary-Ann Davey
DPH, MEpi, GradDipSoc, BEd, DipAppSc, RN, RM
Senior Research Fellow, Department Obstetrics
and Gynaecology, Monash University



Prof Euan M Wallace AM
MBChB, MD, FRCOG, FRANZCOG, FAHMS
Carl Wood Professor and Head of Department of
Obstetrics and Gynaecology, Monash University

Compared to their singleton counterparts, twins have a perinatal mortality rate three and a half times higher,¹ a rate that has seen minimal change over the past 20 years despite significant advances in perinatal care. It is no surprise then that, while twins account for less than 3% of all pregnancies,² no maternity care clinician is unfamiliar with the complexities and challenges of twin pregnancies. In particular, much debate continues about choices and decisions regarding the

preferred mode of birth for 'uncomplicated' twins. This is likely owing, in part, to the relative lack of high-level evidence to guide clinical practice. While a number of retrospective cohort studies had suggested that elective caesarean section was safer than planned vaginal birth,^{3,4} it wasn't until 2013 that the Twin Birth study, the first randomised clinical trial (RCT) of planned mode of birth in twins, showed that elective caesarean section was not associated with better perinatal outcomes than planned vaginal birth.⁵ Eight Australian hospitals participated in the study. One might have expected that the debate would end there, with a definitive RCT. But, no!

Since the publication of the Twin Birth study, the debate has continued. Authors of further cohort studies have argued that planned vaginal birth is as safe as elective caesarean section,^{6,7} while others have argued the opposite.⁸ Most recently, a re-analysis of the Twin Birth study, taking into account gestation as a possible confounder of outcome, showed that planned vaginal birth was safer than caesarean section from 32 to 37 weeks, but from 37 weeks onwards an elective caesarean section may be more favourable.⁹ No wonder confusion reigns, both among women pregnant with twins and among the clinicians providing them care. So, what is the preferred mode of birth for twins in Australia? Recently, we sought to answer that question for Victoria and to understand possible explanations for any changes.

First, the changes. We looked at the mode of birth for twin pregnancies in Victoria over a 33-year period, 1983 to 2015.¹⁰ Over this time, there has been a three-fold increase in both planned and unplanned caesarean section. The proportion of twins born vaginally has fallen from 76% to 29%.¹⁰ Almost all of this change happened before 2005. Since then, the rates of caesarean section and vaginal birth for twins have been relatively stable (Figure 1).

Next, we sought to understand the principal reasons for the changes in mode of birth over time. Were they due to increasingly complex twin pregnancies, or more maternal co-morbidities or pre-existing maternal disease? They weren't. We found that, over time, 'twins' itself has become the main indication for caesarean section, with no other indication. This was true irrespective of maternal age or parity. We also found significant regional variation in the rate of caesarean section for twins across the state (Figure 2), with rates varying by over 25%. After adjusting for maternal age, body mass index, parity, previous caesarean section, public or private care, and use of assisted reproductive technology, women living in Gippsland were half as likely to have twins born by caesarean section than women living in north-west metropolitan Melbourne or the Grampians (adjusted odds ratio 0.46).¹⁰ Consistent with the Twin Birth study,³ we didn't find any evidence that the increased use of caesarean section has been associated with better perinatal outcomes.

Of course, there was only two years between the publication of the Twin Birth study and the end of

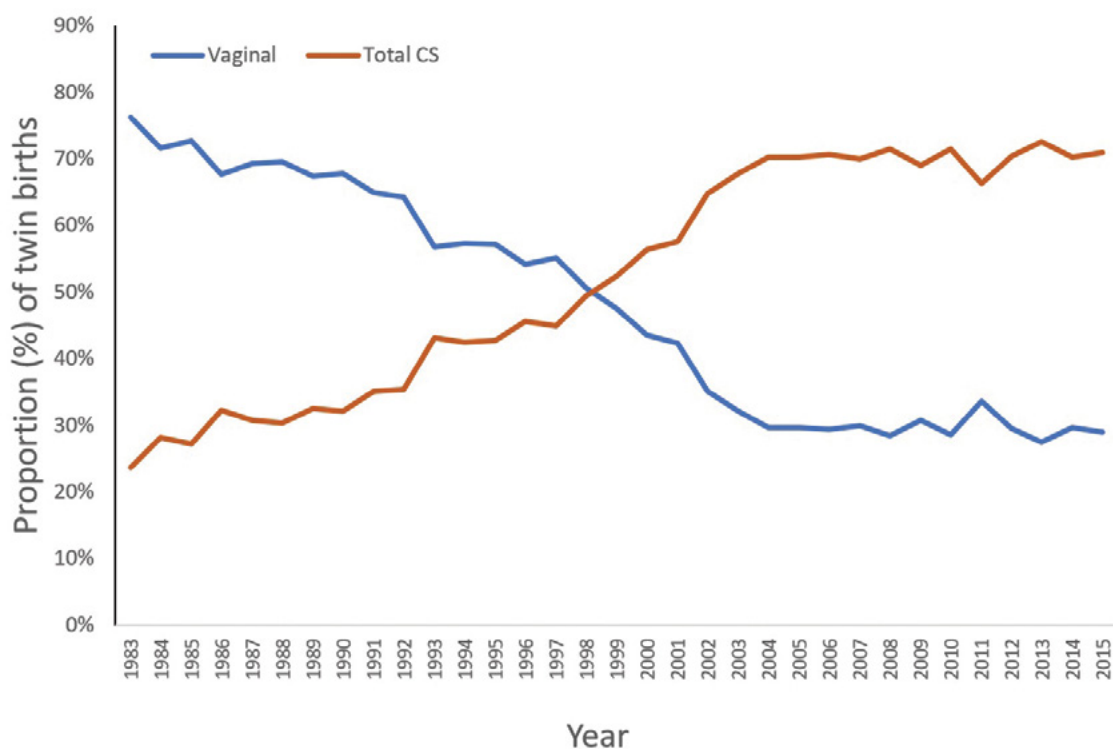


Figure 1. Trends in modes of twin birth in Victoria between 1983–2015. (adapted from Liu et al)¹⁰

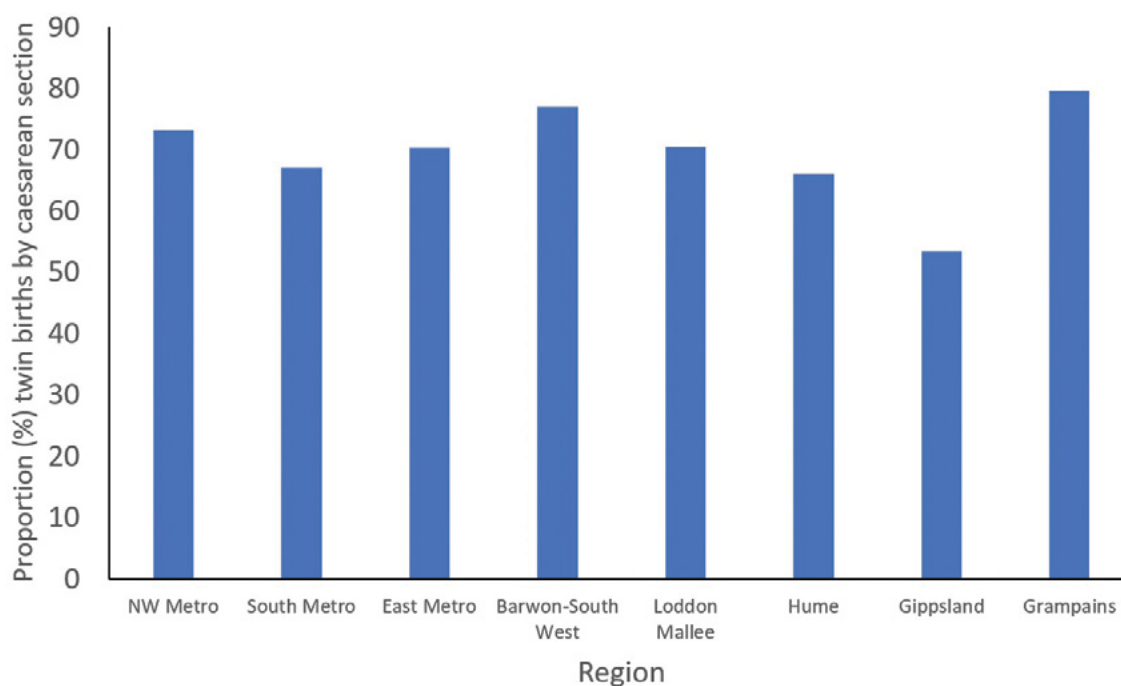


Figure 2. Rates of twin caesarean section by Victorian region. (adapted from Liu et al)¹⁰

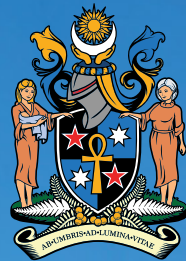
the data set that we analysed. Possibly insufficient time for the findings of the study to change practice. However, perhaps a more pressing implication of our observations is in relation to the maintenance of a skilled workforce. In 1983, the first year of our data set, there were 502 sets of twins born vaginally. In 2015, there were 320. The same year, there were 152 FRANZCOG trainees across six-year levels. This crudely equates to each trainee attending two twin vaginal births a year. It shouldn't be surprising then that a recent survey of RANZCOG members and new

Fellows found that 34% of trainees and 15% of Fellows did not feel sufficiently experienced in twin vaginal births.¹¹ There is no requirement within the RANZCOG training syllabus for trainees to demonstrate competence in twin vaginal birth. Without due care, we could have a Fellowship workforce that is unable to offer women with a twin pregnancy safe choices about mode of birth. As we argued in our recent paper, 'We should ensure that we have a skilled and competent workforce to enable women to have a real choice in how their babies are born.'¹⁰

However, perhaps not all is lost. That the rate of twin vaginal birth hasn't materially changed in over 15 years is somewhat reassuring. Perhaps it is time, if not overdue, that all women with a twin pregnancy are cared for by multidisciplinary clinical teams with expertise in multiple pregnancy, including vaginal birth. We are not arguing for centralisation of twin pregnancy care to large city hospitals. That is not necessary, nor in the best interests of women. In Victoria, the highest rate of twin vaginal birth is in a regional hospital. Rather, we are arguing for women with a twin pregnancy to be cared for by clinicians who are experienced, confident and skilled in being able to offer them safe choices. That way, outcomes would likely improve, and training opportunities could be better concentrated into dedicated units.

References

1. Consultative Council on Obstetric and Paediatric Mortality and Morbidity. Victoria's Mothers, Babies and Children 2014 and 2015. Melbourne: Victorian Government; 2017. Available from: www.bettersafercare.vic.gov.au/reports-and-publications/victorias-mothers-babies-and-children-report-2014-15
2. Australian Institute of Health and Welfare. Australia's mothers and babies 2015—in brief. Canberra: AIHW; 2017. Available from: www.aihw.gov.au/reports/mothers-babies/australias-mothers-babies-2015-in-brief/contents/table-of-contents
3. Smith GC, Shah I, White IR, et al. Mode of delivery and the risk of delivery-related perinatal death among twins at term: a retrospective cohort study of 8073 births. *BJOG*. 2005;112(8):1139-44.
4. Armson BA, O'Connell C, Persad V, et al. Determinants of perinatal mortality and serious neonatal morbidity in the second twin. *Obstet Gynecol*. 2006;108(3 Pt 1):556-64.
5. Barrett JFR, Hannah ME, Hutton EK, et al. A Randomized Trial of Planned Cesarean or Vaginal Delivery for Twin Pregnancy. *N Engl J Med*. 2013;369(14):1295-305.
6. Schmitz T, Prunet C, Azria E, et al. Association Between Planned Cesarean Delivery and Neonatal Mortality and Morbidity in Twin Pregnancies. *Obstet Gynecol*. 2017;129(6):986-95.
7. Hofmeyr GJ, Barrett JF, Crowther CA. Planned caesarean section for women with a twin pregnancy. *Cochrane Database Syst Rev*. 2015;2015(12):CD006553.
8. Goossens S, Ensing S, van der Hoeven M, et al. Comparison of planned caesarean delivery and planned vaginal delivery in women with a twin pregnancy: A nation wide cohort study. *Eur J Obstet Gynecol Reprod Biol*. 2018;221:97-104.
9. Zafarmand MH, Goossens S, Tajik P, et al. Planned Cesarean or planned vaginal delivery for twins: a secondary analysis of a randomized controlled trial. *Ultrasound Obstet Gynecol*. 2019. doi: 10.1002/uog.21907.
10. Liu YA, Davey MA, Lee R, et al. Changes in the modes of twin birth in Victoria, 1983-2015. *MJA*. 2020;212(2):82-8.
11. Yeoh SGJ, Rolnik DL, Regan JA, Lee PYA. Experience and confidence in vaginal breech and twin deliveries among obstetric trainees and new specialists in Australia and New Zealand. *ANZJOG*. 2019;59(4):545-9.



**The Royal Australian
and New Zealand
College of Obstetricians
and Gynaecologists**
Excellence in Women's Health

'Join the
conversation'

Instrumental vaginal delivery: a safe choice?

A/Prof John Svigos AM
MBBS, DRCOG, FRCOG, FRANZCOG
Discipline of Obstetrics & Gynaecology
Faculty of Health & Medical Sciences
University of Adelaide SA
Senior Consultant Obstetrician & Gynaecologist
Lyell McEwin Hospital, Elizabeth Vale, SA

A/Prof Henry Murray
MBChB, MRCOG, FRANZCOG, CMFM
School of Medicine & Public Health
Faculty of Health & Medicine
University of Newcastle
Senior Obstetrician & MFM Specialist
John Hunter Hospital, Newcastle
Head Women's Health and Maternity Network
Hunter New England Health NSW

Prof Stephen Robson
BMedSc, MBBS, MMed, MPH, MD, PhD, FRCOG,
FACOG, FRANZCOG
Medical School
Australian National University
Senior Specialist in Obstetrics & Gynaecology
The Canberra Hospital, ACT

Dr Darren Roberts
MBBS, FRANZCOG
Senior Visiting Obstetrician & Gynaecologist
Women's & Children's Hospital
Adelaide, SA

On behalf of the Birth Master Class Faculty

In 2012, a conversation resulted between three experienced Fellows and RANZCOG examiners (Stephen Robson, Henry Murray, John Svigos) in response to the perception of negative social and questionable scientific information discouraging women from choosing assisted vaginal birth as a safe delivery option.¹ The loss of choice for women was accompanied by an increased caesarean section (CS) rate that had developed without any tangible improvement in perinatal outcomes, along with an increase in short term and 'down the stream' maternal morbidity as a result.² A number of clinicians expressed the view that these changes reflected a loss of confidence in the teaching and training of the next generation of obstetricians to be able to provide assisted vaginal birth as a legitimate option for women.³

The inaugural Birth Master Class (BMC) Workshop was organised at the 2012 Canberra RANZCOG Annual Scientific Meeting as an attempt to halt this process from becoming a self-fulfilling prophecy. That workshop (and the subsequent 10 BMC Workshops) comprised a multi-disciplinary, experienced and enthusiastic faculty (senior obstetricians, midwives, anaesthetist and neonatologist) in tune with contemporary perinatal practice.

To date, a total of 226 consultant obstetricians, senior RANZCOG trainees, GP obstetricians and rural and remote practitioners have undergone a day-long workshop of training in selected vaginal breech delivery, vaginal delivery of selected twins, instrumental vaginal birth and associated procedures required to give them the confidence to provide women with the choice of a safe assisted vaginal birth.

This paper will concentrate on the performance of an instrumental vaginal birth as a safe choice for women.

While traditional guidelines and protocols may identify who may be suitable for instrumental birth, the technical skills to assess labour dystocia accurately and then execute a safe instrumental delivery are slowly mastered over a period of time under the guidance of experienced clinicians.

Ancillary comments and explanation of the nuances, both general and specific, of instrumental vaginal birth in this paper will confirm that the 'art of obstetrics' is able to be mastered by obstetricians in training to allow women to have a choice and is a practice encouraged by reputable colleges (including RANZCOG, ACOG and RCOG) with vacuum and forceps assisted vaginal birth both accounting for approximately 11% of births in Australia and just under 10% of births in New Zealand, with the rise in CS in the last decade mirroring the fall in instrumental vaginal birth.⁴

A judicious obstetrician consulted to consider an instrumental delivery will conduct a clinical assessment of both the mother and the fetus, reviewing the core information in order to determine why an assisted delivery is being considered and how much time is available to effect the delivery.

If the situation is solely delayed progress in the second stage of labour then there may be time to consider the options for the mode of delivery in order to allow discussion of these options at length with the parents and attending staff and obtain an informed consent.

Whereas the discussion time with suspected fetal compromise may be abbreviated to what is likely to be successful and safe for the mother and baby.

Over the last decade, traditional patterns of the progress of labour have received intense scrutiny as a contributor to the increased CS delivery rate due to labour dystocia with the design and adoption of new labour curves of progress and accompanying

management guidelines,⁵ which in turn led to an acceptance of an increased duration of labour compared to that seen under the traditional guidelines.

After the anticipated initial modest fall (not consistently achieved) in the CS delivery rate to justify the change, this potential advantage has not been sustained and we have now been left with a hybrid version of the traditional and new systems of labour assessment and management.⁶

This failed strategy is not all that surprising as the CS delivery rate rose most rapidly during the decades when there was no change in traditional labour curves or in the guidelines for their interpretation.

With regard to instrumental vaginal birth, there has been a similar recalibration of the traditional second stage of labour duration, modified by the presence of neuro-axial analgesia, to almost physically impossible limits (primigravid woman pushing for three hours) in the hope that a normal vaginal delivery might be achieved.

This form of management was modified to incorporate a policy of 'delayed pushing' in the second stage, usually after the demoralising prospect of a woman in labour allowing her previously 'morale-saving' epidural to wear off.⁷

This practice, as with the other strategies mentioned, has been accompanied with increased maternal morbidity, not only from the prolonged duration of labour particularly in the second stage, but also from attempts to deliver the baby either vaginally by instrumental birth under unfavourable circumstances or by CS with the fetal head often deep in the pelvis in the occiput-posterior position with a concomitant increase in neonatal and maternal morbidity.⁸

How can we make/how have we made an instrumental vaginal delivery a safe choice for women to consider?

Astute management of the first stage of labour with early attention to dystocia will reduce the urgency and duration (in the absence of fetal compromise) of the management of the second stage of labour with encouragement of an active, rather than a passive, management style with timely assistance.

In the case of manual rotation as a strategy to deal with malposition (occiput transverse, occiput posterior) detected late in labour,⁹ this incompletely evaluated strategy, in order to be successful, requires early assistance at 8–9cm of cervical dilatation and early in the second stage as the procedure becomes more difficult to perform, or even potentially hazardous to the fetus, if its institution is delayed.

For those practitioners not confident to use Kielland's forceps to deal with fetal malposition in the second stage, a compromise may be achieved by early manual rotation and application of the ventouse (preferably the Kiwi cup), but this will not cover all situations, particularly in the face of a premature infant less than 34–35 weeks or if there is caput and moulding already present, which may interfere with the development of an effective chignon to aid in autorotation that may be required.

In contemporary perinatal centres there has been of late a positive re-evaluation of the benefits of Kielland's forceps rotation in the situation of a fetal malposition deep in the pelvis at full dilation of the cervix.¹⁰

A number of critical strategies have evolved to assist with this re-evaluation of the use of Kielland's forceps and these include the involvement of a committed anaesthetist for the analgesia/anaesthesia requirements of patients in labour ward with an effective epidural, pelvic floor relaxation and timely episiotomy being fundamental to the execution of a safe rotational vaginal delivery with forceps.

Theatre management has changed favourably to now allow the provision of a trial of instrumental birth with the propensity to move to CS, if necessary, as part of contemporary obstetric practice.

Failed instrumental vaginal delivery with potential neonatal morbidity has been addressed by the development of strategies to deal with the impacted fetal head at CS with the use of the Fetal Pillow, the conduct of the CS in the modified lithotomy position and simulation training of obstetricians with 'Desperate Debra' to develop strategies for disimpaction including the 'Push' and 'Pull' techniques.¹¹

A nested study by the BMC Faculty of 40 senior RANZCOG registrars who undertook the Workshop with a two year follow-up has found that of those who returned to an institution where the use of Kielland's forceps was encouraged, all continued with the practice while not surprisingly those returning to an institution where the practice was not encouraged, only 25% continued with the practice.

With babies in the occiput-anterior position requiring delivery in the second stage due to the traditional indications of fetal compromise, failure to progress and malposition, along with the fulfilment of the requirements for instrumental vaginal birth, including consideration of pudendal nerve block anaesthesia, then apart from perhaps requiring further assistance with the determination of fetal position by ultrasound,¹² the choice for the obstetrician is that of which instrument to use, with ventouse being promoted as being less traumatic to the mother and Simpson's pattern forceps being less traumatic to the fetus. The obstetrician's preference is usually predominating, but possibly modified by, the presence of adequate analgesia and/or fetal compromise.

As with any instrumental birth, a discerning obstetrician would anticipate the possibility of concomitant shoulder dystocia, postpartum haemorrhage and the potential need for neonatal resuscitation, and be prepared for such contingencies in order to ensure a safe delivery option for women.

The BMC Workshop may give confidence to obstetricians to provide women with the choice of a safe instrumental vaginal birth. Apart from timely practice revision, the workshop can provide the initial positive learning experience, but reinforcement of this experience is dependent on continued practice and supervision by experienced clinicians ensuring that not only are the instrumental techniques performed correctly but that the required associated skills to mitigate potential complications are taught and encouraged along with debrief, audit and credentialing being integral to the process.

Hence, to answer the original question: yes, women may take the choice of a safe instrumental vaginal birth.

Acknowledgements

The authors wish to acknowledge the unqualified support of Tania Back and the RANZCOG SA&NT Regional Committee.

Full reference list available online

Maternal heart disease in labour



Dr Fiona Stewart
MBChB, FRACP
Department of Cardiology,
Auckland City Hospital, NZ

Throughout the world, heart disease remains the leading indirect cause of maternal death. Many cardiac problems are predictable with knowledge of the mother's underlying cardiac condition, but cardiac events can occur rapidly and unexpectedly. In the latest Australian maternal mortality review, 20% of maternal deaths occurred during birth or the first 24 hours after delivery. Mortality was higher in older women, Indigenous people, those living in very remote areas and mothers from low socioeconomic groups.¹

Risk stratification

Critical to managing women with heart disease in pregnancy is a careful cardiac assessment, ideally pre-pregnancy or early in the pregnancy, to gain a complete picture of the type of underlying cardiac abnormality and its severity. Cardiovascular risk has been best classified by the modified World Health Organization (mWHO) classification of maternal cardiovascular risk.^{2,3} This discussion will only consider women at mWHO risk levels 1 and 2 as women at higher mWHO risk require individualised specialist management with a cardio-obstetric team and delivery at a specialised hospital.

Table 1. Modified WHO Criteria I and II.

Modified WHO Criteria I and II

Women with normal left ventricular function and one of the following:

- Repaired simple congenital heart disease – ASD, VSD, PDA, anomalous pulmonary venous drainage
- Tetralogy of Fallot
- Small ASD or VSD
- Mitral valve prolapse and mild MR
- Atrial arrhythmias and ectopic beats

Delivery planning checklist

- Recent assessment underlying cardiac condition
- Multidisciplinary plan – cardiology, anaesthetics, obstetrics, midwifery
- Timing of delivery
- Mode of delivery
- Maternal monitoring
- Anaesthesia/analgesia
- Labour plan
- Ecobolic
- Postpartum monitoring

Multidisciplinary planning for delivery, discussed with the mother, is important to minimise complications. It is essential that this is well documented and immediately available at all times.

Women with underlying heart disease may decompensate rapidly if they develop gestational hypertension or preeclampsia due to the sudden increase in afterload to the heart.

In lower risk women, the mode of delivery should be determined by obstetric indications. Elective caesarean sections for women with cardiac disease are only recommended for women with aortic pathology, severe mitral and aortic valve stenosis, intractable heart failure, pulmonary artery hypertension and for some who are anticoagulated.

Labour may be induced in cardiac women with artificial rupture of the membranes and the use of oxytocin. Misoprostol is usually safe for women with cardiac disease but can cause coronary vasospasm.⁴ The American College of Obstetrics and Gynecology recommends elective induction of labour in pregnant women with cardiac disease between 39 and 40 weeks.⁵

Cardiac ECG monitoring for most low-risk cardiac women is not necessary in labour but for women with a history of arrhythmias it is wise to have ECG monitoring (and medication to treat the arrhythmia) in the delivery room. If cardiac monitoring is planned, it is important that suitably trained staff are available who can interpret the ECG changes and give emergency antiarrhythmic therapy. For women with intracardiac shunts (ASD, VSD) care needs to be taken with peripheral venous lines because of the risk of introducing air emboli that could cross the defect when the mother is pushing, as right heart pressures are significantly elevated at this time. Careful attention to maternal blood pressure and fluid administration is important for all women.

Good analgesia for labour will reduce maternal cardiac stress by reducing maternal tachycardia. Care needs to be taken with the use of epidural analgesia and anaesthesia to minimise sudden falls in maternal blood pressure or volume overload from intravenous fluids given. Use of a continuous epidural and careful

fluid management can minimise this and is the preferred approach for cardiac women.

Labouring in the lateral position will improve cardiac return to the heart. The active stages of labour cause many haemodynamic changes increasing right heart pressures, the return of blood to the heart and the need for an increased maternal cardiac output. An assisted delivery will reduce maternal cardiac work but is not usually necessary for low-risk cardiac women.

Antibiotic prophylaxis for the prevention of endocarditis is no longer recommended for delivery in women with valvular heart disease.

Oxytocin given by a slow infusion is the ecobolic of choice. PGE analogues may be given for postpartum haemorrhage but ergometrine and PGF analogues should be avoided due to vasoconstriction.

Major haemodynamic changes continue in the early postpartum period. Mothers should remain in hospital and under close observation over this time.

Managing the unexpected cardiac problems in labour

Women with undiagnosed cardiac problems may present in labour or may deliver after an acute cardiac event.

Myocardial infarction

Acute myocardial infarctions occur 3–4 times more commonly in pregnancy than in an age-matched nonpregnant population. Events occur most commonly postpartum (73%) and in the third trimester (21%).⁶ Risk is increased with the administration of ergotamine causing vasoconstriction, paradoxical emboli where there are atrial or ventricular septal defects or as part of the hypercoagulable state of pregnancy.^{2,4} Important differential diagnoses in a woman presenting with chest pain are aortic dissection and pulmonary embolus. Diagnosis is made predominantly by history, ECG changes and troponin rise with echocardiography and angiography where indicated.

Aetiology of myocardial infarction (MI)

- 43% Spontaneous coronary artery dissection
- 27% Atherosclerosis
- 17% Thrombus
- 11% MINOCA (MI with no obstructive coronary disease)
- 2% Takotsubo (stress) cardiomyopathy

Aortic dissection

An aortic dissection is a medical emergency. With a viable fetus, immediate delivery by caesarean section with repair of the aorta is recommended for Stanford type A dissection (involves ascending aorta) and medical management for Stanford Type B dissection (confined to the descending thoracic aorta).²

Maternal cardiac arrest

A maternal cardiac arrest necessitates immediate resuscitation of the mother and treatment where possible of the underlying cause.⁷

CPR is recommended as for nonpregnant patients with careful attention to airway management to minimise hypoxia and early consideration of delivery

Cardiopulmonary resuscitation in pregnancy

- CPR compressions 100/min
- Ventilation 30:2
- Continuous manual left uterine displacement
- Defibrillation
- Antiarrhythmic medications (amiodarone and adrenalin)
- Airway management – minimise hypoxia
- Perimortem caesarean delivery – 5-minute window

by perimortem caesarean section. Maternal survival is significantly improved when delivery is within five minutes of the arrest, but in a series of 57 deliveries following cardiac arrest, maternal survival occurred with delivery at 10.0 + 7.2 mins compared to 22.6 + 13.3 mins in non-survivors of cardiac arrest. Neonatal survival was seen at an average of 14 + 11 minutes from cardiac arrest compared to 22 + 13.3 minutes in non-survivors.⁸

Arrhythmia

All arrhythmias occur more commonly in pregnancy. In an otherwise well woman, SVTs occur most commonly and may complicate delivery. Management is the same as for a nonpregnant woman: with immediate Valsalva manoeuvre and, if unsuccessful, intravenous adenosine as first-line therapy followed by verapamil or metoprolol if unsuccessful. In labour, the goal is to restore normal rhythm promptly to minimise maternal hypotension and fetal compromise.⁹

Rare causes of ventricular tachycardia presenting in labour or immediately postpartum include long QT syndrome. Beta blockers are the drugs of choice for these patients.

There will always be a risk of unexpected complications with cardiac women in labour, but careful assessment of the pregnant woman, labour planning and good communication between the multidisciplinary team will significantly reduce risk and help ensure a good pregnancy outcome for the mother and baby.

References

1. Australian Institute of Health and Welfare 2020. Maternal deaths in Australia 2015–2017. Cat. No. PER 106. Canberra: AIHW.
2. Regitz-Zagrosek V, Roos-Hesselink JW, Bauersachs J, et al. 2018 ESC Guidelines for the management of cardiovascular diseases during pregnancy. *Eur Heart J*. 2018;39(34):3165–3241.
3. Roos-Hesselink J, Baris L, Johnson M, et al. Pregnancy outcomes I women with cardiovascular disease: evolving trends over 10 years in the ESC Registry of Pregnancy and Cardiac disease (ROPAC). *Eur Heart J*. 2019;40:3848–55.
4. Mehta LS, Warnes CA, Bradley E, et al. Cardiovascular considerations in caring for pregnant patients. A scientific statement from the American Heart Association. *Circulation*. 2020;141:e884–e903.
5. ACOG Practice Bulletin No. 212: pregnancy and heart disease. *Obstet Gynecol*. 2019;133:e320–e356.
6. Elkayam U, Jainapurkar S, Barakkat MN, et al. Pregnancy-associated acute myocardial infarction: a review of contemporary experience in 150 cases between 2006 and 2011. *Circulation*. 2014;129:1695–1702.
7. Jeejeebhoy FM, Zelop CM, Lipman S, et al. Cardiac arrest in pregnancy: A scientific statement from the American Heart Association. *Circulation*. 2015;132:1747–73.
8. Einav S, Kaufman N, Sela HY. Maternal cardiac arrest and perimortem caesarean delivery: evidence or expert-based? *Resuscitation*. 2012;83:1191–1200.
9. Bircher CW, Farrakh S, Gada R. Supraventricular tachycardia presenting in labour: A case report achieving vaginal birth and review of the literature. *Obstetric Medicine*. 2016;9:96–7.

Managing pregnancies complicated by obesity



A/Prof Glyn Teale
BSc, MRCP, MD, MRCOG, FRANZCOG
Clinical Services Director
Women's and Children's Services
Joan Kirner Women's and Children's
Western Health, Victoria

In Australia, approximately 45% of women giving birth are overweight or obese, ranging from 42% in New South Wales to 52% in South Australia and Tasmania. (Table 1). Some rural areas report rates over 65%.¹

Almost all adverse outcomes of pregnancy are over-represented in overweight or obese women.²

Even in the absence of complications such as diabetes or hypertension, obese pregnant women still face a significantly increased risk of stillbirth; a risk that is discernible at a body mass index (BMI) of 'only' 30, so it is not just the extremes of BMI that are concerning (Table 2).³ The sheer prevalence of class I and II obesity (around 17%) seems to obtund the level of clinician concern as there is a tendency to see this as 'normal', potentially resulting in missed opportunities to mitigate risk. Reports that outcomes for women with 'diabetes' – obesity and gestational diabetes mellitus

(GDM) – are better than those for obesity alone suggest that the risks of obesity are not recognised and managed the way they are for women with GDM and obesity who receive intensive surveillance.⁴

There are several peak-body-issued guidelines for the management of obese pregnant women. There are disparities in these guidelines and some provide limited advice on key aspects of care.⁵ It is notable that almost all of the recommendations in the RANZCOG 'Management of Obesity in Pregnancy' statement are graded as 'consensus based'.⁶ This highlights a paucity of high-level evidence for mitigating the risks, and much of the advice contained within the statement is common sense. Rather than repeating recommendations, the following discussions will concentrate on practical aspects of care, with an update on recent evidence where available.

Early pregnancy

Counselling about increased risks related to weight is important and may assist compliance with the various additional surveillance and screening measures that will be offered. Many clinicians find conversations about weight difficult to initiate and there is a balance to be achieved between providing information of risk and potential negative patient experience.⁷ A factual, non-judgemental reference to being 'above a healthy weight' avoids pejorative language and seems to be acceptable.

'I see from your weight that you are currently above the healthy weight range. I would suggest a few extra investigations and monitoring through your pregnancy that I would like to talk to you about.'

Obesity is associated with a greater likelihood of major depressive symptoms antenatally and postnatally, supporting the need for routine assessment for depression.⁸

Table 1. Prevalence of overweight and obesity across Australia 2017.

BMI (kg/m ²)	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
Overweight: 25.0–29.9	24.3	26.9	23.4	28.2	27.7	26.7	26.7	28.3	25.6
Class I and II obesity: 30.0–39.9	15.3	17.1	17.4	17.8	20.8	21.3	16.9	20.6	17.0
Class III obesity: 40.0–49.9	2.4	2.7	3.1	2.3	3.6	4.2	3.2	2.3	2.7
Extreme obesity: 50 and over	0.2	0.3	0.3	0.2	0.5	0.6	0.5	0.2	0.3
Total overweight & obese	42.2	47.0	44.2	48.5	52.6	52.8	47.3	51.4	45.6

Data derived from: www.aihw.gov.au/reports/mothers-babies/australias-mothers-and-babies-2017-in-brief/data

Conversations about exercise, diet and weight gain limitation should be routine. Most pregnant women, of any weight, can safely undertake a daily 30–45-minute brisk walk or regular swimming; RANZCOG patient information leaflets can support the advice.

'Regular, daily exercise can be helpful for you and your baby. It can also help limit how much weight you gain. Do you think you would be able to fit in a 30-minute walk every day in your pregnancy?'

Information on diet adjustments and weight gain limitation can be supported by referral to a dietician where available or with online resources (such as, www.eatforhealth.gov.au/sites/default/files/files/the_guidelines/n55h_healthy_eating_during_pregnancy.pdf). While it has proven difficult to limit weight gain in many RCTs, meta-analysis supports the need to at least attempt to adhere to weight gain advice with subsequent potential reduction in a variety of pregnancy complications.⁹

When ordering non-invasive prenatal testing (NIPT) it is important to counsel on the significantly increased risks of not obtaining a result due to low fetal fraction (no-call); approximately 5% in class I obesity rising to 10% in Class II, and even higher in Class III in some studies.¹⁰ The most appropriate response to this situation remains unclear, but the possibility should be discussed beforehand.

Potential mitigation of the increased risk of pre-eclampsia supports routine administration of low-dose aspirin and calcium supplementation for obese women. With an understandable resistance to taking medication in pregnancy, compliance with this recommendation is low and may be improved by the provision of written information.

Women who have Class II or III obesity have a 20% chance of having an abnormal early (<20 weeks) oral glucose tolerance test.¹¹ This screen is widely practiced, although there is little evidence that routine early screening for GDM is beneficial to outcomes. For those who screen negative, this should be repeated at 26–28 weeks.

Routine ultrasound scanning at approximately 20 weeks is less likely to identify significant abnormalities in obese women and it is worth warning of the frequent need to repeat the investigation which can be time consuming and anxiety provoking. It may be helpful to consider specialist referral to a COGU or MFM subspecialist for women with Class III or extreme BMI.

Mid-pregnancy

Given the substantial risk of complications, a low-risk schedule of appointments is not appropriate for overweight or obese women. The frequency of visits should be determined by the presence of co-morbidities and the BMI.

Regular urine testing for proteinuria is useful given the increased risk of UTIs and asymptomatic bacteriuria and to support possible early detection of pre-eclampsia.

Routine 26–28 week bloods should assess for adequate haemoglobin and, where necessary, iron stores to mitigate the increased risk of a postpartum haemorrhage.

Undetected growth restriction is likely the underlying cause of the increased stillbirth risk and clinical

Table 2. Adjusted hazard ratio for stillbirth and class of obesity.

Obesity class	Adjusted hazard ratio	95% confidence intervals
Class I (BMI 30–34.9)	1.71	1.62–1.83
Class II (BMI 35–39.9)	2.04	1.89–2.21
Class III (BMI ≥40)	2.50	2.28–2.74
Extreme BMI (≥50)	3.11	2.54–3.81

Hazard ratio calculated with Cox proportional hazard regression analysis; baseline comparison group: normal weight (BMI 20–24.9). Derived from Yao et al, AJOG, 2014.³

assessment of fetal growth with symphysio-fundal height is unreliable. For women with Class III obesity, without another indication for growth ultrasounds, serial scans at 28, 33 and 36 weeks are reasonable. RANZCOG recommends offering a routine third trimester scan.⁶ Unfortunately, routine ultrasound scans are also subject to significant error and a one-off third trimester scan, especially if performed at 35–36 weeks, is a poor predictor of fetal size.¹² Data from Western Health (submitted for publication) suggest that the sensitivity for detecting growth restriction in women with Class II/III obesity is below 10% and only approximately 50% of women whose scan suggests macrosomia will go on to deliver a 'large for dates' baby. The poor prediction of macrosomia is important to consider in counselling for mode of delivery, and the problems of identifying growth restriction should be remembered when deciding on timing of delivery.

The value of routine fetal movement monitoring in the general obstetric population remains uncertain; however, as already highlighted, obesity is significantly associated with a higher risk of stillbirth. A recent systematic review of the significance of decreased fetal movements (DFM) suggests that the perception of fetal movements is not affected by maternal body size, although more research is needed for women with Class II and III obesity.¹³ Presentations for DFM are more common and, importantly, may be more strongly associated with adverse outcomes in women with obesity. Thorough assessment of DFM is appropriate and the management should consider the increased risk of stillbirth and the challenges of assessing fetal wellbeing.

Timing and mode of delivery

The risks of stillbirth rise exponentially at 39 weeks for women with extreme obesity (BMI>50);³ this supports routinely offering induction or delivery at 38–39 weeks for this group. There is increasing evidence that routine induction of obese women is not associated with an increased risk of caesarean birth and may be associated with reduced maternal and neonatal morbidity.^{14,15} Given the lack of ability to reliably monitor fetal growth in women with Class III obesity despite regular ultrasounds, Western Health also routinely offers induction at 39 weeks for this group. The appropriate management for women with Class I and II obesity is unclear and being actively debated.

The likelihood of emergency caesarean is strongly influenced by BMI.¹⁶ Over 40% of spontaneously labouring nullipara with Class III obesity will birth by

emergency caesarean. The reasons for this increase are unclear but repeatedly reported and this should be discussed with the woman. For some women, the balance of risks may favour elective caesarean. The counselling will be influenced by comorbidities and history, but it is important that the information is exchanged. Failing to inform of the options and risks increases the chance of dissatisfaction and complaint.

For those who wish to contemplate vaginal birth after caesarean (VBAC), obesity negatively impacts the chance of successful vaginal delivery and the risks of serious maternal and neonatal complications rise.¹⁷ Chances of success may be as low as 20% for women with Class III obesity, so it is vital to provide accurate information when counselling about risks and benefits; using success figures of circa 75%, as might be provided to women in the healthy weight range, is unrealistic for obese women.

Intrapartum care

Time to achieve full dilatation is prolonged for obese women, whether they labour spontaneously or following induction.^{18,19} Most of this extra time is in the latent phase, with active first stage and second stage being similar. There is also a greater chance of failed induction, which may be as high as 37.5% for Class III obesity, with Bishop score reliably indicating success rates.²⁰ Higher doses and longer exposure to oxytocin is also needed to achieve vaginal delivery.²¹ Overall, additional patience is probably helpful to allow active labour to establish.

Staff caring for obese labouring women should be appropriately skilled and experienced to mitigate the various complications that are more likely to occur. With increased likelihood of an undetected growth restricted baby, optimal fetal monitoring is important but harder to achieve and there is commonly a need to resort to internal monitoring.²² The substantially increased risks of a postpartum haemorrhage should be mitigated by active management of the third stage, ensuring adequate large bore cannulation, and early recourse to additional measures.

Considerations for the care of obese women who need to go to theatre intra- or postpartum were reviewed in the Spring 2019 issue of *O&G Magazine*.²³

Postpartum care

Women in higher obesity classes are progressively less likely to initiate breastfeeding.²⁴ Women with the highest BMIs should be particularly counselled on the benefits of breastfeeding and extra support should be provided.

Routine postpartum thromboprophylaxis is recommended for many obese women – for more information see www.bettersafecare.vic.gov.au/resources/clinical-guidance/maternity-e-handbook/obesity-during-pregnancy-birth-and-postpartum#goto-thromboprophylaxis. Compliance studies suggest that more than 30% fail to comply with frequency or length of treatment recommendations;²⁵ specific counselling for obese women is important to ensure they understand the risks of non-compliance.

Summary

Much of the advice for the management of women who are obese and pregnant is common sense. Given the increased likelihood of many complications, it is important to provide appropriate information in a sensitive but accurate manner. The tendency

to normalise obesity, particularly in the absence of associated complications, can lead to a failure to mitigate risks; stillbirth risk is considerable and management decisions should reflect this risk at all levels of obesity. Hopefully, by having the increased risks of obesity 'front of mind' we can reduce the adverse outcomes that are so much more prominent.

References

1. Cunningham CE, Teale GR. A profile of body mass index in a large rural Victorian obstetric cohort. *Med J Aust.* 2013;198(1):39-42.
2. D'Souza R, Horyn I, Pavalagantharajah S, et al. Maternal body mass index and pregnancy outcomes: a systematic review and metaanalysis. *Am J Obstet Gynecol MFM.* 2019;1(4):100041.
3. Yao R, Ananth CV, Park BY, et al. Perinatal Research C. Obesity and the risk of stillbirth: a population-based cohort study. *Am J Obstet Gynecol.* 2014;210(5):457. e451-9.
4. Blickstein I, Doyev R, Trojner Bregar A, et al. The effect of gestational diabetes, pre-gravid maternal obesity, and their combination ('diabesity') on outcomes of singleton gestations. *J Matern Fetal Neonatal Med.* 2018;31(5):640-3.
5. Vitner D, Harris K, Maxwell C, Farine D. Obesity in pregnancy: a comparison of four national guidelines. *J Matern Fetal Neonatal Med.* 2019;32(15):2580-90.
6. RANZCOG. Management of Obesity in Pregnancy. C-Obs 49. 2017. Available from: [https://ranzco.org.au/statements-guidelines/obstetrics/obesity-in-pregnancy--management-of-\(c-obs-49\)](https://ranzco.org.au/statements-guidelines/obstetrics/obesity-in-pregnancy--management-of-(c-obs-49))
7. Relph S, Ong M, Vieira MC, et al. Perceptions of risk and influences of choice in pregnant women with obesity. An evidence synthesis of qualitative research. *PLoS One.* 2020;15(1):e0227325.
8. Ruhstaller KE, Elovitz MA, Stringer M, et al. Obesity and the association with maternal mental health symptoms. *J Matern Fetal Neonatal Med.* 2017;30(16):1897-1901.
9. Goldstein RF, Abell SK, Ranasinha S, et al. Association of Gestational Weight Gain With Maternal and Infant Outcomes: A Systematic Review and Meta-analysis. *JAMA.* 2017;317(21):2207-25.
10. Juul LA, Hartwig TS, Ambye L, et al. Noninvasive prenatal testing and maternal obesity: A review. *Acta Obstet Gynecol Scand.* 2020;99(6):744-50.
11. O'Dwyer V, Farah N, Hogan J, et al. Timing of screening for gestational diabetes mellitus in women with moderate and severe obesity. *Acta Obstet Gynecol Scand.* 2012;91(4):447-51.
12. Dude AM, Davis B, Delaney K, Yee LM. Identifying fetal growth disorders using ultrasound in obese nulliparous women. *J Matern Fetal Neonatal Med.* 2019;1-6. doi: 10.1080/14767058.2019.1648420.
13. Bradford BF, Thompson JMD, Heazell AEP, et al. Understanding the associations and significance of fetal movements in overweight or obese pregnant women: a systematic review. *Acta Obstet Gynecol Scand.* 2018;97(1):13-24.
14. Grobman WA, Rice MM, Reddy UM, et al. Labor Induction versus Expectant Management in Low-Risk Nulliparous Women. *N Engl J Med.* 2018;379(6):513-23.
15. Gibbs Pickens CM, Kramer MR, Howards PP, et al. Term Elective Induction of Labor and Pregnancy Outcomes Among Obese Women and Their Offspring. *Obstet Gynecol.* 2018;131(1):12-22.
16. D'Souza R, Horyn I, Pavalagantharajah S, et al. Maternal body mass index and pregnancy outcomes: a systematic review and metaanalysis. *Am J Obstet Gynecol MFM.* 2019;1(4).
17. Yao R, Crimmins SD, Contag SA, et al. Adverse perinatal outcomes associated with trial of labor after cesarean section at term in pregnancies complicated by maternal obesity. *J Matern Fetal Neonatal Med.* 2019;32(8):1256-61.
18. Polónia Valente R, Santos P, Ferraz T, et al. Effect of obesity on labor duration among nulliparous women with epidural analgesia. *J Matern Fetal Neonatal Med.* 2020;33(13):2195-2201.
19. Norman SM, Tuuli MG, Odibo AO, et al. The effects of obesity on the first stage of labor. *Obstet Gynecol.* 2012;120(1):130-5.
20. Kerbage Y, Senat MV, Drumez E, et al. Risk factors for failed induction of labor among pregnant women with Class III obesity. *Acta Obstet Gynecol Scand.* 2020;99(5):637-43.
21. Adams AD, Coviello EM, Drassinower D. The Effect of Maternal Obesity on Oxytocin Requirements to Achieve Vaginal Delivery. *Am J Perinatol.* 2020;37(4):349-56.
22. Brocato B, Lewis D, Mulekar M, Baker S. Obesity's impact on intrapartum electronic fetal monitoring. *J Matern Fetal Neonatal Med.* 2019;32(1):92-4.
23. Neel A, Teale G. Considerations for the obese obstetric patient. *O&G Magazine.* Vol 21, No 3, Spring 2019.
24. Ramji N, Challa S, Murphy PA, et al. A comparison of breastfeeding rates by obesity class. *J Matern Fetal Neonatal Med.* 2018;31(22):3021-6.
25. Rottenstreich A, Karlin A, Kalish Y, et al. Factors associated with women's adherence to postpartum thromboprophylaxis. *J Thromb Thrombolysis.* 2020;49(2):304-11.

Q&A

For the broader *O&G Magazine* readership, balanced answers to those curly-yet-common questions in obstetrics and gynaecology.

Q

I have a patient with a vulval rash, which I suspect is lichen sclerosus. How would you manage it now and into the future?

**Prof Gayle Fischer OAM
MBBS, MD, FACD
Dermatologist**

A

Lichen sclerosus (LS) is not rare in women over 50 and, if not treated, can result in devastating consequences. Unlike most other skin conditions, it can be complicated by severe scarring that may completely obliterate all vulval structure. Further, untreated, there is a 5% risk of squamous cell carcinoma involving affected skin. Both of these complications appear preventable with treatment.

The typical appearance is of a white plaque that may involve any part of the vulva, perineum and perianal skin and is usually, but not invariably, bilaterally symmetrical. The important differentiating feature is the white colour. Few other conditions produce this appearance. In addition, there may be purpura, fissures and erosions. There is typically hyperkeratosis and textural change.

Patients usually, but not always, have symptoms. These are variable, but itch is the commonest. Dyspareunia is often present; however, in the post-menopausal age group commonly affected, there may also be an element of atrophy contributing to this.

It is easy to underestimate the impact of this condition on a woman. Even though a small area of the skin, less than 1% of body surface area, is involved, the consequences of delayed diagnosis and inadequate treatment can be life-changing in terms of general wellbeing, self-esteem, body image and sexual function. The whole subject of vulval disease remains poorly recognised, diagnosed and treated. Patients often refrain from presenting early due to embarrassment and fear.

Because of the potential seriousness of LS, it is important to be sure of the diagnosis. The best way to confirm is with a biopsy prior to starting treatment. This can be done as an office procedure using a 2mm punch, taking the sample from the whitest area. Some patients find it traumatic, however, it is important to be sure and the test can be done in five minutes. Although some authors maintain that the diagnosis can be made clinically, there are other conditions that can mimic it (for

example, lichen planus) and it can be hard for subsequent medical attendants caring for the patient to know how to proceed unless a diagnosis has been established.

Approximately 15% of patients have known thyroid disease or thyroid auto-antibodies, even in the presence of a normal TSH. Although it has never been proven that LS is an auto-immune disease itself, there is circumstantial evidence related to its association with other conditions that are.

LS should always be treated, even when asymptomatic. The gold standard treatment remains potent topical corticosteroid for virtually all cases unless the disease is very mild. Diprosone OV (betamethasone dipropionate 0.05% ointment in optimised vehicle) is a very reliable option in Australia. This is applied once or twice a day, depending on symptom severity. This is not a PBS item. Betamethasone dipropionate 0.05% ointment is a valid alternative. On the vulva, mometasone furoate has a tendency to sting.

It is very likely when you prescribe such a potent topical corticosteroid for the genital area that there will be resistance from your patient (after their own research online) and possibly the dispensing pharmacist. You must fully discuss this at the first consultation: it is very important to explain your treatment choice and reassure that it has been extensively researched and validated.

The first review should be at six weeks. If the skin is back to normal, corticosteroid potency may be reduced; however, until this outcome is achieved the potent preparation is continued. This can take up to six months of daily treatment on the potent preparation, particularly for severe disease. It is achievable in most patients, although there can be some residual hypopigmentation despite loss of other signs and symptoms.

In post-menopausal women, topical oestrogen, although not specifically effective for LS itself, is

often helpful to reduce vaginal and vulval dryness. If this is not addressed, even in the presence of good LS control, patients may remain symptomatic and unable to experience pain-free intercourse.

Maintenance therapy is the rule for LS. Although there may be cases that remit, it is best to assume that treatment is for life. There is no single way to do this, however ongoing topical corticosteroid treatment with moderate to weak preparations (such as methylprednisolone aceponate 0.1% and hydrocortisone 1%) is required, titrated up and down to response so that control is maintained without side effects. Ointment is generally more effective than cream, and less likely to cause allergy, but is not acceptable to all because of the sticky feeling. If applied at night, this is less of a problem.

Although lay people will express concerns about 'thin skin' this is not in fact the problem. However, erythema, telangiectasia and, in some cases irritation, occur if the treatment becomes too potent as the inflammation reduces. As long as there are no side effects, treatment continues and does not have to be reduced. In general, even with very long-term topical corticosteroid treatment of LS, there are no or minimal side effects.

In patients on long-term treatment, follow up is a key to compliance and adherence to corticosteroid of adequate potency. During the first two years, follow up should be at least six-monthly. In stable controlled disease, one to two year follow up is often all that is required.

Well controlled LS has an excellent prognosis and the course of the disease can be modified by treatment. Patients who have ongoing issues with symptoms or impact on quality of life should be assumed to have either a concurrent separate problem such as Candidiasis, or emotional issues. Accepting the reality of LS can be very challenging for some. However, with ongoing monitoring to ensure adequate treatment and strong reassurance to address emotional issues, most can become asymptomatic and never develop the long-term problems related to vulval scarring and malignancy. In my own experience, no patient on adequate suppressive treatment has developed a cancer, however, there is still not enough evidence to categorically assure that it can be completely prevented.

Further reading

Lee A, Bradford J, Fischer G. Long-term Management of Adult Vulvar Lichen Sclerosus: A Prospective Cohort Study of 507 Women. *JAMA Dermatol.* 2015;151(10):1061-7.

Do you have experience working or volunteering in low- to middle-income countries?

Share your story in O&G Magazine

RANZCOG is committed to improving the health of women and their families, including in the Pacific region.

The College is seeking contributions for **O&G Magazine** about global women's health. Articles and opinion pieces that highlight women's health issues or initiatives in low- to middle-income countries are appreciated.

Don't have time to prepare a written contribution? We can interview you and write the article for you.

Contributions are welcome from all College members.

For more information about contributing to **O&G Magazine**, go to:

www.ogmagazine.org.au/contribute



**The Royal Australian
and New Zealand
College of Obstetricians
and Gynaecologists**
Excellence in Women's Health



Case report

Ovarian cancer presenting as haemoperitoneum

Dr Tanushree Rao
MS, MRCOG
AGES Fellow

Dr Jyothi Marry
MBBS, FRANZCOG, MMed
O & G staff specialist, Liverpool Hospital

Dr Murad Al-Aker
FRANZCOG, CGO
Gynae oncology staff specialist, Liverpool Hospital

Ovarian cancer is the eighth most common cancer affecting women in Australia. Women often present with vague pelvic and abdominal signs and symptoms, such as bloating, early satiety, abdominal pain and distention, constipation, and changes in urinary habits. Acutely, patients may present with pleural effusions, ascites, small bowel obstructions or deep vein thrombosis. Upon literature review, we could find only one documented case of ovarian cancer presenting as acute abdomen.¹ Here we present a case of endometroid carcinoma of the ovary presenting as an innocuous ruptured ovarian cyst in a low-risk-age-group woman.

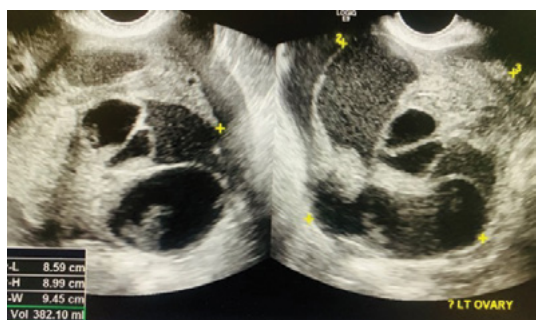


Figure 1. Ultrasound scan demonstrating left ovarian complex cyst.

Case description

A young 29-year-old G1P0, who presented to the emergency department reporting severe abdominal pain for the past 16 hours. The pain was gradual in onset and diffuse in nature. Her last menstrual period was 10 days ago, and her pap smears were up to date. Her past gynaecological, medical, surgical, family and social histories were non-contributory. On examination, her vital signs were stable with mild tachycardia of 100bpm. On physical examination, her abdomen was distended, diffusely tender, dull to percuss, and positive for both rebound and guarding. Speculum examination revealed a normal looking cervix and vagina. The pelvic examination revealed cervical motion tenderness and bilateral forniceal tenderness. Due to voluntary guarding, no pelvic mass was appreciated on the abdominal and vaginal exam. Lab work showed a negative beta HCG, Hb of 102g/L leucocytosis with a WBC count of 31.8 as well as an elevated lactate of 3.9mmol/L. Ultrasound scan demonstrated an 8 x 7.5 x 8 cm complex cystic structure, appearance suggestive of endometriosis with large volume of hemoperitoneum seen obliterating the Morrison's pouch.

A presumptive diagnosis of ruptured ovarian cyst was made, and a decision was taken to proceed with diagnostic laparoscopy + left ovarian cystectomy +/- left salpingo-oophorectomy by the general gynaecology team. Intraoperatively, haemoperitoneum of 1 litre was found. A 5 x 6 cm multiloculated left ovarian cyst was found adherent to the left pelvic wall and sigmoid colon. It had a smooth surface with no papillary projections. Apart from the above-mentioned cyst, two other small (2x1 cm) simple cysts were also found in the same ovary. The larger cyst was found to be friable and there was difficulty in achieving haemostasis after an attempt at cystectomy. Hence a decision was made to perform a left salpingo-oophorectomy after mobilising the mass from the pelvic sidewall and sigmoid colon.



Figure 2. Free fluid.



Figure 3. Lap left salpingo-oophorectomy.

The procedure was uneventful and haemostasis was achieved. Her left ovary was mildly enlarged but nil obvious cysts were seen. The haemoperitoneum was suctioned out. A drain was left in situ and was subsequently removed on day 2 postoperatively when there was no further drain output, after which she was discharged home.

Final pathology showed a well differentiated endometrioid adenocarcinoma (FIGO grade 1) involving both the ovary and tube. Immediate referral was made to the gynae oncology team, where she was discussed at a multidisciplinary team meet. A decision was made to proceed with open total abdominal hysterectomy and unilateral salpingo-oophorectomy with staging. In the interim, as there was a possibility of synchronous endometrial cancer, she also underwent pipelle biopsy which showed proliferative endometrium. Her final histopathology post second laparotomy showed a residual endometrioid adenocarcinoma (1mm) involving the left adnexa and no evidence of malignancy on her pelvic, para aortic and abdominal biopsies. She did not receive any adjuvant chemo/radiotherapy.

Discussion

Ovarian neoplasms include epithelial ovarian cancer, which represents about 90% of all ovarian tumours, and non-epithelial ovarian cancer, including stromal and germ cell tumours. Morphologically, epithelial ovarian cancer is classified into five main histologic subtypes: high-grade serous, which accounts for 70% of all epithelial cancer, low-grade serous, endometrioid, mucinous, and clear-cell tumours.²

Low grade endometrioid tumours are thought to evolve slowly from lower-grade precursor conditions (endometriotic cysts, cystadenomas, etc) and are classified as type I tumours.³ In contrast, high-grade endometrioid carcinomas and carcinosarcomas are thought to evolve rapidly from more obscure precursors and are designated as type II tumours. All of these high-grade carcinomas are nearly always associated with mutations in the TP53 gene.³



Figure 4. Multicystic left ovary with papillary excrescences.

Endometrioid epithelial ovarian tumours represent 10% of all ovarian cancer. They often occur in younger women than other subtypes and are mostly diagnosed at early stage with good outcome.² Early-stage ovarian cancer includes FIGO Stage Ia, Ib, and Ic.⁴ The prognosis of early-stage ovarian cancer is good, with a five-year survival rate of 70–90%. Tumour removal and adequate surgical staging, followed in most cases by adjuvant chemotherapy, represent the primary treatment for early-stage ovarian cancer. Adjuvant chemotherapy may be avoided for low-risk, optimally staged, Stage-I patients (FIGO Stage-Ia/Ib, G1–G2); chemotherapy is indicated after surgery for patients with high-risk Stage-I disease (FIGO Stage-Ic, G3). In case of suboptimal surgical staging of low-risk Stage-I patients, benefits and effect of adjuvant chemotherapy should be discussed with each individual patient.⁵

Approximately two-thirds of all epithelial 'ovarian' cancers are Stage III or Stage IV at diagnosis presenting with vague abdominal pain or discomfort, menstrual irregularities, dyspepsia, and other mild digestive disturbances.⁶ However, this case demonstrates rare presentations of cancer such as acute hemoperitoneum. It highlights the importance of suspecting cancer in otherwise seemingly benign suspected pathology for a general gynaecologist as often they are the first point of reference for such presentations.

References

1. Zhou ZN, Tierney C, Rodgers WH, et al. Ruptured clear cell carcinoma of the ovary presenting as acute abdomen. *Gynecol Oncol Rep.* 2016;16:1-4.
2. Prat J. New insight into ovarian cancer pathology. *Ann Oncol.* 2012;23(10):111–117.
3. Kurman RJ, Shih IM. Pathogenesis of ovarian cancer: Lessons from morphology and molecular biology and their clinical implications. *Int J Gynecol Pathol.* 2008;27:151-60.
4. Prat J. FIGO committee on gynecologic oncology. Staging classification for the cancer of the ovary, fallopian tube, and peritoneum. *Int J Gynaecol Obstet.* 2014;124(1):1-5.
5. NCCN clinical practice guidelines in oncology. Ovarian cancer including fallopian tube cancer and primary peritoneal cancer. 2015. Available from: www.nccn.org/professionals/physician_gls/
6. Berek JS, Kehoe ST, Kumar L, Friedlander M. Cancer of the ovary, fallopian tube, and peritoneum. *Int J Gynaecol Obstet.* 2018;143(2):59-78.

Obituaries

Dr Graham Knox Williams AM 1933–2020

It is with much sadness that we record the death of Dr Graham Knox Williams on 12 January 2020 at Cumnock in rural NSW. Graham was born in Paddington on 4 July 1933, the son of H Bruce Williams, a noted obstetrician of education.

Graham went to St Pauls College and Sydney University for his medical education. He completed medicine in 1956 and married Judy Williamson in 1958.

In 1960, he went off to the UK to study O&G (as was custom at the time) and obtained his membership of RCOG. With Judy, they had two children, Bruce (1963) and Charles (1968).

While Graham completed his obstetrics training, Judy also trained to become an anaesthetist. Graham, with Judy by his side, worked in the UK from 1961 to 1966.

With their young family, they returned to Australia, settled in Woollahra and took up an HMO position at the Royal Hospital for Women in Paddington and also at St George Hospital. For the next 30 years he worked and became a respected and much-loved consultant at these hospitals.

He loved to teach and taught countless future generations of doctors and midwives in our specialty, including myself. He always taught with great patience and generosity of spirit. He was indeed a true specialist in the days of the gentleman obstetrician, without arrogance, softly spoken and loved and respected by all.

Graham had a busy practice, but also gave so much back as NSW President of the AMA and NSW medical board member for many years, and was awarded the AM for his contributions to medicine. Outside of medicine, he was a member of the Council of Cranbrook School and also a talented cricket player in his younger years, playing for Cranbrook, at university and even in the UK.

In 1998, after 30 years of medicine, he decided to go into retirement. Graham and Judy used this opportunity to take over the day-to-day running of a property Judy had inherited from her father.

For the next 20 years, Graham became a capable farmer, specialising in Merino sheep with high fecundity that also produced superior quality wool. Graham also worked at times as a locum at Wagga Hospital whilst Judy worked at Dubbo Hospital.

Above all this, Graham was a family man who loved Judy, his children and grandchildren dearly. Graham died quickly and unexpectedly on 12 January 2020 at the age of 86.

He is survived by his two sons, Bruce and Charles, and their children, Douglas, Morgan and James. Vale Graham – a true gentleman and honour to our profession.

I would like to acknowledge Alister Harvey-Sutton, his lifelong friend, and his sons in helping me prepare this commentary on Graham's life.

A/Prof Louis Izzo FRCOG, FRANZCOG

Dr Margot Jocelyne Barclay 1969–2020

Margot Barclay was born in Saskatoon, Saskatchewan, Canada, and grew up in Canada. She went to high school at St Michaels in Winnipeg, Manitoba, then went to Toronto to attend University and Medical School. An early glimpse of her adventurous spirit can be seen when, as a medical student, she worked in Malawi where she contracted malaria during her service.

Her residency was spent in Vancouver. Following this, she moved to Rossland, British Columbia, where she set up an OBGYN partnership with a colleague. During this time, Margot participated in a program where she trained doctors and midwives in developing nations, including a trip to the Ukraine.

We will all remember Margot as the vibrant, fiery, enthusiastic redhead who came to us from Canada in February 2011 with a passion for Canada, women's health and for life in general. She was a woman of strong views that she defended passionately, not from stubbornness but from a belief that she was making a difference for women

in our care. Surprisingly for someone who came to us from Canada, she became an enthusiastic dragon boat racer and in time represented New South Wales in this sport.

At Liverpool Hospital, she drove gynaecological services, especially in the area of colposcopy and laparoscopic surgery, and participated in the high-risk antenatal clinic for many years. She became Head of Department from July 2015 to October 2018 and participated strongly in the design and development of the new maternity services rebuild. She was the first female head of any department at Liverpool.

The development of breast cancer marred her tenure in this position, forcing her to take longer absences from the job, battling recurrences and protracted treatment regimes and struggling to support and prepare her two children for the final outcome. She showed courage and bravery beyond belief and will be remembered fondly by everyone for her strength in this regard.

Margot Barclay was laid to rest on 24 January 2020. Her funeral was attended by a large number of midwifery and obstetric staff members

lamenting the passing of someone who strove to make a difference to the wellbeing of women in the Southwest Sydney Local Health District. Her irreverent sense of humour was in evidence as we were exhorted to *Always Look on the Bright Side of Life* midway through the Service. We were reminded of her determined self-assuredness as she was accompanied out of the funeral parlour to the strains of *I Did it My Way*.

All those who spoke of her remembered her fondly for her keen intelligence, dry wit and enthusiasm for life. Her love of her family and friends was abundantly evident.

She will always be remembered. Rest in peace, Margot Barclay.

**Dr Ian Fulcher
FRANZCOG**

Dr Arthur Joseph Day 1933–2020

Tributes have poured in for Dr Arthur Day, who passed away in May.

In tributes published online in *The Age*, A/Prof Jim Tsaltas, head of the Gynaecological Endoscopy Unit at Monash Health, said 'Mr Day's death marks an end of an era. He will always be remembered for his superlative surgical skills, uncompromising pursuit of excellence, with sound ethical foundation, and his mentoring of generations of gynaecological surgeons.'

Dr Daya Jayasinghe wrote 'Arthur helped immensely to introduce a national cervical cancer screening program in Sri Lanka, an effort initiated by the Lions Club of Wheelers Hill in the early 2000s. Across his career, he helped nurture the talent of many Australian oncologists and gynaecologists, and he skilfully drew upon some of this professional talent in building the pilot screening program in Sri Lanka. In fact, Arthur Day's contribution to the program is in no small part why cervical cancer rates have recently decreased there.

It is inspiring that this wholehearted Melbournian gave so much to improve public health outcomes in developing countries like Sri Lanka. As well, through

his gynaecologic work, he immeasurably increased the quality of life for so many women and families here in Melbourne.'

Former President, Dr John Campbell, said 'With the death of Arthur Day, RANZCOG lost one of the doyens of gynaecology in Victoria. Arthur served his College and profession superbly in very many ways. At the Queen Victoria Hospital and then the Monash Medical Centre, he was an outstanding gynaecological surgeon and lead the Gynaecological Oncology Unit.'

He was a mentor and friend to a huge number of colleagues and trainees. He was an excellent teacher and provided to generations of future specialists an approach to obstetrics and gynaecology which would greatly assist their future careers.

He served on the Senior Medical Staff associations of the Queen Vic and Monash, the Victorian Regional Committee of College, College Council, and numerous other organisations. For his services to College he was awarded the President's Medal, and for his services to gynaecology, the AM.

He will be greatly missed.

**Dr John Campbell, Charles Day and
Prof Tom Jobling**



College Statements update July 2020

New College Statement

The following new statement was recently approved by RANZCOG Council and Board:

Vaginal screening after hysterectomy in NZ (C-Gyn 8b)

- This new Statement is in addition to the existing College Statement *Vaginal screening after hysterectomy in Australia (C-Gyn 8a)* to outline NZ recommendations which differ from those in Australian Cervical Screening Guidelines.

Revised College Statements

The following College statements were recently approved by RANZCOG Council and Board:

Altruistic and directed umbilical cord blood banking for families at risk (C-Obs 18)

- Minor wording changes only

Cervical cancer screening in Australia and New Zealand (C-Gyn 19)

- Recommendations amended in line with 2020 NZ Cervical Screening Guidelines

Gynaecological examinations and procedures (C-Gyn 30)

- Rewrite

Midurethral slings (C-Gyn 32)

- Rewrite

Locum positions in specialist obstetric and gynaecological practice (WPI 12)

- Minor wording changes only

College Members participating in the RANZCOG expert witness register (C-Gen 1)

- Rewrite

Retired College Statements

The following statements have been retired:

Antenatal care in Australian public hospitals (WPI 10)

- Information is covered in the College document Maternity Care in Australia.

Credentialing for GP Obstetricians and Rural Non-Specialist Obstetricians practising obstetrics in Australia (WPI 6)

A full list of College Statements can be viewed on the Statements and Guidelines page of the RANZCOG website (ranzcog.edu.au/statements-guidelines) and the RANZCOG Guidance app.

RANZCOG Patient Information

There are 41 RANZCOG Patient Information Pamphlets, including the Pregnancy and Childbirth pack of 18 pamphlets. All of these products can be viewed and ordered from: www.ranzcog.edu.au/Womens-Health/Patient-Information-Guides/Patient-Information-Pamphlets.

Prof Yee Leung

Chair

RANZCOG Women's Health Committee



Want to read more?
Find similar articles when
you explore online.

ogmagazine.org.au

Remembering Our Fellows

Our College acknowledges the life and career of Fellows that have passed away:

- Dr Benjamin Azuka Onyeka, Vic
1 May 2020
- Dr Francis Clement Chapman, NSW,
12 May 2020
- Dr Arthur Joseph Day, Vic,
25 May 2020
- Dr John Cunningham Anderson, NSW,
26 May 2020
- Dr Biswanath Mukerjee, ACT,
10 July 2020
- Dr Gytha Wade Betheras, Vic,
31 July 2020