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Diabetes in Pregnancy

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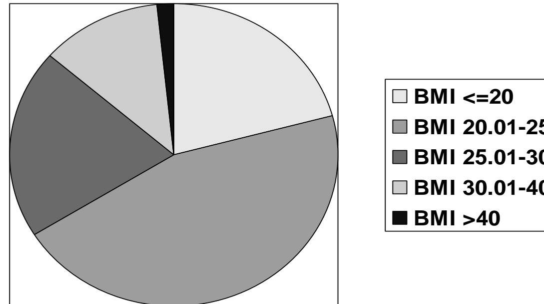
Overview -4 Messages to Remember

1. The "BIG" Problem
2. Pre Conception Care
3. New issues during pregnancy
4. Follow Up

The "BIG" Problem

- Overweight and obesity in an Australian population
  - Overweight and obesity occurs in 33% of pregnant women
    (Callaway LK, Prins JB, Chang AM, McIntyre HD, MJA, In Press)



Pre Conception Care

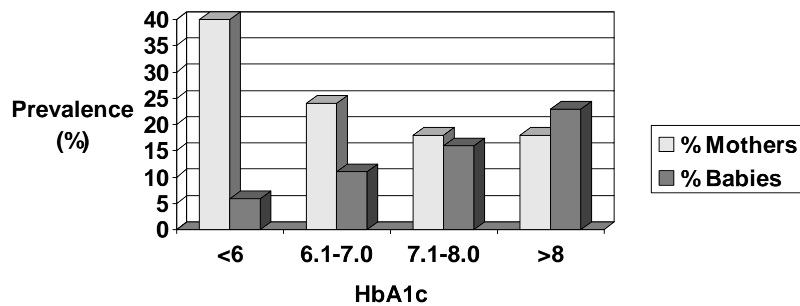
- Type 2 Diabetes
  - Now frequently the dominant form of diabetes in pregnancy
    - **McElduff A et al Diabetes Care 2005: 28; 1260-1**
  - Often viewed as "mild diabetes" but
  - Implications for pregnancy at least as serious as for Type 1 DM
  - Frequently asymptomatic, 50% undiagnosed

Pre Conception Care

- Type 2 Diabetes
  - Find the missing 50%!
    - **PCOS, Previous GDM, Obese**
  - Increase attention to ART / IVF recipients
  - Detect and control diabetes before ART / IVF
  - Use oral agents well
  - Use insulin well
  - Screen for co-morbidities

Pre Conception Care

- Type 2 Diabetes (Towner D et al, Diabetes Care 18: 1995; 1146-51)



Pre Conception Care

- Type 2 DM
  Towner D et al, Diabetes Care 18: 1995; 1146-51
  - Overall 11.7% major anomalies
    - **Most common CNS, cardiac, genitourinary, skeletal systems**
  - No difference related to treatment in early pregnancy (diet only vs oral agents vs insulin)
  - Linear ↑ anomalies with ↑ HbA1c

Pre Conception Care

- Type 2 DM and Malformations
- Congenital anomalies - NZ case series 1985-2000
  - Farrell T et al Diabet Med 2002: 19:322-6

	Type 1	Type 2	GDM	GDM – abnormal PN OGTT
N=	221	317	1822	237
Congenital anomalies	5.9%	4.4%	1.4%	4.6%

Pre Conception care

Author (Year)	No PC care % Malformed	PC care % Malformed
Pedersen (1979)	14.1	7.4
Fuhrmann (1983)	7.5	0.8
Mills (1988)	9.0	4.9
Kitzmiller (1991)	25	1.7
Wilhoite (1993)	6.5	1.6

Pre Conception Care

- Beyond Structural Abnormalities
  - Major organogenesis first trimester
  - Later pregnancy environment may still influence subsequent development
    - e.g. Risk of obesity / Type 2 DM later in life
    - Complex as both SGA and LGA may relate to later risk of diabetes

Pre Conception Care

- Pregnancy following laparoscopic gastric banding (n=49 post LAGB, n=31 pre LAGB)
  - 2 LAGBs removed in pregancy
  - ↓ Maternal weight gain 3.6 vs15.6 kg
  - ↓ GDM – 8 vs 27%
  - ↓ Hypertension 8 vs 23%
    - **Skull AJ et al Obes Surg 2004: 4; 230-5**

Definition of a consensus statement?

….a paper designed by a committee………..

Consensus statement on diabetes control in preparation for pregnancy
H David McIntyre and **Jeff R Flack**
MJA 2004; 181 (6): 326

NDiPAC Consensus Statement

- **Consensus statement on diabetes control in preparation for pregnancy** MJA 2004
  - National Diabetes in Pregnancy Advisory Committee
- Major recommendations
  - HbA1c < 7%
  - Blood glucose as close as possible to normal whilst avoiding hypoglycaemia
  - Attention to co morbidities / complications
  - Pregnancy targets tighter (HbA1c < 6%)
- Debate
  - "Cry in the wilderness"
  - Targets too "tight" to be meaningful

New Issues During Pregnancy

- ACHOIS Study
- Oral Hypoglycaemics

ACHOIS Study

- Australian Carbohydrate Intolerance Study in Pregnant Women
- Crowther et al, NEJM: 2005;352:2477-2486
- Women with GDM between 24 and 34 weeks gestation randomly assigned to:
  - Dietary advice, blood glucose monitoring, insulin as needed
  - Usual care
- Intervention Group:
  - Significantly lower risk of perinatal complications, higher admission rates to ICN, better maternal health outcomes and quality of life scores

New Issues During Pregnancy

- **Oral Hypoglycaemics: Small Studies –no additional risk of teratogenesis**
  - **Metformin (n=30), Glibenclamide (n=22)**
    - *Coetzee Diabetes Res Clin Pract 1985: 61 : 281-7*
  - **Metformin (n=7), Sulphonylures (n=16)**
    - *Hellmuth Diabetes Med 1994: 11; 471-4*
  - **Sulphonylureas (n=147)**
    - *Towner Diabetes Care 1995 18: 1446-51*

New Issues During Pregnancy

- **Small Study –Increased risk of teratogenesis**
  - **Sulphonylureas (n=16) biguanides (n=3)**
  - **50% cong anomalies vs 25% controls**
  - ***Piacquadio Lancet 1991 338 : 8666-69***
- Metanalysis
  - Overall OR 1.05(0.65-1.70) for major malformations with exposure to OHAs
  - ***Gutzin SJ et al Can J Clin Pharm 2003: 10; 179-83***

New Issues During Pregnancy

- Metformin in Pregnancy
- **Data limited but no evidence adverse pregnancy outcomes**
- **Euglycaemia remains the goal before and during pregnancy**
- **Metformin use in pregnancy may be warranted in some circumstances**
- **Risks and benefits should be discussed on an individual basis**
    - Simmons D et al. Metformin therapy and diabetes in pregnancy Med J Aust. 2004: 180; 462-4

Follow Up

- Pre Existing Diabetes
  - Restarting medications for secondary prevention
  - Lifestyle attention
  - Advice regarding future pregnancies

Follow Up

- Gestational Diabetes
  - Oral Glucose Tolerance Test post partum, and every 2 years thereafter
  - Attention to risk modification

4 Things to Remember

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Acknowledgements

- Dr David McIntyre –President, Australasian Diabetes in Pregnancy Society.
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