Local pregnancy and foetal outcomes in Gestational Diabetes Mellitus in Gloucestershire

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Background

An audit for service and therapy evaluation in Gestational Diabetes Mellitus (GDM) at Gloucestershire Royal Hospitals Trust was conducted to provide data regarding local pregnancy and foetal outcomes and to ascertain if management changes have improved outcomes in the longer-term.

Methods

All audits were performed retrospectively looking at women with GDM who attended the Antenatal Clinic at Gloucestershire Royal Trusts .

1st audit:
April 2005 to March 2006
Commencement of Insulin target:
Fasting glucose 4-7mmols, 2 hours postprandial BS < 8 mmols

2nd audit:
December 2006 to November 2007
Commencement of Insulin target changed to:
Fasting glucose 4-6 mmols, 2 hours postprandial BS < 7 mmols

Simple interventions were introduced in 2011:
1) Education evening for Primary Care,
2) Diabetes Specialist Nurse and Dietitian led GDM patient education groups
3) 'Reminder letters' for 6 week post-natal fasting glucose to all GDM patients.

3rd audit:
April 2013 to March 2014

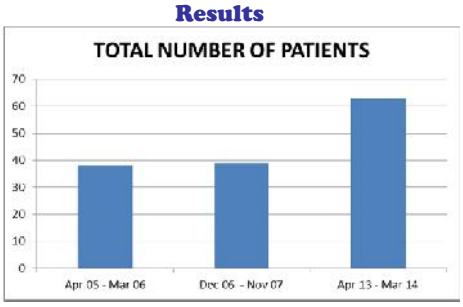
Aims and objectives

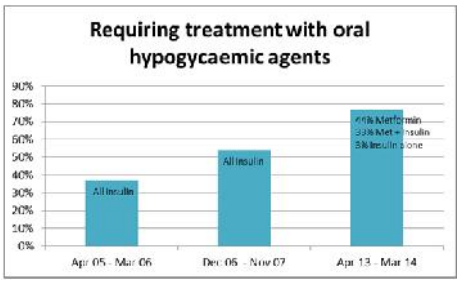
Have the GDM interventions above improved pregnancy and foetal outcomes? Data collected:
1) Percentage of patients having oral glucose tolerance test (OGTT) by 28 weeks gestation,
2) Percentage requiring treatment with hypoglycaemic agents,
3) Number of foetal macrosomia (defined as birth weight > 4000g),
4) Number of emergency and elective Caesarean sections,
5) Number of admissions to the Special Baby Care Unit ,
6) Number of patients having a 6 week postnatal fasting glucose.

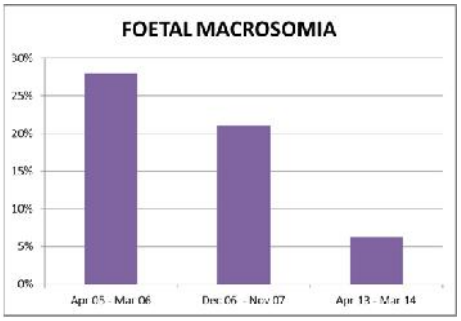
Results Summary

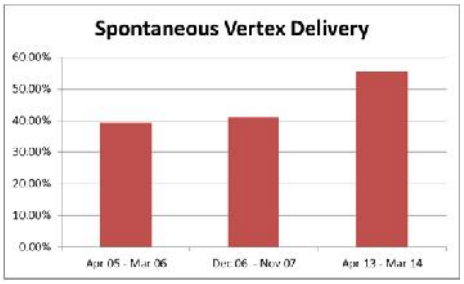
The number of patients seen annually with GDM has increased each year (almost doubling in 10 years). Tighter glycaemic control means more patients receive hypoglycaemic agents (37% in the 1st audit to 77% in the latest one), resulting in significantly less macrosomic babies (28% to 6%). Significantly fewer emergency caesarean sections are being performed (p = 0.08) with the majority now being born by spontaneous vertex delivery (39% to 56%). Reduction in perinatal complications provides a cost advantage to subsidise the GDM clinics. Only 6% babies were admitted to the Special Baby Care Unit. 81% women had their 6 week postnatal fasting glucose, 15.7% of these were abnormal, which suggests they have at least impaired glucose tolerance. Identification and alteration of lifestyle behaviours has significant benefits for the long-term morbidity of the mother and foetus and must be encouraged.

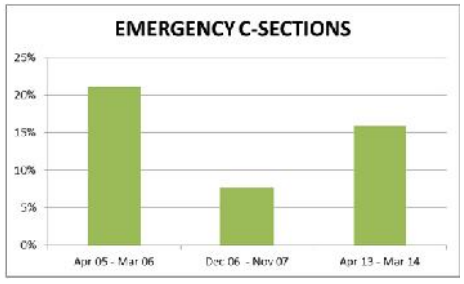
Results

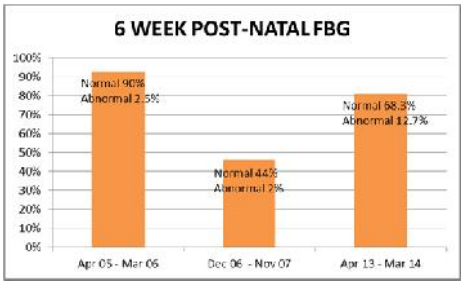












Results

	Apr 2005 – Mar 2006	Dec 2006 – Nov 2007	Apr 2013 – Mar 2014
Total number patients	38	39	63
Average age	32 years 7 months	33 years 5 months	32 years 4 months
Average weight at booking (kg)	76.0	82.6	83.2
Weight over 90kg at booking	27%	19%	33%
Previous GDM	38%	37%	25%
Average gestation when had OGTT	28 weeks 6 days	23 weeks 4 days	26 weeks 0 days
Requiring treatment with hypoglycaemic agents	37% (all insulin)	54% (all insulin)	77% Metformin = 41% Met+Insulin = 33% Insulin alone = 3%
Average baby weight (g)	3598	3512	3366
Number of foetal macrosomia (> 4000g)	28%	21%	6.3%
Spontaneous Vertex	39.4%	41.1%	55.6%
Instrumental vaginal	7.9%	15.3%	19.0%
Elective C-section	31.6%	35.9%	9.5%
Emergency C-section	21.1%	7.7%	15.9%
Number of admissions to the Special Baby Care Unit	-	-	6.3%
6 week Post-natal Fasting Glucose	Total 92.5% Normal 90% Abnormal 2.5%	Total 46% Normal 44% Abnormal 2%	Total 81% Normal 68.3 % Abnormal 12.7%
6 week Post-natal Fasting Glucose Not done	7.5%	54%	19.0%

Conclusions

The number of patients seen annually at Gloucestershire Hospital Trust with GDM has increased each year (almost doubling in ten years), with the average weight of a women with GDM increasing and the percentage of ladies > 90kg going up too. Tighter glycaemic control means more patients are receiving hypoglycaemic agents, 77% in the latest audit, which probably reflects on to the decreased average baby weight and vast reduction in macrosomic babies born (28% to 6.3%). This results in significantly fewer emergency caesarean sections being performed (p = 0.08). This reduction in perinatal complications provides a cost advantage to subsidise the GDM antenatal clinic. The majority of patients are now getting their 6 week post-natal fasting glucose blood test (81%) but this could and should be improved. Evidence suggests that those women with GDM have a dramatically increased risk of subsequently developing type 2 diabetes mellitus and some of those are showing at least impaired glucose tolerance (6 week post-natal fasting blood glucose $\geq$ 5.6 in 12.7% women in the study). Clearly identification of lifestyle behaviours before and during pregnancy can have a benefit for the long-term morbidity of the mother and foetus. Facilitating wider access to pre-pregnancy planning services for women at higher risk of developing GDM e.g. BMI >30, family history of diabetes, would help prevent long-term chronic conditions such as metabolic syndrome and type 2 diabetes.