

Gestational Diabetes

Presenter: **Christina Munyuki**

Indigenous Services Canada

Education Nurse Advisor – Primary care

Christina.Munyuki@sac-isc.gc.ca

Work Cell: **(587) 357-1945**

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Gestational Diabetes

“Gestational diabetes mellitus (GDM) is glucose intolerance with onset during pregnancy. The prevalence of GDM has been steadily rising since 2000, affecting an estimated 7.7% of all women who gave birth in Alberta in 2016”

(Alberta Antenatal Pathway, 2020)

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Perinatal Risks

- Preeclampsia – a condition caused by elevated blood pressure
- Macrosomia – baby's body is larger than normal
- Stillbirth
- Cesarean section
- Neonatal respiratory distress
- Neonatal hypoglycemia
- Birth trauma

(Alberta Antenatal Pathway, 2020)

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Patient Risk Factors

- Previous diagnosis of GDM, Pre-diabetes
- Member of a high-risk population
(e.g. Indigenous, Hispanic, South Asian, Asian, African)
- Age \geq 35 years, BMI \geq 30 kg/m², PCOS
- Acanthosis nigricans,
- Corticosteroid use
- History of macrosomic infant
- Current fetal macrosomia or polyhydramnios

(Alberta Antenatal Pathway, 2020)

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Screening & Diagnosis

All women with unknown diabetes status should be screened for diabetes during pregnancy.

- **MEDIUM RISK**: screening between 24-28 weeks gestation
- **HIGH RISK**: Test for HgB A1C or fasting glucose based on clinical factors at initial presentation

Untreated gestational diabetes can cause problems for both mother and fetus

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Causes Diabetes in Pregnancy

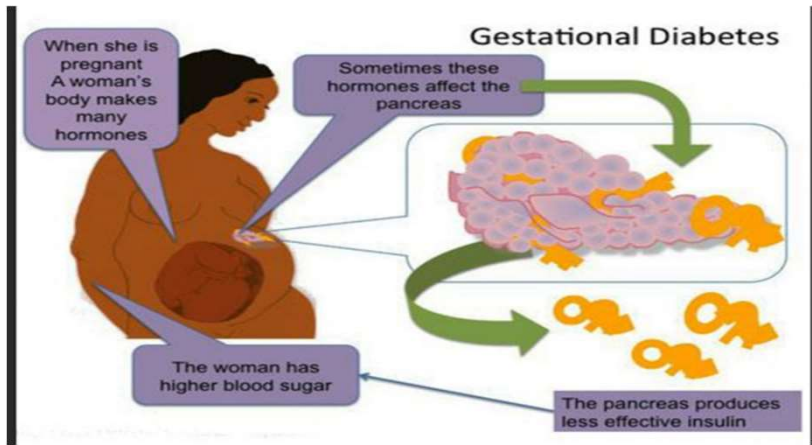
Physiological changes leading to

Slow metabolism → Decreased insulin uptake → Increased glucose levels in the body → controlled or uncontrolled diabetes

- The placenta produces hormones that may affect the production of insulin (Insulin resistance)
- Maternal body must work harder to produce adequate insulin to counteract the effects placenta hormones

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Physiological Changes



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Gestational Diabetes Screen (GDS)

<input type="checkbox"/> D-dimer	<input type="checkbox"/> Random <input type="checkbox"/> AM (0700-1000) <input type="checkbox"/> PM (1500-1800)
<input type="checkbox"/> Fibrinogen	<input type="checkbox"/> Estradiol
<input type="checkbox"/> INR	<input type="checkbox"/>
<input type="checkbox"/> Reticulocyte Count	<input type="checkbox"/> Luteinizing Hormone (LH)
General Chemistry	<input type="checkbox"/> Parathyroid Hormone (PTH)
<input type="checkbox"/> Albumin	<input type="checkbox"/> Progesterone
<input type="checkbox"/> Alkaline Phosphatase (ALP)	<input type="checkbox"/> Prolactin
<input type="checkbox"/> Alanine Aminotransferase (ALT)	<input type="checkbox"/> Testosterone, Total
<input type="checkbox"/> Bilirubin <input type="checkbox"/> Total <input type="checkbox"/> Total and Conjugated	<input type="checkbox"/> Random <input type="checkbox"/>
<input type="checkbox"/> Calcium	<input type="checkbox"/> Thyroid Stimulating Hormone (TSH)
<input type="checkbox"/> C-Reactive Protein (CRP)	<input type="checkbox"/> Thyroid Stimulating Hormone (TSH)
<input type="checkbox"/> Creatine Kinase (CK)	
<input type="checkbox"/> Creatinine (eGFR)	Immunology / Serology
<input type="checkbox"/> Electrolyte Panel <input type="checkbox"/> Sodium <input type="checkbox"/> Potassium	<input type="checkbox"/> EBV IgM
<input type="checkbox"/> Ferritin	<input type="checkbox"/> Hepatitis A Virus (Hep A)
<input type="checkbox"/> Gamma Glutamyl Transferase (GGT)	<input type="checkbox"/> Hepatitis A Virus (Hep A)
<input type="checkbox"/> Glucose Fasting (F) (I)	<input type="checkbox"/> Hepatitis B Surface Antigen (HBsAg)
<input type="checkbox"/> Glucose Gestational Diabetes Screen (GDS)	<input type="checkbox"/> Hepatitis B Surface Antibody (HBsAb)
<input type="checkbox"/> Glucose Tolerance, Gestational, 2h (G) (I)	<input type="checkbox"/> Hepatitis C Virus (Hep C)
<input type="checkbox"/> Glucose Random	<input type="checkbox"/> HIV 1 and 2 Serology
<input type="checkbox"/> Glucose Tolerance, 2h (G) (I)	<input type="checkbox"/> Mononucleosis (EBV)
<input type="checkbox"/> Hemoglobin A1c	<input type="checkbox"/> Rheumatoid Factor (RF)
<input type="checkbox"/> HCG, Serum (Quantitative)	<input type="checkbox"/> Rubella Immunity
	<input type="checkbox"/> Syphilis Screen

GDS (Gestational Diabetes Screen)

Obtained between 24-28 weeks gestation
 POCT BGL should be within normal limits before administering 50g Glucose drink
 Patient drinks 50g glucose drink
 Inform patient not to eat or drink anything for 1 hr
 Blood is drawn 1hr post glucose drink
 Other tests to obtain at this time- CBC, repeat syphilis screen and Urine for G+C
 Please label the requisition and GOLD specimen tube with time the 50g glucose drink was given, time blood is drawn
 Spin only the GOLD
 Storage: Refrigerate

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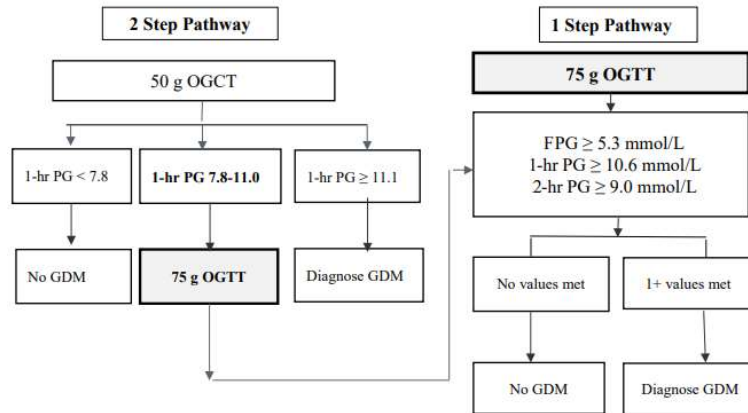
Glucose Tolerance Test (GTT)

<input type="checkbox"/> CBC and Differential <input type="checkbox"/> D-dimer <input type="checkbox"/> Fibrinogen <input type="checkbox"/> INR <input type="checkbox"/> Reticulocyte Count General Chemistry <input type="checkbox"/> Albumin <input type="checkbox"/> Alkaline Phosphatase (ALP) <input type="checkbox"/> Alanine Aminotransferase (ALT) <input type="checkbox"/> Bilirubin <input type="checkbox"/> Total <input type="checkbox"/> Total <input type="checkbox"/> Calcium <input type="checkbox"/> C-Reactive Protein (CRP) <input type="checkbox"/> Creatine Kinase (CK) <input type="checkbox"/> Creatinine (eGFR) <input type="checkbox"/> Electrolyte Panel <input type="checkbox"/> Sodium <input type="checkbox"/> Ferritin <input type="checkbox"/> Gamma Glutamyl Transferase <input type="checkbox"/> Glucose Fasting <input type="checkbox"/> 1 <input type="checkbox"/> Glucose Gestational Diabetes <input type="checkbox"/> Glucose Tolerance, Gestational <input type="checkbox"/> Glucose Random <input checked="" type="checkbox"/> Glucose Tolerance, 2hr <input type="checkbox"/> Hemoglobin A1c <input type="checkbox"/> HCG, Serum (Quantitative) <input type="checkbox"/> Immunoglobulin A (IgA) <input type="checkbox"/> Lipase <input type="checkbox"/> Magnesium <input type="checkbox"/> Phosphate <input type="checkbox"/> Prostate Specific Antigen (PSA) <input type="checkbox"/> Protein Electrophoresis-Serum <input type="checkbox"/> Total Protein <input type="checkbox"/> Urate <input type="checkbox"/> Lipid Panel <input type="checkbox"/> Cholesterol	Cortisol <input type="checkbox"/> Random <input type="checkbox"/> AM (0700-1000) <input type="checkbox"/> PM (1500-1800) <input type="checkbox"/> Estradiol	Prenatal GTT Pre-draw @ 1000, 75g Glucose load @ 1015 1hr post B. draw @ 1115, 2hr post draw @ 1215
BD Vac SST™ Pre-draw before 75g glucose drink 1 hr post 75g glucose drink 2 hr post 75g glucose drink	BD Vac SST™ 1 hr post 75g glucose drink	BD Vac SST™ 2 hr post 75g glucose drink
Consult the NP on Call GTT is obtained when GDS is above therapeutic range, Please refer to Gestational diabetes algorithm for automatic diagnosis based on GDS test results before administering GTT test. Patient fast 8hrs POCT must be within normal range Test is abandoned if blood sugar is above range Pre-draw 1 GOLD tube before patient drink 75g glucose drink Next tube is drawn 1hr post 75g glucose drink the last tube is drawn 2hrs post 75g glucose drink The nurse should have three tubes in total drawn to complete the test Spin GOLD Tubes 15-20 mins after the draw Storage: Refrigerate Transport all three tubes together in one bag		
Gentamicin <input type="checkbox"/> Pre <input type="checkbox"/> Post <input type="checkbox"/> Interval <input type="checkbox"/> Other Tobramycin <input type="checkbox"/> Pre <input type="checkbox"/> Post <input type="checkbox"/> Interval <input type="checkbox"/> Other Vancomycin <input type="checkbox"/> Pre <input type="checkbox"/> Other Urine Drug Testing Panels Reason for Request <input type="checkbox"/> Opioid Dependency Panel What is the Treatment Regimen? <input type="checkbox"/> Buprenorphine <input type="checkbox"/> Methadone <input type="checkbox"/> Morphine <input type="checkbox"/> Hydromorphone <input type="checkbox"/> Other <input type="checkbox"/> General Toxicology Panel <input type="checkbox"/> Chlamydia & Gonorrhea Screen		

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Gestational Diabetes Screening Guide

Universal screening for all Pregnant Women not previously diagnosed at 24-28 weeks, including repeat testing for those who received early testing.



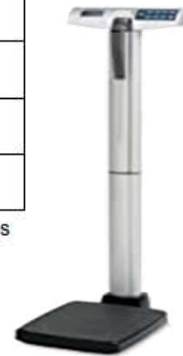
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Gestational Weight Gain

Recommendations for Gestational Weight Gain by Pre-Pregnancy BMI

Weight Category	Pre-Pregnant BMI (kg/m ²)	Total Weight Gain for Pregnancy*	Weight Gain Rate in 2 nd and 3 rd Trimesters*
Underweight	< 18.5	28 – 40 lbs 12.5 – 18 kg	1 lb/week 0.5 kg/week
Healthy Weight	18.5 – 24.9	25 – 35 lbs 11.5 – 16 kg	1 lb/week 0.4 kg/week
Overweight	25.0 – 29.9	15 – 25 lbs 7 – 11.5 kg	0.6 lb/week 0.3 kg/week
Obese	> 30	11 – 20 lbs 5 – 9 kg	0.5 lb/week 0.2 kg/week

*Health Canada 2010 Gestational Weight Gain Guidelines adapted from Institute of Medicine guidelines



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Nutrition

- Encourage pregnant women to eat balanced meals according to *Canada's Food Guide*
- Iron is important for fetal growth
- Prevent excessive maternal fatigue
- Manage maternal hemoglobin levels



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Prenatal Education

- Counsel women to consume a healthy diet, limiting excessive sugar intake
- Regular exercise
- Maintain healthy weight gain
- Take medications as prescribed and maintain a blood glucose record. Review with the provider each prenatal visit.



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Are Women at Risk for Developing of Type 2 Diabetes After Pregnancy?

Women are at risk if:

- Developed gestational diabetes before 24 weeks gestation
- Uncontrolled glucose levels during pregnancy
- Blood glucose level remain elevated during postpartum period
- Obesity
- Family history of diabetes
- Consistently having gestational diabetes with other pregnancies
- Eating well and maintaining an active lifestyle is essential to reduce risk of developing Type 2 Diabetes

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Postpartum Screening

Due to the risk of developing Type 2 Diabetes, *Diabetes Canada* guideline recommends screening women for diabetes:

- **six weeks to six months postpartum** (with a glucose tolerance test)
- **when planning another pregnancy**
- **every three years** (or more often depending on risk factors)

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References

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