Gestational Diabetes Mellitus (GDM)

University Hospitals of Leicester NHS Trust

Trust ref:C14/2022

1. Introduction and Who Guideline applies to

This guideline applies to the management of gestational diabetes and its complications. This applies to obstetric, midwifery and neonatology staff.

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

Women with any risk factors for GDM (Box 1) are offered an oral Glucose Tolerance Test (OGTT).

Related documents:

Diabetes in Pregnancy UHL Obstetric Guideline UHL B33/2018
Hypoglycaemia - Neonatal UHL Neonatal Guideline UHL C22/2008

Contents

2. Guideline standards & procedures

2.1 Information before Screening:

Advise that:

- There is a small risk of birth complications if gestational diabetes is not detected or controlled
- GDM will respond to changes in diet and exercise in some women
- Insulin therapy or oral blood glucose lowering agents will be needed if diet and exercise do not control blood glucose levels
- Extra monitoring and care will be needed during pregnancy and labour

Box 1 - Risk factors requiring screening for GDM

A)

OGTT at 26-28 weeks gestation

- Family origin with a high prevalence of diabetes (South Asian, Black Caribbean and Middle Eastern, Eastern European)
- First-degree relative with diabetes
- BMI > 30 kg/m^2 at booking
- Polycystic ovary syndrome
- Previous macrosomic baby weighing 4.5 kg or greater

B)

If the following risk factors are present; women need OGTT at booking <u>and</u> repeat at 26-28 weeks gestation:

- Previous GDM
- Glycosuria
- BMI > 45 kg/m^2

2.2 Oral Glucose Tolerance Test (OGTT):

For women with risk factors for GDM (Box 1 B) identified at the booking appointment;

- Offer a 2-hour 75g OGTT as soon as possible after booking in order to detect diabetes that may have pre-dated conception

Normal values for OGTT in pregnancy are:

- ✓ ***Fasting glucose: <5.6 mmol/l***
- ✓ ***2-hour glucose: <7.8 mmol/l***

- Community Midwives must electronically refer all abnormal OGTT via the GDM Mailbox
- If fasting glucose > 7.0 mmol/l or 2 hour glucose > 11.0 mmol/l; **same day telephone referral should be made to the diabetes team and electronic referral**
- Inform the primary health care team when a woman is diagnosed with GDM

2.3 Glycosuria;

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).

Be aware that glycosuria of 2+ or above on 1 occasion or 1+ or above on 2 or more occasions detected by reagent strip testing during routine antenatal care may indicate undiagnosed gestational diabetes. If this is observed, consider further testing to exclude GDM.

- Before 32 weeks gestation; offer OGTT
- After 32 weeks gestation; offer a random blood glucose and HbA1c

If HbA1c ≥ 6.0%/ 42mmol/l and / or and random blood glucose >7.8 mmols; refer to antenatal diabetes team.

2.4 EFW above 90th centile

If EFW above 90th centile (or significantly increased growth velocity) book an appointment for GTT if possible before 32 weeks plus 0 days gestation or take an HBA1c if more than 32 weeks and 0 days.

2.5 Gastric Surgery

Women who have had a gastric bypass or a gastric sleeve will be unable to tolerate an OGTT.

- Instead refer to the diabetes antenatal team who will commence CBG monitoring at booking or at 28/40 to be planned on an individual basis

Some women who have had a gastric band may be suitable for an OGTT.

- Please refer to the antenatal diabetes team who will make an individual plan for these women

2.6 Antenatal care for women diagnosed with GDM:

All women diagnosed with gestational diabetes will attend an educational session, these may be group or one-to-one depending on patients'' individual requirements.

The aim is to deliver education within 7 days of OGTT result.

Education is delivered by members of the MDT including Specialist Midwife for Diabetes, Diabetes Specialist Nurse, Dietician and Diabetes support worker

Education will include:

- Implications (both short and long term) of the diagnosis for both her and her baby
- Good blood glucose control throughout pregnancy will reduce risks to the fetus (Box 6)
- Treatment involves both diet and exercise and could include medications
- Teach self-monitoring of blood glucose and discussing the blood glucose targets.
- Advise women to adopt a healthy diet with low GI foods as opposed to high GI foods
- Advise women to take regular exercise (such as walking for 30 minutes post meals) to improve blood glucose control
- Weight management

Box 2 - Risks of Gestational Diabetes Mellitus in pregnancy

Risks to women and babies include:
• Pre-eclampsia • Fetal macrosomia • Induction of labour or Caesarean Section • Birth trauma (to mother and/or baby) • Stillbirth • Transient neonatal morbidity • Neonatal death • Obesity and/or diabetes developing later in the baby's life

2.7 Blood Glucose Targets and Monitoring

Time	Blood glucose mmols/L
Fasting and pre-meal	4.0-5.3
1 hour post meal	4.0-7.8
2 hours post meal (if 1 hour target is unachievable or hypoglycaemia occurs between meals)	4.0-6.4

- Advise pregnant women with GDM to test their fasting and 1-hour post meal blood glucose levels daily during pregnancy

2.8 GDM-Health App

All women diagnosed with gestational diabetes will be offered use of the GDM Health App.

This App provides the Diabetes Antenatal Team with a visual display of the users individual blood glucose (BG) readings. These readings are reviewed in a Virtual Clinic by the Diabetes Team each user will be reviewed as a minimum every two weeks

The Wavesense Jazz blood glucose meter which is provided to the women, links to the App on their smart phone via Bluetooth. The blood glucose readings are sent to the UHL Sensyne Health website in a secure format allowing the team to review each patient.
There is also a no reply text message service that is accessed via the website. This is used by the team to communicate with women on an individualised basis.

The aim of this virtual clinic is to increase surveillance of blood glucose levels. This enables the team to identify women who have blood glucose readings out of target or who are not testing blood glucose levels and offer additional support via messages through the App, telephone conversations or face to face clinic visits.

Exclusions are women with Type 1 Diabetes Mellitus or those women who decline the virtual pathway. Women with language barriers may also be unsuitable to use the App and this will be decided on an individualised basis. Some women may prefer to use the traditional face to face pathway. All women will have clear documentation in their notes, as to the pathway that they are following.

2.9 Before first appointment

- Women with GDM will be invited to download the App when they receive their appointment letter following a diagnosis of GDM.

- A member of the Diabetes Team will input details of the women onto the GDm health platform before their first appointment.

2.10 Education Session

- All women will be shown how to use their blood glucose meter in conjunction with the App and the functions within the App.

    - Functions available to access within the App

  Women will be informed that:

    - The diabetes team will review their blood glucose levels every two weeks
    - If they have any concerns they can request a call-back from the diabetes team via the App.
    - This call-back must only be gestational diabetes specific and be in relation to their BG readings only. Any other queries or pregnancy concerns must be directed towards their community midwife, GP or MAU.
    - Phone calls may take 2-3 days to be returned so if urgent, women must to be told to seek appropriate medical attention immediately
    - That they will have a face to face appointment planned for around 36-38 weeks of pregnancy for a final review by the Diabetes Antenatal Team for a discussion of timing of birth.
    - Women will be also advised of the importance of continuing their community midwife care as per NICE Antenatal Care pathway.

2.11 Review of GDM Health App by the Diabetes Antenatal Team

- On alternative weeks all women will have a review of their BG levels.
  Week 1 will be the LRI
  Week 2 will be the LGH. A text message contact via the UHL Sensyne Health website will be sent to all women who continue to use the GDM health App
- All contacts with women in the virtual clinic will be electronically recorded with up to date treatment details.

- Women whose blood glucose levels “red flag” will also be reviewed on a Monday, Wednesday and Friday staffing permitting.
  (red flags indicate higher or lower than expected blood glucose readings).
- Women who have already had a contact via a Red flag alert will not need a further review that week unless the Red Flag alerts again.

2.12 Initiation of Treatment

- If it is identified that a patient may need to start treatment, they are offered next available appointment in clinic.
- Those patients who need metformin or insulin titrating will initially be offered a flexible prescription
- Here for example the prescription will read ‘500-2000mg Metformin once to twice daily’. A similar set prescription for insulin will also be created reading ‘to be commenced on ____ units of _____. This will be titrated by 2 units every 3 days until blood glucose levels have stabilised.

2.13 Bookmarking within the App

There is an option within the website to add bookmarks to the woman’s history, indicating a further review may be necessary by the clinician reviewing their BG.

Examples include:

- Review of treatment (and that this has been acknowledged by the user)
- Review of dietary advice
- Review of BG following text message contact via App.
- Review of findings of call back

Bookmarking can be used for any other reason as long as the clinician who bookmarks the patient enters a clinical note on the platform to ensure the next clinician is able to understand why they have been highlighted.

2.14 Communicating Prescription Changes

Clinicians during the virtual clinic will be able to telephone patients and document any changes to current treatment doses.

Once a medication change has been confirmed the GP needs to be updated via an appropriate letter.

2.15 Support

Technical support is provided by via Sensyne Health. All administrative users have this information and are able to cascade, either by telephone, or electronically any problems with APP functionality.

2.16 Green Diabetes Antenatal Paperwork

Women with GDM who are using the App will continue to have the green diabetes paperwork in their hospital records. This will continue to provide clinicians with their diagnosis and treatment at their last clinical contact.

Women will be able to show clinicians their BG readings from the App on their smartphone (instead of recording them in the yellow book that the traditional pathway users will still have).

Women's hand held records, electronic records and hospital notes will clearly identify which pathway they follow, and those women using the GDm App.
https://www.nhs.uk/nhs-app/

2.17 Treatment options for women with GDM.

- Offer a trial of change of diet and exercise to women with a fasting plasma glucose < 7.0 mmol/l at diagnosis
- Offer immediate treatment with insulin and/or metformin, as well as changes to diet and exercise, to women with a fasting plasma glucose > 7.0 mmols/l at diagnosis
- Consider immediate treatment with insulin and/or metformin, as well as changes to diet and exercise, to women with fasting plasma glucose between 6.0 - 6.9 mmols/l at diagnosis if there are fetal complications such as macrosomia or polyhydramnios
- Offer metformin if blood glucose targets are not met using changes in diet and exercise after 1 to 2 weeks
- Offer insulin if metformin is contraindicated or unacceptable to the woman
- Offer additional insulin if blood glucose targets are not met using metformin, changes in diet and exercise.
- Measure HbA1c levels in all women with GDM at the time of diagnosis to identify those who may have pre-existing Type 2 diabetes

2.18 Inpatient care

- All women with any form of diabetes will be self-testing using meters that are provided for them by the Diabetes team. It is vital that the following steps are taken so that an appropriate audit trail can be provided whilst under inpatient care
- All medications including Insulin to be locked away as per medicine management policy (Leicestershire Medicines Code UHL Policy)
- All women with any form of diabetes must have their CBG must be recorded accurately on the appropriate chart.
- At a minimum, these should be documented 4 times a day:
    - Before breakfast
    - One hour after breakfast, lunch and evening meal.

2.19 Intrapartum Care

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

Advise women with GDM on diet control alone to give birth no later than 40+5 weeks, and offer elective birth (by Induction of Labour or Caesarean Section) to women who have not given birth by this time.

Advise women with GDM taking metformin and/or insulin to give birth no later than 40 weeks.

Timing of delivery should include individualised risk assessments of each patient including:

- Pregnancy complications e.g. hypertension, proteinuria
- Recent ultrasound scan including growth velocity and liquor volume

Other maternal/fetal conditions should be considered e.g. maternal age.

2.20 Care during labour and birth:

- Monitor blood glucose levels hourly for women on insulin, aiming to maintain blood glucose levels between 4 - 8 mmol/l
- For women with GDM on insulin whose blood glucose is not maintained between 4 and 8 mmol/l:
- Commence Variable Rate Insulin Infusion (VRII) **0.18% NaCl with 4% glucose with 0.3% KCl with 20 or 40 mmol/L at 125 ml/**-(Appendix 2: Intravenous Insulin and Fluid Prescription)

2.21 Care prior to elective Caesarean Section:

- Consider antenatal steroids if elective Caesarean Section is planned <36/40.
- Adjust insulin dosage to account for pre-operative fasting.
- Monitor blood glucose level prior to going to theatre.
- Consider VRII and **0.18% NaCl with 4% glucose with 0.3% KCl with 20 or 40 mmol/L at 125 ml/hr**. In women on insulin whose blood glucose is not maintained within 4 - 8 mmol/l

3. Protocol for the administration of steroids for women with GDM

Diabetes is not a contraindication to steroid treatment. However, steroids increase blood glucose (BG) significantly in pregnant women with diabetes. It is important that the decision to give steroids is carefully considered, discussed with a consultant and that the expected hyperglycaemia is managed appropriately. Steroids should only be given if the delivery is thought to be imminent or planned within the next 48 hours. Steroids should not be given to women with diabetes after 35+6 weeks even if they are undergoing Caesarean Section.

3.1 For women on diet alone (no metformin or insulin):

Monitor capiliary blood glucose pre-meal, 1 hour after meal and at midnight and 04.00 hrs
If capillary blood glucose is ≥12 mmol/L, measure blood ketones, transfer to delivery suite and commence VRIII
Patients should eat and drink as normal.
If a patient is not eating and drinking e.g. being prepared for delivery by caesarean section or vomiting, IV fluids will be required:
Give **0.18% NaCl with 4% glucose with 0.3% KCl with 20 or 40 mmol/L at 125 ml/hr** to manage the VRIII.
If additional IV fluids are required, Hartman's can be given.

3.2 For women on metformin:

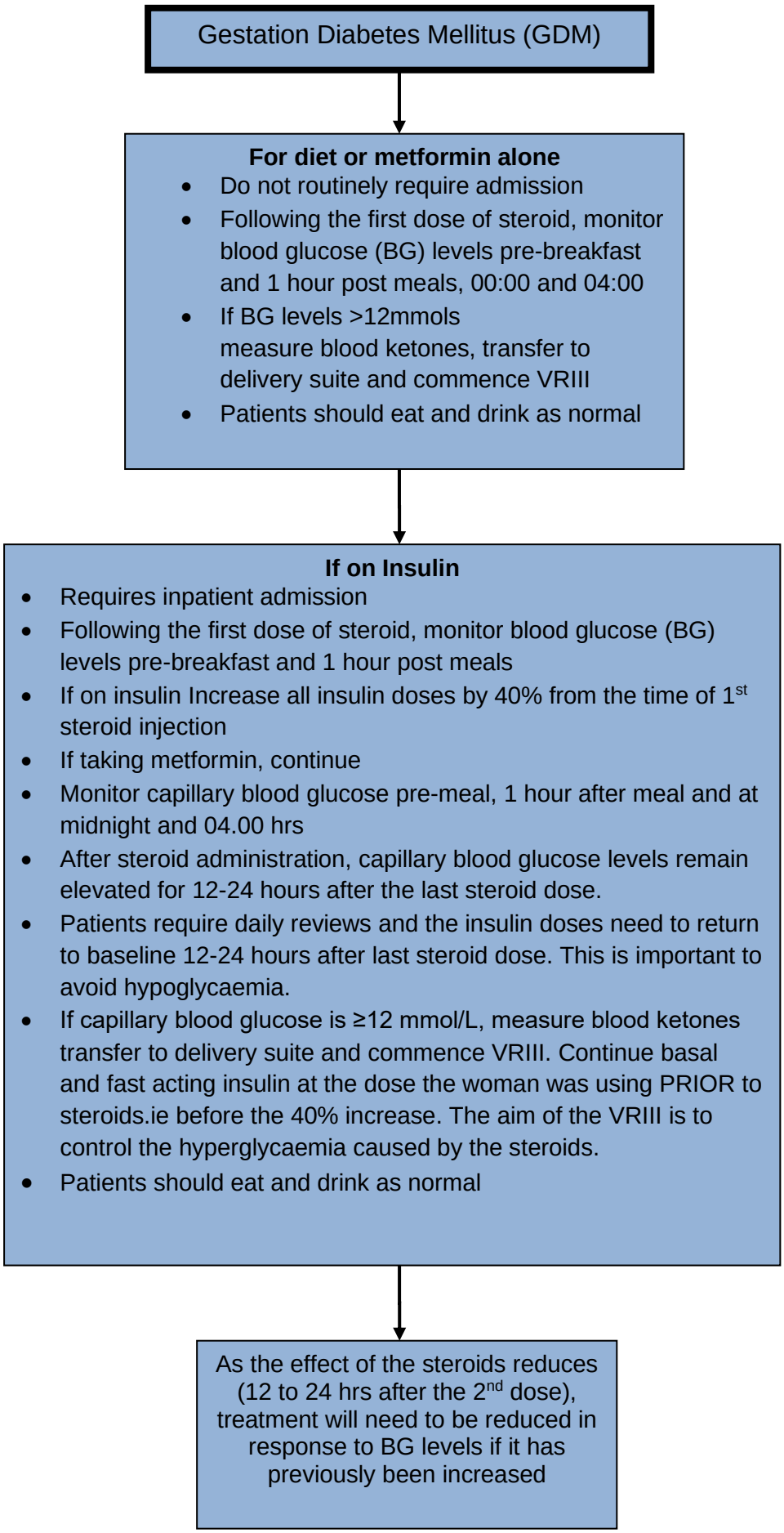
Continue metformin
Monitor capiliary blood glucose pre-meal, 1 hour after meal and at midnight and 04.00 hrs
If capillary blood glucose is ≥12 mmol/L, measure blood ketones, transfer to delivery suite and commence VRIII
Patients should eat and drink as normal.
If a patient is not eating and drinking e.g. being prepared for delivery by caesarean section or vomiting, IV fluids will be required:

Give **0.18% NaCl with 4% glucose with 0.3% KCl with 20 or 40 mmol/L at 125 ml/hr** to manage the VRIII.
If additional IV fluids are required, Hartman's can be given.

3.3 For women on insulin:

Increase all insulin doses by 40% from the time of 1st steroid injection
If taking metformin, continue. These women should be admitted for monitoring of blood glucose levels following steroid administration.
Monitor capiliary blood glucose pre-meal, 1 hour after meal and at midnight and 04.00 hrs
After steroid administration, capillary blood glucose levels remain elevated for 12-24 hours after the last steroid dose. Patients require daily reviews and the insulin doses need to return to baseline 12-24 hours after last steroid dose. This is important to avoid hypoglycaemia.
If capillary blood glucose is ≥12 mmol/L, measure blood ketones transfer to delivery suite and commence VRIII.
Continue basal and fast acting insulin at the dose the woman was using PRIOR to steroids.ie before the 40% increase. The aim of the VRIII is to control the hyperglycaemia caused by the steroids.
Patients should eat and drink as normal.
If a patient is not eating and drinking e.g. being prepared for delivery by caesarean section or vomiting, IV fluids will be required:
Give **0.18% NaCl with 4% glucose with 0.3% KCl with 20 or 40 mmol/L at 125 ml/hr** to manage the VRIII.
If additional IV fluids are required, Hartman's can be given.

3.4 Administration of antenatal steroids in gestational diabetes flow chart



4. Postnatal Care

4.1 Information and advice

For women who were diagnosed with GDM:

- Offer lifestyle advice (including weight control, diet and exercise)
- To stop taking hypoglycaemic medication/insulin immediately after birth
- To stop blood glucose monitoring unless otherwise advised by the Diabetes Team
- On the symptoms of hyperglycaemia
- On the risks of GDM in subsequent pregnancies and the risks of developing Type 2 diabetes
- The importance of pre-conception care should be clearly expressed to women and communicated in GP letters for appropriate follow up care including screening for diabetes when planning a subsequent pregnancy

4.2 Transfer and follow-up

- HbA1c at 13 weeks postnatal
- Women should have an annual HbA1c to assess the increased risk of Type 2 DM
- Do not routinely offer a 75 g 2-hour OGTT

For women having an *HbA1c* at the postnatal test:

Advise women with an HbA1c level < 39 mmol/mol (5.7%) that:

- They have a low probability of having diabetes at present
- They should continue to follow the lifestyle advice (including weight control, diet and exercise) given after the birth
- Recommend an annual Hba1c to check that their blood glucose levels remain normal
- They have a moderate risk of developing Type 2 diabetes: offer them advice and guidance in line with the NICE guideline on preventing Type 2 diabetes.

Advise women with an HbA1c level between 39 - 47 mmol/mol (5.7% and 6.4%) that:

- They are at high risk of developing Type 2 diabetes; offer them advice, guidance and interventions in line with the NICE guideline on preventing Type 2 diabetes.

Advise women with an HbA1c level of 48 mmol/mol (6.5%) or above that

- They have Type 2 diabetes and refer them for further care.

4.3 Neonatal Care for babies born to mothers with Gestational Diabetes

- ✓ Babies of women with diabetes in pregnancy 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 consecutive normal pre-feed CBG levels (> 2.0 mmols) before being allowed home
- ✓ 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

Feeding

- ✓ Women should 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/l 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 the baby has signs of hypoglycaemia; refer urgently to the Neonatal Team**

3. Education and Training

UHL Mandatory annual update of insulin management in adults.

Diabetes management in pregnancy maternity essential to job training

4. Monitoring Compliance

What will be measured to monitor compliance	How will compliance be monitored	Monitoring Lead	Frequency	Reporting arrangements
2 yearly Essential to job role training complete	Mandatory training records	Training lead	Monthly dashboard	Womens' Quality & Safety Board
Women identified as at risk of GDM are referred for OGTT/HbA1c appropriately	Audit	Diabetic team	Annually	Departmental audit panel

5. Supporting References

Diabetes in pregnancy: management from preconception to the postnatal period NICE guideline [NG3] Published: 25 February 2015 updated 2020
https://www.nice.org.uk/guidance/ng3

Diabetes in Pregnancy UHL Obstetric Guideline UHL B33/2018
Hypoglycaemia - Neonatal UHL Neonatal Guideline UHL C22/2008

6. Key Words

Antenatal steroids, Blood glucose, Glucose Tolerance Test, Insulin, Metformin

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The Trust recognises the diversity of the local community it serves. Our aim therefore is to provide a safe environment free from discrimination and treat all individuals fairly with dignity and appropriately according to their needs.
As part of its development, this policy and its impact on equality have been reviewed and no detriment was identified.

CONTACT AND REVIEW DETAILS			
Guideline Lead (Name and Title) H Maybury - Consultant			**Executive Lead** Chief Nurse
Details of Changes made during review:			
Date	**Issue Number**	**Reviewed By**	**Description Of Changes (If Any)**
Jan 2022	**1**	**Written by H Maybury**	**New guideline**
July 2023	**2**	**H Maybury** **L Taylor**	**Removed 500ml 0.9% NaCl + 5% glucose with 20 mmol/L KCl (0.15%) and replaced with 0.18% NaCl with 4% glucose with 0.3% KCl with 20 or 40 mmol/L at 125 ml/hr, now to run at 125 mls/hr instead of 100ml/hr in line with Trust guidance. Newborn glucose monitoring amended in line with neonatal guidance.**

ANTENATAL CARE PATHWAY FOR WOMEN WITH GESTATIONAL DIABETES*

Every woman is to keep in contact with her community midwife for routine care and Parentcraft information.

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 every 4w from 28/40 until delivery	FBC & antibody screen (Empath bloods) if not already taken. Anti-D if required	Diabetes and pregnancy Dietary Advice Home CBG monitoring Insulin start if indicated
31 – 34 weeks	2 weekly review of blood glucose control via GDM App Traditional pathway 2-4 weekly ANC		Growth Scan at 32/40		Documentation of blood results Review of blood glucose every 2 weeks via GDM App to continue until delivery
35 - 37 weeks	See DSM, Obstetrician, Diabetologist,		Growth Scan at 36/40	FBC	Discuss and document birth plan GDM on medication: • Arrange IOL or ELCS for 38 – 39/40 GDM on diet control: • IOL for 40-40+5 or ELCS for 39/40
40 weeks	Routine A/N appointment with Community M/W				

Telephone contact is maintained between appointments with the Diabetes Specialist Nurse and/or Diabetes Specialist Midwives if required.

Adapted from: JBDS-IP
Joint British Diabetes Society
for inpatient 2017 V3 UD/EC

Appendix 2: Intravenous Insulin and Fluid Prescription

NHS University Hospitals of Leicester NHS Trust

For use during pregnancy and labour for ALL patients receiving Variable Rate Intravenous Insulin Infusion (VRIII) **NEVER use an IV syringe to draw up insulin** **ALWAYS draw up insulin using an insulin syringe** **ALWAYS continue subcutaneous intermediate* or basal insulin**** ***Intermediate: Insulatard, Humulin I, Insuman basal** ****Basal: Lantus (Glargine),Levemir (Detemir), Tresiba (Degludec), Toujeo** **Doctor: All prescriptions for insulin and fluids must be signed** **Nurse/Midwife: All entries must be signed**	Ward	Consultant	Admission Date: Discharge Date:
	Surname		First Name
	Hospital Number		Date of Birth/Age
	NHS Number:		
	Address		

	DOSING ALGORITHM (please see guide below)		
Algorithm	1	2	3
	For most women	**For women not controlled on algorithm 1 or needing >80 units/day of insulin**	**For women not controlled on algorithm 2 (after specialist advice)**
CBG Levels (mmol/L)	Infusion rate (units/hr=ml/hr)		
<4	STOP INSULIN FOR 20 MINUTES Treat hypo as per guideline (re-check CBG in 10 minutes)		
4.0-5.5	0.2	0.5	1.0
5.6-7.0	0.5	1.0	2.0
7.1-8.5	1.0	1.5	3.0
8.6-11.0	1.5	2.0	4.0
11.1-14.0	2.0	2.5	5.0
14.1-17.0	2.5	3.0	6.0
17.1-20.0	3.0	4.0	7.0
>20.1	4.0	6.0	8.0
Signed			
Print name			
Date			

ALGORITHM GUIDE

- All women with diabetes should have Capillary Blood Glucose (CBG) testing hourly in established labour or at least once on admission for induction of labour or elective C-Section
- Start VRIII and fluids if two consecutive CBG's >target (see below) or at the start of established labour if the woman has type 1 diabetes.

Algorithm 1
Most women will start here

Algorithm 2
Use this algorithm for women who are likely to require more insulin (on steroids; on >80 units of insulin during pregnancy; or those not achieving target on algorithm 1)

Algorithm 3
Use this for women who are not achieving target on algorithm 2 (No patient starts here without diabetes or medical review)

If the woman is not achieving targets with these algorithms, contact the diabetes team (out of hours: Medical SpR on call)

Target CBG level=4-7mmol/L

Check CBG every hour whilst on VRIII and every half an hour if under anaesthesia

Move to the higher algorithm if the CBG is >target and is not dropping – D/W Obstetric team

Move to the lower algorithm if CBG falls below 4 mmol/L or is dropping too fast – D/W Obstetric team

Drug (approved name) Please tick	Dose	Volume	Route	Prescribers signature	Prescriber Print name	Date	SYRINGE PREPARATION			
Human Actrapid	50	Made up to 50mls with NaCl 0.9% (1 UNIT per ml)	IV				Prepared and administered by:	Date	Time started	Time stopped

INTRAVENOUS SUBSTRATE FLUID PRESCRIPTION

Date	Intravenous Fluid and Rate	Alternative Rate	Prescriber's Signature	Nurse's Signature
	0.18% NaCl with 4% glucose with 0.3% KCl with 20 or 40 mmol/L at 125 ml/hr			
	0.18% NaCl with 4% glucose with 0.3% KCl with 20 or 40 mmol/L at 125 ml/hr			

PRESCRIPTION OF INTRAVENOUS MANAGEMENT OF HYPOGLYCAEMIA

Date	Time	Preparation	Volume	Route	Duration	Prescriber's Signature	Print Name	Given by	Time given
		20% Dextrose	100 mls	IV	15 mins				

CAPILLARY BLOOD GLUCOSE MONITORING

Date	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00
CBG												
Insulin rate												
Blood Ketones												
Initials												
Date	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	24:00
CBG												
Insulin rate												
Blood Ketones												
Initials												

GESTATIONAL DIABETES:
STOP VRIII and IV substrate Fluid regimen once placenta is delivered

TYPE 1 DM and INSULIN TREATED TYPE 2 DM
Reduce the rate of VRIII by HALF once placenta is delivered.
Contact diabetes team to review on-going insulin requirements

Patients with type 1 DM on insulin pumps should be referred to the Diabetes Specialist Team

Maintain IV insulin infusion for 30 minutes after re-starting original insulin regimen – IV insulin has a 5 minute half-life