

Department:	Obstetrics and Gynecology		
Document:	Multidisciplinary Policy and Procedure		
Title:	Management of Diabetic Patient in Labor and Postpartum		
Applies To:	All Obstetrics and Gynecology Staff		
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1. PURPOSE:

- 1.1 To ensure that all patients with diabetes in pregnancy are identified, diagnosed and treated according to modern practice.

2. DEFINITIONS:

- 2.1 **Gestational diabetes-** is a condition in which a patient without diabetes develops high blood sugar levels during pregnancy. Gestational diabetes generally results in few symptoms.

3. POLICY:

3.1 Diabetes mellitus with pregnancy:

- 3.1.1 All patients known to have diabetes mellitus prior to pregnancy whether on diet alone, oral hypoglycemic agents or insulin shall be referred urgently to antenatal diabetic clinic.
- 3.1.2 The diabetic physician will be responsible along with the obstetrician in charge for adjustment of insulin and monitoring of blood glucose during the pregnancy.
- 3.1.3 Blood glucose shall be performed at in daily basis intervals throughout the pregnancy at the discretion of the diabetic physician and obstetrician-undertaking antenatal care of the patient.
- 3.1.4 Insulin therapy usually combining with different rate of action with subcutaneous injections at least 2 to 3 times per day.
- 3.1.5 Delivery should be planned around the due date and should not be allowed to extend too far beyond this.

3.2 Gestational diabetes mellitus:

- 3.2.1 Screening and diagnosis of gestational diabetes mellitus (GDM) to be performed.
- 3.2.2 The main aim of managing diabetic pregnant women is to achieve a strict glycaemic control to have a sustained normal growth rate for the pregnant women and her fetus to avoid ketosis/acidosis.
- 3.2.3 Insulin therapy should be considered if the blood glucose goals are exceeded on two or more occasions within 1-2 weeks of diabetic diet.
- 3.2.4 Daily self-blood glucose monitoring with fasting and one hour post meal blood sugar for remainder of pregnancy in women require insulin needed.
- 3.2.5 If the target range blood sugars are obtained in women on diet control then testing may be decreased to two or three days per weeks.
- 3.2.6 The timing of fetal and maternal monitoring for women with GDM who need insulin and have history of stillbirth or developed complications such as pre-eclampsia or IUGR will be the same as for women with pre pregnancy diabetes.

4. PROCEDURE:

- 4.1 On admission of a patient who are diagnosed to have gestational diabetes but not controlled on diet at antenatal clinic or diabetic patient need to start insulin, involve the medical team.

- 4.1.1 Do clinical assessment, review the antenatal chart and take proper history and examination.
- 4.1.2 Initial laboratory studies in addition to prenatal labs to be done include:
 - 4.1.2.1 Complete metabolic panel, thyroid function studies, HbA1C, 24 hour urine collection to evaluate kidney function.
 - 4.1.2.2 An ophthalmological retinal examination for known diabetic.
- 4.1.3 Patient education about antenatal management of pregnancy with diabetes.
- 4.1.4 Nutritional status of women during pregnancy with diabetes.
- 4.1.5 Insulin :
 - 4.1.5.1 Goals for the patient's insulin therapy should be to minimize the number of injections that the patient will have to take on a daily basis and to bring blood sugar values within suggested ranges.
 - 4.1.5.2 Bedside plasma glucose monitoring, recorded on an appropriate flow sheet.
 - 4.1.5.2.1 A minimum of 4 times per day.
 - 4.1.5.2.2 Before fasting and 1 or 2 hours after each meal for patients orally fed.
 - 4.1.5.2.3 Every 4 to 6 hours during nothing by mouth (NPO) status.
 - 4.1.5.2.4 Hourly monitoring for patients treated with continuous intravenous insulin infusion therapy until values are stable and then consider reducing frequency to every 2 to 3 hours.
 - 4.1.5.3 Regimen 1: Two injections/ day before breakfast and before supper.
 - 4.1.5.3.1 0.7 U/kg of ideal body weight, total dose in the 1st trimester.
 - 4.1.5.3.2 0.8U/kg of ideal body weight total dose in the 2nd trimester.
 - 4.1.5.3.3 0.9 U/kg of ideal body weight, total dose in the 3rd trimester.
 - 4.1.5.3.4 The total dose is distributed as follows:
 - 4.1.5.3.4.1 AM: 2/3 of total à 2/3 intermediate insulin (NPH), 1/3 à short insulin (regular).
 - 4.1.5.3.4.2 PM: 1/3 of total à ½ intermediate insulin (NPH), ½ à short insulin (regular).
 - 4.1.5.4 Regimen 2: four injections/day, total dose of insulin:
 - 4.1.5.4.1 0.7 U/kg ideal body weight for 6to18 weeks.
 - 4.1.5.4.2 0.8 U/kg ideal body weight for week 18 to 26.
 - 4.1.5.4.3 0.9 U/kg ideal body weight for week 27 to 36.
 - 4.1.5.4.4 1 U/kg ideal body weight for weeks 37 to term.
 - 4.1.5.4.5 The insulin should be divided according to the following:
 - 4.1.5.4.5.1 NPH: (45%) = 30% before breakfast, 15% before bedtime.
 - 4.1.5.4.5.2 RI: (55%) = 22% before breakfast, 16.5% before lunch, 16.5% before dinner.
 - 4.1.5.4.6 Adjust the dose every 1-2 days.
- 4.2 Course of hospitalization:
 - 4.2.1 Women with type 1 diabetes who become unwell should have diabetic ketoacidosis excluded as a matter of urgency.
 - 4.2.2 Women who are suspected of having diabetic ketoacidosis should be admitted immediately to intensive care unit, where they can receive both medical and obstetric care.
 - 4.2.3 Target ranges for blood glucose during pregnancy.
 - 4.2.3.1 Patient with diabetes should aim to keep fasting blood glucose between 3.5 and 5.9 mmol/litre and 1 hour postprandial blood glucose below 7.8 and less than 7mmol/L at 2 hours.
 - 4.2.3.2 Capillary blood glucose in the following ranges: fasting 90-99mg/dl, 1 hour post prandial blood glucose less than 140mg/dl or 2 hour post prandial less than 120-127 mg/dl.
- 4.3 Timing of delivery.
- 4.4 Peri / intra partum management of diabetic patients:
 - 4.4.1 Insulin– if patient scheduled for caesarean section.
 - 4.4.1.1 Patient should take usual medication at bedtime.

- 4.4.1.2 Eat nothing after midnight.
- 4.4.1.3 Do not give morning medication and the patient commenced on dextrose 5% with ringer lactate solution at 125 ml/hr from 8 am onwards.
- 4.4.1.4 On arrival to theatre check blood glucose (patient should be fasting so should be normal if sugars have been well controlled).
- 4.4.1.5 Perform caesarean section within 2 hours.
- 4.4.1.6 If unable to perform surgery immediately or patient in poor control, start insulin drip.
- 4.4.1.7 Perform caesarean section after 4-6 hours of euglycemia.
- 4.4.1.8 Gluco checks hourly until surgery.
- 4.4.1.9 The physician is to be informed if blood glucose level exceeds 150 mg/dl to administer insulin in a sliding scale as determined by the physician.
- 4.4.2 Patients for induction of labor by prostaglandins by the vaginal route shall continue with the usual diet and insulin until established in labor and transferred to the L&D unit
- 4.4.3 Patients in established labor on the L&D unit shall be kept NPO with intravenous infusion of normal saline 125ml/hour. Once patient in active labor or glucose level decreases to less than 70mg/dl, the infusion is changed from normal saline to 5% dextrose at a rate of 150 ml/hr to achieve a glucose level of approximately 100mg/dl. Regular insulin is administered via a pump at the rate of 1.25 units per hour if glucose levels exceed 100mg/dl. Glucose levels are checked hourly using bedside meter; if level exceeds 150mg/dl, inform duty physician to adjust insulin requirements.
- 4.4.4 Continuous fetal monitoring during labor.
- 4.5 Postpartum management of diabetic patients on insulin:
 - 4.5.1 Immediately post-delivery the insulin infusion rate should be reduced by at least 50% as rapid decline in insulin requirement occurs following delivery of the placenta.
 - 4.5.2 Perform gluco checks 4 hourly and administer insulin as required according to the sliding scale prescribed by the physician.
 - 4.5.3 For patients with diabetes mellitus prior to pregnancy on insulin start the pre pregnancy dose of insulin in the morning and follow with gluco checks 4 hourly.
 - 4.5.4 Encourage breast feeding.
 - 4.5.5 Breast feeding mothers will require more calories.
 - 4.5.6 Discuss contraception prior to discharge from hospital.
 - 4.5.7 Follow up to general medicine clinic.

5. MATERIAL AND EQUIPMENT:

- 5.1 Insulin.
- 5.2 Syringes.
- 5.3 Glucometer.
- 5.4 IV solutions.

6. RESPONSIBILITIES:

- 6.1 Physician
- 6.2 Nurse
- 6.3 Pharmacist

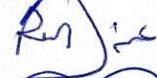
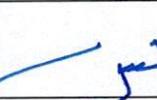
7. APPENDICES:

N/A

8. REFERENCES:

- 8.1 MOH, Guidelines for Obstetrics and Gynecology, Clinical Policies and Procedures.
- 8.2 CBAHI Standard 3rd Edition 2016.

9. APPROVALS:

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