THE AMERICAN COLLEGE OF OBSTETRICIANS AND GYNECOLOGISTS
WOMEN'S HEALTH CARE PHYSICIANS

PRACTICE BULLETIN

CLINICAL MANAGEMENT GUIDELINES FOR OBSTETRICIAN–GYNECOLOGISTS

NUMBER 116, NOVEMBER 2010

Management of Intrapartum Fetal Heart Rate Tracings

Intrapartum electronic fetal monitoring (EFM) is used for most women who give birth in the United States. As such, clinicians are faced daily with the management of fetal heart rate (FHR) tracings. The purpose of this document is to provide obstetric care providers with a framework for evaluation and management of intrapartum EFM patterns based on the new three-tiered categorization.

Background

In 2008, a workshop sponsored by the American College of Obstetricians and Gynecologists, the *Eunice Kennedy Shriver* National Institute of Child Health and Human Development, and the Society for Maternal–Fetal Medicine focused on updating EFM nomenclature, recommending an interpretative system, and setting research priorities (1). Nomenclature for baseline FHR and FHR variability, accelerations, and decelerations were reaffirmed (Table 1). New terminology was recommended for the description and quantification of uterine contractions. *Normal uterine activity* was defined as five or fewer contractions in 10 minutes, averaged over a 30-minute window. *Tachysystole* was defined as more than five contractions in 10 minutes, averaged over 30 minutes and should be categorized by the presence or absence of FHR decelerations. Tachysystole can be applied to spontaneous or induced labor. The terms hyperstimulation and hypercontractility were abandoned.

A three-tiered system for intrapartum EFM interpretation also was recommended (Box 1), with the nomenclature and interpretation described elsewhere (1). This second Practice Bulletin on intrapartum FHR tracings reviews the management of heart rate patterns based on the three-tiered classification system (Figure 1).

Clinical Considerations and Recommendations

▶ *How is a Category I EFM tracing managed?*

Category I FHR tracings are normal (Box 1). These tracings are not associated with fetal acidemia (2–6). Category I FHR patterns may be managed in a routine manner with either continuous or intermittent monitoring. Tracings should be periodically evaluated and documented during active labor by a health care provider (eg, this may include physician, nurse, or midwife) based on clinical

Committee on Practice Bulletins—Obstetrics. This Practice Bulletin was developed by the Committee on Practice Bulletins—Obstetrics with the assistance of George Macones, MD, and Sean Blackwell, MD, in collaboration with Thomas Moore, MD, Catherine Spong, MD, John Hauth, MD, Gary Hankins, MD, and representatives from the Association of Women's Health, Obstetric and Neonatal Nurses–Audrey Lyndon RN, PhD, Kathleen R. Simpson, PhD RN, and Anne Santa-Donato, RNC, MSN, and the American College of Nurse–Midwives—Tekoa King, CNM, MPH. The information is designed to aid practitioners in making decisions about appropriate obstetric and gynecologic care. These guidelines should not be construed as dictating an exclusive course of treatment or procedure. Variations in practice may be warranted based on the needs of the individual patient, resources, and limitations unique to the institution or type of practice.

Table 1. Electronic Fetal Monitoring Definitions

Pattern	Definition
Baseline	• The mean FHR rounded to increments of 5 beats per minute during a 10-minute segment, excluding: —Periodic or episodic changes —Periods of marked FHR variability —Segments of baseline that differ by more than 25 beats per minute • The baseline must be for a minimum of 2 minutes in any 10-minute segment, or the baseline for that time period is indeterminate. In this case, one may refer to the prior 10-minute window for determination of baseline. • Normal FHR baseline: 110–160 beats per minute • Tachycardia: FHR baseline is greater than 160 beats per minute • Bradycardia: FHR baseline is less than 110 beats per minute
Baseline variability	• Fluctuations in the baseline FHR that are irregular in amplitude and frequency • Variability is visually quantitated as the amplitude of peak-to-trough in beats per minute. —Absent—amplitude range undetectable —Minimal—amplitude range detectable but 5 beats per minute or fewer —Moderate (normal)—amplitude range 6–25 beats per minute —Marked—amplitude range greater than 25 beats per minute
Acceleration	• A visually apparent abrupt increase (onset to peak in less than 30 seconds) in the FHR • At 32 weeks of gestation and beyond, an acceleration has a peak of 15 beats per minute or more above baseline, with a duration of 15 seconds or more but less than 2 minutes from onset to return. • Before 32 weeks of gestation, an acceleration has a peak of 10 beats per minute or more above baseline, with a duration of 10 seconds or more but less than 2 minutes from onset to return. • Prolonged acceleration lasts 2 minutes or more but less than 10 minutes in duration. • If an acceleration lasts 10 minutes or longer, it is a baseline change.
Early deceleration	• Visually apparent usually symmetrical gradual decrease and return of the FHR associated with a uterine contraction • A gradual FHR decrease is defined as from the onset to the FHR nadir of 30 seconds or more. • The decrease in FHR is calculated from the onset to the nadir of the deceleration. • The nadir of the deceleration occurs at the same time as the peak of the contraction. • In most cases, the onset, nadir, and recovery of the deceleration are coincident with the beginning, peak, and ending of the contraction, respectively.
Late deceleration	• Visually apparent usually symmetrical gradual decrease and return of the FHR associated with a uterine contraction • A gradual FHR decrease is defined as from the onset to the FHR nadir of 30 seconds or more. • The decrease in FHR is calculated from the onset to the nadir of the deceleration. • The deceleration is delayed in timing, with the nadir of the deceleration occurring after the peak of the contraction. • In most cases, the onset, nadir, and recovery of the deceleration occur after the beginning, peak, and ending of the contraction, respectively.
Variable deceleration	• Visually apparent abrupt decrease in FHR • An abrupt FHR decrease is defined as from the onset of the deceleration to the beginning of the FHR nadir of less than 30 seconds. • The decrease in FHR is calculated from the onset to the nadir of the deceleration. • The decrease in FHR is 15 beats per minute or greater, lasting 15 seconds or greater, and less than 2 minutes in duration. • When variable decelerations are associated with uterine contractions, their onset, depth, and duration commonly vary with successive uterine contractions.
Prolonged deceleration	• Visually apparent decrease in the FHR below the baseline • Decrease in FHR from the baseline that is 15 beats per minute or more, lasting 2 minutes or more but less than 10 minutes in duration. • If a deceleration lasts 10 minutes or longer, it is a baseline change.
Sinusoidal pattern	• Visually apparent, smooth, sine wave-like undulating pattern in FHR baseline with a cycle frequency of 3–5 per minute which persists for 20 minutes or more.

Abbreviation: FHR, fetal heart rate.

Macones GA, Hankins GD, Spong CY, Hauth J, Moore T. The 2008 National Institute of Child Health and Human Development workshop report on electronic fetal monitoring: update on definitions, interpretation, and research guidelines. Obstet Gynecol 2008;112:661–6.

Box 1. Three-Tiered Fetal Heart Rate Interpretation System

Category I

- Category I FHR tracings include all of the following:
- Baseline rate: 110–160 beats per minute
- Baseline FHR variability: moderate
- Late or variable decelerations: absent
- Early decelerations: present or absent
- Accelerations: present or absent

Category II

Category II FHR tracings includes all FHR tracings not categorized as Category I or Category III. Category II tracings may represent an appreciable fraction of those encountered in clinical care. Examples of Category II FHR tracings include any of the following:

Baseline rate

- Bradycardia not accompanied by absent baseline variability
- Tachycardia

Baseline FHR variability

- Minimal baseline variability
- Absent baseline variability with no recurrent decelerations
- Marked baseline variability

Accelerations

- Absence of induced accelerations after fetal stimulation

Periodic or episodic decelerations

- Recurrent variable decelerations accompanied by minimal or moderate baseline variability
- Prolonged deceleration more than 2 minutes but less than10 minutes
- Recurrent late decelerations with moderate baseline variability
- Variable decelerations with other characteristics such as slow return to baseline, overshoots, or "shoulders"

Category III

Category III FHR tracings include either

- Absent baseline FHR variability and any of the following:
  - –Recurrent late decelerations
  - –Recurrent variable decelerations
  - –Bradycardia
- Sinusoidal pattern

Abbreviation: FHR, fetal heart rate.

Macones GA, Hankins GD, Spong CY, Hauth J, Moore T. The 2008 National Institute of Child Health and Human Development workshop report on electronic fetal monitoring: update on definitions, interpretation, and research guidelines. Obstet Gynecol 2008;112:661–6.

status and underlying risk factors. Thus, during the first stage of labor the FHR tracing should be reviewed every 30 minutes and every 15 minutes during the second stage (7). Documentation of this review should include description of FHR category and overall pattern. Change in management may need to occur only if Category II or Category III features develop (Figure 1).

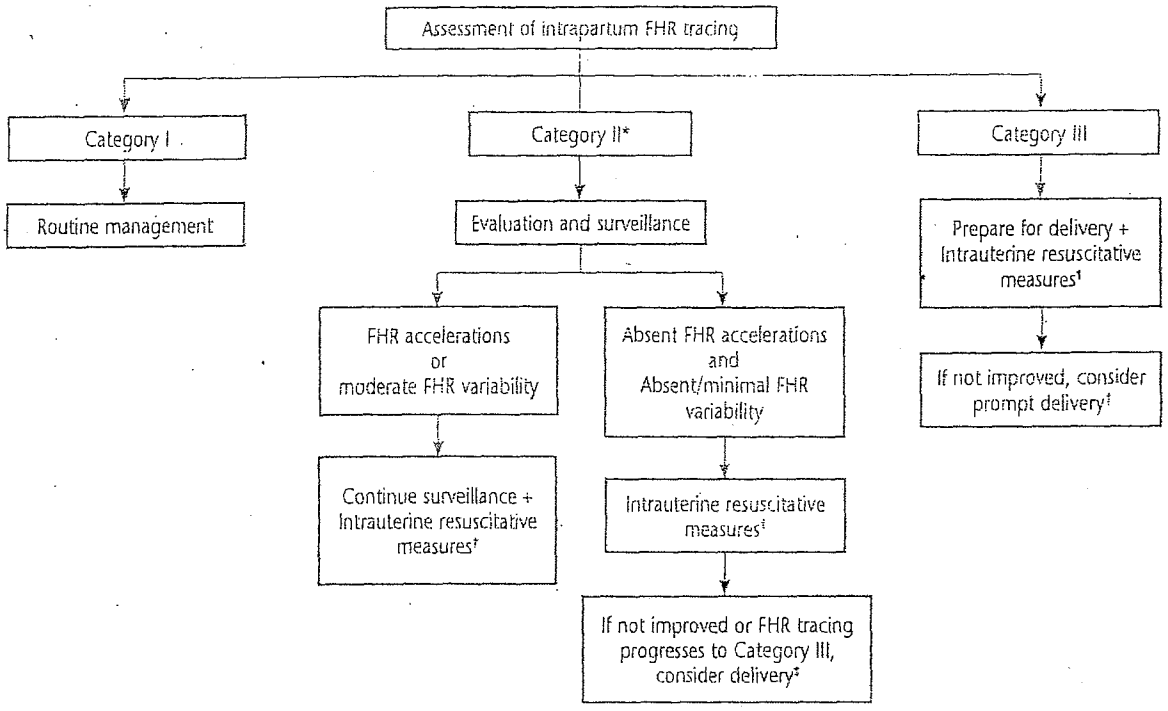
▶ *How is a Category II EFM tracing evaluated and managed?*

Category II FHR tracings include all FHR patterns that are not classified as Category I or Category III (Box 1). Category II tracings require evaluation, continued surveillance, initiation of appropriate corrective measures when indicated, and reevaluation. Once identified, these tracings may require more frequent evaluation, documentation, and continued surveillance, unless they revert to Category I. Given the diverse spectrum of abnormal FHR patterns in Category II, the presence of FHR accelerations (whether spontaneous or elicited by digital scalp or vibroacoustic stimulation) or moderate FHR variability or both are highly predictive of normal fetal acid–base status and, thus, may help guide clinical management (Figure 1) (8–12). The management of specific FHR abnormalities within Category II is discussed as follows.

▶ *How are intermittent and recurrent variable decelerations evaluated and managed?*

Intermittent variable decelerations, defined as occurring with less than 50% of contractions, are the most common FHR abnormality occurring during labor (13), most often do not require any treatment, and are associated with normal perinatal outcomes (3). Evaluation of recurrent variable decelerations includes their frequency, depth and duration, uterine contraction pattern, and other FHR characteristics such as FHR variability (14, 15). *Recurrent variable decelerations*, defined as occurring with greater than or equal to 50% of contractions, that progress to greater depth and longer duration are more indicative of impending fetal acidemia (2, 8, 14, 15). In FHR tracings with recurrent variable decelerations, the presence of moderate FHR variability or a spontaneous or induced acceleration suggests that the fetus is not currently acidemic.

Management of recurrent variable decelerations should be directed at relieving umbilical cord compression (Table 2). Maternal positioning as an initial therapeutic maneuver is a reasonable first step (16). Although there is limited evidence for improvements in short-term or long-term neonatal outcomes, amnioinfusion has been shown to decrease the recurrence of variable decelerations as well as the rate of cesarean delivery for "suspected fetal distress" (17). Adjunctive measures to promote fetal



*Given the wide variation of FHR tracings in Category II, this algorithm is not meant to represent assessment and management of all potential FHR tracings, but provide an action template for common clinical situations.

†See Table 2 for list of various intrauterine resuscitative measures

‡Timing and mode of delivery based on feasibility and maternal–fetal status

Figure 1. Management algorithm of intrapartum fetal heart rate tracings based on three-tiered category system. Abbreviation: FHR, fetal heart rate.

oxygenation also may be useful depending on the severity and duration of the recurrent variable decelerations (Table 2).

➢ *How are recurrent late decelerations evaluated and managed?*

Recurrent late decelerations are thought to reflect transient or chronic uteroplacental insufficiency (18). Common causes include maternal hypotension (eg, postepidural), uterine tachysystole, and maternal hypoxia. Management involves maneuvers to promote uteroplacental perfusion, which may include maternal lateral positioning, intravenous fluid bolus, maternal oxygen administration, and evaluation for tachysystole (Table 2) (16).

In Category II tracings with recurrent late decelerations, management includes intrauterine resuscitation and reevaluation to determine whether an adequate improvement in fetal status has occurred. Given the low predictive value of late decelerations for acidemia and their known false-positive rate for fetal neurologic injury (19–23), evaluation for the presence of accelerations or moderate FHR variability or both may be useful to assess the risk of fetal acidemia (24). If despite intrauterine resuscitation measures late decelerations continue in the setting of minimal FHR variability and absent accelerations, the presence of fetal acidemia should be considered and the potential need for expedited delivery should be evaluated. If FHR variability becomes absent, then the FHR is now Category III and should be managed accordingly.

➢ *How is intrapartum fetal tachycardia evaluated and managed?*

Fetal tachycardia is defined as a baseline heart rate greater than 160 beats per minute (bpm) for at least 10 minutes (Table 1). Fetal tachycardia should be evaluated for identifiable underlying causes such as infection (eg, chorioamnionitis, pyelonephritis, or other maternal infections), medications (eg, terbutaline, cocaine, and other stimulants), maternal medical disorders (eg, hyperthyroidism), obstetric conditions (eg, placental abruption or fetal bleed-

Table 2. Various Intrauterine Resuscitative Measures for Category II or Category III Tracings or Both

Goal	Associated Fetal Heart Rate Abnormality*	Potential Intervention (s)†
Promote fetal oxygenation and improve uteroplacental blood flow	Recurrent late decelerations Prolonged decelerations or bradycardia Minimal or absent fetal heart rate variability	Initiate lateral positioning (either left or right) Administer maternal oxygen administration Administer intravenous fluid bolus Reduce uterine contraction frequency
Reduce uterine activity	Tachysystole with Category II or III tracing	Discontinue oxytocin or cervical ripening agents Administer tocolytic medication (eg, terbutaline)
Alleviate umbilical cord compression	Recurrent variable decelerations Prolonged decelerations or bradycardia	Initiate maternal repositioning Initiate amnioinfusion If prolapsed umbilical cord is noted, elevate the presenting fetal part while preparations are underway for operative delivery

*Evaluation for the underlying suspected cause(s) is also an important step in management of abnormal FHR tracings.

†Depending on the suspected underlying cause(s) of FHR abnormality, combining multiple interventions simultaneously may be appropriate and potentially more effective than doing individually or serially (Simpson KR, James DC. Efficacy of intrauterine resuscitation techniques in improving fetal oxygen status during labor. Obstet Gynecol 2005;105:1362–8).

Data from Young BK, Katz M, Klein SA, Silverman F. Fetal blood and tissue pH with moderate bradycardia. Am J Obstet Gynecol 1979;135:45–7; Chauhan SP, Roach H, Naef RW 2nd, Magann EF, Morrison JC, Martin JN Jr. Cesarean section for suspected fetal distress. Does the decision-incision time make a difference? J Reprod Med 1997;42:347–52; Schauberger CW, Chauhan SP. Emergency cesarean section and the 30-minute rule: definitions. Am J Perinatol 2009;26:221–6; and Schifrin BS, Hamilton-Rubinstein T, Shields JR. Fetal heart rate patterns and the timing of fetal injury. J Perinatol 1994;14:174–81.

ing), and fetal tachyarrhythmias (often associated with FHR greater than 200 bpm). In isolation, tachycardia is poorly predictive for fetal hypoxemia or acidemia, unless accompanied by minimal or absent FHR variability or recurrent decelerations or both.

Treatment for a Category II tracing with tachycardia should be directed at the underlying cause. In addition, other characteristics of the FHR tracing need to be evaluated in concert with the tachycardia, especially baseline variability. For example, a FHR tracing with tachycardia, minimal variability, and no accelerations cannot reliably exclude fetal acidemia.

▶ *How are intrapartum bradycardia and prolonged decelerations evaluated and managed?*

Fetal bradycardia is defined as a baseline heart rate less than 110 bpm for at least 10 minutes (Table 1). *Prolonged decelerations* are defined as FHR decreases of at least 15 bpm below baseline that last at least 2 minutes but less than 10 minutes. Clinical intervention often is indicated before the distinction can be made between a prolonged deceleration and fetal bradycardia; thus, the immediate management of the two is similar.

Prolonged decelerations or fetal bradycardia should be evaluated for identifiable causes such as maternal hypotension (eg, postepidural), umbilical cord prolapse or occlusion, rapid fetal descent, tachysystole, placental abruption, or uterine rupture. Bradycardia due to these conditions often occurs in labor and usually is preceded by an initially normal FHR baseline. Rarely, bradycardia also may occur in fetuses with congenital heart abnormalities or myocardial conduction defects, such as those associated with maternal collagen vascular disease. Most often the onset of bradycardia associated with congenital heart block occurs in the second trimester; it is extremely unlikely that new onset intrapartum bradycardia would be due to this condition.

Treatment for Category II tracing with bradycardia or prolonged decelerations is directed at the underlying cause (Table 2). Fetal heart rate variability during baseline periods should be evaluated in order to better assess the risk of fetal acidemia (25). If bradycardia with minimal or absent variability or prolonged decelerations or both do not resolve, then prompt delivery is recommended.

▶ *How is minimal FHR variability evaluated and managed?*

As with other characteristics of the FHR tracing, baseline variability often changes with fetal sleep or wake state and over the course of labor, and it may transition from moderate to minimal and back again. Evaluation of minimal FHR variability should include evaluation of potential causes such as maternal medications (eg, opioid, magnesium sulfate), fetal sleep cycle, or fetal acidemia (26–28). For minimal variability thought to be due to recent maternal opiod administration, FHR variability often improves and returns to moderate variability within 1–2 hours. A fetal sleep cycle generally lasts 20 minutes but can persist up to 60 minutes, and moderate variability should return when the fetal sleep cycle is

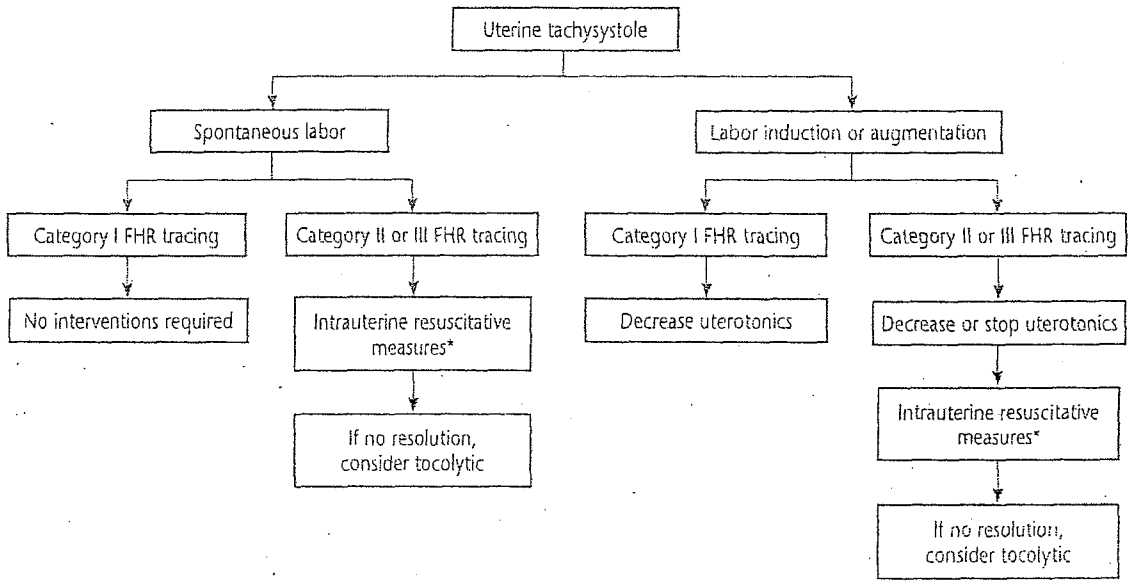
complete. Thus, in these situations, continued observation and expectant management is appropriate. If minimal FHR variability is suspected to be due to decreased fetal oxygenation, then maternal repositioning, administration of oxygen, or intravenous fluid bolus may be considered (Table 2). If improvement in FHR variability does not occur with these measures and there are no FHR accelerations, additional assessment such as digital scalp or vibroacoustic stimulation should be done (12). Continued minimal variability (in the absence of accelerations or normal scalp pH) that cannot be explained or resolved with resuscitation should be considered as potentially indicative of fetal acidemia and should be managed accordingly.

➤ *How is tachysystole with and without FHR changes evaluated and managed?*

Tachysystole is defined as more than five contractions in 10 minutes, averaged over 30 minutes. The presence or absence of associated FHR abnormalities is the key issue in management (Figure 2). For women with spontaneous labor, tachysystole coupled with recurrent FHR decelerations requires evaluation and treatment. Tachysystole occurring with less frequent FHR abnormalities may or may not require treatment, depending on the specific clinical situation and associated FHR characteristics such as variability and accelerations. In laboring women receiving oxytocin, management of tachysystole generally involves efforts to reduce uterine activity to minimize risk of evolving fetal hypoxemia or acidemia (29). In labor induction or augmentation or both, a decrease in the oxytocin dose should be considered if tachysystole occurs in the presence of a Category I tracing. If there is a Category II or III tracing, oxytocin should be reduced or stopped in addition to intrauterine resuscitation (7). In addition, simultaneous initiation of multiple resuscitative measures may improve fetal condition more rapidly than the use of individual therapies (Table 2). If tachysystole induced FHR abnormalities do not resolve with these initial maneuvers, then tocolytic medications (eg, terbutaline) may be warranted (30, 31).

➤ *How is a Category III EFM tracing evaluated and managed?*

A Category III FHR tracing is abnormal and conveys an increased risk for fetal acidemia at the time of observation. Category III tracings have been associated with an increased risk for neonatal encephalopathy, cerebral palsy, and neonatal acidosis. Nevertheless, the predictive value of Category III tracings for abnormal neurologic outcome is poor (32). If unresolved, Category III FHR tracings most often require prompt delivery. While intrauterine resuscitation measures are used, preparations for delivery should be considered and a time frame for proceeding to delivery should be determined if the FHR does not improve (Figure 1). As discussed previously potential interventions for intrauterine resuscitation are described in Table 2; these should be modified to the appropriate clinical circumstance(s) and specific FHR pattern.



*See Table 2 for list of various intrauterine resuscitative measures

Figure 2. Management algorithm for uterine tachystole. Abbreviation: FHR, fetal heart rate.

- *If a Category III tracing continues and intrauterine resuscitative measures are unsuccessful, over what time interval should delivery be accomplished?*

The acceptable time frame to accomplish delivery in the setting of a Category III FHR tracing has not been established. Historically, a 30-minute rule from decision-to-incision time for emergent cesarean delivery in the setting of abnormal FHR pattern has existed (7); however, the scientific evidence to support this threshold is lacking. In a study of 2,808 women who had cesarean deliveries for emergent indications, investigators found that more than 30% of the cesarean deliveries began more than 30 minutes after the decision to operate, yet adverse neonatal outcomes were not increased among those infants delivered after more than 30 minutes (33). Multiple other studies affirm the lack of association of increased adverse outcomes with this 30-minute decision-to-incision time frame (34–38). It also should be recognized that in some cases immediate delivery in a woman with an unknown duration of a Category III tracing may not improve outcome if the fetus has already experienced hypoxic ischemic injury (39, 40).

Nevertheless, when a decision for operative delivery in the setting of a Category III EFM tracing is made, it should be accomplished as expeditiously as feasible. The decision-to-incision interval and mode of delivery should be based on the timing that best incorporates maternal and fetal risks and benefits. For instance many of these clinical scenarios will include high-risk conditions or pregnancy complications (eg, morbid obesity, eclampsia; cardiopulmonary compromise, hemorrhage), which may require maternal stabilization or additional surgical preparation before performance of emergent cesarean delivery. These factors also may vary based on the institution and local circumstances. Preparation for impending delivery of a woman with a Category III tracing often requires assessment of several logistical issues depending on the setting and clinical circumstances (see Box 2).

Box 2. Potential Logistical Considerations in Preparation for Operative Delivery in Setting of Category III Tracing

- Obtain informed consent (verbal or written as feasible)
- Assemble surgical team (surgeon, scrub technician, and anesthesia personnel)
- Assess patient transit time and location for operative delivery
- Ensure intravenous access
- Review status of laboratory tests (eg, complete blood type and screen) and assess need for availability of blood products
- Assess need for preoperative placement of indwelling foley catheter
- Assemble personnel for neonatal resuscitation

Summary of Conclusions and Recommendations

The following recommendations and conclusions are based on good and consistent scientific evidence (Level A):

- Category I FHR tracings may be managed in a routine manner because they are not associated with fetal acidemia.
- A Category III FHR tracing is abnormal and conveys an increased risk of fetal acidemia at the time of observation.
- Amnioinfusion has been shown to decrease the recurrence of variable decelerations as well as the rate of cesarean delivery for abnormal FHR patterns.

The following recommendations and conclusions are based on evidence that may be limited or inconsistent (Level B):

- Intravenous fluid bolus, lateral positioning and oxygen administration, when used together, may improve fetal oxygenation during labor.
- Regardless of whether labor is spontaneous or stimulated, tachysystole accompanied by Category II or Category III FHR tracing requires evaluation and initiation of appropriate treatment.
- Category II tracings require evaluation, continued surveillance, initiation of appropriate corrective measures when indicated, and reevaluation. The presence of FHR accelerations (whether spontaneous or elicited) or moderate FHR variability or both are highly predictive of normal fetal acid–base status and, thus, may help guide clinical management.

The following conclusion is based primarily on consensus and expert opinion (Level C):

- The optimal time frame to effect delivery in the setting of a Category III FHR tracing has not been established.

References

1. Intrapartum fetal heart rate monitoring: nomenclature, interpretation, and general management principles. ACOG Practice Bulletin No. 106. American College of Obstetricians and Gynecologists. Obstet Gynecol 2009;114:192–202. (Level III)
2. Macones GA, Hankins GD, Spong CY, Hauth J, Moore T. The 2008 National Institute of Child Health and Human Development workshop report on electronic fetal monitoring: update on definitions, interpretation, and research guidelines. Obstet Gynecol 2008;112:661–6. (Level III)
3. Berkus MD, Langer O, Samueloff A, Xenakis EM, Field NT. Electronic fetal monitoring: what's reassuring? Acta Obstet Gynecol Scand 1999;78:15–21. (Level II-3)
4. Krebs HB, Petres RE, Dunn LJ, Smith PJ. Intrapartum fetal heart rate monitoring. VI. Prognostic significance of accelerations. Am J Obstet Gynecol 1982;142:297–305. (Level II-3)
5. Tejani N, Mann LI, Bhakthavathsalan A, Weiss RR. Correlation of fetal heart rate-uterine contraction patterns with fetal scalp blood pH. Obstet Gynecol 1975;46: 392–6. (Level III)
6. Dellinger EH, Boehm FH, Crane MM. Electronic fetal heart rate monitoring: early neonatal outcomes associated with normal rate, fetal stress, and fetal distress. Am J Obstet Gynecol 2000;182:214–20. (Level III)
7. American Academy of Pediatrics, American College of Obstetricians and Gynecologists. Fetal heart rate monitoring. In: Guidelines for perinatal care. 6th ed. Elk Grove Village (IL): AAP: Washington, DC: ACOG; 2007. p. 146–7. (Level III)
8. Parer JT, King T, Flanders S, Fox M, Kilpatrick SJ. Fetal acidemia and electronic fetal heart rate patterns: is there evidence of an association? J Matern Fetal Neonatal Med 2006;19:289–94. (Level III)
9. Lin CC, Vassallo B, Mittendorf R. Is intrapartum vibroacoustic stimulation an effective predictor of fetal acidosis? J Perinat Med 2001;29:506–12. (Level II-3)
10. Clark SL, Gimovsky ML, Miller FC. Fetal heart rate response to scalp blood sampling. Am J Obstet Gynecol 1982;144:706–8. (Level III)
11. Clark SL, Gimovsky ML, Miller FC. The scalp stimulation test: a clinical alternative to fetal scalp blood sampling. Am J Obstet Gynecol 1984;148:274–7. (Level III)
12. Skupski DW, Rosenberg CR, Eglinton GS. Intrapartum fetal stimulation tests: a meta-analysis. Obstet Gynecol 2002;99:129–34. (Meta-analysis)
13. Garite TJ, Dildy GA, McNamara H, Nageotte MP, Boehm FH, Dellinger EH, et al. A multicenter controlled trial of fetal pulse oximetry in the intrapartum management of nonreassuring fetal heart rate patterns. Am J Obstet Gynecol 2000;183:1049–58. (Level I)
14. Kubli FW, Hon EH, Khazin AF, Takenmura H. Observations on heart rate and pH in the human fetus during labor. Am J Obstet Gynecol 1969;104:1190–206. (Level III)
15. Krebs HB, Petres RE, Dunn LJ. Intrapartum fetal heart rate monitoring. VIII. Atypical variable decelerations. Am J Obstet Gynecol 1983;145:297–305. (Level II-3)
16. Simpson KR. Intrauterine resuscitation during labor: review of current methods and supportive evidence. J Midwifery Womens Health 2007;52:229–37. (Level III)
17. Hofmeyr GJ. Amnioinfusion for potential or suspected umbilical cord compression in labour. Cochrane Database of Systematic Reviews 1998, Issue 1. Art. No.: CD000013. DOI: 10.1002/14651858.CD000013. (Meta-analysis)
18. Harris JL, Krueger TR, Parer JT. Mechanisms of late decelerations of the fetal heart rate during hypoxia. Am J Obstet Gynecol 1982;144:491–6. (animal)
19. Nelson KB, Dambrosia JM, Ting TY, Grether JK. Uncertain value of electronic fetal monitoring in predicting cerebral palsy. N Engl J Med 1996;334:613–8. (Level II-2)
20. Larma JD, Silva AM, Holcroft CJ, Thompson RE, Donohue PK, Graham EM. Intrapartum electronic fetal heart rate monitoring and the identification of metabolic acidosis and hypoxic-ischemic encephalopathy. Am J Obstet Gynecol 2007;197:301.e1–301.e8. (Level II-2)
21. Parer JT, King T. Fetal heart rate monitoring: is it salvageable? Am J Obstet Gynecol 2000;182:982–7. (Level III)
22. Spencer JA, Badawi N, Burton P, Keogh J, Pemberton P, Stanley F. The intrapartum CTG prior to neonatal encephalopathy at term: a case-control study. Br J Obstet Gynaecol 1997;104:25–8. (Level II-2)
23. Williams KP, Galerneau F. Comparison of intrapartum fetal heart rate tracings in patients with neonatal seizures vs. no seizures: what are the differences? J Perinat Med 2004;32:422–5. (Level II-2)
24. Paul RH, Suidan AK, Yeh S, Schifrin BS, Hon EH. Clinical fetal monitoring. VII. The evaluation and significance of intrapartum baseline FHR variability. Am J Obstet Gynecol 1975;123:206–10. (Level III)
25. Young BK, Katz M, Klein SA, Silverman F. Fetal blood and tissue pH with moderate bradycardia. Am J Obstet Gynecol 1979;135:45–7. (Level III)
26. Giannina G, Guzman ER, Lai YL, Lake MF, Cernadas M, Vintzileos AM. Comparison of the effects of meperidine and nalbuphine on intrapartum fetal heart rate tracings. Obstet Gynecol 1995;86:441–5. (Level I)
27. Kopecky EA, Ryan ML, Barrett JF, Seaward PG, Ryan G, Koren G, et al. Fetal response to maternally administered morphine. Am J Obstet Gynecol 2000;183:424–30. (Level III)
28. Hallak M, Martinez-Poyer J, Kruger ML, Hassan S, Blackwell SC, Sorokin Y. The effect of magnesium sulfate on fetal heart rate parameters: A randomized, placebo-controlled trial. Am J Obstet Gynecol 1999;181:1122–7. (Level I)
29. Simpson KR, James DC. Effects of oxytocin-induced uterine hyperstimulation during labor on fetal oxygen status and fetal heart rate patterns. Am J Obstet Gynecol 2008;199:34.e1–34.e5. (Level II-3)

30. Pullen KM, Riley ET, Waller SA, Taylor L, Caughey AB, Druzin ML, et al. Randomized comparison of intravenous terbutaline vs nitroglycerin for acute intrapartum fetal resuscitation. Am J Obstet Gynecol 2007;197:414.e1–414.e6. (Level I)

31. Kulier R, Hofmeyr GJ. Tocolytics for suspected intrapartum fetal distress. Cochrane Database of Systematic Reviews 1998, Issue 2. Art. No.: CD000035. DOI: 10.1002/14651858.CD000035. (Meta-analysis)

32. American Academy of Pediatrics. American College of Obstetricians and Gynecologists. Neonatal encephalopathy and cerebral palsy: defining the pathogenesis and pathophysiology. Elk Grove Village (IL): AAP: Washington, DC: ACOG: 2003. (Level III)

33. Bloom SL, Leveno KJ, Spong CY, Gilbert S, Hauth JC, Landon MB, et al. Decision-to-incision times and maternal and infant outcomes. National Institute of Child Health and Human Development Maternal-Fetal Medicine Units Network. Obstet Gynecol 2006;108:6–11. (Level II-2)

34. MacKenzie IZ, Cooke I. What is a reasonable time from decision-to-delivery by caesarean section? Evidence from 415 deliveries. BJOG 2002;109:498–504. (Level II-3)

35. Holcroft CJ, Graham EM, Aina-Mumuney A, Rai KK, Henderson JL, Penning DH. Cord gas analysis, decision-to-delivery interval, and the 30-minute rule for emergency cesareans. J Perinatol 2005;25:229–35. (Level II-2)

36. Hillemanns P, Strauss A, Hasbargen U, Schulze A, Genzel-Boroviczeny O, Weninger E, et al. Crash emergency cesarean section: decision-to-delivery interval under 30 min and its effect on Apgar and umbilical artery pH. Arch Gynecol Obstet 2005;273:161–5. (Level II-2)

37. Chauhan SP, Roach H, Naef RW 2nd, Magann EF, Morrison JC, Martin JN Jr. Cesarean section for suspected fetal distress. Does the decision-incision time make a difference? J Reprod Med 1997;42:347–52. (Level II-2)

38. Schauberger CW, Chauhan SP. Emergency cesarean section and the 30-minute rule: definitions. Am J Perinatol 2009;26:221–6. (Level III)

39. Schifrin BS, Hamilton-Rubinstein T, Shields JR. Fetal heart rate patterns and the timing of fetal injury. J Perinatol 1994;14:174–81. (Level III)

40. Phelan JP, Ahn MO. Perinatal observations in forty-eight neurologically impaired term infants. Am J Obstet Gynecol 1994;171:424–31. (Level III)

41. Althabe O Jr, Schwarcz RL, Pose SV, Escarcena L, Caldeyro-Barcia R. Effects on fetal heart rate and fetal pO2 of oxygen administration to the mother. Am J Obstet Gynecol 1967;98:858–70. (Level III)

42. Carbonne B, Benachi A, Leveque ML, Cabrol D, Papiernik E. Maternal position during labor: effects on fetal oxygen saturation measured by pulse oximetry. Obstet Gynecol 1996;88:797–800. (Level III)

43. Abitbol MM. Supine position in labor and associated fetal heart rate changes. Obstet Gynecol 1985;65:481–6. (Level III)

44. Simpson KR, James DC. Efficacy of intrauterine resuscitation techniques in improving fetal oxygen status during labor. Obstet Gynecol 2005;105:1362–8. (Level I)

The MEDLINE database, the Cochrane Library, and the American College of Obstetricians and Gynecologists' own internal resources and documents were used to conduct a literature search to locate relevant articles published between January 1985–December 2009. The search was restricted to articles published in the English language. Priority was given to articles reporting results of original research, although review articles and commentaries also were consulted. Abstracts of research presented at symposia and scientific conferences were not considered adequate for inclusion in this document. Guidelines published by organizations or institutions such as the National Institutes of Health and the American College of Obstetricians and Gynecologists were reviewed, and additional studies were located by reviewing bibliographies of identified articles. When reliable research was not available, expert opinions from obstetrician–gynecologists were used.

Studies were reviewed and evaluated for quality according to the method outlined by the U.S. Preventive Services Task Force:

I Evidence obtained from at least one properly designed randomized controlled trial.

II-1 Evidence obtained from well-designed controlled trials without randomization.

II-2 Evidence obtained from well-designed cohort or case–control analytic studies, preferably from more than one center or research group.

II-3 Evidence obtained from multiple time series with or without the intervention. Dramatic results in uncontrolled experiments also could be regarded as this type of evidence.

III Opinions of respected authorities, based on clinical experience, descriptive studies, or reports of expert committees.

Based on the highest level of evidence found in the data, recommendations are provided and graded according to the following categories:

Level A—Recommendations are based on good and consistent scientific evidence.

Level B—Recommendations are based on limited or inconsistent scientific evidence.

Level C—Recommendations are based primarily on consensus and expert opinion.

The American College of Obstetricians and Gynecologists
409 12th Street, SW, PO Box 96920, Washington, DC 20090-6920

Management of intrapartum fetal heart rate tracings. Practice Bulletin No. 116. American College of Obstetricians and Gynecologists. Obstet Gynecol 2010;116:1232–40.

UNIT ONE: APPROACH TO THE PATIENT
EDUCATIONAL TOPIC 6: LEGAL AND ETHICAL ISSUES IN OBSTETRICS AND GYNECOLOGY

Rationale: Recognizing and understanding the basis of legal and ethical issues in obstetrics and gynecology will promote quality patient care and patient safety.

Intended Learning Outcomes:
The student will be able to explain the following legal issues:

- Informed consent
- Confidentiality
- Advance directives for healthcare
- Reporting of suspected child abuse, sexual abuse and domestic violence
- Discuss the legal and ethical issues in the care of minors
- Apply a systematic approach to ethical problems based on ethical principles
- Describe issues of justice relating to access to obstetric-gynecologic care
- Recognize his/her role as a leader and advocate for women
- Explain ethical dilemma in obstetrics and gynecology

TEACHING CASE

CASE: A 33 year-old G2P1 presents to your office at 33 weeks of gestation for her scheduled prenatal visit and discussion of mode of delivery. She reports no problems. Her psychosocial history is unremarkable. Her prior pregnancy resulted in a cesarean delivery with a transverse uterine incision. There were no complications associated with the delivery. Her physical examination reveals normal blood pressure and weight. Fundal height, fetal position, and heart rate are unremarkable. Her diagnostic test results show Hgb: 12.4 g/dL; WBC: 11,000; Urinalysis: negative for bacteria and leukocytes; and urine drug screen: negative.

COMPETENCY-BASED DISCUSSION & TEACHING POINTS:
Competencies addressed:

- Patient Care
- Medical Knowledge
- Interpersonal and Communication Skills
- Professionalism
- Systems-Based Practice

1. What would you tell this patient regarding her options for delivery?

    - Trial of labor after a cesarean section (TOLAC) for a vaginal birth after a cesarean-section (VBAC)
    - Cesarean delivery

ACOG Practice Bulletin 109, Cervical Cytology Screening, December 2009.

- Since the patient is sexually active with a new partner, you should offer her screening for sexually transmitted diseases including gonorrhea and chlamydia. All sexually active patients under the age of 25 should be screened annually for chlamydia. A patient who is between the age of 21-30 only needs a pap test every two years. Screening for chlamydia need not involve a speculum exam as chlamydia testing can be performed via urine screen. One may consider annual pap tests for this patient due to her multiple risk factors for developing cervical cancer. .
- After performing the Pap smear, you wipe any excess cervical mucous and you insert the cotton swab to collect the cultures or the DNA probe in the endocervical canal.

3. How often does this patient need to undergo a Pap smear?

   - Patients who have had an abnormal Pap smear previously will need more frequent Pap smears based on the actual abnormality. For this patient, since it appears that she had normal follow-up, she needs to continue to have Pap smears every 2 years assuming this one is normal.

4. What risk factors does this patient have for cervical dysplasia and cancer?

   - Multiple partners, sexual activity at an early age, history of abnormal Pap smear, smoking.

5. If while performing the speculum exam, you notice a gross lesion on the cervix, what would your next step in management be?

   - Any gross lesion on the cervix will need to be directly biopsied as Pap smears have a false negative rate and cervical cancer might be missed.

6. What other counseling or advice you need to discuss with this patient?

   - Discuss the importance of cervical cancer screening guidelines. Offer the patient blood testing for other sexually transmitted infections such as syphilis, HIV, and hepatitis B and C. Discuss the importance of safe sex practices.

REFERENCES

Beckman CRB, et al. *Obstetrics and Gynecology*. 6th ed. Philadelphia: Lippincott; Williams & Wilkins, 2009.

Hacker NF, Moore JG, et al. *Essentials of Obstetrics and Gynecology*. 5th ed. Philadelphia: Saunders, 2010.

UNIT ONE: APPROACH TO THE PATIENT
EDUCATIONAL TOPIC 7: PREVENTIVE CARE AND HEALTH MAINTENANCE

Rationale: The student will recognize the value of routine health surveillance as a part of health promotion and disease prevention.

Intended Learning Outcomes:
The student will demonstrate the ability to:

- Counsel patients regarding the following:
  - Contraception
  - Domestic abuse/violence
  - Prevention of sexually transmitted infections
  - Immunizations
  - Diet/nutrition
  - Exercise
  - Seat belt use
  - Stress management
  - Sun exposure
  - Tobacco use
  - Alcohol/substance abuse
- Explain preventive guidelines including screening procedures for diseases of the following organ systems:
  - Breast
  - Cervix
  - Colon
  - Cardiovascular
  - Skin
  - Bone

TEACHING CASE

CASE: A 51-year old G3P3 comes to the office for a health maintenance exam. She has no concerns. She is in good health. She had three normal vaginal deliveries. She is sexually active with her husband and has been using condoms for contraception. She has no history of abnormal Pap smears or sexually transmitted infections. Her last Pap smear was one year ago. Her cycles are irregular as she only had 4 menstrual periods last year. Her last menstrual period was 2 months ago. She is not taking any medications. Her family history is significant for a maternal aunt who was diagnosed with ovarian cancer at age 60. On examination, she has normal vital signs. Her thyroid, breast, heart, lungs and abdominal exams are normal. On pelvic examination, she has normal external genitalia, normal vagina and cervix. On bimanual exam, she has a slightly enlarged uterus and no palpable adnexal masses. Rectovaginal exam confirms.

REFERENCES

Beckman CRB, et al. *Obstetrics and Gynecology*. 6th ed. Philadelphia: Lippincott, Williams & Wilkins, 2009.

Hacker NF, Moore JG, et al. *Essentials of Obstetrics and Gynecology*. 5th ed. Philadelphia: Saunders, 2010.

ACOG Practice Bulletin 115, Vaginal Birth After Previous Cesarean Delivery, August 2010 (Replaces Practice Bulletin #54 July 2004 and Committee Opinion #342 August 2006) (Note: ACOG members only access)
http://www.acog.org/publications/educational_bulletins/pb115.cfm

NIH Consensus Development Conference on Vaginal Birth After Cesarean: New Insights
http://consensus.nih.gov/2010/vbacstatement.htm

2. What are the underlying ethical principles in informed consent?

   - Autonomy or self-determination – the patient has the "ultimate" say
   - Rational decision-making – requires disclosure of information by both the physician and the patient

3. What is the role of the physician in informed consent?

   - Establish a relationship conducive to sharing information and trust
   - Be certain the patient is well-informed and when appropriate, her partner is too
   - Ensure the patient has, under ordinary circumstances, reasonable time to think about the information provided by the physician
   - Be open to questions from the patient and the patient's partner
   - Document the process as well as the decision

4. What is the role of the patient?

   - To participate in the decision-making process
   - To provide accurate and complete information
   - To ask questions

5. What topics might be included in an informed consent at this time?

   - Management of labor and associated risks
   - Possible interventions
   - Risks and benefits that can be reviewed in detail
   - Specifics include:
     - VBAC or Cesarean section
     - Benefits and risks of a trial of labor
     - IV fluids
     - Fetal monitoring

6. What should be done if the patient declines a trial of labor after a history of low-transverse c-section (VBAC)?

   - A woman should not be coerced to experience a VBAC
   - Almost one-half of eligible patients request an elective repeat procedure
     - To avoid labor-related pain
     - Convenience of scheduling
     - Geographic, cultural, and social factors may play a role

UNIT TWO: OBSTETRICS
EDUCATIONAL TOPIC 8: MATERNAL FETAL PHYSIOLOGY

Rationale: Knowledge of the physiologic adaptations to pregnancy will allow the student to better understand the impact of pregnancy in health and disease.

Intended Learning Outcomes:
The student will be able to describe:

- ! Maternal physiologic and anatomic changes associated with pregnancy
- !Physiologic functions of the placenta and fetus
- !Effect of pregnancy on common diagnostic studies

TEACHING CASE

CASE: You are seeing a new prenatal patient today. She is a 32 year-old G1 who is a nurse in the dialysis unit. She is in excellent health, a former college athlete. She has sent her own labs. Her vital signs are normal and she has gained 4 lbs. Your physical exam is normal and confirms her menstrual dates of 8 weeks. She has brought you a list of her questions.

COMPETENCY-BASED DISCUSSION & KEY TEACHING POINTS:
Competencies addressed:

- ! Communication
- ! Patient Care
- ! Medical Knowledge

1.! I'm urinating all the time so after lunch yesterday I dipped my urine. It showed no bacteria but +2 glucose. Why would this be? Do I have diabetes? Why are pregnant women more likely to get diabetes?

2.! My T4 is high, what meds do you want to start me on?

3.! I'm nauseous all day, but only vomit in the evening and when I do, even hours after dinner it looks undigested, why would that be? Is it true if I'm feeling sick I'm less likely to miscarry?

Your patient is now 32 weeks with a normal pregnancy to date, including her glucose tolerance test. She has stopped sending her own labs but still has a lot of questions.

4.! My mom says I sound breathless all the time. I still walk up 5 flights to my unit but I am more tired and my back is starting to bother me at night. I have noticed my O2 sat is normal but my pulse is 90 at rest, and it used to be 50! What do these symptoms mean? Am I anemic?

5.! My cousin told me I should be eating iodized salt to protect my baby's thyroid function. Is this true?

REFERENCES

Hacker NF, Moore JG, et al. *Essentials of Obstetrics and Gynecology*. 5th ed. Philadelphia: Saunders, 2010.

Challis, J.R.G. Prenatal endocrine function. Br Med bull (1975) 31 (1): 57-61

UNIT TWO: OBSTETRICS
EDUCATIONAL TOPIC 9: PRECONCEPTION CARE

Rationale:-The proven benefits of good health prior to conception include a significant reduction in maternal and fetal morbidity and mortality.

Intended Learning Outcomes:
The student will demonstrate the ability to:

- Describe how certain medical conditions affect pregnancy
- Describe how pregnancy affects certain medical conditions
- Counsel patients regarding history of genetic abnormalities
- Counsel patients regarding genetic screening options
- Counsel patients regarding substance abuse
- Counsel patients regarding nutrition and exercise
- Counsel patients regarding medications, immunizations and environmental hazards

TEACHING CASE

CASE: You have been Mary's doctor for the past 3 years. She is a 39-year-old Caucasian woman with a BMI of 32.9 who sees you primarily for her idiopathic chronic hypertension which is well controlled on an ACE inhibitor. She has smoked 1 pack of cigarettes per day for the past 20 years. She is in today for her annual exam and mentions that she is getting married in a few months and would like to start a family. She has never been pregnant before. Her past medical history is otherwise unremarkable.

On physical exam, her BP=138/84, Ht=5' 2", Wt=180 lbs. Otherwise, her exam is unremarkable.

COMPETENCY-BASED DISCUSSION & KEY TEACHING POINTS:
Competencies addressed:

- Patient care
- Medical knowledge
- Interpersonal and communication skills
- Professionalism

1. What is the goal of counseling a woman about pregnancy prior to conception?

2. What are the major topics that should be discussed or addressed with any woman prior to conception?

3.! For the patient in this case, what specific topics need to be addressed?

REFERENCES

Beckman CRB, et al. *Obstetrics and Gynecology*. 6th ed. Philadelphia: Lippincott, Williams & Wilkins, 2009.

Hacker NF, Moore JG, et al. *Essentials of Obstetrics and Gynecology*. 5th ed. Philadelphia: Saunders, 2010.

UNIT TWO: OBSTETRICS
EDUCATIONAL TOPIC 10: ANTEPARTUM CARE

Rationale: Antepartum care promotes patient education and provides ongoing risk assessment and development of an individualized patient management plan.

Intended Learning Outcomes:
The student will demonstrate the ability to:

- Diagnose pregnancy
- Determine gestational age
- Identify risk factors for pregnancy complications
- Describe appropriate diagnostic studies
- Describe nutritional needs of pregnant women
- Describe adverse effects of drugs and the environment
- Perform a physical examination on obstetric patients
- Answer commonly-asked questions concerning pregnancy, labor and delivery
- Describe non-directive counseling of a woman with an unintended pregnancy
- Describe approaches to the following:
    - Fetal well-being
    - Fetal growth
    - Amniotic fluid volume
    - Fetal lung maturity

TEACHING CASE

CASE: Your resident asks you to make a preliminary assessment of a 24-year-old woman who has presented to the emergency room complaining of vaginal spotting for the past two days, and which has become heavier today. She says that today's bleeding is more than a usual period and she became concerned when she passed a large clot. When you enter the cubicle where she is resting, you notice an anxious, though pleasant, woman sitting upright on the gurney. She denies fever, chills, abdominal pain or cramping. She says that she has been urinating more frequently than usual, without pain, and notes fatigue that she attributes to stress at her work. She is unable to tell you when her last menstrual period was since she has had irregular menses since puberty, often with two to three-month gaps between periods. She has never been pregnant. She tells you that she and her boyfriend, who plan to marry in the next year, use condoms for contraception. She has never been diagnosed with a sexually transmitted infection.

The patient is 170 pounds and is 5'5" tall. On physical exam, her vital signs are stable and she is not orthostatic. Speculum exam reveals no active bleeding from the cervix, although there is evidence of old blood in the vaginal vault. The cervical os is closed. No lesions are present in the vagina or on the vulva. Bimanual exam reveals

a slightly enlarged and globular uterus in mid-position, slightly irregular in contour but non-tender; the adnexae are without masses and tenderness.

COMPETENCY-BASED DISCUSSIONS & KEY TEACHING POINTS:
Competencies addressed:

- Patient Care
- Medical Knowledge

1. What are the next steps in the assessment of this patient?

2. What potential complications should you discuss with this patient?

3. What would you recommend as further management for this patient?

REFERENCES

Beckman CRB, et al. *Obstetrics and Gynecology*. 6th ed. Philadelphia: Lippincott, Williams & Wilkins, 2009.

Hacker NF, Moore JG, et al. *Essentials of Obstetrics and Gynecology*. 5th ed. Philadelphia: Saunders, 2010.

UNIT TWO: OBSTETRICS
EDUCATIONAL TOPIC 11: INTRAPARTUM CARE

Rationale: Understanding the process of normal labor and delivery allows optimal care and reassurance for the woman and timely recognition of abnormal events.

Intended Learning Outcomes:
The student will demonstrate the ability to:

- List the signs and symptoms of true and false labor
- Perform initial assessment of the laboring patient
- Describe the three stages of labor and recognize common abnormalities
- List pain management approaches during labor
- Describe methods of monitoring the mother and fetus
- Describe the steps of a vaginal delivery
- List indications for operative delivery

TEACHING CASE

CASE: AJ is a 23-year old G1P0 currently at 38 weeks gestation who comes to Labor and Delivery complaining of a 5 hour history of painful contractions occurring every 5 minutes and lasting 45-60 seconds in duration. She denies leaking of fluid per vagina, but has noted bloody show. She reports normal fetal movement.

In reviewing her chart, you find that she has had an uncomplicated prenatal course. She had an ultrasound at 17 weeks that revealed a male fetus and was consistent with her last menstrual period dating. A screening culture at 36 weeks was positive for group B streptococcus. The cervical exam at the 36 week visit was closed and long.

Her blood pressure is 96/54, pulse 92/minute, respirations are 20/minute and temperature is 98F oral. The fetal back is palpable at the right side of the maternal abdomen and the vertex is palpable through the maternal abdomen just below her symphysis pubis. Fetal heart rate (FHR) is in the 150s with moderate variability, positive accelerations and no decelerations. Contractions are noted on the external monitor every 3 minutes. The patient's cervix is 3 cm dilated, 50% effaced with the fetal vertex at 0 station. The remainder of the physical exam is unremarkable.

COMPETENCY-BASED DISCUSSION & KEY TEACHING POINTS:
Competencies addressed:

- Patient Care
- Medical Knowledge
- Systems-Based Practice

1.! Is this patient in labor? What elements of the case history support a diagnosis of labor?

2.! In addition to determining whether this patient is in labor or not, what should be included in the initial evaluation of a patient who presents in labor?

3.! What is the stage and phase of labor for this patient?

4.! What are your next steps in management of this patient?

5.! What options for pain management are available for this patient?

6.! Describe the process by which the fetus descends through the birth canal and the steps of vaginal delivery.

7.! What are other methods of delivery if AJ had not been able to push effectively or if fetal intolerance of labor had developed?

REFERENCES

Beckman CRB, et al. *Obstetrics and Gynecology*. 6th ed. Philadelphia: Lippincott, Williams & Wilkins, 2009.

Hacker NF, Moore JG, et al. *Essentials of Obstetrics and Gynecology*. 5th ed. Philadelphia: Saunders, 2010.

APGO Clinical Skills Curriculum. Vaginal Delivery: http://www.apgo.org/elearn/clinical_skills_curriculum/HTML/delivery-learningoutcomes.html

ACOG Practice Bulletin 17, Operative Vaginal Delivery, June 2000.

ACOG Practice Bulletin 36, Obstetric Analgesia and Anesthesia, July 2002.

ACOG Practice Bulletin 49, Dystocia and Augmentation of Labor, December 2003.

ACOG Practice Bulletin 106, Intrapartum Fetal Heart Rate Monitoring: Nomenclature, Interpretation, and General Management Principles, July 2009.

UNIT TWO: OBSTETRICS
EDUCATIONAL TOPIC 12: IMMEDIATE CARE OF THE NEWBORN

Rationale: Assessment of the newborn allows recognition of the abnormalities requiring intervention

Intended Learning Outcomes:
The student will demonstrate the ability to:

- Discuss techniques for assessment of newborn status
- Describe immediate care of the normal newborn
- Recognize situations requiring immediate intervention in newborn care

TEACHING CASE

CASE: C.C. is a term male newborn infant at 5 minutes of age. The Apgar score assigned by the charge nurse at 1 minute was 4. Currently, he has a heart rate of 110, a vigorous cry, active motion of all four extremities, bluish hands and feet, and a positive grimace. Because of the low 1-minute Apgar score, the charge nurse sent a cord gas. The 5-minute Apgar was 9. The following umbilical arterial gas measurements were noted: pH 7.14, pCO_2 69 mm Hg, HCO_3 23.

COMPETENCY-BASED DISCUSSION & KEY TEACHING POINTS:
Competencies addressed:

- Patient Care
- Medical Knowledge
- Systems-Based Practice

1. How do you decide if this newborn is doing well?

2. What are the important first steps in caring for any newborn?

3. Though this infant needed no additional resuscitation, what signs and symptoms would prompt you to offer additional interventions? What additional interventions would you offer?

REFERENCES

ACOG Committee Opinion 326, Inappropriate Use of the Terms Fetal Distress and Birth Asphyxia, December 2005.

ACOG Committee Opinion 333, The Apgar Score, May 2006, reaffirmed 2010.

Beckman CRB, et al. Obstetrics and Gynecology. 6th ed. Philadelphia: Lippincott, Williams & Wilkins, 2009. Chapter 10 (119-124).

Hacker NF, Moore JG, et al. Essentials of Obstetrics and Gynecology. 5th ed. Philadelphia: Saunders, 2010. Chapter 8 (114-118).

UNIT TWO: OBSTETRICS
EDUCATIONAL TOPIC 13: POSTPARTUM CARE

Rationale: Knowledge of normal postpartum events allows appropriate care, reassurance and early recognition of abnormal events.

Intended Learning Outcomes:
The student will demonstrate the ability to:

- Describe normal physiologic changes of the postpartum period
- Identify and discuss management of common problems in the early postpartum period
- Discuss contraceptive counseling of the postpartum, breastfeeding patient
- Discuss screening for postpartum depression

TEACHING CASE

CASE: A 22 year-old multigravida delivered her third healthy child vaginally without complication. During sign-out and hand off, the patient is described as ready for discharge from the hospital. She is breastfeeding, as she has with all of her children, but reports difficulty latching on. Although she is not married, she is in a stable relationship. She is considering permanent sterilization and wants to discuss it at her postpartum check-up. She states that she does not want any contraception at discharge, since she is breastfeeding and thinks she does not need any. On further questioning, she alludes to a vague history of a possible deep venous thrombosis (DVT) and history suggestive of postpartum depression after a prior pregnancy. Even though she is not a new mother, she asks about when she should expect her period.

COMPETENCY-BASED DISCUSSION & TEACHING POINTS:
Competencies addressed:

- Patient Care
- Medical Knowledge
- Interpersonal and Communication Skills

1. What are you going to tell the patient about her difficulty with latching on?

2. How are you going to answer the patient's question about resumption of menses?

3. What type of contraceptive counseling are you going to provide?

4. How would your contraceptive counseling change if the patient had persistently elevated blood pressure?

5. How would contraception counseling change if the patient had gestational diabetes?

6. How are you going to include the history of potential postpartum depression in your management plan?

7. What discharge instructions are you going to give this patient?

REFERENCES

Beckman CRB, et al. Obstetrics and Gynecology. 6th ed. Philadelphia: Lippincott, Williams & Wilkins, 2009. Chapter 10 (119-124).

Hacker NF, Moore JG, et al. Essentials of Obstetrics and Gynecology. 5th ed. Philadelphia: Saunders, 2010. Chapter 8 (114-118).

CDC US Medical Eligibility Criteria for Contraceptive Use
www.cdc.gov/mmwr/preview/mmwrhtml/rr59e0528a1.htm

Update to CDC's *U.S. Medical Eligibility Criteria for Contraceptive Use, 2010*: Revised Recommendations for the Use of Contraceptive Methods During the Postpartum Period
www.cdc.gov/mmwr/preview/mmwrhtml/mm6026a3.htm

UNIT TWO: OBSTETRICS
EDUCATIONAL TOPIC 14: LACTATION

Rationale: Knowledge of the physiology and function of the breast during lactation allows appropriate counseling to the pregnant and postpartum patient.

Intended Learning Outcomes:
The student will demonstrate the ability to:

- List the normal physiologic and anatomic change of the breast during pregnancy and postpartum.
- Recognize and know how to treat common postpartum abnormalities of the breast.
- List the reasons why breastfeeding should be encouraged.
- Describe the resources and approach to determining medication safety during breastfeeding.
- Describe common challenges in the initiation and maintenance of lactation.

TEACHING CASE

CASE: A 22 year-old G1P1 comes to the office for an urgent visit 4 days postpartum. She states that she has not been feeling well, has had a fever at home, and has a tender swollen area on her left breast. She has no problems with her right breast. Her previous medical history is significant for severe depression for which she was taking Lithium prior to pregnancy, but currently she is taking Zoloft. On examination, she is in no distress but appears tired. Her temperature is 100.7°C and BP is 130/70. On breast examination, she has an erythematous tender 4 cm area on her left breast. Her left nipple is also tender and has some cracks. The right breast is normal. She really would like to breast feed, because she has heard it is good for her baby. However it has been causing her a lot of distress, and she feels she has not had adequate milk production. In addition, she is concerned about how it will affect her sleep and how often she would have to do it, especially at night. She also would like to resume taking Lithium as her symptoms of severe depression are returning.

COMPETENCY-BASED DISCUSSIONS & KEY TEACHING POINTS:
Competencies addressed:

- Patient care
- Medical knowledge
- Practice-based
- Interpersonal and Communication Skills

1. What is the differential diagnosis? What signs and symptoms led to your diagnosis?

2. What treatment do you recommend for her breast condition?

3.! List the benefits of breastfeeding.

4.! How do you address this patient's concern about inadequate milk production?

5.! What do you tell her about how frequently and how long to breastfeed with each feed?

6.! What do you tell her about the safety of using lithium while breastfeeding?

REFERENCES

Beckman CRB, et al. *Obstetrics and Gynecology*. 6th ed. Philadelphia: Lippincott, Williams & Wilkins, 2009.

ACOG Practice Bulletin 92, Use of Psychiatric Medications During Pregnancy and Lactation, April 2008.

ACOG Committee Opinion 361, Breastfeeding: Maternal and Infant Aspects, February 2007.

Briggs GG, Freeman RK, Yaffe SJ. *Drugs in Pregnancy and Lactation*. 8th ed. Philadelphia: Lippincott Williams and Wilkins, 2008.

UNIT TWO: OBSTETRICS
EDUCATIONAL TOPIC 15: ECTOPIC PREGNANCY

Rationale: Ectopic pregnancy is a leading cause of maternal morbidity and mortality. Early diagnosis and management may prevent serious adverse outcomes, and may preserve future fertility.

Intended Learning Outcomes:
The student will demonstrate the ability to:

- Develop a differential diagnosis for bleeding and abdominal pain in the first trimester.
- List risk factors for ectopic pregnancy.
- Describe how an ectopic pregnancy is diagnosed.
- Describe treatment options for patients with ectopic pregnancy.

TEACHING CASE

CASE: A 36-year-old G1P0010 female presents to your preceptor's office with onset today of light vaginal bleeding, which she feels is not her menstrual period, and mild right lower quadrant pain which she rates as 2/10. The pain is intermittent and crampy, and is not associated with urination. There is no nausea or vomiting. The patient's last bowel movement was yesterday and was normal in consistency without blood or black color.

> **Note that the LNMP was not given in the clinical case to see if the students ask about this. You can tell them that the LNMP was 7 weeks ago.**

Her past medical history shows no allergies, no medications, and two hospitalizations. The first was eight years ago for lower abdominal pain which was thought to be due to Pelvic Inflammatory Disease and which resolved with antibiotics. The second was for a left ectopic pregnancy that required surgical removal of her left tube.

Review of systems and family history are unremarkable. Social History shows that she is mutually monogamous with a male partner without contraception.

Physical examination shows an anxious appearing female with a temperature of 99.2 degrees orally, a BP of 105/62, and a pulse of 95. Examination of her abdomen reveals normal bowel sounds. There are no masses, organomegaly, distention, or rebound tenderness. She has mild discomfort in the right lower quadrant. Pelvic examination reveals right adnexal tenderness without adnexal masses. Uterus is of normal size and there is discomfort on cervical motion. The rectal exam is negative with heme negative stool.

COMPETENCY-BASED DISCUSSIONS & KEY TEACHING POINTS:

Competencies addressed:

- Patient Care
- Medical Knowledge
- Systems-Based Practice

1. a) What is the differential diagnosis for this patient ?
   b) What aspects of her history and physical examination might lead you to be suspicious of an ectopic pregnancy?

2. What are the risk factors for ectopic pregnancy and which of these risk factors does the patient have?

3. Where can ectopic pregnancies occur and how frequently does this happen?

4. What initial test would you order for this patient to assist you in narrowing down your diagnosis?

5. If this patient's test is positive, what tests could be helpful in making a more definitive diagnosis?

6. What options are available for the management of ectopic pregnancy?

REFERENCES

Beckman CRB, et al. *Obstetrics and Gynecology*. 6th ed. Philadelphia: Lippincott, Williams & Wilkins, 2009.

ACOG Practice Bulletin 94, Medical Management of Ectopic Pregnancy, June 2008.

e-Medicine. Sepilian V, Wood E. Ectopic pregnancy. May 7, 2010.

UNIT TWO: OBSTETRICS
EDUCATIONAL TOPIC 16: SPONTANEOUS ABORTION

Rationale: Spontaneous abortion is a common and often distressing complication of early pregnancy. An accurate and prompt diagnosis is warranted.

Intended Learning Outcomes:
The student will demonstrate the ability to:

- Develop a differential diagnosis for first trimester bleeding
- Differentiate the types of spontaneous abortion (missed, complete, incomplete, threatened, septic)
- Describe the causes of spontaneous abortion
- List the complications of spontaneous abortion

TEACHING CASE

CASE: A 32 year-old G1 presents with a positive urine pregnancy test at 9 weeks 4 days from start of last normal menstrual period. She reports 5 days of moderate painless vaginal bleeding and chills. Physical examination shows a temperature of 101.5° orally, pulse of 95, and BP of 95/60 with normal bowel sounds, no rebound, and 5/10 suprapubic tenderness. Pelvic exam shows moderate amount of blood in vagina with a closed 5/10 tender cervix and an 8/10 tender uterus. No adnexal masses or tenderness.

Lab data shows a serum HCG level of 6,500 mIU/ml and ultrasound shows a gestational sac in the uterus with no fetus seen. The ovaries and tubes appear normal.

COMPETENCY-BASED DISCUSSION & KEY TEACHING POINTS:
Competencies addressed:

- Patient Care
- Medical Knowledge

1. What are the different types of spontaneous abortion?

2. Which type or types is most likely in this case?

3. What is your reasoning for which type of abortion this is?

4. Why does this patient have a fever and tenderness and what needs to be done about it?

5. If this patient did not have fever and tenderness, what complications could she develop?

6.! If this patient was 6 weeks pregnant with no fever or tenderness, had an HCG level of 700 mIU/ml and a negative ultrasound with no evidence of a gestational sac, what would be your differential diagnosis if she had a small amount of bleeding and no fever or tenderness?

7.! How would you make the diagnosis in question 6?

8.! For a patient with any type of abortion, what blood test is essential to do?

9.! What are the causes of spontaneous abortion?

REFERENCES

Beckman CRB, et al. *Obstetrics and Gynecology*. 6th ed. Philadelphia: Lippincott, Williams & Wilkins, 2009.

Hacker NF, Moore JG, et al. *Essentials of Obstetrics and Gynecology*. 5th ed. Philadelphia: Saunders, 2010.

UNIT TWO: OBSTETRICS
EDUCATIONAL TOPIC 17: MEDICAL AND SURGICAL COMPLICATIONS OF PREGNANCY

Rationale: Medical and surgical conditions may alter the course of pregnancy. Likewise, pregnancy may have an impact on the management of these conditions.

Intended Learning Outcomes:
The student will demonstrate the ability to identify the following medical and surgical conditions in pregnancy and discuss the potential impact of the conditions on the gravid patient and the fetus/newborn, as well as the impact of pregnancy (if any) on each condition, and appropriate initial evaluation:

- Anemia
- Endocrine disorders, including diabetes mellitus and thyroid disease
- Cardiovascular disease
- Hypertension
- Pulmonary disease
- Renal disease
- Gastrointestinal disease
- Neurologic disease
- Autoimmune disorders
- Alcohol, tobacco, and substance abuse
- Surgical abdomen
- Infectious diseases, including:
  - Syphilis
  - TORCH (Toxoplasmosis, Rubella, Cytomegalovirus, Herpes)
  - Group B Streptococcus
  - Hepatitis
  - Human Immunodeficiency Virus (HIV)
  - Parvovirus
  - Varicella

TEACHING CASE

CASE 1: A 22-year-old female presents to the emergency department with a 3 hour history of steadily increasing lower abdominal pain. She has not seen a physician in over 3 years. She has no history of medical or surgical problems and takes no medications. She noted the pain shortly after eating lunch, and has had some nausea, but no vomiting. She denies fever, dysuria, flank pain, and vaginal bleeding. She does not remember her last menstrual period, because they are very irregular. She is sexually active, and does not use contraception regularly. She was treated for a "pelvic infection" with an injection one year ago, but she cannot recall the name of the infection. She denies use of illicit drugs, but admits to alcohol abuse (one 6-pack

daily and more on the weekend) and gives a 6-year history of tobacco use. She describes the pain as a gradual onset, becoming sharp and intermittent with waves of pain alternating with short episodes of relief. An antacid did not give relief.

Physical examination reveals an anxious female lying on the exam table with hips flexed, moaning softly. She intermittently cries and complains of increasing pain. The nurse tells you her temperature is 99 degrees, and her pregnancy test is positive. Your examination of her abdomen reveals a gravid uterus to the level of the umbilicus with guarding and mild rebound tenderness in both upper quadrants. The uterus is soft and non-tender to palpation. Pelvic examination reveals no amniotic fluid in the vagina, and cervix is closed with no blood visible at the external os.

COMPETENCY-BASED DISCUSSIONS & KEY TEACHING POINTS:
Competencies addressed:

- Patient care
- Medical knowledge
- Professionalism

1. What tests/labs should be ordered at this time?

2. What is your initial assessment and plan?

3. What potential impact will the medical or surgical condition have on the patient and the fetus/newborn, and what potential impact will the pregnancy have on the medical or surgical condition?

CASE 2: A 30 year-old white female G0 who is infected with human immunodeficiency virus (HIV, diagnosed 4 years ago) presents to your office inquiring about future pregnancy. She is recently married to a man who is not infected with HIV and they want to have a child. She is concerned about whether her baby could be infected with HIV and whether pregnancy could make her develop AIDS. She is asymptomatic and is taking no HIV medications. Her pap smears have all been normal.

Pertinent ROS reveals she has felt well, no recent fevers, chills, cough, shortness of breath, abdominal pain, vaginal discharge, night sweats, diarrhea, weight loss, or other symptoms.

Physical examination is unremarkable.

Laboratory tests: CD4+ lymphocyte count (per mm^3) 489; HIV RNA (copies/ml) 6520.

COMPETENCY-BASED DISCUSSIONS & KEY TEACHING POINTS:
Competencies addressed:

- Patient care
- Medical knowledge
- Professionalism

1. What are the major issues to discuss with a woman who is HIV+ and wants to have a baby?

2. What are some of the risk factors for MTCT of HIV?

3. What are the recommendations for treatment of HIV in pregnant women? How may these differ from recommendations for non-pregnant adults?

4. Are there any antiretroviral drugs that should be avoided or administered in altered doses in pregnant women with HIV?

REFERENCES

Beckman CRB, et al. *Obstetrics and Gynecology.* 6th ed. Philadelphia: Lippincott, Williams & Wilkins, 2009.

ACOG Practice Bulletins 20, 29, 30, 37, 60, 68, 78, 82, 86, 90, 95, 100, 105, 113

ACOG Committee Opinions 279, 281, 284, 301, 411, 418, 422, 435, 438, 449

Public Health Service Task Force. Recommendations for use of antiretroviral drugs in pregnant HIV-1-infected women for maternal health and interventions to reduce perinatal HIV-1 transmission in the United States; May 24, 2010. Available at http://AIDSinfo.nih.gov . Accessed July 18, 2010.

Riley LE and Yawetz S. Case Records of the Massachusetts General Hospital: Case 32-2005: A 34-year-old HIV-positive woman who desired to become pregnant. N Engl J Med 2005; 353:1725-32.

UNIT TWO: OBSTETRICS
EDUCATIONAL TOPIC 18: PREECLAMPSIA-ECLAMPSIA

Rationale: Preeclampsia-eclampsia accounts for significant morbidity and mortality in both the mother and newborn.

Intended Learning Outcomes:
The student will demonstrate the ability to:

- Classify the types of hypertension in pregnancy
- Describe the pathophysiology of preeclampsia-eclampsia
- Recognize the signs and symptoms to diagnose preeclampsia-eclampsia
- Explain the management of a patient with preeclampsia-eclampsia
- List the maternal and fetal complications associated with preeclampsia-eclampsia

TEACHING CASE

CASE: An 18 year old G1P0 currently at 38 0/7 weeks presents for her routine prenatal visit. She has had an uncomplicated pregnancy up to this point, with the exception of a late onset of prenatal care and obesity (BMI of 35 kg/m^2). She reports that during the past week, she has noted some swelling of her hands and feet. She also has been feeling a bit more fatigued and has had a headache on and off. She reports good fetal movement. She has had some contractions on and off, but nothing persistent. Her blood pressure is 147/92 and her urine dip has 1+ protein/no ketones/no glucose. The fundal height measures 36 cm, the fetus is cephalic with a heart rate of 144 bpm. On physical exam you note that the patient has 3+ pre-tibial edema, and trace edema of her hands and face. She has 2+ deep tendon reflexes and 2 beats of clonus. You review her blood pressures up to this point and note that at the time of her first prenatal visit at 18 weeks, her blood pressure was 130/76 and she had no protein in her urine. However, since that visit, her blood pressures seem to have been climbing higher with each visit. Her last visit was one week ago, and she had a blood pressure of 138/88 with trace protein in the urine and she has gained 5 pounds.

COMPETENCY-BASED DISCUSSION & KEY TEACHING POINTS:
Competencies addressed:

- Patient Care
- Medical Knowledge
- Systems-Based Practice

1. What is the appropriate method for assessing blood pressure in the ambulatory setting and what is considered a hypertensive blood pressure during pregnancy?

2.! What types of hypertensive syndromes can occur during pregnancy?

3.! How does the physiology of preeclampsia lead to the clinical symptoms and findings?

4.! What are the laboratory findings that support a diagnosis of preeclampsia-eclampsia syndrome?

5.! What types of maternal and fetal complications are associated with preclampsia-eclampsia syndrome?

REFERENCES

Beckman CRB, et al. *Obstetrics and Gynecology*. 6th ed. Philadelphia: Lippincott, Williams & Wilkins, 2009.

Hacker NF, Moore JG, et al. *Essentials of Obstetrics and Gynecology*. 5th ed. Philadelphia: Saunders, 2010.

Sibai B. Diagnosis and Management of Gestational Hypertension and Preeclampsia. ObstetGynecol. High-Risk Pregnancy Series: An Expert's View. Jul 2003; (102) 1 - p 181-192.

Lain KY, Roberts JM. Contemporary concepts of the pathogenesis and management of preeclampsia. *JAMA*. Jun 26 2002; 287(24):3183-6.

UNIT TWO: OBSTETRICS
EDUCATIONAL TOPIC 19: ALLOIMMUNIZATION

Rationale: The incidence of maternal D alloimmunization has decreased in the past few decades. Awareness of the red cell antigen-antibody system is important to help further reduce the morbidity and mortality from alloimmunization.

Intended Learning Outcomes:
The student will demonstrate the ability to:

- Describe the pathophysiology and diagnosis of alloimmunization
- Discuss the use of immunoglobulin prophylaxis during pregnancy for the prevention of alloimmunization

TEACHING CASE

CASE: A 32 year-old P1101 woman and her new husband present for prenatal care at 20 weeks' gestation. Her past obstetric history is significant for a first child delivered at term following an abruption. Her second child died of complications of prematurity following in utero transfusions for Rh alloimmunization. Her initial prenatal labs this pregnancy indicate her blood type as A negative and an antibody screen positive for anti-D with a titer of 1:64. You discuss any additional evaluation needed, her risks in this pregnancy, and the plan of management with her and her husband.

COMPETENCY-BASED DISCUSSIONS & KEY TEACHING POINTS:
Competencies addressed:

- Patient Care
- Medical Knowledge
- Practice-Based Learning
- Systems-Based Practice

1. What is Rh alloimmunization and what are the red cell antigens involved?

2. What are the risk factors for Rh alloimmunization?

3. What is the mechanism for RhoGAM prophylaxis against Rh disease? What is the dose of RhoGAM? What is the recommended schedule for RhoGAM administration?

4. Could this patient's Rh alloimmunization have been prevented? What are the ways in which alloimmunization might be diagnosed? Is there any further blood work that should be obtained before you counsel this patient on her risks in this pregnancy? What are some ultrasound findings that may suggest Rh disease?

REFERENCES

Beckman CRB, et al. *Obstetrics and Gynecology*. 6th ed. Philadelphia: Lippincott, Williams & Wilkins, 2009. Chapter 19.

Hacker NF, Moore JG, et al. *Essentials of Obstetrics and Gynecology*. 5th ed. Philadelphia: Saunders, 2010. Chapter 15.

ACOG Practice Bulletin 4, Prevention of Rh D Alloimmunization, May 1999.

ACOG Practice Bulletin 75, Management of Alloimmunization, August 2006.

UNIT TWO: ABNORMAL OBSTRICS
EDUCATIONAL TOPIC 20: MULTIFETAL GESTATION

Rationale: Multifetal gestation imparts additional risks and complications to the mother and fetus which require specialized care.

Intended Learning Outcomes:
The student will demonstrate the ability to:

- Describe the embryology of multifetal gestation
- Describe the unique maternal fetal physiologic changes associated with multifetal gestation
- Describe the diagnosis and management of multifetal gestation
- Describe the potential maternal and fetal complications associated with multifetal gestation

TEACHING CASE

CASE: You are seeing a 28 year-old G2P1 now at 12 weeks. Her first pregnancy was full term and uncomplicated. At her first trimester screen she was noted to have a dichorionic diamniotic twin gestation with size equal to dates.

COMPETENCY-BASED DISCUSSION & KEY TEACHING POINTS:
Competencies addressed:

- Communication
- Patient Care
- Medical Knowledge
- Systems Based Practice

1. How is the diagnosis of chorionicity and zygosity made?

2. What nutritional deficiencies is she at higher risk for in a twin gestation? What recommendations will you make to her because of them, including weight gain?

3. You are counseling her about the increased maternal and fetal risks during the pregnancy, what specifically are you concerned about?

4. What additional management strategies are recommended in twin pregnancy?

5. Your patient is now at 29 weeks without any complications. You are going to counsel her about delivery planning. What factors will determine the safest timing of delivery in a multiple gestation?

6. What are the risks of delivery in a multiple gestation and what are considerations for mode of delivery?

REFERENCES

Beckman CRB, et al. *Obstetrics and Gynecology*. 6th ed. Philadelphia: Lippincott, Williams & Wilkins, 2009. Chapter 18.

Bush MC, Pernoll ML. Multiple Pregnancy: in Current Diagnosis & Treatment: Obstetrics and Gynecology, 2007.

ACOG Practice Bulletin 56, Multiple Gestation: Complicated Twin, Triplet and Higher Order Multifetal Gestation, 2004.

Chauhan SP, Cardo JA, Hayes E. Twins: prevalence, problems, and preterm births. Am J Obstet Gynecol: 203(4): 305-315. 2010

UNIT TWO: OBSTETRICS
EDUCATIONAL TOPIC 21: FETAL DEATH

Rationale: Antepartum stillbirth is a devastating pregnancy complication that may cause additional risks to the patient. Early medical management and patient support is warranted.

Intended Learning Outcomes:
The student will demonstrate the ability to:

- Describe the common causes of fetal death in each trimester
- Describe the symptoms, physical findings and diagnostic methods to confirm the diagnosis and etiology of fetal death
- Describe the medical and psychosocial management of a patient diagnosed with a fetal demise

TEACHING CASE

A 30 year-old G1P0 presents for a routine prenatal visit at 36 weeks gestation. Her prenatal course has been uncomplicated. She had a normal ultrasound at 20 weeks gestation with a normal fetal anatomic survey. She reports no problems and good fetal movement. Unfortunately, no fetal heart tones were heard by Doppler and an ultrasound evaluation confirmed no fetal cardiac activity. She is very upset and you spend time with her counseling her.

COMPETENCY-BASED DISCUSSION & KEY TEACHING POINTS:
Competencies addressed:

- Patient care
- Medical knowledge
- Interpersonal and communication skills
- Professionalism

1. What is the definition of fetal death?

2. What are the symptoms and physical findings and diagnostic methods used to confirm the diagnosis of fetal death?

3. What risk factors are associated with fetal death?

4. What are some causes and conditions associated with fetal death?

5. What work-up should be considered for a patient with a fetal death?

6. Describe the medical and psychosocial management of a patient diagnosed with a fetal demise.

7. How should a patient with a history of an unexplained fetal death be followed in a future pregnancy?

REFERENCES

ACOG Practice Bulletin 102, Management of Stillbirth, March 2009.

Silver RM, Fetal Death. Obstet Gynecol 2007;109:153-67.

Educational Topic 16: Spontaneous Abortion

UNIT TWO: OBSTETRICS
EDUCATIONAL TOPIC 22: ABNORMAL LABOR

Rationale: Labor is expected to progress in an orderly and predictable manner. Careful observation of the mother and fetus during labor will allow for early detection of abnormalities so that management can be directed to optimize outcome.

Intended Learning Outcomes:
The student will demonstrate the ability to:

- List abnormal labor patterns
- Describe the causes and methods of evaluating abnormal labor patterns
- Discuss fetal and maternal complications of abnormal labor
- List indications and contraindications for oxytocin administration
- List risks and benefits of trial of labor after Cesarean delivery
- Discuss strategies for emergency management of breech, shoulder dystocia and cord prolapse.

TEACHING CASE

CASE: Charlene is a 31 year-old G1 at 40 weeks and 6 days gestation as determined by in vitro fertilization dating, who presents with a chief complaint of contractions. Her prenatal care has been uncomplicated. Her past medical history is unremarkable. She has been having contractions about every 5-7 minutes for about 10 hours, and she is exhausted. She denies leaking of fluid or vaginal bleeding.

A cervical exam reveals her cervix to be about 2cm dilated, 100% effaced, with a vertex presentation at –3 station. Fetal heart tones are in the 140s with an external monitor. A tocodynamometer confirms uterine contractions about every 5 minutes. Her vital signs are stable and her physical examination is otherwise unremarkable.

Dipstick urinalysis reveals no protein, glucose or ketones. A blood clot to type and hold is sent to the laboratory per hospital policy. A CBC is normal.

Charlene is admitted to labor and delivery where an IV line is placed. Two hours later, there has been no change in the cervical exam and she asks for pain medicine. Narcotic medication is ordered and she soon falls asleep. The fetal heart tones remain stable and the contraction frequency has decreased.

Charlene is awakened about two hours after the narcotic dose by painful contractions that appear on the monitor about every 3 minutes. A cervical exam reveals a change to 5cm dilation, 100% effacement. The fetus is at –2 station with some caput noted. The membranes are artificially ruptured, revealing copious

amounts of clear fluid; fetal scalp electrode and intrauterine pressure catheter are placed. Charlene requests an epidural, and the anesthesiologist places one.

The epidural functions well and the intrauterine pressure catheter show uterine contractions every 7-10 minutes. Her average Montevideo units is 100. The fetal heart tracing remains reassuring. After another two hours, the cervix is unchanged and the station has remained at –2. Oxytocin is started by intravenous pump. The uterine contractions become more frequent, every 2-4 minutes, and her MVU's reach 200 over 10 minutes. Her temperature has climbed slightly, to 99.8° F. Two hours later the cervix is still 5 cm dilated and she has a temperature of 101° F; the fetal heart rate is reassuring, but the baseline has increased to the 160's. A Cesarean section is planned.

COMPETENCY-BASED DISCUSSION & KEY TEACHING POINTS:

Competencies Addressed:

- Patient Care
- Medical Knowledge
- Systems-Based Practice

1. What is the reason for this patient's Cesarean section? What are some patterns of abnormal labor? What are the causes of abnormal labor?

2. How do you evaluate labor?

3. If this patient had refused Cesarean section and proceeded with labor despite an abnormal pattern, what maternal and fetal complications could have occurred?

4. What are indications and contraindication for oxytocin administration?

5. In her subsequent pregnancies, this patient would like to attempt a vaginal delivery. What are risks and benefits trial of labor after Cesarean?

6. How do you manage breech presentation, shoulder dystocia and cord prolapse?

REFERENCES

ACOG Committee Opinion 340, Mode of Term Singleton Breech, July 2006, reaffirmed 2010.

ACOG Practice Bulletin 40, Shoulder Dystocia, November 2002.

ACOG Practice Bulletin 13, External Cephalic Version, February 2000.

ACOG Practice Bulletin 115, Vaginal Birth after Cesarean, August 2010.

Beckman CRB, et al. *Obstetrics and Gynecology*. 6th ed. Philadelphia: Lippincott, Williams & Wilkins, 2009. Chapter 9 (103-111).

Hacker NF, Moore JG, et al. *Essentials of Obstetrics and Gynecology*. 5th ed. Philadelphia: Saunders, 2010. Chapter 13 (166-170), Chapter 11 (143-145).

UNIT TWO: OBSTETRICS
EDUCATIONAL TOPIC 23: THIRD TRIMESTER BLEEDING

Rationale: Bleeding in the third trimester requires prompt evaluation and management to reduce maternal and fetal morbidity and mortality.

Intended Learning Outcomes:
The student will demonstrate the ability to:

- List the causes of third trimester bleeding
- Describe the initial evaluation of a patient with third trimester bleeding
- Differentiate the signs and symptoms of third trimester bleeding
- Describe the maternal and fetal complications of placental previa and abruption placenta
- Describe the initial evaluation and management plan for acute blood loss
- List the indications and potential complications of blood product transfusion

TEACHING CASE

CASE: A 25-year-old G_2P_1 female at 32 weeks gestation is brought to labor and delivery by her husband. About an hour before, she was watching television when she noted a sudden gush of bright red blood vaginally. The bleeding was heavy and soaked through her clothes, and she has continued to bleed since then. She denies any cramps or abdominal pain. She says that her last sexual intercourse was a week ago. A review of her prenatal chart finds nothing remarkable other than a borderline high blood pressure from her first prenatal visit that has not required medication. There is no mention of bleeding prior to this episode. She had an ultrasound to confirm pregnancy at 14 weeks, but none since.

Physical examination reveals an extremely pale woman whose blood pressure is 98/60, pulse 130, respirations 30, temperature 99° F. Her abdomen is soft without guarding or rebound to palpation, and the uterus is nontender and firm, but not rigid. Fundal height is 33cm. Fetal heart tones are in the 140s with good variability. The external monitor reveals uterine irritability, but no discrete contractions are seen. There is a steady stream of bright red blood coming from her vagina

COMPETENCY-BASED DISCUSSION & KEY TEACHING POINTS:
Competencies addressed:

- Patient Care
- Medical Knowledge
- Systems-Based Practice

1. What is your differential diagnosis for potential causes of bleeding for this patient?

2.! What steps would you take to evaluate this patient?

3.! What signs and symptoms would help you differentiate the potential causes of the bleeding?

4.! What steps would you take to manage the low blood pressure and tachycardia that the patient is displaying?

5.! Under what circumstances would you consider blood product transfusion?

REFERENCES

Beckman CRB, et al. *Obstetrics and Gynecology*. 6th ed. Philadelphia: Lippincott, Williams & Wilkins, 2009.

Hacker NF, Moore JG, et al. *Essentials of Obstetrics and Gynecology*. 5th ed. Philadelphia: Saunders, 2010.

UNIT TWO: OBSTETRICS
EDUCATIONAL TOPIC 24: PRETERM LABOR

Rationale: Prematurity is the most common cause of neonatal mortality and morbidity. The reduction of preterm births remains an important goal in obstetric care.

Intended Learning Outcomes:
The student will demonstrate the ability to:

- Identify the risk factors and causes for preterm labor.
- Describe the signs and symptoms of preterm labor.
- Describe the initial management of preterm labor.
- List indications and contraindications of medications used in preterm labor.
- Identify the adverse outcomes associated with preterm birth.
- Counsel the patient regarding risk reduction for preterm birth.

TEACHING CASE

CASE: An 18-year-old African-American, G2P0101 who is 12 weeks pregnant, presents to your prenatal clinic for a new patient visit. Before you walk into the room to see the patient, you look through her records and note that she delivered her last pregnancy just 12 months ago. Beginning at 24 weeks in her previous pregnancy, the patient presented numerous times to Labor and Delivery reporting contractions, and was sent home each time with a diagnosis of "Braxton-Hicks contractions". She eventually presented at 28 weeks gestation and was diagnosed with preterm labor. She delivered at 29 weeks. The neonate's course was complicated by intra-ventricular hemorrhage and respiratory distress syndrome. The child now appears to have cerebral palsy and chronic lung disease due to bronchopulmonary dysplasia.

The patient's intake vitals are: Temp 36.5º C, HR 64, RR 20, BP 100/60, Wt 49 kg.

Your nurse tells you that the patient appears very anxious about this pregnancy and that she has a lot of questions about why she had a premature baby in the first place. She is concerned that she might have this type of complication with this current pregnancy, but wishes that she could distinguish Braxton-Hicks contractions from true labor better so that she can avoid coming to Labor & Delivery repeatedly like she did last time.

COMPETENCY-BASED DISCUSSIONS & KEY TEACHING POINTS:
Competencies addressed:

- Patient care
- Medical knowledge
- Interpersonal and communication skills

- Professionalism
- Systems-based practice and management

1. What are the risk factors for preterm labor, and which ones does this patient have?

2. What characteristics distinguish Braxton-Hicks contractions from true labor contractions?

3. What should you counsel the patient regarding the signs and symptoms of preterm labor?

4. What recommendations, if any, would you discuss with this patient regarding prevention strategies to reduce the risk of preterm delivery in this pregnancy? To reduce the risk of neurodevelopmental disorders and other morbidity associated with preterm labor in this fetus should she experience preterm labor?

5. If the patient does experience PTL in this pregnancy, what recommendations would you make regarding treatment and management?

REFERENCES

Beckman CRB, et al. *Obstetrics and Gynecology*. 6th ed. Philadelphia: Lippincott, Williams & Wilkins, 2009.

ACOG Practice Bulletin 31, 43.

ACOG Committee Opinion 419, 445, 455.

UNIT TWO: OBSTETRICS
EDUCATIONAL TOPIC 25: PREMATURE RUPTURE OF MEMBRANES

Rationale: Rupture of the membranes prior to labor is a problem for both term and preterm pregnancies. Careful evaluation of this condition may improve fetal and maternal outcome.

Intended Learning Outcomes:
The student will demonstrate the ability to:

- List the history, physical findings and diagnostic methods to confirm rupture of the membranes
- Identify risk factors for premature rupture of the membranes
- Describe the risks and benefits of expectant management versus immediate delivery based on gestational age
- Describe the methods to monitor maternal and fetal status during expectant management
- Identify a treatment to decrease the risk of preterm premature rupture of the membranes in a future pregnancy

TEACHING CASE

CASE: A 26-year-old G2P0100 woman, who is 31 weeks gestation, presents to the labor unit complaining of leakage of fluid and she thinks that her "bag of water broke". She has had increased vaginal discharge and intermittent lower back pain for the last two days. She reports a gush of fluid about 2 hours ago. The fluid ran down her leg and appeared clear with no noticeable odor. Her prior pregnancy was complicated by preterm labor and premature rupture of the membranes at 26 weeks gestation. The neonate's course was complicated by necrotizing enterocolitis, respiratory distress, and death at 28 days of life.

COMPETENCY-BASED DISCUSSION & KEY TEACHING POINTS:
Competencies addressed:

- Patient care
- Medical knowledge

1. What risk factors are associated with PROM?

2. What should be the next step in this patient's diagnosis?

3. What should be the next step in management once PROM has been confirmed?

4. What are the risks associated with preterm PROM?

5.! What treatment can this patient be offered in a future pregnancy to decrease her recurrence risk for preterm PROM and preterm delivery?

REFERENCES

Beckman CRB, et al. *Obstetrics and Gynecology*. 6th ed. Philadelphia: Lippincott, Williams & Wilkins, 2009.

Hacker NF, Moore JG, et al. *Essentials of Obstetrics and Gynecology*. 5th ed. Philadelphia: Saunders, 2010.

ACOG Technical Bulletin 80, Premature Rupture of Membranes, April 2007.

UNIT TWO: OBSTETRICS
EDUCATIONAL TOPIC #26: INTRAPARTUM FETAL SURVEILLANCE

Rationale: Intrapartum fetal monitoring helps evaluate fetal well-being.

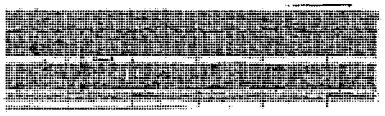
Intended Learning Outcomes:
The student will demonstrate the ability to:

- Describe the techniques of fetal monitoring
- Interpret intrapartum electronic fetal monitoring

TEACHING CASE

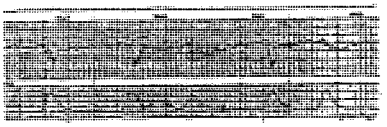
CASE: A 27 year-old G3 P2 at 39 weeks gestation is admitted to the labor and delivery unit in early labor. She has had an uncomplicated pregnancy similar to her other two pregnancies, both of which delivered vaginally. Her last labor was 4 hours in length, and the infant's birth weight was 3900 grams after an uncomplicated delivery.

At the time of admission, her physical examination reveals a healthy appearing woman in moderate distress with contractions every 4-6 minutes, described as 7 on a pain scale of 1-10, with 10 being most severe. Her weight is 165 pounds, blood pressure is 135/82, and fundal height is 37 cm. The estimated fetal weight is around 4000 grams, the fetus is in the vertex presentation and her pelvic examination reveals a normal-sized pelvis with cervix dilated to 5cm/80% effacement/-1 station. Fetal heart rate is noted to be 120 beats per minute when the external monitor is applied at 1600.



This patient appears to be having a normal labor at term. The fetal heart rate is normal and the fetus is having accelerations of the fetal heart rate, also a reassuring finding. Her contraction pattern appears normal, and we should expect a vaginal delivery in the next few hours.

Two hours later, the nurse calls you to the labor suite to review the fetal heart tracing below. She expresses concern about the changed appearance of the fetal heart tracing and asks for your opinion.



COMPETENCY-BASED DISCUSSIONS & KEY TEACHING POINTS:

Competencies addressed:

- Patient Care
- Medical Knowledge
- Practice-Based Learning
- Interpersonal and Communication Skills
- Systems-Based Practice

1. What is the purpose of intrapartum fetal heart rate monitoring?
2. What are the commonly used methods of intrapartum fetal monitoring?
3. What are the periodic changes that occur in the FHT, what is the physiology, and what interventions, if any, would be appropriate?
4. What is the most important aspect in the evaluation of any fetal heart tracing?

REFERENCES

Beckman CRB, et al. *Obstetrics and Gynecology*. 6th ed. Philadelphia: Lippincott, Williams & Wilkins, 2009. Chapter 9.

Hacker NF, Moore JG, et al. *Essentials of Obstetrics and Gynecology*. 5th ed. Philadelphia: Saunders, 2010. Chapter 9.

ACOG Practice Bulletin 106, Intrapartum Fetal Heart Rate Monitoring: Nomenclature, Interpretation, and General Management Principles, July 2009.

ACOG Practice Bulletin 116, Management of Intrapartum Fetal Heart Rate Tracings, November 2010.

Macones GA, Hankins GDV, Spong CY, Hauth J, Moore T. The 2008 National Institute of Child Health and Human Development Workshop Report on Electronic Fetal Monitoring: Update on Definitions, Interpretation and Research Guidelines. *Obstetrics & Gynecology*. 112(3):661–666, September 2008. See Below.

Excerpt from Macones GA et al, Obstetrics and Gynecology, 2008: Three-Tier Fetal Heart Rate Interpretation System

Category I

Category I fetal heart rate (FHR) tracings include all of the following:

- Baseline rate: 110–160 beats per minute (bpm)
- Baseline FHR variability: moderate
- Late or variable decelerations: absent
- Early decelerations: present or absent
- Accelerations: present or absent

Category II

Category II FHR tracings include all FHR tracings not categorized as Category I or Category III. Category II tracings may represent an appreciable fraction of those encountered in clinical care. Examples of Category II FHR tracings include any of the following:

Baseline rate

- Bradycardia not accompanied by absent baseline variability
- Tachycardia

Baseline FHR variability

- Minimal baseline variability
- Absent baseline variability not accompanied by recurrent decelerations
- Marked baseline variability

Accelerations

- Absence of induced accelerations after fetal stimulation

Periodic or episodic decelerations

- Recurrent variable decelerations accompanied by minimal or moderate baseline variability
- Prolonged deceleration _2 minutes but _10 minutes
- Recurrent late decelerations with moderate baseline variability
- Variable decelerations with other characteristics, such as slow return to baseline, "overshoots," or "shoulders"

Category III

Category III FHR tracings include either:

- Absent baseline FHR variability and any of the following:
  - Recurrent late decelerations
  - Recurrent variable decelerations
  - Bradycardia
- Sinusoidal pattern

UNIT TWO: OBSTETRICS
EDUCATIONAL TOPIC 27: POSTPARTUM HEMORRHAGE

Rationale: Postpartum hemorrhage is a major, often preventable, cause of maternal morbidity and mortality.

Intended Learning Outcomes:
The student will demonstrate the ability to:

- Identify the risk factors for postpartum hemorrhage.
- Construct a differential diagnosis for immediate and delayed postpartum hemorrhage.
- Develop an evaluation and management plan for the patient with postpartum hemorrhage.

TEACHING CASE

CASE: Tracy is a 33 year-old G 1 patient who had undergone induction of labor for a post-dates pregnancy at 41 weeks and 3 days gestation. Prostaglandins were used to accomplish cervical ripening and an oxytocin infusion was used to induce labor. The patient had a lengthy first and second stage. Ultimately, the fetus was delivered with vacuum assistance. The baby weighed 9 pounds 3 oz at birth. The third stage of labor was uncomplicated. Thirty minutes later you are called to the recovery room because Tracy has experienced brisk vaginal bleeding that did not respond to uterine massage by her nurse.

COMPETENCY-BASED DISCUSSIONS & KEY TEACHING POINTS

Competencies addressed:

- Medical Knowledge
- Patient Care
- Systems-Based Practice

1. What is the definition of postpartum hemorrhage?

2. What elements of this case present risk factors for a post-partum hemorrhage?

3. What are other risk factors for postpartum hemorrhage?

4. What are the causes of postpartum hemorrhage?

5. What is the management for postpartum hemorrhage?

REFERENCES

Beckman CRB. et al. *Obstetrics and Gynecology.* 6th Edition. Philadelphia: Lippincott, Williams & Williams, 2009. Chapter 12 (133-139).

SOGC Practice Guideline 235, Active Management of the Third Stage of Labour: Prevention and Treatment of Postpartum Hemorrhage, October 2009.

World Health Organization Guidelines for the management of postpartum hemorrhage and retained placenta, 2009.

UNIT TWO: OBSTETRICS
EDUCATIONAL TOPIC 28: POSTPARTUM INFECTION

Rationale: Early recognition and treatment of postpartum infection decreases maternal morbidity and mortality.

Intended Learning Outcomes:
The student will demonstrate the ability to:

- Identify the risk factors for postpartum infection
- List common postpartum infections
- Develop an evaluation and management plan for the patient with postpartum infection

TEACHING CASE

CASE: A 24 year-old G1P1 African-American, 3 days post op from a primary Cesarean section, is evaluated for a fever of 39° C. She denies nausea or vomiting, but has noticed increased lower abdominal pain since last evening. Her pregnancy has been uncomplicated. She presented to the hospital at 38 6/7 days with rupture of membranes, with cervical dilation of 2 cm/50% effacement. She was given oxytocin to induce labor. She progressed slowly to the active phase, and 9 hours later, she was 5 cm/completely effaced and vertex at zero station, but her labor remained protracted. She had an intrauterine pressure catheter placed and the oxytocin dose was titrated to achieve adequate labor. Despite adequate contractions (240 Montevideo units per hour), she had no progress for the next 4 hours. The fetus was also noted to develop tachycardia with a baseline heart rate of 170 beats per minute. At this time, a repeat low transverse Cesarean section was performed. The surgery was uncomplicated. She delivered a viable male, 3750 grams, with APGAR 9/9 at one and five minutes respectively. She was given perioperative antibiotic prophylaxis (Ancef 1 gm) at the time of the Cesarean section.

COMPETENCY-BASED DISCUSSIONS & KEY TEACHING POINTS:
Competencies addressed:

- Patient Care
- Medical Knowledge

1. What findings in the history place this patient at risk for postpartum fever? Are there any other factors that place patients at risk for postpartum infection that we don't learn from this history?

2. What would you include in your differential for the cause of the postpartum fever?

3. How would you approach evaluating this patient?

4.! How would you approach managing this patient?

REFERENCES

Beckman CRB, et al. *Obstetrics and Gynecology*. 6th ed. Philadelphia: Lippincott, Williams & Wilkins, 2009.

Hacker NF, Moore JG, et al. *Essentials of Obstetrics and Gynecology*. 5th ed. Philadelphia: Saunders, 2010.

ACOG Practice Bulletin 120, Use of Prophylactic Antibiotics in Labor and Delivery, June 2011.

ACOG Practice Bulletin 49, Dystocia and Augmentation of Labor, December 2003.

ACOG Practice Bulletin 80, Premature Rupture of Membranes, April 2007.

UNIT TWO: OBSTETRICS
EDUCATIONAL TOPIC 29: ANXIETY AND DEPRESSION

Rationale: Pregnancy may be accompanied by anxiety and depression especially in the postpartum period. Recognition of psychological disturbance is essential for early intervention.

Intended Learning Outcomes:
The student will demonstrate the ability to:

- Identify risk factors for postpartum blues, depression, and psychosis
- Differentiate between postpartum blues, depression, and psychosis
- Describe treatment options for postpartum blues, depression, and pyschosis
- Recognize appropriate treatment options for mood disorders during pregnancy and lactation

TEACHING CASE

CASE: Ms. Davis is a 22-year-old $G_3P_2Ab_1$ who reports that in addition to being overwhelmed by having a newborn baby, her 2 ½-year-old daughter recently experienced a severe illness. She denied suicidal ideation or homicidal ideation. Her mother is assisting with caring for the children.

During her visit, Ms. Davis describes feeling sleep deprived, guilty and inadequate. She also admits to occasional crying spells and decreased appetite. She notes that her sister has depression and is treated with fluoxetine.

She is a stay-at-home mom who has been married for five years. Her pregnancy was uncomplicated, and she had a normal vaginal delivery at term. She initially tried to breast feed but stopped after 3 days because of "sore nipples."

COMPETENCY-BASED DISCUSSION & KEY TEACHING POINTS:
Competencies addressed:

- Patient Care
- Medical Knowledge
- Systems-Based Practice

1. What are the most important symptoms to look for in a patient like Ms. Davis and why?

2. Are her symptoms consistent with postpartum blues, postpartum depression, or postpartum psychosis?

3. What would a treatment plan for Ms. Davis include?

4.! Which pharmacologic agents could be included in her treatment plan and how would lactation affect the agents selected?

REFERENCES

Beckman CRB, et al. *Obstetrics and Gynecology*. 6th ed. Philadelphia: Lippincott, Williams & Wilkins, 2009.

Hacker NF, Moore JG, et al. *Essentials of Obstetrics and Gynecology*. 5th ed. Philadelphia: Saunders, 2010.

ACOG Practice Bulletin 92, Use of Psychiatric Medications During Pregnancy and Lactation, April 2008 (Replaces Practice Bulletin 87 November 2007): http://www.acog.org/publications/educational_bulletins/pb092.cfm

ACOG Committee Opinion 453: Screening for Depression During and After Pregnancy, February 2010: http://www.acog.org/publications/committee_opinions/co453.cfm

UNIT TWO: OBSTETRICS
EDUCATIONAL TOPIC 30: POSTTERM PREGNANCY

Rationale: Perinatal mortality and morbidity may be increased significantly in a prolonged pregnancy. Prevention of complications associated with postterm pregnancy is one of the goals of antepartum and intrapartum management.

Intended Learning Outcomes:
The student will demonstrate the ability to:

- Identify the normal duration of gestation
- Identify the complications of prolonged gestation
- Describe the evaluation and management options for prolonged gestation

TEACHING CASE

CASE: A 35-year-old, G1P0, presents to your office for a routine prenatal exam. She is 5 days past her due date that was determined by her last menstrual period and a second trimester ultrasound. While reviewing her chart, you note that she has gained 32 pounds during this uncomplicated pregnancy. Today's exam reveals a weight gain of 1/2 pound since last week's visit. Her BP is 110/65. She has no glycosuria or proteinuria. The fundal height measures 38 cm and fetal heart tones are auscultated at 120 bpm in the left lower quadrant. The fetus has a cephalic presentation and an estimated weight of 8 lbs.

Just before you go into the room, your nurse pulls you to the side, and tells you, "She has a lot of questions!" Once you walk into the room, the patient expresses her disappointment that she has not had the baby yet. She assumed that she will be having the baby on her due date. She asks you about potential harm to her and the baby from going past her due date, and she would like to know her options.

COMPETENCY-BASED DISCUSSION & KEY TEACHING POINTS:
Competencies addressed:

- Patient Care
- Medical Knowledge
- Systems-Based Practice

1. What would you tell this patient is the normal duration of pregnancy and what is the usual time for the onset of spontaneous labor?

2. What would you counsel the patient, are the risks associated with postterm pregnancy?

3. What are the features of postmaturity syndrome?

4.! What management plan would be appropriate for this patient?

REFERENCES

Beckman CRB, et al. *Obstetrics and Gynecology*. 6th ed. Philadelphia: Lippincott, Williams & Wilkins, 2009.

Hacker NF, Moore JG, et al. *Essentials of Obstetrics and Gynecology*. 5th ed. Philadelphia: Saunders, 2010.

ACOG Practice Bulletin 55, Management of Postterm Pregnancy, September 2004.

UNIT TWO: OBSTETRICS
EDUCATIONAL TOPIC 31: FETAL GROWTH ABNORMALITIES

Rationale: Abnormalities of fetal growth carry increased risks for morbidity and mortality. Monitoring fetal growth is an important aspect of prenatal care.

Intended Learning Outcomes:
The student will demonstrate the ability to:

- !Define macrosomia and fetal growth restriction
- !Discuss etiologies of abnormal growth
- !Cite methods of detection for fetal growth abnormalities
- !Describe the management of fetal growth abnormalities
- !State the associated morbidity and mortality of fetal growth abnormalities

TEACHING CASE

CASE: A 20 year-old G 2 now P1 African-American is referred to you from her family physician for an obstetrics consultation. She is currently 35 0/7 weeks based on a certain LMP with regular 28 day cycles. At her last prenatal visit, her fundal height measured 30 cm. In taking her history about her prior delivery, she tells you that she delivered 3 weeks before her due date, but she thought that her baby was small, weighing 2400 grams. She does not report any other pregnancy complications. She smokes 2 packs of cigarettes a day and has gained 8 pounds during this pregnancy.

Physical Exam: BP 110/70; fundal height is 30 cm. Fetal heart tones are present

Prenatal Lab:

Toxoplasmosis - <1:16
Herpes - <0.25
Rubella - Immune
CMV - .29
CBC - Hgb -10.1 gm/dl
WBC - 8.6
VDRL = non-reactive
Blood Type - 0+
Antibody Screen - negative

Obstetrical Ultrasonography Report:

Fetal number: Single
Position: Cephalic
Placenta: Anterior, grade II
Amniotic fluid volume: Normal

Fetal dating:

BPD: 82.9 mm = 33.3 ± 3.1 weeks
HC: 299.7 mm = 33.2 ± 3.0 weeks
AC: 274.0 mm = 31.5 ± 3.0 weeks
FL: 58.0 mm = 30.3 ± 3.0 weeks
Humerus: 51.2 mm = 29.9 ± 2.8 weeks
Menstrual age = 34.9 weeks
Composite sonar age = 31.6 ± 2.4 weeks
Estimated fetal weight = 1700 ± 308 grams, less than the 10th percentile at 34.9 weeks

Fetal Organ Imaging:

Kidneys: +
Bladder: +
Stomach: +
Spine: Appears grossly normal
Cardiac motion: + (normal four chamber view)
Fetal Breathing: +
Limb motion: +

Umbilical artery Doppler Flow Study: S/D ratio = 2.66 (average of 3 measurements). This is within normal limits for this gestational age.

COMPETENCY-BASED DISCUSSIONS & KEY TEACHING POINTS:

Competencies addressed:

- Patient Care
- Medical Knowledge
- Systems-based Practice

1. How do you interpret the ultrasound?

2. What can you tell the patient is the possible etiology of the IUGR?

3. The patient asks you why the fetal growth problem was not detected earlier. What are the methods to screen and diagnose fetal growth disorders?

4. What would you tell the patient are the potential consequences of IUGR?

5. How would you approach managing this patient?

REFERENCES

Beckman CRB, et al. *Obstetrics and Gynecology*. 6th ed. Philadelphia: Lippincott, Williams & Wilkins, 2009.

Hacker NF, Moore JG, et al. *Essentials of Obstetrics and Gynecology*. 5th ed. Philadelphia: Saunders, 2010.

ACOG Practice Bulletin 12, Intrauterine Growth Restriction, January 2000.

UNIT TWO: OBSTETRICS
EDUCATIONAL TOPIC 32: OBSTETRICS PROCEDURES

Rationale: Knowledge of obstetric procedures is basic to the management and counseling of the pregnant patient.

Intended Learning Outcomes:
The student will demonstrate the ability to:

- Describe the key components of pre-operative evaluation and planning, including history, physical examination, and informed consent.
- Describe common measures for the prevention of infection, deep venous thrombosis and other peri-operative complications.
- Describe the components of routine post-operative care.
- Discuss common post-operative complications.
- Describe the communication of operative findings and complications to patient and family.
- Describe each procedure and list the indications and possible complications for each of the following:

    1. Ultrasound
    2. Chorionic villous sampling
    3. Intrapartum fetal surveillance
    4. Induction and augmentation of labor
    5. Spontaneous vaginal delivery
    6. Vaginal birth after cesarean delivery
    7. Operative vaginal delivery
    8. Breech delivery
    9. Cesarean delivery
    10. Postpartum tubal ligation
    11. Cerclage
    12. Newborn circumcision

TEACHING CASE

CASE: A 26 year old, G3P2002 presents to Labor and Delivery with a complaint of frequent, painful uterine contractions and leaking of fluid. She has been getting prenatal care through your clinic and review of her records shows her to be 36 6/7 weeks with a spontaneous dichorionic/diamniotic twin pregnancy. She has had a completely uncomplicated pregnancy to date, with the exception of obesity. She is 5' 4" tall and weighs 220 pounds, giving her a BMI of 37.8 kg/m^2. Your evaluation reveals the patient to be 8 cm dilated, fully effaced, and +1 station. Although, the membranes are ruptured, you are unsure of the presenting part. The fetal heart rate tracings for both twins are reassuring. During your evaluation, the patient

repeatedly tells you that she really wants to deliver these twins vaginally because she delivered both of her prior babies vaginally, and doesn't want to be slowed down by the recovery from a cesarean.

COMPETENCY-BASED DISCUSSION & KEY TEACHING POINTS:

Competencies addressed:

- Patient Care
- Medical Knowledge
- Interpersonal and Communication Skills
- Professionalism
- Systems-Based Practice

1. Is this patient a candidate for a vaginal delivery of her twins? What additional information do you need to make that decision?

2. You confirm that the patient is indeed a good candidate for vaginal delivery. What are the complications that this patient may encounter during her delivery?

3. What pre-delivery preparations can you make to minimize these risks for the patient?

4. The patient achieves the 2nd stage of labor and progresses well to deliver the first infant without complication. You perform an assessment for the presentation of the 2nd twin and find it to be breech. What are your options for delivering the 2nd twin?

5. You proceed with attempting vaginal delivery of the 2nd twin. While waiting for the 2nd fetus to progress in labor, you notice the onset of heavy vaginal bleeding. The fetal heart rate tracing begins to deteriorate and you perform a cesarean delivery. What measures can you take intra-operatively to prevent complications from the cesarean?

6. You complete the cesarean successfully, but note that the patient had an estimated blood loss of 1500 cc probably due to an abruption. What measures can you take post-operatively to assess for and diagnose complications?

REFERENCES

Beckman CRB, et al. *Obstetrics and Gynecology*. 6th ed. Philadelphia: Lippincott, Williams & Wilkins, 2009.

Hacker NF, Moore JG, et al. *Essentials of Obstetrics and Gynecology*. 5th ed. Philadelphia: Saunders, 2010.

ACOG Practice Bulletin 17, Operative Vaginal Delivery, June 2000.

ACOG Practice Bulletin 56, Multiple Gestation: Complicated Twin, Triplet, and High-order Multifetal Pregnancy, October 2004.

UNIT THREE: GYNECOLOGY
EDUCATIONAL TOPIC 33: CONTRACEPTION AND STERILIZATION

Rationale: An understanding of contraceptive methods and associated risks and benefits is necessary to assist patients seeking to prevent pregnancy.

Intended Learning Outcomes:
The student will demonstrate the ability to:

- Describe the mechanism of action and effectiveness of contraceptive methods
- Counsel the patient regarding the benefits, risks and use for each contraceptive method
- Describe barriers to effective contraception use and to the reduction of unintended pregnancy
- Describe the methods of male and female surgical sterilization
- List the risk and benefits of female surgical sterilization procedures

TEACHING CASE

CASE: A 17 year old G0 presents to clinic desiring information about contraceptive methods. She reports that she is sexually active with her boyfriend, using condoms occasionally, when she "needs them." She has never used any other methods. She has had 2 lifetime partners. She became sexually active at age 15 and had sex with her first partner 3-4 times but didn't use contraception. She has been sexually active with her current partner for the last year. She came today because she last had unprotected intercourse 3 days ago and is worried she might get pregnant. She has decided it's time for a more reliable method of contraception. She has never had a Pap smear. She has history of well controlled seizure disorder and had appendicitis at age 11. She is taking Valproic Acid. She smokes one-half pack of cigarettes per day, drinks alcohol socially, and uses occasional marijuana. Her blood pressure is 100/60 and pulse is 68.

Competency-Based discussions & Key Teaching Points:
Competencies addressed:

- Patient Care
- Medical Knowledge
- Practice-Based Learning and Improvement
- Interpersonal and Communication Skills
- Professionalism
- Systems-Based Practice

1. What pertinent historical information should you obtain from the patient prior to presenting recommendations for appropriate contraception?

2. What physical exam and studies are required prior to prescribing hormonal contraceptives?

3. About which contraceptive agents should the patient be counseled?

4. When/how to start the contraceptive method?

REFERENCES

Beckman CRB, et al. *Obstetrics and Gynecology*. 6th ed. Philadelphia: Lippincott, Williams & Wilkins, 2009.

Hacker NF, Moore JG, et al. *Essentials of Obstetrics and Gynecology*. 5th ed. Philadelphia: Saunders, 2010.

ACOG Practice Bulletin 59, Intrauterine Device, January 2005.

ASCCP Guidelines for Cervical Cancer Screening.

Zieman M, Hatcher RA et al. *A Pocket Guide to Managing Contraception*. Tiger, Georgia: Bridging the Gap Foundation, 2007.

UNIT THREE: GYNECOLOGY
EDUCATIONAL TOPIC 34: INDUCED ABORTION

Rationale: Induced abortion is a reproductive option. Patients may consider it based on their personal life circumstances as well as in the setting of fetal anomalies or maternal illness. Regardless of personal views about abortion, students should be knowledgeable about its public health importance as well as techniques and complications

Intended Learning Outcomes:
The student will demonstrate the ability to:

- Provide non-directive counseling to patients surrounding pregnancy outcomes
- Explain surgical and non-surgical methods of pregnancy termination
- Identify potential complications of induced abortion
- Understand the public health impact of the legal status of abortion

TEACHING CASE

CASE: The patient is a 14-year-old G_1P_0 who presents to a private clinic requesting termination of pregnancy. Her last menstrual period began 9 weeks prior to arrival. She has been experiencing intermittent nausea and vomiting. She is sexually active with her 21-year-old partner and reports she is having consensual sex with him. She has been using condoms for contraception. She has no history of sexually transmitted infections. She has mild asthma for which she uses an inhaler as needed. She denies alcohol, drug , or tobacco use and lives with her mother and 17-year old brother. Her physical exam is unremarkable, uterine size is approximately 8 weeks. Ultrasound confirms intrauterine pregnancy at 8 weeks with fetal heart motion present.

COMPETENCY-BASED DISCUSSION & KEY TEACHING POINTS:
Competencies addressed:

- Patient Care
- Medical Knowledge
- Interpersonal and Communication Skills
- Professionalism
- Systems-Based Practice

1. What is options counseling and how would you counsel this patient about her options?

2. Is this patient a victim of sexual abuse? Should this case be reported to authorities?

3. Can the patient consent for termination herself or must she have parental consent since she is a minor?

4. What types of abortion is this patient eligible for, given her gestational age of 8 weeks?
5. How is a surgical abortion performed?

6. How is a medical abortion performed?
7. What are the potential complications of abortion?

8. How should this patient be counseled about contraception?

9. How should this patient be counseled and managed regarding STD prevention?

REFERENCES

Beckman CRB, et al. *Obstetrics and Gynecology*. 6th ed. Philadelphia: Lippincott, Williams & Wilkins, 2009.

Hacker NF, Moore JG, et al. *Essentials of Obstetrics and Gynecology*. 5th ed. Philadelphia: Saunders, 2010.

ACOG Practice Bulletin 67, Medical Abortion, March 2008.

UNIT THREE: GYNECOLOGY
EDUCATIONAL TOPIC 35: VULVAR AND VAGINAL DISEASE

Rationale: Vulvar and vaginal conditions occur frequently, can be distressing, and may have serious consequences.

Intended Learning Outcomes:
The student will demonstrate the ability to:

- Formulate a differential diagnosis for vulvovaginitis
- Interpret a wet mount microscopic examination
- Describe the variety of dermatologic disorders of the vulva
- Discuss the steps in the evaluation and management of a patient with vulvovaginal symptoms

TEACHING CASE

CASE: A 20 year-old female college student comes to see you because of a persistent vaginal discharge and also seeking contraceptive advice. She and her boyfriend have been sexually active for 6 months. They use condoms "most of the time," but she is interested in using something with a lower failure rate for birth control. She has regular menses and no significant past medical or gynecologic history. She describes the discharge as yellowish and also notes mild vulvar irritation. On physical exam, she has normal external female genitalia without lesions or erythema, a gray/yellow discharge on the vaginal walls and pooled in the posterior fornix . Her cervix is grossly normal but bleeds easily with manipulation. The bimanual exam is unremarkable.

COMPETENCY-BASED DISCUSSIONS & KEY TEACHING POINTS:
Competencies addressed:

- Patient Care
- Medical Knowledge
- Systems-Based Practice

1. What is your differential diagnosis?
2. What tests are currently available to help in the diagnosis of these disorders?
3. What test findings would suggest Trichomonas?
4. What two findings can be used to diagnose Vulvovaginal Candidiasis?
5. What are Amsel's Criteria for the diagnosis of Bacterial Vaginosis?

6. The patient is diagnosed with Trichomonas. What is your treatment plan for this patient?

7. What are the additional reproductive health issues you would want to discuss with this patient?

8. Would you recommend screening for additional sexually transmitted infections in this patient and if so, how?

REFERENCES

ACOG Practice Bulletin 72, Vaginitis, May 2006.

Mishell, DR ed., *Comprehensive Gynecology*, 3rd ed, St. Louis: Mosby, 1997.

UNIT THREE: GYNECOLOGY
EDUCATIONAL TOPIC 36: SEXUALLY TRANSMITTED INFECTIONS (STI) AND URINARY TRACT INFECTIONS (UTI)

Rationale: Early recognition and treatment of urinary and pelvic infections may help prevent short and long-term morbidity. Prevention of sexually transmitted infections is a major public health goal.

Intended Learning Outcomes:
The student will demonstrate the ability to:

- Describe the guidelines for STI screening and partner notification/treatment
- Describe STI prevention strategies, including immunization
- Describe the symptoms and physical exam findings associated with common STIs
- Discuss the steps in the evaluation and initial management of common STIs including appropriate referral
- Describe the pathophysiology of salpingitis and pelvic inflammatory disease
- Describe the evaluation, diagnostic criteria and initial management of salpingitis/pelvic inflammatory disease
- Identify the possible long-term sequelae of salpingitis/pelvic inflammatory disease
- Describe the diagnosis and management of UTIs

TEACHING CASE

CASE: A 16-year-old G_1P_1, LMP one week ago, presents with a one-week history of severe lower abdominal pain. Pain is constant, bilateral and accompanied by fever and chills. She has had some nausea and several episodes of vomiting. She has been sexually active for 3 years and has had unprotected intercourse with several partners. She denies irregular bleeding, dysmenorrhea or dyspareunia. Past medical history is non contributory. Past surgical history is remarkable for tonsillectomy as a child and an uncomplicated vaginal delivery one year ago.

Physical exam reveals an ill appearing 16-year-old with a temperature of 37 degrees Celsius and has a pulse of 94 bpm, BP 124/82 and a respiratory rate 22 breaths/minute. On examination of the abdomen, bowel sounds are present, there is bilateral lower abdominal tenderness and the abdomen is slightly distended with rebound, negative psoas and Murphy's signs. Pelvic exam reveals the BUS (Bartholins, Urethral, Skene's glands) to be normal and the vagina to be pink, moist. There is a purulent discharge from the cervical os and the cervix appears indurated. The uterus is in the midline position and is soft and tender to palpation. There is bilateral adnexal fullness and moderate tenderness.

Laboratory evaluation includes positive GC, negative RPR and WBC 17.6 with a left shift. Urinalysis is remarkable for few WBC's, no bacteria, no leukocyte esterase, no nitrites, 3+ ketones and negative urine HCG.

COMPETENCY-BASED DISCUSSION & KEY TEACHING POINTS:

Competencies addressed:

- Patient Care
- Medical Knowledge
- Interpersonal and Communication Skills
- Systems-Based Practice

1. What is your differential diagnosis for abdominal pain in a sexually active female?
2. What is the most likely diagnosis in this case?
3. What are the most likely organisms responsible for this condition?
4. What are the common presenting signs and symptoms for this condition?
5. What is the definitive diagnostic tool for equivocal cases?
6. What criteria will you use to determine inpatient vs. outpatient treatment?
7. What is your management and follow-up plan?
8. If this condition went untreated, what would be the possible sequelae?
9. How would one rule out and diagnosis of UTI in this patient?

REFERENCES

Beckman CRB, et al. *Obstetrics and Gynecology*. 6th ed. Philadelphia: Lippincott, Williams & Wilkins, 2009.

Hacker NF, Moore JG, et al. *Essentials of Obstetrics and Gynecology*. 5th ed. Philadelphia: Saunders, 2010.

Centers for Disease Control and Prevention. Sexually Transmitted Disease Treatment Guideline 2006. www.cdc.gov/std/treatment/

ACOG Practice Bulletin 91, Treatment of UTI in Nonpregnant Patients, October 2005.

COMPETENCY-BASED DISCUSSIONS & KEY TEACHING POINTS:

Competencies addressed:

- Patient Care
- Medical Knowledge
- Interpersonal and Communication Skills
- Professionalism
- Systems-Based Practice

1. What resources should you discuss with the patient to assure her short-term safety?

2. What information should you give this patient about an exit plan to leave the abusive relationship?

3. What is the incidence of child abuse and elder abuse?

REFERENCES

Beckman CRB, et al. *Obstetrics and Gynecology.* 6th ed. Philadelphia: Lippincott, Williams & Wilkins, 2009.

http://www.acf.hhs.gov/programs/cb/pubs/cm07/summary.htm

Teaster, PB, Otto, JM, Dugar, TD, Mendiondo, MS, Abner, EL, & Cecil, KA. (2006). The 2004 survey of state Adult Protective Services: Abuse of adults 60 years of age and older. Report to the National Center on Elder Abuse, Administration on Aging, Washington, D.C.

UNIT THREE: GYNECOLOGY
EDUCATIONAL TOPIC 37: PELVIC ORGAN PROLAPSE AND URINARY INCONTINENCE

Rationale: Pelvic organ prolapse and urinary incontinence are increasingly common with the aging of the US population. These conditions have a major impact on a woman's quality of life.

Intended Learning Outcomes:
The student will demonstrate the ability to:

- Describe normal pelvic anatomy and pelvic support
- Describe screening questions to elicit signs and symptoms of urinary incontinence
- Differentiate the types of urinary incontinence
- Describe the evaluation and diagnosis of incontinence
- Describe the anatomic changes associated with urinary incontinence and pelvic organ prolapse
- Describe medical and surgical management options for urinary incontinence and pelvic organ prolapse

TEACHING CASE

CASE: A 75-year-old woman G_5P_5 presents for an annual exam and reports a "fullness" in the vaginal area. The symptom is more noticeable when she is standing for a long time. She does not complain of urinary or fecal incontinence. She has no other urinary or gastrointestinal symptoms. There has been no vaginal bleeding. Her past medical history is significant for well-controlled hypertension and chronic bronchitis. She has never had surgery.

Pelvic exam reveals normal appearing external genitalia except for generalized atrophic changes. The vagina and cervix are without lesions. A cystocele and rectocele are noted. The cervix descends to the introitus with the patient in an upright position. Uterus is normal size. Ovaries are not palpable. No rectal masses are noted. Rectal sphincter tone is slightly decreased. The patient wishes to discuss options for treatment.

COMPETENCY-BASED DISCUSSION & KEY TEACHING POINTS:
Competencies Addressed:

- Patient Care
- Medical Knowledge
- Interpersonal and Communication Skills
- Systems-based Practice

1. What increases this patient's risk for pelvic organ prolapse?
2. What are the symptoms of pelvic organ prolapse?
3. What are the different types of pelvic organ prolapse?
4. What are the different types of urinary incontinence?
5. What is the role of vaginal estrogen in patients with pelvic relaxation?
6. When is surgery indicated?
7. What are nonsurgical treatments?

REFERENCES

Beckman CRB, et al. *Obstetrics and Gynecology*. 6th ed. Philadelphia: Lippincott, Williams & Wilkins, 2009.

Hacker NF, Moore JG, et al. *Essentials of Obstetrics and Gynecology*. 5th ed. Philadelphia: Saunders, 2010.

ACOG Practice Bulletin 85, Pelvic Organ Prolapse, September 2007 (reaffirmed 2009).

ACOG Practice Bulletin 63, Urinary incontinence in Women, June 2005 (reaffirmed 2009).

UNIT THREE: GYNECOLOGY
EDUCATIONAL TOPIC 38: ENDOMETRIOSIS

Rationale: Endometriosis may result in pelvic pain, infertility and menstrual dysfunction.

Intended Learning Outcomes:
The student will demonstrate the ability to:

- Describe theories of the pathogenesis of endometriosis.
- List the most common sites of endometriosis
- Describe the symptoms and physical examination findings in a patient with endometriosis.
- Describe the diagnosis and management of endometriosis.

TEACHING CASE

CASE: A 28-year-old woman G0P0 is seen because of the inability to conceive for the past two years. She has never used oral contraceptives and she and her husband have not used any form of birth control for over two years. Her menarche occurred at the age of 12 and her menses became very painful in her late teens. She has had chronic cyclical pelvic pain, which has progressively worsened over the years. This pain is incapacitating at times. She describes the location of the pain to be in the lower abdomen and pelvis that radiates into the lower back. In addition to the pain, her menstrual periods have become increasingly frequent and heavy. She experiences deep dysparunia that began with her first sexual partner and has continued with husband. She denies any non-cyclical vaginal bleeding, discharge and weight loss. She states that her 22-year-old younger sister has always had very painful menses.

On physical examination the patient looks her age. She is 138 lbs and is 5'6". Her BP is 110/76 mm Hg with a heart rate of 85 bpm. Her head and neck examination is negative. Cardiac and respiratory systems are also normal. Examination of the abdomen reveals that it is flat with no scars. On palpation she has generalized tenderness of the lower abdomen. There are no signs suggesting evidence of a surgical abdomen and she has no costo-vertebral angle pain. The pelvic exam showed a fixed, retroverted uterus. The uterosacral ligaments on both sides are nodular. A 5 cm right adnexal mass is palpated and tender.

Transvaginal ultrasound of the pelvis showed a 5.5 cm cystic mass with low-level echoes in the right ovary. The left ovary was reported as normal. The uterus is retroverted and is of normal size and contour. There is no evidence of fibroids and the endometrial lining is normal.

COMPETENCY-BASED DISCUSSIONS & KEY TEACHING POINTS:

Competencies addressed:

- Patient Care
- Medical Knowledge
- Systems-Based Practice

1. What symptoms does this patient present with that would lead to a suspicion of endometriosis?
2. Describe the physical findings for this patient that helps confirm a possible diagnosis of endometriosis?
3. What alternative diagnoses would you consider in this patient?
4. How is the diagnosis of endometriosis made?
5. What protocols are used to stage endometriosis?
6. What are the treatment options for a patient with a diagnosis of endometriosis?

REFERENCES

Beckman CRB, et al. *Obstetrics and Gynecology*. 6th ed. Philadelphia: Lippincott, Williams & Wilkins, 2009.

ACOG Practice Bulletin 114, Management of Endometriosis, July 2010.

UNIT THREE: GYNECOLOGY
EDUCATIONAL TOPIC 39: CHRONIC PELVIC PAIN

Rationale: Chronic pelvic pain may be a manifestation of a variety of gynecologic and non-gynecologic conditions.

Intended Learning Outcomes:
The student will demonstrate the ability to:

- Define chronic pelvic pain
- Cite the prevalence and common etiologies of chronic pelvic pain
- Describe the symptoms and physical exam findings associated with chronic pelvic pain
- Discuss the steps in the evaluation and management options for chronic pelvic pain
- Discuss the psychosocial issues associated with chronic pelvic pain

TEACHING CASE

CASE: A 24 year-old G0 woman presents to you as a self-referral for pelvic pain. She describes a four-year history of intermittent lower abdominal and pelvic pain that is now constant in nature. The pain is always present, sometimes sharper in the left lower quadrant and not related to menses. She has occasional nausea and is sometimes constipated. Nothing makes the pain better or worse. Over the years, she has used acetaminophen and ibuprofen, and has not found any relief and reports that this pain is making her life miserable. She is otherwise healthy and denies smoking. She reports menarche at age 13 and has regular cycles. She experiences occasional premenstrual bloating and cramps, and reports discomfort at other times of the month. She had a trial of oral contraceptives and a laparoscopy that was normal. She has never been sexually active, and upon further questioning reports that her oldest brother sexually abused her as a child. On physical examination, she has a somewhat flattened affect, but smiles occasionally. Trapezius and paraspinous muscles are tender on palpation with no costovertebral angle tenderness. Abdomen is soft with 2 well-healed laparoscopic incisions, and mild tenderness to deep palpation in the lower quadrants. Pelvic examination including rectovaginal examination is entirely normal except for mild bilateral adnexal tenderness.

COMPETENCY-BASED DISCUSSIONS & KEY TEACHING POINTS:
Competencies addressed:

- Patient care
- Medical knowledge
- Systems-based practice

1. What is chronic pelvic pain? How often does it affect women?

2. What is your differential diagnosis for this patient, and what are the potential causes of chronic pelvic pain?

3. What are the symptoms and physical examination findings associated with chronic pelvic pain?

4. What are the steps in the evaluation and management of chronic pelvic pain?

5. The patient reports that the pain worsens when her older brother returns home for family holidays. What would be the psychosocial issues associated with chronic pelvic pain?

REFERENCES

Beckman CRB, et al. *Obstetrics and Gynecology*. 6th ed. Philadelphia: Lippincott, Williams & Wilkins, 2009.

Hacker NF, Moore JG, et al. *Essentials of Obstetrics and Gynecology*. 5th ed. Philadelphia: Saunders, 2010.

ACOG Practice Bulletin 51, Chronic Pelvic Pain, March 2004.

UNIT THREE: GYNECOLOGY
EDUCATIONAL TOPIC 40: DISORDERS OF THE BREAST

Rationale: Breast disorders and concerns are common. They are often distressing and may indicate the presence of serious disease.

Intended Learning Outcomes:
The student will demonstrate the ability to:

- Describe symptoms and physical examination finding of benign or malignant conditions of the breast
- Demonstrate the performance of a clinical breast examination
- Discuss the steps in the evaluation of common breast complaints: mastalgia, mass, nipple discharge
- Discuss initial management options for benign and malignant conditions of the breast

TEACHING CASE

CASE: A 56-year-old woman G_0P_0 made an appointment to see her gynecologist because of a small lump in her right breast that she has been able to feel for 2 months. She has not had prior breast problems and does not have a family history of breast cancer. There are no apparent skin changes, asymmetry or skin dimpling. Axillary or supraclavicular lymph nodes are not palpable. Breasts are symmetric, diffusely cystic and non-tender. There is a firm area approximately 1 cm in diameter with indiscreet borders at the 9 o'clock position on her right breast. The area is slightly different in consistency than the rest of the surrounding tissue. The patient's mammogram revealed dense breast tissue, but no mammographic abnormalities.

COMPETENCY-BASED DISCUSSION & KEY TEACHING POINTS:
Competencies addressed:

- Patient Care
- Medical Knowledge
- Interpersonal and Communication Skills
- Professionalism
- Systems-based Practice

1. What is the proper technique to perform a breast exam?

2. What are common risk factors for breast cancer?
3. What is your next step in this patient's management?

4. What are some common benign breast disorders?

REFERENCES

Beckman CRB, et al. *Obstetrics and Gynecology*. 6th ed. Philadelphia: Lippincott, Williams & Wilkins, 2009.

Hacker NF, Moore JG, et al. *Essentials of Obstetrics and Gynecology*. 5th ed. Philadelphia: Saunders, 2010.

CDC Breast Cancer Screening
http://www.cdc.gov/cancer/breast/basic_info/screening.htm

CME breast health modules
http://www.medscape.com/editorial/public/breastcancer-cdc

UNIT THREE: GYNECOLOGY
EDUCATIONAL TOPIC 41: GYNECLOGIC PROCEDURES

Rationale: Evaluation and management of gynecologic problems frequently requires performing diagnostic and therapeutic surgical procedures. Understanding the risks and benefits of such procedures is important in counseling patients about their options for treatment and reasons for having the procedures performed.

Intended Learning Outcomes:
The student will demonstrate the ability to:

- Describe the key components of pre-operative evaluation and planning, including history, physical examination and informed consent
- Describe common measures for the prevention of infection, deep venous thrombosis and other peri-operative complications
- Describe the components of post-operative care
- Discuss common post-operative complications
- Describe the communication of operative findings and complications to patients and family
- Describe common outpatient and inpatient gynecologic procedures with their indications and possible complications
    - Foley catheter insertion
    - Pelvic ultrasonography
    - Colposcopy and cervical biopsy
    - Cryotherapy
    - Electrosurgical excision of cervix
    - Cervical conization
    - Laser vaporization
    - Vulvar biopsy
    - Endometrial biopsy
    - IUD insertion
    - Contraceptive implants
    - Dilation and curettage
    - Hysterosalpingogram
    - Hysteroscopy
    - Laparoscopy
    - Tubal ligation
    - Hysterectomy and bilateral salpingoophorectomy
    - Pregnancy termination

TEACHING CASE

CASE: The patient is a 40 year-old G0 who has menorrhagia due to a fibroid uterus. She has anemia with a hematocrit of 27% despite oral iron therapy. She has periods

lasting 10-12 days each month. She also suffers from lupus and anti-phosphlipid antibody syndrome, diagnosed when she was 25. Her manifestations mostly are arthritis, but she has a history of a deep venous thrombosis (DVT) 6 years ago. Although her lupus currently is not flaring, she takes prednisone 5 mg per day as well as coumadin 2.5 mg per day. She does not have other medical problems and her only other surgery was a tonsillectomy at age 16, during which she was told she had "more than usual bleeding" but did not require transfusion. She desires definitive surgical management with hysterectomy. She is married, works as an office manager, and never had children because of her lupus. Her physical exam shows BP 120/70, weight of 160, height of 5'6". She has a number of small bruises on her extremities. Her uterus is palpable just under her umbilicus, but is non-tender. Pelvic exam is only significant for the enlarged uterus. Pelvic ultrasound confirms a large fibroid uterus, normal ovaries. Labs show INR of 2.5, normal chemistry panel.

COMPETENCY-BASED DISCUSSIONS & KEY TEACHING POINTS:

Competencies addressed:

- Patient Care
- Medical Knowledge
- Interpersonal and Communication Skills
- Professionalism
- Systems-Based Practice

1. Describe the consent process for surgery for this patient.
2. What are the main surgical risks facing this patient?
3. What steps can you take to try to avoid these risks?
4. Which other health professionals would you consult both pre- and post-operatively?
5. What measures can you take post-operatively to assess for and diagnose complications?
6. During the patient's hysterectomy, there was an incidental cystotomy which was repaired intraoperatively. Describe how you would communicate this information to the patient and family.

REFERENCES

ACOG Committee Opinion 195, Role of Loop Electrosurgical Excision Procedure in the Evaluation of the Abnormal Pap Test Results, November 1997.

ACOG Practice Bulletin 14, Management of Anovulatory Bleeding, March 2000.

ACOG Practice Bulletin 84, Prevention of Deep Venous Thrombosis and Pulmonary Embolism, August 2006.

Hebert, PC, Levin, AV, Robertson G, Bioethics for clinicians: 23 Disclosure of Medical Error; CMAJ 2001 64(4).

UNIT FOUR: REPRODUCTIVE ENDOCRINOLOGY, INFERTILITY AND RELATED TOPICS
EDUCATIONAL TOPIC 42: PUBERTY

Rationale: Puberty is a natural process which can generate concern in patients and families in its normal state. Abnormalities of puberty can be benign or may reflect a more serious underlying disorder. Correctly differentiating between these possibilities can have long-term health consequences.

Intended Learning Outcomes:
The student will demonstrate the ability to:

- Recognize the difference between normal and abnormal puberty
- Develop a differential diagnosis for abnormal puberty
- Describe the diagnostic evaluation for delayed puberty
- Provide treatment options for delayed puberty

TEACHING CASE

CASE: A 15 year-old female comes in for exam because she has not had her period. She seemed to be developing normally and had normal breast development that started about 3 years ago and she has pubic hair. She met her developmental milestones in childhood and is of normal height and weight. She has not had any significant medical illnesses. Her ROS is negative and her family history is negative.

She is active in school and is a cheerleader. She works out with the team and runs. She does well in school. She lives at home with her mom, dad and sister. She reports she has a boyfriend but has not been sexually active.

Physical exam:

- Well appearing
- 100/60 with 130 pounds and 5 feet 7 inches tall
- Breast exam: appear symmetric, areola are darkened bilaterally with nipple continuous with the areola
- Abdomen: soft, non-tender, no masses
- External Genitalia: soft straight hair covering the mons but not extending to the thighs

COMPETENCY-BASED DISCUSSIONS & KEY TEACHING POINTS:
Competencies addressed:

- Patient Care
- Medical Knowledge

1. What Tanner stage is this patient?
2. What is the normal process of puberty in girls?
3. What is the differential diagnosis for this patient's presentation?
4. What key test must be performed first?
5. What further history must be elicited?
6. What further studies will help refine the diagnosis?
7. If all lab studies are normal which medication can be used to induce menses?

REFERENCES

Clinical Gynecologic Endocrinology and Infertility, 5th Edition, 1994; Chapter 11 Abnormal Puberty and Growth Problems (377-386).

Beckman CRB, et al. *Obstetrics and Gynecology*. 6th ed. Philadelphia: Lippincott, Williams & Wilkins, 2009. Chapter 34 Puberty (309-313).

UNIT FOUR: REPRODUCTIVE ENDOCRINOLOGY, INFERTILITY & RELATED TOPICS
EDUCATIONAL TOPIC 43: AMENORRHEA

Rationale: The absence of menstrual bleeding may represent an anatomic or endocrine problem. A systematic approach to the evaluation of amenorrhea will aid in the diagnosis and treatment of its cause.

Intended Learning Outcomes:
The student should be able to:

- Define amenorrhea and oligomenorrhea
- Explain the pathophysiology and identify the etiologies of amenorrhea and oligomenorrhea
- Describe associated symptoms and physical examination findings of amenorrhea and oligomenorrhea
- Discuss the steps in the evaluation and management of amenorrhea and oligomenorrhea
- Describe the consequences of untreated amnorrhea and oligomenorrhea

TEACHING CASE

CASE: A 26-year-old G_2P_2 woman presents to your office because she has had no periods for 9 months. She delivered two full term healthy children vaginally and their ages are 5 and 3. She breastfed her youngest child for one year. Her menses resumed soon after weaning and were normal in duration and interval until 9 months ago. She is not using any contraception, although intercourse is infrequent. She feels very fatigued, has frequent headaches and has had trouble losing weight. She has no history of abnormal Pap smears or STI's. She takes no medications. She is married and works from home as a computer consultant. On exam, BP= 120/80, P= 64, Ht= 5'8", Wt= 160 pounds. She appears tired but in no distress. Breasts show scant bilateral milky white discharge with manual stimulation. Breast exam reveals no masses, dimpling or retraction. Exam is otherwise normal, including pelvic exam. HCG is negative.

COMPETENCY-BASED DISCUSSION & KEY TEACHING POINTS:
Competencies addressed:

- Patient care
- Medical Knowledge
- System-Based Practice

1. Does this patient have primary amenorrhea, secondary amenorrhea or oligomenorrhea?

2. What is the differential diagnosis for this disorder? Describe the relevant associated symptoms, physical exam findings, laboratory findings and pathophysiology for each of these.

3. What additional studies are needed?
4. Consider that this patient has a prolactin level of 130. The test, when repeated with the patient fasting is 100. What is your next step?

5. How would your next step differ if the patient had normal labs with an estradiol level of 30pcg/ml and an FSH of 2mIU/ml. What treatment would you offer her? What is she at risk for?

REFERENCES

Beckman CRB, et al. *Obstetrics and Gynecology*. 6th ed. Philadelphia: Lippincott, Williams & Wilkins, 2009.

Hacker NF, Moore JG, et al. *Essentials of Obstetrics and Gynecology*. 5th ed. Philadelphia: Saunders, 2010.

UNIT FOUR: REPRODUCTIVE ENDOCRINOLOGY, INFERTILITY AND RELATED TOPICS
EDUCATIONAL TOPIC 44: HIRSUTISM AND VIRILIZATION

Rationale: Androgen excess causes short and long-term morbidity, and may represent serious underlying disease.

Intended Learning Outcomes:
The student will demonstrate the ability to:

- Recognize normal variations and abnormalities in secondary sexual characteristics
- Define hirsutism and virilization
- Describe pathophysiology and identify etiologies of hirsutism
- Describe the steps in the evaluation and initial management options for hirsutism and virilization

TEACHING CASE

CASE: A 25 year-old G1 woman presents with increased hair growth on the face, particularly the upper lip, chin and neck. Her menses started about age 13, occur every 2-4 months and have never been regular. She noted the onset of facial hair around menarche, and it has gradually increased. She has been shaving twice a week and using electrolysis when she can afford it. She wonders about her fertility. She has no allergies and takes no medications.

LMP was 2 months ago. Duration is 7-10 days with heavy flow for 3 days. She has been sexually active and using condoms for contraception. No prior abnormal pap smears or STIs.

Social history is remarkable for smoking ½ pack of cigarettes per day for 8 years, occasional alcohol and no recreational drugs. She is a bus driver. Family history is remarkable for mother with irregular cycles, obesity, diabetes, hypertension and similar facial hair growth, and sister with obesity, irregular cycles, similar facial hair growth.

Physical Examination:

- Height: 5 feet, 3 inches
- Weight: 204 pounds
- BP=120/80
- Physical examination is remarkable for terminal hair on the upper outer 1/3 of her lip, few sparse hairs in the sideburn area and chin, midline terminal hairs on the chest and in the periareolar area, and obese abdomen without striae. Terminal hair is noted in a vertical band below the umbilicus. Normal

external genitalia are present. Uterus is anteflexed, anteverted, midline and normal size. Adnexae are without palpable masses.

COMPETENCY-BASED DISCUSSION & KEY TEACHING POINTS:

Competencies addressed:

- Patient Care
- Medical Knowledge
- Practice-Based Learning
- Systems-Based Practice

1. What is the differential diagnosis for the patient's hirsutism based on the history and physical examination alone, and what is the most likely diagnosis?

2. What additional evaluation would you recommend?

3. For what complications is this patient at high risk?

4. What would you recommend to minimize these risks?

5. Outline a management plan for helping the patient achieve pregnancy.

6. How would the management change if virilization was present?

REFERENCES:

Beckman CRB, et al. Obstetrics and Gynecology. 6th ed. Philadelphia: Lippincott, Williams & Wilkins, 2009. Chapter 36.

Hacker NF, Moore JG, et al. Essentials of Obstetrics and Gynecology. 5th ed. Philadelphia: Saunders, 2010.

ACOG Practice Bulletin 108, Polycystic Ovary Syndrome, October 2009.

UNIT FOUR: REPRODUCTIVE ENDOCRINOLOGY, INFERILITY & RELATED TOPICS
EDUCATIONAL TOPIC 45: NORMAL AND ABNORMAL UTERINE BLEEDING

Rationale: The occurrence of bleeding at times other than expected menses is common. Accurate diagnosis of abnormal uterine bleeding is necessary for appropriate management.

Intended Learning Outcomes:
The student will demonstrate the ability to:

- Define the normal menstrual cycle and describe its endocrinology and physiology
- Define abnormal uterine bleeding
- Describe the pathophysiology and identify etiologies of abnormal uterine bleeding
- Discuss the steps in the evaluation of abnormal uterine bleeding
- Explain medical and surgical management options for patients with abnormal uterine bleeding
- Counsel patients about management options for abnormal uterine bleeding

TEACHING CASE

CASE: A 45 year-old G2P0020, with LMP 21 days ago, presents with heavy menstrual bleeding. Prior to 6 months ago her cycles came every 28-30 days, lasted for 6 days, and were associated with cramps that were relieved by ibuprofen. In the last 6 months there has been a change with menses coming every 25-32 days, lasting 7-10 days and associated with cramps not relieved by ibuprofen, passing clots and using 2 boxes of maxi pads each cycle. She is worried about losing her job if the bleeding is not better controlled. She denies dizziness, but complains of feeling weak and fatigued. Her weight has not changed in the last year. She denies any bleeding disorders or reproductive cancers in the family. She uses condoms for contraception. She takes no daily medications and has no other medical problems. She is married and works in a factory.

On exam, BP=130/88; P= 100; Ht=5'6'; Wt=150 pounds. She appears pale. Pelvic exam shows normal vulva, vagina and cervix; normal size, mildly tender, mobile uterus; non-tender adnexae without palpable masses. Labs show Hgb: 9.0, HCT: 27%, HCG: negative, Endometrial biopsy: normal secretory endometrium, Pelvic ultrasound: heterogeneous myometrium, endometrial lining 1.4cm and irregular consistent with endometrial polyp, normal ovaries.

COMPETENCY-BASED DISCUSSION & KEY TEACHING POINTS:
Competencies addressed:

- Patient Care
- Medical Knowledge
- Interpersonal and Communication Skills
- Professionalism
- Systems-Based Practice

1. What are the parameters of a normal menstrual cycle?

2. Describe the normal endocrinologic and physiologic events that make the menstrual cycle possible.

3. What is the definition of abnormal uterine bleeding?

4. What possible etiologies could cause this patient's bleeding?
5. Which of these etiologies is associated with anovulation?

6. Discuss the mechanism for anovulatory bleeding

7. How can you tell if this patient is having ovulatory cycles?

8. What further tests would indicate if there was an anatomic problem?

9. Describe 3 possible medical and 2 possible surgical therapies.

REFERENCES

ACOG Practice Bulletin 14, Management of Anovulatory Bleeding, March 2000.

Beckman CRB, et al. *Obstetrics and Gynecology*. 6th ed. Philadelphia: Lippincott, Williams & Wilkins, 2009.

Hacker NF, Moore JG, et al. *Essentials of Obstetrics and Gynecology*. 5th ed. Philadelphia: Saunders, 2010.

UNIT FOUR: REPRODUCTIVE ENDOCRINOLOGY, INFERTILITY AND RELATED TOPICS
EDUCATIONAL TOPIC 46: DYSMENORRHEA

Rationale: Dysmenorrhea is a common and sometimes debilitating condition in reproductive age women. Accurate diagnosis guides effective treatment.

Intended Learning Outcomes:
The student will demonstrate the ability to:

- Define dysmenorrhea and distinguish primary and secondary dysmenorrhea
- Describe the pathophysiology and identify the etiologies of dysmenorrhea
- Discuss the steps in the evaluation and management options for dysmenorrhea

TEACHING CASE

CASE: A 14 year-old G0 presents with severe dysmenorrhea for the past six months. She began menstruating 10 months ago. Her first two periods were pain-free and 2 months apart. Since then, she has menstruated every 28 days, and has associated nausea, diarrhea and headaches. She misses school due to the pain. She says that she gets partial relief by using 3-4 Advil, two or three times a day during her period.

You speak to the patient without her mother about the possibility of sexual activity which she denies. She is a good student, is involved in sports and after school programs. She denies use of drugs or alcohol.

The review of systems, past medical history and social history are noncontributory. The patient's mother has endometriosis.

Physical examination:
She is afebrile. Abdominal exam is benign. Because the patient is virginal, pelvic examination is deferred. Rectal exam reveals a normal size non-tender mobile and anteflexed uterus. There are no adnexal masses or tenderness.
Laboratory:
Urinalysis is negative for blood, nitrites and leukocytes.

COMPETENCY-BASED DISCUSSION & KEY TEACHING POINTS:
Competencies addressed:

- Patient Care
- Medical Knowledge
- Practice-Based Learning
- Systems-Based Practice

1. Define and distinguish between primary and secondary dysmenorrhea.
2. What is the differential diagnosis and most likely diagnosis?
3. What additional evaluation is needed?
4. How would you manage the diagnoses in #1 above?

REFERENCES

Beckman CRB, et al. Obstetrics and Gynecology. 6th ed. Philadelphia: Lippincott, Williams & Wilkins, 2009. Chapter 30.

Hacker NF, Moore JG, et al. Essentials of Obstetrics and Gynecology. 5th ed. Philadelphia: Saunders, 2010. Chapter 8 (114-118).

ACOG Practice Bulletin 110, Noncontraceptive Uses of Hormonal Contraception, January 2010.

UNIT THREE: REPRODUCTIVE ENDOCRINOLOGY, INFERTILITY AND RELATED TOPICS

EDUCATIONAL TOPIC 47: MENOPAUSE

Rationale: Women may spend much of their lives in the postmenopausal years. Physicians should understand they physical and emotional changes caused by menopause

Intended Learning Outcomes:

The student will demonstrate the ability to:

- Define menopause and describe changes in the hypothalamic-pituitary-ovarian axis associated with perimenopause/menopause
- Recognize symptoms and physical exam finding related to perimenopause/menopause
- Discuss management options for patients with perimenopause/menopausal symptoms
- Counsel patients regarding the menopausal transition
- Discuss long-term changes associated with menopause

TEACHING CASE

CASE: A 53-year-old, G3P3, whose last menstrual period was 4 months ago presents to the office with hot flushes, emotional lability, and insomnia. She experiences hot flushes 2-3 times per day and occasionally at night. She has been having trouble sleeping and is extremely fatigued. Since age 14, her periods have been regular until 2 years ago, when they began to space out to every 2-3 months. She is sexually active and recently has noted some dyspareunia. The patient rarely exercises. She smokes 2 packs of cigarettes a day and drinks alcohol socially. She recently started taking a soy supplement. She does not have any pertinent gynecological, medical or surgical history. Her family history is significant for her mother sustaining a hip fracture at age 60 and a sister with breast cancer and high cholesterol. On examination, she has normal vital signs. she is 5'4" tall and weighs 123 lbs. On pelvic examination, she has decreased vaginal rugae and a pale, small cervix. No masses or tenderness are palpated on bimanual exam.

COMPETENCY-BASED DISCUSSION & KEY TEACHING POINTS:

Competencies addressed:

- Patient Care
- Medical Knowledge
- Interpersonal and Communication Skills
- Professionalism
- Systems-based Practice

1. What are the symptoms of menopause?
2. How do you make the diagnosis of menopause?
3. What are the patient's risk factors for osteoporosis?
4. How do you diagnose and treat atrophic vaginitis?
5. How do you counsel a patient regarding estrogen and alternative therapies?
6. What laboratory and diagnostic tests would you order for this patient?

REFERENCES

Beckman CRB, et al. *Obstetrics and Gynecology*. 6th ed. Philadelphia: Lippincott, Williams & Wilkins, 2009.

Hacker NF, Moore JG, et al. *Essentials of Obstetrics and Gynecology*. 5th ed. Philadelphia: Saunders, 2010.

WHI studies:
http://www.nhlbi.nih.gov/whi/references.htm

NAMS 2010 position statement Estrogen and Progestogen use in Postmenopausal Women:
http://www.menopause.org/PSht10.pdf

ASCCP guidelines for cervical cytology screening:
http://www.shef.ac.uk/FRAX/

FRAX calculator for osteoporosis related risk:
http://www.shef.ac.uk/FRAX/

NIH NCCAM website:
http://nccam.nih.gov/health/menopause/

UNIT FOUR: REPRODUCTIVE ENDOCRINOLOGY AND INFERTILITY
EDUCATIONAL TOPIC 48: INFERTILITY

Rationale: The evaluation and management of an infertile couple requires an understanding of the processes of conception and embryogenesis, as well as sensitivity to the emotional stress that can result from the inability to conceive.

Intended Learning Outcomes:
The student will demonstrate the ability to:

- Define infertility
- Describe the causes of male and female infertility
- Describe the evaluation and initial management of an infertile couple
- List the psychosocial issues associated with infertility

TEACHING CASE

CASE: A 37-year-old female and her 37-year-old male partner present with the complaint of a possible fertility problem. The couple has been married for 2 years. The patient has a 4-year-old daughter from a previous relationship. The patient used birth control pills until one-and-a- half-years-ago. The couple has been trying to conceive since then and report a high degree of stress related to their lack of success. The patient reports good health and no problems in conceiving her previous pregnancy or in the vaginal delivery of her daughter. She reports that her periods were regular on the birth control pill, but have been irregular since she discontinued taking them. She reports having periods every 5-7 weeks. Past history is remarkable only for mild depression. Citalopram, 20 mg in the morning for the last 8 months, is her only medication. She works as a cashier, runs 12-24 miles each week for the last 2 years, and has no history of STDs, abnormal Paps, smoking, alcohol or other drugs. She has had no surgery. She has been taking a multivitamin with folic acid since trying to conceive.

The patient's partner also reports good health and reports no problems with erection, ejaculation or pain with intercourse. He has had no prior urogenital infections or exposure to sexually transmitted infections. He has had unprotected sex prior to his current relationship, but has not knowingly conceived. He has no medical problems or past surgery. He works as a long-distance truck driver and is on the road 2-3 weeks each month. He smokes a pack of cigarettes a day since age 18 and drinks 2-3 cans of beer 3-4 times a week when he's not driving. He occasionally uses amphetamines to stay awake while driving at night. The couple has vaginal intercourse 3-5 times per week when he is at home.

The patient is 5'9" and weighs 130 pounds. Head and neck examination is unremarkable. Specifically there is no evidence of thyromegaly. Breast exam reveals no tenderness or masses, but bilateral galactorrhea on compression of the areola. Pelvic exam reveals normal genitalia, well-estrogenized vaginal mucosa and cervical

mucus consistent with the proliferative phase. The uterus is anteflexed and normal in size without masses or tenderness. Several tests were ordered.

COMPETENCY-BASED DISCUSSIONS & KEY TEACHING POINTS:

Competencies addressed:

- Patient Care
- Medical Knowledge
- Interpersonal and Communication Skills
- Professionalism

1. What is the definition of infertility?

2. What are the etiologies of infertility?

3. What is the initial work-up for infertile couples and what tests would you add for this particular couple?

4. Given the results below what is the differential diagnosis for the etiology (ies) of this couple's infertility?

5. What is the appropriate management for etiology of this couple's infertility?

REFERENCES

Beckman CRB, et al. *Obstetrics and Gynecology*. 6th ed. Philadelphia: Lippincott, Williams & Wilkins, 2009.

Hughes E, Brown J, Collins JJ, Vanderkerchove P. Clomiphene citrate for unexplained subfertility in women. Cochrane Database Syst Rev. 2010 Jan 20; (1): CD000057

UNIT FOUR: REPRODUCTIVE ENDOCRINOLOGY, INFERTILITY & RELATED TOPICS

EDUCATIONAL TOPIC 49: PREMENSTRUAL SYNDROME (PMS) AND PREMENSTRUAL DYSPHORIC DISORDER (PMDD)

Rationale: PMS and PMDD involves physical and emotional discomfort. Effective management of this condition requires an understanding of symptoms and diagnostic methods.

Intended Learning Outcomes:
The student will demonstrate the ability to:

- Indentify the criteria for making the diagnosis of PMS and PMDD
- List treatment options for PMS and PMDD

TEACHING CASE

CASE: GS, a 37 year-old married woman comes to your office for an "annual checkup." She has recently moved to town, and all her previous medical care was in a different city. She has not seen a gynecologist for 2 years and states that she wants to establish a relationship with a physician in her new surroundings.

The patient is a G3, P3. She has regular periods, although they have gotten somewhat longer in the past year or so. She is currently not sexually active and is taking no medications or supplements. All her pregnancies were delivered vaginally and she had the "baby blues" with the first pregnancy that lasted about 4 months. With the next two pregnancies she again had mood problems that lasted about a year. She did not seek any medical help. She states she was a "moody" teenager that was quite reclusive. She has had no treatment for depression in the past.

Past history reveals that she underwent an appendectomy as a child. She has no medical conditions and is not allergic to any medications.

Her family history reveals that her mother suffered from depression. Her 40 year-old sister was recently diagnosed with breast cancer. Upon review of systems, she describes occasional constipation and diarrhea. She has difficulty sleeping and feels that she gets tired more easily than she should. Upon further questioning, she reveals that she has difficulty falling asleep, often because she is thinking about what has happened during the day and/or what may be coming up the next day. The patient and her three children have recently moved to town, while her husband has remained in their previous city to fulfill his job obligation. This domestic separation has been going on for approximately 6 months.

On physical examination, all findings are normal. The patient did appear to be a bit nervous and startled easily as you entered the room.

On further questioning, the patient thinks that her jitteriness and sleeplessness have led to increased irritability with the children. She feels inadequate as a mother as she continues to lose her temper with the children over small issues. This has never been a problem in the past. She worries a great deal, particularly about her domestic situation and being separated from her husband. She has difficulty concentrating at her job (she works as a bank teller) and also feels that her memory is failing her. She has difficulty getting up in the morning and always feels tired. She feels quite hopeless about her situation and is worried that her husband may not join them in six months. She complains of abdominal bloating, breast tenderness and muscle pain. Further questioning also reveals that the patient has observed worsening of her symptoms about 10 days before her cycle and they seem to resolve a week after her cycle ends.

She saw a physician assistant in a primary care practice regarding these symptoms. He told her that he believes she has PMS. The patient does believe that her symptoms may get worse at different times of the month, but she has never been able to keep track of them long enough to know whether there is a specific cyclic pattern to these problems. General lab tests were performed and were normal.

COMPETENCY-BASED DISCUSSIONS & KEY TEACHING POINTS:

1. What diagnosis would you give this patient and why?
2. If both PMS and PMDD require prospective daily ratings, which tools are available for patients to assess their symptoms?
3. What are the treatment options for this patient?

REFERENCES:

Beckman CRB et.al. Obstetrics and Gynecology. 6th ed.. Philadelphia: Lippincott, Williams & Wilkins, 2009. Premenstrual Syndrome and Premenstrual Dysphoric Disorder (347-352).

ACOG Practice Bulletin 15, Premenstrual Syndrome, April 2000.

The Diagnostic Statistical Manual of Mental Heatlh Disorders. DSM-IV-TR American Psychiatric Association 2000.

Kaur G, Gonsalves, Thacker HL. Premenstrual dysphoric disorder: a review for the treating practitioner. Clev Clin J Med 71(4):303-305, 2004.

UNIT FIVE: NEOPLASIA
EDUCATIONAL TOPIC 50: GESTATIONAL TROPHOBLASTIC NEOPLASIA (GTN)

Rationale: Gestational trophoblastic neoplasia is important because of its malignant potential and the associated morbidity and mortality.

Intended Learning Outcomes:
The student will demonstrate the ability to:

- List the symptoms and physical examination findings of a patient with GTN
- Describe the diagnostic methods, treatment options and follow-up for GTN
- Recognize the difference between molar pregnancy and malignant GTN

TEACHING CASE

CASE: A 15-year-old primigravida presents for routine prenatal care. She is 14 weeks pregnant by last menstrual period. She has some nausea but otherwise feels well. The pregnancy to date has been unremarkable. She has support from her parents and the father of the baby.

The uterus is enlarged, measuring 20 cm from the pubic symphysis. Fetal heart tones are not auscultated by Doppler. She denies vaginal bleeding or passage of tissue from the vagina. Vaginal exam is unremarkable.

Routine prenatal labs were unremarkable. She is Rh-positive. Quantitative beta hCG levels were markedly elevated at 112,320 MICU/ml. TSH was low and further thyroid testing revealed the patient to be mildly hyperthyroid.

Ultrasound showed the uterus to be enlarged, with multiple internal echoes and a "snow storm" appearance. No fetus is noted. Ultrasound also showed enlarged multi-loculated ovarian cysts bilaterally.

COMPETENCY-BASED DISCUSSION & KEY TEACHING POINTS:
Competencies addressed:

- Patient Care
- Medical Knowledge
- Systems Based Practice

1. What is the differential diagnosis prior to receiving your ultrasound result?

2. What aspects of the ultrasound guide the diagnosis?

3. What evaluation do you need to make a final diagnosis?

4. What is the epidemiology and clinical course of this condition?

5. What is your management plan?

REFERENCES

Beckman CRB, et al. *Obstetrics and Gynecology*. 6th ed. Philadelphia: Lippincott, Williams & Wilkins, 2009.

Hacker NF, Moore JG, et al. *Essentials of Obstetrics and Gynecology*. 5th ed. Philadelphia: Saunders, 2010.

ACOG Practice Bulletin 53, Diagnosis and Treatment of Gestational Trophoblastic Disease, June 2004 (reaffirmed 2008).

UNIT FIVE: NEOPLASIA
EDUCATIONAL TOPIC 51: VULVAR NEOPLASMS

Rationale: Early recognition and proper evaluation of vulvar neoplasms can reduce morbidity and mortality.

Intended Learning Outcomes:
The student will demonstrate the ability to:

- Identify the risk factors for vulvar neoplasms
- List the indications for vulvar biopsy

TEACHING CASE

CASE: A 67 year-old woman presents with the complaint of a pruritic area on the right side of her vulva. She has noticed this for about three months, and has used a variety of over-the-counter creams, including imidazole and corticosteroid preparations, without success. She underwent menopause at age 52, and tried hormone replacement therapy for three years, but discontinued this due to irregular bleeding. The bleeding stopped when she stopped the hormones. She does have a history of abnormal Pap smears, including a cervical conization at age 35. Her last Pap was approximately 7 years ago. The patient has a long-standing history of hypertension and takes a beta-blocker. She smokes 1 pack per day, and has done so for 30 years. Her general physical examination is essentially unremarkable. Examination of her groin lymph nodes reveals no palpable adenopathy. Examination of the external genitalia reveals a 1 cm raised, firm, irregular, lesion on the right labia majora. Excoriations are also noted adjacent this lesion. The rest of the vulva is notable for atrophic changes. The vagina is also atrophic, and the cervix is grossly normal. The uterus is small and the ovaries are nonpalpable.

COMPETENCY-BASED DISCUSSIONS & KEY TEACHING POINTS:
Competencies addressed:

- Patient care
- Medical Knowledge

1. What risk factors does this patient have for a vulvar neoplasm?
2. What are the essential steps in evaluating a patient with these vulvar complaints?
3. What is the next step in the management of this patient? When should a vulvar biopsy be performed?

REFERENCES

Beckman CRB, et al. *Obstetrics and Gynecology*. 6th ed. Philadelphia: Lippincott, Williams & Wilkins, 2009.

Hacker NF, Moore JG, et al. *Essentials of Obstetrics and Gynecology*. 5th ed. Philadelphia: Saunders, 2010.

ACOG Practice Bulletin 93, Diagnosis and Management of Vulvar Skin Disorders, May 2008.

Crum CP. Carcinoma of the vulva: epidemiology and pathogenesis. Obstet Gynecol 1992 Mar; 79(3):448-54.

UNIT FIVE: NEOPLASIA
EDUCATIONAL TOPIC 52: CERVICAL DISEASE AND NEOPLASIA

Rationale: Early recognition and proper evaluation of pre-invasive cervical disease and cancer can reduce morbidity and mortality.

Intended Learning Outcomes:
The student will demonstrate the ability to:

- Describe the pathogenesis of cervical cancer
- Identify the risk factors for cervical neoplasia and cancer
- State the guidelines for cervical cancer screening
- Describe the initial management of a patient with an abnormal Pap smear
- Describe the symptoms and physical findings of a patient with cervical cancer

TEACHING CASE

CASE: A generally healthy 26 year-old G1P0 woman with a last menstrual period approximately 16 weeks ago is referred for the management of an abnormal Pap smear showing High Grade Squamous Intraepithelial Lesion (HGSIL). This Pap smear was obtained 10 weeks ago when she underwent an elective termination of an unplanned pregnancy at approximately six weeks of gestation. She has not had any prior Pap smears. She has never been tested for sexually transmitted infections. The combination of the undesired pregnancy and the abnormal Pap smear, however, has been a "wake-up call" and today she requests testing for "everything." She received Depo-Provera at the time of the termination, and has not had a period yet. She reports normal, regular menses and has used oral contraceptives inconsistently in the past. She began having sexual intercourse at the age of 17, and has had 4 lifetime partners. She is on no other medications and has no known drug allergies. Her family history is notable for a grandmother with breast cancer. She smokes ½ pack of cigarettes per day, does clerical work for a moving company, and is engaged to be married in 6 months.

COMPETENCY-BASED DISCUSSIONS & KEY TEACHING POINTS:
Competencies addressed:

- Patient care
- Medical Knowledge
- Systems-based practice

1. According to recent guidelines published by the American College of Obstetricians and Gynecologists (2009), how many Pap smears should this patient have had given her age and clinical history?

2. Which historical risk factors does this patient have for having cervical dysplasia or for having cervical dysplasia progress to cervical cancer?

3. What is meant by the term "high-grade squamous intraepithelial lesion"?

4. What would you recommend as the next step in the evaluation of this patient's abnormal pap test?

5. Would typing for the human papilloma virus (HPV) aid in the management of this patient?

REFERENCES

Beckman CRB, et al. *Obstetrics and Gynecology*. 6th ed. Philadelphia: Lippincott, Williams & Wilkins, 2009.

Hacker NF, Moore JG, et al. *Essentials of Obstetrics and Gynecology*. 5th ed. Philadelphia: Saunders, 2010.

ACOG Practice Bulletin 109, Cervical Cytology Screening, December 2009.

American Society for Colposcopy and Cervical Pathology (ASCCP), 2006 Consensus Guidelines for the Management of Women with Abnormal Cervical Cancer Screening Tests:
http://asccp.org/pdfs/consensus/algorithms_cyto_07.pdf

UNIT FIVE: NEOPLASIA
EDUCATIONAL TOPIC 53: UTERINE LEIOMYOMAS

Rationale: Uterine leiomyomas represent the most common gynecologic neoplasm and often lead to medical and surgical intervention.

Intended Learning Outcomes:
The student will demonstrate the ability to:

- Discuss the prevalence of uterine leiomyomas
- Describe the symptoms and physical findings in patients with uterine leiomyomas
- Describe the diagnostic methods to confirm uterine leiomyomas
- List management options for the treatment of uterine leiomyomas

TEACHING CASE

CASE: A 42-year-old G3P3 woman presents with a history of abnormal bleeding and pelvic pain. She was well until approximately age 35, when she began developing dysmenorrhea and progressive menorrhagia. The dysmenorrhea was not fully relieved by NSAIDs. Over the next several years, the dysmenorrhea and menorrhagia became more severe. She then developed intermenstrual bleeding and spotting, as well as pelvic pain, which she describes as a constant feeling of pressure. She also complains of urinary frequency. Past gynecological history is otherwise non-contributory. She delivered three children by Caesarean section, the last with a tubal ligation at age 30. Her past medical history is unremarkable.

Physical examination reveals a well-developed, well-nourished woman in no distress. Vital signs and general physical exam are unremarkable. Abdominal examination reveals an irregular-sized mass extending halfway between the pubic symphysis and umbilicus and to the right of the midline. Pelvic exam reveals a normal appearing vagina and cervix. The uterus is markedly enlarged and irregular, especially on the right side where it appears to reach the lateral pelvic sidewalls. The adnexae are not palpable given the size of the mass.

Beta HCG is negative. CBC reveals hemoglobin of 10.3 and hematocrit of 31.2%. Indices are hypochromic, microcytic. Serum ferritin confirms mild iron deficiency anemia. Pap smear is reported negative for malignancy, adequate for evaluation. Ultrasound shows a large irregular mass, filling the pelvis and extending into the lower abdomen. The mass does extend into the right side of the pelvis. There is mild hydronephrosis on that side. The ovaries are not visualized. Endometrial biopsy reveals proliferative endometrium.

COMPETENCY-BASED DISCUSSION & KEY TEACHING POINTS:
Competencies addressed:

- Patient Care
- Medical Knowledge
- Practice-Based Learning
- Systems-Based Practice

1. What are the likely causes of the mass?

2. Describe the pathological changes of leiomyomata.

3. Discuss the appropriate management of women with fibroids.

4. What are the indications for hysterectomy in women with fibroids?

REFERENCES

Beckman CRB, et al. *Obstetrics and Gynecology.* 6th ed. Philadelphia: Lippincott, Williams & Wilkins, 2009.

Hacker NF, Moore JG, et al. *Essentials of Obstetrics and Gynecology.* 5th ed. Philadelphia: Saunders, 2010.

ACOG Practice Bulletin 96, Alternatives to Hysterectomy in the Management of Leiomyomas, August 2008.

American Family Physician:
www.aafp.org

UNIT FIVE: NEOPLASIA
EDUCATIONAL TOPIC 54: ENDOMETRIAL HYPERPLASIA AND CARCINOMA

Rationale: Endometrial carcinoma is the most common gynecologic malignancy. Early recognition and proper evaluation of endometrial hyperplasia and cancer can reduce morbidity and mortality.

Intended Learning Outcomes:
The student will demonstrate the ability to:

- Identify the risk factors for endometrial hyperplasia/cancer
- Describe the symptoms and physical findings of a patient with endometrial hyperplasia/cancer
- Outline the causes, diagnosis and management of postmenopausal bleeding

TEACHING CASE

CASE: A 56 year-old G0 woman presents to the clinic with complaints of intermittent vaginal bleeding. She went through the menopause 2 years ago and had no vaginal bleeding until 6 months ago when she had a three day episode of light bleeding. Since that time, she has had another 3 such episodes. Past medical history is remarkable for well-controlled hypertension, depression and "borderline" diabetes for which is poorly controlled on diet alone. She never used oral contraceptive pills but was unable to become pregnant. She has had a laparoscopic cholecystectomy. She takes Lisinopril and Zoloft. Her family history is non-contributory. On examination, she has normal vital signs, and weighs 247 pounds. Her heart, lung and abdominal exams are normal. On pelvic examination, she has normal external genitalia, vagina and cervix. The bimanual exam is difficult secondary to the patient's habitus, but the uterus feels slightly enlarged and no adnexal masses are palpable.

COMPETENCY-BASED DISCUSSIONS & KEY TEACHING POINTS:
Competencies addressed:

- Patient care
- Medical Knowledge
- Systems-based practice

1. What is your differential diagnosis for this patient?
2. What is the etiology of endometrial cancer?
3. What risk factors does this patient have for endometrial carcinoma?
4. What are the next steps in the diagnostic work-up of this patient?

5. An office endometrial biopsy revealed endometrial adenocarcinoma. How would you manage this patient?

REFERENCES

Beckman CRB, et al. *Obstetrics and Gynecology*. 6th ed. Philadelphia: Lippincott, Williams & Wilkins, 2009.

Hacker NF, Moore JG, et al. *Essentials of Obstetrics and Gynecology*. 5th ed. Philadelphia: Saunders, 2010.

ACOG Practice Bulletin 65, Management of Endometrial Cancer, August 2005.

UNIT FIVE: NEOPLASIA
EDUCATIONAL TOPIC 55: OVARIAN NEOPLASMS

Rationale: Adnexal masses are a common finding in both symptomatic and asymptomatic patients. Appropriate evaluation assists in the differentiation between benign and malignant neoplasms.

Intended Learning Outcomes:
The student will demonstrate the ability to:

- Outline the approach to a patient with an adnexal mass
- Compare the characteristics of functional cysts, benign ovarian neoplasms and ovarian cancers
- Describe the symptoms and physical findings associated with ovarian cancer
- List the risk factors for ovarian cancer
- Describe the three histologic categories of ovarian neoplasms

TEACHING CASE

CASE: A 48 year-old G3P3 woman comes to the office for a health maintenance exam. She is in good health and has no concerns. She had three normal vaginal deliveries and underwent a tubal ligation after the birth of her third child 15 years ago. She has no history of abnormal Pap smears or sexually transmitted diseases. Her cycles are regular and her last menstrual period was 18 days ago. She is not taking any medications. Her family history is significant for a maternal aunt who was diagnosed with ovarian cancer at age 60. On examination, she has normal vital signs. Her heart, lung and abdominal exams are normal. On pelvic examination, she has normal external genitalia, vagina and cervix. On bimanual exam, she has a slightly enlarged uterus and a palpable 6 cm mobile, non-tender right adnexal mass which is confirmed on the rectovaginal exam.

COMPETENCY-BASED DISCUSSION & KEY TEACHING POINTS:
Competencies addressed:

- Patient care
- Medical knowledge
- Systems-based practice

1. What is the next step in the management of this patient?

2. How would your approach be different if the patient was postmenopausal at 62 years of age?

3. You obtain an ultrasound which shows a 6 cm right complex ovarian cyst. What is your differential diagnosis?

4. What risk factors does this patient have for ovarian cancer?

5. List history and physical exam elements which help support or rule out the diagnosis of ovarian cancer.

REFERENCES

Beckman CRB, et al. *Obstetrics and Gynecology*. 6th ed. Philadelphia: Lippincott, Williams & Wilkins, 2009.

Hacker NF, Moore JG, et al. *Essentials of Obstetrics and Gynecology*. 5th ed. Philadelphia: Saunders, 2010.

ACOG Practice Bulletin 83, Management of Adnexal Masses, July 2007.

UNIT SIX: HUMAN SEXUALITY
EDUCATIONAL TOPIC 56: SEXUALITY AND MODES OF SEXUAL EXPRESSION

Rationale: All physicians should be able to provide a preliminary assessment of patients with sexual concerns and make referrals when appropriate.

Intended Learning Outcomes:
The student will demonstrate the ability to:

- Demonstrate the ability to obtain a sexual history; including sexual function and sexual orientation
- Explain the physiology of the female sexual response
- Classify the common patterns of female sexual dysfunction
- Identify the physical, psychological and society impact on female sexual function

TEACHING CASE

CASE 1: D.D. is a 29 year-old G1P1 who comes to see you because of decreased sex drive and pain with intercourse. She reports that since the birth of her child about one year ago, her sexual relationship with her husband never returned to normal. She does admit to being very stressed out lately because she started a new job six months ago and she is trying to balance it out with being a mother. She also reports being very tired most of the time. She is using oral contraceptive pills for birth control.

COMPETENCY-BASED DISCUSSIONS & KEY TEACHING POINTS:
Competencies addressed:

- Patient Care
- Medical Knowledge
- Interpersonal and Communication Skills
- Professionalism

1. What are the key components of a sexual history?
2. Describe the physiology of the female sexual response.
3. What is the definition of sexual dysfunction?
4. What are the potential etiologies of this woman's sexual dysfunction?
5. How do you treat this patient's sexual dysfunction?

CASE 2: L.W. is a 22-year-old G0 who comes to the office for a health maintenance exam. Her previous medical and surgical history is negative. She has regular menses, has never had a history of abnormal Pap smears. Her last one was 2 years ago. She lives with Lisa, her current partner of 6 months. She smokes 1 pack per day and has for the last 10 years. She does not use alcohol or any other drugs. She is on no medications. She has no complaints.

Physical exam:

Young healthy woman in no distress. Exam all normal.

Laboratory:

Pap smear normal

COMPETENCY-BASED DISCUSSIONS & KEY TEACHING POINTS:

Competencies addressed:

- Patient Care
- Medical Knowledge
- Interpersonal and Communication Skills
- Professionalism

1. What issues should be discussed at this patient's well-woman visit?

2. What are some special concerns regarding health care and women in same-sex relationships?

REFERENCES

Basson R. Clinical Updates in Women's Health Care: Sexuality and Sexual Disorders. ACOG 2003;11(2):22-32.

Plaut SM, Graziottin A, Heaton JW. *Sexual Dysfunction (Fast Facts), Indispensable Guides to Practice.* Health Press. March 2004.

ACOG Committee Opinion 428, Legal Status: Health Impact for Lesbian Couples, February 2009.

UNIT TWO: VIOLENCE AGAINST WOMEN
EDUCATIONAL TOPIC 57: SEXUAL ASSAULT

Rationale: Although the true frequency of sexual assault is unknown, it is a significant cause of short and long-term morbidity. In sexual assault cases, the physician has two clear duties: 1) medical treatment of the patient; and 2) collection and preservation of evidence. All health care providers should provide compassionate care for sexual assault survivors.

Intended Learning Outcomes:
The student will demonstrate the ability to:

- Define sexual assault in medical and legal terminology
- List risk factors for both victims and perpetrators
- Describe medical and psychosocial management of a victim of sexual assault
- Identify potential long-term sequelae

TEACHING CASE

CASE: A 24 year-old woman presents to the emergency department at 2:00 am. She reports that she was studying with a classmate who asked her to come to his apartment to continue their work. They were talking about the project when he kissed her. She became uncomfortable when he tried to go further and asked him to stop. She stated that she had then been held down while her clothes were removed and then was forced to have sex. She is tearful, distraught, agitated and reports that she had a glass of wine while they were working.

Her past medical history shows no allergies, no medications, and no hospitalizations. Review of systems and family history are unremarkable. Social history reveals that she is a graduate student in the Humanities. She does not regularly use drugs or alcohol.

Competency-Based Discussions & Key Teaching Points:
Competencies addressed:

- Patient Care
- Medical Knowledge
- Systems-Based Practice

1. What are the key components of the physical exam in this scenario?
2. What is the epidemiology of sexual assault?
3. What are risk factors for becoming a perpetrator of sexual assault?
4. What laboratory tests are indicated for this patient?

5. Which medications should this patient be offered acutely?

6. This patient is so satisfied with her care that she remains in your practice for the next 30 years. What potential long-term sequelae should you screen for?

REFERENCES

Beckman CRB, et al. *Obstetrics and Gynecology*. 6th ed. Philadelphia: Lippincott, Williams & Wilkins, 2009. (pg. 425-430)

Centers for Disease Control and Prevention National Center for Injury Prevention and Control 1-800-CDC-INFO • www.cdc.gov/injury • cdcinfo@cdc.gov

Rape and Incest National Network. www.rainn.org

UNIT SEVEN: VIOLENCE AGAINST WOMEN
EDUCATIONAL TOPIC 58: DOMESTIC VIOLENCE

Rationale: Domestic violence affects women irrespective of socioeconomic status. All physicians should screen for domestic violence.

Intended Learning Outcomes:
The student will demonstrate the ability to:

- Cite prevalence and incidence of violence against women, elder abuse, child abuse
- Demonstrate screening methods for domestic violence
- Communicate the available resources for a victim of domestic violence including short-term safety

TEACHING CASE

CASE 1: Alexis W. is a 24 year-old G4P3 woman who makes an appointment to consult you about her "PMS." She complains that she is "not herself" for several days before her period and that she can't stop crying. She doesn't have her usual patience with the children, aged 3 years, 2 years, and 8 months. She startles easily and is clumsy. Just last month, she accidentally broke a favorite figurine her mother had given her. She thinks she might have felt better when she took birth control pills, but her husband doesn't think she should take drugs that "interfere with natural functions," especially with this PMS problem. He doesn't like IUDs, diaphragms or condoms, either. When you screen the patient for depressive symptoms, she denies appetite disturbance. Her sleep is somewhat fitful, but she has to keep an ear cocked to hear the children so that they won't disturb her husband, as "he has to get to work in the morning." Her energy and sex drive are not great, but she believes that's pretty natural with three children. She manages to keep up with them and the housekeeping. She enjoys seeing other people, but doesn't have much time for socializing.

Her husband, who has accompanied her to the appointment, confirms her account. He says she "would be a great little wife and mother if it weren't for this darned PMS." He remains in the examining room throughout the interview and general physical and pelvic exam. You have a difficult time performing a pelvic exam as the patient is very nervous. The husband is holding his wife's hand and patting her on the back from time to time. He tells you that you should hurry up and just do the exam as she is always uncomfortable, "down there."

Physical exam:

All normal, except the difficulty with the pelvic exam and a small bruise on A.W.'s right arm.

COMPETENCY-BASED DISCUSSIONS & KEY TEACHING POINTS:

Competencies addressed:

- Patient Care
- Medical Knowledge
- Interpersonal and Communication Skills
- Professionalism
- Systems-Based Practice

1. What are the recommendations for who should be screened for domestic violence? What is the incidence and prevalence of domestic violence in the United States?
2. What specific "warning signs" do you find above that indicate the possibility of domestic violence?
3. How should this patient be screened for domestic violence?

CASE 2: A.W.'s symptoms seem to occur in the premenstrual phase. It is not clear whether she meets criteria for major depression or dysthymic disorder as well, but since the treatment for PMS is selective serotonin reuptake inhibitors (SSRIs), which are antidepressants, you reason that you will treat the depression, if it is present.

After ordering a laboratory workup, you prescribe sertraline 50 mg/day. You also arrange to have her previous medical records sent to your office. Prior to A.W.'s return visit 2 weeks later, you review her records and notice that she has made numerous visits to physicians with vague complaints of headaches and abdominal pains over the years. She has also been seen in the emergency department for a succession of lacerations and broken bones. Bruises were noted on these visits, but always explained by the patient.

When A.W. appears for her visit, again accompanied by her husband, you ask the office nurse and clerk to engage him in a lengthy discussion of insurance benefits. When he is not present, you tell A.W. that you are glad to have the opportunity to speak with her alone. She indicates that the medication has not made much of a difference in her symptoms. You tell her that people sometimes have symptoms like hers when others in their home are hurting them, and that you have noticed many injuries in her past medical history. A.W. looks very frightened. You assure her that you are there to help and that you will keep her statements strictly confidential. A.W. breaks down in tears and tells you that her husband's temper sometimes gets the best of him, and she says, "He would kill me if he knew I had told anyone." You assure A.W. that no one has the right to hurt anyone and discreetly provide her with information about domestic violence.

COMPETENCY-BASED DISCUSSIONS & KEY TEACHING POINTS:

Competencies addressed:

- Patient Care
- Medical Knowledge
- Interpersonal and Communication Skills
- Professionalism
- Systems-Based Practice

1. What resources should you discuss with the patient to assure her short-term safety?

2. What information should you give this patient about an exit plan to leave the abusive relationship?

3. What is the incidence of child abuse and elder abuse?

REFERENCES

Beckman CRB, et al. *Obstetrics and Gynecology*. 6th ed. Philadelphia: Lippincott, Williams & Wilkins, 2009.

http://www.acf.hhs.gov/programs/cb/pubs/cm07/summary.htm

Teaster, PB, Otto, JM, Dugar, TD, Mendiondo, MS, Abner, EL, & Cecil, KA. (2006). The 2004 survey of state Adult Protective Services: Abuse of adults 60 years of age and older. Report to the National Center on Elder Abuse, Administration on Aging, Washington, D.C.