



Standard Operational Procedure for the Management of Diabetes in Pregnancy

UNCONTROLLED WHEN PRINTED

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Summary table 1:Management of Pre-existing diabetes.

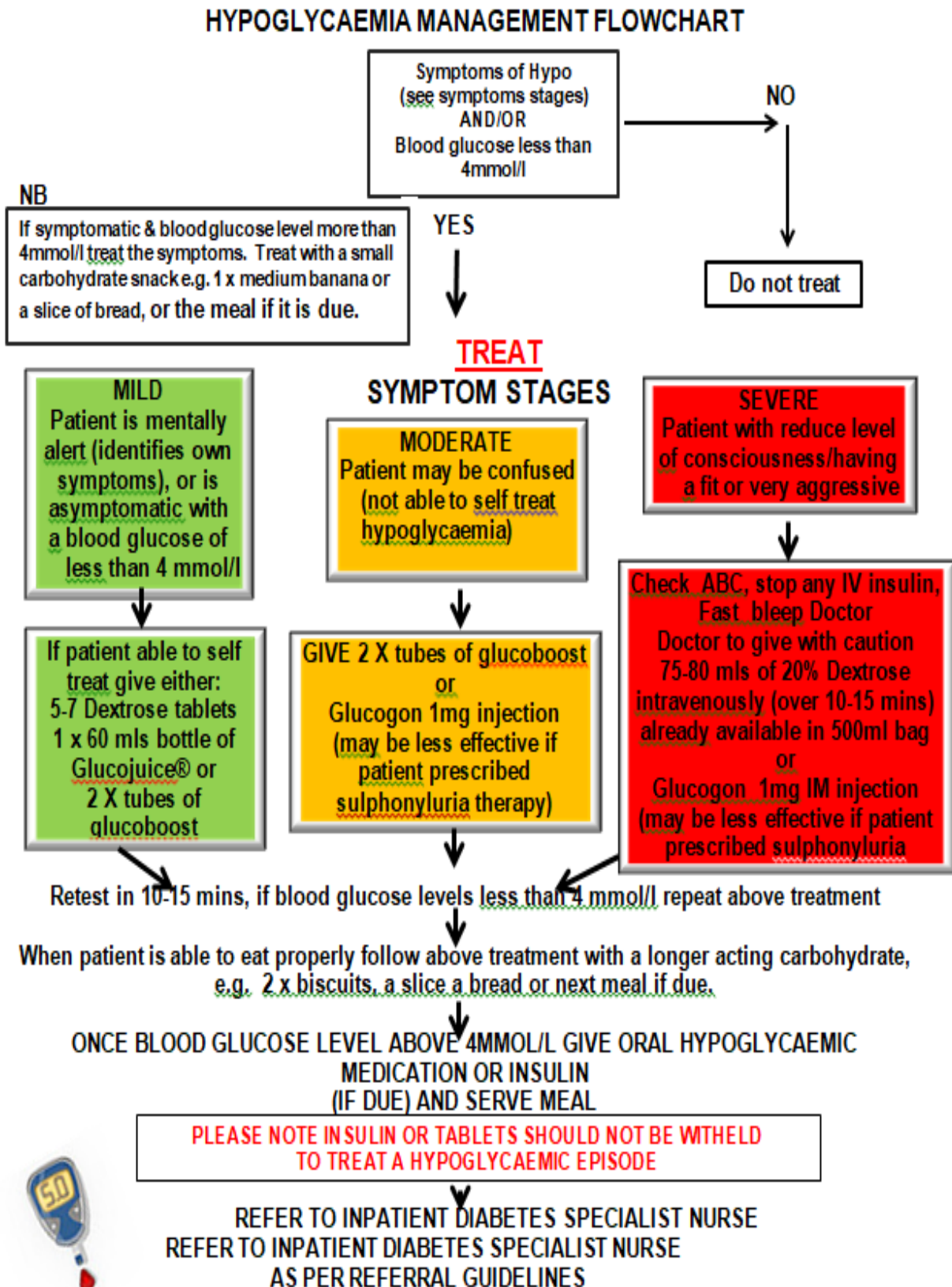
Gestation weeks	ACTION / MANAGEMENT
Pre – pregnancy	<p>Review contraception, medication and appropriate life style changes and reduction in smoking</p> <p>Eyes- review retinal screening and refer to eye clinic if necessary</p> <p>Kidneys –review renal screening Albumin to creatinine ratio</p> <p>Check blood pressure - stop ,statins and review other medications</p> <p>Ensure excellent control of diabetes and agree target HbA1c for conception</p> <p>Discuss hypoglycaemia and treatment</p> <p>Discuss risks of ketoacidosis and use of ketone testing strips where appropriate. Offer blood ketone meter</p> <p>Folic acid supplementation (5mg/day) start before conception up to 12 weeks of gestation</p> <p>Check rubella status if not rubella immune then to organise vaccination appropriately</p> <p>Background HbA_{1c}, serum creatinine ,Liver function tests (LFT), Thyroid function tests(TFT), Full blood count (FBC) all to be done</p> <p>Discuss overall outline of pregnancy management.</p>
6-12	<p>Community Midwife</p> <ul style="list-style-type: none"> -Routine Booking appointment -Recommend aspirin 150 mg once daily from dating scan to be used up to 24 hours before delivery -Booking bloods, -Booking scan (confirm gestation and viability) -Ensure that she sees diabetes team as soon as pregnancy confirmed then 1-2 - weekly <p>Diabetes team responsibilities</p> <ul style="list-style-type: none"> - to issue ketostix and GlucaGen Kit as appropriate -Bloods taken for HbA_{1c}, U+E LFT TFT and urinary ACR -Offer information, advice and support for glycaemic control -Arrange retinopathy screening if not already done and repeat in each trimester. -Arrange repeat ACR in each trimester -Refer to joint diabetic clinic - Seen by Diabetes team every 2 weeks or as required
20	Detailed ultrasound (US)

24-38	Review at joint diabetes clinics on a 4 weekly basis with growth and liquor volume scan
36	<p>Book induction of labour (IOL) or caesarean between 37-38+6 weeks if indicated</p> <p>Consider elective birth before 37 wks. if there are metabolic or any other maternal or fetal complications. If CS before 39 weeks please ensure that the course of steroids has been completed 1 week prior to the booked CS.</p> <p>Recommend early breast-feeding and explain the benefits of antenatal hand expression of colostrum.</p>
37	See community midwife unless problems.
Post-natal review before discharge	<p>Inform diabetes team of delivery, who will review on the ward if possible or organise a follow up appointment and provide ongoing care.</p> <p>Women with pre-existing Type 1 diabetes should return to the pre-pregnancy insulin doses, and the insulin must not be stopped. Do not stop the insulin in Type 2 diabetes unless this has previously been agreed and documented in the birth plan.</p>

Summary table 2: Management of Women with Gestational diabetes (GDM)

Gestation weeks	ACTION / MANAGEMENT
6-26	<p>Women with a previous history of gestational diabetes should be offered fasting blood glucose at booking and, if normal, oral glucose tolerance test (OGTT) at 16 weeks and again at 24-28 wks.</p> <p>All women highlighted at booking to be at risk of diabetes will have an appointment made at the dating scan to attend for a OGTT at 24-26 weeks</p> <ul style="list-style-type: none"> • 1st degree relative (mother, father, sibling, child) with diabetes • Maternal age >40 • Previous baby >4.5 or >95th centile for gestational age • Maternal obesity BMI >30 kg/m² or booking weight over 100 Kg • South Asian, Black African, Afro Caribbean or Middle Eastern Descent <p>OGTT are carried out on Thursday and Fridays in the antenatal clinic. All results are checked on a Monday and Fridays morning by. If the OGTT is found to be positive referral is emailed to Diabetes team by ANC staff on iowdiabetes.newpatientreferral@nhs.net</p>
Following diagnosis	<p>Diabetes team.</p> <p>The woman will be taught how to monitor blood glucose levels.</p> <p>Offer information, advice and support for glycaemic control (diet and exercise)</p> <p>Emphasise the need for daily self-monitoring with blood glucose readings 1 hour after meals and x2 or more weekly prior to breakfast and explain expected target levels. (before breakfast <5.3mmol/l , 1 hour after meals <7.8mmols/l or 2 hours after meals <6.4mmol/l)</p> <p>Arrange an appointment at the next diabetes joint clinic and a scan as soon as possible</p> <p>Diet Controlled- Routine Tues ANC</p> <p>Treatment- Seen at Combined Diabetic clinic</p> <p>CMW visits as per normal unless otherwise directed by joint clinic</p>
36	<p>Review birth plan</p> <p>Uncomplicated GDM diet control IOL 40-41 wks.</p> <p>Uncomplicated GDM on treatment IOL 39-40 weeks</p> <p>Caesarean if indicated at 39 weeks</p> <p>Recommend early breast feeding</p>
Post-natal review before discharge	<p>Once delivered all diabetes medication is stopped immediately unless otherwise stated in the birth plan. Ensure appropriate dietary and lifestyle advice given to all.</p> <p>Arrange fasting blood glucose at 6 wks. Post-delivery and follow up with diabetes team.</p> <p>Review contraception.</p> <p>Advise HbA1c testing yearly to screen for diabetes</p>

Flow Chart 1- Management of Hypoglycaemia for Trust Guideline



DSN P MANNALL REVISED May 2019

Flow Chart 2- management of DKA

IMMEDIATE MANAGEMENT 0-60 MINUTES

ACTION 1 ALL 3 OF THE FOLLOWING MUST BE PRESENT TO CONFIRM DIAGNOSIS OF DKA

- Capillary blood glucose (CBG) 11.0mmol/L or known diabetes
- Capillary blood ketones >3.0mmol/L or 2+ ketonuria
- Venous pH <7.3 and/or venous bicarbonate <15mmol/L

ACTION 2 BASELINE ASSESSMENT

- Na⁺, K⁺, UREA, CREATININE, CHLORIDE, EGFR HCO₃⁻
- LACTATE LAB GLUCOSE
- GCS MEWS

ACTION 3 INVESTIGATIONS

- ECG CXR
- MSU, □ HCG
- STOOL MC&S
- BLOOD CULTURES
- CT HEAD
- VTE PROPHYLAXIS GIVEN?
- CHECK ANION GAP

ACTION 4

- INFECTION/SEPSIS/STRESS/NON COMPLIANCE/IDIOPATHIC
- OTHERS: STEROIDS, ALCOHOL, PREGNANCY, PUMP FAILURE

ACTION 5 IS THE PATIENT SHOCKED?

- SpR/Consultant informed
- Patient shocked (SBP <90 mmHg) or severe DKA*

YES

- Give 500ml 0.9% Sodium Chloride (NaCl) over and give another 500ml bolus over 15mins if SBP still <100mmHg (Hypotension is likely to be due to low circulating volume but consid other causes such as sepsis/heart failure etc.)

Severe DKA*

- Ketones >6, pH <7.1,
- HCO₃ <5, SpO₂ <92%
- K⁺ <3.5, GCS <12,
- SBP <90,
- Pulse >100/<60

ACTION 6 INSULIN

- Prescribe 50 units of Actrapid in 49.5ml 0.9%NaCl (1unit/ml)
- Commence a fixed rate insulin infusion at 0.1unit/kg/hour Maximum 15ml/hour (starting dose)

If patient takes long acting insulin e.g. Insuman Basal or Humulin I or Insuman Basal or Lantus or Levemir or tresiba or Toujeo or Abasaglar continue as normal

ACTION 7 POTASSIUM REPLACEMENT

Venous potassium level

- >5.5mmol/L
- 3.5 -5.5mmol/L
- <3.5mmol/L

Potassium Chloride (KCl) replacement

NONE
40mmol/L
SENIOR ADVICE
additional K⁺ required

Life threatening hypokalemia can occur **with** insulin infusion
If K⁺ infusion is greater than 20mmol/hour cardiac monitoring is needed
DO NOT GIVE KCL IF ANURIC

ACTION 8 REASSESS PATIENT

- | | |
|---|---|
| <ul style="list-style-type: none"> • Poor urine output • Persistent vomiting • SpO₂ <94% • Persistent acidosis? • GCS <13 Senior review? | <ul style="list-style-type: none"> Catheterise Consider NGT ABG/CXR Consider other causes Consider CT head |
|---|---|

1. Purpose/Background:

Diabetes in pregnancy is associated with an increased risk of adverse perinatal outcomes for mother and baby. The purpose of this guideline is to provide guidance for the care of all women with pre-existing and/or gestational diabetes.

2. Scope:

This document is for use by all obstetricians and midwives and it applies to all women with preexisting or gestational diabetes cared for by the Maternity Services at St Mary's Hospital

3. Responsibilities

It is the responsibility of all Midwifery Nursing and medical staff to:

- Access read understand and apply this guidance
- Attend any mandatory training pertaining to the guidance

It is the responsibility of the department to:

- Ensure the guideline is reviewed as required in line with trust and national recommendations

Ensure the guideline is accessible to all relevant staff

4. Procedure:

4.1 Pre pregnancy counselling for women with pre-existing diabetes

This service is available for women with diabetes, planning a pregnancy. Referral can occur both through the obstetric or diabetes departments. They are seen in the monthly combined diabetes antenatal clinic and in individual diabetes or obstetric clinics in between as necessary.

Issues to be considered/ discussed before conception in women with pre-existing diabetes:

- Explanation that poorly or sub-optimally controlled Diabetes poses risks to mother and baby and is associated with higher obstetric intervention rates.
- Insulin requirements need continued adjustment during pregnancy for optimal control.
- Achieve optimal body mass index (BMI)
- Avoid smoking and minimise alcohol intake
- Commence folic acid supplements and use higher dose (5mg od).

- Contraceptive advice until conditions for pregnancy are optimal.
- Review medication for safety in pregnancy (some antihypertensive, oral Hypoglycaemic, statins)
- Assessment of renal and thyroid function and Albumin to Creatinine ratio(ACR)
- Aim to maintain fasting levels at 5-7mmol/l on waking and at lunch and evening meals and post-prandial glucose level (90mins) to 5-9 mmol/l in pre-pregnancy period if safe to do so.
- Offer ketone blood meter (via the diabetes centre)
- Preconceptual HbA1c \leq 48mmol/mol (6.5%) if safe. Optimal glycaemic control is essential preconceptually and for the first 10-12 weeks as the organs develop, to minimise the risk of fetal malformations.
- The need for increased blood glucose monitoring (at least 7 times /day).
- Advice regarding hypoglycaemia (un)awareness and risks.
- Accelerated fetal growth (macrosomia) and/or polyhydramnios are more likely when there is poor glycaemic control.
- Further pre-pregnancy follow up in the Diabetes Centre.
- General discussion on the management and risks of pregnancy.
- Identification and discussion of the risks to the mother from progression of retinal or renal disease

4.2 Ante natal Management of Pre-existing Diabetes

- Follow summary table 1

4.3 Screening for Gestational Diabetes Mellitus (GDM)

- Women with gestational diabetes in a previous pregnancy should be offered fasting blood glucose at booking **and then** oral glucose tolerance test OGTT at 16 weeks. If these tests are normal they then will require a further OGTT at 24-28 weeks.
- All women highlighted at booking to be at risk of diabetes will have an appointment made at the dating scan to attend for a OGTT at 24-28 weeks (see summary table 2)
- If a woman beyond 28 weeks gestation is suspected of developing diabetes then discuss individual cases with the diabetes team.

- To organise an OGTT contact the antenatal clinic. The woman will be sent a Patient information leaflet with the appointment letter.

4.3 Diagnosis

Diagnosis of GDM With an OGTT as per NICE

	Normal	Abnormal
Fasting	<5.6 mmol/L	≥ 5.6 mmol/L
2 hour	< 7.8 mmol/L	≥ 7.8mmol/L

Diagnosis of GDM without an OGTT.

- Any random blood glucose >11.0mmol/L
- Fasting glucose ≥7.0mmol/L

If either of these occur, there is no need to perform an OGTT. Refer urgently to Diabetes team.

4.5 Treatment of GDM

4.5.1 Diet and Exercise

This is the most important aspect of treatment for women with GDM. This is discussed with the women by the diabetes team at all consultations.

Medication options for women whose blood glucose remains high despite appropriate diet and exercise

- Insulin
- Metformin
- Metformin and insulin.

4.5.2 Ideal blood glucose and glycosylated haemoglobin (HbA1c) targets

Home glucose monitoring may have to be done 4- 7 times/day (before and after each meal and at bedtime) to achieve the following targets for glycaemic control if safe to do so:

- *Pre meal* 4-5.2 mmol/l
- *1 hours post meal* < 7.8 mmol/l
- *2 hours post meal* < 6.4 mmol/l
- *HBA1C* < 6.5% (48mmol/mol)

The woman should be encouraged to record all her blood glucose levels in a booklet which should be brought to each clinic visit.

4.5.3 Management of women with Gestational Diabetes

- Follow summary table 2

4.6 Antenatal emergencies

4.6.1 Management of hypoglycaemic episodes

See “Hospital Management of hypoglycaemia Adult patients diagnosed with diabetes mellitus ” (Trust guideline)

Signs and symptoms of Hypoglycaemia:

Shakiness, irritability, palpitations, tremor, hunger, pallor, tingling in lips, tongue and/or fingers, perspiration, anxiety, drowsiness, headaches, lack of concentration, slurred speech, blurred vision, confusion, irrational behaviour, unsteady gait, dizziness, weakness, fits, coma

See Flow Chart 1 for immediate management of Hypoglycaemia

4.6.2 Management of suspected diabetic keto-acidosis

See ‘Guideline on the Management of Diabetic Ketoacidosis (DKA) in Adults’ (Trust Guideline)

Ketonaemia

Diabetic ketoacidosis (DKA), though preventable remains a frequent life threatening complication of Type 1 Diabetes. Patients can present with DKA when newly diagnosed with T1 Diabetes Mellitus. Or usually present with a precipitant, e.g. infection, diarrhoea and vomiting, missed insulin doses.

Presents As:

- **Symptoms:** Polydipsia, polyuria, vomiting
- **Examination:** Tachycardia, acidotic Kussmaul breathing (deep, rapid breathing), smell of ketones, dehydration, reduced alertness, hypotension
- **Bedside/ Lab tests** Ketonaemia (blood ketones) 3 mmol/l and over OR ketonuria (urinary ketones) more than 2+ ketones AND Metabolic Acidosis (pH less than 7.30 or Bicarbonate below 15 mmol/l) and usually hyperglycaemia (usually plasma glucose more than 11 mmol/l).

Diagnosis summary

- Ketonaemia (blood ketones) >3 mmol/l OR Ketonuria (urinary ketones) more than 2+ ketones AND
- Bicarbonate below 15 mmol/l) and /or Metabolic Acidosis (pH less than 7.30) AND
- Hyperglycaemia (usually plasma glucose >11 mmol/l) or known diabetes

Women should be managed in the High Dependency Unit, or Intensive Care, as this is a very serious situation carrying high risk of mortality to both baby and mother requiring urgent senior medical and obstetric assistance.

See Flow Chart 2 for immediate management of DKA

4.7 Antenatal administration of corticosteroids

Antenatal administration of synthetic steroids is often indicated in cases of threatened premature labour or where iatrogenic premature delivery is likely. Steroids do, however, antagonise the action of insulin and, particularly if used in combination with beta-mimetic drugs, there is a risk of maternal ketoacidosis.

Therefore:

- All mothers with either pre-existing diabetes or gestational diabetes (whether receiving insulin or not) who are being treated with an antenatal course of steroids should be admitted to the antenatal ward for at approx. 36 hours and stay until blood glucose levels are stable.
- For planned admissions the diabetes team should be informed of the woman's admission and asked to review her care. For non-planned admissions a care plan must be initiated by an Obstetric consultant.
- The **Intravenous Insulin Prescription and Fluid Protocol for the Management of Steroid Hyperglycaemia during Pregnancy** ([Appendix 1](#)) booklet should be commenced and utilised throughout the admission.
- All medications should be prescribed at the decision to administer corticosteroids.

Procedure

Measure Capillary Blood Glucose (CBG):

- CBG to be measured PRIOR to administration of steroids.
- If < **7.8mmol/l**, proceed with steroid injection.
- Measure CBG **hourly**.

- If there are 2 consecutive readings > 7.8mmol/l, then in addition to the usual diabetes treatment, commence the **Supplementary Insulin Sliding Scale** and **500mls 0.9% NaCl + 5% Dextrose with 10mmols KCL (0.3%)** at **50mgs/hr (50ml/hr)**.

However

- If 7.8mmol/l or above, start **Supplemental Intravenous Insulin Sliding Scale** and **500mls 0.9% NaCl + 5% Dextrose with 10mmols KCL (0.3%)** at **50mgs/hr (50ml/hr)** immediately and proceed with first steroid injection.
- If the woman is NBM she **must** commence **the Supplemental Intravenous Sliding Scale** and **500mls 0.9% NaCl + 5% Dextrose with 10mmols KCL (0.3%)** at **50mgs/hr (50ml/hr)** in addition to her basal or long acting insulin (Tresiba, Toujeo, Abasaglar).

All women having steroid therapy should aim to eat and drink normally and continue with their routine medication/insulin in addition to the sliding Scale and IV fluids

Stopping supplemental Insulin Infusion

- If the CBG is <4mmols/l stop the insulin for 20minutes and recheck CBG in 10 minutes. Administer **100mls 20% Dextrose IV over 15 minutes** for the management of hypoglycaemia (see 4.6.1).
- Recommence supplemental intravenous sliding scale and IV fluid if there are 2 consecutive capillary blood glucose levels above 7.8mmol/l.
- Continue hourly CBG measurements for at least 12 hours after the second steroid dose, or until the CBG are stable.
- Prior to discharge home, the woman should be reviewed by the Obstetric Consultant/Registrar or Diabetes team for diet/insulin management.

4.8 Induction of labour

- The induction process follows the standard induction of labour SOP.
- Women on insulin should have their normal morning insulin followed by breakfast.
- Women on metformin should take it as normal.

- Once labour is diagnosed, follow care in labour guideline (see below).

4.8.1 Amniotomy

- The woman should be transferred to labour ward preferably in the early morning.
- Capillary blood glucose should be monitored hourly.
- Aim to maintain CBG between 4-7mmols/l.
- If CBG >7mmols or if the woman has Type 1 Diabetes, a **Supplementary Intravenous Sliding Scale and 500mls 0.9% NaCl + 5% Dextrose with 10mmol KCL (0.3%) at 50mgs/hr (50ml/hr)** ([Appendix 2](#)) should be commenced.

4.8.2 Balloon Induction

- Women should continue their normal treatment / diet until labour is diagnosed or ARM performed.

4.8.3 Elective caesarean section (ELSCS)

- Women should be admitted the morning of the planned surgery
- If they are on insulin they should have her usual pre-dinner short acting insulin and evening intermediate or long acting insulin.
- To be kept nil by mouth from midnight.
- Omit morning short acting insulin.
- CBG to be taken and recorded on admission and then hourly.
- Aim to maintain CBG between 4-7mmols/l
- If >7mmols/l, commence **Supplementary Intravenous Sliding Scale and 500mls 0.9% NaCl + 5% Dextrose with 10mmol KCL (0.3%) at 50mgs/hr (50ml/hr)** ([Appendix 2](#)).
- The woman should be first on any elective list.
- Half hourly CBG in the event of general anaesthetic.
- Paediatricians should be informed in advance of the planned delivery.

4.9 Intrapartum care

The principles of management are to maintain blood glucose within normal limits throughout labour and avoid any hypoglycaemic episodes

Once in established labour

- Inform Obstetric Registrar of admission

- All women should have hourly CBG following transfer to the Labour ward.
- Women treated with insulin should commence the **Supplementary Intravenous Sliding Scale** and **500mls 0.9% NaCl + 5% Dextrose with 10mmol KCL (0.3%) at 50mgs/hr (50ml/hr)** ([Appendix 2](#)).
- Women with Insulin pumps should have plan of care for intrapartum management documented in their handheld notes.
- Aim to maintain CBG between 4-7mmols/l.
- Women treated with Diet or Metformin should commence a sliding scale with IV fluid (as above) if CBG >7mmols/l.
- Strict input/ output chart must be kept.
- Continuous Cardiotocograph monitoring.

The pre-printed booklets containing prescriptions and supplementary insulin sliding scales must be utilised in addition to the Labour Care booklet and Theatre booklet, and all medications prescribed by a Doctor/Non-Medical Prescriber.

4.10 Post-partum care

4.10.1 Post-partum care for women with Type 1 DM and Insulin Treated Type 2 DM

- should reduce the **Supplementary Intravenous Insulin Sliding Scale** by **HALF** once the placenta is delivered
- The woman should stay on the labour ward with a continuing IV fluid/insulin infusion until she is stable and able to eat and drink.
- The Diabetes team should be contacted to review on-going insulin requirements.
- Self-monitoring of capillary blood glucose measurements should be continued as appropriate.
- Women with pre-existing Type 2 diabetes who were on oral hypoglycaemics other than metformin prior to the pregnancy should stay on insulin at a reduced dose if they are breast-feeding with further assessment by the diabetes team. If not breastfeeding, they can be switched back to their previous diabetic regime.

4.10.2 Women with Gestational diabetes on insulin or Metformin treatment

- Insulin or metformin treatment of women with gestational diabetes should be stopped immediately after delivery unless otherwise stated by the consultant.
- Women should continue to monitor their own glucose levels before each meal for the first 2-3 days until reviewed by the diabetes team or unless advised otherwise.

4.10.3 Breast Feeding

- Breast-feeding should be encouraged and babies should be offered a feed within the first hour after birth.
- Women with Type 1 diabetes should be advised that breast-feeding lowers maternal blood glucose levels and some reduction in pre-pregnancy insulin doses and/or snacks before or during breast feeding may be required according to the self-monitoring results.
- Women with type 2 diabetes who were on oral hypoglycaemic agents prior to the pregnancy, except Metformin alone should generally remain on insulin until they stop breast-feeding unless a different plan has been agreed with the diabetes team.

4.11 Discharge Planning

Prior to discharge from hospital the diabetes team will organise:

- Fasting plasma glucose 6 weeks after delivery if the woman had gestational diabetes and a copy of the result to be sent to the GP.
- Follow up appointment to discuss the results and give Health Promotion Education

For women who had gestational diabetes, the need for screening for GDM in future pregnancies and the increased long-term risk of developing diabetes should be explained, and lifestyle modification recommended where applicable.

4.12 Contraception

Information and advice about contraception and the importance of planned pregnancy should be offered before discharge from hospital. All methods of

contraception can be considered according to individual circumstances and preference.

5 Implementation/training/awareness

- This is a review of a current document and it formalises current practice.
- Once ratified it will be available in all clinical areas within the Maternity Unit and on the intranet.
- All new, reviewed and ratified documents are notified to staff via the monthly maternity newsletter

6. Auditable Standards

What aspects of compliance with the document will be monitored	What will be reviewed to evidence this	How and how often will this be done	Detail sample size (if applicable)	Who will coordinate findings	Which group or report will receive findings
Diabetes Care Planning document Fully completed	Maternal Notes	Initial audit within 6 mths from ratification/ No more than 2 yearly after this	All notes	Audit Midwife	MCSG
If IVIII is required the appropriate prescription chart has been used and completed fully	Maternal Notes	Initial audit within 6 mths from ratification/ No more than 2 yearly after this	All Notes	Audit Midwife	MCSG

7. Related Documents:

- Trust Guideline: Management of hypoglycaemia in diabetes mellitus in adults
- Trust Guideline: Management of diabetic keto-acidosis
- SOP- Antenatal corticosteroid administration
- SOP- Management of infants whose mothers have diabetes
- Management of the neonate at risk of hypoglycaemia.

8. References:

- **NICE clinical guideline NG3:**

- Diabetes in pregnancy. Management of diabetes and its complications from pre-conception to the postnatal period. Feb 2015

9. DISCLAIMER

It is the responsibility of staff to check the Trust intranet to ensure that the most recent version/issue of this document is being referenced.

DOCUMENT HISTORY					
Date of Issue	Version No.	Next Review Date	Date Approved	Director Responsible for Change	Nature of Change
November 2016	5.0	03.11.19	03.11.16	Sabeena Allahdin, Victor Lawrence Anya Wright	
April 2021	SOP v1	April 2024	13 th April 2021	MCSG	Reviewed and converted to SOP

Appendix 1: Intravenous Insulin Prescription and Fluid Protocol for the Management of Steroid Hyperglycaemia during Pregnancy



Intravenous insulin prescription and fluid protocol for the management of steroid hyperglycaemia during pregnancy

Aim for the woman to eat and drink normally (if applicable), keeping capillary blood glucose levels between 4.0 to 7.8mmols.

ADDRESSOGRAPH		Ward							
		Consultant							
		Admission date							
		Discharge date							
Pre-existing Type 1 <input type="radio"/>		Type 2 <input type="radio"/>	Gestational <input type="radio"/>						
Diet controlled <input type="radio"/>		Metformin <input type="radio"/>	Insulin <input type="radio"/>						
S	Indication for steroids								
	Steroids prescribed		Yes <input type="radio"/> No <input type="radio"/>						
Drug (approved name)	Dose	Volume	Prescribed by	Route	Commenced by	Checked by	Date/time		
Human Soluble Insulin	50 units	Made up to 50ml with NaCl 0.9% (1 unit per ml)		IV					
Intravenous fluid prescription									
Date	Intravenous fluid and rate			Prescribed by	Commenced by	Checked by	Date/time		
	500ml 0.9% NaCl + 5% Dextrose with 10mmol KCl (0.3%) to run at 50mls/hr								
	500ml 0.9% NaCl + 5% Dextrose with 10mmol KCl (0.3%) to run at 50mls/hr								
Prescription of intravenous management of hypoglycaemia									
Date	Time	Preparation	Volume	Route	Duration	Prescriber's signature	Print name	Given by	Time given
		20% Dextrose	100ml	IV	15 min				
Patients with type 1 DM on insulin pumps should be referred to the Diabetes Specialist Team									
B	Gravida				Para				
	Gestation								
	Blood group				Antibodies				
	Placenta								
	Medical history								
Obstetric history									
A	Blood pressure	Pulse	Temperature	Respiratory rate	Sats	Urinalysis			

ADDRESSOGRAPH

Fetal movement	Active <input type="radio"/>	Reduced <input type="radio"/>	Nil felt <input type="radio"/>
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CTG indicated on admission	Yes <input type="radio"/>	No <input type="radio"/>
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Peripheral Venous Access Device (PVAD) assessment continuation

PVAD STICKER		Day	Date	Time	VIP	Flush	Signature	Print name & Designation
1								
2								

PVAD removed date	Reason for removal	Removed by
Time	VIP score	Designation


R	Blood glucose prior to administration of 1st dose steroid/If > 7.8mmol commence sliding scale.
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Algorithm →	Dosing algorithm (please see the guide below)			Algorithm guide
	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)	<ul style="list-style-type: none"> All women with diabetes should have Capillary Blood Glucose (CBG) testing hourly whilst on sliding scale for the management of steroid hyperglycaemia during pregnancy. Start sliding scale and fluids if CBG > target (see below) for 2 consecutive hours. <p>Algorithm 1 Most women will start here.</p> <p>Algorithm 2 Use this algorithm for women who are on long term steroids; > 80 units of insulin; or those not achieving target on algorithm 1.</p> <p>Algorithm 3 Use this for women who are not achieving target on algorithm 2. (No patient starts here without diabetes or medical review).</p> <p>If the woman is not achieving targets with these algorithms, contact the Diabetes Team (out of hours: medical SpR in call).</p> <p>Target CBG level = 4–7.8mmol/L</p>
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	Check CBG every hour whilst on sliding scale			
Print name	Move to the higher algorithm if the CBG is > target and is not dropping			
Date	Move to the lower algorithm if CBG falls below 4mmol/L or is dropping to fast			

Appendix 2: Supplementary Intravenous Sliding Scale

Intravenous insulin prescription and fluid protocol for the management of women admitted for iol, labour or elective caesarean section

Utilise in addition to labour care booklet/ theatre booklet



Isle of Wight
 NHS Trust
 

ADDRESSOGRAPH

Ward
Consultant
Admission date
Discharge date

Pre-existing Type 1 <input type="radio"/>	Type 2 <input type="radio"/>	Gestational <input type="radio"/>
Diet controlled <input type="radio"/>	Metformin <input type="radio"/>	Insulin <input type="radio"/>

S	Reason for admission		
	Steroids	Yes <input type="radio"/>	No <input type="radio"/>
		Date	

Drug (approved name) Please tick	Dose	Volume	Route	Prescriber's signature	Prescriber print name	Date
Human Soluble Insulin	50 units	Made up to 50 ml with NaCl 0.9% (1 unit per ml)	IV			


INTRAVENOUS SUBSTRATE FLUID PRESCRIPTION				
Date	Intravenous fluid and rate	Prescriber	Commenced by	Checked by
	500 ml 0.9% NaCl + 5% Dextrose with 10mmol KCl (0.3%) to run at 50mls/hr			
	500 ml 0.9% NaCl + 5% Dextrose with 10mmol KCl (0.3%) to run at 50mls/hr			

PRESCRIPTION OF INTRAVENOUS MANAGEMENT OF HYPOGLYCAEMIA									
Date	Time	Preparation	Volume	Route	Duration	Prescriber's signature	Print name	Given by	Time given
		20% Dextrose	100ml	IV	15 min				

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

B	Gravida	Para
	Gestation	
	Blood group	Antibodies
	Placenta	
	Medical history	
	Obstetric history	

A	See Labour Care booklet/ Theatre booklet
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IV Insulin Prescription & Fluid Protocol for the Management of Women Admitted for IOL, Labour or Elective CS 25 February 2021 Version 0.6 1

ADDRESSOGRAPH

Fetal movement	Active <input type="radio"/>	Reduced <input type="radio"/>	Nil felt <input type="radio"/>
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CTG indicated on admission	Yes <input type="radio"/>	No <input type="radio"/>	Blood glucose
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R

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

Algorithm →	Dosing algorithm (please see the guide below)			Algorithm guide
	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)			Algorithm 1 Most women will start here.
<4	STOP INSULIN FOR 20 MINUTES Treat hypo as per guideline (re-check CBG in 10 minutes)			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).
4.0–5.5	0.2	0.5	1.0	Algorithm 3 Use this for women who are not achieving target on algorithm 2. (No patient starts here without diabetes or medical review).
5.6–7.0	0.5	1.0	2.0	
7.1–8.5	1.0	1.5	3.0	If the woman is not achieving targets with these algorithms, contact the Diabetes Team (out of hours: medical SpR in call).
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	Target CBG level = 4–7.8mmol/L
Signed				Check CBG every hour whilst on VRIII
Print name				Move to the higher algorithm if the CBG is > target and is not dropping
Date				Move to the lower algorithm if CBG falls below 4 mmol/L or is dropping to fast

ADDRESSOGRAPH

Care of diabetic women in the intrapartum event

Capillary blood glucose monitoring												
Date/Time												Gestational Diabetes STOP VRIII and IV Substrate Fluid regime once placenta is delivered.
CBG												
Insulin rate												
Initials												
Date/Time												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.
CBG												
Insulin rate												
Initials												
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 regime – IV insulin has a 5 minute half-life												