Blackpool, Fylde and Wyre Hospitals NHS Foundation Trust

Document Type: **GUIDELINE**		**Unique Identifier:** OBS/GYNAE/GUID/101
Title: **Diabetes in Pregnancy – Type 1 and Type 2 (Pre-existing diabetes) pre-conception, antenatal and postnatal care.**		**Version Number:** 2 **Status:** Ratified
Scope: Doctors, Midwives and Nurses working in Obs/Gynae Department		**Classification:** Departmental
Author/Originator and title: Dr M Elrishi, Consultant Diabetologist Alison Leyland, Diabetes Specialist Midwife Mr J Duthie, Lead Obstetrician		**Responsibility:** Women's and Children's Division
Replaces: 1 Diabetes in Pregnancy – Antenatal and Postnatal Care	**Description of amendments:** Change of title and amendments throughout	
Name Of Divisional/Directorate/Working Group: Policy Group	**Date of Meeting:** 21/09/2010	**Risk Assessment:** Not Applicable **Financial Implications** Not Applicable
Validated by: Obstetric and Gynaecology Directorate Meeting	**Validation Date:** 29/07/2010	**Which Principles of the NHS Constitution Apply?** 1 - 4
Ratified by: Clinical Improvements Committee	**Ratified Date:** 07/10/2010	**Issue Date:** 07/10/2010
Review dates may alter if any significant changes are made		**Review Date:** 01/07/2013

Does this document meet the requirements of the Equality Act 2010 in relation to Race, Religion or Belief, Age, Disability, Gender, Sexual Orientation, Gender Identity, Pregnancy & Maternity, Marriage and Civil Partnership, Carers, Human Rights and Social Economic Deprivation discrimination? Initial Assessment

1. PURPOSE

To ensure a robust system is in place to provide comprehensive, appropriate multi-disciplinary care to women with pre-existing diabetes mellitus during pregnancy and to manage the associated risks.

2. SCOPE

Doctors, Midwives, Nurses and Allied Health Professionals working within Blackpool Fylde and Wyre Hospitals NHS Foundation Trust

3. PROCEDURE

3.1 PRE – CONCEPTION

Women with Type 1 and Type 2 Diabetes have an increased risk of adverse pregnancy outcome, including miscarriage, fetal congenital anomaly and perinatal death.

The importance of planning pregnancy should be an essential component of diabetes education. The importance of good glycaemic control must be stressed to reduce but not eliminate the risks of adverse outcomes.
If referral is received by the Diabetes Specialist Midwife for pre-conception advice the flow chart detailed in Appendix 1 will be followed.
All care must be documented in the woman's health record.

3.2 MANAGEMENT OF WOMEN WITH PRE-EXISTING DIABETES IN PREGNANCY

All women with pre-existing diabetes must be referred immediately to the Diabetes Specialist Midwife once pregnancy is confirmed.

Women with diabetes must be advised to give birth in a hospital where advanced neonatal resuscitation skills are available 24 hours a day.

The woman will be given the Diabetes in Pregnancy - Understanding NICE Guidance patient information leaflet by the Diabetes Team.

3.2.1 Multi-Disciplinary Diabetes Team Involvement

All pregnant women known to the Trust with pre-existing diabetes must be offered referral to the Joint Diabetic Antenatal Clinic.They will receive Multi-disciplinary care, from the Diabetic Team which includes the Consultant Diabetologist, Lead Consultant Obstetrician, Diabetes Specialist Nurse, Diabetes Specialist Midwife and Dietician. The multidisciplinary team will document consultations in the woman's health record.

3.2.2 Timetable of Antenatal Appointments (Appendix 2)

The timetable of antenatal appointments detailed in appendix 2 for women with diabetes is documented within the diabetic health record by the Diabetes Team.

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Women will also receive routine antenatal care according to the schedule of appointments in Antenatal Care Guideline (OBS/GYNAE/PROT/008) and this will be documented in the health record.

3.2.3 The Requirement to Document an Individual Management Plan In the Health Record That Covers the Pregnancy and Post-Natal Period Up To Six Weeks

The Diabetes Team will complete an individual management plan and this must be documented in the woman's diabetic pregnancy health record and cover the pregnancy and the postnatal period up to 6 weeks. Postnatal care is detailed in Appendix 4

3.2.4 Targets for Glycaemic Control

The Diabetes Team will undertake the following:-

- At booking individualised targets for home blood glucose monitoring must be agreed with the woman. Aim for a fasting blood sugar between 4.0 mmol/L and 6.0 mmol/L and 1-2 hour postprandial glucose below 7.8 mmol/L throughout pregnancy
- Aim for HbA1c of less that 7.0%
- At booking glucose monitoring technique and frequency of glucose testing should be reviewed and an up to date meter should be provided
- At booking and throughout pregnancy the woman must be advised of the benefits of good glycaemic control in reducing but not eliminating the risks associated with diabetes in pregnancy
- Glucagon (Hypokit) prescription should be considered and appropriate training given to the woman's partner and / or family members.

The above actions must be documented in the woman's health record by the Diabetes Team.

3.2.5 Risks of Hypoglycaemia and Hypoglycaemia Unawareness

At booking and throughout the pregnancy the Diabetes Team will offer the woman advice and information on the risks associated with hypoglycaemia and hypoglycaemia unawareness; this must be recorded in the woman's health record by the Diabetes Team.

3.2.6 Nephropathy Screening

Women with diabetic nephropathy are at increased risk of adverse pregnancy outcomes, in particular intrauterine growth restriction, chronic hypertension, pre- eclampsia and pre-term birth. Nephropathy screening will be offered by the Diabetes Team and include:-

- Measurement of the albumin/creatinine ratio and serum creatinine
- Urinalysis for protein at each clinic visit
- Refer to the nephrologist if significant proteinuria or serum creatinine > 120 micromol/L
- Prescribe thromboprophylaxis if 24 – hour protein > 3-5g

3.2.7 Retinopathy Screening – Women With Pre-Existing Diabetes

Retinopathy screening will be offered to woman with pre existing diabetes in the first trimester by the Diabetes Team. If the result is normal this should be repeated in the third trimester.

If the result is abnormal the Diabetes Team will refer the woman to the ophthalmologist

Diabetic retinopathy should not be a contraindication to rapid optimisation of glycaemic control in woman who present with poorly controlled diabetes in early pregnancy.

Diabetic retinopathy should not be a contraindication to vaginal birth.

3.2.8 Offering Antenatal Examination of The Four-Chamber View of The Fetal Heart and Outflow Tracts

This will be offered by the Lead Obstetrician / Diabetes Specialist Midwife and undertaken at 18 – 20 weeks, it will be documented in the diabetes health record.

3.2.9 Steroid therapy

Steroid therapy is detailed in Appendix 3

3.2.10 How Women Who are Suspected of Having Diabetic Ketoacidosis (DKA) are Admitted Immediately to a High Dependency Area Where They Can Receive Both Medical and Obstetric Care

Women with diabetes are susceptible to developing DKA during pregnancy. DKA is associated with significant fetal and maternal mortality.

Any woman with diabetes who is suspected of DKA will be reviewed by the on call physician and if DKA is confirmed the woman will be transferred to High Dependency Care. Usually the assessment for woman less than 24 weeks will take place in the Accident and Emergency Department / Clinical Decisions Unit and for woman over 24 weeks this will take place on Delivery Suite.

In all cases the on call physician must inform a senior obstetrician of the woman's admission. The woman will receive care from both the obstetrician and physician.

3.2.10.1 Prevention and education of DKA.

The diabetes team must**:**

- Educate the woman about the risk of DKA if they are unwell or become hyperglycaemic.
- Give ketone testing strips and advise to check for ketones if they become hyperglycaemic and/or unwell
- Offer contact with the Diabetes Specialist Nurse/Midwife if the women becomes unwell.

3.2.10.2. Identification of suspected DKA:

DKA is suspected if the following signs are present:

- The woman is unwell
- Blood Glucose levels are high
- Ketones are present in the urine +++ or greater
- Blood ketones are present

3.3 MONITORING COMPLIANCE

The process for monitoring compliance is identified in Appendix 4.

4. ATTACHMENTS

Appendix 1	Preconception care for woman with pre-existing diabetes
Appendix 2	Time table of antenatal appointments
Appendix 3	Steroid Therapy
Appendix 4	Post-natal Care up to 6 weeks
Appendix 5	Process for Monitoring Compliance

5. ELECTRONIC AND MANUAL RECORDING OF INFORMATION

Electronic Database for Policies, Procedures, Protocols and Guidelines held by Policy Co-ordinator/Archivist office

6. LOCATIONS THIS DOCUMENT ISSUED TO

Copy No	Location	Date Issued
1	Intranet	07/10/2010
2	Wards and Departments	

7. OTHER RELEVANT/ASSOCIATED DOCUMENTS

Obs/Gynae/Prot/008	Antenatal Care Guideline
Obs/Gynae/Guid/065	Steroid Therapy for Fetal Lung Maturation
Corp/Guid/069	Management of Hyperglycaemic Emergency In adult Diabetic Ketoacidosis (DKA) Hyperosmolar Non-Ketotic State (HONK)

8. SUPPORTING REFERENCES/EVIDENCE BASED DOCUMENTS

References In Full
Understanding NICE Guidance Diabetes in pregnancy – Clinical Guideline 63 Information for people who use NHS services
NICE clinical guidance 63 Diabetes in pregnancy (2008) : Management of diabetes and it's complications from pre-conception to the postnatal period

9. CONSULTATION WITH STAFF AND PATIENTS

Name	Designation
Erica Duffield	Diabetes Nurse Specialist
Caroline McNicholas	Dietician
Louise Dowell	Clinical Governance Lead
Dr Seth	Consultant Physician

10. DEFINITIONS/GLOSSARY OF TERMS

NAME	DEFINITION
Diabetes Team	The Diabetes Team consists of the Diabetes Diabetlogist, Obstetrician, Diabetes Specialist Nurse, Diabetes Specialist Midwife and Dietician

Level 2 Care (High Dependency)	Level 2 care is defined as care for patients requiring detailed observation or intervention including support for a single failing organ system or post – operative care and those stepping down from higher levels of care. In this instance Level 2 care will be provided on Delivery Suite or the High Dependency Unit

11. AUTHOR/DIVISIONAL/DIRECTORATE MANAGER APPROVAL

Issued By	Alison Leyland	**Checked By**	Dr M Elrishi
Job Title	Diabetes Specialist Midwife	**Job Title**	Consultant Diabetologist
Signature		**Signature**	
Date	October 2010	**Date**	October 2010

Appendix 1

PRECONCEPTION CARE FOR WOMEN WITH PRE-EXISITNG DIABETES
FLOW CHART

The Diabetes Specialist Midwife will Offer Advice on:

Pregnancy and the risks of fetal malformation, fetal loss, pre-eclampsia and other adverse pregnancy outcomes and how to reduce the risks with good Glycaemic control
Diet, body weight and exercise, including weight loss for women with body mass index (BMI) over 27 kg/m2
When to stop contraception
Taking Folic Acid 5mgs from pre-conception until 12 weeks gestation
Hypoglycaemia and hypoglycaemia unawareness
Review of, and possible changes to, medication, Glycaemic targets and self- monitoring routine
Retinal and renal assessment
Smoking cessation and alcohol consumption
Frequency of appointments and local support

All the above must be documented in the health record by the Diabetes Team

APPENDIX 2 - Timetable of antenatal appointments

The diabetes team will offer and document in the health record the following

• Immediate referral to the joint diabetic antenatal clinic • Contact with the diabetes team every 1-2 weeks to assess glycaemic control • Advice on where to have the birth, which should be in hospital with advanced neonatal resuscitation skills available 24 hours a day • Information and education on good diabetes control at each appointment. • Care specifically for women with diabetes in addition to routine antenatal care.
1st Appointment • Offer information, advice and support on glycaemic control • Take clinical history • Commence diabetes in pregnancy notes • Review medication • Offer retinal and renal assessment if not performed in previous 12 months • Offer blood tests: Thyroid function, Biochemistry profile, Liver function, HbA1c • Prescribe folic acid 5mgs
7-9 weeks • Offer viability scan
Booking Appointment • Ideally by 10 weeks • Discuss information, education about how diabetes will affect pregnancy, birth and early parenting such as breastfeeding and initial care of the baby.
11-13 weeks • Offer dating scan
16 weeks • Offer retinal assessment in women with pre-existing diabetes who had signs of diabetic retinopathy at the 1st appointment. • Offer Downs syndrome screening
18-20 weeks • Offer routine anomaly scan • Offer four chamber view of fetal heart and outflow tracts
23-26 weeks • Offer antenatal assessment
28 weeks • Offer ultrasound monitoring of fetal growth and amniotic fluid volume 4 weekly, as a minimum • Offer retinal assessment to women with pre-existing diabetes who did not have diabetic retinopathy at their 1st antenatal clinic visit. • Offer routine investigations • Offer antenatal assessment
32 weeks • Offer ultrasound monitoring of fetal growth and amniotic fluid volume • Offer routine antenatal investigations and assessment
34 weeks • Offer weekly fetal monitoring by cardiotocograph undertaken on the Maternity Day Unit • Offer antenatal assessment
36 weeks • Offer ultrasound monitoring of fetal growth and amniotic fluid volume • Offer routine investigations and antenatal assessment • Discuss options for delivery and decide plan for delivery after 38 completed weeks
38 weeks • Induction of labour or caesarean section if indicated after 38 weeks and if there is a normally grown fetus • Offer antenatal assessment
39 – 41 weeks • Offer fetal surveillance and ultrasound Doppler in women who choose to await spontaneous delivery • Offer antenatal assessment

APPENDIX 3 – Steroid Therapy

Health record must be completed by all health care professionals involved in the woman's care.

Advice	Action in an emergency situation	Action in planned situation	Documentation
Steroid therapy for Fetal Lung Maturity if delivery is indicated before 34 weeks gestation	**In an emergency/unplanned situation or if the woman is in labour, unwell , nil by mouth or not eating and drinking:** Steroid therapy must be given to the woman on delivery suite as per Steroid Therapy for Fetal Lung Maturation Guideline (OBS/GYNAE/PROT/032) Sliding scale to commenced as regime below. Contact the Diabetes Team for further advice	**If the woman is well, eating and drinking:** Steroid therapy must be given to the woman on the antenatal ward as per Steroid Therapy for Fetal Lung Maturation Guideline (OBS/GYNAE/PROT/032) • Record blood glucose levels pre-meal and 1-2 hrs post meal • Sub-cutaneous Insulin is given as prescribed however, doses will be increased by 20 -30% for 48 hours after the first steroid injection as prescribed. • If blood glucose >11 mmol/L on 3 consecutive occasions the obstetric team will commence sliding scale regime below • The midwife will contact the diabetes team to review insulin doses and review prior to discharge home. • On discharge, the midwife, will offer an appointment for the next Joint Diabetic ANC	The Obstetric Team / Diabetes Team are responsible for Documenting the Birth record

<u>Sliding Scale Regime</u>
Line 1:
1000 mls 5% Dextrose with 20 mmol Potassium Chloride to be infused 8 hourly (125 ml/hr) using an infusion pump.
Line 2:
50units Actrapid added to 49.5 ml 0.9% normal saline and administer via a syringe pump using the sliding scale below.
Please note: The insulin and dextrose infusions to run through 1 venflon with a 3 way tap.

Blood Glucose	Rate of Intravenous Insulin Infusion
Less Than 4 mmol/L	0
4.1 -8.0 mmol/L	1 unit per hour
8.1 – 10 mmol/L	2 unit per hour
10.1 – 12 mmol/L	4 unit per hour
Greater that 12.1mmol/L	Inform on call physician

<u>Sliding Scale</u>
The rate of the insulin pump is adjusted based on hourly blood glucose measurements with blood glucose test strips using the ward based meter.

Record insulin regime and blood glucose results on the Glucose/Insulin Regime and sliding scale chart.

Appendix 4

POST NATAL CARE UP TO SIX WEEKS

The ward midwife must inform the Diabetes Specialist Midwife or deputy of any births to women who have diabetes. All care must be documented in the health record by the appropriate health professional.

Advice	Person Responsible
Refer to Diabetic notes for postnatal plan and contact Diabetes Team for advice Advise women with pre-existing diabetes: • to reduce sub-cutaneous insulin by 20% immediately after birth and monitor blood glucose to establish correct dose • about the risk of hypoglycaemia, especially when breast feeding • to have food available before or during breastfeeding	Diabetes Team / Obstetric Team
Women with Type 2 Diabetes advise: • To resume or continue taking Metformin and Glibencamide while breastfeeding if prescribed • Not to take other oral hypoglycaemic agents while breastfeeding	Diabetes Team
Transfer and Follow Up to 6 weeks **Women with Pre-existing Diabetes** • Advise women of the importance of pre-conception care when planning future pregnancies • Offer contraception advice • Offer appointment with Diabetes Team at 6 weeks postnatal then refer back to routine diabetes care • Offer telephone contact with Diabetes Specialist Nurse/Midwife during first 6 weeks postnatally	Diabetes Team / Obstetric Team

Appendix 5 – PROCESS FOR MONITORING COMPLIANCE

Minimum requirement to be monitored		Process for monitoring e.g. audit	Responsible individual/ group/ committee	Frequency of monitoring	Responsible individual/ group/ committee for review of results	Responsible individual/ group/ committee for development of action plan	Responsible individual/group/ committee for monitoring of action plan and Implementation
a)	The involvement of the multidisciplinary team including the obstetricians, diabetes specialist midwife, diabetes physician, diabetes specialist nurse and dietician in the provision of care when appropriate	Audit 1% of all health records of women that have pre-existing diabetes	Diabetes Specialist Midwife	Annual	Women and Children's Governance Group	Diabetes Specialist Midwife / Women and Children's Governance Group	Women and Children's Governance Group
b)	The time table of antenatal appointments	Audit 1% of all health records of women that have pre exiting diabetes	Diabetes Specialist Midwife	Annual	Women and Children's Governance Group	Diabetes Specialist Midwife / Women and Children's Governance Group	Women and Children's Governance Group
c)	The requirement to document an individual management plan in the health record that covers the pregnancy and post natal period up to six weeks	Audit 1% of all health records of women that have pre exiting diabetes	Diabetes Specialist Midwife	Annual	Women and Children's Governance Group	Diabetes Specialist Midwife / Women and Children's Governance Group	Women and Children's Governance Group

d)	Targets for Glycaemic control	Audit 1% of all health records of women that have pre exiting diabetes	Diabetes Specialist Midwife	Annual	Women and Children's Governance Group	Diabetes Specialist Midwife / Women and Children's Governance Group	Women and Children's Governance Group
e)	Advising women with type 1 diabetes the risks of hypoglycaemia and hypoglycaemia unawareness in pregnancy	Audit 1% of all health records of women that have pre exiting diabetes	Diabetes Specialist Midwife	Annual	Women and Children's Governance Group	Diabetes Specialist Midwife / Women and Children's Governance Group	Women and Children's Governance Group
f)	Offering antenatal ultrasound of the four chamber view of the fetal heart and outflow tracts at 20 weeks.	Audit 1% of all health records of women that have pre exiting diabetes	Diabetes Specialist Midwife	Annual	Women and Children's Governance Group	Diabetes Specialist Midwife / Women and Children's Governance Group	Women and Children's Governance Group
g)	How women who are suspected of having DKA are admitted immediately to a high dependency unit where they can receive both medical and obstetric care.	Audit 1% of all health records of women that have pre exiting diabetes	Diabetes Specialist Midwife	Annual	Women and Children's Governance Group	Diabetes Specialist Midwife / Women and Children's Governance Group	Women and Children's Governance Group