

# Preterm Labor

Topic- based Uworld Questions

Block 1, 2, 7, 8



A 32-year-old primigravida comes to the hospital at 28 weeks gestation due to painful contractions that began 2 hours ago and are currently occurring every 5 minutes. The patient was last seen in the office a few days ago for routine prenatal care during which she reported symptoms of pelvic pressure. Examination at that time showed a closed cervix. The patient reports frequent fetal movement and no leakage of fluid or vaginal bleeding. Her temperature is 37 C (98.7 F), blood pressure is 125/60 mm Hg, and pulse is 80/min. A digital examination shows the cervix is 3 cm dilated and 90% effaced with a bulging bag. An ultrasound confirms vertex presentation. The fetal heart rate tracing is normal and the tocometer shows uterine contractions every 5 minutes. Betamethasone and indomethacin are administered. Which of the following is the most appropriate next step in management of this patient?

- A. Administer magnesium sulfate
- B. Administer nifedipine
- C. Administer progesterone
- D. Observe and reexamine the cervix in 2 hours
- E. Test for fetal fibronectin
- F. Use ultrasound to measure cervical length

**Submit**



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- A. Administer magnesium sulfate (43%)
- B. Administer nifedipine (9%)
- C. Administer progesterone (6%)
- D. Observe and reexamine the cervix in 2 hours (26%)
- E. Test for fetal fibronectin (10%)
- F. Use ultrasound to measure cervical length (3%)

Omitted  
Correct answer  
A

43%  
Answered correctly

01 sec  
Time Spent

07/01/2020  
Last Updated

Explanation

Preterm labor	
Gestational age (weeks)	Management
34 0/7 to 36 6/7	<ul style="list-style-type: none"><li>• ± Betamethasone</li><li>• Penicillin if GBS positive or unknown</li></ul>
32 0/7 to 33 6/7	<ul style="list-style-type: none"><li>• Betamethasone</li><li>• Tocolytics</li><li>• Penicillin if GBS positive or unknown</li></ul>
<32	<ul style="list-style-type: none"><li>• Betamethasone</li><li>• Tocolytics</li><li>• Magnesium sulfate</li><li>• Penicillin if GBS positive or unknown</li></ul>

GBS = group B *Streptococcus*.

**Preterm labor** refers to regular contractions at <37 weeks gestation that cause cervical dilation and/or effacement. Risk factors for preterm labor include multiple gestation, history of preterm delivery, and history of cervical surgery (eg, conization).

This patient's frequent contractions and cervical change at 28 weeks gestation are consistent with preterm labor. Patients in **preterm labor at <32 weeks** require:

- **Corticosteroids** (eg, betamethasone): decrease the risk of neonatal respiratory distress syndrome
- **Tocolytics**: at <32 weeks, indomethacin is the first-line tocolytic of choice
- **Magnesium sulfate**: provide **fetal neuroprotection** (eg, cerebral palsy)

(Choice B) Nifedipine, a calcium channel blocker, is a first-line tocolytic. This patient received indomethacin; another tocolytic agent is not indicated.

GBS = group B *Streptococcus*.

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- **Magnesium sulfate**: provide **fetal neuroprotection** (eg, cerebral palsy)

**(Choice B)** Nifedipine, a calcium channel blocker, is a first-line tocolytic. This patient received indomethacin; another tocolytic agent is not indicated.

**(Choice C)** Progesterone is administered to patients with a history of prior preterm delivery or a shortened cervix to prevent preterm delivery. Progesterone has no tocolytic properties and would not help this patient in preterm labor.

**(Choice D)** Because this patient can be diagnosed as being in labor by clinical presentation and is at 28 weeks gestation, management is focused on decreasing neonatal morbidity and mortality. If this patient were at >37 weeks gestation or if the diagnosis of labor were unclear, a repeat cervical examination in 2 hours would be appropriate.

**(Choices E and F)** A positive fetal fibronectin test and a shortened cervix as measured by transvaginal ultrasound are associated with an increased risk of preterm delivery. These tests are not needed as this patient can be diagnosed with preterm labor from her clinical presentation.

#### Educational objective:

Preterm labor refers to regular contractions causing cervical dilation and/or effacement at <37 weeks gestation. Patients in preterm labor at <32 weeks should receive a tocolytic agent plus corticosteroids (to reduce the risk of neonatal respiratory distress syndrome) as well as magnesium sulfate (for fetal neuroprotection).

#### References

- [Prediction and prevention of preterm birth](#)

A 26-year-old primigravid woman at 25 weeks gestation comes to the hospital due to preterm labor. For the last 6 hours, the patient has had intermittent, painful contractions but no vaginal bleeding or leakage of fluid. Blood pressure is 110/66 mm Hg and pulse is 90/min. BMI is 23 kg/m<sup>2</sup>. Cardiopulmonary examination is normal. The uterus is nontender. On sterile speculum examination, the cervix is visibly 2 cm dilated. Fetal heart rate monitoring shows a baseline of 150/min, no decelerations, no accelerations, and minimal variability. Contractions occur every 2-3 minutes on tocodynamometry. The patient is administered indomethacin for tocolysis. This intervention increases this patient's risk for which of the following obstetric complications?

- A. Gestational diabetes mellitus
- B. Intraamniotic infection
- C. Oligohydramnios
- D. Preeclampsia
- E. Pulmonary edema

**Submit**

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- A. Gestational diabetes mellitus (1%)
- B. Intraamniotic infection (20%)
- C. Oligohydramnios (37%)
- D. Preeclampsia (14%)
- E. Pulmonary edema (27%)

Omitted

Correct answer  
C37%  
Answered correctly01 sec  
Time Spent06/07/2020  
Last Updated

Explanation

This patient with frequent contractions causing cervical dilation at 25 weeks gestation is in **preterm labor**. Management of preterm labor depends on gestational age, with increased intervention required at earlier gestations due to the risks of neonatal prematurity. Patients at **<32 weeks gestation** in preterm labor require:

- **indomethacin** to inhibit contractions and delay delivery (ie, tocolysis).

This patient with frequent contractions causing cervical dilation at 25 weeks gestation is in **preterm labor**. Management of preterm labor depends on gestational age, with increased intervention required at earlier gestations due to the risks of neonatal prematurity. Patients at **<32 weeks gestation** in preterm labor require:

- **indomethacin** to inhibit contractions and delay delivery (ie, tocolysis).
- betamethasone to promote fetal lung maturity.
- magnesium sulfate to decrease the risk of cerebral palsy (ie, fetal neuroprotection).
- penicillin to decrease the risk of neonatal group B *Streptococcus* infection.

Although the benefits typically outweigh the risks, indomethacin tocolysis can have adverse fetal effects. Indomethacin, a nonspecific cyclooxygenase inhibitor, **decreases prostaglandin production** and leads to fetal vasoconstriction (eg, premature closure of the ductus arteriosus). The subsequent **decreased renal perfusion** and fetal oliguria can result in **oligohydramnios** (ie, amniotic fluid index  $\leq 5$  cm), particularly with prolonged administration; therefore, patients typically receive indomethacin for  $\leq 48$  hours. The oligohydramnios associated with indomethacin use is typically transient and resolves without intervention once the medication is discontinued.

**(Choice A)** Although betamethasone, a corticosteroid, may transiently increase maternal glucose levels, it does not increase the risk of gestational diabetes mellitus (GDM). Indomethacin does not increase the risk of GDM.

**(Choice B)** The risk of intraamniotic infection is increased in patients with preterm prelabor rupture of membranes, but indomethacin does not increase the risk.

**(Choice D)** Risk factors for preeclampsia include chronic hypertension, diabetes mellitus, and multiple gestation but not indomethacin use.

**(Choice E)** The most common cause of pulmonary edema in pregnancy is preeclampsia due to increased vascular permeability and hemodynamic dysfunction. Although indomethacin, like other nonsteroidal anti-inflammatory drugs, can lead to some degree of fluid retention, its use is not associated with pulmonary edema.

#### Educational objective:

Indomethacin tocolysis (ie, to inhibit contractions) is indicated in patients with preterm labor at <32 weeks gestation. Indomethacin tocolysis can cause oligohydramnios and premature closure of the fetal ductus arteriosus, although its benefits typically outweigh these risks.



A 36-year-old woman, gravida 3 para 2, at 29 weeks gestation comes to labor and delivery due to clear vaginal discharge. The patient has had increasing nonmalodorous discharge for the past 2 days with no associated vaginal bleeding or contractions. She has no vulvovaginal pruritus, dysuria, or hematuria. The patient has been treated multiple times during this pregnancy for symptomatic bacterial vaginosis but has had no other complications. She has no chronic medical conditions. Her prior pregnancies ended in term vaginal deliveries. She does not use tobacco, alcohol, or illicit drugs. Temperature is 36.7 C (98 F), blood pressure is 110/70 mm Hg, and pulse is 68/min. Fetal heart rate is 130/min. The uterus is nontender and has no palpable contractions. A speculum examination shows clear fluid in the posterior fornix that increases with Valsalva. Microscopy shows ferning and squamous epithelial cells with no stippling. Ultrasound shows a cephalic fetus, an anterior placenta, and minimal amniotic fluid with an amniotic fluid index of 3 cm. This patient is at increased risk for which of the following complications?

- A. Placenta accreta
- B. Placenta previa
- C. Placental abruption
- D. Uterine rupture
- E. Vasa previa

**Submit**

A 36-year-old woman, gravida 3 para 2, at 29 weeks gestation comes to labor and delivery due to clear vaginal discharge. The patient has had increasing nonmalodorous discharge for the past 2 days with no associated vaginal bleeding or contractions. She has no vulvovaginal pruritus, dysuria, or hematuria. The patient has been treated multiple times during this pregnancy for symptomatic bacterial vaginosis but has had no other complications. She has no chronic medical conditions. Her prior pregnancies ended in term vaginal deliveries. She does not use tobacco, alcohol, or illicit drugs. Temperature is 36.7 C (98 F), blood pressure is 110/70 mm Hg, and pulse is 68/min. Fetal heart rate is 130/min. The uterus is nontender and has no palpable contractions. A speculum examination shows clear fluid in the posterior fornix that increases with Valsalva. Microscopy shows ferning and squamous epithelial cells with no stippling. Ultrasound shows a cephalic fetus, an anterior placenta, and minimal amniotic fluid with an amniotic fluid index of 3 cm. This patient is at increased risk for which of the following complications?

- A. Placenta accreta (6%)
- B. Placenta previa (20%)
- C. Placental abruption (39%)
- D. Uterine rupture (5%)
- E. Vasa previa (28%)

Omitted

Correct answer

C



39%

Answered correctly



02 secs

Time Spent



04/29/2020

Last Updated

Explanation

**Preterm prelabor rupture of membranes (PPROM)**

Preterm prelabor rupture of membranes (PPROM)	
<b>Definition</b>	<ul style="list-style-type: none"> <li>• Membrane rupture at &lt;37 weeks prior to labor onset</li> </ul>
<b>Risk factors</b>	<ul style="list-style-type: none"> <li>• Prior PPROM</li> <li>• Genitourinary infection (eg, ASB, BV)</li> <li>• Antepartum bleeding</li> </ul>
<b>Diagnosis</b>	<ul style="list-style-type: none"> <li>• Vaginal pooling or fluid from cervix</li> <li>• Nitrazine-positive (blue) fluid</li> <li>• Ferning on microscopy</li> </ul>
<b>Management</b>	<ul style="list-style-type: none"> <li>• &lt;34 weeks (reassuring): latency antibiotics, corticosteroids</li> <li>• &lt;34 weeks (nonreassuring): delivery</li> <li>• ≥34 weeks: delivery</li> </ul>
<b>Complications</b>	<ul style="list-style-type: none"> <li>• Preterm labor</li> <li>• Intraamniotic infection</li> <li>• Placental abruption</li> <li>• Umbilical cord prolapse</li> </ul>

ASB = asymptomatic bacteriuria; BV = bacterial vaginosis; PPROM = preterm prelabor rupture of membranes.

This patient's vaginal pooling of nitrazine-positive fluid that causes **ferming** on microscopy is consistent with **preterm prelabor rupture of membranes (PPROM)**, or rupture of membranes at <37 weeks gestation before labor onset (eg, no contractions). Risk factors include PPROM in a prior pregnancy, antepartum bleeding, and genitourinary tract infections—particularly **bacterial vaginosis**.

Patients with PPROM are at risk for both **maternal and fetal complications**, which may require immediate delivery. A common complication is **placental abruption** (abruptio placentae), a premature separation of the placenta from the uterus. Placental abruption can occur because

This patient's vaginal pooling of nitrazine-positive fluid that causes **ferning** on microscopy is consistent with **preterm prelabor rupture of membranes (PPROM)**, or rupture of membranes at <37 weeks gestation before labor onset (eg, no contractions). Risk factors include PPRM in a prior pregnancy, antepartum bleeding, and genitourinary tract infections—particularly **bacterial vaginosis**.

Patients with PPRM are at risk for both **maternal and fetal complications**, which may require immediate delivery. A common complication is **placental abruption** (abruptio placentae), a premature separation of the placenta from the uterus. Placental abruption can occur because decreased amniotic fluid volumes (eg, amniotic fluid index <5 cm) lead to uterine decompression; this causes maternal decidual vessels to shear, resulting in bleeding and separation of the placenta from the uterus. As the abruption enlarges, patients are at risk for fetal hypoxia (and possible demise) or maternal hemorrhage (and possible disseminated intravascular coagulation).

Additional complications of PPRM include **intraamniotic infection, preterm labor, and umbilical cord prolapse**. Due to the risk of these complications, patients with PPRM require **inpatient management**.

**(Choices A, B, and E)** PPRM does not affect placental attachment (eg, placenta accreta) or location (eg, placenta previa) because both are established prior to rupture of membranes. The greatest risk factor for placenta accreta (villi attachment to the uterine myometrium) is prior uterine surgery (eg, cesarean delivery). Vasa previa, the overlying of aberrant fetal blood vessels over the cervix, develops during placental attachment; it is not a complication of PPRM. In addition, this patient's placenta is anterior, making these complications unlikely.

**(Choice D)** Uterine rupture occurs secondary to increased intrauterine pressure (eg, contractions, polyhydramnios), not due to decompression (as in PPRM). Risk factors for uterine rupture include labor after prior uterine surgery (eg, cesarean delivery) and acute trauma; neither applies to this patient.

#### Educational objective:

Preterm prelabor rupture of membranes, rupture of membranes <37 weeks gestation before the onset of labor, requires inpatient management due to the risk of placental abruption, intraamniotic infection, umbilical cord prolapse, and preterm labor.

#### References

- [ACOG practice bulletin no. 188 summary: prelabor rupture of membranes.](#)

### Exhibit Display

Amniotic fluid ferning



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A 40-year-old woman, gravida 3 para 2, at 33 weeks gestation comes to labor and delivery due to leakage of fluid. The patient has had intermittent leakage of clear vaginal fluid for the past few hours but no vaginal bleeding. She has had some irregular contractions for the past few weeks, but they are nonpainful. Fetal movement has been normal. The patient has type 2 diabetes mellitus and had polyhydramnios on her most recent fetal ultrasound. Temperature is 36.7 C (98 F), blood pressure is 120/70 mm Hg, and pulse is 70/min. BMI is 35 kg/m<sup>2</sup>. Fetal heart rate tracing shows a baseline of 140/min with moderate variability and multiple accelerations. Tocodynamometer reveals contractions every 15-18 minutes. The uterus is nontender. Speculum examination shows a closed cervix and clear fluid in the posterior fornix of the vagina. There is ferning on microscopy. A transabdominal ultrasound reveals a fetus in vertex presentation surrounded by minimal amniotic fluid; the deepest vertical pocket is 1 cm. Which of the following is the best next step in management of this patient?

- A. Amnioinfusion
- B. Magnesium sulfate
- C. Nifedipine tocolysis
- D. Prophylactic latency antibiotics
- E. Vaginal progesterone

**Submit**

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- A. Amnioinfusion (24%)
- B. Magnesium sulfate (11%)
- C. Nifedipine tocolysis (13%)
- D. Prophylactic latency antibiotics (47%)
- E. Vaginal progesterone (2%)

Omitted

Correct answer

D



47%

Answered correctly



02 secs

Time Spent

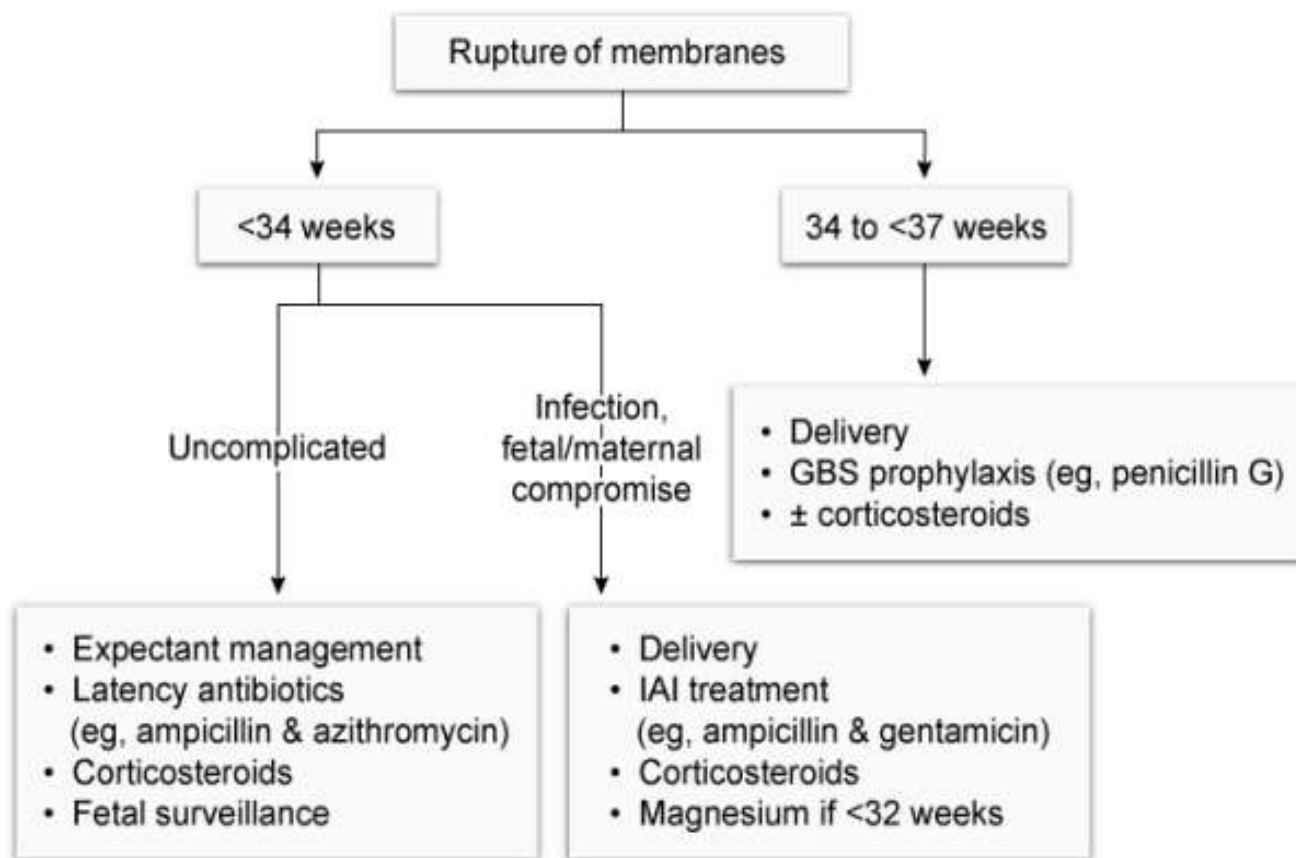


05/19/2020

Last Updated

Explanation

## Management of preterm prelabor ROM

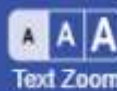


GBS = group B streptococcal; IAI = intra-amniotic infection; ROM = rupture of membranes.

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This patient's vaginal pooling of nitrazine-positive (ie, alkaline) amniotic fluid with ferning on microscopy is consistent with **preterm prelabor rupture of membranes (PPROM)**: rupture of membranes at <37 weeks gestation **prior** to the onset of labor (as in this patient who still has irregular contractions and a closed cervix). Risk factors include prior PPRM as well as conditions that overdistend or weaken the membranes, making them prone to rupture (eg, polyhydramnios, genitourinary infection, antepartum bleeding).





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Management of PPRM depends on gestational age and maternal-fetal status; benefits of further fetal development in utero (eg, fetal lung maturity) are balanced against risks for maternal complications (eg, intraamniotic infection). In the absence of complications, patients with PPRM at **<34 weeks gestation** require **inpatient expectant management** with:

- **Prophylactic latency antibiotics** to prevent fulminant intraamniotic infection, thereby increasing time between rupture and delivery (ie, "latency")
- **Corticosteroids** (eg, betamethasone) to decrease neonatal respiratory distress syndrome risk
- Fetal surveillance (eg, nonstress tests, fetal growth ultrasounds)

Patients with PPRM are typically delivered at 34 weeks gestation (when the risk of complications outweighs the neonatal benefit of continuing pregnancy); however, if complications develop (eg, placental abruption) then earlier delivery is indicated.

**(Choice A)** Amnioinfusion treats variable fetal heart rate decelerations in labor. It is not indicated in PPRM for oligohydramnios treatment (ie, replacing fluid volume lost from PPRM) because it does not improve fetal outcomes (eg, pulmonary hypoplasia).

**(Choices B and C)** Tocolysis (eg, nifedipine) temporarily halts contractions to delay delivery. Tocolysis is contraindicated in PPRM because contractions often indicate a complication (eg, intraamniotic infection, placental abruption) that requires delivery or intervention. Magnesium sulfate is given for fetal neuroprotection (ie, cerebral palsy risk reduction) for preterm deliveries at less than 32 weeks gestation. This patient is at 33 weeks gestation.

**(Choice E)** Vaginal progesterone decreases the risk of preterm delivery in patients with an incidental shortened cervix ( $\leq 25$  mm). It is not used in the management of PPRM.

#### Educational objective:

Uncomplicated preterm prelabor rupture of membranes at <34 weeks gestation is managed expectantly with prophylactic latency antibiotics, corticosteroids, and inpatient monitoring. Delivery is at 34 weeks gestation, as soon as complications develop (eg, intraamniotic infection).

- **Prophylactic latency antibiotics** to prevent fulminant intraamniotic infection, thereby increasing time between rupture and delivery (ie, "latency")
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Uncomplicated preterm prelabor rupture of membranes at  $< 34$  weeks gestation is managed expectantly with prophylactic latency antibiotics, corticosteroids, and inpatient monitoring. Delivery is at 34 weeks gestation or sooner if complications develop (eg, intraamniotic infection, placental abruption).

#### References

- [ACOG practice bulletin no. 188 summary: prelabor rupture of membranes](#)



Previous



Next



Full Screen



Tutorial



Lab Values



Notes



Calculator



Reverse Color



Text Zoom

A 23-year-old woman, gravida 2 para 1, at 30 weeks gestation comes to the emergency department after having a sudden gush of clear vaginal fluid. The patient continues to have leakage of clear fluid but no abdominal pain or vaginal bleeding. Fetal movement has been normal. The patient had intermittent vaginal bleeding during the first trimester but no other complications during this pregnancy. Her prior pregnancy ended in a term vaginal delivery. Temperature is 37.2 C (99 F), blood pressure is 110/70 mm Hg, and pulse is 82/min. The uterine fundus is nontender. Sterile speculum examination reveals a closed cervix and vaginal pooling of nitrazine-positive, clear fluid. Ultrasound reveals a fetus in the breech presentation and decreased amniotic fluid. Fetal heart rate tracing has a baseline of 130/min, moderate variability, and no decelerations. Tocometry shows no contractions. Which of the following is the best next step in management of this patient?

- A. 17-Hydroxyprogesterone
- B. Cerclage
- C. Cesarean delivery
- D. Corticosteroids
- E. External cephalic version
- F. Induction of labor

**Submit**

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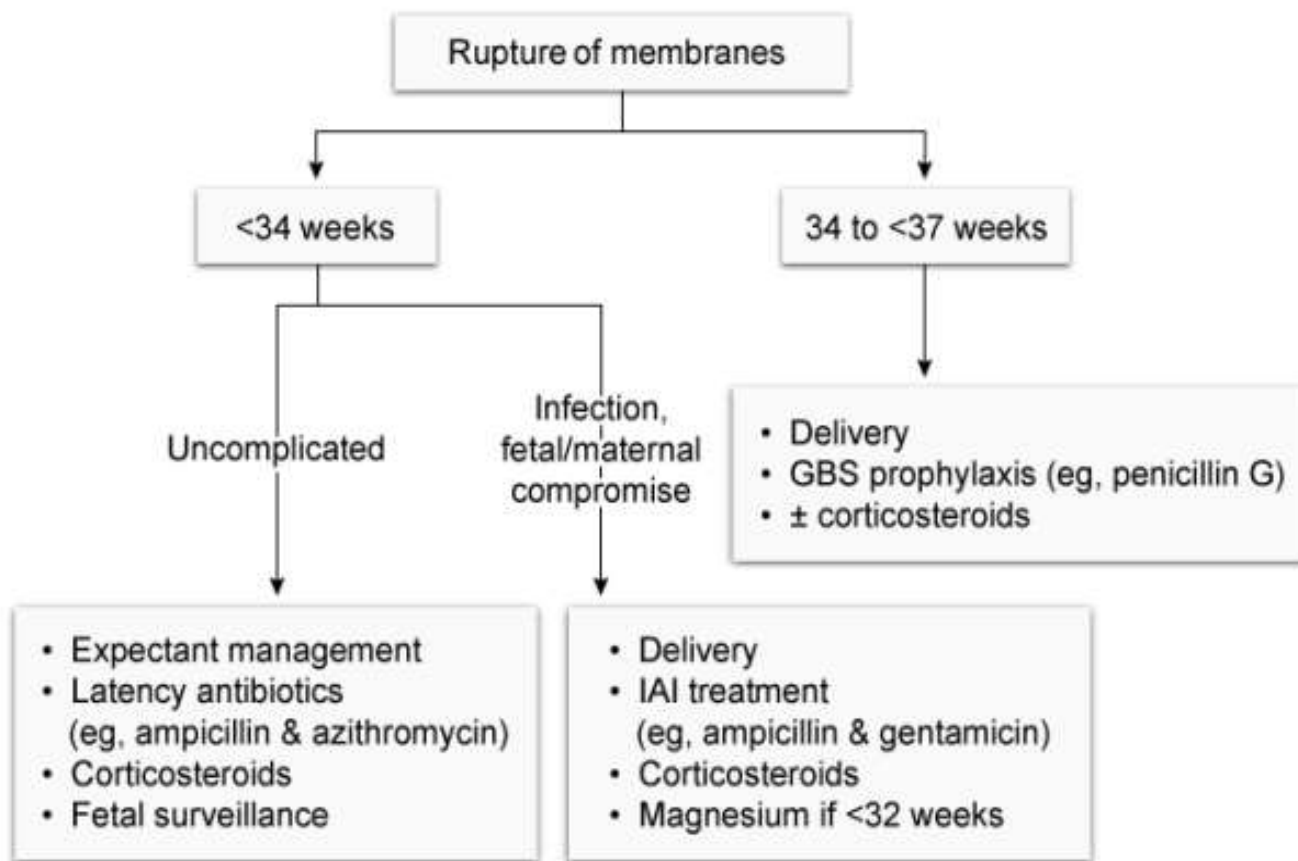
- A. 17-Hydroxyprogesterone (2%)
- B. Cerclage (2%)
- C. Cesarean delivery (9%)
- D. Corticosteroids (78%)
- E. External cephalic version (4%)
- F. Induction of labor (1%)

Omitted

Correct answer  
D78%  
Answered correctly01 sec  
Time Spent04/07/2020  
Last Updated

Explanation

## Management of preterm prelabor ROM



GBS = group B streptococcal; IAI = intra-amniotic infection; ROM = rupture of membranes.

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This patient at <37 weeks gestation with vaginal pooling of **nitrazine-positive fluid** and a closed cervix (ie, prior to labor onset) has **preterm prelabor rupture of membranes (PPROM)**. PPRM risk factors are similar to those for preterm delivery (eg, multiple gestation, prior preterm delivery) but also include a history of prior PPRM, genital tract infection (eg, bacterial vaginosis), and **antepartum bleeding** (as in this patient).

This patient at <37 weeks gestation with vaginal pooling of **nitrazine-positive fluid** and a closed cervix (ie, prior to labor onset) has **preterm prelabor rupture of membranes (PPROM)**. PPRM risk factors are similar to those for preterm delivery (eg, multiple gestation, prior preterm delivery) but also include a history of prior PPRM, genital tract infection (eg, bacterial vaginosis), and **antepartum bleeding** (as in this patient). Management is dependent on gestational age and fetal/maternal status because the risks of fetal prematurity are balanced against maternal complications (eg, intraamniotic infection, abruptio placentae).

Patients with **PPROM at <34 weeks gestation** are at high risk of prematurity-related fetal morbidity and mortality; therefore, expectant management is aimed at promoting in utero fetal development and consists of the following:

- Prophylactic **latency antibiotics**: PPRM is commonly due to a subclinical intraamniotic infection, and latency antibiotics prevent the infection from becoming fulminant, thereby increasing the time interval between membrane rupture and delivery (ie, prolong latency).
- Antenatal **corticosteroids** (eg, betamethasone): These are administered to promote fetal lung maturation (eg, pneumocyte development, surfactant release), thereby reducing neonatal morbidity and mortality.

Delivery is indicated if there are signs of intraamniotic infection (eg, fetal tachycardia, uterine tenderness), deteriorating fetal/maternal status, or at 34 weeks gestation (**Choices C and F**).

**(Choices A and B)** Cerclage and 17-hydroxyprogesterone are used in patients with a history of cervical insufficiency (eg, painless cervical dilation) or preterm labor to prevent PPRM and preterm birth. These interventions are not used in patients after PPRM has occurred.

**(Choice E)** External cephalic version (ECV) is typically performed at  $\geq 36$  weeks gestation to manually correct fetal malpresentation (eg, breech). Ruptured membranes, decreased amniotic fluid, and fetal prematurity are all relative contraindications to ECV due to lower success rates and higher risks of fetal injury.

#### Educational objective:

Patients who have uncomplicated preterm prelabor rupture of membranes at <34 weeks gestation are managed expectantly with antibiotics and corticosteroids to promote in utero fetal development. Delivery is indicated if there are signs of intraamniotic infection, deteriorating fetal/maternal status, or at 34 weeks gestation.

A 27-year-old woman, gravida 2 para 1, at 10 weeks gestation comes to the office for an initial prenatal visit. The patient has had no cramping or vaginal bleeding. She was not expecting this pregnancy because she had an uncomplicated term vaginal delivery 6 months ago and breastfed for the first 4 months postpartum. She is taking a daily prenatal vitamin and has no chronic medical conditions. Blood pressure is 126/80 mm Hg and pulse is 76/min. BMI is 24 kg/m<sup>2</sup>. The abdomen is soft, nontender, and nondistended. Pelvic ultrasound reveals a singleton intrauterine pregnancy at 10 weeks gestation with a fetal heart rate of 165/min. Hemoglobin is 10.4 g/dL. This patient is at increased risk for which of the following pregnancy-related complications?

- A. Gestational diabetes mellitus
- B. Postterm pregnancy
- C. Preeclampsia
- D. Preterm prelabor rupture of membranes
- E. Protracted labor course

**Submit**

A 27-year-old woman, gravida 2 para 1, at 10 weeks gestation comes to the office for an initial prenatal visit. The patient has had no cramping or vaginal bleeding. She was not expecting this pregnancy because she had an uncomplicated term vaginal delivery 6 months ago and breastfed for the first 4 months postpartum. She is taking a daily prenatal vitamin and has no chronic medical conditions. Blood pressure is 126/80 mm Hg and pulse is 76/min. BMI is 24 kg/m<sup>2</sup>. The abdomen is soft, nontender, and nondistended. Pelvic ultrasound reveals a singleton intrauterine pregnancy at 10 weeks gestation with a fetal heart rate of 165/min. Hemoglobin is 10.4 g/dL. This patient is at increased risk for which of the following pregnancy-related complications?

- A. Gestational diabetes mellitus (6%)
- B. Postterm pregnancy (4%)
- C. Preeclampsia (15%)
- D. Preterm prelabor rupture of membranes (58%)
- E. Protracted labor course (13%)

Omitted  
Correct answer  
D

58%  
Answered correctly

02 secs  
Time Spent

03/19/2020  
Last Updated

Explanation

### Short interpregnancy interval

**Definition**

- <6-18 months from delivery to next pregnancy



Short interpregnancy interval	
Definition	<ul style="list-style-type: none"> <li>• &lt;6-18 months from delivery to next pregnancy</li> </ul>
Complications	<ul style="list-style-type: none"> <li>• Maternal anemia</li> <li>• PPROM</li> <li>• Preterm delivery</li> <li>• Low birth weight</li> </ul>

PPROM = preterm prelabor rupture of membranes.

Pregnancy, delivery, and the postpartum period place increased physical and metabolic demands on women in order to develop and provide nutrition for the fetus and newborn. During pregnancy, maternal folate and iron are depleted for fetal development, and the resulting **maternal anemia** is exacerbated by normal blood loss during delivery (eg, up to 10%-20% of blood volume). In breastfeeding women, continued nutritional demands from the newborn prevent repletion of normal folate and iron stores, resulting in prolonged anemia (as seen in this patient).

Due to these increased demands, women with **short interpregnancy intervals** (eg, <6-18 months between delivery and the next pregnancy) have an **increased risk of pregnancy complications** including low birthweight, preterm labor, and **preterm prelabor rupture of membranes** (possibly due to persistent genital tract inflammation). Therefore, appropriate pregnancy timing with interval contraception (eg, progestin-containing intrauterine device) is recommended for adequate maternal recovery and optimization for future pregnancies.

**(Choice A)** Risk of gestational diabetes mellitus is increased with obesity, certain medical conditions (eg, polycystic ovary syndrome), and prior gestational diabetes mellitus, which are not seen in this patient. Risk is not increased by a short interpregnancy interval.

**(Choice B)** Short interpregnancy intervals increase risk of preterm (not postterm) delivery. Risk factors for postterm pregnancies include nulliparity and prior postterm pregnancy.

**(Choice C)** Risk of preeclampsia is increased by prior preeclampsia, comorbid medical conditions (eg, chronic hypertension, diabetes mellitus), and nulliparity—not by short interpregnancy intervals.

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**(Choice A)** Risk of gestational diabetes mellitus is increased with obesity, certain medical conditions (eg, polycystic ovary syndrome), and prior gestational diabetes mellitus, which are not seen in this patient. Risk is not increased by a short interpregnancy interval.

**(Choice B)** Short interpregnancy intervals increase risk of preterm (not postterm) delivery. Risk factors for postterm pregnancies include nulliparity and prior postterm pregnancy.

**(Choice C)** Risk of preeclampsia is increased by prior preeclampsia, comorbid medical conditions (eg, chronic hypertension, diabetes mellitus), and nulliparity—not by short interpregnancy intervals.

**(Choice E)** A protracted labor course is more likely with advanced maternal age (age >35), fetal macrosomia, and an increased interpregnancy interval (eg, >24 months). Risk is not increased by a short interpregnancy interval.

#### Educational objective:

Short interpregnancy intervals (eg, <6-18 months between delivery and next pregnancy) are associated with an increased risk of pregnancy complications including preterm labor, preterm prelabor rupture of membranes, and low birth weight.

#### References

- [Interpregnancy interval and obstetrical complications.](#)

Obstetrics & Gynecology  
Subject

Pregnancy, Childbirth & Puerperium  
System

Preterm premature rupture of the membranes  
Topic

A 34-year-old woman, gravida 2 para 1, at 26 weeks gestation comes to the emergency department due to intermittent leakage of fluid for the past 6 hours. She has had no vaginal bleeding or contractions. The patient's previous pregnancy was complicated by preterm prelabor rupture of membranes at 29 weeks gestation; she delivered at 34 weeks gestation after inpatient management with corticosteroids and latency antibiotics. Temperature is 39.4 C (103 F), blood pressure is 100/70 mm Hg, and pulse is 114/min. Fetal heart rate is 170/min. The uterus is tender to palpation. On speculum examination, purulent amniotic fluid emerges from the cervix with Valsalva and turns the nitrazine paper blue. The cervix is visibly closed. Transabdominal ultrasound shows a vertex fetus consistent with gestational age. The amniotic fluid index is 8 cm. In addition to antibiotics, which of the following is the best next step in management of this patient?

- A. Fetal fibronectin and lung maturity testing
- B. Expectant management
- C. Immediate induction of labor
- D. Outpatient monitoring and bed rest
- E. Serial fetal ultrasounds and amnioinfusion

**Submit**

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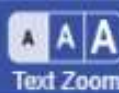
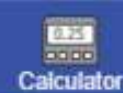
- A. Fetal fibronectin and lung maturity testing (24%)
- B. Expectant management (10%)
- C. Immediate induction of labor (48%)
- D. Outpatient monitoring and bed rest (3%)
- E. Serial fetal ultrasounds and amnioinfusion (13%)

Omitted

Correct answer  
C48%  
Answered correctly01 sec  
Time Spent03/12/2020  
Last Updated

Explanation

**Intraamniotic infection (chorioamnionitis)**



Intraamniotic infection (chorioamnionitis)	
<b>Risk factors</b>	<ul style="list-style-type: none"> <li>• Prolonged rupture of membranes (&gt;18 hours)</li> <li>• Preterm prelabor rupture of membranes</li> <li>• Prolonged labor</li> <li>• Internal fetal/uterine monitoring devices</li> <li>• Repetitive vaginal examinations</li> <li>• Presence of genital tract pathogens</li> </ul>
<b>Diagnosis</b>	Maternal fever PLUS $\geq 1$ of the following: <ul style="list-style-type: none"> <li>• Fetal tachycardia (&gt;160/min)</li> <li>• Maternal leukocytosis</li> <li>• Purulent amniotic fluid</li> </ul>
<b>Management</b>	<ul style="list-style-type: none"> <li>• Broad-spectrum antibiotics</li> <li>• Delivery</li> </ul>
<b>Complications</b>	<ul style="list-style-type: none"> <li>• Maternal: postpartum hemorrhage, endometritis</li> <li>• Neonatal: preterm birth, pneumonia, encephalopathy</li> </ul>

This patient at 26 weeks gestation has **preterm prelabor rupture of membranes (PPROM)** based on leakage of nitrazine-positive fluid (ie, alkaline amniotic fluid) emerging from the cervix. Risk factors for PPRM include prior PPRM (as in this patient), genitourinary infection, and antepartum bleeding. Uncomplicated cases of PPRM are managed expectantly with inpatient monitoring (eg, serial fetal ultrasounds), prophylactic latency antibiotics, corticosteroids, and delivery at 34 weeks gestation (**Choices B, D, and E**).

However, patients who develop complications (eg, placental abruption, cord prolapse) do not meet criteria for expectant management. This patient has **fever** and **fetal tachycardia** consistent with an **intraamniotic infection (IAI)** (ie, chorioamnionitis), a fulminant polymicrobial infection of the amniotic sac, fetus, cord, and placenta from ascending vaginal flora. Additional signs may include maternal tachycardia, **uterine tenderness**, and malodorous or **purulent amniotic fluid**. IAI has an increased risk of maternal morbidity (eg, sepsis, disseminated intravascular

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**(Choice A)** Fetal fibronectin is used to identify patients with preterm contractions who are at high risk for preterm delivery. It is not performed in PPRM because the risk of preterm delivery is high and, therefore, does not change management. Fetal lung maturity testing is performed in patients with uncertain gestational dating to determine timing of delivery (ie, prolong pregnancy for fetal benefit). Neither of these tests is indicated because this patient requires immediate delivery.

#### Educational objective:

Intraamniotic infection (chorioamnionitis) is a complication of preterm prelabor rupture of membranes. Due to the increased risk of maternal morbidity and mortality, patients with intraamniotic infection require therapeutic antibiotics and immediate delivery, regardless of gestational age.

#### References

- [An evidence-based approach to the evaluation and treatment of premature rupture of membranes: part I.](#)
- [Progress in pathogenesis and management of clinical intraamniotic infection.](#)