Pregnancy at Risk:
Pre-existing Conditions

- Safe, Effective Care
- Unique Needs
- “Normal” Needs, Feelings, Discomforts

Primary Objective:
Guide and Support
Anticipatory Guidance

The Course of a Normal Pregnancy can Complicate the Disease;
The Course of the Disease can Complicate the Pregnancy (Fetus, Baby, and Mother)

Critical Thinking…

- A woman with gestational diabetes faces potential complications for herself and her baby. How does the nurse successfully manage her condition and achieve the best possible outcome for them?
- Analysis of data
- Case study
Alicia Jones

- 28 years old, 22 weeks pregnant, gravida 1, para 0. Five feet, four inches tall, 240 pounds.
- Family history of diabetes type II.
- Diagnosed with gestational diabetes.

Complications of GDM

- Woman: preterm birth, C/Section, stillbirth, hypertension, PIH, developing DM type II
- Baby: macrosomia, shoulder dystocia, hypoglycemia; low Ca, Mg, jaundice, RDS
  childhood/adult obesity, type II DM

Why would Alicia develop GDM?

- Similar to type II diabetes, variations of same pathophysiology
- As a normal pregnancy progresses, insulin resistance worsens because of weight gain, decreased physical activity, and placental factors... normally stimulates pancreas to secrete more insulin to maintain normal blood glucose.
- Alicia's beta cell dysfunction becomes more severe in gestational diabetes.
Who, what and when?

- Indicators for high risk of gestational diabetes: marked obesity before pregnancy
- Personal hx of GDM
- Strong family hx DM
- Common symptoms: polydipsia, polyuria, polyphagia
- Megan – FBS = 147, 149

If all risk screening negative,

- <25 years old
- Normal weight before pregnancy
- Not high risk ethnic group (Hispanic, African-American, Southeast Asian, Native American, Pacific Islander)
  - No known diabetes in 1st degree relative
  - No hx abnormal GTT
  - No hx poor obstetric outcome

Screening for GDM

- 24-28 weeks One Hour Glucose Tolerance (50g Glucose)
  - > or = 140 is positive;
  - Then 3 hour fasting GTT, 100g glucose
Positive if 2 or more met or exceeded:
  - Fasting >105, 1hr 190, 2hr 165, 3hr 145 mg/dl
It takes a team…
- Obstetrician/ Perinatologist
- Endocrinologist
- Registered Nurse
- Dietician, neonatologist, ophthalmologist, pharmacist, etc
- THE PATIENT!!

Patient Education – self mgmt
- Assess individual educational needs
- Identify goals
- Interventions directed at goals
- Evaluate how well she is managing GDM

Blood Glucose Control thru Diet
- Achieve/maintain normal blood glucose level. EUGLYCEMIA = >120
- Provide adequate energy to gain weight and prevent ketosis
- Nutrients for mother and baby while maintaining tight glycemic control.
- Assess medical, social, food history
- 2000-2200 cal/day; consistent CHO
Exercise helps improve control.
- Glycemic control, decrease insulin resistance, and prevent excess weight gain.
- 20-30 minutes aerobic. Doesn’t have to be vigorous or lengthy to make a difference.
- Morning exercise best because hypoglycemia more likely a few hours after.

Insulin may become necessary.
- If diet and exercise do not achieve euglycemia, insulin is primary pharmacologic approach.
- Anticipatory Guidance... if think this may be necessary.
- Rapid acting and/or long acting PM
- Learning self-injections can be overwhelming!

Teaching
- Nutritional plan
- Consistent exercise program
- If insulin, type, dosage, syringe prep, injection technique, pumps, sites
- FSBS – technique, frequency, levels
- S/S hypo and hyperglycemia
- Fetal surveillance
- Prep for labor and delivery
- Postpartum care
Blood Glucose Monitoring
- Immediately report levels <60, >200
- Hypoglycemia treated with oral intake of simple carbs 10-20g
- Family (not just the patient) must know symptoms to recognize
- Urine testing w/1st morning urine for ketones

Ongoing Assessments
- BP, UA
- NST, BPP, fetal growth
- PIH? 24hr urine → protein, creatinine; CBC/platelets, Liver function tests
- Twice-weekly NST
- Glucose controlled?? Deliver?
- Psychosocial support, stress mgmt
- Postpartum testing

From...
METABOLIC DISORDERS

DIABETES MELLITUS
- A chronic, systemic disease, characterized by either a deficiency of insulin or decreased ability of body to use insulin
- TYPE I – destruction of beta cells leads to absolute insulin deficiency;
- Inherited trait, HLA, autoimmune

TYPE II
- limited beta cell response to hyperglycemia
- resistance to insulin in liver and peripheral tissues

In Normal Pregnancy, CHO metabolism changes
- More resistance to cellular action of insulin, less glucose entry into cells, lowers blood glucose up to 50%
- Probably due to hormone changes (HPL, GH, cortisol) counter regulate
- Estrogen, progesterone, prolactin (worsen insulin sensitivity)
Physiology of Pregnancy that affects Diabetes:
- Vomiting during pregnancy, decreases CHO intake, increases acidosis
- Human placental lactogen decreases insulin response, more insulin needed
- Elevated basal metabolic rate
- Normal lowered renal glucose threshold – spill more
- Muscular activity in labor – adj. insulin
- Postpartum - insulin antagonists removed

How Diabetes affects Pregnancy:
- Significant health risks
- Increased fetal morbidity/mortality
- Risk determined by:
  - degree of glycemic control
  - presence of cardiovascular or renal complications
  - hypertension, smoking, etc.

So WHAT About Diabetes in Pregnancy??
- Increased spontaneous abortions
- Increased PIH, PTL, PROM, PP hemorrhage, infections, UTI, ketoacidosis, coma, death (maternal & fetal), anomalies, macrosomia, delivery risks, hypoglycemia, polycythemia, IUGR, RDS, Hyperbili...
Nursing Management - Diabetes

- Assessment
  - Health status
  - Adherence/compliance
  - Understanding
    - Physical Exam – special efforts to ID effects of diabetes
    - Lab

Nursing diagnoses

- Knowledge deficit r/t lack of recall of information
- Risk for fetal injury r/t elevated maternal glucose levels
- Anxiety r/t threat of maternal and fetal well-being

PLAN

- Weekly – biweekly appointments
- Euglycemia =60-120 mg/dl
- Consistent daily schedule
- Usual supplies, medic alert, foot care
- DIET – precipitates special nutritional needs
  - 3 meals plus 2 snacks
  - consistent weight gain
Insulin Therapy

- Will see increased requirements 2-3rd trimesters with increased insulin resistance
- Type II moms may need to learn to self administer insulin
- 2-3 injections per day
- Insulin pump

Plan/Interventions/Evaluation

- Fetal assessment
- Determination of delivery date and mode
- Intrapartum
- Postpartum
- Care of Newborn
STDs/STIs in Pregnancy

- Spread through sexual contact with an infected partner. Potential harmful effect on the pregnancy, fetus or newborn.
- Causative organism must be identified so that appropriate agents in pregnancy can be prescribed.
- If infection present at birth, can be transmitted to newborn.. some devastating.

- Candidiasis – yeast infection (fungal)
  - Thick white d/c, pruritis. Diflucan, Monistat. Thrush in newborn.
- Trichomoniasis – protozoan
  - Yellow, gray, odorous d/c; can cause PTL, PROM. Flagyl early/late preg.
- Bacterial vaginosis – Gardnerella
  - Gray d/c, fishy odor, pruritis; chorioamnionitis, PROM, PTL
  - Flagyl or clindamycin

- Chlamydia – gram neg parasite
  - Heavy, gray d/c; cultures needed.
  - Amoxicillin or zithromax in pregnancy
  - Frequently seen with gonorrhea; test partners
  - Fetus/newborn – conjunctivitis, blindness, pneumonia… PROM, PTL, endometritis pp, PID, infertility
Group B Strep

- Occurs more frequently than herpes or gonorrhea, but less press...
- Cervical or vaginal infection but no symptoms
- UTI, intra-amniotic infection, PROM, PTL
- Screen (vaginal culture) at 35-38 weeks. Ampicillin if positive, especially if/when in labor.
- Newborn – overwhelming pneumonia, meningitis, sepsis, death

Cardiovascular Disease

- During Pregnancy the cardiovascular system is taxed normally:
  - Blood Volume Increases by 1000-1500 milliliters
  - 40% increase over pre-pregnancy volume, peaks around 20-24 wks.
  - Heart rate increases, CO increases 30%
  - Systemic vascular resistance decreases, blood pressure varies

Classification of Heart Disease

- Class I Uncompromised, no limitations to physical activity. No symptoms of cardiac insufficiency or angina.
Classification of Heart Disease

- Class II: Slightly compromised. Slight limitation of physical activity. Routine activity causes excessive fatigue, palpitations, dyspnea, or angina.

- Class III: Markedly compromised. Moderate to marked limitation in physical activity. During less than usual activity, experiences fatigue, palpitations, dyspnea, or angina.

- Class IV: Severely compromised. Unable to carry out any physical activity without experiencing discomfort. Symptoms even at rest.

From New York State Heart Association
Basic, Practical Guide

- Frequent Visits
- Good Patient Cooperation
- Appropriate OB Care
- Team Approach

These Changes Normal/OK in Pregnancy:

- Volume increases
- ID heart murmur for 1st time
- Heart palpitations on sudden exertion
- Increased heart rate
- Changes in BP

IF...

- Myocardial disease develops
- Valvular disease exists
- Congenital heart problems

⇒ ANTICIPATE CARDIAC DECOMPENSATION!
The Danger of Pregnancy in a Woman with Cardiac Disease:

- Occurs mainly because of increased circulatory volume!
- So what would you look for???

Left-Sided Heart Failure

- Left ventricle cannot move the volume of blood forward that is received by the left atrium from the pulmonary circulation
- Mitral stenosis, valve, insufficiency, rheumatic fever, aortic coarctation
What Will Patient Exhibit?

- Increased respiratory rate
- Fatigue, weakness, dizziness
- Increased heart rate, peripheral vasoconstriction
- Sodium, water retention
- Orthopnea, nocturnal dyspnea
- MOIST COUGH, CRACKLES

Mitral Valve Prolapse

- 10% of women, usually benign
- Usually well tolerated in pregnancy
- Decreased vascular resistance in pregnancy favors forward blood flow
- May hear murmur, usually asymptomatic, sometimes CP at rest, anxiety, palpitations, dyspnea, syncope

However....

- Prophylaxis with antibiotics for labor/delivery
- Ampicillin, Pen G, cephalixin, clencin, erythromycin, azithromycin
- INFECTIVE ENDOCARDITIS
  - Major ABX, Prevent CHF, Emboli, Death
Right-Sided Heart Failure

- Occurs when the output of the right ventricle is less than the blood volume received from the right atrium
- Back Pressure causes congestion of systemic circulation and decreased CO to lungs
- Congenital heart, ASD, VSD, Pulmonary valve stenosis, Eisenmenger

Peripartal Cardiomyopathy

- 25-50% Mortality
- Due to effects of pregnancy on the CV system – CHF!
- Postpartum Recovery Vs Heart Transplant

Nursing Assessment of Cardiac Pt.

- Continuous, probably weekly:
- Document Pre-Pregnancy cardiac status:
- Observe/report immediately:
- Factors increasing stress on heart:
Prenatal Interventions...

- ***SUDDEN INABILITY to perform activities she has been comfortable doing previously
- (not just that she is tired or doesn’t feel like vacuuming, has a cold, etc.)
- 8-10 hours sleep each night
- 30 minute nap after meals
- Limit activities to functional classification
- Avoid heavy exertion
- Bed Rest – class III and IV

Nursing Diagnosis

- Activity Intolerance r/t effects of pregnancy on the patient with heart disease (rheumatic or valvular)

DANGER!

- Sudden inability to perform usual activities
- (Sudden change in activity level from what she was comfortable doing earlier)
Nursing Diagnosis

- Therapeutic Regimen: individual risk for ineffective management r/t woman’s first pregnancy and perceived sense of wellness

Nursing Diagnosis

- Decreased cardiac output r/t increased circulatory volume secondary to pregnancy and cardiac disease

Nursing Diagnoses

- Fear r/t peripartum risks
- Knowledge deficit regarding effects on pregnancy and fetus
- Risk for self-care deficit
- Impaired home maintenance mgmt
- Family implications?? r/t culture??
General Interventions

- Remember basic, practical guide
- Anticipate cardiac decompensation
- Teach, anticipatory guidance
- Prenatal
- Intrapartal
- Postpartal

Intrapartum Interventions...

- This is an additional burden on the CV system
- Vaginal birth is recommended; labor in side-lying, sitting upright position
- Epidural – minimize valsalva
- Assess decompensation!!
- Observe for HR>100, resp>25, cough, crackles, pale, clammy, cool

Postpartal interventions...

- assessing for cardiac decompensation is critical!
- 24-48 hours is most hemodynamically difficult
- Cardiac output increases rapidly as extravascular fluid is remobilized into the vascular compartment
Postpartum, cont…

- Takes up to 6 weeks to stabilize the cardiovascular system
- Elevate HOB, lie on side
- BR with BRP, ADL with Assist
- Progressive ambulation; VS, resp before and after
- Mom to DIRECT OTHER family members in care of infant

ANEMIA

- Most common disorder of pregnancy
- Oxygen carrying capacity reduction causes cardiac compensation by increasing CO, cardiac workload and taxing ventricular functioning

Pregnant Hct <34%; Hbg <11mg/dl

Types of Anemia

- Iron Deficiency
  - pathologic
- Folic Acid Deficiency
  - neural tube defects
- Sickle Cell Hemoglobinopathy
  - presence of abnormal hemoglobin
  - pregnancy worsens disease
Iron Deficiency
- Iron is needed for erythropoiesis
- Deficiency occurs with blood loss, decreased intake, impaired absorption, excess demands

Folic Acid Deficiency
- Needed for RBC production
- Increased nutritional requirements for fetus and placenta
- During conception & early pregnancy deficiencies lead to neural tube defects, cleft lip & palate
- 600 micrograms per day; if deficient may need 1gm/day. Start supplements pre-pregnancy

Sickle Cell Hemoglobinopathy
- Trait in 10% of patients, sickling of cells but normal RBC life span
- Anemia in 1% of patients; hemolytic anemia, abnormal hemoglobin
- Recurrent attacks (crises) of fever, pain in abdomen or extremities starting in childhood – vascular occlusion results in tissue hypoxia, edema, RBC destruction
Pre-conception

- Genetic counseling
- Fetal loss is high
- Increased number of crises seen with pregnancy
- Pregnancy worsens the disease – impaired oxygen supply, sickling, infarcts in placental circulation.
- Mom is prone to pyelonephritis, leg ulcers, CVA, CHF, cardiomyopathy, PIH.

UTI

- High incidence of asymptomatic bacteriuria – up to 10%. E Coli
- Dilatation of ureters (progesterone) and urinary stasis, reflux.
- Glucosuria, even minimal, contributes
- Leads to pyelonephritis, PROM, PTL

UTI/ Pyelo S/S

- Frequency, pain on urination = UTI
- Flank pain, radiating downward with pyelo, tender (CVA tenderness)
- N/V, malaise, pain, elevated temp 104 possible
- >100,000 organisms/ml, blood, nitrates, cloudy urine
- Ampicillin, cephalosporins OK
- No tetracycline, sulfa
- Drink 3–4l/24hr; cranberry; knee-chest BID, signs of PTL
RESPIRATORY

- **ASTHMA**
  - reactive airway disease
  - nursing management specific to disease
  - in addition to OB care
  - classic signs and symptoms
  - therapy – relief of acute attack
    - limit future attacks
    - adequate mat/fetal oxygen

AUTOIMMUNE

- **Systemic lupus erythematosus (SLE)**
  - chronic multisystem inflammatory disease
  - Symptoms: fatigue, fever, rash, weight loss, arthralgias, pericarditis
  - Pregnancy implications = 15-60% exacerbation, PTL, IUGR, HELLP/PIH
  - At a minimum need steroids, ASA

HIV/ AIDS

- Women are fastest growing population
- Preconception counseling – pregnancy not encouraged
- 20-25% perinatal transmission with no intervention, ranges from 5-10% with AZT therapy
- 90% of pediatric AIDS cases occur due to perinatal transmission
Management
- Diligence with AZT treatment during pregnancy and infant for 6 weeks
- AZT infusion during labor
- C/Section decreases risk of transmission at delivery
- OB risks include PTL, PROM, IUGR, perinatal mortality and endometritis
- Leave membranes intact, no scalp electrode. Bathe infant ASAP
- Breastfeeding discouraged

Surgery
- Remember the fetus! FHT assessed frequently, or EFM/NST
- Surgery can stimulate uterine contractions; changes in perfusion can cause fetal distress/hypoxia
- Organs are shifted upward – appendix – lower rib border, gall bladder – more to right, diaphragm – elevated r/t abdominal contents

Neuro - Epilepsy
- Disorder of brain causing recurrent seizures
- Most common neuro disorder accompanying pregnancy
- Seizures may be more frequent or more severe in pregnancy
- Hormones affect the seizure threshold
Anticonvulsants - increase hepatic estrogen metabolism and thus a higher rate of both breakthrough bleeding and contraceptive failure
• Bleeding is the only consistent association with maternal epilepsy
• Fetus has enough reserve to withstand an isolated seizure

Medication Therapy is Critical!
• Anticonvulsant metabolism is altered during pregnancy for each drug.
• To maintain blood levels for seizure control, monthly blood levels needed
• Teratogenic! Associated with neural tube, cleft lip/palate, heart, digital hypoplasia depending on which drug

ENDOCRINE
• Serious in pregnancy because enzymes or hormones control so many specific body functions
• Hyperthyroid– 2/1000 Graves Disease (most frequent)
  * increased BMR, SNS activity
  * seen more than hypothyroid
  * may see heart failure
Patient more prone to PIH, IUGR, PTL, and anomalies. **Hyperemesis should be screened, dx, and treated during pregnancy.

Nsg Diagnosis: risk for injury (mat. And fetal) r/t pre-existing thyroid disorder and drug therapy during pregnancy.

Treatment: Not the Usual!

Thyrotoxicosis

- Untreated or partially treated
- S/S: fever, restlessness, tachycardia, vomiting, hypotension, stupor
- Treatment: IV fluids, oxygen, high dose PTU, Potassium Iodide, sedation, antipyretics, steroids, beta blockers
Hypothyroid

- Rare, infertile, frequent miscarriages
- Characteristic symptoms:
- Lab/Diagnostics
- Untreated risks PIH, abruption, stillbirth, low birth weight
- Treatment: thyroid hormone supplement (synthroid)

Substance Abuse

- Care is often delayed by patient
- Arkansas Cares program
- Standardize care, nsg management to avoid manipulation
- Breastfeeding is contraindicated
- Social work consult mandatory, legal reporting to protect infant
Trauma in Pregnancy

- 250,000 pregnant women/year; third trimester – fainting, balance, MVA front seat injuries
- Intimate partner abuse - homicide
- “Clumsy” – no ladders, throw rugs, bathtub cautions; fatigue, long standing
- Seat belt below iliac crests

Trauma Care

- A woman’s body will maintain homeostasis at the expense of the fetus; uterus is a peripheral organ.
- Increased blood volume. Can lose more volume before VS reflect. Fluid replacement needs will be greater to restore volume.
- Uterine blood flow 500-1000ml/min
- EKG, labs change normally in pregnancy; organs repositioned

MVA, GSW, arterial bleeding...

- Fear r/t threat of injury to fetus
- Risk for fetal injury
- Ineffective tissue perfusion
- Ineffective breathing pattern
- Risk of infection
- Powerlessness, low self-esteem, etc
CPR in Pregnancy

- ABCs as usual
- Towel, small blanket under right hip for left tilt – placental perfusion
- Choking – no space to do Heimlich
  - use chest thrusts, mid sternum
- With Loss of Consciousness, external compressions same as CPR, just as effective in removing airway obstruction