Diabetes in pregnancy	University Hospitals of Leicester NHS NHS Trust

Scope:

This guideline applies to the management of diabetes and its complications from pre-conception to the postnatal period. This applies to obstetric, midwifery, neonatology and diabetology staff.

Legal Liability (standard UHL statement):

Guidelines issued and approved by the Trust are considered to represent best practice. Staff may only exceptionally depart from any relevant Trust guidelines providing always that such departure is confined to the specific needs of individual circumstances. In healthcare delivery such departure shall only be undertaken where, in the judgement of the responsible health professional' it is fully appropriate and justifiable – such decision to be fully recorded in the patient's notes.

Monitoring:

This is based on a review of incident forms by the Risk Manager in conjunction with the clinical lead, and will include trend analysis if considered necessary, and referred to the Perinatal Risk Group where appropriate. Any action points / plans will then be referred to the Maternity Services or Neonatal Governance Group.

Background:

The National Institute for Health and Clinical Excellence (NICE) published clinical guideline 63f, Diabetes in Pregnancy, in March 2008 (updated June 2008). The guideline states:

> *Miscarriage, pre-eclampsia and preterm labours are more common in women with pre-existing diabetes, and diabetic retinopathy can worsen rapidly during pregnancy. Stillbirth, congenital malformations, macrosomia, birth injury, perinatal mortality and postnatal adaptation problems (such as hypoglycaemia) are more common in babies born to women with pre-existing diabetes.*

This guideline is the NICE Diabetes in Pregnancy guideline with additions where appropriate to explain implementation within UHL.

Diabetes Care Team:

The Diabetes Care Team consists of Consultant Obstetricians, Consultant Diabetologists, Specialist Diabetes Midwives (DSM), Specialist Diabetes Nurses (DSN) and Specialist Diabetes Dieticians.

Information regarding blood glucose levels and insulin requirements is recorded on specific clinical sheets and filed in the woman's hospital notes. Obstetric information is written in the handheld maternity notes. An individualised management plan for pregnancy, labour and postnatal period on designated forms in the patient's hospital notes. DSN's have a record form for telephone contact with the woman outside of the clinic. These forms are then filed in the green hospital notes post-natally. The Dieticians record their advice on the clinical sheets in the green hospital notes.

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1. Key priorities for implementation

- **Pre-conception care**
  - Women with diabetes who are planning to become pregnant should be informed that establishing good glycaemic control before conception and continuing this throughout pregnancy will reduce the risk of miscarriage, congenital malformation, stillbirth and neonatal death. It is important to explain that risks can be reduced but not eliminated.

  - The importance of avoiding unplanned pregnancy should be an essential component of diabetes education from adolescence for women with diabetes.

  - Women with diabetes who are planning to become pregnant should be offered pre-conception care and advice before discontinuing contraception.

- **Antenatal care**

  - If it is safely achievable, women with diabetes should aim to keep fasting blood glucose concentrations between 4.0 and 5.5 mmol/litre and 2-hour postprandial blood glucose below 7.0 mmol/l during pregnancy. In order to minimise the risks of maternal hypoglycaemia women will be advised to regard 4.0 mmol/l as the safe lower limit. (Note: the postprandial glucose target is equivalent to a 1 hour value below 7.8 mmol/l).

  - Women with insulin-treated diabetes should be advised of the risks of hypoglycaemia and hypoglycaemia unawareness in pregnancy, particularly in the first trimester.

  - During pregnancy, women who are suspected of having diabetic ketoacidosis should be admitted immediately to delivery suite or HDU for level 2 critical care, where they can receive both medical and obstetric care. (See box 9).

  - Women with diabetes who have HbA1c ≥ 64 mmol/mol (8.0%) at booking should be offered antenatal ultrasound examination of the outflow tracts as well as four-chamber view of the fetal heart at 18–22 weeks.

- **Neonatal care**

  - Babies of women with diabetes should be kept with their mothers unless there is a clinical complication or there are abnormal clinical signs that warrant admission for intensive or special care.

  - Babies must have 2 normal pre-prandial blood glucose levels before being allowed home.

- **Postnatal care**

  - Women who were diagnosed with gestational diabetes should be offered lifestyle advice (including weight control, diet and exercise) and offered a fasting plasma glucose measurement as a minimum at the 6-week postnatal check and annually thereafter. Local opinion is that the standard should be an oral glucose tolerance test (OGTT) in order to identify women with impaired

glucose tolerance that might benefit from proven lifestyle interventions to prevent the development of diabetes.

2. Pre-conception care

Pre-conception care is currently provided by the Diabetes Care Team and by General Practitioners.

- **Information and advice**

  - Offer information, care and advice to women with diabetes who are planning to become pregnant before they discontinue contraception.

  - Give pre-conception care in a supportive environment. Encourage the woman's partner or a family member to attend.

  - This should build on previous care given in routine appointments with healthcare professionals, including the diabetes care team (see box 1).

Box 1 Encouraging women with diabetes to seek pre-conception care

Starting from adolescence:

- Healthcare professionals should give information about the benefits of pre-conception glycaemic control at each contact with women of child-bearing potential and with all types of diabetes.

- The diabetes care team should record the woman's intentions regarding pregnancy and contraceptive use at each contact.

- The importance of avoiding unplanned pregnancy should be an essential component of diabetes education.

- If women are planning pregnancy, they should be seen by healthcare professionals with appropriate competence to give advice – Level 2 of the Leicester 'Service Model for Diabetes'.

- If women have additional medical or obstetric problems which further increase risk in pregnancy, they should be referred to LGH or LRI for specialist pre-pregnancy counselling – Level 3 of the Leicester 'Service Model for Diabetes'.

- **Give advice and information on:**

    - The risks of diabetes in pregnancy (see box 2) and how to reduce them with good glycaemic control, diet, body weight and exercise, including weight loss for women with a body mass index (BMI) over 27 kg/m^2.

    - Hypoglycaemia and hypoglycaemia unawareness.

    - Pregnancy-related nausea/vomiting and glycaemic control.

    - Retinal and renal assessment.

    - When to stop contraception.

    - Taking folic acid supplements (5 mg/day) from pre-conception until 12 weeks of gestation.

    - Review of, and possible changes to, medication, glycaemic targets and self-monitoring routine.

    - Frequency of appointments and local support, including emergency telephone numbers.

Box 2 Risks of diabetes in pregnancy
Risks to women and babies include: - Fetal macrosomia - Birth trauma (to mother and baby) - Induction of labour or caesarean section - Miscarriage - Congenital malformation - Stillbirth - Transient neonatal morbidity - Neonatal death - Obesity and/or diabetes developing later in the baby's life. - Pre-eclampsia

- **Care, assessment and review:**

    Offer:

    - Folic acid supplements (5 mg/day).

    - Blood glucose meter for self-monitoring.

    - Ketone testing strips to women with type 1 diabetes and advise to use if hyperglycaemic or unwell.

    - Diabetes structured education programme.

    - Monthly HbA1c.

- Retinal assessment by digital imaging with mydriasis using tropicamide (unless carried out in previous 6 months).

- Renal assessment (including microalbuminuria) before stopping contraception.

Consider:

- Referral to a nephrologist if serum creatinine is 120 micromol/litre or more or the estimated glomerular filtration rate (eGFR) is less than 45 ml/minute/1.73 m^2.

Review:

- Current medications for diabetes and its complications (see box 3).

- Glycaemic targets and glucose monitoring (see box 4).

Box 3 Safety of medications before and during pregnancy

- Metformin may be used before and during pregnancy, as well as or instead of insulin.

- Rapid acting insulin analogues (NovoRapid® insulin aspart and Humalog® insulin lispro) are safe to use in pregnancy and have advantages over soluble human insulin during pregnancy.

- Evidence about the use of long-acting insulin analogues during pregnancy is limited. Insulatard insulin is the first-choice long-acting insulin during pregnancy.

- Women already established on long acting insulin analogues (Levemir® insulin determir or Lantus® insulin glargine) may wish to continue with them despite the lack of long term safety data.

Before or as soon as pregnancy is confirmed:

- Stop oral hypoglycaemic agents, apart from metformin, and commence insulin if required.

- If Metformin is prescribed to treat PCOS, this should be continued.

- Stop angiotensin-converting enzyme inhibitors and angiotensin-II receptor antagonists and consider alternative antihypertensives.

- Stop statins.

After 12 weeks of pregnancy:

- Advise women to take 75 mg Aspirin daily from 12 weeks gestation until delivery to reduce the risk of pre-eclampsia (NICE guideline CG107 Hypertension in Pregnancy)

Box 4
Blood glucose targets and monitoring

- Agree individualised blood glucose targets for self-monitoring.
- Advise women who need intensification of hypoglycaemic therapy to increase the frequency of self-monitoring to include fasting and a mixture of pre- and postprandial levels.
- Offer monthly $HbA1_c$.
- Advise women to aim for an $HbA1_c$ < 48 mmol/mol (6.5%) if possible.
- Inform women that any reduction in HbA_{1c} may reduce risks, even if this target is not achievable.
- Advise women with HbA_{1c} above 86 mmol/mol (10%) to avoid pregnancy.
- Do not offer rapid optimisation of glycaemic control until after retinal assessment and treatment are completed.

3. Gestational diabetes

Box 5 Risk factors for screening at booking
- BMI above 30 kg/m^2 at booking. - Previous macrosomic baby weighing 4.5 kg or greater. - Previous gestational diabetes. - First-degree relative with diabetes. - Family origin with a high prevalence of diabetes (South Asian, Black Caribbean and Middle Eastern). - PCOS - Glycosuria

- **Screening and diagnosis:**

Women with risk factors for gestational diabetes are offered an oral GTT.

Normal values in pregnancy are:
Fasting glucose: <5.5 mmol/l
2-hour glucose: <7.8 mmol/l
Referral to the diabetes team should be initiated if either (or both) of the parameters are abnormal.

Offer:

- Screening for gestational diabetes between 24 – 28 weeks using risk factors (see box 5) at the booking appointment.
-

Except:

- If the woman has had gestational diabetes previously, offer a 2-hour 75 g oral glucose tolerance test (OGTT) as soon as possible after booking in order to detect diabetes that may have pre-dated conception. If the result is normal a further OGTT at 24 -28 weeks should be performed to detect a recurrence of gestational diabetes.

- If the women presents with glycosuria at booking an immediate OGTT should be offered (due to the high prevalence of undiagnosed type 2 diabetes in the local population)

- If gestation > 32 weeks and large for dates, polyhydramnios, or two episodes of glycosuria, offer a random blood glucose and HbA1c and refer to the Diabetes Specialist Midwives for further advice and management.

Do not offer:

- Screening for gestational diabetes using fasting plasma glucose, random blood glucose, glucose challenge test or urinalysis for glucose.

- **Information and advice before screening and testing:**

Advise that:

- There is a small risk of birth complications if gestational diabetes is not controlled.
- Gestational diabetes will respond to changes in diet and exercise in most women.
- Insulin injections may be needed if diet and exercise do not control blood glucose levels.
- Extra monitoring and care may be needed during pregnancy and labour.

- **Information and advice after diagnosis:**

Give information and advice on:

- The risks of gestational diabetes (see box 6) and how to reduce them with good glycaemic control.
- Diet, body weight and exercise to limit excessive weight gain during pregnancy.
- Self-monitoring of blood glucose.
- Individualised targets for blood glucose.

Box 6 Risks of gestational diabetes
Risks to women and babies include: - Fetal macrosomia - Birth trauma (to mother and baby) - Induction of labour or caesarean section - Transient neonatal morbidity - Neonatal hypoglycaemia - Perinatal death - Obesity and/or diabetes developing later in the baby's life.

- **Hypoglycaemic therapy:**

Consider hypoglycaemic therapy for women with gestational diabetes:

- If lifestyle changes do not maintain blood glucose targets over a period of 1–2 weeks

If hypoglycaemic therapy is required:

- Tailor hypoglycaemic therapy to the individual woman.

- The usual treatment will be with insulin – often a rapid-acting analogue (NovoRapid®), with one or more meals. Women who refuse to take insulin may be offered metformin instead.

- For Gestational Diabetes carepathway, see page 17.

4. Antenatal care

This information is supplementary to routine antenatal care.

- **Offer:**

  - Immediate referral to a joint diabetes and antenatal clinic at LGH (Tuesday am/pm) or LRI (Wednesday pm/Thursday pm), by telephone to the Diabetic Specialist Midwife.

  - Contact with the diabetes care team regularly based on individual need to assess glycaemic control. Telephone contact will be used to facilitate this in order to avoid additional visits to hospital.

  - Advice on where to have the birth, which should be in a hospital with advanced neonatal resuscitation skills available 24 hours a day.

  - Information and education at each appointment.

  - Care specifically for women with diabetes, in addition to routine antenatal care, see page 18.

Box 7 Blood glucose targets and monitoring

- Agree individualised targets for self-monitoring.
- Typically advise women to test their blood glucose fasting and 2-hour after meals.
- Typically advise women to aim for a fasting blood glucose of between 4.0 and 5.5 mmol/litre and 2-hour postprandial blood glucose below 7.0 mmol/litre.
- The presence of diabetic retinopathy should not prevent rapid optimisation of glycaemic control in women with a high $HbA1_c$ in early pregnancy.
- Do not measure HbA1c routinely in the second and third trimesters.

Box 8 Additional care for women taking insulin

Offer:

- Glucagon to women with type 1 diabetes if their partner is willing to administer it.

Advise:

- Women to test their blood glucose before going to bed at night.
- On the risks of hypoglycaemia and hypoglycaemia unawareness, especially in the first trimester with particular reference to driving.
- Women and their partners or family members on the use of oral glucose solutions and glucagon for hypoglycaemia.

Box 9 Detecting and managing diabetic ketoacidosis

If diabetic ketoacidosis (DKA)[+] is suspected during pregnancy, admit women immediately for high dependency care*, where both medical and obstetric care are available. Admission is to the delivery suite or medical unit depending on gestation.

For women with type 1 diabetes:

- Offer ketone testing strips and advise women to test their ketone levels if they are hyperglycaemic or unwell.
- Exclude diabetic ketoacidosis as a matter of urgency in women who become unwell.

Although a trace of ketonuria is the fasting state is common in pregnancy, a higher concentration of ketonuria is likely to indicate decompensation of diabetes. It is possible to develop diabetic ketoacidosis in pregnancy with blood glucose concentrations close to the normal range.

Guidelines

[+]Refer to UHL Diabetic Ketoacidosis (DKA) guideline (DMS number 10019).

*Refer to 'Admissions to HDU' (DMS number 18769).

Box 10 Retinal assessment for women with pre-existing diabetes

Offer retinal assessment:

- As soon as possible after the first contact in pregnancy if it has not been performed in the past 12 months
- In 2nd trimester.
- In 3rd trimester.

Retinal assessment should be carried out by digital imaging with mydriasis using tropicamide, the images graded as top priority.

Box 11 Renal assessment for women with pre-existing diabetes

Offer:

- Renal assessment at the first contact in pregnancy if it has not been performed in the past 12 months.

Consider:

- Referral to a nephrologist if serum creatinine is abnormal (120 micromol/litre or more) or total protein excretion exceeds 2 g/day
- Thromboprophylaxis if proteinuria is above 5 g/day.

Do not offer:

- eGFR during pregnancy.

Box 12 Monitoring and screening fetal development

Offer:

- Antenatal ultrasound examination of the fetal cardiac outflow tracts in addition to routine anomaly scanning at 18–22 weeks for women with booking HbA1c ≥ 64 mmol/mol (8.0%).

- Ultrasound monitoring of fetal growth and amniotic fluid volume every 4 weeks between 28 and 36 weeks

- Individualised monitoring of fetal wellbeing to women at risk of intrauterine growth restriction (those with macrovascular disease or nephropathy).

Do not offer:

- Tests of fetal wellbeing before 38 weeks, unless there is a risk of intrauterine growth restriction.

5. Intrapartum care

Every woman with diabetes in pregnancy will have an individualised care plan for delivery which is filed in the green hospital notes. This is developed jointly by the Obstetricians and Diabetologists in discussion with the woman from 36 weeks.

- **Information and advice:**

  Give information on:

  - The risks and benefits of vaginal birth, induction of labour and caesarean section if the baby has macrosomia identified by ultrasound.
  - The possibility of vaginal birth in women with diabetic retinopathy.
  - The possibility of vaginal birth after previous caesarean section.

  Care for preterm labour:

  - Consider antenatal steroids for fetal lung maturation in preterm labour or if early elective birth is planned.
  - Consider tocolytic medication (but not betamimetic drugs) to suppress labour if indicated.
  - Monitor glucose levels of women taking steroids for fetal lung maturation closely and advise on taking supplementary insulin according to an agreed protocol or admit and use Insulin/Dextrose sliding scale if blood glucose levels unstable.

Care after 36 weeks:

Offer:

- Induction of labour to women taking insulin therapy for between 38 and 39 weeks.
- Caesarean section (if indicated) for between 38 and 39 weeks to all women.
- Induction of labour to women on diet control for between 40 and 41 weeks.

See Flowcharts on page 18 and 19 for further guidance.

Care during labour and birth:

Monitor:

- Blood glucose levels hourly for Type 1 and Type 2 diabetes, aiming to maintain blood glucose levels between 4 and 9 mmol/l.

Consider intravenous dextrose and insulin:

- For women with Type 1 or Type 2 diabetes.
- For women whose blood glucose is not maintained between 4 and 9 mmol/l.

Care prior to elective Caesarean section:

- Adjust insulin dosage to account for pre-operative fasting.

Monitor:

- Blood glucose level prior to going to theatre

Consider intravenous dextrose and insulin:

- For women with poorly controlled Type 1 or Type 2 diabetes.
- For women whose blood glucose is not maintained within 4 and 9 mmol/l.

6. Neonatal care

The baby should stay with the mother unless extra neonatal care is required.

Do not transfer babies into community care until they are at least 24 hours old, maintaining their blood glucose levels and feeding well.

Preventing, detecting and managing neonatal hypoglycaemia

UHL has a written policy for the prevention and management of symptomatic or significant hypoglycaemia in neonates.

Advise:

Women to feed their babies as soon as possible after birth and then at frequent intervals (2–3 hours) until pre-feed blood glucose levels are maintained at 2 mmol/litre or more.

Test the baby's blood glucose levels:

Before the 2nd and 3rd feed using a quality-assured method validated for neonatal use (ward-based glucose electrode or laboratory analysis)

If he or she has signs of hypoglycaemia, refer urgently to the Neonatal Team .

7. Postnatal care

INFORMATION AND ADVICE

- **Advise:**
  - Women with diabetes who are breastfeeding to continue to avoid drugs for complications that were discontinued for safety reasons.
  - On the importance of contraception and pre-conception care when planning future pregnancies.
- **Advise women with insulin-treated pre-existing diabetes:**
  - To reduce insulin immediately after birth as advised by the diabetes team and to monitor their blood glucose concentrations to establish correct dose.
  - About the risk of hypoglycaemia, especially while breastfeeding.
  - To have food available before or during breastfeeding.
- **Advise women with type 2 diabetes:**
  - That they can resume or continue taking metformin while breastfeeding.
  - Not to take any other oral hypoglycaemic agents while breastfeeding.
- **Advise women with gestational diabetes:**
  - To stop taking hypoglycaemic medication/insulin immediately after birth.
  - To stop blood glucose monitoring unless otherwise advised by the Diabetes Team.
  - On weight control, diet and exercise.
  - On the symptoms of hyperglycaemia.
  - On the risks of gestational diabetes in subsequent pregnancies and screening for diabetes when planning pregnancy.

TRANSFER AND FOLLOW-UP

- **Advise women with gestational diabetes:**

  to arrange an OGTT with their General Practitioner at the 6 week postnatal check and annually thereafter.

The NICE recommendation of a fasting glucose measurement is regarded as a minimum requirement and we strongly advocate an OGTT, as this will identify women with persistently abnormal glucose tolerance (IGT) for which there is good evidence of the efficacy of lifestyle intervention in preventing diabetes. Our local population has a high prevalence of diabetes and IGT.

Refer women with pre-existing diabetes:

- Back to routine diabetes care.

Offer ophthalmological follow-up:

- For women who have preproliferative diabetic retinopathy diagnosed in pregnancy, for at least 6 months after the birth.

8. MANAGEMENT OF TYPE 1 AND TYPE 2 DIABETES

WEEKS OF PREGNANCY	ANTENATAL CLINIC	Retinal screening	HbA1c	SCANS	BLOODS	INFORMATION
4 – 11 weeks	See DSM, Diabetologist, Obstetrician, DSN & Dietitian	✓	✓	Viability scan	U&E, Creatinine, TFT, urine ACR,	Diabetes and pregnancy. Book with Community Midwife[1] Advise Folic Acid 5mg od
11^{+2} - 15 weeks	See above as necessary			Dating Scan/ Nuchal Translucency Scan (NT 11^{+2} – 14^{+1} weeks)]	Further tests at discretion of diabetes/obstetric teams .	Start Aspirin 75 mg o.d. Documentation of booking bloods
16 - 17 weeks	See above as necessary		✓			Give results of NT scan
18 - 22 weeks	See above as necessary	✓		Anomaly Scan Four chamber and outflow tract cardiac scan if indicated*		
23 - 27 weeks	See above as necessary					
28 - 31 weeks	See above as necessary	✓		Growth Scan	FBC & antibody screen (Northampton bloods)	
32 - 35 weeks	See above as necessary			Growth Scan		Documentation of FBC and Northampton bloods
36 - 37 weeks	See above as necessary			Growth Scan	FBC	Discuss and document birth plan. Arrange IOL/ELCS for 38-39/40
38 - 39 weeks	See above as necessary					Discuss postnatal care and follow-up

*See Box 12 (page 12) in the guideline for indications
[1]Every woman is encouraged to keep in contact with her community midwife for routine care and parentcraft information.
Telephone contact is maintained between appointments with the DSN and/or DSM

Diabetes Team: Diabetologist, Diabetes Specialist Nurse, Diabetes Dietitian

Obstetric Team: Obstetrician, Diabetes Specialist Midwife

9. MANAGEMENT OF GESTATIONAL DIABETES*

Women who have an abnormal OGTT at 8 – 16 weeks will follow the same care pathway as women with pre-existing diabetes

WEEKS OF PREGNANCY	ANTENATAL CLINIC	HbA1c	SCANS	BLOODS	INFORMATION
24 – 30 weeks	See DSM, DSN and Dietitian	✓	Growth Scan	FBC & antibody screen (Northampton bloods)	Diabetes and pregnancy. Dietary Advice Home BG monitoring Insulin start if indicated
31 – 34 weeks	See DSM, (Obstetrician, Diabetologist, DSN or Dietitian as necessary)		Growth Scan		Documentation of blood results
35 - 37 weeks	See DSM, Obstetrician, Diabetologist,		Growth Scan	FBC	Discuss and document birth plan. Arrange IOL at 38 – 39 weeks for insulin controlled diabetes. Arrange ELCS (if indicated) at 38 – 39 weeks for all women.
38 - 39 weeks	See as above				Documentation of FBC Discuss and document birth plan. Arrange IOL at 39 – 41 weeks for diet controlled diabetes Care returned to CM/MW

* Every woman is encouraged to keep in contact with her community midwife (CM/MW) for routine care and parentcraft information.
Telephone contact is maintained between appointments with the DSN's and/or DSM

Diabetes Team: Diabetologist, Diabetes Specialist Nurse, Diabetes Dietitian

Obstetric Team: Obstetrician, Diabetes Specialist Midwife

10. HbA1c Conversion Table

HbA1c conversion table			
Definitions	Old unit New unit	= NGSP unit = IFCC unit	= %HbA1c = mmol/mol
Conversion formulas	Old New	= 0,0915 New + 2,15% = 10,93 Old – 23,5 mmol/mol	

HbA1c Old	HbA1c New	HbA1c Old	HbA1c New
4,0	20	8,1	65
4,1	21	8,2	66
4,2	22	8,3	67
4,3	23	8,4	68
4,4	25	8,5	69
4,5	26	8,6	70
4,6	27	8,7	72
4,7	28	8,8	73
4,8	29	8,9	74
4,9	30	9,0	75
5,0	31	9,1	76
5,1	32	9,2	77
5,2	33	9,3	78
5,3	34	9,4	79
5,4	36	9,5	80
5,5	37	9,6	81
5,6	38	9,7	83
5,7	39	9,8	84
5,8	40	9,9	85
5,9	41	10,0	86
6,0	42	10,1	87
6,1	43	10,2	88
6,2	44	10,3	89
6,3	45	10,4	90
6,4	46	10,5	91
6,5	48	10,6	92
6,6	49	10,7	93
6,7	50	10,8	95
6,8	51	10,9	96
6,9	52	11,0	97
7,0	53	11,1	98
7,1	54	11,2	99
7,2	55	11,3	100
7,3	56	11,4	101
7,4	57	11,5	102
7,5	58	11,6	103
7,6	60	11,7	104
7,7	61	11,8	105
7,8	62	11,9	107
7,9	63	12,0	108
8,0	64		

Monitoring	
Process for monitoring:	Retrospective review of health records
How often will monitoring take place:	Quarterly
Population:	8 sets of health records of women who have delivered with a diagnosis of pre existing diabetes
Person responsible for monitoring:	Specialist Midwives – diabetes Senior Midwife for Antenatal Services and Community Senior Midwives for Intrapartum and Inpatient Services
Auditable standards:	• There is documentation of the involvement of the multi disciplinary team which includes the obstetrician, midwife, diabetes physician, diabetes specialist nurse and the dietician • The antenatal visits were timetabled as per recommended schedule • There is an individual management plan in the health care record that covers pregnancy and the postnatal period up to six weeks • Targets for glycaemic control were used to guide management • Advice has been given on the risks of hypoglycaemia and hypoglycaemia unawareness in pregnancy • All women have been offered antenatal ultrasound examination of the four chamber view of the fetal heart and outflow tracts at the time of the fetal anomaly scan • Women suspected of having diabetic ketoacidosis have been given high dependency care
Results reported to:	Maternity Services Governance Group
Person responsible for producing action plan:	Specialist Midwives - Diabetes Senior Midwife for Antenatal and Community Services Senior Midwives for Intrapartum and Inpatient Services
Action plan to be signed off by:	Maternity Services Governance Group
Action plan to be monitored by:	Maternity Services Governance Group
How will learning take place: in one or more of the following fora	Audit meetings Team meetings Delivery suite forum Unit meetings The following may also be used: Ward rounds Communication boards Emails Face to face