The relationship between treatment and HbA1c as a measure of glycaemic control; at booking, during antenatal care and after delivery  
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HOW WERE THE PATIENTS TREATED?  
In this study, we have analysed a population of women with gestation diabetes who have been treated with a combination of therapies including diet advice alone, metformin, insulin, or a combination of all three. Oral hypoglycaemic agents are not without their own risks however, and they themselves can lead to neonatal hypoglycaemia. Trans-placental transfer of oral hypoglycaemic agents and other safety concerns (Ghandi et al., 2012). Metformin acts three fold to reduce the peripheral insulin resistance, inhibit gluconeogenesis and reduce the overall plasma triglyceride concentration. It must be noted that metformin can cross the placenta (Simmons et al., 2004). The benefit of patients taking metformin over insulin is that it can be taken orally and does not carry the same risks as insulin which needs to be injected. This requires much greater training and carries risk of hypoglycaemic episodes if not performed correctly.

WHO IS AFFECTED BY GESTATIONAL DIABETES?  
Gestational diabetes begins and is first recognised with the onset of pregnancy. It is the defect in glucose control and can result in hyperglycaemia with varying severity. The prevalence of gestational diabetes is usually in the range of 2 - 6% however it can be as high as between 10 – 22% (Galtier, 2010). In the Leeds area there is a high prevalence of individuals at risk of gestational diabetes. The clinic where this research was carried out has a specific, multidisciplinary team to identify and implement early intervention for these mothers. This study will aim to investigate the impact of the management of glucose control using HbA1c as a marker of glycaemic control.

WHAT IS HBA1C AS A MEASURE OF GLYCAEMIC CONTROL?  
Glycated haemoglobin is the non-enzymatic addition of glucose molecules to the amino group of haemoglobin. HbA1c is a specific type of this glycation whereby the addition of the glucose is to a valine of the haemoglobin beta chain. The total glycated haemoglobin is partly comprised of HbA1c as well as other glycated sites on the haemoglobin. There are two main factors that affect the HbA1c levels that are seen in a patient: the concentration of glucose within the patient’s blood stream and the life span of the red blood cell itself. The normal lifespan of a red blood cell is 120 days and thus this represents the long term average levels of glycaemic control of the patient (Little and Sacks, 2009).

METHODS  
Audit data were collected from 84 consecutive patients presenting with pre-existing diabetes mellitus (n=43 type 1, n=37 type 2) at the combined antenatal and diabetes clinic based at St James’ Hospital in Leeds during 2010-11. Potential confounders in the relationship between treatment (dietary advice, metformin or insulin) and HbA1c (at booking, 28 and 36 weeks) were identified using a directed acyclic graph (DAG) and included in separate multivariate linear regression models (one for each measurement of HbA1c).

RESULTS  
After adjustment for confounding, women prescribed insulin and/or metformin had higher average HbA1c levels at booking than those prescribed dietary advice alone (insulin: B=2.25; 95%CI: -0.01, 4.51; metformin: B=0.59; 95%CI: 1.03, 3.55; insulin and metformin: B=2.18; 95%CI: 0.04, 4.31). Average HbA1c levels were subsequently lower at 28 and 36 weeks gestation, and there was no significant difference in these HbA1c values amongst women prescribed dietary advice, metformin and/or insulin.

REFERENCES  
8. Simmons et al., 2004.  