

Consensus statement on diabetes control in preparation for pregnancy

The National Diabetes in Pregnancy Advisory Committee (NDIPAC) is a multidisciplinary committee established in November 2000 by the Commonwealth Department of Health and Aged Care as part of the National Diabetes Strategy. On behalf of the NDIPAC, we present the first Australian consensus statement (endorsed by the Committee in February 2004) on diabetes control for women with type 1 or type 2 diabetes who are preparing for pregnancy:

Women planning pregnancy should aim to achieve a target HbA_{1c} value of <7% (where the upper limit of the normal range for people without diabetes is <6%)

(If the normal range for people without diabetes is specified otherwise, the target HbA_{1c} level should be <1% above the upper limit of normal.)

The following important qualifying statements apply:

- Women with diabetes should aim to achieve the best control of diabetes possible in preparation for pregnancy. This should include achieving blood glucose levels as close to the normal range as possible, while avoiding hypoglycaemia. Decisions about the precise glucose level targets to be achieved should be made on an individual basis, with collaboration between the woman and her healthcare team.
- Women who are able to achieve better control of their diabetes than the target value indicated above (eg, an HbA_{1c} level of 6%) should be encouraged to maintain these levels in preparation for pregnancy.
- Other aspects of care are also important in preparation for pregnancy. These include healthy eating, taking folic acid supplements, and detection and treatment of other diabetes-related complications.
- It is recommended that tighter control of blood glucose levels (eg, HbA_{1c} < 6% or within the upper limit of the normal range) be targeted once pregnancy is achieved to minimise the risk of pregnancy complications and long-term metabolic consequences for the child.

These recommendations were made after reviewing and discussing the available data (the references listed here are a selection of the data sources considered the most relevant).¹⁻¹⁵ The recommendations have now been endorsed by the Australasian Diabetes in Pregnancy Society, the Australian Diabetes Society, the National Diabetes Strategy Group and the Royal Australasian College of General Practitioners.

The NDIPAC suggests that the recommendations be used to determine action strategies for improving outcomes in pregnancies complicated by diabetes. For example, they could be applied in:

- designing appropriate enhanced primary-care guidelines and target HbA_{1c} levels for women in their child-bearing years;
- flagging pathology results (specifically, the HbA_{1c} value in women of child-bearing potential) for action by treating clinicians;

- ongoing monitoring of pre-pregnancy glycaemic control using the framework of the National Diabetes in Pregnancy Audit Program (for more information, see the Australasian Diabetes in Pregnancy Society website, www.adips.org).

H David McIntyre,*† Jeff R Flack*†

(on behalf of the National Diabetes in Pregnancy Advisory Committee)

* Director, Department of Endocrinology
Mater Health Services, South Brisbane, QLD

† Director, Diabetes Centre
Bankstown-Lidcombe Hospital, Bankstown, NSW

† Co-Chair, National Diabetes in Pregnancy Advisory Committee
dmcintyre@mater.org.au

- 1 Kitzmiller JL, Cloherty JP, Younger MD, et al. Diabetic pregnancy and perinatal morbidity. *Am J Obstet Gynecol* 1978; 131: 560-580.
- 2 Gabbe SG, Mestman JH, Freeman RK, et al. Management and outcome of pregnancy in diabetes mellitus, classes B to R. *Am J Obstet Gynecol* 1977; 129: 723-732.
- 3 Miller E, Hare JW, Cloherty JP, et al. Elevated maternal hemoglobin A1c in early pregnancy and major congenital anomalies in infants of diabetic mothers. *N Engl J Med* 1981; 304: 1331-1334.
- 4 Fuhrmann K, Reiher H, Semmler K, et al. Prevention of congenital malformations in infants of insulin-dependent diabetic mothers. *Diabetes Care* 1983; 6: 219-223.
- 5 Greene MF, Hare JW, Cloherty JP, et al. First-trimester hemoglobin A1c and risk for major malformation and spontaneous abortion in diabetic pregnancy. *Teratology* 1989; 39: 225-231.
- 6 The Diabetes Control and Complications Trial Research Group. Pregnancy outcomes in the Diabetes Control and Complications Trial. *Am J Obstet Gynecol* 1996; 174: 1343-1353.
- 7 Hanson U, Persson B, Thunell S. Relationship between haemoglobin A1c in early type 1 (insulin-dependent) diabetic pregnancy and the occurrence of spontaneous abortion and fetal malformation in Sweden. *Diabetologia* 1990; 33: 100-104.
- 8 Sheffield JS, Butler-Koster EL, Casey BM, et al. Maternal diabetes and infant malformations. *Obstet Gynecol* 2002; 100: 925-930.
- 9 Hawthorne G, Robson S, Ryall EA, et al. Prospective population based survey of outcomes of pregnancy in diabetic women: results of the Northern Diabetic Pregnancy Audit, 1994. *BMJ* 1997; 315: 279-291.
- 10 Casson IF, Clarke CA, Howard CV, et al. Outcomes of pregnancy in insulin dependent diabetic women: results of a five year population cohort study. *BMJ* 1997; 315: 275-278.
- 11 Fenig DS, Palda VA. Type 2 diabetes in pregnancy: a growing concern. *Lancet* 2002; 359: 1690-1692.
- 12 Suhonen L, Hiilesmaa V, Teramo K. Glycaemic control during early pregnancy and fetal malformations in women with type 1 diabetes mellitus. *Diabetologia* 2000; 43: 79-82.
- 13 Towner D, Kjos SL, Leung B, et al. Congenital malformations in pregnancies complicated by NIDDM. *Diabetes Care* 1995; 18: 1446-1451.
- 14 Ray JG, O'Brien TE, Chan WS. Preconception care and the risk of congenital anomalies in the offspring of women with diabetes mellitus: a meta-analysis. *QJM* 2001; 94: 435-444.
- 15 Gunton JE, McElduff A, Sulway M, et al. Outcome of pregnancies complicated by pre-gestational diabetes mellitus. *Aust N Z J Obstet Gynaecol* 2000; 40: 38-43.

(Received 1 Jul 2004, accepted 3 Aug 2004)

□