N432 Focus Sheet 1- 2020

Ricci, Kyle & Carman Ch (3) 4,5, 10, 11, & 12

ATI Ch 1-6 & 8 (Infections)

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R,K, & C Ch 3—While this Chapter is technically not on the Exam, you must know these topics as the basis for other processes about which you will learn.

1. Provide a brief description of the external female reproductive organs.
   a. Mons pubis
      The mons pubis refers to the prominence of fatty tissue located anterior to the symphysis pubis. The function of the mons pubis is to protect the symphysis pubis during sex.
   b. Labia majora
      The labia majora are the larger and outermost vaginal lips. Structurally, the labia majora are fleshy relative to the labia minora. The functions of the labia majora include cushioning during intercourse and the protection of the vaginal opening. The labia majora contain glands for the secretion of sweat and oil and grow hair over them following puberty.
   c. Labia minora
      The labia minora are the smaller and innermost vaginal lips. The labia minora descend from the anterior and inner aspect of the labia minora, and protect the vaginal opening, clitoris, and urethra. Furthermore, they are sensitive to stimulation; this will cause them to engorge and lubricate the vulva. Structurally, the labia minora are thin relative to the labia majora. Overall size, however, may vary considerably.
   d. Clitoris
      The clitoris is a vascular mass of nerves and erectile tissue located at the junction of the labia minora, superior to the urethral orifice. Functionally, it is a sexual stimulation zone and is the most sensitive erogenous area for most women. Most of the clitoral structure is internal and rests under the skin and connective tissue of the vulva. The clitoris is covered externally by a fold of skin called the prepuce. Inferior to the clitoris is another skin fold called the frenulum.
   e. Perineum
      The perineum refers to the external area between the vulva and anus. It is considered the most posterior part of the external female reproductive organs, and consists of skin, muscle, and connective tissue. During childbirth, the perineum can be torn or surgically cut to facilitate the birth. When performed surgically, it is referred to as an episiotomy.

2. Provide a brief description of the internal reproductive organs.

a. Ovary

The ovaries are located internally, posterior to and on either side of the umbilicus. They are suspended from ligaments that place them near (but not connected to) the fallopian tubes. Ovaries are the glands responsible for releasing ova. Furthermore, the ovaries secrete estrogen and progesterone. Structurally, the ovaries are almond shaped; they are approximately 4 cm long and 2 cm wide when mature.

b. Fallopian tube

The fallopian tubes connect the upper uterus and ovaries. Thus, they permit ovum from the ovary to move toward the uterus, and sperm in the uterus to move toward the ovary. This is facilitated by the structure of the fallopian tubes. They feature cilia on their lumen and are muscular, which allows peristalsis. Furthermore, the funnel shape proximal to the ovary allows ovum to easily enter the tube. Fertilization occurs within the fallopian tubes, with the fertilized ovum progressing out of the tube into the uterus for implantation.

c. Uterus

The uterus is superior to the vagina, posterior to the bladder, and anterior to the rectum. It is separated from the vagina by its inferior portion, the cervix. The uterus is a pear-shaped organ with a thick, muscular wall made of three layers – the inner endometrium, middle myometrium, and outer perimetrium. The muscular myometrium is the thickest layer. The uterus serves several functions. First, it is where menstruation occurs. Second, it receives the fertilized ovum and hosts the fetus. Third, its muscular walls contract during labor to expel the fetus and placenta.

d. Fundus of uterus

The fundus is the most superior region of the uterus. If visualizing the uterus as an inverted pear, the fundus represents the convex region which sits above the fallopian tubes.

e. Cervix

The cervix lies between the end of the vagina and uterus, and is itself the most inferior part of the uterus. The channel, or opening, of the cervix is small and oval shaped prior to childbirth and slit shaped following childbirth. It is through this channel that sperm inside the vagina enter the uterus. The mucus secreting glands of the channel secrete a thick mucus prior to ovulation that prevents sperm from entering the uterus. In contrast, during ovulation, the mucus secreted is thinner so that sperm can enter. The cervix also serves as a barrier to bacteria while secreting the thicker mucus. Finally, the alkaline cervical environment is hospitable to sperm in contrast to the acidic environment of the vagina.

f. Vagina

The vagina is a tubular, muscular canal located anterior to the rectum and posterior to the bladder. It connects the external female genitalia to the cervix. The lining of the vagina features mucus membranes and rugae that facilitate expansion of the vagina during labor. Functionally, the vagina is the site of penile penetration during intercourse. Furthermore, it is the route of exit for menstrual blood and for the fetus during labor.

3. Menstrual Cycle hormones

Hormone	Purpose	
Estrogen	Induces proliferation of endometrial glands during the endometrial cycle. Causes the uterus to increase in size and weight.	
Progesterone	Induces swelling and secretion in the endometrium during the luteal phase. Facilitates pregnancy by reducing uterine contractions.	
Prostaglandins	Inflammatory mediators responsible for freeing the ovum inside the graafian follicle. Facilitate normal function of the female reproductive system.	

R,K & C Ch 4; ATI Ch 1,2

1. Define infertility. How can you as the nurse educate a couple on infertility causes and treatments?

   Infertility refers to failure to conceive for 12 months or more of trying. As a part of the nurse's teaching role, nurses can discuss the causes and risk factors of infertility with clients. A fundamental part of this is the understanding that infertility can be due to male and/or female factors. In women, the main causes are dysfunction of the ovaries or tubal and pelvic conditions. In males, erectile dysfunction and low or absent sperm counts are primary causes. Female risk factors include hormonal imbalances secondary to being over or under weight, scarring of the fallopian tubes, uterine fibroids, tubal occlusion, anovulation, cervical stenosis, problems with oocyte viability, chromosomal abnormalities, congenital uterine defects, immune system dysfunction, chronic illness, STIs, ectopic pregnancy, age, endometriosis, eating disorders, pelvic inflammatory disease, smoking, alcohol consumption, a history of miscarriages, environmental exposure to pollutants, menstrual dysfunction, chemotherapy, and stress. Male risk factors include exposure to toxins, chemotherapy, tobacco or cannabis use, diabetes, heavy alcohol use, certain prescription drugs, exposure of the genitals to high temperatures, hernia surgery, cardiovascular disease, low sperm quality, cushing syndrome, frequent cycling or running, STIs, cryptorchidism, and mumps after puberty.

   In addition to offering emotional support and discussing modifiable risk factors and appropriate lifestyle with clients, nurses can provide information about medical and surgical treatment

options. These include drugs like clomiphene, hormone therapy, and in vitro fertilization. Other options include artificial insemination, egg donation, and the use of a surrogate. Finally, the nurse should keep in mind that infertility is a sensitive issue with cultural and spiritual factors to consider. The nurse should be aware of their clients' beliefs, values, and concerns and adapt their teaching to fit the needs of their clients.

2. What is IVF?

In vitro fertilization refers to a procedure wherein fertilization occurs outside of the body in a culture medium. The fertilized ova is then implanted in to the uterus.

4. Birth Control options

Type	action	Side effect	Pro/con	Contraindications	Important Patient Teaching
Coitus interruptus	The man withdraws before ejaculating.	N/A	Pro: No devices required. Can be done any time. Con: Requires considerable self control by the male. Pre-ejaculatory fluid may still contain sperm.	N/A	This method has a relatively high failure rate and does not protect from STIs. Places woman in a dependent and trusting role.
Lactational amenorrhea method	Depends on lactational infertility.	N/A	Pro: No costs associated; not linked to sexual activity. Con: Only temporarily effective (~6 months after giving birth)	N/A	Stress that lactational amenorrhea is not a permanent method of contraception and encourage clients to plan for future contraception.
Condom	Barrier method. Semen and thus sperm	Latex condoms can cause allergic	Pro: Widely available, low cost, safe.	Latex allergy (with latex condoms)	Ensure clients know how to properly use condoms.

	are blocked from entering the vagina.	reaction if allergic to latex.	Con: Decreased male sensation, decreased sexual spontaneity, risk of condom breaking.		
Diaphragm	Barrier method. Diaphragm is a latex cup that is held in place inside the vagina by a spring mechanism. Prevents entry of semen and thus sperm.	Latex can cause allergic reaction if allergic to latex.	Pros: Nonhormonal method. Medically safe. Reduces the risk of cervical cancer. Cons: Requires professional fitting. Increases the risk of urinary tract infections.	Allergies to latex, rubber, polyurethane, or spermicide.	Women must be taught to insert and remove the device correctly.
Oral contraceptives (combination & progestin only)	Combination pills rely on the action of both estrogen and progestin. Progestin only thickens cervical mucus which prevents entry of sperm past the cervix in to the uterus.	Combination: dizziness, nausea, mood changes, high blood pressure, blood clots, heart attacks, strokes. Progestin only: irregular bleeding, weight gain, increased incidence of ectopic pregnancy.	Pros (combination): easy to use, high rate of effectiveness, protection against ovarian and gendometrial cancers. Pros (Progestin only): no estrogen related side effects, may be used by lactating women, may be used by women with history of thrombophlebitis.	Combination: Smoking, history of thromboembolic disease. Progestin only: history of functional ovarian cysts, previous ectopic pregnancy, hyperlipidemia.	Women should be screened for contraindications prior to beginning therapy. Be sure clients understand to take as directed.

			Cons (combination): Must take daily. Possible undesirable side effects. Requires prescription. Can be cost prohibitive. <u>Cons (progestin)</u>: must be taken with accuracy, may cause irregular bleeding, less effective than combination.		
Natural Family Planning (Fertility Awareness-based methods)	Refrain from sex during fertile periods.	N/A	<u>Pros</u>: no side effects, most religious groups are okay with this method. <u>Cons</u>: High failure rate when used incorrectly.	N/A	Be sure couples understand they need to be committed to use the method for it to be effective. Does not protect against STIs.
Interauterine devices	A T-shaped device inserted into the uterus. The device releases copper, progesterone, or levonorgestrel	Cramps, bleeding, pelvic inflammation disease; infertility; perforation of the uterus.	<u>Pro:</u> Immediately effective with low failure rate. Allows sexual spontaneity, can be used during lactation; return to fertility without impairment. Requires no active	PID, ectopic pregnancy.	Woman should be taught how to locate string to check placement monthly. Sign a consent form prior to insertion. Pregnancy test, pap smear, and cervical cultures

			compliance by user after insertion. <u>Con:</u> Insertion requires a skilled professional. Menstrual irregularities; prolonged amenorrhea. Can be unknowingly expelled, may increase the risk of pelvic infection. User must check string for placement. No protection against STIs. Delay of fertility after discontinuing for possibly 6-12 months.		should be negative before starting. If pregnancy is suspected after IUD insertion, a sonogram may be needed to rule out ectopic pregnancy.
Methoxyprogesterone	IM or SQ injection of hormone given to the client every 11-13 weeks. It works to inhibit ovulation and thicken cervical mucus.	Adverse effects include decreased bone mineral density, weight gain, increased depression, amenorrhea, headache, and irregular vaginal spotting or bleeding.	<u>Pros</u>: Very effective and requires only four injections per year. Does not impair lactation. Possible absence of periods and decrease in bleeding. Decreased risk of uterine cancer if used long-term. <u>Cons</u>: Adverse effects include decreased	Breast cancer, evidence of current cardiovascular disease, abnormal liver function, liver tumors, and unexplained vaginal bleeding.	Start injections during the first 5 days of the menstrual cycle and every 11 to 13 weeks thereafter. Injections in postpartum nonbreastfeeding clients should begin within 5 days following delivery. For breastfeeding clients, injections should start in

			bone mineral density, weight gain, increased depression, amenorrhea, headache, and irregular vaginal spotting or bleeding. Does not protect against STIs. Return to fertility can be delayed up to 18 months after stopping. Should only be used as a long-term method (more than two years) if other methods are inadequate.		the sixth week postpartum. Keep follow-up appointments. Maintain an adequate intake of calcium and engage in weight bearing exercise to decrease the risk of osteoporosis. Do not massage after IM injections because it decreases the absorption and effectiveness of the medication.
Subdermal implant	Implantable progestin is delivered by implanting small rods of progestin under the skin of the inner upper aspect of the arm. Prevents pregnancy by suppressing the ovulatory cycle and thickening cervical mucus.	Irregular and unpredictable menstruation, mood changes, headache, acne, depression, decreased bone density, and weight gain.	Pros: Long duration of action; low dose of hormones; reversible; estrogen-free Cons: Irregular bleeding, weight gain, breast tenderness, headaches, difficulty removing.	Unexplained vaginal bleeding. Infection at insertion site. Increased risk of ectopic pregnancy.	Before insertion, assess woman to make sure she is aware this method will produce 3 years of infertility. Avoid trauma to the area of implantation. Wear condoms to protect against STIs.

5. What does PAINS stand for?

PAINS is an acronym for warning signs associated with IUD use.

- P = Period late, pregnancy, abnormal spotting or bleeding.
- A = abdominal pain, pain with intercourse.
- I = Infection exposure, abnormal vaginal discharge.
- N = Not feeling well, fever, chills
- S = String length shorter or missing.

6. Name the three forms of sterilization and provide a description for each.

a. Tubal ligation: The fallopian tubes are sealed. This can be done by cauterization, placement or rings, bands or clips, or by severing and tying them.

b. Essure: A small coil is introduced to the fallopian tubes through the cervix. The coil causes tissue growth within the fallopian tube, which occludes them over a 3 month period.

c. Vasectomy: The vas deferens is severed. Because sperm travels from the testes to the penis via the vas deferens, after the vasectomy the semen doesn't contain sperm.

7. Discuss the differences between surgical and medical abortion.

Surgical abortion is done in the ambulatory setting under local anesthesia. The entire procedure takes about 10 minutes. Risks and complications in the first trimester include infection, retained tissue, hemorrhage, uterine perforation, retained products of conception, and cervical tear. The techniques used include vacuum aspiration and/or dilation and evacuation.

Medical abortion, in contrast, is done either in a clinic or doctors office and may require multiple visits. Clients take mifepristone and misoprostol. The former blocks progesterone. The latter, which is taken 1-2 days later, empties the uterus by inducing cramping and bleeding. These drugs can be taken vaginally or orally. A follow up visit is required to confirm the termination of pregnancy was successful.

Infections

RKC Ch 5 & Ch 20 pp 760 -771 ; ATI Ch 8

1. What are the TORCH infections which negatively affect a woman who is pregnant?
    - T = Toxoplasmosis
    - O = Other (hepatitis)
    - R = Rubella
    - C = Cytomegalovirus
    - H = Herpes Simplex Virus

While the TORCH infections do not represent all major infections that can harm the mother or fetus, as a group all of them can cross the placenta and have teratogenic effects.

2. What is the treatment for Chalmydia?

    Antibiotic therapy is indicated for the treatment of Chlamydia. Doxycycline may be used unless pregnant. If pregnant, azithromycin or amoxicillin are used. Erythromycin is administered to all infants following delivery and does provide prophylaxis against chlamydia. Clients who are pregnant should be retested 3 weeks after completing treatment. Finally, all exposed sexual partners should also be identified and treated.

3. What is the treatment for Gonorrhea?

    Antibiotic therapy is indicated for the treatment of Gonorrhea. Pregnant women may use Ceftriaxone IM and oral azithromycin. All exposed sexual partners should be identified and treated as well.

4. Which pregnant women should be screened for Syphyllis?

    - All pregnant clients should be screened for syphilis.

    When should they be screened?

    - All women should be screened in the first trimester during the first prenatal visit. If they are at a high risk (in an area with a high rate of syphilis infection, not previously tested, or had a positive test in the first trimester) they should also be screened in the third trimester.

    What are the names of the tests used for screening?
    - Nontreponemal tests include VDRL and RPR
        - VDRL = Venereal disease research laboratory
        - RPR = Rapid plasma reagin.
    - Treponemal tests include FTA-ABS and TP-PA
        - FTA-ABS = Fluorescent treponemal antibody absorbed
        - TP-PA = T. *pallidum* particle agglutination.
    - Microscopic examination of the primary lesion may also be used.

5. Why are pregnant women at higher risk for Candidiasis infection?

   Hormonal changes during pregnancy disrupt the normal pH balance of the vagina.

6. Which pregnant women should be screened for Syphyllis?

   This is a partial repeat of question #4

7. If a pregnant woman is diagnosed with an HIV infection, what treatment would you anticipate for the mother and the infant?

   The mother should be educated that with antiretroviral treatment the risk of transmitting HIV to her newborn decreases from 25% to less than 2%. Furthermore, formula feeding rather than breastfeeding is recommended to avoid transmission through breastmilk.

   The pregnant woman should support her immune system by getting adequate sleep, avoiding infection, decreasing stress, getting adequate protein and vitamins in her diet, staying hydrated, and planning rest periods through the day. The client should be screened for STIs, and her viral load and CD4 count should be monitored frequently. If the client has a viral load of more than 1,000 copies/mL anticipate cesarean birth at 38 weeks. If the client has a viral load of less than 1,000 copies/mL vaginal birth at 36 weeks is an option. If their partner is the source of infection, encourage the use of condoms. The mother should receive zidovudine 3 hours prior to scheduled caesarean section.

   The infant should be handled with gloves when providing care following delivery, and should be bathed after birth before remaining with the mother. At delivery and for 6 months following birth, the infant should receive zidovudine.

8. Why are genital herpes a problem for a pregnant woman? What is the treatment?

   Genital herpes in a pregnant woman presents risk of both maternal effects and fetal effects. Maternal effects include spontaneous abortion, intrauterine infection, preterm labor, PROM, and fetal growth restriction. Fetal effects include risk of infection during birth, birth anomalies, transplacental infection, skin or mouth sores, intellectual disability, premature birth, low birth weight, blindness, and death. Acyclovir is the treatment for herpes simplex. Other drugs that may be used include valacyclovir and famciclovir.

8. Discuss each of the following for cytomegalovirus:

Pathophysiology	Cytomegalovirus is a herpesvirus that is generally asymptomatic. However, it is also the most common congenital and perinatal viral infection. The risk of fetal transmission and injury is greatest if maternal infection develops in the first trimester or early in the second trimester. Pregnant women acquire cytomegalovirus through sexual activity, blood transfusion, kissing, or contact with children. It can be spread from mother to child in utero, during birth, or

	through breastfeeding and is present in all bodily fluids. Permanent disability is associated only with in utero infection.
Nursing Assessment	Assess for behaviors that put the mother at risk of contracting cytomegalovirus.
Testing	Prenatal screening for cytomegalovirus is not routinely performed.
Management	There is no proven in utero treatment for infected fetuses.
Patient education needs	Since cytomegalovirus cannot be prevented by vaccine or treated, it is critical to educate women at risk for infection. This includes education on hygienic practices like hand hygiene, using gloves, not sharing cups, utensils, food or toothbrushes, not sharing towels or washcloths, cleaning surfaces that come in contact with children's saliva, and practicing safe sex.

9. Discuss each of the following for Group B streptococcus:

Pathophysiology	GBS is a gram positive bacteria found naturally in 50% of adults. It is found in the GI and GU tracts. About half of pregnant women carry GBS in their vagina or rectum, which risks transmission to the fetus during birth. GBS can be life threatening to newborns, resulting in conditions like sepsis, meningitis, and newborn pneumonia.
Nursing Assessment	Review the mother's prenatal history including prior infections and determine if membranes have ruptured. Monitor the mothers vital signs. Assess for risk factors of perinatal transmission of GBS. These include previous colonization with GBS, low socioeconomic status, being African American, being younger than 20 years old, positive colonization at 35-37 weeks gestation, GBS in urine sample, a previous birth of a GBS positive newborn, preterm birth, and the use of invasive obstetric procedures. Urinary tract infections, uterine infections, and chorioamnionitis may indicate GBS infection.
Testing	All pregnant women should be screened for GBS at 35-37 weeks gestation. This is done by checking vaginal and rectal cultures.
Management	Medical management includes prophylactic antibiotic use to mothers during childbirth. Penicillin G is the treatment of choice.
Patient education needs	Nurses should educate clients about GBS and the risk of transmission. They should ensure that clients are screened between 35-37 weeks.

10. Discuss each of the following for Hepatitis B: p198

Pathophysiology	Hepatitis B virus may be transmitted through saliva, blood serum, semen, menstrual blood, and vaginal secretions. The onset of symptoms follows an incubation period of 6 weeks to 6 months.
Nursing Assessment	Clients should be assessed for clinical manifestations of hepatitis B. The manifestations of hepatitis B include flu-like symptoms with malaise, skin rashes, fatigue, anorexia, nausea, pruritis, fever, and upper right quadrant pain. Fever and skin involvement may be less so than seen in hepatitis A infection.
Testing	Diagnosed by hepatitis B surface antibody test.
Management	Treatment is supportive for acute infection. Administration of HBV immune globulin. Vaccination with HBV vaccine within 12 hours of birth and repeat vaccination at 6 months and 12 months. Women who are negative may be

	vaccinated at during pregnancy.
Patient education needs	Prevention is important. Most hospitals vaccinate newborns at birth. Women should be encouraged to be screened at their first prenatal visit and, if high risk, again in the third trimester.

R,K,& C Ch 10

1. **Briefly** define the difference between preembryonic, embryonic, and fetal stages of development.
    - The **pre-embryonic stage** encompasses the zygotic and blastocyst stages.
        - **The zygotic stage** starts at fertilization and ends at the second week. Zygote refers to the fertilized ovum. The zygote undergoes mitosis until it becomes a 16 celled morula, which travels to the uterine cavity.
        - **The blastocyst** is formed when fluid from the uterine cavity enters the morula. The blastocyst continues to grow with its outer layer, the trophoblast attaching itself to the endometrium. The trophoblast eventually becomes the chorion.
    - The **embryonic stage** begins at day 15 following conception and continues through the 8th week. During this stage the basic structures of the major body organs and external features develop.
    - **The fetal stage** of development is the time from the end of the 8th week until the time of birth. At this point, the conceptus is called a fetus. All major organ systems are present in their basic forms, but grow and develop rapidly.

2. List 5 functions of the placenta. See RKC Chapter 10 pp342-3

    - Protection of the fetus from immune attack by the mother.
    - Removes waste products from the fetus.
    - Induces the mother to bring more food to the placenta.
    - Produces hormones that prepare fetal organs for life after birth.
    - Supplies fetus with nutrients and oxygen.

R,K,& C Ch 11; ATI Ch 3, 4, 5

1. What are:

    Braxton hicks contractions

    - Braxton-Hicks contractions are a probable sign of pregnancy. They are false contractions that are painless, irregular, and may generally be relieved by walking. These occur between 16 and 28 weeks.

Hegars sign

- Hegar's sign refers to a softening of the lower uterus. This occurs between 6-12 weeks.

Goodells sign

- Goodell's sign is a softening of the cervical tip. It occurs at 5 weeks.

Chadwicks sign

- The cervix and vaginal mucosa take on a bluish-purple color. This sign occurs at between 6-8 weeks.

Ballotment

- Ballotment is the rebound of the fetus after an examiner pushes against the woman's cervix. This sign occurs between 16-28 weeks.

3. What is hCG? Why is it so important to watch during pregnancy?

   Human chorionic gonadotropin is a sensitive indicator of pregnancy – 98% of pregnant women will have detectable serum levels of hCG by day 11 following conception. It is monitored during pregnancy because deviation from expected levels can indicate problems. Normally, hCG levels double every 2-3 days until peaking at 60-70 days. Lower than expected hCG doubling times may indicate miscarriage or ectopic pregnancy. Higher than normal hCG doubling times may indicate molar pregnancy, genetic abnormalities, or multiple-gestational pregnancies.

4. What cause supine hypotensive syndrome in a pregnant woman? How can we educate her to prevent this?

   Supine hypotension is due to compression of the vena cava by the gravid uterus. The client should be educated to lie down in either a side-lying position or a semi-sitting position with the knees slightly flexed to avoid this.

5. In your own words, ***BRIEFLY*** summarize the expected changes a woman will see in each of the following:

   Uterus- The uterus, stimulated by estrogen, grows dramatically during pregnancy. This allows space for the fetus to develop. Furthermore, the uterine vasculature increases to support the increased myometrial mass and supply blood to the placenta.

Cervix- The cervix softens and produces a greater quantity of mucus. The cervical entrance is blocked by a mucus plug. The tissue of the cervix increases in vascularity. The cervix ripens and connective tissues become more elastic to accommodate childbirth.

Vagina- The inner layer of the vagina thickens, the number of blood vessels increases, and the smooth muscle of the vaginal wall grows and strengthens. The vaginal canal elongates, and connective tissues loosen. Vaginal secretions are increased, thicker, acidic, and white in color.

Ovaries- The ovaries grow larger due to an increased blood supply. During pregnancy, hormonal levels prevent FSH and LH secretion which in turn prevents ovulation. After the 6^{th} or 7^{th} week of pregnancy, the corpus luteum stops producing hormones and the placenta is primarily responsible for progesterone production.

Breasts- Changes in estrogen and progesterone levels cause the breasts to grow larger. The vascularity of breast tissue increases. Changes specific to the nipples and areola include darkening, enlargement, and increased erection. Montgomery glands, which help lubricate the nipples, become more apparent. Stretch marks develop in many pregnant women. The breasts begin to produce colostrum in the third trimester.

Gastrointestinal system- The primary alteration to the GI function during pregnancy is decreased motility. Higher progesterone levels cause smooth muscles to relax which slows peristalsis. Other problems include constipation, nausea, vomiting, and gallstones. While pregnant, GERD can occur due to displacement of the esophagus and diminished tone of the lower esophageal sphincter. Furthermore, increased vasculature and blood flow in the mouth can cause the gums to swell and bleed. Women may swallow less due to nausea, resulting in excess salivation. Finally, changes in hormone levels can give rise to gum disease including gingivitis.

Cardiovascular system- During pregnancy there are increases to blood and plasma volume, but these are not commensurate to increases in RBC mass. Heart rate and cardiac output increase while peripheral resistance decreases. This decrease in peripheral resistance in turn decreases blood pressure, particularly diastolic pressure.

Respiratory system – During pregnancy, the uterus forces the diaphragm up which decreases the superior-inferior axis of the thoracic cavity. Nevertheless, oxygen demands are increased and increased chest circumference facilitates significantly greater tidal volume. Pregnant women's respirations become diaphragmatic, and the depth and rate of respiration increases.

Renal/urinary system- During pregnancy, blood flow to the kidneys increases which helps them deal with increased blood volume and waste. The kidneys enlarge overall with the renal pelvis and uterus dilating due to increased estrogen and progesterone. Furthermore, the increased blood volume leads to increases in GFR and urine output. Because of the increase in GFR, pregnant women may require dose adjustment for medications excreted by the kidneys.

musculoskeletal system – The ligaments of the SI joints and pubic symphysis become more pliable to allow for childbirth. Abdominal enlargement gives rise to changes in posture to compensate; notably, swayback and upper spine extension increase. These changes in combination with increased weight can lead to back pain in pregnant women.

Integumentary system- Most pregnant women experience some degree of generalized hyperpigmentation. As discussed above in the breasts section, stretch marks can appear. Women may develop a darkly pigmented line extending from the umbilicus to pubic region called the linea nigra. Varicose veins may develop. Finally, hair might grow slower while nails often grow faster. Furthermore, nails become more brittle and may feature white discoloration.

Vascular related changes- Women may develop varicose veins in the legs and perineum while pregnant. This may be due increased pressure in the pelvic veins due to the compression by the uterus. Finally, spider veins and red or pink discoloration of the palms may occur.

Endocrine system-

Thyroid: The thyroid gland becomes larger and increases in activity. Greater levels of thyroid hormone are produced to facilitate development of the fetus' brain. As a result of increased thyroid hormone levels, the woman's basal metabolic rate, heart rate, and cardiac output increase.

Pituitary - Like the thyroid gland, during pregnancy the pituitary gland becomes bigger. FSH and LH secretion are inhibited. TSH levels are decreased during the first trimester. Growth hormone producing cells and blood levels decrease. Melanocyte stimulating hormone increases. Oxytocin levels increase over the course of the pregnancy.

Pancreas – The pancreas secretes more insulin to accommodate the increased blood glucose needs of mother and baby. Maternal blood glucose may be low early in the pregnancy as the fetus uses much of it to meet their energy requirements.

Adrenal glands- During pregnancy cortisol levels increase to deal with increased stress. Aldosterone levels are also increased to allow for excretion of salt in urine.

Prostaglandin secretion- It is believed that, at term, a drop in prostaglandin levels precipitates the increased production of prostaglandins. This, in turn, helps with labor by promoting uterine contractions and increasing the sensitivity of myometrial musculature to oxytocin.

Placental secretion- The placenta makes and secretes several hormones. These include hCG, hPL, relaxin, progesterone, and estrogen.

Immune system – While the immune system of pregnant women is largely similar to that of non-pregnant women, some changes do occur. To wit, inflammatory response and phagocyotosis and increased while adaptive immunity is decreased.

6. Why are pregnant women often diagnosed with anemia?

   During pregnancy there is an expansion in total blood volume, but not a commensurate increase in RBC mass. This results in physiologic anemia.

7. What important roles do each of the following placental hormones play in pregnancy?

   hCG- maintenance of the corpus luteum, early production of trophoblast cells, presence in blood allows for early detection of pregnancy.

   hPL- prepares breasts for lactation, alters maternal metabolism of macronutrients to increase glucose levels available to fetus, decreases tissue sensitivity to insulin, increases free fatty acids in maternal circulation, decreases maternal metabolism of glucose.

   Relaxin- Works with progesterone to maintain pregnancy, increases flexibility of pubic symphysis to facilitate childbirth, dilates the cervix, may delay contractions by inhibiting oxytocin.

   Progesterone- Supports the uterine endometrium, prepares uterine lining for implantation, inhibits uterine contractility, prepares breasts for lactation.

   Estrogen- Induces engorgement and vascularization of genitalia, uterus, and breasts. Relaxes the ligaments and joints of the pelvis, thought to be responsible for changes in skin pigmentation, vascular skin changes, increased salivation, and changes to the gums and nasal mucosa, helps prepare the breasts for lactation.

7. Why are folic acid, iron and prenatal vitamins important for pregnant women?

   - **Folic acid** is important for the neurological development of the fetus. Deficiencies can lead to neural tube defects.
   - **Iron supplements** are indicated to help increase maternal RBC mass. During pregnancy increases in fluid volume without consummate increases in RBC mass give rise to physiologic anemia.
   - Supplementation with **prenatal vitamins** helps ensure that nutritional needs are being met, and recommending their use is standard.

What are some good sources for folic acid and iron that you can educate pregnant women to consume?

- **Folic Acid**: Leafy vegetables, dried peas and beans, seeds, and orange juice; fortified grains such as breads and cereals.
- **Iron**: Beef liver, red meats, fish, poultry, dried peas and beans, and cereals and breads that have been fortified.

8. After reading over the general guidelines on RKC p 378 and the MyPlate guidelines on p 379 ; ATI ch 5, please write out a daily food plan in the table below:

Breakfast	**snack**	**Lunch**	**snack**	**Supper**	**snack**
Omelet with spinach and cheese	Turkey Slices	Liver and Onions	Beef Jerky	Grilled Cheese	Hummus
Banana	Orange	Fruit Cocktail	Raisins	Mixed berries	Apple
V-8 Juice	Carrots	Green Beans	Garden Salad	Tomato Soup	Celery sticks
Yogurt	Cheese slices	Milk	String Cheese	Milk	Yogurt
Oatmeal	Crackers	Bread	Mixed Nuts	**bread in grilled cheese	Pita Bread

8. What would you tell a pregnant woman who asks you what she should avoid eating during her pregnancy? What if she asks how much weight she should gain?

   I would advise her that research on the safety of artificial sweeteners during pregnancy is sparse, and recommend using them in moderation if at all. I would also suggest avoiding fish with high levels of mercury, and no more than two 12 oz servings per week of low mercury fish. Furthermore, processed foods and raw milk may contain Listeria and should be avoided. Other foods to avoid include salads made in stores (ex: egg salad), pate or meat spreads, or soft cheeses.

   I would preface information concerning weight gain by assuring her that quality of diet is less critical than weight gain. I would then explain that current recommendations for weight gain are based on her BMI rather than a rigid figure. However, gaining 1-2 kg during the first trimester and then 0.5 kg per week for the 2^{nd} and 3^{rd} trimester is a general rule for clients who are not underweight or overweight.

9. Why is pica? What often precedes the identification of pica?

Pica refers to craving things that are not food, such as clay or egg shells, for at least one month. Clinical identification of pica is often preceded by signs of anemia. This can be the first sign of a problem because women may be reluctant to volunteer information about their cravings with their provider.

11. In your own words explain what each of the following mean in reference to a pregnant woman.

Ambivalence describes mixed feelings about the pregnancy. For example, a woman may be excited at the prospect of being a mother but also feel like the baby may damage the

quality of relationship she has with her partner. Such feelings are considered normal and it is commonly experienced in the first trimester.

Introversion is an inward focus on herself and on the fetus, which may come at the expense of attention to other aspects of her life or the people in it. It is common early in pregnancy but is also seen in the third trimester. It is usually considered a normal adaption.

Acceptance describes the woman coming to terms with the realization that a fetus, distinct from herself, is developing inside of her. This comes during the second trimester and is associated with the emergence of obvious signs of pregnancy.

Mood swings describe rapid and unpredictable shifts between emotional highs and lows associated with pregnancy.

11. How can pregnancy change the mother's image of herself? Her sexuality? Her relationship with her partner?

    - A pregnant woman's change in self-image is an individual experience that may be quite different between women. What is constant is that alterations in body image, while considered a normal part of pregnancy, can be a source of stress for the client.
    - Unless the client is at particular risk for complication, sex is safe during pregnancy. That said, a woman's libido can change throughout the course of the pregnancy due to a few factors including the physical changes to her body and how she feels about them. Partners should have an open dialogue about what the woman is comfortable with, and, if needed, alternative ways to be intimate.
    - A partner's response to pregnancy can also vary widely, and may develop with changing trimesters; for instance, the partner may go through an acceptance stage in the 2nd trimester and come to terms with their role change in the 3rd semester. The experience of pregnancy may reflect the overall quality of the relationship prior to pregnancy.

R, K, & C CH 12; ATI Ch 4,5, & 6

1. Why is preconception care important?

   Taking steps to work towards optimal health prior to conception can help reduce the risk of problems for the woman and her baby. Perinatal outcomes can be improved by modifying risk factors for complications and preparing for potential complications before pregnancy.

2. What types of information should be obtained at the first prenatal appointment?

A complete health history that includes medical conditions, surgeries, age, menstrual history, information about any prior pregnancies, psychological screening, medication use, STI exposures, genetic screening, diet, and lifestyle.

3. What are the thresholds for diagnosis of overt diabetes during pregnancy?
    - Fasting serum glucose – 126 mg/dL
    - HgA1c - = or > 6.5%
    - Random serum glucose – 200 mg/dL

4. Calculate the following estimated due dates using Nagele's Rule:
    a. Last menstrual period (LMP) 7/9/19
        - 4/16/20
    b. Last menstrual period (LMP) 12/24/16
        - 9/31/17

5. State what words GTPAL stand for and what each mean.
    - **Gravida** = How many times the woman has been pregnant.
    - **Term** = The number of full term gestations (delivering 38-42 weeks).
    - **Pre-term births** = The number of times the woman has had a preterm pregnancy ending after 20 weeks, including viable births before 37 weeks.
    - **Abortions** = The number of pregnancies ending before 20 weeks or viability.
    - **Living** = How many children the patient has that are currently alive.

6. So what is meant by the term para?

Para refers to the number of times a woman has given birth to a fetus that is 20 gestation weeks old or more. This includes fetuses that were nonviable, and multiple births (ie twins) count as a single event.

7. What is linea nigra? How does fundal height correlate with gestation?

The linea nigra is a darkly pigmented line that extends from the umbilicus to the symphysis pubis in some pregnant women. As gestation progresses, the fundus can be palpated at increasingly superior points on the woman's anterior. At 12 weeks, the fundus is at the symphysis pubis. By 36 weeks, the fundus is proximal and inferior to the xiphoid process.

8. Fill in the following table:

Test	When are these done in the pregnancy?	Evaluation/meaning of results
CBC	During the initial visit	• Hgb (12-14), Hct (37-47%),

		and RBCs (4.2-5.4 million) are used to screen for anemia. Falling below these expected ranges may indicate anemia. • WBC (5-10k) may indicate infection if above the expected range. • Platelets (150k-450k) assess for problems with clotting.
Blood typing & Rh	During the initial visit	Determines the client's blood type and Rh status. If incompatibility issues exist, treatment at 28 weeks and again after childbirth with RhoGAM may be indicated.
Rubella titer	During the initial visit	Expected result is that the titer is greater than 1:8. If the titer is 1.8 or less, the woman is not immune to rubella and will need vaccinated.
Hepatitis B	At the initial visit	Screens for hepatitis B. The presence of hepatitis B antibody surface antigen indicates infection with hepatitis B.
HIV	At the initial visit	Screens for HIV antibodies. The presence of antibodies requires additional intervention.
STI screening	At the initial visit	Screens for STIs including syphilis, herpes, HPV, and gonorrhea. If infected, treatment should be initiated.
Cervical smears-G/C	At the initial visit.	Positive results indicate infection and treatment should be initiated.
Cervical smears- group B strep	35-37 weeks.	If positive for GBS, antibiotic therapy should be initiated.

Blood Glucose Tolerance test	Done at initial visit if at risk. For all other clients, done at 24-28 weeks gestation.	Greater than 140 mg/dL requires further investigation.
MSAFP-Maternal Serum Alpha Feto-protein	16-18 weeks gestation is optimal, may be done between 15-22 weeks.	Low levels may indicate down syndrome. High levels may indicate neural tube defect.

9. How often are follow up visits and what things are assessed?

It is recommended that a healthy pregnant woman have follow-ups every 4 weeks until 28 weeks, every 2 weeks from 29 to 36 weeks, and every week from 37 weeks until birth. At follow up appointments, weight and blood pressure, urine testing (protein, glucose, ketones, and nitrites), fundal height, verification of quickening, and an assessment of fetal heart rate are performed.

10. What danger signs are associated with the first trimester?

- Spotting or bleeding (miscarriage)
- Painful urination (infection)
- Severe and persistent vomiting (hyperemesis gravidarum)
- Fever greater than 100 F (infection)
- Lower abdominal pain with dizziness and accompanied by shoulder pain. (ruptured ectopic pregnancy.)

Second?

- Regular uterine contractions (preterm labor)
- Pain in calf, increased with foot flexion (DVT)
- Sudden gush or leakage of vaginal fluid (prelabor rupture of membranes)
- Absence of fetal movement for more than 12 hours (fetal stress or death)
- Any of the first trimester warning signs

Third?

- Sudden weight gain; periorbital or facial edema, severe upper abdominal pain, headache with visual changes (gestational hypertension or preeclampsia)
- A decrease in fetal daily movement for more than 24 hours (fetal death)
- Any of the first or second trimester warning signs

11. How is fetal well being assessed?

Testing used to evaluate fetal well-being include ultrasonography, doppler flow studies, maternal serum alpha feto protein, marker screening tests, nuchal translucency screening, amniocentesis, chorionic villus sampling, percutaneous umbilical blood sampling, nonstress test, contraction stress test, and biophysical profile.

12. Discuss the following amniotic fluid findings and their implications to the fetus.

a. Color
   - In a mature fetus, the normal finding is clear with white flecks.
   - The presence of maternal blood usually is not a problem.
   - "Port wine" fluid can suggest abruptio placentae.
   - Fetal blood may suggest damage to the fetal, placental, or umbilical cord vessels.

b. Bilirubin
   - At term, bilirubin is not normally present in the amniotic fluid.
   - High levels suggest hemolytic disease of the neonate if isoimmunized pregnancy.

c. Meconium
   - Meconium is not normally present in amniotic fluid except in cases of breech presentation.
   - Presence suggests hypotension or distress of the fetus

d. Lecithin to sphingomyelin ratio (L/S ration)
   - Normal is considered >2
   - Low levels suggest an immature fetus

e. Alpha-fetoprotein
   - What is normal varies by gestational age and laboratory technique. The highest normal concentration is approximately 18.5 ng/mL at 13-14 weeks.
   - Elevation suggests neural tube defect, impending fetal demise, congenital nephrosis, or contamination of fetal blood.

f. Bacteria
   - Bacteria is normally absent
   - The presence of bacteria suggests chorioamnionitis

g. Acetylcholinesterase
   - Acetylcholinesterase is normally absent from the amniotic fluid.
   - The presence of acetylcholinesterase in amniotic fluid suggests neural tube defects, exomphalos, or other malformations.

13. Describe the procedure and expected results for a non stress test.

A nonstress test uses a doppler transducer to monitor fetal heart rate and a tocotransducer to monitor uterine contractions. When the pregnant client feels a contraction, they press an indicator to mark it on the strip. This allows the nurse administering the test to observe the relationship between fetal heart rate and fetal movement. This is performed in the third trimester and is used to verify that the fetal central nervous system is functioning correctly.

It is expected that fetal heart rate increases at least 15 bpm for at least an interval of 15 seconds and occurs at least twice during a 20 minute test. This finding is termed “reactive.”

A nonreactive NST test does not meet the minimum criterial of a reactive NST test as described above. This finding merits deeper investigation.

14. Describe the procedure and expected results for a biophysical profile (BPP).

The biophysical profile uses a combination of several diagnostic tools to identify hypoxia and thus reduce stillbirth and avoid permanent fetal damage secondary to asphyxiation. The procedure involves simultaneous real-time ultrasound and a nonstress test. The ultrasound is used to check movements of the fetus, fetal tone, breathing, the volume of amniotic fluid and fetal heart rate. Five categories worth two points each are used to score the test. The categories include: (1) Body Movements: Three or more discrete limb or trunk movements; (2) Fetal tone: one or more instances of full extension and flexion of a limb or trunk; (3) Fetal breathing; one or more fetal breathing movements of more than 30 seconds; (4) Amniotic fluid volume: One or more pockets of fluid measuring 2 cm; and (5) Normal NST = 2 points.

Interpretation of the BPP results may depend on several factors. However, scoring a 2 in any given category is considered normal and an overall score of 8-10 is considered normal provided that amniotic fluid volume is sufficient. Scores of 6 or less may indicate fetal compromise and merit further testing.

~~**15. N/A – not a question**~~

16. Choose one of the ten discomforts of pregnancy listed in RKC on p 420 and ATI Ch 4 pp 21-22. Write out a teaching plan that you could use for a mother who is experiencing this discomfort. (While you are only choosing one to write about you will be responsible for knowing education for each of the discomforts.)

Urinary tract infections are one of the discomforts of pregnancy listed in the ATI text. Teaching plan:

A. During pregnancy changes in your kidneys and vaginal flora make you more susceptible to urinary tract infections.
B. If you notice signs of symptoms that may indicate a urinary tract infection, contact your provider. These include:
    a. Foul-smelling urine
    b. Urine containing blood
    c. Urine that appears cloudy.
C. There are steps you can take to reduce your risk of urinary tract infections.
    a. Wipe your perineal area from front to back after using the bathroom.
    b. Avoid bubble baths
    c. Wear cotton underwear
    d. Avoid tight-fitting pants
    e. Consume 8 glasses of water a day
    f. Urinate before and after intercourse
    g. Avoid retaining urine; when possible, void as soon as you have the urge.

17. What are the common discomforts experienced in the third trimester?
Common discomforts of the third trimester include shortness of breath, dyspnea, heartburn, indigestion, dependent edema, and Braxton-Hicks contractions.

How can you as the nurse educate women to successfully handle these discomforts?

- **Shortness of breath & dyspnea**: Offer reassurance that dyspnea is normal and should improve following fetal lightening. She may get relief by positioning her body to promote chest expansion and avoiding large meals. Raising the head of the bed or placing pillows under the back may help. Furthermore, lying on the left side can relieve uterine compression of the vena cava. Taking breaks to stretch with the arms above the head and doing deep breathing may help. The client should avoid exercise that precipitates dyspnea, take rest breaks after exercise, and avoid overheating. If pertinent, advise the client to stop smoking.
- **Heartburn & Dyspnea**: Help the client review her dietary habits and identify gas-producing, fatty foods, and large meals that may be contributing to her problem. Encourage her to remain in a sitting position for 1-3 hours following meals to prevent gravity induced reflux. It is best to consume small, frequent meals and eat slowly (this prevents swallowing excess air). Caffeinated drinks, greasy, gas-forming foods, citrus, spiced foods, chocolate, coffee, alcohol, and spearmint or peppermint may stimulate gastric acid secretion. Finally, avoid eating late at night, large meals, and chewing gum.
- **Dependent edema**: Educate the client that she can mitigate her edema with several strategies. Elevating the feet and legs above the heart throughout the day, using compression stockings when standing or sitting for extended periods, changing position regularly throughout the day, walking at a moderate pace to help contract

leg muscles and promote venous return, break up long car rides with breaks to walk every two hours, laying on the left side to mitigate compression of the vena cava by the uterus, avoiding high sodium foods, avoiding knee-high stockings, getting adequate fluid intake (6-8 glasses daily), and avoiding high intake of sugar and fats (may cause water retention).

- **Braxton Hicks Contractions**: Provide reassurance that what she is experiencing is normal and educate her on the difference between Braxton Hicks contractions (false contractions) and real contractions. True contractions occur at regular intervals and become longer, stronger, and closer together over time. They are strengthened by walking rather than relieved. The client can mitigate Braxton Hicks Contractions by staying well hydrated, resting in a side-lying position, and using breathing techniques to ease discomfort.

18. Should pregnant women receive vaccines, if so, which ones & why?

While routine vaccination is usually unnecessary during pregnancy, the CDC recommends that pregnant women consider the following vaccines unless contraindicated: Hepatitis B, Influenza, Tdap, and Rabies. There is a theoretical risk of transmission to infant when receiving live vaccines such as MMR or varicella. However, inactivated vaccines or toxoids are not thought to pose a risk. As a general rule, the theoretical risk of a particular vaccine should be weighed against the risk the disease would pose to mother and infant.

19. ~~Do not spend time on looking at the information on drug classifications, we will discuss this in class.~~

N/A – not a question

20. Briefly explain in your own words the value of prenatal/childbirth education classes.

While individual methods vary, childbirth education classes share a common theme of empowering women by reframing the process of birth from something that dominates them to something they have control over. From a holistic perspective of care, we should not be content to aspire only to keep mother and baby safe. Rather, we need to recognize the emotional toll that pregnancy takes is in part a result of a pregnant woman feeling that she has lost some agency of her own body and fear, anxiety, or uncertainty about what she may experience. Childbirth education classes like the Lamaze, Dick-Read, and Bradley methods help women take ownership of their experience.