



House of Representatives Inquiry into Diabetes

ACM Submission

Issued September 2023

House of Representatives Inquiry into Diabetes – ACM Submission

The Australian College of Midwives

The Australian College of Midwives (ACM) is the peak professional body for midwives in Australia and welcomes the opportunity to provide a written submission to the *House of Representatives Inquiry into Diabetes*. ACM represents the professional interests of midwives, supports the midwifery profession to enable midwives to work to full scope of practice, and is focused on ensuring better health outcomes for women, babies, and their families. ACM is committed to growth of the midwifery profession, midwifery leadership and strengthening and enhancing the opportunities for midwives. Better outcomes for women, include the right to access respectful maternity care, and the care of their choice, close to home. This also includes high quality care around diabetes diagnosis and management.

Midwives are primary maternity care providers working directly with women and families, in public and private health care settings across all geographical regions. There are over **33 000** midwives in Australia. The maternity care system, as with other areas of health, faces significant challenges, further exacerbated by the global Covid-19 pandemic¹.

ACM notes the publication of the Australian National Diabetes Strategy by the Australian Government Department of Health in 2021², identifying diabetes as a multi-system disorder with a prevalence in Australia that requires a national response and sustained action. ACM also notes the omission of Midwives as providers of primary and preventative maternity health care in this strategy. Approximately 1.3 million people in Australia are living with diabetes³. 53 900 women (more than 1 in 6 or 17.9%) were diagnosed with gestational diabetes in 2020-21⁴, one of the now most common medical complications of pregnancy. Further, ACM recognises the National Preventive Health Strategy (2021)⁵ as a key document to support improving outcomes for women and babies, in particular the prioritisation of breastfeeding and the positive impacts this has on obesity, diabetes, heart disease and reducing the overall impact of burden of chronic disease across the lifespan.

Consent to publish and provide evidence at a hearing

ACM consents to this submission being published in its entirety, including names and is available to present and give evidence at hearing, if called upon.

Terms of Reference

This submission will address all the terms of reference identified by the Select Committee, with a particular focus on *gestational diabetes mellitus (GDM)*.

Summary of ACM's Recommendations:

The Australian National Diabetes (2021 – 2030) Strategy cites 7 Goals²:

1. Prevent people developing type 2 diabetes
2. Promote awareness and earlier detection of type 1 and type 2 diabetes
3. Reduce the burden of diabetes and its complications and improve quality of life
4. Reduce the impact of pre-existing and gestational diabetes in pregnancy
5. Reduce the impact of diabetes among Aboriginal and Torres Strait Islander peoples
6. Reduce the impact of diabetes among other priority groups
7. Strengthen prevention and care through research, evidence, and data.

The Australian College of Midwives recommends the following priority areas to achieve the 7 goals;

- Prioritise and standardise **clinical** evidence based gestational diabetes testing and management criteria.
- Alignment of **National strategies** and policy work with implementation plans impacting diabetes/gestational diabetes management;
- Investment in equity and access to **preventative and primary care** management of diabetes/gestational diabetes in Australia.
- Prioritisation of **workforce** strategy, initiatives and incentives impacting diabetes management
- Investment in **Maternity Service Reform, in particular** prioritising rural and remote maternity care and Aboriginal and Torres Strait Islander women and families.
- **Universal application of the Baby Friendly Health Initiative (BFHI)** as a public health strategy.
- Health professional and consumer **education** with focus on improving health literacy.

Individual and targeted recommendations are included in each terms of reference response below, with a focus on Midwives as primary health care professionals, continuity of midwifery care models including [Birthing on Country](#), and universal access to maternity, sexual & reproductive and child, maternal & family health regardless of geographical location.

Terms of Reference

1. The causes of diabetes (type 1, type 2 and gestational) in Australia, including risk factors such as genetics, family history, age, physical inactivity, other medical conditions and medications used.

There is widespread, but not universal consensus on the diagnostic criteria for GDM in Australia⁶. The number of women being diagnosed with GDM has doubled over the last 10 years, which is often attributed to an increasing maternal age in pregnancy and increasing body mass index (BMI), however some data across Australia challenges this theory with reducing antenatal BMIs over a 10-year period from 2008 - 2017⁷.

Consideration for the increase in diagnoses of gestational diabetes, however, must also be given to the changing definitions or thresholds of GDM⁸. Queensland, for example, has a lower fasting blood glucose level of 5.0mmol/L, compared to other states and countries at 5.3mmol/L, posing the question ***Do the extra 6-7% of women diagnosed benefit or not?***

There are a range of notable risk factors for developing Gestational Diabetes. Women more likely to be diagnosed with GDM are those who:

- identify as Aboriginal and/or Torres Strait Islander (1.3 times higher than women who do not)⁹
- live in *remote* (1.1 times) and *very remote* (1.2 times) locations⁹
- live in the lowest socioeconomic areas (1.6 times)⁹
- BMI > 30 kg/m² (pre-pregnancy or on entry to care),
- ethnicity (Asian, Indian subcontinent, Pacific Islander, Māori, Middle Eastern, black African)⁸
- maternal age ≥ 42 years
- polycystic ovarian syndrome
- family history
- medications and
- other endocrine disorders.

In relation to pregnancy;

- previous GDM, previous elevated blood glucose level (BGL) and previous high HbA1c are all risk factors alongside a previous macrosomia baby (birth weight > 4500 g or > 90th percentile), a

history of hypertensive disorders of pregnancy within 5-10 years of affected pregnancy and multiple pregnancy⁶.

There is a growing body of evidence to suggest a relationship between Covid-19 and new onset diabetes¹⁰. During Covid-19, there were also changes to usual testing criteria aimed at reducing the need for women to undergo the full oral glucose tolerance test (OGTT) when risk of covid-19 infection was elevated by attending hospitals or pathology clinics¹¹. The COVID-19 pandemic in Queensland saw a rapid change as a response to promoting hospital avoidance from the OGTT to a recommended HbA1c in the first trimester, and a fasting blood glucose between 24- and 28-weeks' gestation. If the fasting was between 4.7 – 5.0 mmol/L, progress to an OGTT, with a diagnosis of GDM equal to or greater than 5.1 mmol/L. This highlights two factors –

1. The rapid ability to alter GDM testing methods and
2. A further inconsistency in diagnostic criteria (5.1mmol/L) differed from national and international recommendations (5.3 mmol/L) and the Qld pre-Covid reduced criteria of 5.0mmol/L¹¹.

Type 2 diabetes was historically diagnosed over 45 years of age, however there are now children as young as 10 years being diagnosed with type 2 diabetes². Increased prevalence of diabetes places an increased burden on women, and the healthcare system⁸.

One of the challenges of gestational diabetes management is the number of women with undiagnosed type 2 diabetes presenting with elevated BGL's and diagnosed as GDM during pregnancy⁶. Current fragmented care models and pathways restrict a woman diagnosed with GDM's access to continuity of midwifery carer models due to the diagnosis placing the pregnancy at higher risk. Continuity of midwifery care (CoMC) such as Midwifery Group Practice (MGP) provides support and navigation through the referral process to include endocrinologists, obstetricians, diabetes educators and Aboriginal & Torres Strait Islander Health workers for example, while still supporting additional improved maternal and neonatal outcomes such as established breastfeeding, positive birth experience, healthy birthweights, and birth at term gestation. Women with or developing diabetes during pregnancy require personalised midwifery care to receive the benefits of CoMC¹². It is essential that women are advised of these benefits for themselves and their babies and CoMC continues into the postnatal period. Midwives are the social

connectors in the community¹³ and individualise care according to each woman's needs to incorporate the multidisciplinary team close to home¹⁴.

In the Australian context, the impact on Aboriginal and Torres Strait Islander women and families and additionally all women living in rural and remote communities is of significance. Lifestyle factors, lack of access to fresh food supply, health professionals for maternity care, chronic disease management close to home as well as social determinants of health contribute to or exacerbate impacts of diabetes and its ongoing management. More than 60 per cent of Aboriginal and Torres Strait Islander women and families live outside the metropolitan area¹⁵ and Aboriginal and Torres Strait Islander women are ten times more likely to have pre-existing type 2 diabetes and 1.3 times more likely to be diagnosed with gestational diabetes than non-Indigenous women¹⁶.

Breastfeeding plays a preventive role in developing diabetes. Breastfeeding for greater than 12 months is related with a relative risk reduction of 30% for diabetes and 13% for hypertension and therefore associated with long-term cardiovascular health benefits for women¹⁷. Exclusive breastfeeding for the first 3 months postnatal results in a lower risk of developing diabetes compared with mothers who mixed feed and formula feed. Education and promotion of breastfeeding is a low-risk intervention that should be scaled up by Government. The [Baby Friendly Health Initiative](#) (BFHI) is an established foundation to leverage¹⁸.

The Baby Friendly Health Initiative (BFHI) is a joint World Health Organisation (WHO) and UNICEF project that aims to create a healthcare environment where breastfeeding is the norm, and practices known to promote the well-being of all mothers and infants are promoted. BFHI is managed by the Australian College of Midwives and is primary recommendation of the [National Breastfeeding Strategy](#)⁴⁵. It has not as yet been implemented nationally, although Tasmania do mandate it in their services.

The [Ten Steps to Successful Breastfeeding](#) are the global criteria against which maternity facilities are assessed and accredited¹⁹. The role of the BFHI in Australia is to protect, promote and support breastfeeding. This is achieved by providing a framework for Baby Friendly hospitals to operate within based on the Ten Steps to Successful Breastfeeding. Once implemented, these standards ensure all mothers and babies receive appropriate support and contemporary information in both the antenatal and postnatal period, regarding infant care and feeding.

Recommendation:

- Investment in equity and access to **preventative and primary care** management of diabetes/gestational diabetes in Australia with prioritisation of the following
 - Rural and remote maternity care – [Modified Monash Model](#) (MMM) 3-7²⁰
 - Improved maternal and neonatal outcomes for Aboriginal and Torres Strait Islander women and babies through [Closing the Gap](#) health measures²¹
 - Increased access to continuity of midwifery care and birthing on country models of maternity care for women with gestational diabetes, supported with access to multidisciplinary wrap around diabetic care
 - Child, Family and Maternal Health across the first 2000 days with a focus on health promotion

- Implementation of Priority 2.1 of the [National Breastfeeding Strategy](#)⁴⁵ and furthermore required implementation and Government funding for ACM to oversee and manage mandatory roll out of **Baby Friendly Health Initiative (BFHI)** nationally aligned with national Health Service accreditation to prioritise and promote breastfeeding as a public health strategy.

- Prioritise health professional and consumer **education** with focus on improving health literacy through
 - Implementation of the [National Health Reform Agreement](#) Schedule C29 – 39 as an immediate priority²²
 - The Australian Government invests in funding the Australian College of Midwives to develop a suite of online gestational diabetes learning modules which will be freely available at no cost to all midwives in Australia
 - Improved health literacy for diabetes through the development of culturally appropriate gestational diabetes information available in multiple languages as per NHRA²²
 - Inclusion of evidence based gestational diabetes information in the living evidence consortium pregnancy and postnatal care [LEAPP guidelines](#)²³

2. New evidence-based advances in the prevention, diagnosis and management of diabetes, in Australia and internationally.

Diagnostic testing for GDM in relation to reproducibility (getting a positive diagnosis on separate or consecutive occasions) has come into question, for example when the woman has undergone an 'early gestation' glucose tolerance test, is unwell at the time of screening, has not followed recommended pre-test criteria such as fasting and (high carbohydrate) meal choice or when women a woman has requested a 're-test' due to a borderline result that has harnessed different results when repeated. This suggests diagnosis may be inaccurate particularly where the woman is close to the diagnostic cut off point value.

A randomised control trial (RCT) of gestational diabetes screening comparing one step screening with two step screening found no significant between-group differences in the risks of primary outcomes relating to perinatal and maternal complications²⁴.

- large-for-gestational-age infants, 8.9% vs 9.2%
- perinatal composite outcome, 3.1% vs 3%
- gestational hypertension or pre-eclampsia, 13.6% vs 13.5%
- primary caesarean section, 24% vs 24.6%

Further, a lower versus higher glycaemic criteria for diagnosis of gestational diabetes RCT study found the use of lower glycaemic criteria for the diagnosis of GDM did not result in a lower risk of a large-for-gestational-age infant than the use of the higher glycaemic criteria. The lower-glycaemic criteria in this study resulted in higher rates of induction of labour, use of health services, use of pharmacological agents and neonatal hypoglycaemia²⁵.

The one-step approach is a single fasting two-hour 75 g oral glucose tolerance test, with blood sugars checked at fasting, one hour, and two hours. Diagnosis is confirmed if one or more values is positive. The two-step approach involves a non-fasting one-hour 50 g glucose challenge test. If the result is positive, the test is followed by a fasting three-hour 100 g oral glucose tolerance test, with values checked at fasting and one, two, and three hours²⁶.

While there is no approved indication in pregnancy, metformin is increasingly being used for the treatment of GDM. Metformin is most used for the treatment of T2DM when lifestyle modifications have failed, and is commonly prescribed off-label to manage symptoms of polycystic ovary syndrome (PCOS)²⁷.

ACM midwife members contributed as reviewers and noted that the impact of a gestational diabetes diagnosis can have an overwhelming effect on women, with monitoring, stress and for some women, stigma, shame, and guilt changing the entire management, course, and woman's experience of her pregnancy⁴⁸. Further, GDM limits model of care choice, hospital or location of birth choice and non-pharmacological pain relief options such as access to water immersion and water birth. In the clinical practice setting, the main points of difference are the significant impact of gestational diabetes treated with medication versus diet control and the management plan for labour and birth – including increased rates of induction of labour and routine blood glucose monitoring of the newborn baby after birth^{28,29}.

There are no clear guidelines in Australia for testing of children with mothers of gestational diabetes. Postnatal HbA1c follow up is poor³⁰. Consideration is required to enabling follow up for women at no cost to the woman, and without the requirement of visiting a General Practitioner. Midwives are well placed to provide this service, including drop-in services at community centres/training health professionals to complete via point of care/access to point of care equipment, particularly for women in rural and remote areas.

The Telethon Kids Institute in Western Australia is conducting research into Diabetes, aiming to improve the lives of children and adolescents affected by these conditions, however, there remains opportunity to include studies on type 2 diabetes in children³¹ (**Australian Research opportunity:** Australian National Diabetes Strategy Goal 7 - Strengthen prevention and care through research, evidence, and data).

Consideration needs to be given to address the identified gaps in knowledge of healthcare providers of the long-term health risks following hypertensive disorders in pregnancy and diabetes in pregnancy or gestational diabetes³². In addition, how this relates to the provision of long-term care and follow-up and the promotion of integrated care between primary health and tertiary level complex models of care. Consumer education and follow-up programs in the postnatal period are currently being reviewed by Midwifery researchers that align with research in this area to explore the most effective interventions to reduce long-term health risks. This demonstrates the value of midwives in preventive health care and research leadership.

Recommendation:

- Prioritise *clinical* evidence based gestational diabetes testing and management criteria
 - Ensure gestational diabetes diagnostic thresholds are not too low.
 - Development and provision of clear national clinical guideline around one and two-step testing criteria to improve reproducibility and thus reliability of gestational diabetes testing.
 - Revert to routine gestational diabetes testing at 24-28 weeks gestation rather than the current 20 weeks until there is clear clinical evidence of benefit versus harm for women of higher risk being tested early.
 - Establish defined postnatal follow up practice for both mother and baby following a GDM diagnosis.
 - Reduce birth trauma risk and the burden of gestational diabetes diagnosis through improving access to perinatal mental health services and continuity of midwifery care models.

3. The broader impacts of diabetes on Australia's health system and economy.

Along with the impact of ongoing maternity service closure and bypass across Australia³³, particularly in rural and regional areas, costs for health services are increased when women are not supported to adequately manage their health. GDM, when not well managed, may result in poorer health outcomes over the life course for women and babies and therefore diabetes has a significant impact on the wider healthcare system and economy. Close consideration and scrutiny need to be given to the initial diagnosis and ongoing management of same, ensuring a balance between over and underdiagnosing GDM.

There is an estimated \$3.1 billion health expenditure attributed to diabetes in Australia annually³⁴. Preventive approaches and delaying the onset of diabetes through investment in primary care, rural health and birthing on country models will show a return on investment.

Financial Cost of gestational *diabetes* to the healthcare system was an estimated \$63.6 million. When compared to normal birth, GDM costs include³⁴;

- Cost of interventions –
 - increased ultrasound scans,
 - increased pathology,
 - increased medical consultations,
 - increased length of stay (LOS) KPI in hospital
 - Cost of complex birth item for private obstetrics (women with diabetes with medical management).
 - Cost of ‘cascade of intervention’ i.e., if woman is induced, leads to pharmacological pain relief, may lead to intervention in birth (operative vaginal birth +/- caesarean section)
 - Cost of diabetes and complications of diabetes in many populations.

Financial, Physical, cultural and psychosocial cost of *diabetes* to women;

- Cost of medication
- Cost of testing equipment
- Increased length of stay (LOS)
- Cost of travel and accommodation for increased antenatal visits if in rural and remote areas
- Separation of mother and baby if special care nursery admission required
- Delayed establishment of breastfeeding, supply
- Women not able to access their preferred model of care
- Potential risk of birth trauma
- Culturally and linguistically diverse women experience challenges in applying lifestyle and dietary advice and changes to their cultural practice and philosophy.

Recommendations

- Prioritisation of ***workforce*** strategy, initiatives and incentives impacting diabetes management.
 - Prioritisation of funding for the development and implementation of the National Maternity Workforce Review – (under scoping phase led by Queensland, NT and ACT).

- Recognition of the scope of practice and role Midwives and Endorsed Midwives in primary maternity and preventive health care provision through the [Unleashing the Potential of our Health Workforce](#) – Scope of Practice Review³⁵.
- **Maternity Service Reform** through;
 - [National Health Reform Agreement](#) recommendations and funding reform²²
 - Prioritisation of the [National Rural Maternity Forum](#) consensus priorities³⁶
 1. Rural birthing services should be an agenda item for the upcoming National Cabinet focused on health.
 2. Expansion of the RISE framework to increase Birthing on Country and strengthen rural and remote maternity care.
 3. Secure funding for a National Maternity Workforce Plan with implementation.
 4. Establish minimum standards for rural maternity care access and service.
 5. Review and update the National Consensus Framework for Rural Maternity Services.
 - Implementation of the [MBS Taskforce Participating Midwives Reference Group](#) recommendations in particular items 1, 3 and 10 which remain unfunded despite recommendation³⁷.
 - Expansion of [PBS items for midwives](#) for example, access for endorsed midwives to include oral hypoglycemics³⁸.

4. Any interrelated health issues between diabetes and obesity in Australia, including the relationship between type 2 and gestational diabetes and obesity, the causes of obesity and the evidence-base in the prevention, diagnosis and management of obesity; and

The preconception and antenatal period are an important opportunity to provide access to education to women and families about risk factors related to developing type 2 diabetes and gestational diabetes, including lifestyle interventions that may protect their health and the health of their newborns in the future. In addition to weight loss, smoking cessation, and exercise, breastfeeding should also be prioritised due to its significant benefit¹⁷. Continuity of Midwifery Carer models are the gold standard of care which provides a trusted relationship with a known carer that can prioritise this; this is particularly true also of Birthing on Country care for Aboriginal and Torres Strait Islander women.

Food security is a significant issue⁵. Women with socio-economic disadvantage, priority populations; women living with family violence; or living in rural and remote locations may not have access to foods that support GDM prevention over the life course or management of GDM through dietary change. Medication or monitoring equipment co-payment may be prohibitive, even with NDIS/PBS and medication storage, particularly insulin, always requires reliable refrigerated storage which some women do not have access to.

There is a clear link between poorly managed GDM and adverse long- and short-term outcomes for women and the fetus³⁹. Health service economic impacts from poor GDM management include increased^{5,34}:

- numbers of women with complicated pregnancy requiring higher level health services.
- special care nursery admissions.
- birth injury/anomalies.
- numbers of women at risk for development of chronic disease.
- premature birth.
- numbers of newborns at risk for development of chronic disease and obesity across the lifespan.
- increasing numbers of young people with diabetes through intergenerational impacts.

Fetal exposure to metformin in utero during pregnancy and the association to short- and long-term outcomes such as childhood obesity are limited and rarely assessed on a whole of country level²⁷. Findings from a small RCT running across six years in Canada and Australia showed that metformin used in pregnancy resulted in no adverse neonatal outcomes. However, the metformin exposed infants weighed less than the placebo control group. In addition, the metformin-treated women achieved better glycaemic control, required less insulin, gained less weight, and had fewer caesarean sections⁴⁰. A study comparing metformin exposure to combination exposure of metformin and insulin found there was no association with long-term increased risk of obesity, hypoglycaemia, hyperglycaemia, diabetes, or social/motor development compared with insulin alone. There was however significantly increased risk of being small for gestational age associated with exposure to metformin, compared with insulin²⁷. This finding, when combined with the risk of stillbirth in small for gestational age babies should be considered in applying routine testing and lower thresholds for GDM diagnostic criteria⁴¹.

Recommendations as per Question 1:

- Implementation of Priority 2.1 of the [National Breastfeeding Strategy](#)⁴⁵ and furthermore required implementation and Government funding for ACM to oversee and manage mandatory roll out of **Baby Friendly Health Initiative (BFHI)** nationally aligned with national Health Service accreditation to prioritise and promote breastfeeding as a public health strategy.
- Prioritise health professional and consumer **education** with focus on improving health literacy through
 - Implementation of the [National Health Reform Agreement](#) Schedule C29 – 39 as an immediate priority²².
 - The Australian Government invests in funding the Australian College of Midwives to develop a suite of online gestational diabetes learning modules, **including impact of obesity** which will be freely available at no cost to all midwives in Australia.
 - Improved health literacy for diabetes through the development of culturally appropriate gestational diabetes information available in multiple languages as per NHRA²².
 - Inclusion of evidence based gestational diabetes information in the living evidence consortium pregnancy and postnatal care [LEAPP guidelines](#)²³.

5. The effectiveness of current Australian Government policies and programs to prevent, diagnose and manage diabetes.

The [Australian National Diabetes Strategy](#) 2021-2030 and funding initiatives announced in the 2023-24 federal budget regarding Aboriginal and Torres Strait Islander Health, chronic disease management, multi-disciplinary care, [My Health Record](#)⁴², are positive first steps. High-level strategies require implementation plans and measures to be developed, implemented, monitored, and assessed to be effective². Furthermore, investment in flexible models of care provided by multi-disciplinary teams for diabetes management can;

- Increase uptake and use of telehealth and virtual care (where clinically appropriate) to strengthen seamless and coordinated connected care⁴³.
- leverage workforce initiatives to improve shortages and maldistribution of all health professionals in rural areas:

Discontinue ineffective policies and programs for re-investment into innovative and evidence-based initiatives.

- Address the barriers of poor digitisation⁴³ and telecommunication access in rural and remote areas.
- Maintain existing and continuously improve mental health support for people diabetes diagnoses.

Recommendation:

- Alignment of **National strategies** and policy work with implementation plans impacting diabetes/gestational diabetes management;
 - [Woman-centred Care Strategy](#)⁴⁴
 - Australian [National Breastfeeding](#) strategy⁴⁵
 - Australian National [Diabetes Strategy](#)²
 - Australia's [Primary Health Care – 10 Year Plan](#)⁴³
 - [National Preventive Health Strategy 2021-2030](#)⁵
- Prioritisation of care closer to home through utilisation of telehealth and hub and spoke models of care and access to a broad multidisciplinary team including midwives, medical officers, nurses, allied health professionals and Aboriginal and Torres Strait Islander health workers .

Conclusion

There are increasing numbers of women being diagnosed with GDM. Driving factors include new guidelines lowering diagnostic criteria; increased maternal age; higher rates of increased BMI; population growth of at-risk ethnicity in Australia⁷ and structural health system inequities.

Of concern is the disparities that exist in current GDM rates that have been created through the complex interplay of health and social determinants. Human rights include access to services that enable the highest attainable standard of health⁴⁶. Best care for women with GDM is equitable access to multidisciplinary health care teams, which must be inclusive of midwives⁴⁷ and as close to home as possible. Midwifery care and midwifery models are recognised as a socially responsive way to ameliorate social disadvantage and existing risks from GDM.

The Australian College of Midwives seeks ongoing commitment from state and federal governments to prioritise access to midwives, midwifery care and midwifery continuity of carer for women with GDM. Access to affordable services, closer to home, is required for women living in rural and remote regions in Australia.

Thank you for the opportunity to make this submission.



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Appendix A – Definitions / Glossary of Terms

Definitions/Glossary	
AIHW	Australian Institute of Health and Welfare (AIHW)
Continuity of Care	A team of caregivers working within the same philosophy and framework and sharing information however there is an absence of a designated named carer ⁵⁰ .
Continuity of Carer	Defined as ‘relational continuity’ or ‘one-to-one care’ provided by the same named caregiver who is involved throughout the period of care even when other caregivers are required. A defining requirement of ‘continuity of carer’ model is that the care is provided or led over the full length of the episode of care by the same named carer ⁵⁰ .
Diabetes – Type 1	Type 1 diabetes is an autoimmune condition where the body’s own immune system is activated to destroy the beta cells in the pancreas which produce insulin ⁴⁹ .
Diabetes – Type 2	Type 2 diabetes is a condition in which the body becomes resistant to the normal effects of insulin and gradually loses the capacity to produce enough insulin in the pancreas. The condition has strong genetic and family-related (non-modifiable) risk factors and is also often associated with modifiable lifestyle risk factors ⁴⁹ .
Diabetes in pregnancy (DIP)	Hyperglycaemia onset or first recognition during pregnancy. Plasma glucose levels exceed the threshold(s) for diagnosis of diabetes outside pregnancy. May indicate undiagnosed or pre-existing diabetes outside pregnancy, but a definitive diagnosis of non-gestational diabetes cannot be made until the postpartum period. Additional management (beyond that required for lower abnormal plasma glucose levels) is required ⁸ .
Gestational Diabetes Mellitus (GDM)	Glucose intolerance with onset or first recognition during pregnancy. Elevated plasma glucose levels less severe than overt diabetes ⁸ .
HbA1c	Glycated haemoglobin. This test measures the amount of blood sugar (glucose) attached to your haemoglobin over the past few months compared to the glucose tolerance test which measures how much glucose is in the blood at that moment. Used to diagnose and monitor type 2 diabetes.
Hyperglycemia	High blood glucose levels ⁴⁹ .
Hypoglycemia	Low blood glucose levels ⁴⁹ .
Metformin	First line monotherapy for type 2 diabetes mellitus (T2DM) after failure of lifestyle modifications in all major guidelines, and the most prescribed pharmacological management for T2DM worldwide.
MGP	Midwifery Group Practice.
Polycystic Ovarian Syndrome (PCOS)	PCOS is a condition that affects the body’s production of insulin and testosterone, a male hormone that women produce in small amounts ⁴⁹ .
Pre-diabetes	A condition in which blood glucose levels are higher than normal but not high enough to be diagnostic of diabetes. Includes impaired fasting glucose, and/or impaired glucose tolerance. Diagnosis is established outside of pregnancy (before or after) ⁸ .

References

1. Bradfield Z, Hauck Y, Homer CSE, Sweet L, Wilson AN, Szabo RA, Wynter K, Vasilevski V, Kuliukas L. Midwives' experiences of providing maternity care during the COVID-19 pandemic in Australia. *Women Birth*. 2022 May;35(3):262-271. doi: 10.1016/j.wombi.2021.02.007. Epub 2021 Mar 15. PMID: 33752996; PMCID: PMC9051255.
2. Australian Government (2021). Australian National Diabetes Strategy 2021-2030. Retrieved from https://www.health.gov.au/sites/default/files/documents/2021/11/australian-national-diabetes-strategy-2021-2030_0.pdf
3. Australian Institute of Health and Welfare (n.d.) Retrieved from <https://www.aihw.gov.au/reports/diabetes/diabetes/contents/summary>
4. Australian Institute of Health and Welfare (2023) Gestational Diabetes. Retrieved from <https://www.aihw.gov.au/reports/diabetes/diabetes/contents/total-diabetes/gestational-diabetes>
5. Australian Government. National Preventive Health Strategy (2021). Retrieved from https://www.health.gov.au/sites/default/files/documents/2021/12/national-preventive-health-strategy-2021-2030_1.pdf
6. Australian Institute of Health and Welfare. (n.d). Retrieved from <https://www.aihw.gov.au/reports/diabetes/diabetes/contents/how-common-is-diabetes/gestational-diabetes>
7. Queensland Government. Statistical Services Branch. (2019). *Maternal overweight and obesity in Queensland, 2008 to 2017*. Retrieved from https://www.health.qld.gov.au/_data/assets/pdf_file/0029/929540/statbite79.pdf
8. Queensland Health. (2021) Queensland Clinical Guidelines. *Gestational diabetes mellitus*. Retrieved from https://www.health.qld.gov.au/_data/assets/pdf_file/0022/950503/g-gdm.pdf
9. AIHW. Retrieved from <https://www.aihw.gov.au/reports/diabetes/diabetes-australian-facts/contents/how-common-is-diabetes/gestational-diabetes>
10. Chourasia, P., Goyal, L., Kansal, D., Roy, S., Singh, R., Mahata, I., Sheikh, A. B., & Shekhar, R. (2023). Risk of new-onset diabetes mellitus as a post-covid-19 condition and possible mechanisms: A scoping review. *Journal of Clinical Medicine*, 12(3), 1159. <https://doi.org/10.3390/jcm12031159>
11. Queensland Clinical Guidelines. (2022). Frequently Asked Questions GDM screening and testing during COVID-19. Retrieved from https://www.health.qld.gov.au/_data/assets/pdf_file/0031/951457/o-gdm-covid-faq.pdf
12. Sandall, J., Soltani, H., Gates, S., Shennan, A., & Devane, D. (2016). Midwife-led continuity models versus other models of care for childbearing women. *The Cochrane database of systematic reviews*, 4(4), CD004667. <https://doi.org/10.1002/14651858.CD004667.pub5>
13. Davies, L., & Crowther, S. (2020, July 29). *The Midwife as Social Connector: 5 : V2: Sustainability, midwifery*. A. Taylor & Francis. <https://www.taylorfrancis.com/chapters/edit/10.4324/9780429290558-5/midwife-social-connector-lorna-davies-susan-crowther>
14. Royal College of Midwives. (2023). Retrieved from https://www.rcm.org.uk/media/6330/caring-for-pregnant-with-pre-existing-and-gestational-diabetes_digital.pdf
15. AIHW. Retrieved from <https://www.aihw.gov.au/reports/australias-health/profile-of-indigenous-australians#>
16. AIHW. Incidence of gestational diabetes in Australia. Retrieved from <https://www.aihw.gov.au/reports/diabetes/incidence-of-gestational-diabetes-in-australia/contents/gestational-diabetes-incidence>
17. Rameez RM, Sadana D, Kaur S, et al. Association of Maternal Lactation With Diabetes and Hypertension: A Systematic Review and Meta-analysis. *JAMA Netw Open*. 2019;2(10):e1913401. doi:10.1001/jamanetworkopen.2019.13401
18. Baby Friendly Health Initiative (2023). Retrieved from <https://bfhi.org.au/>
19. World Health Organisation. (2023). *Nutrition and Food Safety – 10 Steps to Successful Breastfeeding*. Retrieved from <https://www.who.int/teams/nutrition-and-food-safety/food-and-nutrition-actions-in-health-systems/ten-steps-to-successful-breastfeeding>

20. Australian Government. (2023). *Modified Monash Model*. Retrieved from <https://www.health.gov.au/topics/rural-health-workforce/classifications/mmm>
21. Australian Government. (2023). *Closing the Gap health measures*. Retrieved from <https://www.health.gov.au/topics/aboriginal-and-torres-strait-islander-health/how-we-support-health/closing-the-gap-health-measures>
22. Australian Government. (2023). 2020-25 National Health Reform Agreement (NHRA) Retrieved from <https://www.health.gov.au/our-work/2020-25-national-health-reform-agreement-nhra>
23. Australian Living Evidence Collaboration. (2023) *New Living Clinical Practice Guidelines for Pregnancy and Postnatal Care*. Retrieved from <https://livingevidence.org.au/news/2023/5/10/new-living-clinical-practice-guidelines-for-pregnancy-and-postnatal-care>
24. Hillier TA, Pedula KL, Ogasawara KK, Vesco KK, Oshiro CES, Lubarsky SL, Van Marter J. A Pragmatic, Randomized Clinical Trial of Gestational Diabetes Screening. *N Engl J Med*. 2021 Mar 11;384(10):895-904. doi: 10.1056/NEJMoa2026028.
25. Crowther CA, Samuel D, McCowan LME, Edlin R, Tran T, McKinlay CJ; GEMS Trial Group. Lower versus Higher Glycemic Criteria for Diagnosis of Gestational Diabetes. *N Engl J Med*. 2022 Aug 18;387(7):587-598. doi: 10.1056/NEJMoa2204091
26. Rani PR, Begum J. Screening and Diagnosis of Gestational Diabetes Mellitus, Where Do We Stand. *J Clin Diagn Res*. 2016 Apr;10(4):QE01-4. doi: 10.7860/JCDR/2016/17588.7689. Epub 2016 Apr 1. PMID: 27190902; PMCID: PMC4866200.
27. Brand KMG, Saarelainen L, Sonajalg J, et al. Metformin in pregnancy and risk of adverse long-term outcomes: a register-based cohort study. *BMJ Open Diab Res Care* 2022;10:e002363. doi:10.1136/bmjdr-2021-002363
28. Li X, Li TT, Tian RX, Fei JJ, Wang XX, Yu HH, Yin ZZ. Gestational diabetes mellitus: The optimal time of delivery. *World J Diabetes*. 2023 Mar 15;14(3):179-187. doi: 10.4239/wjd.v14.i3.179. PMID: 37035228; PMCID: PMC10075038.
29. Government of Western Australia. (2020). *KEMH Clinical Guideline. Neonatology Hypoglycaemia*. Retrieved from <https://www.kemh.health.wa.gov.au/~media/HSPs/NMHS/Hospitals/WNHS/Documents/Clinical-guidelines/Obs-Gyn-Guidelines/Hypoglycaemia.pdf?thn=0>
30. National Library of Medicine. Mother To Baby | Fact Sheets [Internet]. Brentwood (TN): Organization of Teratology Information Specialists (OTIS); 1994-. Gestational Diabetes. 2023 Apr. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK582729/>
31. Telethon Kids Institute. (2023) Type 1 Diabetes. Retrieved from https://www.telethonkids.org.au/our-research/research-topics/diabetes-type-1/?gad=1&gclid=EAlaQobChMIg4PZ64jrgAMVfWfYCh3xzgRIEAAyAAEgKYIPD_BwE
32. Frier, A., Devine, S., Barnett, F., & Dunning, T. (2019). *Utilising clinical settings to identify and respond to the social determinants of health of individuals with type 2 diabetes – A review of the literature*. Retrieved from <https://onlinelibrary.wiley.com/doi/full/10.1111/hsc.12932>
33. Bradow J, Smith SD, Davis D, Atchan M. A systematic integrative review examining the impact of Australian rural and remote maternity unit closures. *Midwifery*. 2021 Dec;103:103094. doi: 10.1016/j.midw.2021.103094. Epub 2021 Jul 14. PMID: 34329966.
34. AIHW. (2023). *Diabetes: Australian Facts*. Retrieved from <https://www.aihw.gov.au/reports/diabetes/diabetes/contents/impact-of-diabetes/health-system-expenditure>
35. Australian Government. (2023). *Unleashing the Potential of our Health Workforce – Scope of Practice Review*. Retrieved from <https://www.health.gov.au/our-work/scope-of-practice-review>
36. Rural Doctors Association Australia and Australian College of Midwives. (2023). Joint media release – National forum delivers key solutions for rural birthing challenges. Retrieved from <https://www.rdaa.com.au/common/Uploaded%20files/ Aus/Media%20releases%20-%202023/MR%20-%20National%20forum%20delivers%20key%20solutions%20for%20rural%20birthing%20challenges%20-%20final%20-%202030-8-23.pdf>

37. Australian Government. (2023). Taskforce findings – Participating Midwives Reference Group report. Retrieved from <https://www.health.gov.au/resources/publications/taskforce-findings-participating-midwives-reference-group-report?language=en>
38. Australian Government. (2023). The Pharmaceutical Benefits Scheme. *Browse by Midwife Items*. Retrieved from <https://www.pbs.gov.au/browse/midwife>
39. Rodolaki K, Pergialiotis V, Iakovidou N, Boutsikou T, Iliodromiti Z, Kanaka-Gantenbein C. The impact of maternal diabetes on the future health and neurodevelopment of the offspring: a review of the evidence. *Front Endocrinol (Lausanne)*. 2023 Jul 3;14:1125628. doi: 10.3389/fendo.2023.1125628. PMID: 37469977; PMCID: PMC10352101.
40. Feig, D. S., Donovan, L. E., Zinman, B., Sanchez, J. J., Asztalos, E., Ryan, E. A., Fantus, I. G., Hutton, E., Armson, A. B., Lipscombe, L. L., Simmons, D., Barrett, J. F., Karanicolas, P. J., Tobin, S., McIntyre, H. D., Tian, S. Y., Tomlinson, G., Murphy, K. E., Feig, D., ... Mangoff, K. (2020). Metformin in women with type 2 diabetes in pregnancy (MiTy): A multicentre, international, randomised, placebo-controlled trial. *The Lancet Diabetes & Endocrinology*, 8(10), 834–844. [https://doi.org/10.1016/s2213-8587\(20\)30310-7](https://doi.org/10.1016/s2213-8587(20)30310-7)
41. YouTube. *Are we over-diagnosing gestational diabetes in Queensland?* Retrieved from <https://www.youtube.com/watch?app=desktop&v=gybd7RHHUmA>
42. Australian Digital Health Agency. (2023). *My Health Record*. Retrieved from <https://www.digitalhealth.gov.au/initiatives-and-programs/my-health-record>
43. Commonwealth of Australia (2022). *Future focused primary health care: Australia’s Primary Health Care 10 Year Plan 2022-2032*. Retrieved from <https://www.health.gov.au/sites/default/files/documents/2022/03/australia-s-primary-health-care-10-year-plan-2022-2032-future-focused-primary-health-care-australia-s-primary-health-care-10-year-plan-2022-2032.pdf>
44. Australian Government. (2019). *Women-centred care. Strategic directions for Australian Maternity services*. Retrieved from <https://www.health.gov.au/sites/default/files/documents/2019/11/woman-centred-care-strategic-directions-for-australian-maternity-services.pdf>
45. Australian Government. (2022). *Australian National Breastfeeding Strategy*. Retrieved from <https://www.health.gov.au/topics/pregnancy-birth-and-baby/breastfeeding-infant-nutrition/australian-national-breastfeeding-strategy>
46. World Health Organization. (2022) *Human rights* Retrieved from <https://www.who.int/news-room/fact-sheets/detail/human-rights-and-health>
47. Frontiers | Improving Models of Care for Diabetes in Pregnancy: Experience of Current Practice in Far North Queensland, Australia (frontiersin.org)
48. Craig L, Sims R, Glasziou P, Thomas R. (2020) Women's experiences of a diagnosis of gestational diabetes mellitus: a systematic review. *BMC Pregnancy Childbirth*. <https://bmcpregnancychildbirth.biomedcentral.com/articles/10.1186/s12884-020-2745-1>
49. Diabetes Australia. *Hyperglycaemia – symptoms, risks and management*. Retrieved from <https://www.diabetesaustralia.com.au/>
50. Toohill J, Chadha Y, Nowlan S. An interactive decision-making framework (i-DMF) to scale up maternity continuity of carer models. *J Res Nurs*. 2020 Sep;25(6-7):561-576. doi: 10.1177/17449871199887424. Epub 2020 Jan 17. PMID: 34394674; PMCID: PMC7932297.