

# Diabetes in pregnancy

## It is not a benign condition...

**A consequence of the obesity and type 2 diabetes (T2D) epidemic is that the prevalence of pregnancies complicated by T2D is rapidly escalating. Most diabetes in pregnancy specialist clinics in Australia are now reporting a greater percentage of T2D compared to T1D patients. T2D, as well as dramatically increasing in prevalence, is occurring in younger patients and the trend is only expected to worsen.**

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Although, there are few published reports on outcomes of T2D in pregnancy, the reports that do exist ring alarm bells. This topic has been well reviewed in *ANZJOG* by Cheung et al.<sup>1</sup> They have aptly named their article 'Type 2 diabetes in pregnancy: A wolf in sheep's clothing'. The rates of major congenital malformations and perinatal deaths, if anything, are higher in T2D than T1D. McElduff et al recently reported an Australian cohort of 180 T1D (45 per cent) and T2D (55 per cent) pregnancies.<sup>2</sup> Perinatal mortality and major congenital malformations were 1.2 per cent and six per cent for T1D pregnancies and 5.1 per cent and ten per cent for T2D pregnancies respectively. Similarly, examination of an Irish cohort showed perinatal mortality and major congenital malformation rates of 3.6 per cent and 3.7 per cent for T1D pregnancies (n= 302) and 5.5 per cent and 9.3 per cent for T2D pregnancies (n=54).<sup>3</sup>

***'Poor glycaemic control in the first trimester is highly associated with increased rates of both miscarriages and congenital malformations'***

### Preconception Counselling in T1D and T2D women

There have been dramatic improvements in the outcome of T1D over the last four decades. Disappointing, however, is the failure of modern obstetric management to normalise the rates of major congenital malformations in T1D.

Poor glycaemic control in the first trimester is highly associated with increased rates of both miscarriages and congenital malformations.<sup>4</sup> It makes sense, therefore, that glycaemic control

should be optimised before conception. In a meta-analysis of the outcomes of pregnancies complicated by pregestational diabetes, it was found that the pooled rates of major anomalies was 2.1 per cent among preconception care recipients compared with 6.5 per cent in non-recipients (RR 0.36, 95 per cent CI 0.22-0.59).<sup>4</sup> First trimester pooled mean difference in glycosylated haemoglobin (HbA1c) was 2.3 per cent lower in the preconception care participants.<sup>4</sup>

The place for preconceptive care in T2D is not known. However, with the apparent higher rates of major congenital malformations in this group, the potential benefit is major.

Preconception counselling rates, unfortunately, continue to be very low. Increased awareness of its value for both T1D and T2D is the first step. Hopefully this will then be followed by successful facilitation of the necessary programs in all sectors of healthcare.

### Key points: Type 2 diabetes in pregnancy

- T2D is now more common than T1D in pregnancy.
- The perinatal mortality rate is probably higher in T2D than T1D pregnancies.
- Congenital malformation rates are probably higher in T2D than T1D pregnancies.
- Preconceptive counselling has the potential to dramatically improve pregnancy outcomes of T2D, as it is well known to do in women with T1D.

## Principles of preconceptive care in T1D and T2D women

1. Educate female adolescents and women with pregestational diabetes about the need to plan pregnancies. They should know that the outcomes of pregnancies complicated by diabetes are usually very good if planned and appropriately managed.
2. Offer contraception advice to reduce risk of unplanned pregnancies.
3. Before conception commence high dose folate supplementation (five mg/day).
4. Screen for diabetes complications. Untreated retinopathy can progress rapidly during pregnancy and can be vision threatening. This can be avoided by stabilisation with laser therapy. Renal disease is associated with significantly increased risk and requires advice and management by specialised teams.
5. Be aware of increased risk of macrovascular disease, particularly in women with T2D.
6. Glycaemic control needs to be optimised aiming for HbA1c less than seven per cent and if possible, less than 6.5 per cent. From the time of conception it is optimal for fasting blood glucose to be maintained between 4.0 and 5.5 mmol/l and two hour post-meal levels to be <7 mmol/l.
7. In T2D women, oral hypoglycaemics should be ceased and insulin should be started. Ceasing metformin pre-pregnancy, however, can reduce fertility in women with polycystic ovarian syndrome phenotypes, such that it may be appropriate to continue it until conception is confirmed in some women (opinion of author). There are no oral hypoglycaemic agents (including metformin) that have been established to be safe in pregnancy. There are ongoing clinical trials investigating this.
8. Lipid lowering medications need to be stopped and antihypertensive medications need to be changed to agents known to be safe in pregnancy.
9. Utilise multidisciplinary teams whenever possible.

## References

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## Managing PROM and PPROM

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may result in irreversible damage and neonatal death due to lung hypoplasia, which cannot be corrected by ventilation or surfactant. This can result even if birth can be delayed to more than 34 weeks.

## PPROM Summary

- PPROM has an inflammatory aetiology and development of clinical chorioamnionitis is the main concern.
- A ten day course of erythromycin improves neonatal outcomes.
- In the absence of indication for delivery, the aim should be 34 weeks or later.
- Mode of delivery should be individualised.
- Outcomes vary, but absence of liquid at the time of canalicular lung development can be catastrophic.

## References

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