

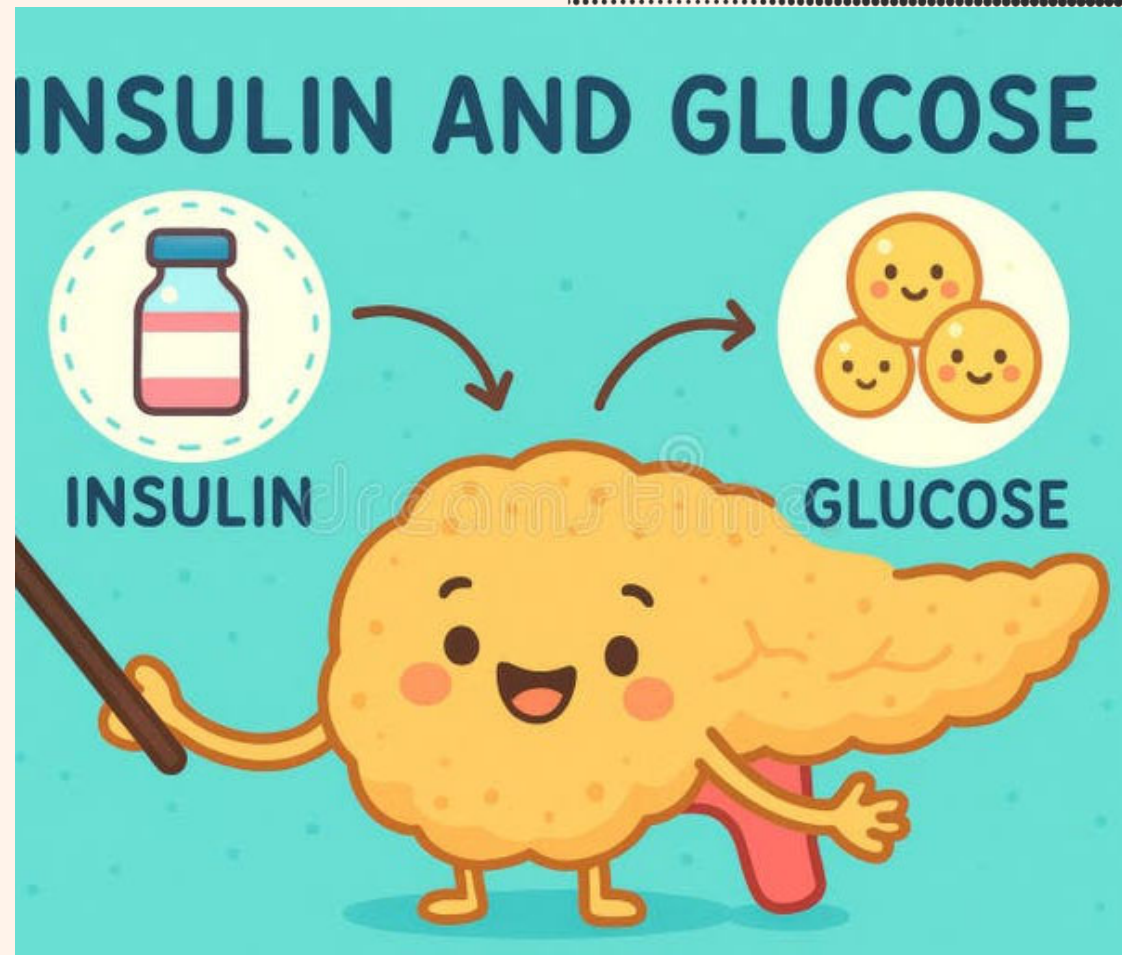
# Diabetes in Pregnancy

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FOOTER



## Today's Goals

- Understanding pregestational vs gestational diabetes
- Discussing how pregnancy affects disease
- Reviewing the risks factors for both
- Reviewing the management strategies
- Discussing role of social drivers of health



# Pregestational Diabetes

## ***Type 1 Diabetes***

Diagnosed earlier in life, often in childhood and adolescence

No insulin is produced

Often on insulin pumps

Long acting or basal insulin is a must

More prone to diabetic ketoacidosis

## ***Type 2 Diabetes***

Generally diagnosed later in life

Insulin resistance

Often seen with obesity

Can be reversed with diet modifications and weight loss

Often on oral medications or multiple medications

Many of the anti-glycemic medications are not recommended in pregnancy, thus addressing this early or preconceptionally is important

# Gestational Diabetes

Diabetes which is diagnosed during pregnancy assuming normal routine care prior has been performed.

Long term 50% risk of developing Diabetes outside of pregnancy.

Can be diagnosed early in pregnancy or in third trimester.

Once pregnancy is over, retesting should occur.

Those at risk:

- Prior history of Gestational Diabetes
- Family history of diabetes in first degree relatives
- Advanced maternal age
- Hispanic, South or East Asian, Native American, Pacific Islander, African, or Middle Eastern.
- Polycystic ovarian syndrome
- Prior obstetric history of a large for gestational age neonate.
- Multiple gestations
- Overweight or Obese
- Physical inactivity

# Gestational Diabetes

1 hour glucose tolerance test: 140 (135)

3 hour glucose tolerance test: (two must be elevated for diagnosis)

Fasting: 95

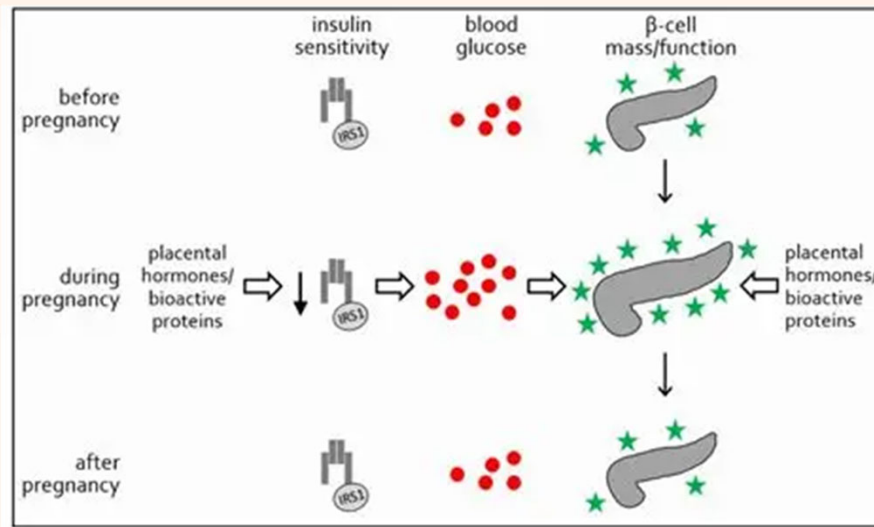
1 hour: 180

2 hour: 155

3 hour: 140



# Physiology



# Risks to Pregnancy

## ***Pregestational Diabetes***

- Hypoglycemia (including potential for unawareness)
- Progression of retinopathy and nephropathy
- Increased risk of preeclampsia, with incidence dependent on diabetes duration and complications.
- Cesarean delivery
- Wound healing issues
- Diabetic ketoacidosis
- Congenital anomalies, with risk correlated to maternal Hgb A1c. A1c <7% confers a baseline risk similar to the general population.
- Stillbirth, fetal growth restriction, macrosomia, shoulder dystocia, and birth injury.
- Neonatal complications: Hypoglycemia, respiratory distress syndrome, electrolyte abnormalities, jaundice, and polycythemia.

## ***Gestational Diabetes***

- Macrosomia
- Shoulder dystocia and Birth Injury
- Cesarean section
- Neonatal Hypoglycemia and NICU stay,
- Intrauterine fetal demise
- Preeclampsia
- Development of diabetes outside of pregnancy



## Pregnancy Plan of Care --Pre-gestational

- Aspirin
- Baseline labs: CMP, CBC, TSH, Hgb A1c, urine protein/creatinine
- Referrals to Registered dietitian and ophthalmology
- Cardiac evaluation via EKG or Echo if Class D diabetes or evidence of vascular disease
- Update vaccinations: Pneumococcal, COVID, Influenza (seasonal), Tdap
- Detailed anatomy ultrasound with MFM at 18–20 weeks
- Fetal echocardiogram at 22 weeks
- Serial growth ultrasounds starting at 28 weeks
- Twice-weekly non stress tests beginning at 32 weeks
- Consider cesarean delivery if estimated fetal weight >4500g
- Plan for delivery between 37–39 weeks, depending on glycemic control. If poorly controlled or other complications 37-38 weeks, if well controlled the 39th week of pregnancy.

## Pregnancy Plan of Care --Gestational

- Monitor fasting and 1 hour post prandial glucose values.
- Send blood glucose values in weekly to MFM portal for management.
- If uncontrolled blood glucose values, will start medications
- Serial growth ultrasounds in the third trimester
- If on medications, initiate twice weekly NSTs starting at 32 weeks gestation.
- Induction of labor at 39 weeks gestation if well controlled on medication.
- If blood glucoses are controlled without medication, recommend induction of labor at 39- 40 weeks.
- 2 hour glucose test at the 6 week postpartum visit.

# Testing Blood Glucose Levels

## ***Continuous glucose monitor (CGM)***

Monitors capillary blood glucose

Easy to use

Insurance issues



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## ***Traditional finger stick***

Using blood

Painful

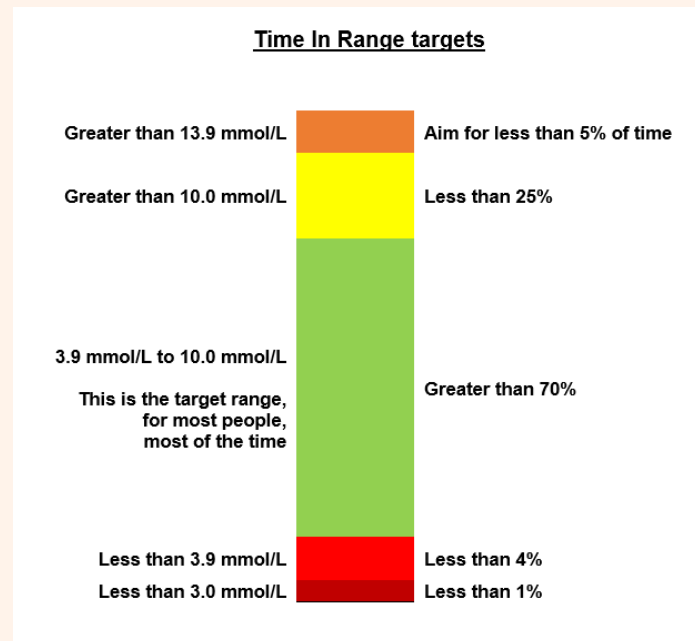
More accurate



# Glucose Goals

Traditional: Using finger stick monitoring. Fasting glucose less than 95 and 1 hour post prandial less than 140.

Continuous glucose monitoring: Same as above but time in range of 70% or greater.



# Medications

## Insulin Types

### Rapid

Lispro (Humalog)  
Aspart (Novolog)  
Glulisine (Aspidra)

Onset: 15-30 mins  
Peak: 1-3 hours  
Duration: 4-6 hours

- Use **just before meal**
- Highest risk of hypoglycemia

### Short

Regular (Humulin R)  
Regular (Novolin R)

Onset: 30-60 mins  
Peak: 2-4 hours  
Duration: 5-8 hours

- Take **30-60 mins** before meal
- Useful for managing **Diabetic ketoacidosis**

### Intermediate

NPH (Humulin N)  
NPH (Novolin N)

Onset: 2-4 hours  
Peak: 8-12 hours  
Duration: 10-18 hours

- Act as basal insulin
- Cover insulin need **around 0.5 day**

### Long

Glargine (Lantus)  
Detemir (Levemir)

Onset: 1-2 hours  
Peak: No peak  
Duration: 24+ hours

- Act as basal insulin
- Cover insulin need **around 1 day**

### Ultra long

Degludec (Tresiba)

Onset: 1 hour  
Peak: No peak  
Duration: **42+ hours**

- Useful for extra long glucose control

# Anti-Glycemic Medications

1. Biguanides (Metformin)
2. Sulfonylureas (Glipizide, Glyburide)
3. GLP-1 receptor agonists (Ozempic)



# Social Determinates of Health

- Never assume baseline knowledge.
- Food insecurity and food deserts make it challenging to get healthy fresh produce and healthy options in general.
- Fast food is convenient and cheap.
- Access to food banks, WIC, social work.
- Cultural sensitivity.



# Obesity



| BMI          | Classification             |
|--------------|----------------------------|
| 18,5 a 24,99 | Normal weight              |
| 25 a 29,99   | Pre-obesity                |
| 30 a 34,99   | Obesity class 1 (moderate) |
| 35 a 39,99   | Obesity class 2 (severe)   |
| ≥40          | Obesity class 3 (morbid)   |

# Obesity in Pregnancy

## Maternal Risks

- **Gestational hypertension (high blood pressure)**
- **Preeclampsia**, which can affect the liver, kidneys, brain, and placenta and may become life-threatening.
- **Gestational diabetes**, increasing the risk of future type 2 diabetes for both mother and child.
- **Obstructive sleep apnea** and related cardiovascular complications.
- Higher likelihood of **cesarean delivery (C-section)** and surgical complications such as wound infection.
- Increased risk of **venous thromboembolism (blood clots)** and postpartum complications.

## Fetal and Neonatal Risks

- **Birth defects**, particularly neural tube defects and some congenital heart defects.
- **Macrosomia** (large-for-gestational-age infant), which can lead to difficult delivery and shoulder dystocia.
- **Preterm birth**, often related to maternal complications such as preeclampsia.
- **Stillbirth and miscarriage** risks are higher in women with obesity.
- Increased risk of **childhood obesity**, metabolic problems, and some long-term health issues in offspring.

# Obesity Pregnancy Plan

- Early and regular prenatal care.
- Screening for gestational diabetes and hypertension.
- Appropriate pregnancy weight gain counseling.
- Nutritional and physical activity guidance.
- Consideration of low-dose aspirin in selected high-risk patients, per obstetric guidelines.
- Post partum guidance

# References

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# Thank you