MINISTRY OF HEALTH OF UKRAINE
ODESA NATIONAL MEDICAL UNIVERSITY

International Faculty

Department of obstetrics and gynecology

CONFIRMED by
Vice-rector for scientific and pedagogical work
Eduard BURIACHKIVSKYI
«29» August, 2024

METHODOLOGICAL RECOMMENDATIONS FOR PRACTICAL CLASS

International Faculty, Course V

Discipline "Obstetrics and Gynecology"

Practical lesson №15. Topic: Anomalies in the development of the fertilized EGG. Multiple pregnancy.

Approved:

Meeting of the Department of Obstetrics and Gynecology of Odesa National Medical University

Protocol No. 1 dated August 29, 2024.

Head of the Department_____ (Ihor GLADCHUK)

Developer:
Ph.D., assistant professor of
obstetrics and gynecology department_____ (G. Kozhukhar)

Practical class №15.

"ANOMALIES IN THE DEVELOPMENT OF THE FERTILIZED EGG. MULTIPLE PREGNANCY"

LEARNING OBJECTIVES is to gain basic knowledge about multiple pregnancies, classification, risk factors for multiple pregnancies and why prevalence is increasing, be familiar with the increased complications that occur in multiple pregnancies, understand the antenatal care of women with multiple pregnancies in order to provide successful obstetric outcome.

To understand why prenatal diagnosis is performed and what conditions can be tested for in the fetus, be aware of the invasive prenatal diagnostic tests that can be performed, their risks and benefits, know the various screening tests that are used to predict the risk of a woman having a pregnancy affected by Down's syndrome, appreciate how to appropriately counsel a woman and her partner who are considering having an invasive prenatal diagnostic test, learn about newer non-invasive methods of prenatal diagnosis based on measurement of cell-free fetal DNA in the maternal circulation.

BASIC CONCEPTS: Anomalies of extraembryonic elements of the ovum (placenta, amniotic membranes and umbilical cord). Polyhydramnios and oligohydramnios: causes, diagnosis, tactics of pregnancy, consequences for the fetus and newborn. Hereditary and congenital diseases of the fetus. Prenatal genetic counseling, indications. Prenatal screening and diagnosis.

Multiple pregnancy: classification, diagnosis, course and management of multiple pregnancy. Childbirth in multiple pregnancies.

EQUIPMENT

- Obstetric models and obstetric instruments (pelvimeter, obstetric stethoscope, centimeter tape).
- Professional algorithms, structural-logical schemes, tables, videos.
- Results of laboratory and instrumental researches, situational tasks, patients, medical histories.
- Multimedia equipment (computer, projector, screen), TV.

EDUCATIONAL TIME – 4 h

1. **ORGANIZATIONAL STAGE**
   - Greetings,
   - checking attendees,
   - defining of educational goals,
   - providing of positive motivation.

Prenatal diagnosis is the identification of a disease in the fetus prior to birth. This topic will discuss why prenatal diagnostic tests may be performed and the types of non-invasive and invasive tests that are available. It will discuss factors that should

be taken into consideration prior to offering testing, and emphasizes the importance of good communication with women and multidisciplinary working.

Rates of multiple pregnancies continue to increase and now constitute approximately 3% of live births. The high prevalence of multiple pregnancy is explained predominantly by increasing use of assisted fertility, with rates of multiple pregnancy being directly proportional to the number of embryos transferred. Regardless of chorionicity and amnionicity, complications in multiple pregnancies are higher than for singleton pregnancies and include preterm birth, fetal growth restriction (FGR), cerebral palsy and stillbirth. The maternal risks are also increased and include hypertensive and thromboembolic disease and antepartum and postpartum haemorrhage.

2. CONTROL OF BASIC KNOWLEDGE (written work, written testing, online testing, face-to-face interview, etc.)

2.1. Requirements for the theoretical readiness of students to perform practical classes.

Knowledge requirements:

- Ability to collect data on patient complaints, medical history, life history;
- Ability to evaluate information about the diagnosis using a standard procedure, based on the results of laboratory and instrumental studies. To determine the list of required clinical, laboratory and instrumental studies and evaluate their results;
- Ability to select the leading clinical symptom or syndrome;
- Ability to make a preliminary and a differential diagnosis and make the clinical diagnosis of the disease;
- Ability to determine the principles of treatment of diseases, the necessary mode of work and rest, the nature of nutrition;
- Ability to diagnose emergencies;
- Ability to determine tactics and provide emergency medical care;
- Ability to provide consultations on family planning, determine the tactics of physiological pregnancy, physiological labor and the postpartum period;
- Ability to assess mother's condition; to carry out diagnostic and tactical measures in each period of labor; to exam woman in labor; assess the condition of the fetus during childbirth; to conduct the postpartum period;
- Ability to assess the patient, and the necessary examination before using a contraceptive; demonstrate family planning counseling skills;
- Ability to formulate and bring to the mother, relatives and specialists recommendations for the most effective mode of delivery; to provide the necessary information about changes in a female body in the postpartum period;
- Ability to keep medical records.

List of didactic units:

– Anomalies of extraembryonic elements of the ovum (placenta, amniotic membranes and umbilical cord).
– Polyhydramnios and oligohydramnios: causes, diagnosis, tactics of pregnancy, consequences for the fetus and newborn.
– Hereditary and congenital diseases of the fetus.
– Prenatal genetic counseling, indications.
– Prenatal screening and diagnosis.
– Multiple pregnancy: classification, diagnosis, course and management of multiple pregnancy.
– Childbirth in multiple pregnancies.

2.2. Questions (test tasks, tasks, clinical situations) to test basic knowledge on the topic of the class.

Questions:

– Hereditary and congenital diseases of the fetus.
– Indications for prenatal genetic screening and counselling.
– Screening and diagnostic tests, invasive and non-invasive procedures.
– First-trimester screening and diagnostic testing options for aneuploidy.
– Biochemical and ultrasound components for aneuploidy screening in the first trimester.
– Combination first- and second-trimester screening modalities and their detection rates.
– The types of second-trimester serum testing for fetal aneuploidy.
– The role of serum testing for fetal neural tube defects.
– The diagnostic approach to abnormal first- and second-trimester screening.
– Epidemiology and aetiology of multiple pregnancy.
– Classification of multiple pregnancy.
– Complications of multiple pregnancy Perinatal mortality.
– Complications unique to monochorionic twin pregnancies.
– Care of women with a multiple pregnancy.
– Intrapartum management. Time and mode of delivery.
– Amniotic fluid metabolism.
– Causes of polyhydramnios and oligohydramnios. Fetal and maternal complications.
– Management of pregnants with polyhydramnios and oligohydramnios.

Test tasks

Direction: For each of the multiple-choice questions select the lettered answer that is the one best response in each case.

1. You review a woman who is 20 weeks pregnant with MCMA twins at her booking appointment. She asks your opinion regarding timing and mode of delivery. She had hoped for a vaginal delivery. How would you advise her?

(A) Emergency caesarean section

(B) Delivery by caesarean section at 37 weeks
(C) Refer for laser ablation therapy
(D) Elective caesarean section at 32-34 weeks
(E) Start oxytocin infusion

2. Advising a 34-year-old woman at 12 weeks' gestation about the risk of chromosomal defects in the fetus, you can correctly state which of the following?
(A) There is little worry regarding Down syndrome before the age of 35.
(B) Paternal age is very important in the etiology of Down syndrome.
(C) Maternal serum alpha-fetoprotein (MSAFP) is a very specific test for Down syndrome.
(D) Screening for Down syndrome can be improved by checking amniotic fluid for acetylcholinesterase level.
(E) Efficacy of screening for Down syndrome is improved by adding estriol, inhibin A, and hCG concentration to the MSAFP (quadruple screen).

3. A patient is measuring size larger than dates at her initial obstetric visit at 24 weeks' EGA. She is worried about twins since they "run" in the family. The best method to safely and reliably diagnose twins is by which of the following?
(A) ultrasonography
(B) Leopold's maneuvers
(C) auscultation
(D) X-rays
(E) computed tomography (CT) scan

4. There is good evidence that a woman who gave birth to an infant with a neural tube defect (NTD) can substantially reduce the risk of recurrence by taking periconceptional folic acid supplementation. What is the recommended dose?
(A) 0.4 mg
(B) 0.8 mg
(C) 1.0 mg
(D) 4 mg
(E) 8 mg

5. How many weeks after LMP is ultrasound most useful in evaluating fetal anatomy?
(A) between 2 and 4 weeks after LMP
(B) between 7 and 9 weeks after LMP
(C) between 12 and 14 weeks after LMP
(D) between 19 and 21 weeks after LMP
(E) between 30 and 32 weeks after LMP

Answer key

1	D

2	E
3	A
4	D
5	D

3. FORMATION OF PROFESSIONAL SKILLS (mastering skills, conducting curation, determining the treatment regimen, conducting a laboratory study, etc.).

3.1. Content of tasks (tasks, clinical situations, etc.).

Interactive task:

Students of the group are divided into 2 subgroups of 4-5 people each. They work in the classroom, women's outpatient clinic, labor & delivery ward, ward of pathology of pregnancy with pregnants.

Tasks:

– Subgroup I – to determine indications for prenatal genetic screening and counselling, to perform detailed counselling prior to embarking on any screening or diagnostic tests, to make clear for woman the potential outcomes of tests, the choices available to her, to explain how the outcome of the test would affect the decisions she made during her pregnancy.
– Subgroup II – to perform general and obstetric examination, assess the health status of the mother carrying twins, to asses results of clinical general and obstetrical examinations, lab tests in multiple pregnancy, to develop a plan of prenatal careand a plan of intrapartum management in multiple pregnancy, choose a time and a mode of delivery, to develop a plan of management of pregnants with polyhydramnios and oligohydramnios.

In 30 minutes the groups exchange tasks with each other. After next 30 min students assess and discuss results of their work.

Tests:

Direction: For each of the multiple-choice questions select the lettered answer that is the one best response in each case.

1. A 32-year-old woman has a twin pregnancy at 8 weeks' gestation. During her initial prenatal care visit, you review risks for multifetal pregnancies. Which of the following statements reflects the most frequent risks in twin pregnancies?

(A) Pregnancy-induced hypertension occurs at a higher rate than in singletons.

(B) Cesarean delivery is necessary in greater than 90% of twin deliveries.

(C) Shoulder dystocia occurs more in the aftercoming vertex twin, as compared to a singleton.

(D) Perinatal death rate is less than that of singletons.

(E) Congenital anomalies occur at the same rate as in singletons.

2. Which clinical scenario is most associated with metastatic gestational trophoblastic disease?

(A) after spontaneous abortion of a chromosomally abnormal embryo

(B) spontaneously during the childbearing years

(C) after hydatidiform mole

(D) after normal pregnancy

(E) after a second trimester pregnancy termination

3. Which of the following is the only class of hormones relevant to the embryogenesis of the external genitalia?

(A) androgens

(B) estrogens

(C) cortisol

(D) human chorionic gonadotropin (hCG)

(E) progesterone

4. When asked about the fetal safety of a category B drug when taken by a pregnant woman, you should respond that a drug in this category has which of the following?

(A) proven risks that outweigh its benefits

(B) fetal risk, but the benefits far outweigh the risks

(C) studies showing adverse effects in animals, but there are no human data

(D) animal studies showing no fetal risks, or if there are risks, they are not shown in well-controlled human studies

(E) no fetal risks and the medication is thus considered safe in pregnancy

5. When counseling a patient regarding fetal abnormalities during prenatal care, which of the following is the greatest advantage of chorionic villus sampling (CVS) over amniocentesis?

(A) the ability to provide results early

(B) the ability to perform enzyme studies

(C) a decreased fetal risk

(D) obtaining far superior cellular sample

(E) a lack of maternal cell contamination

Answer key

	A
	C
	A
	D
	A

Case

Ms G is an 18-year-old woman who had her first scan at 16 weeks' gestation. When the fetal abdomen was scanned, an irregular mass was seen to project from the anterior abdominal wall at the level of the umbilicus, to the right side of the umbilical cord insertion. Figure shows the herniated bowel (indicated by a white arrow) in the amniotic fluid. No other fetal abnormalities were noted.

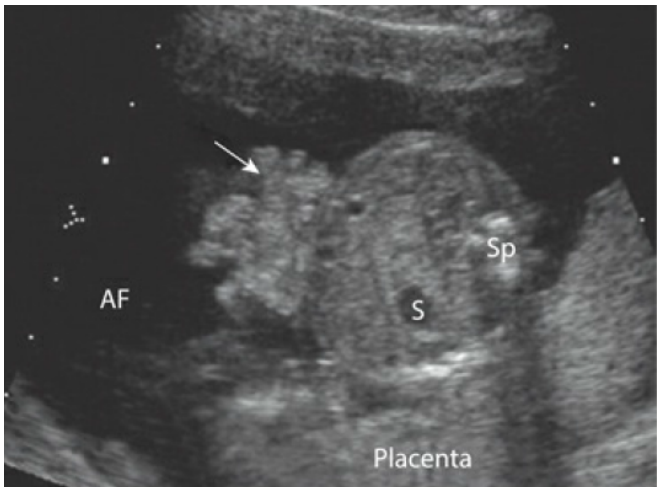


Figure 1. Ultrasound image of gastroschisis (arrow). AF, amniotic fluid; S, fetal stomach; Sp, fetal spine.

Questions:

A. How should this patient be managed?

B. What should the consultant tell her about the outlook for her baby?

C. What plans would you make for delivery?

Answers:

A. A prenatal diagnosis of a gastroschisis has been made on ultrasound scan. Ultrasound scan will detect at least 90% of all gastroschisis defects. Ms G should be seen by the consultant and the ultrasound findings explained to her. She requires referral to a tertiary unit for ongoing management and planning of delivery. Involvement of a multidisciplinary team would be important.

B. The consultant should stress that the majority of babies born with gastroschisis will do well in the long term and lead normal lives. Gastroschisis is not usually associated with any other physical problems or with learning problems (Table 5.3). It should be explained that the fetus will need to be monitored regularly during the pregnancy as fetuses with gastroschisis are often small and may have oligohydramnios. In later pregnancy, the fetal bowel may dilate, which can be associated with bowel ischaemia and bowel atresia. This can make the postnatal surgery more difficult. Following delivery, the baby would require an operation to repair the defect. Surgical repair ranges from reduction of bowel and suturing of defect under anaesthetic, to the need for a silo. This is a covering placed over the abdominal organs on the outside of the baby. Gradually, the organs are squeezed by hand through the silo into the opening and returned to the body. This method can take up to a week to return the abdominal organs to the body cavity. Severe cases may require bowel resection for atresias or volvulus. Survival rates of up to 97% are found for simple cases and the majority of babies are on full oral feeds by 4 weeks of age. For more complex severe cases there is a lower rate of survival with longer hospitalization. Ms G should be given the opportunity to meet the paediatric surgeons during the pregnancy and visit the paediatric surgical unit. After delivery, she should be encouraged to express breast milk to feed to her baby.

C. Induction around 37 weeks' gestation enables delivery to be planned in a unit with appropriate paediatric surgical facilities, and may reduce the incidence of stillbirth late in pregnancy. There does not appear to be any benefit from delivery by caesarean section for babies with gastroschisis. If other organs such as the liver are also herniated, caesarean delivery may be indicated. If a woman has a normal delivery it makes it easier for her to visit her baby on the paediatric surgical unit in the first few days after birth.

3.2. Educational materials, recommendations (instructions) for performing tasks

PRENATAL GENETIC COUNSELING

Nearly 3% of newborns have major congenital anomaly. Usually genetic factors
are responsible. Chromosomal abnormalities are observed in majority of all first trimester miscarriages and about 5% of all stillborns. The different etiologic factors for fetal malformations are:

1. Chromosomal abnormalities (numeric or structural)
2. Single gene disorders (cystic fibrosis) - 1%
3. Polygenic or multifactorial disorders
4. Teratogenic disorders due to exposure of exogenous factors (drugs).

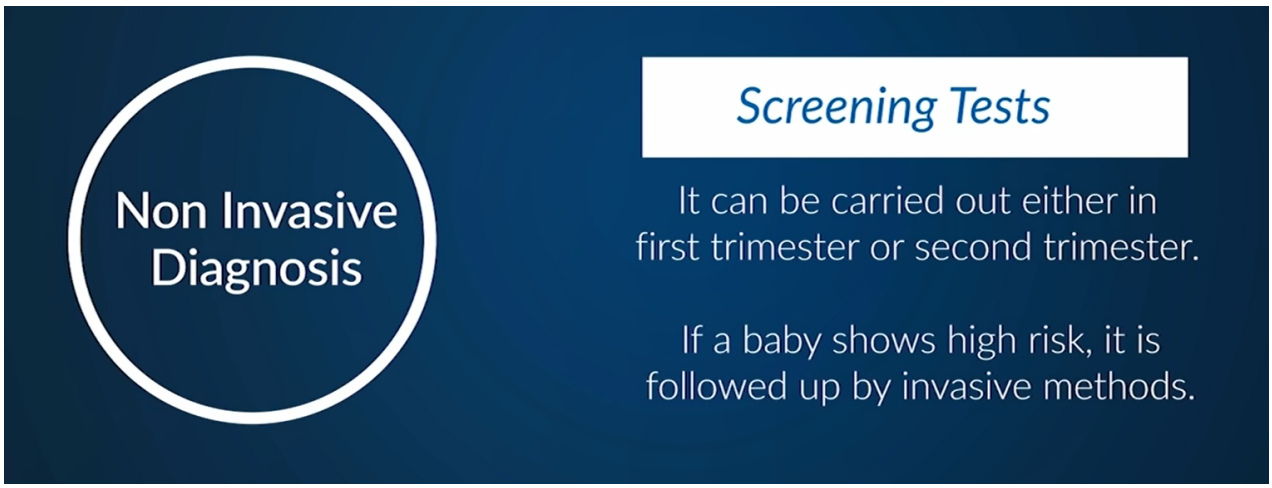
Prenatal genetic counseling, screening and diagnosis are done to evaluate a fetus with risk of chromosomal, genetic abnormality or a structural anomaly. Couple is communicated with the basic knowledge of genetic abnormalities. Different possible causes are discussed. Written information (leaflets) may be handed over as that allows the couple for discussion among themselves. Couples are encouraged to ask questions. Women's or couples' risk assessment for having a baby with increased risk of genetic disease should be done based on the ethnicity, race, personal (age, drug history) or family history. In cases where the risk is high, couple needs additional counseling by a genetic counselor.

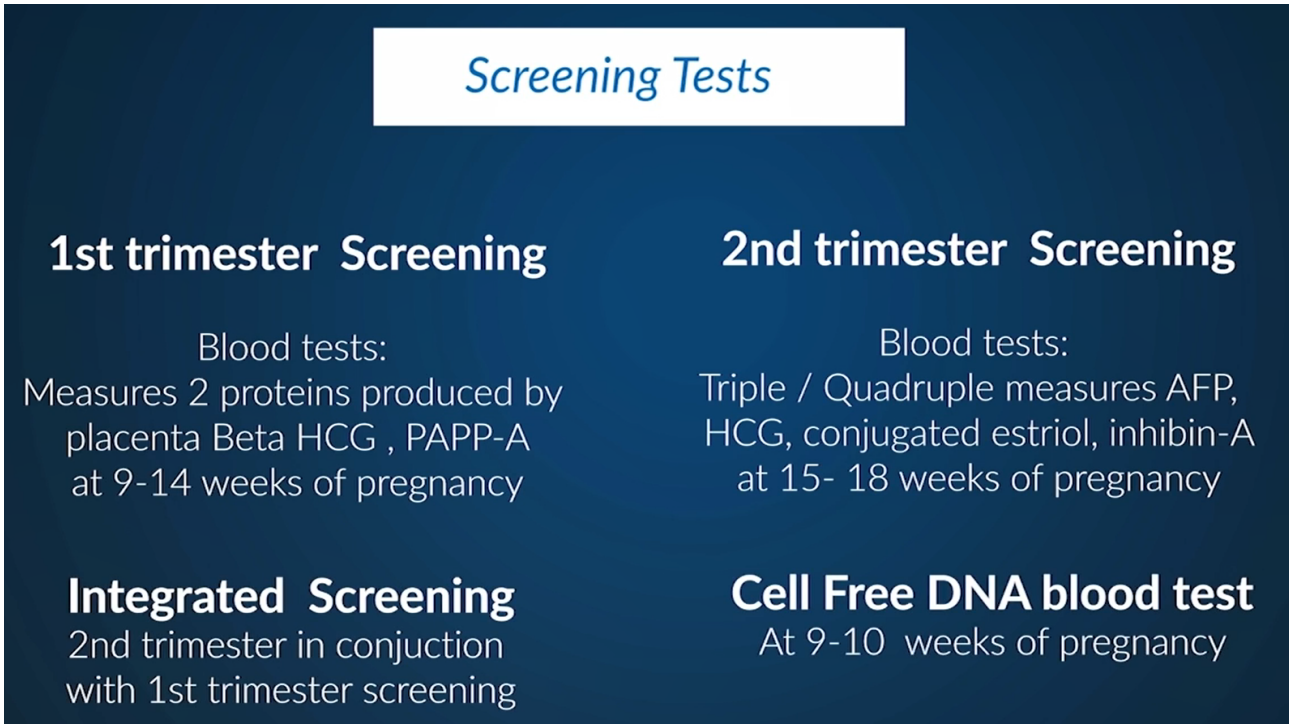
Noninvasive prenatal screening for aneuploidy or neural tube defects is offered to all women regardless of age.

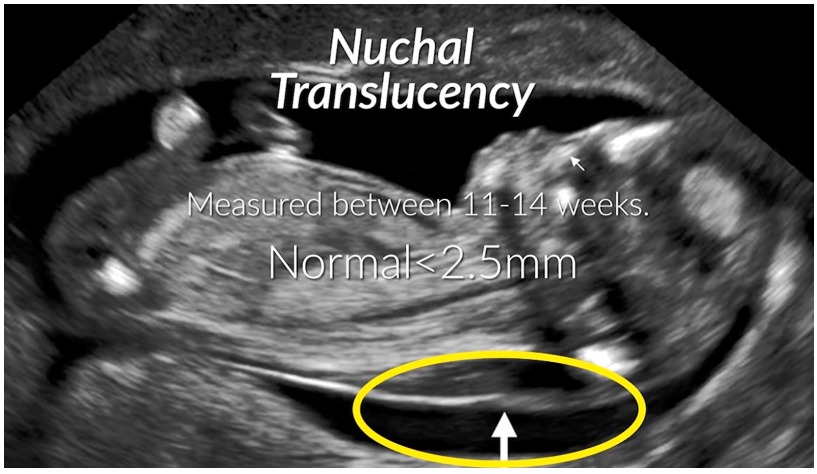
Indications for prenatal genetic counselling

Maternal Risk Factors	Prenatal Risk Factors
■ Maternal age > 35 years	■ Oligohydramnios (see p. 250)
■ Family history of neural tube defects	■ Polyhydramnios (see p. 250)
■ Previous baby born with neural tube defect	■ Severe symmetrical fetal growth restriction (see p. 534)
■ Previous child with chromosomal anomaly	■ Abnormal ultrasound findings (structural anomalies)
■ One or both parents—carriers of sex-linked or autosomal traits	■ Uncontrolled diabetes mellitus in the periconceptional period (see p. 325)
■ One parent is known to carry a balanced translocation	■ Contact with infection (teratogenic), e.g. rubella, cytomegalovirus (see p. 348) or intake of teratogenic drugs (see p. 587)
■ History of recurrent miscarriage	■ Presence of soft tissue markers of chromosomal anomaly on ultrasonography (see p. 735)
	■ Abnormal maternal serum screening (see p. 128)

Prenatal genetic screening







Prenatal genetic testing

Table 12.2: Prenatal Diagnosis: CVS, Amniocentesis and Cordocentesis			
	Chorionic Villus Sampling	**Amniocentesis**	**Cordocentesis**
Time	Transcervical 10–13 weeks, Transabdominal 10 weeks to term	After 15 weeks (early 12–14 weeks)	18–20 weeks
Materials for study	Trophoblast cells	• Fetal fibroblasts • Fluid for biochemical study (see p. 741)	• Fetal white blood cells (others—infection and biochemical study)
Karyotype result	• Direct preparation: 24–48 hours. • Culture: 10–14 days	• Culture: 3–4 weeks	• Culture: 24–48 hours
Fetal loss	0.5–1%	0.5%	1–2%
Accuracy	Accurate; may need amniocentesis for confirmation	Highly accurate	Highly accurate
Termination of pregnancy when indicated	1st trimester—safe	2nd trimester—risky	2nd trimester–risky
Maternal effects following termination of pregnancy	Very little	More traumatic; physically and psychologically	Same as amniocentesis

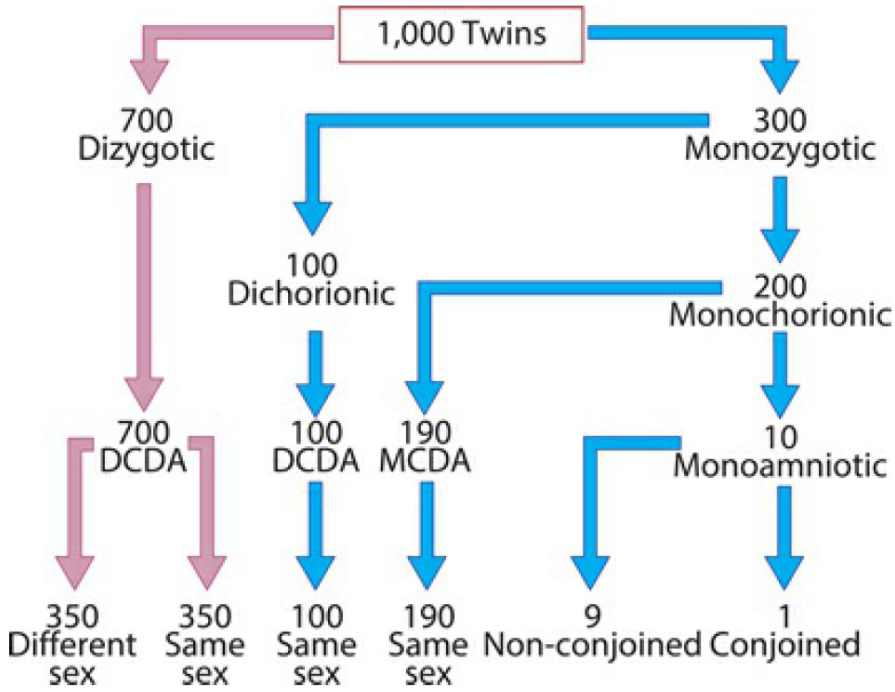
KEY LEARNING POINTS

– Approximately 3% of live-born infants have a major birth defect. Majority (80%) of fetal deaths occur antenatally.
– Birth defect may be - (a) *Chromosomal*: numerical or structural, (b) *Single gene disorder,* (c) *Polygenic or multifactorial,* or (d) *Teratogenic disorder* (drugs). About half of chromosomal abnormalities are due to autosomal trisomy and remaining half is due to sex chromosomal abnormalities.
– Screening for prenatal diagnosis should be offered to all pregnancies. *MSAFP estimation is* done between 15–18 weeks. Value of 2.5 MOM adjusted with maternal age is taken as cut-o" point. Elevated level can detect 85% of all open NTDs.
– Triple test (MSAFP, hCG, uE3) is used for detection of Down's syndrome. It is done between 15 weeks and 18 weeks.
– First trimester screening with biochemical analytes PAPP-A and hCG and USG measurement of NT can improve detection rate (87%) of Down's syndrome. For confirmation, prenatal genetic study (CVS, amniocentesis or cordocentesis) has to be performed.
– Second trimester screening (quad screening) at 15–18 weeks: MSAFP, uE3, inhibin A and hCG can detect trisomy 21 in 85% of cases with a false-positive rate of 0.9%.
– Screen positive women are offered fetal karyotyping for confirmation. Fetal tissues are obtained from CVS, amniocentesis or cordocentesis. All these are invasive procedures.
– Invasive procedures carry risks. CVS is comparable to amniocentesis in terms of fetal loss rate and diagnostic accuracy. To avoid the problems of LRD, CVS should be done after 9 completed weeks. The complications of cordocentesis appear to be 1–2%.
– Single gene disorders can be detected by enzymatic analysis and or by molecular genetics. Direct analysis is done when gene sequence is known otherwise linkage analysis is done.

– PGD can be done by removing a single cell from the embryo. Molecular genetics including FISH can detect genetic or chromosomal disorder accurately and safely. Currently implantation rate is only 20–30% in most IVF centers. After genetic screening, implantation rate increases by 50%.
– Cell-free fetal DNA can be obtained from maternal plasma and whole blood and is a reliable source for prenatal diagnosis. It is a noninvasive procedure. Fetal aneuploidy (trisomy 21) and single gene disorders can be diagnosed.
– Intact fetal cells have also been recovered from maternal circulation. Genetic and chromosomal disorders are detected from a fetal cell using DNA probes and FISH or comparative genomic hybridization (CGH) and chromosomal microarrays.

MULTIPLE PREGNANCY

Multiple pregnancy may be classified according to:
– Number of fetuses: twins, triplets, quadruplets, etc.
– Number of fertilized eggs: zygosity.
– Number of placentae: chorionicity.
– Number of amniotic cavities: amnionicity.

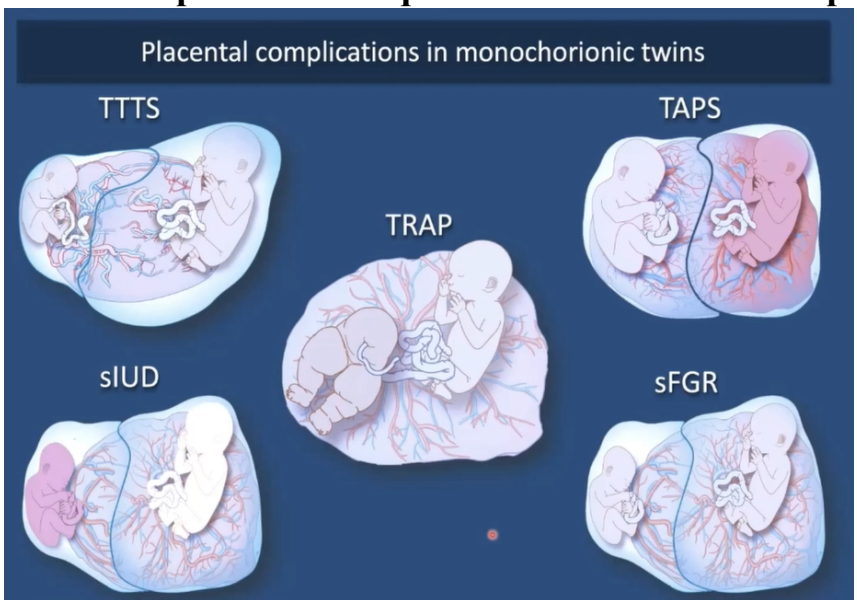


Incidence of monozygotic and dizygotic twin pregnancies. DCDA, dichorionic diamniotic; MCDA, monochorionic diamniotic.

Complications of multiple pregnancy

Maternal	Fetal
■ Nausea, Vomiting ■ Anemia ■ PIH and Preeclampsia ■ Polyhydramnios/ oligohydramios ■ Preterm Labor ■ Malpresentation ■ Antepartum hemorrhage ■ Mechanical distress (dyspnea, palpitation) ■ Prolonged labor ■ Operative interference ■ Postpartum hemorrhage ■ (↑) Postnatal support	■ Abortion ■ Vanishing twin/fetus papyraceous ■ Appearing twin ■ Preterm birth ■ Fetal anomalies ■ Discordant growth ■ Intrauterine death of one fetus ■ Twin transfusion syndrome ■ Cord prolapse ■ Locked twins ■ (↑) Perinatal mortality (complications are more in monozygotic twins, p. 240)

Complications unique to monochorionic twin pregnancies



Care of women with a multiple pregnancy

According to the National Institute for Health and Care Excellence (NICE) guidelines, treatment and care should take into account a woman's needs and preferences.

Due to an increased risk of pregnancy complications, women with multiple pregnancies that involve a shared amnion should be offered individualized care in a tertiary level fetal medicine.

Women with multiple pregnancies should be cared for by a multidisciplinary team consisting of a core team of named specialist obstetricians, specialist midwives and ultrasonographers.

Regular ultrasound assessment is used to date the pregnancy, perform first trimester screening and to monitor growth. Abdominal palpation or symphysis–fundal height (SFH) measurements should not be used to predict FGR.

There is no benefit in using untargeted administration of corticosteroids.

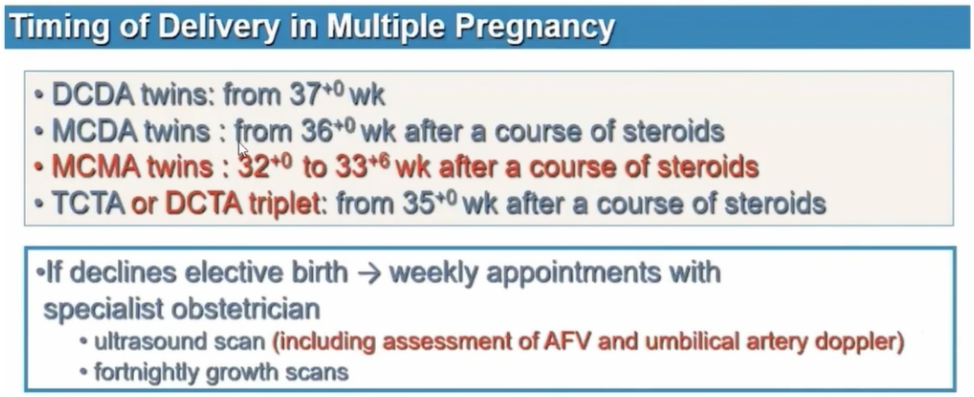
Gestation and mode of delivery depends on the type of multiple pregnancy.

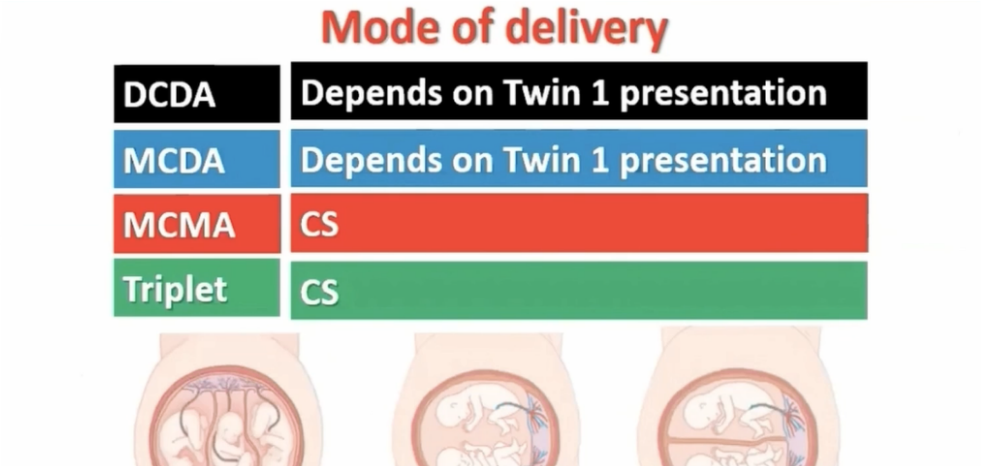
Women with multiple pregnancies should receive the same advice about diet, lifestyle and nutritional supplements as in routine antenatal care.

Women with multiple pregnancies are at higher risk of anaemia compared with singleton pregnancies and a full blood count should be checked at 20 and 28 weeks' gestation and supplementation with iron, folic acid or vitamin B12 initiated.

Intrapartum management

- General management of a patient with twin pregnancy in labour involves:
- Antenatal education and a preagreed birth plan.
- Continuous fetal heart monitoring.
- Two neonatal resuscitation trolleys, two obstetricians and two paediatricians are available and that the special care baby unit and anaesthetist are informed well in advance of the delivery.
- Analgesia, ideally in the form of an early epidural, to allow for internal podalic version (if needed) for twin 2.
- A standard oxytocin solution for augmentation should be prepared, run through an intravenous giving-set and clearly labelled 'for augmentation', for use for delivery of the second twin.
- Oxytocin infusion in anticipation of postpartum haemorrhage.
- Portable ultrasound.





KEY LEARNING POINTS

– Multiple pregnancy rates continue to increase worldwide.
– Multiple pregnancies are associated with increased incidence of almost every pregnancy complication, with the exception of macrosomia and postdates pregnancy.
– Preterm birth, growth restriction and stillbirth are key causes of the raised fetal morbidity and mortality associated with multiple pregnancies.
– Maternal morbidity and mortality are also increased in multiple pregnancies.
– Early ultrasound assessment is key in the management of multiple pregnancy as it can correctly classify the type of pregnancy according to chorionicity and amnionicity, allowing risk to be stratified.
– Ultrasonography in multiple pregnancy is very informative. Antenatal fetal surveillance is done by serial sonography at every 3–4 weeks interval or even earlier when needed. Sonography is useful in the intrapartum period and for selective fetal reduction and termination.
– Twin pregnancy needs special care in the antenatal period (maternal nutrition) and hospital admission and supplement therapy.
– Routine hospital admission for bed rest is not essential. To prevent preterm delivery prophylactic tocolytics, cervical cerclage or progesterone supplementation is not recommended.
– Mode of delivery in twins depends on fetal presentation, estimated fetal weight and gestational age.
– Vaginal delivery (trial of labor) following spontaneous onset of labor is often allowed when both the fetuses are in vertex (50%) and also when the first twin is vertex (40%). Cesarean delivery is decided when the first twin is nonvertex or when there is any obstetric indication.
– Management of third stage of labor should be very prompt and active following delivery of the second twin. Atonic PPH is a major postpartum complication in multiple pregnancy.

3.3. Requirements for the results of work.

− To determine indications for prenatal genetic screening and counselling,
− to perform detailed counselling prior to embarking on any screening or diagnostic tests,

- to understand and make clear for woman the potential outcomes of tests, the choices available to her, be able to explain how the outcome of the test would affect the decisions she made during her pregnancy,
- if a fetal abnormality is diagnosed antenatally, provide the woman with the best information about the likely outcome for her baby, facilitate her decision,
- to provide appropriate support at a difficult time,
- to take a medical history (general and specific, such as menstrual, obstetrics) and record information in a standardized proforma (antenatal record book),
- to perform general and obstetric examination, assess the health status of the mother carrying twins,
- to asses results of clinical general and obstetrical examinations, lab tests in multiple pregnancy,
- to develop a plan of prenatal care in multiple pregnancy,
- to develop a plan of intrapartum management in multiple pregnancy, choose a time and a mode of delivery,
- to develop a plan of management of pregnants with polyhydramnios and oligohydramnios.

3.4. Control materials for the final stage of the class: tasks, tests, etc.

Tests

1. Which of the following is the most common chromosomal abnormality found in tissue from first trimester spontaneous abortions?

(A) autosomal trisomy

(B) sex-chromosome monosomy

(C) sex-chromosome polysomy

(D) triploidy

(E) tetraploidy

2. You are seeing a 21-year-old with G1, P0, abortion 1. Her last pregnancy was terminated at 17 weeks' gestation for anencephaly. She would like to try to get pregnant again. She asks you if there is anything in particular that you would recommend in this pregnancy. Which of the following should you suggest?

(A) begin folic acid 4 mg daily

(B) ultrasounds beginning at 10 weeks with a vaginal scan because anencephaly may be detected at that point

(C) 1 mg folic acid

(D) first-trimester screening for nuchal thickness and blood acolytes—beta-subunit of hCG, inhibin, and Pap A

(E) alpha-fetoprotein screening at 15 weeks' gestation with Level II ultrasound at 18 weeks

3. After a normal labor and delivery of monozygotic twins at 35 weeks of gestation, one is found to be polycythemic, and the other small and markedly anemic. What is the most likely etiology of this phenomenon?

(A) acute fetal bleeding
(B) fetal cardiac failure
(C) inadequate maternal iron intake
(D) placental anastomosis
(E) Rh incompatibility

4. A male infant is delivered with very little amniotic fluid. He is noted to have low-set ears, contractures of the extremities, and prominent epicanthal folds. He does not void and dies during the first day of life. What is the most likely diagnosis?

(A) glycogen storage disease
(B) renal agenesis
(C) talipes equinovarus
(D) anencephalus
(E) trisomy 18

5. Fetal anencephaly is commonly associated with which of the following?

(A) pituitary hyperplasia
(B) oligohydramnios
(C) bradycardia
(D) adrenal hypertrophy
(E) postterm labor

6. A patient who is a practicing veterinarian is concerned about contracting toxoplasmosis from her feline patients. In counseling the patient, what do you note as the most common sequela of a fetal toxoplasmosis infection?

(A) phocomelia
(B) anencephaly
(C) mental retardation
(D) ambiguous genitalia
(E) respiratory distress in the first 24 hours of life

7. While counseling a mother on the risks of a child having a trisomy 21 after second-trimester screening, you note that the general background incidence of significant fetal malformations (birth defects) is approximately which of the following?

(A) <1%
(B) 3–5%
(C) 7–9%
(D) 10–13%
(E) 14–18%

8. Widespread use of thalidomide in Europe in the mid-1980s was clearly associated with birth defects. As thalidomide has been reapproved by the FDA for certain indications, it is important that all women in the reproductive age who are prescribed this medication or whose partner is taking thalidomide use very effective contraception. This is because when used in the first trimester, thalidomide is associated with phocomelia, which is defined as a defect in the development of which of the following?

(A) color vision
(B) the digits
(C) the long bones
(D) the great vessels
(E) the cytochrome P450 system

9. A child is born with genital ambiguity. The genital folds (scrotum and labia minora) are adherent in the midline, and there is severe hypospadias. The parents ask you about the gender of their child. Your best response, based on the information given, should be which of the following?

(A) The child has female pseudohermaphroditism and should be raised as female.
(B) The diagnosis is most likely testicular feminization and the child should be raised as a male.
(C) This is called an incomplete scrotal raphe and the child should be raised as a male.
(D) It is likely the child has vaginal atresia but should be raised as a female
(E) While the sex of rearing will most likely be female, assignment must await further investigation.

10. A patient who reports episodes of binge drinking in the first trimester wants evaluation of the fetus for fetal alcohol syndrome so she might terminate the pregnancy if it is affected. You inform her that antenatal testing is unable to detect the physical manifestations of fetal alcohol syndrome and it is associated with which of the following?

(A) fetal hypospadias
(B) postmaturity
(C) midfacial hypoplasia
(D) macrosomia
(E) congenital cataracts

11. A 16-year-old G1P0 patient presents at 24 weeks' estimated gestational age (EGA) with a recent onset of a rash. It is determined to be rubella. You reassure her

that an in utero infection with rubella virus is unlikely to result in congenital rubella syndrome when it occurs after how many weeks of pregnancy?

(A) 9 weeks
(B) 11 weeks
(C) 13 weeks
(D) 15 weeks
(E) 17 weeks

12. Which of the following neonatal findings would suggest congenital rubella syndrome rather than a congenital cytomegalovirus infection?

(A) thrombocytopenia
(B) hepatosplenomegaly
(C) fetal growth restriction
(D) cataracts
(E) hemolytic anemia

13. Regarding drug and alcohol use in pregnancy, which of the following statements is TRUE?

(A) Alcohol abusers seldom abuse a second drug.
(B) The main side effect of alcohol use during pregnancy is related to postmaturity secondary to alcohol's ability to forestall labor.
(C) Fetal alcohol syndrome is associated with impaired mental performance and midfacial hypoplasia in the offspring.
(D) A well-defined "cocaine syndrome" in pregnancy has been described.
(E) All of the above

14. Hydramnios is characterized by which of the following?

(A) amniotic fluid volumes greater than 2,000 cc
(B) negligible increase in perinatal morbidity
(C) a lack of symptoms, depending on rapidity of onset
(D) marked increase in intrauterine pressure
(E) an increase in endometritis

Answer key

1.	A	8.	C
2.	A	9.	E
3.	D	10.	C
4.	B	11.	E
5.	E	12.	D

6.	C	13.	C
7.	B	14.	A

Case 1

Ms B is 38 weeks gestation in her second pregnancy. This is a dichorionic diamniotic pregnancy that has been uncomplicated to date. Ms B presents contracting every 5 minutes. Twin 1 (the presenting twin) is cephalic and twin 2 is cephalic. Her first pregnancy was a term delivery, delivered 11 months previously as a spontaneous vaginal delivery. On examination Ms B is 6 cm dilated and both fetal heart recordings are reassuring. An epidural has just been inserted and is providing good analgesia.

Question A. What would you do next?

Ms B waters rupture and she proceeds to have a spontaneous vaginal delivery. On delivering twin 1, the abdomen is palpated and ultrasound confirms that twin 2 is cephalic. The fetal heart rate remains reassuring.

Question B. How would you proceed?

After 25 minutes of reassuring heart monitoring Ms B is contracting once every 10 minutes. Fetal heart monitoring remains reassuring.

Question C. How would you proceed?

The membranes surrounding twin 2 rupture. Vaginal examination reveals that Ms B remains fully dilated. However, twin 2 is now transverse with its back upwards. The fetal heart tracing shows prolonged fetal decelerations.

Question D. How would you proceed?

ANSWER

A. There is no indication to intervene in this situation. Ms B has labored spontaneously and is progressing quickly. Fetal heart rate is reassuring. Allow labour to progress naturally. Continue fetal monitoring.

B. Again, there is no indication to intervene. Ms B has successfully delivered twin 1. Waiting allows the head of twin 2 to descend, which will increase the likelihood of a spontaneous vaginal delivery.

C. There are now two options. First would be to perform an amniotomy to rupture the membranes of twin 2, which will likely increase the frequency of contractions, allowing twin 2 to be delivered. The second option would be to start oxytocin infusion to try to increase the frequency of contractions and allow delivery of twin 2 to proceed. As the membranes are intact one must be cautious with the use of oxytocin, therefore the ideal option is to perform a vaginal examination and, when a contraction occurs (which will push the fetal head into the pelvis), perform artificial rupture of the membranes. Oxytocin may be used at this stage to augment contractions.

D. This is now an obstetric emergency. Ensure senior obstetric help is present. There are two options on how to manage this situation. The first is to perform internal podalic version as described above by performing vaginal examination; follow the fetal spine towards the legs and on palpating a foot apply gentle traction to the foot to encourage delivery of the fetus by breech extraction. The second option is to transfer the mother to the operating theatre and perform a category 1 caesarean section. As

Ms B is multiparous, internal podalic version and breech extraction would be the quickest way to deliver twin B and ensure a quick recovery for Ms B. External cephalic version would be a third option, but in the presence of a non-reassuring fetal heart rate this would be contraindicated.

Case 2

A 36-year-old G2P1001 woman presents as a transfer of care at 10 weeks' gestation. She was previously receiving care with another obstetrician until her insurance changed. She has no significant medical or family history. Her last pregnancy 4 years ago ended in a term delivery of a healthy female infant. She is aware of the increased likelihood of fetal chromosome disorders associated with maternal age over 35. She was advised by her previous doctor to undergo amniocentesis later in pregnancy. She is uneasy about waiting until after 16 weeks to get any information on the fetal chromosome status. Conversely, she is also uneasy about putting this pregnancy at risk by undergoing an invasive prenatal diagnostic procedure.

Questions:

1. What first-trimester screening/testing options does this patient have to address her risk for fetal aneuploidy?
2. Would your recommendations for screening versus testing be any different if she was 26 years old instead of 36 years old?

ANSWER

1. First-trimester screening/testing options to address risk for fetal aneuploidy: This patient has the option of aneuploidy screening with serum biochemical markers in combination with nuchal translucency or invasive testing with chorionic villus sampling (CVS) if available.

2. Recommendations for screening versus testing if patient was 26 years old instead of 36 years old: Obviously the difference for these two patients would be the a priori risk for fetal chromosome abnormalities each of these patients has. If patients truly understand the nuances and limitations of screening versus testing, there should be no important differences in the type of counseling each of these age groups should receive. All patients should be offered invasive testing for prenatal diagnosis of fetal chromosome abnormalities, and all patients should be offered noninvasive screening, if they choose to do so, before deciding about invasive testing.

4. SUMMING UP

Assessment of the ongoing learning activity at the practical class:

1. Assessment of the theoretical knowledge on the theme:
   - methods: individual survey on the theme, participation of the students in the discussion of problem situations; assessment of performance of tests on the theme;
   - the maximum score – 5, the minimum score – 3, the unsatisfactory score – 2.
2. Assessment of practical skills on the theme:
   - methods: assessment of the solution of situational tasks (including calculation) on the theme;

- the maximum score – 5, the minimum score – 3, the unsatisfactory score – 2.

Assessment of the individual task:

1. Assessment of the quality of the performance of the individual task:
   - the maximum score – 5, the minimum score – 3, the unsatisfactory score – 2.
2. Assessment of the presentation and defense of an individual task, participation in the assessment of the business plan of the competitors and its critical analysis:
   - the maximum score – 5, the minimum score – 3, the unsatisfactory score – 2.

The score for one practical class is the arithmetic average of all components and can only have an integer value (5, 4, 3, 2), which is rounded statistically.

Criteria for ongoing assessment at the practical class:

Criteria for current assessment on the practical lesson:

5	The student is fluent in the material, takes an active part in the discussion and solution of situational clinical problems, confidently demonstrates practical skills during the examination of a pregnant and interpretation of clinical, laboratory and instrumental studies, expresses his opinion on the topic, demonstrates clinical thinking.
4	The student is well versed in the material, participates in the discussion and solution of situational clinical problems, demonstrates practical skills during the examination of a pregnant and interpretation of clinical, laboratory and instrumental studies with some errors, expresses his opinion on the topic, demonstrates clinical thinking.
3	The student isn’t well versed in material, insecurely participates in the discussion and solution of a situational clinical problem, demonstrates practical skills during the examination of a pregnant and interpretation of clinical, laboratory and instrumental studies with significant errors.
2	The student isn’t versed in material at all, does not participate in the discussion and solution of the situational clinical problem, does not demonstrate practical skills during the examination of a pregnant and the interpretation of clinical, laboratory and instrumental studies.

RECOMMENDED LITERATURE

Basic:

1. Gladchuk I.Z. Obstetrics: student`s book / Gladchuk I.Z., Ancheva I.A. . – Vinnitsia: Nova Knyha, 2021. – 288 p.
2. Obstetrics and Gynecology: in 2 volumes. Volume 1. Obstetrics: textbook / V.I. Gryshchenko, M.O. Shcherbina, B.M. Ventskivskyi et al. (2nd edition). – «Medicina», 2018. – 392 p.
3. Hiralal Konar DC Dutta's Textbook of Obstetrics (9th Ed.) / Hiralal Konar (Ed.). – Jp Medical Ltd, 2018. – 700 p.
4. F. Gary Cunningham Williams Obstetrics (26th Edition) / F. Gary Cunningham, Kenneth Leveno, Jodi Dashe, Barbara Hoffman, Catherine Spong, Brian Casey. – McGraw Hill / Medical, 2022. – 1328 p.

5. Jeremy Oats, Suzanne Abraham Llewellyn-Jones Fundamentals of Obstetrics and Gynaecology (10th Ed) / Jeremy Oats, Suzanne Abraham. – Elsevier, 2016. – 384 p.

Additional:

1. The PROMPT-CIPP Editorial Team. (2019). PROMPT-CIPP Course Participant's Handbook: Care of the Critically Ill Pregnant or Postpartum Woman (Critical Car Prompt Practical Obstetric Multi-professional Training). – Cambridge University Press; 1st edition, 2019. – 136 p.
2. L. A. Magee The FIGO Textbook of Pregnancy Hypertension. An evidence-based guide to monitoring, prevention and management. / L. A. Magee, P. Dadelszen, W. Stones, M. Mathai (Eds). – The Global Library of Women's Medicine, 2016. – 456 p.
3. Edwin Chandraharan Handbook of CTG Interpretation: From Patterns to Physiology / Edwin Chandraharan. – Cambridge University Press; 1st edition, 2017. – 256 p.
4. Louise C. Kenny, Jenny E. Myers Obstetrics by Ten Teachers (20th ed) / Louise C. Kenny, Jenny E. Myers. – CRC Press, 2017. – 342 p.
5. J. Studd Current Progress in Obstetrics and Gynaecology. Vol 4. / J. Studd, Seang Lin Tan, F. Chervenak. – TreeLife Media (A Div of Kothari Medical), 2017. – 419 p.
6. J. Studd Current Progress in Obstetrics and Gynaecology. Vol 5. / J. Studd, Seang Lin Tan, F. Chervenak. – TreeLife Media (A Div of Kothari Medical), 2019. – 403 p.
7. J. Studd Current Progress in Obstetrics and Gynaecology. Vol 6. / J. Studd, Seang Lin Tan, F. Chervenak. – TreeLife Media (A Div of Kothari Medical), 2022. – 309 p.
8. Mark Landon Obstetrics: Normal and Problem Pregnancies, 8th Edition / Mark Landon, Henry Galan, Eric Jauniaux, Deborah Driscoll, Vincenzo Berghella, William Grobman, et al. – Elsevier, 2021. – 1280 pp.
9. Mark B. Landon Gabbe's Obstetrics Essentials: Normal & Problem Pregnancies, 1st Edition / Mark B. Landon, Deborah A. Driscoll, Eric R. M. Jauniaux, Henry L. Galan, William A. Grobman, Vincenzo Berghella. – Elsevier, 2019. – 496 pp.
10. Ian M. Symonds, Sabaratnam Arulkumaran Essential Obstetrics and Gynaecology, 6th Edition / Ian M. Symonds, Sabaratnam Arulkumaran. – Elsevier, 2020. – 480 pp.
11. Myra J. Wick Mayo Clinic Guide to a Healthy Pregnancy, 2nd Edition / Myra J. Wick. – Mayo Clinic Press, 2018. – 520 p.

INTERNET SOURCES:

- https://www.cochrane.org/
- https://www.ebcog.org/
- https://www.acog.org/

- https://www.uptodate.com
- https://online.lexi.com/
- https://www.ncbi.nlm.nih.gov/
- https://pubmed.ncbi.nlm.nih.gov/
- https://www.thelancet.com/
- https://www.rcog.org.uk/
- https://www.npwh.org/