Pregnancy management for Type 1, Type 2 and Gestational Diabetics (GL826)

Approval

Approval Group	Job Title, Chair of Committee	Date
Maternity & Children's Services Clinical Governance Committee	Mr Mark Selinger, Consultant Obstetrician	10th January 2014

Change History

Version	Date	Author, job title	Reason
4.0	April 2010	Deidre Graham (Diabetes Specialist Midwife)	Reviewed
5.0	May 2011	Deidre Graham (Diabetes Specialist Midwife)	Reviewed
5.1	Sept 2011	Avril Mansfield (Maternity Info Officer)	Auditable standards added
5.2	Mar 2012	Deidre Graham (Diabetes Specialist Midwife), Pat Street (Consultant Obstetrician)	Reviewed and amended to reflect current practice
5.3	May 2012	Deidre Graham (Diabetes Specialist Midwife), Pat Street (Consultant Obstetrician)	Amended
6.0	Nov 2013	Deidre Graham (Diabetes Specialist Midwife)	Reviewed

Gestational diabetes is also managed under the guideline: Gestational Diabetes: screening and diagnosis.

Pre-conceptual care of type 1 and type 2 diabetics – clinic not currently available at Royal Berkshire Hospital

The aim of pre-conceptual care is to reduce the risks of adverse pregnancy outcome to mother and baby. It should be provided for women and their families.

Management of type 1 and type 2 diabetic women considering pregnancy:

- Discuss risks of diabetes and pregnancy and the importance of good glycaemic control, as measured by the HbA1c, in reducing the risks
- Advise effective contraception and monitoring of menstrual cycle
- Optimize diabetes control
- If needed, supply blood glucose meter and advise frequent blood glucose measurements, pre- and post-prandial. Agree blood glucose targets with the woman.
- Target HbA1c <43 mmol/mol, if safely achievable. However, a level <53 mmol/mol is acceptable. HbA1c should be measured monthly. Women with an HbA1c ≥86 mmol/mol should be advised not to become pregnant
- Use of Metformin with or without insulin should be assessed on an individual patient basis.
- To reduce the risk of neural tube defects, Folic Acid 5mgs daily should be commenced. This should be maintained until 12 weeks post-conception.
- Screen for retinopathy, nephropathy and thyroid dysfunction. Take appropriate action on abnormal screening results
- Teratogenic drugs should be stopped e.g., ACE inhibitors and Statins.
- Methyldopa should be used for hypertension management
- Healthy eating and exercise advice should be given. If available, referral to a dietician would be desirable, particularly for those with a BMI ≥27 kg/m2
- Discuss risks and management of hypoglycaemia and hypoglycaemia unawareness
- Discuss risks of vomiting, illness and diabetic keto-acidosis
- Discuss labour and delivery with regard to: large for gestation fetus and difficulty in delivery; good glycaemic control in labour; early feeding of the baby and prevention of neonatal hypoglycaemia; transient neonatal morbidity; risks of infant obesity and importance of breast-feeding.

Referral to clinic

- Type 1 and type 2 diabetic women should be referred to the maternity department, as soon as pregnancy is confirmed, by telephoning the diabetes specialist midwife (DSM) on ext 7245.
- Insulin controlled women will be seen in the first available diabetes antenatal clinic. This will be arranged by the DSM or by Miss Street. The maternity records staff will not make an appointment for this clinic without their approval.
- This is a multi-disciplinary team (MDT) clinic, attended by a diabetic physician, a consultant obstetrician with a specialist interest in diabetes and the diabetes specialist midwife.
- Diet/Metformin controlled type 2 diabetic women and those with impaired glucose tolerance should be referred as above but, while they remain controlled by diet/Metformin, they will be seen in Miss Street’s general antenatal clinic, transferring to the diabetes antenatal clinic if insulin is started. Their first appointment may be delayed until the 2nd trimester if blood glucoses remain normal and these will be monitored by the DSM.
- Diabetes maternity care at the hospital may commence before formal booking by the community midwife. All type 1 and type 2 diabetic women should be booked by their community midwife in the usual way.
- The usual procedure should be followed for booking second trimester Down’s syndrome combined screening
- Insulin dependent women and those with serious diabetes co-morbidities will be entered on to the High Risk Register
- Gestational diabetics – see guideline Gestational Diabetes Screening and diagnosis

Initial contact with type 1 and type 2 diabetic women

On referral, an **Individual Care Record for Pregnancy complicated by Diabetes** will be commenced. This is a record of diabetes care/management from first contact to the postnatal period and is on sand-coloured paper at the front of the notes.

A midwifery record will also be started for the recording of telephone conversations between appointments, which will be kept in the DSMs’ office.

The DSM prepares the hospital maternity notes, labelling them to indicate the diabetic status. She arranges an appointment for the woman and telephones her.

During this first telephone consultation the following is discussed:

Obstetric, social, general medical and diabetic history, including current medications

Smoking cessation and availability of cessation support

E-mail address and telephone numbers given for DSM & Delivery Suite

Importance of good glycaemic control, target HbA1c and blood glucose levels

Risk of diabetic keto-acidosis/pregnancy induced vomiting/illness and method of self referral to Delivery Suite if vomiting

Hypoglycaemia management and risk of reduced or absent 'hypo' awareness

Review of medications & withdrawal of teratogenic drugs

GP prescription for Folic Acid 5mg, to be continued to 12 weeks

Gestational diabetics – See Gestational Diabetes: Screening and Diagnosis

Meter start

Some women with type 2 diabetes may not have a blood glucose monitoring meter. Arrangements should be made for one to be given, with training by the DSM or her appointee. The GP's surgery may supply this if they have the facility.

Gestational diabetics – See Gestational Diabetes: Screening and Diagnosis

Insulin or Metformin start

Type 2 diabetics and those with established impaired glucose tolerance, controlled by diet/Metformin pre-pregnancy may, possibly, remain diet/Metformin controlled throughout pregnancy but, are frequently, transferred to, or supplemented with, insulin. This will be arranged by the DSM, in liaison with the diabetes physician or Miss Street. Training of the woman will include demonstration of injecting equipment, practice of injection technique and recognition and management of hypoglycaemia. Advice will be given regarding the DVLA regulations. Supporting, written advice will be given and appropriate documentation made in the Diabetes Care Record.

Gestational diabetics and diet controlled type 2 diabetics are transferred to Metformin, when diet and exercise has failed to ensure glucose levels within target. Metformin will be considered if:

- the woman fails to maintain blood glucose targets over a 1-2 week period,
- the fetal growth suggests incipient macrosomia (fetal abdominal circumference >70th centile)

Insulin therapy will be considered if:

- a woman started on Metformin (standard or modified release) fails to maintain glucose levels within target range

- a woman started on Metformin (standard or modified release) has gastric intolerance or an allergic reaction

After a woman has started insulin she will be transferred to the diabetic antenatal clinic on Thursday afternoon and will be added to the High Risk Register.

When hypoglycaemic therapy is started or changed, documentation of this should be made in the woman's notes. This should be appropriate for compliance with the Insulin and Metformin adjustment by diabetes specialist midwives protocol

Appointment Schedule

Type 1 and 2 diabetes & gestational diabetics on insulin

Frequency of visits to diabetes antenatal clinic is decided on an individual basis.

First and second trimester:

Up to weekly, and not more than monthly with the MDT. If needed, there will be telephone/e-mail contact with the DSM for a blood glucose review and adjustment of diabetes medication between appointments.

Third trimester:

28 – 36 weeks: Up to weekly and not more than monthly with the MDT. Women who are not seen for 1 month should have a routine antenatal check with their GP or community midwife between hospital appointments. In addition they should contact the DSM by telephone/e-mail up to weekly or at least fortnightly for a blood glucose review and adjustment of diabetes medication, if required.

36 weeks onwards: Women should see the MDT up to weekly and not more that fortnightly. Telephone/e-mail contact with the DSM between appointments with frequency on an individual need basis for a blood glucose review and adjustment of diabetes medication, if required.

Gestational diabetes diet and Metformin controlled

Antenatal clinic will usually be between 2 & 4 weekly, depending on the quality of the control, treatment and the growth pattern of the baby. It will not be greater than monthly, with contact between appointments with the DSM as required.

DNAs

Women failing to attend an appointment will be telephoned by the DSM and given a new appointment for the following week.

Women failing to attend 2 consecutive appointments, without good reason, will be sent a letter detailing clearly the risks of adverse pregnancy outcome in pregnancies complicated by diabetes, which are not managed intensively by a multi-disciplinary team. Another appointment will be offered for the following week.

The community midwife will be asked to visit those who continue to not attend.

New appointments will continue to be sent, with covering letters detailing the risks of not having regular antenatal care by the multi-disciplinary team.

The GP of those women who continue to not attend will be notified by letter after the 3rd failed attendance.

The consultant obstetrician and consultant diabetes physician will be kept informed.

Glycaemic control

At each appointment the importance of good glycaemic control will be emphasised
Blood glucose testing: type 1 & type 2 diabetics: minimum x4 per day; gestational diabetics: minimum x2 per day
Target blood glucose levels 3.5-5.9 mmol/mol fasting and pre-prandial and <7.8 mmol/mol 1 hour post-prandial
Monthly HbA1c with a target of <43 mmol/mol if safely achievable but with <53 mmol/mol acceptable
The type and regimen of insulin administration will be decided on an individual basis

Diet & Exercise

In the absence of a dietetic service, the DSM should review the woman's diet and advise on healthy eating especially low Glycaemic Index foods and portion size. The woman should be given a copy of the NHS 'Eat Well Be Healthy' guide to healthy eating.

Regular exercise should be encouraged with at least 30 minutes of moderate exercise per day. The RCOG information booklet 'Recreational exercise and pregnancy' should be given (available from www.rcog.org.uk).

Hypoglycaemia safety measures

Glucogel (concentrated glucose solution) should be available for all women on insulin, or a suitable alternative, fast-acting carbohydrate choice, e.g. jelly babies, should be suggested for the women to have available at all times
Glucagon given to all type 1 diabetics with instructions on its use

Screening for diabetic complications:

Retinal (type 1 and type 2 diabetics)

At the first appointment the woman will be given a 'flyer' emphasising the importance of attending eye screening.
Referral to ophthalmology when viable pregnancy confirmed by ultrasound.
Referral will be sent by password protected e-mail with a hard copy by post
Routine retinal assessment will be arranged for the first and second trimester.
Appointments will be sent directly to the patient by the Eye Department. The need for additional assessment or treatment will be made on an individual basis by the consultant ophthalmologist.
Eye appointment DNAs: Non-attenders will be sent a repeat appointment. All DNAs will be managed by the Eye Department.

Renal (type 1 and type 2 diabetics)

Urine testing for protein at each appointment; MSU if screen positive
Serum renal profile at first appointment
Urea and electrolytes at 36 weeks and with routine bloods prior to Caesarean section
Urine protein creatinine ratio if persistent proteinuria of ++ or above on two separate occasions, (with or without 24 hr urine collection for protein)
Referral to nephrologist if:

- Protein excretion of >2g/day
- Serum creatinine ≥120micromol/L

Thrombo-phrophylaxis if protein excretion >5g/day

Hypertension

Blood pressure at each appointment
Further monitoring on Day Assessment Unit or admission, if required, for maternal and fetal monitoring
Methyldopa is the antihypertensive drug of choice

Screening for diabetic co-morbidities (type 1 and type 2 diabetics)

Thyroid function assessment at first appointment/with booking bloods

Ultrasound

Type 1 and type 2 diabetics will have a viability ultrasound when pregnancy estimated to be greater than 7 weeks. If no fetal heart activity seen, if appropriate repeat to be arranged for a subsequent date.

If non-viable pregnancy found Miss Street to be informed and referral to Sonning Ward arranged.

Dating or Nuchal Translucency ultrasound as required at 10-12 weeks

20 weeks anomaly ultrasound, to include a four-chamber view of the heart and great vessels

Type 1 and type 2 diabetics will have a 24 week fetal cardiac ultrasound performed by trained Consultant

28 weeks and onwards fetal growth and liquor assessment, usually, fortnightly but may be monthly in certain circumstances, e.g., type 2 diabetic, diet controlled, normal growth

A woman with apparent macrosomia on ultrasound will be informed of the risks of shoulder dystocia associated with vaginal birth

Individualised fetal assessment for those with growth restriction

Steroid prophylaxis

If delivery is indicated before 36 weeks gestation, steroids should be given. All insulin dependent diabetic women should be admitted for steroids, with careful blood glucose monitoring and the use of an insulin sliding scale, if required, to control deranged blood glucoses. For gestational diabetics who are diet/Metformin controlled, steroids may be given as an outpatient. The woman must be given clear instruction to perform regular blood glucose monitoring and to ring the Delivery Suite in the event of two consecutive readings of ≥10.0 mmol/L. The Delivery Suite should arrange immediate admission for assessment of the need for an insulin sliding scale. (See Diabetes & Steroid prophylaxis guideline)

Falling insulin requirements

If Insulin requirements fall in the third trimester the woman should be advised to monitor fetal movements. Alternate day cardiotocographs and/or admission may be appropriate.

Diabetic keto-acidosis (DKA)

Women with type 1 diabetes should be offered urine ketone testing strips for use if they become hyperglycaemic or unwell.

There is a high risk of fetal loss in the event of DKA and there is evidence that babies who survive have lower IQs than their peers at school.

These women are managed by DAU/Delivery Suite, whatever their gestation, even if <16 weeks gestation

Women are advised to contact the Delivery Suite if they are unwell/vomiting and feel they have lost control of their diabetes.

Immediate admission should be advised and a diagnosis of DKA should be excluded.

Documents on the intranet are available for guidance under Policies and Protocols:

Maternity guidelines:

- Diabetes - Hyperemesis & Diabetic keto-acidosis (DKA) GL824
- Clinical documents > Diabetes and Endocrinology > Diabetic Emergencies and Safe Administration of Insulin and Management of Intravenous Insulin Sliding Scale for Adult Inpatients – CG242 guideline > Appendix 3: Management of Diabetic Ketoacidosis in Adults

There should be a low threshold for involving the Diabetes Medical Team or the Outreach Team

Diabetic women admitted with vomiting should be managed with one-to-one care in a Delivery Room. The intensity of care may be reduced as the woman's condition improves.

Anaesthetic assessment antenatally

Over and above the criteria for non-diabetic women, the need for anaesthetic assessment will be made on an individual basis. For those requiring anaesthetic assessment, this can be booked on the appointment system.

Fetal assessment in the third trimester

If there are concerns about fetal wellbeing, not requiring immediate admission, women should be given regular appointments in the Day Assessment Unit for CTG monitoring. In addition, small for dates foetuses should have fetal assessment in the scan department by a consultant, preferably Miss Jill Ablett

Preparation for delivery

Usually in mid-third trimester, delivery will be discussed between the woman and the consultant obstetrician. The safest mode of delivery will be decided on an individual basis, with particular attention paid to the degree of fetal macrosomia.At approximately 34-36 weeks the woman will be seen by the DSM to discuss, as appropriate:

- Practical arrangements for delivery
- Blood glucose monitoring in labour
- Insulin/Metformin doses/administration, as appropriate:
  - prior to elective Caesarean section
  - in labour
  - removal of insulin sliding scale after delivery
  - return to subcutaneous insulin doses postnatally
  - insulin doses required in the first 3-5 days postnatal
  - stopping insulin and/or Metformin for gestational diabetics
  - returning to Metformin postnatally for type 2 diabetics
- Fetal response to labour and the need for continuous fetal monitoring
- Neonatal response to birth, including hypoglycaemia and neonatal blood glucose measurement; reasons for admission to NNU
- Postnatal blood glucose monitoring
- The 34 week checklist as per the hand-held notes, including the breastfeeding checklist – if not previously done by the community midwife
- Antenatal expressing of breast milk from 36 weeks

The Delivery Management Page of the Diabetes Care Record, documenting the individual plan of diabetes and delivery management will be completed at this appointment.

Delivery

Type 1 and type 2 diabetes

With good diabetes control and, barring complications, it is expected that the pregnancy will continue until the 39th week, and a vaginal delivery achieved.

Delivery will be managed on the Delivery Suite

Those who need Elective Caesarean section will be booked in the normal way.

Gestational diabetes

The pregnancies of those women who are diet controlled, with normal growth of the fetal abdominal circumference & normal liquor volume and with no other complicating factors, may continue up to 12 days post dates.

Women on treatment and those who have growth on or above the 97th centile should be booked for delivery in the 39th week of pregnancy.

Induction of labour

Aim for labour and delivery on a weekday daytime

The day of induction given should take into account that Propess can take several days to act before rupture of membranes is possible.

Women will be asked to come to DAU in the usual way. See *Induction of labour and Augmentation of PLRoM in prolonged pregnancy guideline (GL861)*

The woman should eat and drink normally and take her usual subcutaneous insulin and or Metformin doses until artificial rupture of membranes is performed.

Elective Caesarean section

This is usually, but not exclusively, arranged for Miss Street's Wednesday morning theatre list. Women on insulin should be first on the theatre list.

Women on insulin will be asked to come into Iffley Ward the night before the Caesarean date. Diet and Metformin controlled women can arrive on DAU on the morning of their operation at 07.30

The woman will have been advised to reduce her insulin doses on the afternoon/evening before her Caesarean. The amount of reduction will depend on which insulin schedule she is on and the quality of her blood glucose control. This is to prevent hypoglycaemia overnight.

The DSM will attend theatre with type 1 and type 2 diabetic women on insulin and those with serious diabetic co-morbidities. She will assess on a basis of individual need whether she needs to attend theatre for gestational diabetics or women who are Metformin or diet controlled.

For insulin dependent women requiring general anaesthesia, the blood glucose should be measured ½ hourly in theatre

Rarely, gestational or type 2 diabetic women on a twice daily insulin regimen, with or without Metformin and who are on a very small dose of evening insulin, may be advised to omit this evening dose and arrive for Caesarean on the morning of their operation. This will be arranged on the advice of the diabetes specialist midwife or Miss Street.

Labour

For women on insulin in pregnancy, the Diabetes - labour guideline (GL820) should be followed and an insulin sliding scale used.

The target glucose range is between 4-7 mmol/L during labour. While important for maternal well-being, this control is particularly important for the stability of the neonatal blood glucose.

The blood glucoses of diet and Metformin controlled women are taken 2 hourly in labour and hourly if the results are above 7.0 mmol/L. If they remain above 7.0 mmol/L the use of an insulin sliding scale should be considered.

Continuous fetal monitoring should be used during labour as there is an increased risk of fetal distress developing

Operative deliveries in type 1 and type 2 diabetics should be covered with antibiotics

Emergency Caesarean section and semi-elective Caesarean section

An insulin sliding scale should be used for women on Insulin who are undergoing Emergency Caesarean or having a Caesarean section which is not on the booked morning theatre list e.g. if pre-elective Caesarean SROM – see Maternity guideline: Diabetes - Emergency Caesarean Section or other Emergency Surgery

For insulin dependent women requiring general anaesthesia, the blood glucose should be measured ½ hourly in theatre

Diet and Metformin controlled women who are not in active labour should have 2 hourly glucose monitoring while fasting for the Caesarean, and follow advice for diet controlled woman in labour if results fall outside the parameters stated above

The immediate postnatal period

Type 1 diabetic

Maintain insulin sliding scale until the woman is able and allowed to eat and drink

Suitable postnatal insulin doses will be found on the Delivery Management page of the Diabetes Care Record, except in the case of premature delivery when this may not have been completed and the following management can be followed.

After delivery of the placenta the insulin requirements will return to the pre-pregnancy levels. These will be found on page 2 of the Diabetes Care Record.

N.B. It is important to avoid a severe hypoglycaemic episode. The initial requirement for insulin is usually 1/3rd to 1/2 of the pre-pregnancy doses. Insulin can be reintroduced gradually, up to the full pre-pregnancy doses, according to blood glucose readings and resumption of full diet.

Insulin doses should be prescribed in the variable dose medication to cover for the frequently changing doses in the initial postnatal period

When able to eat and drink, give a meal. Ensure the meal is tolerated. Give appropriate subcutaneous insulin. Remove sliding scale. If the meal is not tolerated continue sliding scale

Women who have been delivered by Caesarean Section and who have not tolerated a meal by 19:00 should be maintained on an insulin sliding scale until breakfast time.

For women who have had a Caesarean section, insulin administration should only be under the direct supervision of a midwife for the first 24 hours postnatal. The insulin pens should be locked in the ward refrigerator during this period.

Type 2 diabetics on oral hypoglycaemics pre-pregnancy or during pregnancy

Metformin and Glibenclamide may be used by breastfeeding women. Women on Metformin or Glibenclamide preconception may resume these immediately postnatally.

Apart from insulin, other anti-diabetic medication should not be taken by breastfeeding women. For women on other anti-diabetic medication preconception, insulin may need to be used while breastfeeding.

Treatment of the blood glucose is not always required immediately and may be deferred until the glucose results are consistently ≥ 10.0 mmol/L. However, some women may be symptomatic of diabetes with blood glucoses less that 10.0 mmol/L but > 6.0 mmol/L and want to start treatment. Subcutaneous insulin may be reintroduced, at the doses stated in the woman's Diabetes Care Record – Delivery Management Plan page, or treatment started as per the advice of a diabetes physician.

N.B. If Metformin has been stopped during the pregnancy it should be reintroduced gradually, as per BNF recommendation, as it, initially, causes gastro-intestinal upset.

Type 2 diabetic and impaired glucose tolerance diet controlled in pregnancy

Blood glucose monitoring should continue pre-meals and pre-bed

Gestational diabetics

- After delivery of the placenta, the blood glucoses should return to normal levels.
- Diabetes medication should be stopped
- To ensure that the readings have returned to normal, the woman should be asked continue her blood glucose monitoring pre-meals and pre-bed for a minimum of 24 hours on an unrestricted diet,
- Rarely, type 1 diabetes, which has developed for the first time in pregnancy, may be suspected and hourly blood glucose monitoring may be advised for at least 8 -12 hours, on the Delivery Suite, following delivery of the baby. In these circumstances, after discontinuing the IV insulin sliding scale, the blood glucose will rise rapidly into double figures. If this occurs, subcutaneous insulin will need to be recommenced. Recommended doses may be written on the Delivery Management page of the Diabetes Care Record. If they are not, refer to the diabetes medical team. If there is a time delay while this is arranged, re-start the IV insulin sliding scale promptly or there will be a risk of diabetic ketoacidosis.

Postnatal ward

Advise the insulin dependent woman that she is at risk of hypoglycaemia especially when breast feeding and to keep food nearby at all times

Babies of diabetic mothers should remain with the mother unless there is a medical indication for the baby to go to the Neonatal Unit. This will be a paediatric decision.
All diabetic women should be transferred to Iffley ward where neonatal transitional care facilities are available.
Women will be seen regularly by the DSM for review of the diabetes control
The diabetes medical team do ward rounds on Monday, Wednesday and Friday mornings and do not need to be called routinely. Should you need them to see a diabetic woman, they can be notified on beep no. 199
For type 1 and type 2 diabetics, the blood glucose target levels are 5 – 7 mmol/L.
For gestational diabetics, if the blood glucoses are consistently raised, the woman should be reviewed by the DSM on the morning following delivery and thereafter with consideration given to starting Metformin, if a new diagnosis of type 2 diabetes is likely. New therapy would be decided in conjunction with the diabetes physicians.
If the blood glucoses are consistently less than 6.0 mmol/L pre-meals and pre-bed the testing may be discontinued after 24 hours
All women should have their postnatal glucose readings recorded on a Blood Glucose Monitoring chart which is available on the Intranet: Policies and Protocols: Maternity Guidelines – Stationery - Diabetes

Discharge home - 6 weeks

A postnatal appointment at the Royal Berkshire Hospital is not mandatory and the need for an appointment will be made on an individual basis. General guidance follows:

Type 1 & 2 diabetic women normally under the care of the Diabetes Centre: offered a postnatal appointment after which they are referred back to the Diabetes Centre.

Type 1 and type 2 diabetic women normally managed by the GP: not usually offered a postnatal appointment.

Gestational diabetic: Blood glucose assessment will be made on the postnatal ward. Generally postnatal appointments are made as follows:

- Normal postnatal glucose readings: postnatal appointment not offered; a fasting plasma glucose will be arranged for 5 weeks postnatal with the result to be given by the GP at 6 weeks.
- Postnatal glucose readings not returned fully to normal: 6 week postnatal appointment will be offered; an oral glucose tolerance test arranged for 5 weeks' postnatal and result given at postnatal appointment.

- Postnatal glucose readings in the treatment range: postnatal appointment will be offered; diabetes treatment commenced prior to discharge

Prior to discharge home the DSM will advise the woman about the following, as required:

Type 1 & type 2 diabetics

- Any changes to new diabetes management
- Return to national eye screening programme
- Importance of annual diabetes review with GP
- Contraceptive advice. NHS leaflets available
- Preconceptual advice for a future pregnancy. Leaflet to be given (available on Maternity guidelines: Stationery)
- Importance of early referral and referral process for a future pregnancy, including self-referral to DSM
- Availability of telephone support for insulin adjustment up to 6 weeks postnatal
- Returning to the care of the Diabetes Centre, if appropriate
- Locally available weight loss support organisations, if appropriate
- Postnatal appointment if needed

Gestational diabetics

- pathology form for fasting glucose or oral glucose tolerance test, with written instructions will be given to the woman
- postnatal appointment, if needed
- contraception. NHS leaflets available in ANC for diabetic women
- likelihood of gestational diabetes in a future pregnancy.
- likelihood of developing type 2 diabetes – give letter detailing symptoms of T2DM
- weight loss, dietary and exercise advice – give letter with advice and availability of help via the GP
- annual fasting plasma glucose is advised

6 week postnatal appointment:

Type 1 and type 2 diabetes

Assess and optimize glycaemic control and, if necessary, blood pressure control
Discuss: contraception; pregnancy planning
If appropriate, book into medical diabetes clinic (usually 4-6 months postnatal). This will be arranged by the diabetes consultant physician or, in their absence, a letter will be

sent to the Diabetes Centre by Miss Street. Appointment to be posted to patient from the Diabetes Centre.

Gestational diabetes

- If appropriate, give Oral Glucose Tolerance Test result & lifestyle advice for diet, weight loss and exercise
- For women with a positive OGTT, refer back to GP with appropriate recommendations for treatment
- For those diagnosed by an OGTT with diabetes/glucose intolerance Discuss: health risks, contraception; pregnancy planning; need for annual review by GP and yearly eye screening.

Auditable standards:

1. The antenatal care schedule for all women with diabetes to be seen in the antenatal clinic is:
   - 1st & 2nd trimester: no less than monthly and up to weekly
   - 3rd trimester: no less than 2 weekly and up to weekly

   Their individual frequency of visits will be documented in the "Individual care record for pregnancy complicated by diabetes" filed in the maternal health care record.
2. All women with pre-existing diabetes on insulin treatment will be seen on each appointment by a multidisciplinary team formed by: obstetrician, DSM and endocrinologist.
3. All women with pre-existing diabetes not on insulin treatment will be seen on each appointment by a team formed by: obstetrician and DSM.
4. All women with pre-existing diabetes will be offered a fetal cardiac ultrasound at 24 weeks.
5. All pregnant women with insulin-treated diabetes are advised of the risks of hypoglycaemia unawareness in pregnancy on their first appointment with the diabetic team. This will be documented in the "Individual care record for pregnancy complicated by diabetes" filed in the maternal health care record.
6. All pregnant women with insulin-treated diabetes are advised regarding optimal fasting and 1-hour post-pandrial blood glucose level during pregnancy on their first appointment with the diabetic team. This will be documented in the "Individual care record for pregnancy complicated by diabetes" filed in the maternal health care record.

7. All diabetic women admitted to the maternity will have a blood sugar done within one hour of admission
8. All diabetic women admitted to the maternity will have a "think glucose" referral completed and sent to the DSM within XXX hour of admission
9. All diabetic women admitted to the maternity will be commenced on a Maternity Blood Glucose Monitoring chart and be given a small sharps container for their bedside table

References

1. National Institute of Clinical Excellence Diabetes in Pregnancy: management of diabetes and its complications from pre-conception to the postnatal period NICE clinical guideline no. 63 March 2008 Available from URL <http://www.nice.org.uk/CG63 >
2. National Institute of Clinical Excellence Obesity: the prevention, identification, assessment and management of overweight and obesity in adults and children NICE clinical guideline no. 43 Dec 2006 Available from URL <http://www.nice.org.uk/CG43>
3. The Renal Association The UK CKD Guidelines (2005) Available from URL <http://www.renal.org/CKDguide/ckd>
4. Catherine Nelson-Piercy, Handbook of Obstetric Medicine 2002; 82-99

Author	Miss Pat Street (Consultant in Feto-Maternal Medicine)
Written	2004
Reviewed	Jan 2007; July 2008; July 2009; April 2010; May 2011, Revised Mar & May 2012, November 2013 (D Graham Diabetes Specialist Midwife)

Monitoring:

The audit team that will audit the above auditable standards will be formed by:

- A midwife and/or a doctor and/or a maternity support worker
- Audit and quality midwife
- A clinical audit facilitator

The audit will compare results with previous audits, if applicable. The audit will review documentation stated in the maternal health records as evidence of compliance with standards.

The audit will be completed prospectively or retrospectively:

- For first-time audits: within the first 9 months of each financial year

- For repeat audits: within the timeframe stated by previous audit's *risk priority*.

Plan following audit results **for all standards** audited, this would subject to earlier re-audit if concerns are raised from risk management about this particular area.

Results	Plan	Risk Priority
If < 75% compliance	Implement action plan and re-audit within 3 months from completion of report	1
If ≥ 75% compliance and results ≤ than previous audit (when applicable)	Implement action plan and re-audit within 6 months from completion of report	2
If ≥ 75% compliance and results ≥ than previous audit (when applicable)	Implement action plan and re-audit next financial year from completion of report	3

The results will be disseminated depending on the *risk priority.*

Risk Priority	Dissemination
1	Presented in at least one of the following meetings: Maternity Audit Forum, Maternity Clinical Governance, Morbidity & Mortality, Combined anaesthetic team, midwifery services meeting or local ward forums. Uploaded in Datix for staff and patients access RBHFT Maternity Newsletter Special measures identified in action plan
2	Presented in one of the above meetings Uploaded in Datix for staff and patients access RBHFT Maternity Newsletter
3	Uploaded in Datix for staff and patients access RBHFT Maternity Newsletter

The dissemination on results and implementation of action plans and timely re-audit will be coordinated by the Audit and Quality Midwife and reported to the Maternity Clinical Audit Committee on a monthly basis. This committee reports to Maternity Clinical Governance monthly