Mid Essex Hospital Services NHS
NHS Trust

MANAGEMENT OF DIABETES IN PREGNANCY	CLINICAL GUIDELINES Register no 04266 Status: Public

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Document History

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1.0	Dr Jackson, Miss Sharma, Rachel Hoddinott, Margaret Bardle	September 2008
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1.0 Purpose of Guideline

1.1 To assist professionals in providing timely evidence based practice, to ensure optimum care, and best outcome for mother and baby.

2.0 Equality and Diversity

2.1 Mid Essex Hospital Services NHS Trust is committed to the provision of a service that is fair, accessible and meets the needs of all individuals.

3.0 Screening

3.1 All mothers in the following high risk groups should have a 75g oral glucose tolerance test (OGTT) performed between 24 and 28 weeks gestation:

- BMI > 35 pre-pregnancy (i.e. marked obesity)
- 1st degree family history of diabetes (i.e. parents/siblings with any form of diabetes)
- South Asian/Black Caribbean/Middle Eastern ethnic origin
- Previous PCOS (polycystic ovaries)
- Previous macrosomia >4.5kg
- Previous unexplained intrauterine death
- Congenital deformity in previous/present pregnancy
- Polyhydramnios/large for dates baby in current pregnancy

3.2 If the mother has previous history of any type of diabetes, including gestational diabetes, she should automatically be referred to the diabetic nurses who will then organise the patient's appointments with the Joint Diabetes /Antenatal Clinic.

3.3 If the mother has a previous history of any type of diabetes, including gestational diabetes, they do not need the OGTT repeating by the midwives.

3.4 Screening for gestational diabetes using fasting or random plasma glucose should not be undertaken.

3.5 Women with polycystic ovaries (PCO) should have a GTT appointment. If GTT is normal they do not need to be seen in clinic just because they have PCO.

4.0 Diagnosis

4.1 The criteria for diagnosis is based on the World Health Organisation (WHO) recommendations and endorsed by Diabetes UK.

4.2 Diagnosis of gestational diabetes is made if:

- **Fasting plasma glucose is 7.0mmol/l or higher**

  and/or

- **Plasma glucose 2 hours following a 75g glucose load is 7.8mmol/l or higher**

4.3 The gestational date of the result should be recorded, as glucose tolerance changes as pregnany progresses.

5.0 Referral

5.1 Any patient with pre-existing diabetes or with a newly positive OGTT should automatically be referred to the diabetic nurses via fax (01245 516380) and followed up with a telephone call (01245 516371) who will then organise the patient's appointments with the Joint Diabetes /Antenatal Clinic.
(Refer to Appendix A)

5.2 The clinic runs every Friday morning and comprises of:

- Obstetrician (consultant/registrar)
- Midwife
- Diabetes physician
- Diabetes specialist nurse
- Dietician
- Ultrasonographer

5.3 When making a referral provide; the patient's name and contact details and reason for requesting the test as well as the test result; which will assist with early commencement of self-monitoring of blood glucose and dietary advice.

5.4 Patients with pre-existing diabetes will be transferred back to their normal out patient's department service following delivery.

6.0 Antenatal Care

6.1 All advice about self monitoring of blood glucose and appropriate targets for safe glucose levels will be supported by the diabetes team (extension 6371).

6.2 The diabetes team will be aiming for a fasting glucose levels below 6.0 mmol/l and 1 hour post-priandal glucose levels below 7.8 mmol/l and throughout the pregnancy. The main limiting factor is the risk of hypoglycaemic episodes.

6.3 Patients on insulin in pregnancy should be advised of the risks of hypoglycaemia and hypoglycaemia unawareness in pregnancy.
(Refer to the patient information leaflet entitled 'Hypoglycaemia')

6.4 Any patients referred with a suspected diabetic ketoacidosis should be admitted to the Emergency Department where they can be reviewed immediately and transferred to MHDU or ITU
(Refer to 'Guideline for the management of pregnant and postnatal patients who present for care at the trust's emergency services'. Register number 08012)

6.5 Should the patient need steroid therapy in pregnancy, she should be admitted to labour ward for monitoring, and if needed a sliding scale insulin regime commenced.
(Refer to the guideline entitled 'Administration of antenatal steroids'; register number 07065)

6.6 Timetable for antenatal appointments for pre-existing and gestational diabetes as follows:

- Obstetric appointments

(Refer to the schedules in Appendix A (pre-existing) and B (gestational diabetes)

6.6.1 The diabetes team also offer and provide weekly telephone and email contact for all diabetic patients; between clinic appointments as required.

6.6.2 All scans will ideally be booked to coincide with joint clinic appointments

6.6.3 If they have pre-existing diabetes they should have their retina checked by digital imaging, organised by GPs and Mid-Essex Retinal screener service around 16 weeks gestation and this appointment is followed through by the diabetic team

6.7 The patient's individual management plan covering the pregnancy and the postnatal period (up to six weeks) should be documented in the health care records. The diabetes team use the diabetes software DIAMOND to generate a letter to be sent to the GP's surgery within 2 working days; with two copies; one to be incorporated in the patient's handheld records on the day of the antenatal appointment and the remaining copy to be retained in the lilac medical records.

6.8 The patient should have care with her local midwife and be given the opportunity to receive information and education on other aspects of pregnancy, alongside her obstetric care.

6.9 At 20 weeks gestation patients with pre-existing diabetes should be offered an ultrasound (USS) examination of the four chamber view of the fetal heart and outflow tracts. This is a routine USS offered to all pregnant patients.
(Refer to 'Ultrasound department guidelines for obstetric examination')

7.0 Antenatal Patients Receiving Steroids
(Refer to the guideline entitled 'Administration of antenatal steroids'; register number 07065)

7.1 When early delivery is suspected/ advised patients may require steroid injections (betamethasone/ dexamethasone) to help with maturity of the baby's lungs. This can have an adverse effect on blood sugar levels in diabetic women, causing hyperglycaemia.

7.2 The patient should be admitted to the DAU to receive the steroids. She should continue to take her insulin as prescribed. She should also continue to eat and drink unless otherwise indicated.

7.3 Hourly blood sugar readings should be undertaken and recorded. Should the blood sugar levels go above 10mmols/l, then the patient should adjust her insulin levels as advised by the diabetic team (see individual care plan in notes).

7.4 If the blood sugar levels remain above 10mmol/l, then a sliding scale should be commenced. Consideration should then be given for transferring the woman to the labour ward.

7.5 Antenatal patients on a sliding scale do not warrant continuous CTG monitoring unless otherwise indicated

8.0 Intrapartum Care

8.1 For patients with pre-existing diabetes there is an increased risk to the unborn child and patient if delivery goes past 40 weeks.

8.2 Timing and method of delivery will be decided by the obstetric team on an individual basis in discussion with the patient. Delivery of the baby is normally planned for 38-39 weeks gestation, if the fetus has grown normally; and also taking into consideration any other maternal of fetal risk factors.

8.3 Diabetes in itself should not be a contraindication to VBAC (Vaginal Birth after caesarean section)
(Refer to 'Guideline for vaginal birth after caesarean section (VBAC)'. Register number 06030).

9.0 Management of Insulin Treated Patients in Labour

9.1 The Diabetes Team will complete the intrapartum management plan at 36 weeks gestation for both pre-existing and gestational diabetics.
(Refer to Appendix C)

9.2 The patient should be encouraged to manage their diabetes until labour becomes established.

9.3 Once in established labour, the patient should monitor their blood sugar levels hourly. She should continue to take her insulin as prescribed. Energy drinks should be encouraged
(Refer to the guideline entitled 'Nutrition in labour and antacid prophylaxis for the patient at term'; register number 04253)

9.4 If the blood sugar goes above 10 mmols/litre then the patient should adjust her insulin dose (as recommended by the diabetic team). If this adjustment fails to correct her blood sugar and it remains above ten, than the sliding scale should be commenced. Blood sugar levels should continue to be measured hourly and the sliding scale adjusted accordingly.
(Refer to Appendix D)

9.5 Continuous electronic fetal monitoring should be commenced with a low threshold for caesarean section.

9.6 Ranitidine 150 milligrammes (mg) orally, should be commenced and continued six hourly in labour until delivery.

9.7 The paediatrician should be bleeped if neonatal resuscitation is required; or if there is any evident birth defect.

10.0 Management of Women with Diet and Tablet Controlled Diabetes requiring Induction of Labour (IOL)

10.1 Patients with well controlled gestational diabetes mellitus (GDM) (diet controlled) should have propess and they can go home unless they have associated complications such as pre-eclampsia (PET) or intra-uterine growth retardation (IUGR).
(Refer to the guideline entitled 'Management of propess for induction of labour' (09125)

11.0 Management of Women with Insulin Controlled Diabetes requiring Induction of Labour (IOL)

11.1 Women with poorly controlled diabetes controlled on Insulin, should be induced with prostin and these should remain as an inpatient in the Consultant-led Unit at Broomfield

Hospital. They should have an additional cardiotocograph (CTG) at approximately 20:00 hours and 07:00 hours the following day
(Refer to the guideline entitled 'Induction of labour with prostaglandin, artificial rupture of membranes and stretch and sweep; register number 04291)

12.0 Management of Diet and Tablet Controlled Diabetes in Labour

12.1 The Diabetes Team will complete the intrapartum management plan at 36 weeks gestation for both pre-existing and gestational diabetics.
(Refer to Appendix C)

12.2 Monitor blood glucose hourly and start sliding scale if blood monitoring (BMs) is >10mmols/l.

12.3 Continuous electronic fetal monitoring should be commenced.
(Refer to the 'Guideline for fetal monitoring in pregnancy and labour'. Register number 04265)

12.4 Ranitidine 150 mg orally, should be given in labour and six hourly there after until delivery.

12.5 The paediatrician should be bleeped if neonatal resuscitation is required; or if there is any evident birth defect.

13.0 Management of Elective Caesarean Section (LSCS)

13.1 Arrange for LSCS to be first on the obstetric theatre list.

13.2 Normal fasting arrangements for LSCS will apply. If on insulin the patient will be advised by the diabetic team to reduce her pre-operative dose of long acting insulin by a third and omit the morning dose of insulin on the day of surgery. Sliding scale insulin is not required unless clinically indicated. These patients are placed first on the elective caesarean section list.

13.3 Administer ranitidine 150mg and metoclopramide 10mg orally.

13.2 Monitor blood glucose prior to LSCS and post elective caesarean section in the recovery room.

13.3 The paediatrician should be bleeped if neonatal resuscitation is required; or if there is any evident birth defect.

14.0 Diabetic Ketoacidosis

14.0 In cases where diabetic ketoacidosis is suspected or diagnosed, the woman must be initially cared for on the labour Ward by an appropriately trained member of staff. The Consultant Obstetrician and Consultant Anaesthetist should be informed of the situation. The diabetic team and/or on-cal medics must also be informed and transfer to an appropriate place of care (MHDU, ITU) should be considered.

15.0 Postnatal Care for Type 1 Diabetes

15.1 The Diabetes Team will complete the post birth management plan at 36 weeks gestation for both pre-existing and gestational diabetics.
(Refer to Appendix E)

15.2 Return to pre-pregnancy insulin doses, reducing doses by a further 10-20% if the mother is breastfeeding. The diabetes team will usually already have advised on the correct post-partum insulin regime.

15.3 If sliding scale insulin is in progress continue two hourly blood glucose monitoring until the next meal. When sliding scale is discontinued, refer to point 11.1.

15.4 Leave the patient's cannula in situ for 24 hours and ensure that she checks her blood glucose prior to meals and at bedtime.

15.5 The patient may be at risk of hypoglycaemia while breastfeeding and should be advised to have a snack available during feeds.

15.6 Contraception needs to be discussed during the postnatal period as unplanned pregnancy is not advisable.

16.0 Postnatal Care for Gestational Diabetes (GDM) and Type 2 Diabetes

16.1 The Diabetes Team will complete the post birth management plan at 36 weeks gestation for both pre-existing and gestational diabetics.
(Refer to Appendix E)

16.2 Stop insulin immediately after the placenta is delivered.

16.3 Check blood glucose pre meal and at bedtime for 2 days in hospital or at home. If blood glucose remains within the non diabetic range i.e. 4 to 7mmols/litre then discontinue.

16.4 Type 2 diabetes patients will usually return to their pre-pregnancy therapy, unless breastfeeding, when the diabetes team will advice about treatment options.

16.5 Patients with gestational diabetes should be advised by the diabetes team of the risk of developing Type 2 diabetes within 3-5 years and offered lifestyle advice (including weight control, diet and exercise).

16.5.1 Patients with gestational diabetes should be offered a glucose tolerance test 6 weeks post-partum, which they will need to arrange. The diabetes team will give women blood test forms and an instruction sheet at last antenatal clinic appointment prior to delivery.

17.0 Neonatal Care

17.1 Blood glucose testing should be carried out routinely in babies of women with diabetes at 2-4 hours after birth on the postnatal ward.
(Refer to

17.2 Babies of patients with diabetes should feed as soon as possible after birth(within 30 minutes) and then at intervals no greater than 3 hourly until feeding maintains pre-feed blood glucose levels at a minimum of 2.6 mmol/l.

17.3 If pre feed blood glucose values are below 2.6mmol/l despite maximum support for feeding, but the infant remains asymptomatic inform the paediatric team and additional measures such as nasogastric tube feeding should be considered if the baby will not feed orally effectively.

17.4 All Symptomatic infants and infants with BMs below 2mmols need to be assessed on the Neonatal unit and may require Dextrose infusions.

17.5 Neonatal staff should be advised of maternal insulin requirements and also the quality of the antenatal glycaemic control; this will have important implications on the likelihood of neonatal complications and further investigation may be required including echocardiogram if a cardiac murmur is present.

17.6 Babies of patients with diabetes should not be transferred to community care until they are at least 24 hours old, and that the health professionals are satisfied the babies are maintaining adequate blood glucose levels and are feeding well.

18.0 Hypoglycaemia in Diabetic Patients

18.1 Diabetic patients can sometimes become hypoglycaemic for reasons including:

- Taking too much insulin
- Not eating enough (particularly if 'nil by mouth' (NBM) prior to a required procedure
- Excessive exercise (including labour/latent phase)
- Stress

18.2 If blood sugar levels are found to be less than 4mmols/l or the patient is symptomatic, action is required
(Refer to Appendix C)

18.3 If the patient is nil by mouth or unable to take recommended food/drink (refer to Appendix C) then administer dextrogel (located in the diabetic box on Labour ward) or 5% dextrose intravenously (as prescribed by a doctor).

19.0 Staffing and Training

19.1 All midwifery and obstetric staff must attend yearly mandatory training which includes skills and drills training.
(Refer to 'Mandatory training policy for Maternity Services (incorporating training needs analysis. Register number 09062)

19.2 All midwifery and obstetric staff are to ensure that their knowledge and skills are up-to-date in order to complete their portfolio for appraisal.

20.0 Infection Prevention

20.1 All staff should follow Trust guidelines on infection prevention by ensuring that they effectively 'decontaminate their hands' before and after each procedure.

20.2 All staff should ensure that they follow Trust guidelines on infection prevention, using Aseptic Non-Touch Technique (ANTT) when carrying out procedures i.e. obtaining blood samples and when inserting a cannula.

20.3 All invasive devices must be inserted and cared for using High Impact Intervention guidelines to reduce the risk of infection and deliver safe care. This care should be recorded in the Saving Lives High Impact Intervention Monitoring Tool Paperwork (Medical Devices).

21.0 Supervisor of Midwives

21.1 The supervision of midwives is a statutory responsibility that provides a mechanism for support and guidance to every midwife practising in the UK. The purpose of supervision is to protect women and babies, while supporting midwives to be fit for practice'. This role is carried out on our behalf by local supervising authorities. Advice should be sought from the supervisors of midwives are experienced practising midwives who have undertaken further education in order to supervise midwifery services. A 24 hour on call rota operates to ensure that a Supervisor of Midwives is available to advise and support midwives and women in their care choices.

22.0 Audit and Monitoring

22.1 Audit of compliance with this guideline will be considered on an annual audit basis in accordance with the Clinical Audit Strategy and Policy, the Maternity annual audit work plan and the NHSLA/CNST requirements. The Audit Lead in liaison with the Risk Management Group will identify a lead for the audit.

22.2 As a minimum the following specific requirements will be monitored:

- Involvement of the multidisciplinary team including the obstetrician, midwife, diabetes physician, diabetes specialist nurse and dietician in the provision of care when appropriate
- Timetable of antenatal appointments
- Requirement to document an individual management plan in the health records that covers the pregnancy and postnatal period up to six weeks
- Targets for glycaemic control
- Advising patients with type 1 diabetes of the risks of hypoglycaemia and hypoglycaemia unawareness in pregnancy
- Offering antenatal ultrasound examination of the four chamber view of the fetal heart and outflow tracts at 20 weeks
- How patients who are suspected of having diabetic ketoacidosis are admitted immediately to a high dependency unit where they can receive both medical and obstetric care

22.3 A review of a suitable sample of health records of patients to include the minimum requirements as highlighted in point 22.2 will be audited. A minimum compliance 75% is required for each requirement. Where concerns are identified more frequent audit will be undertaken.

22.4 The findings of the audit will be reported to and approved by the Maternity Risk Management Group (MRMG) and an action plan with named leads and timescales will be developed to address any identified deficiencies. Performance against the action plan will be monitored by this group at subsequent meetings.

22.5 The audit report will be reported to the monthly Maternity Directorate Governance Meeting (MDGM) and significant concerns relating to compliance will be entered on the local Risk Assurance Framework.

22.6 Key findings and learning points from the audit will be submitted to the Patient Safety Group within the integrated learning report.

22.7 Key findings and learning points will be disseminated to relevant staff.

23.0 Guideline Management

23.1 As an integral part of the knowledge, skills framework, staff are appraised annually to ensure competency in computer skills and the ability to access the current approved guidelines via the Trust's intranet site.

23.2 Quarterly memos are sent to line managers to disseminate to their staff the most currently approved guidelines available via the intranet and clinical guideline folders, located in each designated clinical area.

23.3 Guideline monitors have been nominated to each clinical area to ensure a system whereby obsolete guidelines are archived and newly approved guidelines are now downloaded from the intranet and filed appropriately in the guideline folders. 'Spot checks' are performed on all clinical guidelines quarterly.

23.4 Quarterly Clinical Practices group meetings are held to discuss 'guidelines'. During this meeting the practice development midwife can highlight any areas for further training; possibly involving 'workshops' or to be included in future 'skills and drills' mandatory training sessions.

24.0 Communication

24.1 A quarterly 'maternity newsletter' is issued and available to all staff including an update on the latest 'guidelines' information such as a list of newly approved guidelines for staff to acknowledge and familiarise themselves with and practice accordingly.

24.2 Approved guidelines are published monthly in the Trust's Focus Magazine that is sent via email to all staff.

24.3 Approved guidelines will be disseminated to appropriate staff quarterly via email.

24.4 Regular memos are posted on the guideline notice boards in each clinical area to notify staff of the latest revised guidelines and how to access guidelines via the intranet or clinical guideline folders.

25.0 References

National Institute for Health and Clinical Excellence (2008) Diabetes in Pregnancy. NICE.

Confidential Enquiry into Maternal and Child Health (2007) Diabetes in Pregnancy: Are we providing the best care. CEMACH

Appendix A

Antenatal Obstetric Appointments for Pre-existing Women

Antenatal care schedule for women with Pre-existing diabetes			
Approx Gestation	**Diabetic & Obstetric Review**	**Scans**	**Date & Signature**
First Appointment	**Additional Diabetes Care**		
	Offer information, advice and support in relation to optimising glycaemic control. Establish the extent of diabetes related complications. Review the insulin/medication in regards to pregnancy. Discontinue medication not suitable for pregnancy. Check taking folic acid 5mg. Offer retinal assessment if not done in last 12 months and discuss plans for pregnancy Obtain Hb A1C	Viability scan	
Booking 8-10 weeks (midwife)	Full antenatal risk assessment Antenatal care and place of birth discussed Assessment of vulnerability issues Routine enquiry Safeguarding children & young adults Blood pressure (BP), routine booking bloods Urinalysis, MSU & Body Mass Index		
12 weeks	**Additional Diabetes Care**		
		Combined USS/Bloods	
16 weeks (midwife)	BP & Urinalysis – review test results Discuss parent education & infant feeding classes Discuss Bump to breastfeeding website link Offer anti-D appointment if required		
	Additional Diabetes Care		
	Offer retinal assessment if previously showed any signs of diabetic retinopathy. Book serial scans and refer for anaesthetic review		
20 weeks	Book serial scans and anaesthetic review Book parent education & infant feeding classes		
	Additional Diabetes Care		
	Obtain Hb A1C	Review anomaly scan	
24 weeks	BP & urinalysis MATB1, review parent education needs		
28 weeks	FBC & antibodies, anti-D given if rhesus negative as indicated Measure and plot SFH/scan, weigh		
	Additional Diabetes Care		
	Offer retinal assessment if showed no diabetic retinopathy previously.	Growth & liquor volume	
32 weeks	BP and urinalysis, measure and plot SFH/scan		
	Additional Diabetes Care		
	Obtain Hb A1C	Growth & liquor volume	
34 weeks	Ensure infant feeding checklist completed		
36 weeks	BP and urinalysis, weight. Measure and plot SFH/scan, FBC, MRSA screening Discuss mode of delivery and make birth plan Plan for delivery 38-39 weeks		
	Additional Diabetes Care		
		Growth & liquor volume	
38 weeks	BP and urinalysis. Measure and plot SFH Discuss mode of delivery and make birth plan		
39 weeks	BP and urinalysis. Measure and plot SFH Discuss mode of delivery and make birth plan		
40 weeks	BP and urinalysis. Measure and plot SFH		

Appendix B

Antenatal Obstetric Appointments for Gestational Diabetic Women

Antenatal care schedule For women with gestational diabetes not requiring Medication			
Approx Gestation	**Diabetic & Obstetric Review**	**Scans**	**Date & Signature**
Women with gestational diabetes controlled by diet alone should received routine antenatal care but with the additional diabetic support detailed below.			
Booking 8-10 weeks (midwife)	Full antenatal risk assessment Antenatal care and place of birth discussed Assessment of vulnerability issues Routine enquiry Safeguarding children & young adults Blood pressure (BP), routine booking bloods Urinalysis, MSU & body mass index If history of previous gestational diabetes refer to the diabetic team; GTT not required		
First diabetes appointment (usually 12+ weeks)	**Additional Diabetes Care**		
	Offer information, advice and support in relation to optimising glycaemic control. Discuss plans for pregnancy including blood glucose assessment and monitoring, general wellbeing, dietary advice and care follow up		
16-20 weeks (midwife)	Review screening tests to date, BP and urinalysis, Discuss parent education & infant feeding classes Discuss Bump to breastfeeding website link Offer anti-D appointment if required		
22 weeks		Anomaly scan	
24 weeks	BP & urinalysis MATB1, review parent education needs		
28 weeks	FBC and antibodies, anti-D given if rhesus negative as indicated Measure and plot SFH/scan, weigh		
32 weeks	BP & urinalysis, measure and plot SFH		
34weeks	Ensure infant feeding checklist completed		
Additional Diabetes Care Clinical Supervision by Diabetes Nurse Specialist/Obstetric Specialist under 34/40 gestation			
34 weeks	Assessment at joint diabetic/obstetric clinic for discussion regarding mode of delivery and birth plan BP and urinalysis		
36 weeks	BP and urinalysis, weigh. Measure and plot SFH/scan, FBC, MRSA screening Discuss mode of delivery		
38 weeks	BP and urinalysis. Measure and plot SFH Discuss mode of delivery		
39 weeks	BP and urinalysis. Measure and plot SFH Discuss mode of delivery		
40 weeks	BP and urinalysis. Measure and plot SFH Discuss mode of delivery		

Women who require medication for diabetic control during their pregnancy should be transferred onto the antenatal care schedule for women with pre-existing diabetes at the point of commencing medication

Appendix C

Intrapartum Management Plan

INTRAPARTUM MANAGEMENT PLAN	
Instructions for Diabetic Control during labour and birth	
Intravenous sliding scale required ☐ **Comments:**	**Sliding Scale not required** ☐ **Comment:**
Aim to control blood glucose 4-7 mmol/L. Test blood glucose every hour during labour/delivery and every 30 minutes during general anaesthesia. If patient on insulin, continue woman's normal insulin regime until in established labour then follow relevant guideline & sliding scale	
Additional instructions for women with pre existing diabetes Date: Signature:	
Additional instructions for women with gestational diabetes: Date: Signature:	

Appendix D

Sliding Scale Insulin Chart

TREATMENT CARD FOR FASTING / ILL PATIENTS WITH DIABETES REQUIRING INSULIN

Patient's Name: Consultant:

Registration No: Ward:

Usual Diabetic Treatment (NOT with sliding scale)								
Breakfast	Lunch			Dinner			Bedtime	
Insulin sliding scale 50 units of soluble insulin, Actrapid or Humulin S, (delete as appropriate), in 50mls of Sodium Chloride 0.9%, to run according to the sliding scale prescribed.	Date	Doctor's Signature	Batch No. Insulin	Batch No. Sodium Chloride	Start Time	Finish Time	Signature	Check

Insulin Sliding Scale					
Blood Glucose mmol/L	Rate ml/hour	Rate ml/hour	Rate ml/hour	Rate ml/hour	Rate ml/hour
<5.0	0.5				
5.1 - 10.0	1.0				
10.1 - 15.0	2.0				
15.1 - 20.0	3.0				
20.1 - 25.0	4.0				
>25.0	6.0				
Persistently >25.0	Check pump call doctor				
Signature Date					

This sliding scale is intended as a guide. The blank columns are included so that an individualised regime can be prescribed if required.

Frequency of capillary Blood Glucose Monitoring (please circle and complete as appropriate)

A **Pre-meal and bedtime** **or** **B** ..... **hourly**

Intravenous Fluid Prescription									
Date	Infusion solution (BLOCK CAPITALS) Volume: Bottle/Bag	Potassium Y / N	Duration of Unit	Prescriber's Signature	Batch No.	Start Time	Finish Time	Signature	Check

This chart should be used in conjunction with the Mid Essex Hospitals Services NHS Trust standard diabetic chart.

Notes

A Diabetic Ketoacidosis

Fluid Replacement

This is a guide only and should be modified particularly if the patient has cardiac/renal disease or is elderly.
In some circumstances, a central venous pressure line is a useful aide to guide fluid replacement.

- 1 litre Sodium Chloride 0.9% over 60mins, no Potassium
- 1 litre Sodium Chloride 0.9% with Potassium, 4 hourly for 8 hours
- 1 litre Sodium Chloride 0.9% with Potassium, 8 hourly until rehydrated
- once glucose below 10 mmol/L, use 5% glucose instead.

Potassium Replacement

- Admission serum Potassium can be high/normal/low, but total Potassium level is low
- Rehydration and insulin both lower serum Potassium quickly
- **only add Potassium once serum concentration falls below 5.0 mmol/L**
- **reassess 'U & E' regularly**
- as a guide for potassium replacement .....

Potassium mmol/L	amount to add in next litre
<3	40 mmol
3-5	20 mmol
>5	none

Blood gases

Measure frequently until acidosis corrects

Insulin replacement

The sliding scale written is intended as a guide. The blank columns are included so that an 'individualised' regime can be prescribed, if required.
Conversion from sliding scale back to insulin is best done at breakfast.
Before breakfast, stop the sliding scale and give s/c insulin. Usually the patient's normal dose of insulin will suffice.

B Other situations when patients controlled by insulin are Nil By Mouth

If patients are NBM, then intravenous fluids will usually be required. The volume of fluid required will need to be tailored to individual need, with regular review of patient and their electrolytes. In general,

Capillary Blood Glucose >10, 1 litre Sodium Chloride 0.9% with 20 mmol Potassium 8-12 hourly.
Capillary Blood Glucose <10, 1 litre 5% glucose with 20 mmol Potassium 8-12 hourly.

C Perioperative care (check with anaesthetist)

i Any patient with Diabetes requiring major surgery and/or prolonged post operative fasting

- arrange a sliding scale to start approximatley 12 hours pre-operatively
- intravenous fluids as prescribed for patients who are NBM (see section B)

ii Patients controlled by insulin requiring any other surgery when prolonged fasting is not anticipated

- consider 10 units of Human Actrapid or Humulin S in 1 litre 5% glucose over 10 hours and repeat
- if complications or prolonged fast, switch to sliding scale as above (discuss with anaesthetist)

iii Patients with Type 2 Diabetes on tablets requiring any other surgery, when prolonged fasting is not anticipated

- consider simply omitting oral hypoglycaemic agents

Conversion from sliding scale back to insulin is best done at breakfast.
Before breakfast, stop the sliding scale and give s/c insulin. Usually the patient's normal dose of insulin will suffice.

Further advice and information is available from the Diabetes Team

Post Birth Management Plan

POST BIRTH MANAGEMENT PLANS

Plan for Pre-existing Diabetes

Recommence pre pregnancy insulin (as below) once eating and drinking normally

Insulin, OHD's, etc	Breakfast	Lunch	Evening	Bedtime

Follow up care:

Signed :	Comments:

Plan for Gestational Diabetes - STOP Insulin immediately after birth

Continue to record blood sugars 2 days after delivery ensure <8

OGTT required 5-6 weeks after delivery

Forms given Yes/No