



Diabetes and Pregnancy Promoting a Health Legacy 2021

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Objectives – Diabetes & Pregnancy

- ▶ 1. Describe 5 issues that affect women with diabetes.
- ▶ 2. Discuss the unique attributes of pre-existing diabetes in pregnancy and gestational diabetes.
- ▶ 3. State the diagnostic criteria and management goals for gestational diabetes.
- ▶ 4. List potential short term and long term complications of fetal exposure to hyperglycemia.

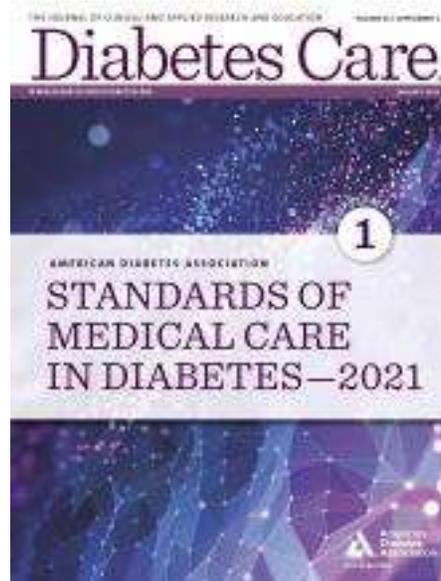


References

14. Management of Diabetes in Pregnancy: *Standards of Medical Care in Diabetes—2021*

American Diabetes Association

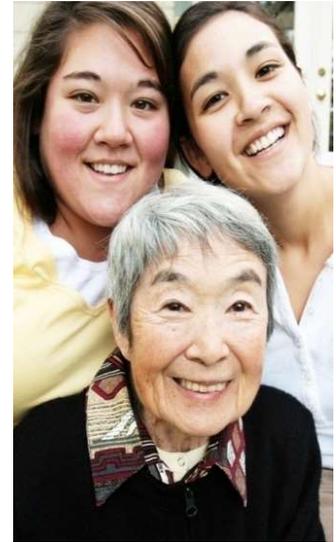
Diabetes Care 2021 Jan; 44 (Supplement 1): S200-S210. <https://doi.org/10.2337/dc21-S014>



Plus other articles as sited on slides

Diabetes and Pregnancy and Beyond

- ▶ Pregnancy and Diabetes – preparation and future implications
- ▶ Social Determinants of Health
- ▶ Polycystic Ovary Syndrome
- ▶ Heart and Vessel disease
- ▶ Alcohol Consumption
- ▶ Sexuality



Perinatal care makes a difference

- ▶ Reaching out before pregnancy has the potential for slowing the diabetes epidemic

- ▶ Focus:

- ▶ prenatal,
- ▶ perinatal and
- ▶ postnatal health



Engaging and supporting Kids to Adults



**Environment
LifeStyle
Access**



Engaging and supporting during pregnancy to help slow the epidemic

▶ Phases of Life

- ▶ Before, during and after Pregnancy



▶ LifeStyle

- ▶ Healthy Weight
- ▶ Keeping Active
- ▶ Eating healthy

▶ Social determinants of health

- ▶ Access to safe places to exercise
- ▶ Access to healthy foods
- ▶ Adequate paying job/finances
- ▶ Access to health care resources
- ▶ Finances
- ▶ Feel safe at home
- ▶ History of trauma

PrePregnancy BMI and risk of GDM

| <u>BMI</u> | <u>Odds Ratio of GDM</u> |
|------------|--------------------------|
|------------|--------------------------|

| | |
|---------|------|
| ▶ <20 | 0.75 |
| ▶ 25-29 | 1.97 |
| ▶ 30-35 | 3.01 |
| ▶ >35 | 5.55 |

▶ The risk of GDM is positively associated with prepregnancy BMI.

▶ Obesity Review, 2009, March 10(2)- A systematic review of the literature with meta analysis

Preconception weight continues to increase



- ▶ 55% enter pregnancy at BMI >25 (CDC)
- ▶ < 30% of gain recommended gestational weight
- ▶ Excess weight increases risk for GDM
- ▶ Take home message – Assess BMI, assist with resources to healthy eating, appt w/ Registered Dietitian

CDC Report 2011-2015, published Jan 2018
https://www.cdc.gov/mmwr/volumes/66/wr/mm665152a3.htm?s_cid=mm665152a3_w

Diabetes – Who is at Risk?

- ▶ Pre Diabetes & Type 2- Screening Guidelines
- ▶ Screen at first OB Visit for those **at age 45 or if** BMI \geq 25, Asians BMI \geq 23 and one or > additional **risk factor**:
 - ▶ First-degree relative w/ diabetes
 - ▶ Member of a high-risk ethnic population
 - ▶ Habitual physical inactivity
 - ▶ PreDiabetes
 - ▶ History of heart disease



Diabetes 2 - Who is at Risk?

(ADA Clinical Practice Guidelines)

Risk factors cont'd



- ▶ HTN - BP > 140/90
- ▶ HDL < 35 or triglycerides > 250
- ▶ history of Gestational Diabetes Mellitus (GDM)
- ▶ Acanthosis Nigricans
- ▶ Polycystic ovary syndrome (PCOS)

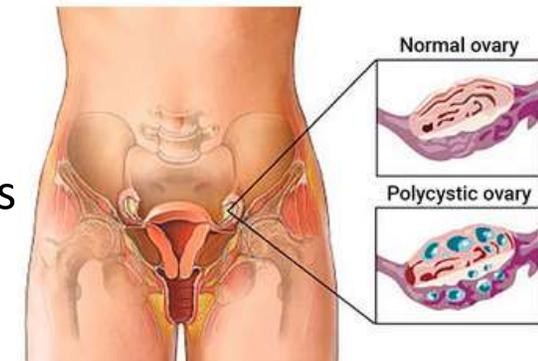
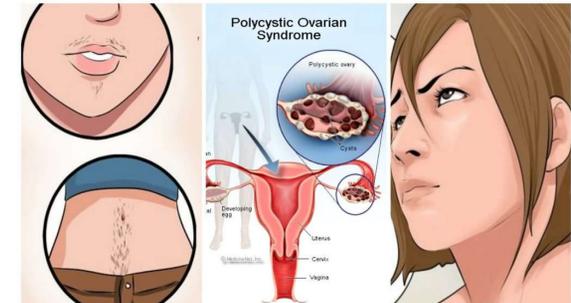
Life Study

- ▶ KR has a history of polycystic ovary syndrome (PCOS) treated with metformin 850mg BID.
- ▶ Her period is two weeks late.
- ▶ At provider visit, discovers that 4 wks pregnant
- ▶ Fasting glucose is 103 mg/dl
- ▶ What is PCOS?



Polycystic Ovarian Syndrome

- ▶ Reproductive disorder of hyperandrogenism, ovulatory dysfunction, polycystic ovaries
- ▶ About 40% have prediabetes (10% DM)
- ▶ Clinical findings
 - ▶ Infertility, amenorrhea, irregular menses, hirsutism, acne, obesity, dyslipidemia, acanthosis nigricans.
 - ▶ “PCOS is the 5 o’clock shadow of Metabolic Syndrome”
- ▶ Treatment
 - ▶ Lifestyle changes (lose wt, exercise, healthy eating)
 - ▶ Meds (Metformin and others)
 - ▶ Monitor BG for prediabetes/ diabetes



Polycystic Ovarian Syndrome and Related Issues

- ▶ **Diabetes** 50% with PCOS will have diabetes or pre-diabetes by age 40.
- ▶ **High blood pressure** Greater risk of HTN
- ▶ **Cholesterol.** Elevated LDL cholesterol and low HDL cholesterol.
- ▶ **Sleep apnea.** If BMI 25+, increased sleep apnea risk.
- ▶ **Depression and anxiety** more common
- ▶ **Endometrial cancer.** PCOS, excess wt, insulin resistance, diabetes, increase risk of developing endometrium cancer



Life Study

- ▶ KR has a history of polycystic ovary disease treated with metformin 850mg BID.
- ▶ Her period is two weeks late.
- ▶ At provider visit, discovers 4 wks pregnant
- ▶ Fasting glucose is 103 mg/dl
- ▶ What are next actions?



Quick Question 1

- ▶ KR is 4 weeks pregnant. Fasting glucose is 103 mg/dl. What best describes KR's current situation?
- A. KR has gestational diabetes
 - B. KR needs a 75 gm OGTT
 - C. KR has type 1 diabetes
 - D. KR might have prediabetes



Quick Question 2

- ▶ If prediabetes diagnosis is confirmed, what is the next step?
 - A. Start basal insulin
 - B. Add human basal bolus insulin
 - C. Stop metformin, start sulfonylurea
 - D. Continue metformin



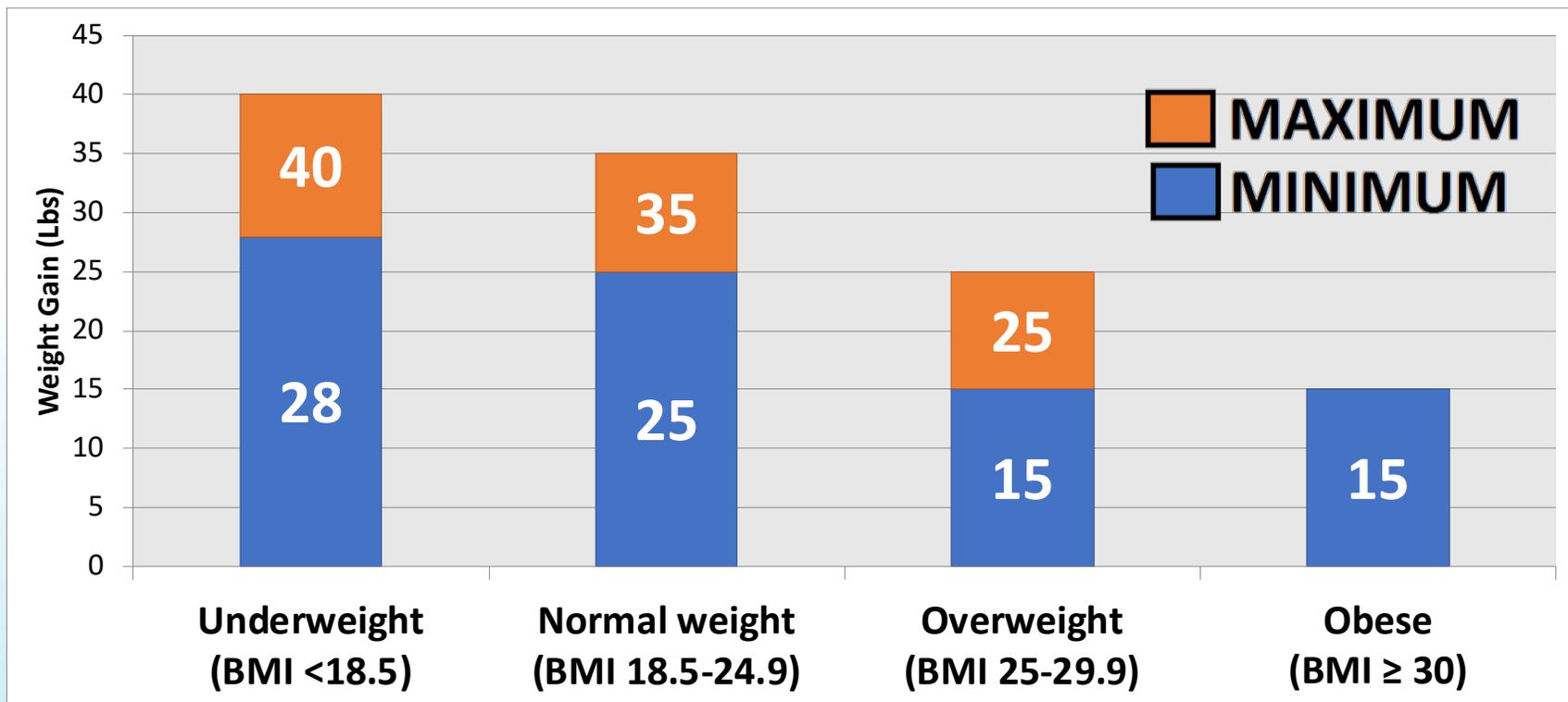
Metformin for Polycystic Ovary Syndrome

- ▶ Metformin, when used to treat polycystic ovary syndrome and induce ovulation, should be discontinued by the end of the first trimester.



Pre-pregnancy BMI and Weight Gain

Pre-pregnancy BMI and Weight Gain



Blood Glucose and Pregnancy

- ▶ Pregnancy with healthy glucose metabolism is characterized by:
 - ▶ Lower fasting BG levels due to insulin-independent glucose uptake by the fetus and placenta and
 - ▶ Mild postprandial hyperglycemia and carbohydrate intolerance as a result of diabetogenic placental hormones
- ▶ Non-diabetes usual glucose ranges
 - ▶ Mean fasting BG
 - ▶ 61-75 mg/dl
 - ▶ Peak post prandial
 - ▶ Rarely exceeds 126 mg/dl
 - ▶ Maximal post prandial excursions 60 – 90 mins after start of meal.

Inturrisi, Lintner – Diagnosis and Treatment of Hyperglycemia in Pregnancy - 2011

BG levels during pregnancy



Pregnancy normally associated with lower fasting glucose and higher post meal glucose



Early pregnancy, more insulin sensitive

Insulin needs may drop



2nd, 3rd trimester increased insulin resistance

Insulin needs may increase by 2-3x's pre-pregnancy needs



After delivery – insulin needs drop dramatically

KR Life Study – Question 3

- ▶ KR meets with a dietitian and is able to adjust their meal plan and activity and lowers BG to non-diabetes range. At 25 weeks KR goes to the lab for one step 75gm OGTT.
 - ▶ Blood glucose results
 - ▶ FBG 91
 - ▶ 1 hour 183
 - ▶ 2 hr 156
- ▶ What best describes KR's status?
 - A. Normal blood glucose with pregnancy
 - B. Pre diabetes associated pregnancy
 - C. Gestational diabetes
 - D. Diabetes in pregnancy



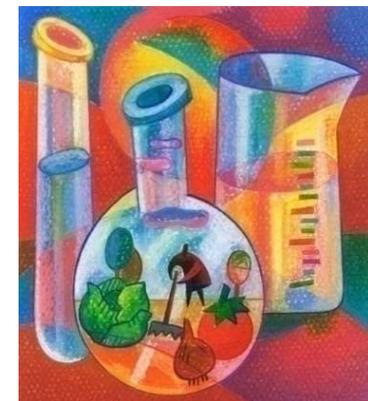
GDM Criteria - 2 Options

“1 Step” – 75 gm OGTT

- ▶ 24-28 weeks
- ▶ OGTT in am after overnight fast of 8 or > hrs
- ▶ **GDM Diagnosis if ANY** of the following values met or exceeded:

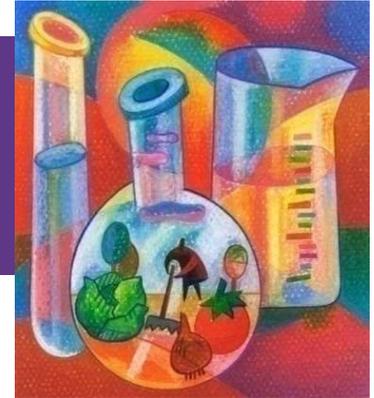
| ▶ FBG | 1 HR | 2HR |
|-------------|---------------|---------------|
| ▶ ≥ 92 | or ≥ 180 | or ≥ 153 |

Based on Hyperglycemia and Adverse Pregnancy Outcomes Study - IADPSG



GDM Criteria – Option 2

“NIH 2 step”



▶ Step 1

- ▶ 50 gm Oral Glucose Tolerance Test (non-fasting)
- ▶ If BG 140* at 1 hour proceed to Step 2

▶ Step 2 – 100 gm Oral Glucose Tolerance (fasting)

GDM - If at least two of the following four plasma glucose levels (measured fasting and at 1, 2, and 3 h during OGTT) are met or exceeded (Carpenter-Coustan criteria)

Fasting: 95 mg/dL (5.3 mmol/L)

1 h: 180 mg/dL (10.0 mmol/L)

2 h: 155 mg/dL (8.6 mmol/L)

3 h: 140 mg/dL (7.8 mmol/L)

Hyperglycemia and Fetal Risk

During 2-3rd trimester insulin resistance increases =hyperglycemia

Maternal glucose can cross the placenta

Maternal **insulin** can NOT cross placenta

Fetus exposed to maternal glucose, but not maternal insulin. Fetus makes insulin.

Insulin stimulates fetal growth, increase in adipose tissue

Poll question 4

- ▶ What best describes gestational diabetes?
 - a. Diabetes discovered within the first 12 weeks of pregnancy.
 - b. Diabetes discovered in the 24-28 week of pregnancy.
 - c. Risk of getting diabetes before pregnancy.
 - d. Diabetes discovered at any point during pregnancy.



Gestational DM ~ 9% of all Pregnancies

- ▶ Detected at 24-28 weeks of pregnancy (most insulin resistant phase)
- ▶ GDM prevalence increased by
 - ▶ ~10–100% during the past 20 yrs
- ▶ Women getting pregnant later



Rates of Gestational Diabetes (GDM) and Diabetes in Pregnancy increasing

- ▶ 1% to 2% have type 1 or type 2 during pregnancy
- ▶ 6% to 9% develop GDM.
- ▶ From 2000 to 2010
 - ▶ GDM rates increased 56%
 - ▶ Type 1 or type 2 before pregnancy increased 37%.
- ▶ Asian and Hispanic women have higher rates of GDM
- ▶ Black and Hispanic women have higher rates of type 1 or type 2 diabetes during pregnancy.

CDC

<https://www.cdc.gov/reproductivehealth/maternalinfanthealth/diabetes-during-pregnancy.htm>



Risks associated w/ elevated BG -GDM Second and Third Trimester

- ▶ **Macrosomia: fetal wt > 4000g (~ 9lbs)**
 - ▶ Birth trauma, shoulder dystocia, clavicular fracture
 - ▶ Increased risk of C-section
 - ▶ Still birth
 - ▶ Polyhydramnios (excess amniotic fluid)
 - ▶ Pre-eclampsia: edema, HTN, proteinuria
 - ▶ Neonatal hypoglycemia (should be >40)



Blood Glucose Goals for GDM and Pre-existing type 1 or 2

- ▶ Fasting < 95 mg/dl
- ▶ One hour post meal < 140 mg/dl
- ▶ Two hour post meal < 120 mg/dl

- ▶ *A1c < 6 - 6.5%

*may need to be relaxed to < 7% if excessive hypoglycemia – A1c lower during pregnancy due to increased RBC turnover rate.

A1c Target in Pregnancy

- ▶ Individualize A1c target at 6- 7%
- ▶ In early gestation, lowest rates of adverse fetal outcomes with A1C <6–6.5%
- ▶ In 2-3rd trimester, A1c <6%, has lowest rates of macrosomia, preterm deliver and preeclampsia.
- ▶ An A1c < 6% is optimal during pregnancy, if it can be achieved without significant hypo.
- ▶ Evaluate for and avoid hypoglycemia
 - ▶ increases risk of low birth wt



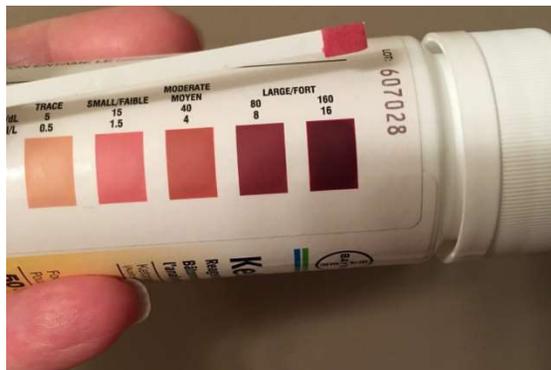
Nutrition Intervention: Pregnancy and Diabetes

▶ Dietitian

- ▶ Referral within 48 hours of diagnosis
- ▶ MNT initiated within 1 week of diagnosis

▶ Avoid ketonemia from ketoacidosis or starvation ketosis

- ▶ Make sure consuming sufficient carbs
- ▶ Monitor urine ketones
- ▶ DKA associated with risk of stillbirth



70-85% of GDM Manage with Lifestyle

- ▶ Food plan based on Dietary Reference Intakes (DRI).
- ▶ DRI during pregnancy recommends a minimum of
 - ▶ 175 g of carbohydrate,
 - ▶ a minimum of 71 g of protein
 - ▶ and 28 g of fiber.
- ▶ Emphasis on monounsaturated and polyunsaturated fats while limiting saturated fats and avoiding *trans* fats.
- ▶ Coaching on amount, type of carbohydrate and impact on BG



Sample Meal Plan for Women with Gestational Diabetes

This sample meal plan will guide you until you meet with a registered dietitian to create an individualized plan.

| | |
|--------------------------|---|
| Breakfast (2 carbs=30g) | 1 slice whole wheat toast (1 carb) 1 egg 1 cup fat-free milk (1 carb) |
| Snack (1 carb=15g) | 4-6 whole wheat crackers (1 carb) 1 ounce cheddar cheese |
| Lunch (3 carbs=45g) | 2 slices whole wheat bread (2 carbs) 3 ounces turkey Lettuce and tomato 1 cup raw veggies 1 cup berries (1 carb) 1 cup fat-free milk (1 carb) |
| Snack (2 carbs=15-30g) | 2 tablespoons peanut butter 1 small apple (1 carb) 3 cups popcorn (1 carb) |
| Dinner (3 carbs=45g) | 4 ounces skinless chicken breast 1 medium baked potato (2 carbs) 2 tablespoons reduced-fat sour cream 1 cup broccoli salad 1-2 tablespoons salad dressing 1 cup fat-free milk (1 carb) |
| Snack (1-2 carbs-15-30g) | 1/2 banana (1 carb) 2 tablespoons nuts 1/2 cup plain nonfat Greek yogurt (1/2 carb) |

<https://yalehealth.yale.edu/sample-meal-plan-women-gestational-diabetes>

Eat a healthy diet or follow a meal plan for your entire pregnancy to improve your health and to help ensure a healthy pregnancy. If you need to make changes to your diet or meal plan to keep your glucose level in the healthy range, your health care provider will help.

Management of Hyperglycemia in Type 2 or GDM

- ▶ For type 2s or GDM, oral meds may not be sufficient to get BG to target.
- ▶ Glyburide, Metformin not recommended.
- ▶ Both cross the placenta to the fetus
- ▶ If lifestyle alone doesn't help achieve glucose goals, insulin is recommended.



Management of Pregnancy and Diabetes

- ▶ **Insulin is preferred for type 1 and 2 and GDM**
 - ▶ Does not cross placenta
 - ▶ Can overcome insulin resistance associated w/ type 2
- ▶ Either multiple daily injections or insulin pump technology
- ▶ Refer to specialized center
- ▶ Get eye exam before pregnancy and every 3 months



Sample Insulin Management Plan

PMC full text:

[Saudi Med J. 2015; 36\(4\): 399–406.](#)

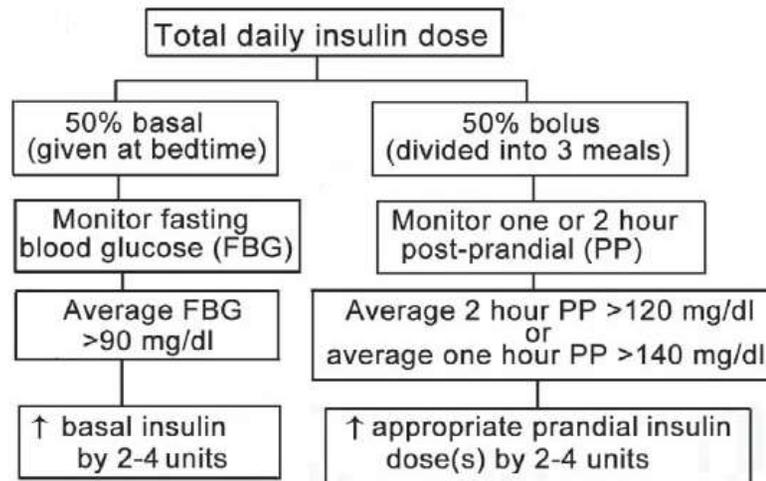
doi: [10.15537/smj.2015.4.10307](#)

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Not on Exam

Figure 1



Initiation and optimization of insulin therapy in hyperglycemia during pregnancy.

TABLE 2.

Insulin Regimens for GDM and Pregnancy in Patients With Type 2 Diabetes

| Regimen | Dose |
|---------------------------------|---|
| Weight-based dosing (10) | 0.7–1 units/kg daily in divided doses (no additional recommendations are provided) |
| Trimester + weight-based dosing | 1st trimester TDD: 0.7 units/kg 2nd trimester TDD: 0.8 units/kg 3rd trimester TDD: 0.9–1 units/kg |

<https://spectrum.diabetesjournals.org/content/29/2/92.figures-only>

Postpartum after GDM

- ▶ 50% risk of getting diabetes in 5 years
- ▶ Screen with 75gm OGTT at 4-12 wks post partum
- ▶ Repeat at 1-3 yr intervals or signs of DM
 - ▶ Encourage Breast Feeding
(reduces future GDM Risk by 50%)
 - ▶ Encourage weight control
 - ▶ Encourage exercise
 - ▶ Make sure connected with health care
 - ▶ Lipid profile/ follow BP
 - ▶ Preconception counseling



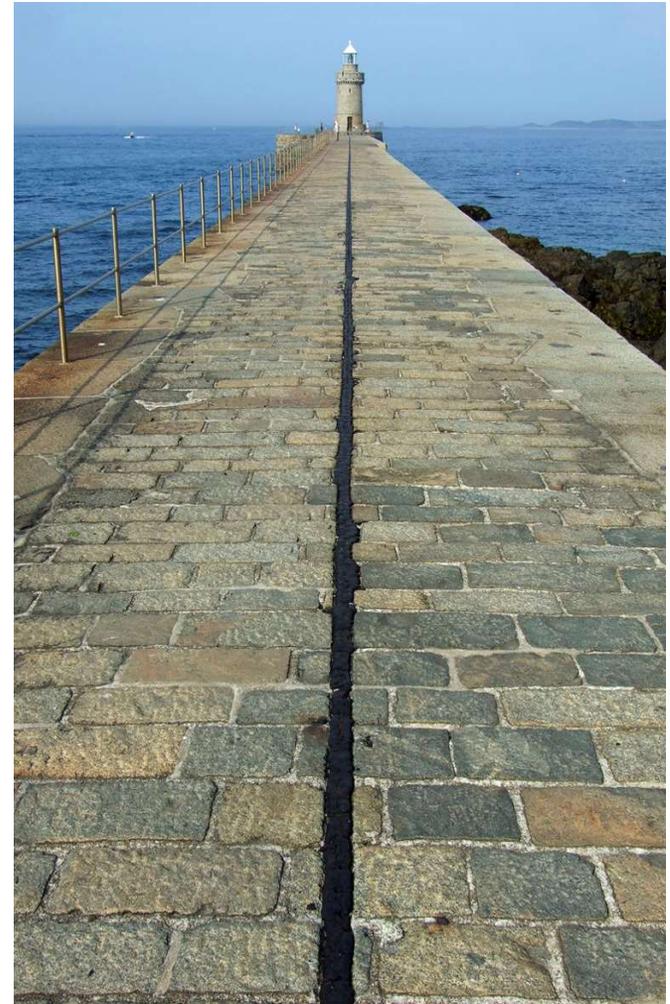
Risk of Future Diabetes after Gestational Diabetes

| Immediately after birth | 6 – 12 weeks later | 36 months later | 5 years later |
|---|---|---|---|
| <ul style="list-style-type: none">• 5 – 10% have diabetes | <ul style="list-style-type: none">• 10% diagnosed w/ DM• 20% have pre diabetes | <ul style="list-style-type: none">• 30% have metabolic syndrome | <ul style="list-style-type: none">• 50% have Type 2 |

Inturrisi, Lintner – Diagnosis and Treatment of Hyperglycemia in Pregnancy - 2011

Long Term Effects of GDM on Adult

- ▶ Risk for excess weight
- ▶ Visceral Adiposity
- ▶ Hyperinsulinemia
- ▶ Insulin Resistance
- ▶ Type 2
- ▶ Cardiovascular Disease
- ▶ Metabolic Syndrome



Gestational Diabetes

- ▶ Test for undiagnosed diabetes at first prenatal visit in those with risk factors
- ▶ Test for GDM at 24-28 weeks
- ▶ Test GDM women for post partum diabetes at 4-12 weeks, using OGTT
- ▶ Women with GDM need lifelong screening for prediabetes/diabetes at least every 3 yrs
- ▶ Women with hx of GDM, found to have prediabetes need intensive lifestyle interventions or metformin to prevent diabetes.



Improving Health / Preventing GDM



- ▶ Reaching out to women and providing them with the necessary tools and resources is critical
- ▶ Improve screening and health equity
- ▶ Promote prevention of GDM
- ▶ Provide the woman and family with ongoing education, screening and resources
- ▶ Consider social determinants of health from youth through adulthood
- ▶ Increase access to healthy foods, health care and provide opportunities
- ▶ Discuss family planning



Screen Pregnant Women for Diabetes Before 13 weeks

- ▶ Screen for undiagnosed Type 2 at the first prenatal visit using *standard* risk factors.
- ▶ Women found to have diabetes at their initial prenatal visit treated as **“Diabetes in Pregnancy”**
- ▶ If below target, recheck at 24-28 weeks for Gestational Diabetes



Poll Question #6

- ▶ Mary just found out she is 7 weeks pregnant. Her midwife checks her fasting BG and it is 134. What does she have?
 - A. Gestational diabetes
 - B. Latent Autoimmune Diabetes
 - C. Pregnancy induced hyperglycemia
 - D. Diabetes in pregnancy



31 year old with Type 1 Diabetes

- ▶ Tells you I am ready to get pregnant.
- ▶ She uses an insulin pump and CGM.
- ▶ She also takes an ACE Inhibitor and statin.
- ▶ What is her A1c target pre-pregnancy and any other recommendations?



Diabetes in Pregnancy or (Pre-existing DM)

- ▶ A woman with pre-existing type 1 or 2 becomes pregnant
- ▶ Elevated BG discovered in first 13 weeks of pregnancy
- ▶ **Preconception A1c goal < 6.5%.**
 - ▶ 2/3 of all pregnancies w/ diabetes not planned
- ▶ Involve and empower to help prevent complications



Diabetes in Pregnancy – Preconception Counseling Critical

- ▶ Risk of malformation associated w/ degree of hyperglycemia during first trimester
 - ▶ 1st Trimester potential complications directly proportional to A1c levels
 - ▶ 5-8 weeks is organogenesis.
 - ▶ Elevated BG can lead to:
 - ▶ Spina bifida, anencephaly, microcephaly, heart defects, organ position reversal



Elevated Blood Sugars in Pregnancy – Potential Complications

- ▶ Spontaneous abortion
- ▶ Fetal anomalies
- ▶ Pre-eclampsia
- ▶ Intrauterine fetal demise
- ▶ Macrosomia
- ▶ Neonatal hypoglycemia
- ▶ Neonatal hyperbilirubinemia
- ▶ Increased risk of type 2 and excess wt in offspring



Time in Range | Pregnancy

- ▶ For those with type 1 diabetes and pregnant:
 - > 70% of BG readings within 63-140 mg/d
 - < 4% of readings < 63 mg/dL
 - < 1% of readings < 54 mg/dL
 - < 25% of readings > 140 mg/dL



Clinical Targets for Continuous Glucose Monitoring Data Interpretation: Recommendations From the International Consensus on Time in Range

Tadej Battelino et al. Diabetes Care Aug 2019, 42 (8) 1593-1603; DOI: 10.2337/dci19-0028

Poll Question 5

- ▶ MR has type 1 diabetes and is trying to get pregnant. According to ADA Standards, which of the following medications need to be stopped before pregnancy?
 - A. Levothyroxine, labetalol
 - B. Lipitor, Lisinopril
 - C. Metformin, nifedipine
 - D. Flonase, folic acid



Meds and Blood Pressure Target During Pregnancy

- ▶ Target B/P < 135/85
 - ▶ Not lower than 120/80
- ▶ **Meds contraindicated during pregnancy**
 - ▶ ACE inhibitors and Angiotensin Renin Blockers (ARB)
 - ▶ Statins
- ▶ **B/P Meds approved**
 - ▶ Methyldopa, nifedipine, labetalol, diltiazem, clonidine, prazosin.
 - ▶ Other beta blockers except atenolol can be used



Type 1 and Hypoglycemia

- ▶ Increased risk of hypoglycemia in first trimester
 - ▶ Due to altered counterregulatory response in pregnancy that may decrease hypoglycemia awareness.
- ▶ Education about prevention, recognition, and treatment of hypoglycemia is important before, during, and after pregnancy to help to decrease and manage the risk of hypoglycemia.
- ▶ Insulin resistance drops rapidly with delivery of the placenta (leads to hypo post delivery)



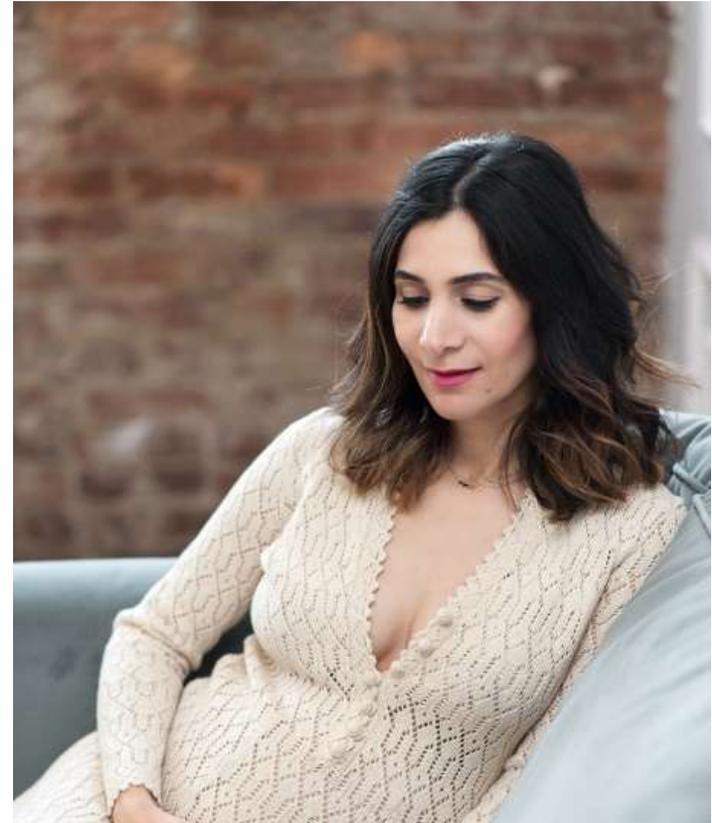
Glucose Monitoring in Pregnancy

- ▶ GDM – check fasting blood glucose and post prandial BG
- ▶ Pre-existing type 1 or type 2, may need to also check premeal BG
- ▶ Continuous glucose monitoring (CGM) can help to achieve A1C targets when used in addition to pre- and postprandial glucose monitoring
 - ▶ can reduce macrosomia and neonatal hypoglycemia in pregnancy complicated by type 1 diabetes.
- ▶ CGM Estimated A1C and glucose management indicator calculations not to be used in pregnancy as estimates of A1C.



A1c in Pregnancy

- ▶ A1C levels fall during normal pregnancy, due to physiological increases in red blood cell turnover
- ▶ A1C represents an integrated measure of glucose, may not fully capture postprandial hyperglycemia, which drives macrosomia.
- ▶ Thus, A1c is a secondary measure of glycemic after self-monitoring of blood glucose.
- ▶ May need to measure monthly



A1c Target in Pregnancy

- ▶ A1c target at 6- 7%
- ▶ In early gestation, lowest rates of adverse fetal outcomes with A1C <6–6.5%
- ▶ In 2-3rd trimester, A1c <6%, has lowest rates of macrosomia, preterm deliver and preeclampsia.
- ▶ An A1c < 6% is optimal during pregnancy, if it can be achieved without significant hypo.
- ▶ Evaluate for and avoid hypoglycemia
 - ▶ increases risk of low birth wt



Type 1 or 2 – Aspirin Therapy for Preeclampsia 100-150 mg daily

- ▶ People with type 1 or 2 have 2-4x's increased risk of preeclampsia during pregnancy.
 - ▶ Signs: HTN, Proteinuria, edema
 - ▶ Associated with decrease blood flow to fetus.
- ▶ Start aspirin therapy at the end of the first trimester until birth
 - ▶ US Preventive Task Force 2018 recommendations
 - ▶ Taking ASA reduces morbidity, saves lives and lowers health care costs



31 year old with Type 1 Diabetes

- ▶ Uses an insulin pump and CGM, Time in Range
- ▶ Stop ACE Inhibitor and statin
- ▶ Other recommendations?
 - ▶ Find knowledgeable team
 - ▶ Monitor Blood Pressure
 - ▶ Eye exam before and during each trimester
 - ▶ Prepare for glucose changes over each trimester and post delivery
 - ▶ Help with problem solving



Postpartum with *PreExisting DM*

- ▶ Meal plan adjustment for goals/needs
- ▶ Breastfeeding and BG balance
- ▶ Family planning
- ▶ Preconception counseling starts here
- ▶ Connect with long term follow up care
- ▶ Monitor for postpartum depression and provide support



Postnatal Health: Maternal Behavior

- ▶ For children:
Breastfeeding decreases risk type 1 and type 2 and excess weight
- ▶ For parent:
 - ▶ Breastfeeding decreases diabetes risk by 50%.
 - ▶ Plus breastfeeding decreases blood pressure, risk of breast cancer and helps with weight management



Engaging and supporting

▶ Phases of Life

▶ After Delivery



▶ Environment

- ▶ Access to safe places to exercise
- ▶ Access to healthy foods
- ▶ Adequate paying job/finances
- ▶ Access to health care / Postnatal care
- ▶ Access to child care

▶ LifeStyle

- ▶ Breast feeding
- ▶ Weight management
- ▶ Keeping Active
- ▶ Choose healthy foods
- ▶ Role model for children

Improving Sex Life

- ▶ People with diabetes get more vaginal and bladder infections
- ▶ Difficulty achieving orgasm due to neuropathy
- ▶ Painful intercourse due to lack of genital lubrication



Treatment

- ▶ Lower blood glucose / blood pressure
- ▶ Treat genital infections and UTI's
- ▶ Water based lubricants for vaginal dryness
- ▶ Hormone replacement therapy
- ▶ Eat to prevent lows during intimacy
- ▶ Allow time, touching and romance

Poll question #7

- ▶ Which of the following is true about heart disease and women?
 - A. Women with diabetes are more likely to die of heart disease than men with diabetes.
 - B. Women with diabetes have heart disease up to 10 years later than women without diabetes.
 - C. Women with diabetes have unusually low LDL levels.
 - D. Women with diabetes usually experience crushing chest pain with heart attack



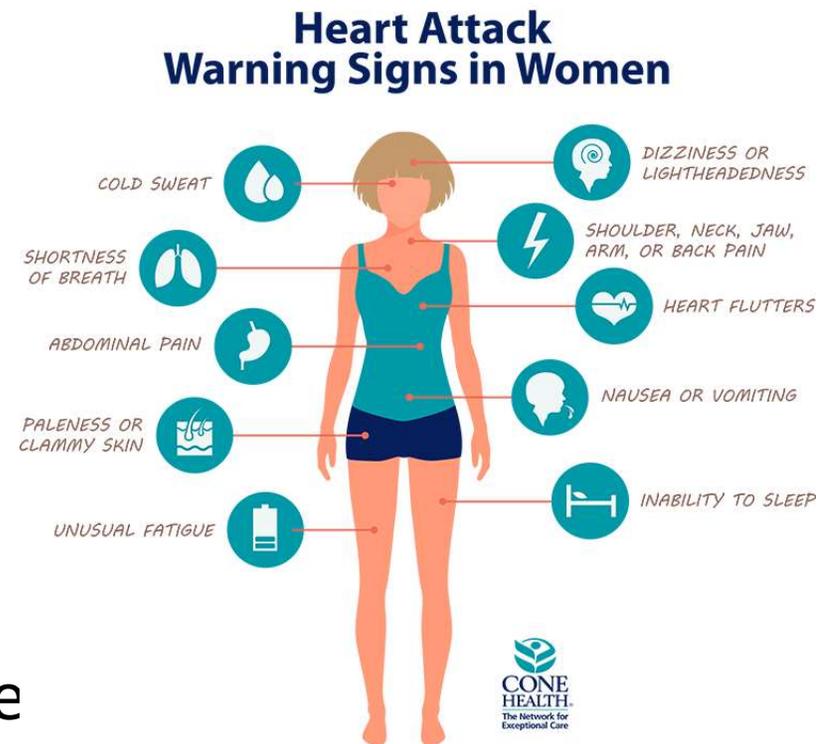
Women, DM, CVD



- ▶ 6x's rate of CVD than non-DM women
- ▶ 4xs risk of CVD & mortality compared to men w/ diabetes who have 2xs the risk
- ▶ Women with diabetes present 10 years earlier with CVD than women without diabetes (same as men). Lose female protection.
- ▶ Why?
 - ▶ Elevated BG, HTN, dyslipidemia, excess wt, PCOS, depression, lower income, later detection

Heart Disease | Leading Cause of Death in US Women

- ▶ 1 in every 5 female deaths.
- ▶ 299,578 deaths in 2017
- ▶ Leading cause of death for African American & white women.
- ▶ Women more commonly describe nausea, tiredness and jaw pain, although some women may have the same symptoms as men.



Stroke Awareness



BE

BALANCE

Sudden loss of balance/dizziness



EYES

Vision loss of one or both eyes



Stroke is an emergency.

Recognize the signs

FAST

FACE

Facial weakness or drooping



ARMS

Weakness of arms



SPEECH

Difficult or slurred speech



TIME

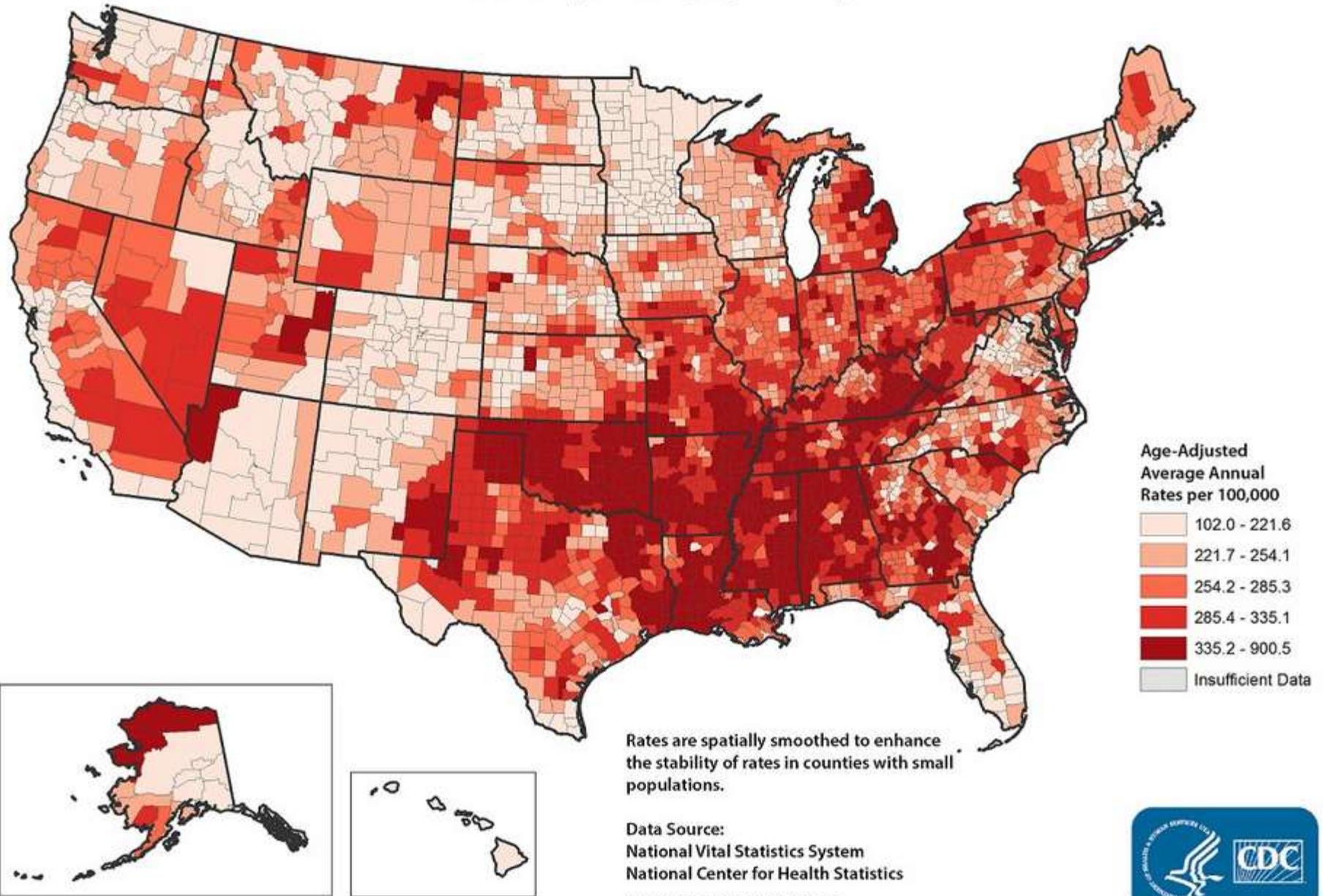
Call **911** now!



<https://www.cdc.gov/stroke/women.htm>

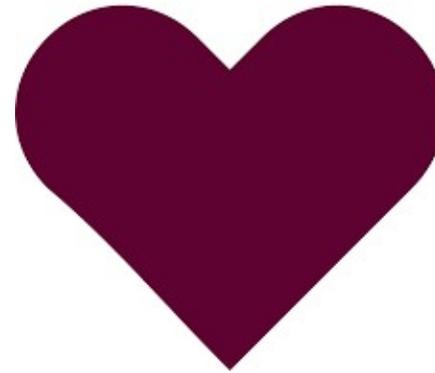
Stroke kills twice as many women as breast cancer does, making stroke the third leading cause of death for women.²

Heart Disease Death Rates, 2015-2017 Women Ages 35 +, by County



INTERHEART Study

- ▶ Identified 9 Risk Factors for CV Disease in Women
 - ▶ Diabetes
 - ▶ Dyslipidemia
 - ▶ Hypertension
 - ▶ Smoking
 - ▶ Psychosocial stress
 - ▶ Obesity—especially abdominal fat
 - ▶ Physical inactivity
 - ▶ Poor eating habits with too little fruit
 - ▶ High alcohol intake
- ▶ Diabetes increases the risk of CVD and mortality 2-4 xs
- ▶ However, diabetes has a different impact in women and men; it increases the risk by about four times in women and about twofold in men



Type 2 diabetes and cardiovascular disease in women

Jan 2013, vol 56 <https://link.springer.com/article/10.1007%2Fs00125-012-2694-y>

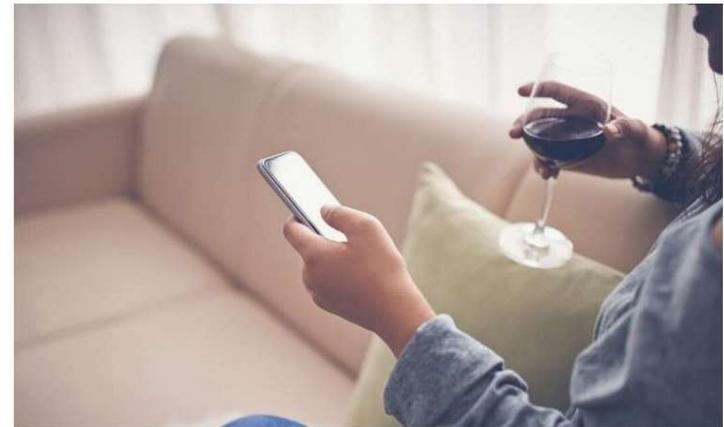
Alcohol Intake on Rise

- ▶ Women, older adults, racial/ethnic minorities, and socioeconomically disadvantaged
- ▶ Associated with increased alcohol use, high-risk drinking, and *DSM-IV* Alcohol Use Disorder
- ▶ These findings portend increases in many chronic comorbidities in which alcohol use has a substantial role.

JAMA Psychiatry Sept 2017
<https://jamanetwork.com/journals/jamapsychiatry/article-abstract/2647079?redirect=true>

Women are drinking more during the pandemic, and it's probably got a lot to do with their mental health

by Shalini Arunogiri, Caroline Gurvich and Jayashri Kulkarni, *The Conversation*



Credit: Shutterstock

COVID-19 has significantly affected our collective mental health.

<https://medicalxpress.com/news/2020-06-women-pandemic-lot-mental-health.html>

YOUR HEALTH

Women Now Drink As Much As Men — Not So Much For Pleasure, But To Cope

June 9, 2021 - 5:18 AM ET
Heard on All Things Considered

ANERI PATTANI

FROM **KHN**

Washington Post – Heavy Drinking has been normalized for women. That's dangerous. 2016

- ▶ Excessive drinking for women in US is defined as anything more than one drink a day.
- ▶ Women have smaller bodies than men, blood-alcohol levels climb faster and stay elevated longer.
- ▶ Women make less alcohol dehydrogenase enzymes than men to break down alcohol.
- ▶ According to CDC, women are more prone to suffer brain atrophy, heart disease and liver damage from heavy drinking.
- ▶ Women who drink have an increased risk of breast cancer.
- ▶ Females more susceptible to the unwanted biological effects of alcohol than men, even when adjusted for weight.



Health Legacy –

Great opportunity to pass on your best for generations to come

- ▶ Healthy eating before and during pregnancy matters

- ▶ Keep Active

- ▶ Family planning

- ▶ Encourage active

participation in care; before, during and after.



Thank You



- ▶ Questions?
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