Pregnancy Saved My Life: A Case of Ovarian Cancer and Pregnancy

**Background**
Ovarian cancer can be a devastating diagnosis for any woman but is particularly so for the pregnant woman who must make some difficult decisions regarding her pregnancy and treatment plan. The standard treatment for ovarian cancer is aggressive chemotherapy, which attacks the rapidly dividing cells of the cancer. At the same time, the rapidly dividing cells of the vulnerable fetus are at risk from the treatment. Our patient had multiple surgeries during pregnancy, including port placement and multiple cycles of chemotherapy (with its associated side effects). The nurses caring for her during her extended antenatal stay and delivery learned a great deal about ovarian cancer treatment.

**Case**
A woman with a history of infertility and endometriosis received a diagnosis of ovarian cancer. We will discuss her diagnosis, treatment plan, effects on maternal and fetal outcome, and delivery and follow-up treatment.

**Conclusion**
Early detection of ovarian cancer and collaboration with a treatment team of obstetricians, oncologists, surgeons, and nurses may lead to positive outcomes for mother and infant.

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Perplexing Presentation of Pink Breast Milk

**Background**
*Serratia marcescens* is an opportunist pathogen with strong evidence of a role in nosocomial infections. It has been cultured from hospital equipment, including breast pumps and inhalation devices and can be transmitted from the hands of healthcare workers. One outbreak in a newborn intensive care nursery was traced to the contamination of healthcare workers’ personal bottles of 1% chloroxylenol soap that were left open in work areas.

**Case**
During a routine 6-week postpartum visit, a mother reported a bright pink stain on her breast pads, burp pads, and infant diapers. The same bright pink color was in her bottles and breast pump when they were left out. The review of systems was negative. Her history was positive for right breast mastitis on postpartum day 4, which was treated appropriately and resolved. Her infant was healthy and thriving. The nurse practitioner caring for her was perplexed by this presentation. She consulted with the obstetric–gynecologic staff and the lactation specialist who were also puzzled. A breast specialist in general surgery consulted with infectious disease and pediatrics. The workup included cultures of the mother’s breast pads, milk, and breast pump. *Serratia marcescens* was isolated in addition to common gram-negative and -positive bacteria. The working diagnosis was colonization of *S. marcescens* without acute infection. The mother was reassured and encouraged to continue breastfeeding. She and her infant were closely monitored and managed without antibiotics.

**Conclusion**
This case provides an example of a unique clinical presentation involving unusual bacteria. The workup and management were addressed through a multidisciplinary approach. Having input from different disciplines provided the working diagnosis. The woman was given guidance regarding proper care of the breast pump and reassured that she could continue to breastfeed. At her final visit, she was breastfeeding 60% of the time and the infant was thriving.
Multidisciplinary Management of Maternal Diaphragmatic Hernia

**Background**

Early recognition, diagnosis, and treatment are critical in the management of the pregnant woman with a diaphragmatic hernia (DH), which occurs when abdominal viscera shift into the thoracic cavity. Signs and symptoms mimic normal pregnancy and include nausea, vomiting, abdominal pain, dyspnea, radiating shoulder pain, and chest pain.

**Case**

A 30-year-old, gravida 2, para 2, woman at 29 3/7 weeks gestation presented with nausea, dry heaves, abdominal and back pain, constipation, and an inability to get comfortable. Her medical history included gastric bypass surgery, strangulated hernia repair, and a cesarean birth of twins at 34 weeks gestation. A CT scan revealed a 7-inch diameter incarcerated DH. Treatment required two surgical interventions. The first was an immediate DH repair, and the second an abdominal hernia repair and C/S.

A nurse-coordinated, multidisciplinary team convened to discuss the plan of care and identify potential risks and possible emergency interventions. Team members included the general surgeon and assistant, the operating room (OR) team, an obstetric anesthesiologist, the labor and delivery (L&D) nurse, and the obstetrician. The neonatal intensive care unit (NICU) team and other specialist were on standby. Planned interventions included general and epidural anesthesia, dual-lumen intubation with two ventilators, and intermittent fetal monitoring. The woman and her husband were involved in the discussions of the plan of care. The DH repair was completed without incident. The recovery occurred in the intensive care unit (ICU) with care provided by the ICU and L&D nursing staff to monitor central lines, peripherally inserted central catheter lines, total parental nutrition, ventilators, sedation, epidural, wound vacuums, chest tubes, g-tube, Foley catheter, and fetal heart tones.

Weekly multidisciplinary meetings were held to discuss maternal and fetal progress, update the plan of care and identify interventions for emergency situations, including a cesarean in the ICU for a prolapsed cord (fetus in transverse lie). The adjacent ICU room was set up as an NICU, and cesarean and anesthesia equipment were available. The team leads for L&D and ICU created a to do list in case for emergency. The goal was to monitor the mother and newborn until 34 weeks gestation when the second surgery was planned.

The cesarean and hernia repair were done at 34 6/7 weeks gestation in the main OR with the patient’s husband present. She recovered in the postanesthesia care unit and was transferred to a medical/surgical unit. The newborn was admitted to the NICU. Detailed postoperative instructions for the L&D and medical/surgical team leads were outlined. A triage phone list was posted in the patient’s room. The mother and newborn recovered without complications.

**Conclusion**

Multidisciplinary teamwork, communication, and care coordination resulted in the discharge of a healthy mother and newborn.

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Lymphocytic Myocarditis in the Late Preterm Patient

**Background**

A woman was transferred to us at 35 weeks gestation with gastroenteritis symptoms and suspected preeclampsia. Further evaluation revealed more than a simple case of preeclampsia. Multiple differential diagnoses were considered.

**Case**

Physical examination was unremarkable on admission. The woman's blood pressure was normal and viral gastroenteritis was suspected. She reported headache and nausea, but symptoms improved after administration of antiemetics and antacids. Subsequently, she became febrile and oliguric and developed epigastric pain. Abdominal magnetic resonance imaging was unremarkable, pancreatitis was ruled out by abdominal ultrasonography, and the hepatitis panel result was negative. She then developed a diffusely tender abdomen, at which point chorioamnionitis was suspected, antibiotics were started, and an induction of labor was initiated.

After the initiation of the induction of labor, dyspnea was noted and a chest X-ray was obtained
to rule out pneumonia. She remained febrile, hypotensive, tachycardic, and tachypneic throughout labor but had a spontaneous vaginal delivery. The infant was transferred to the neonatal intensive care unit.

No improvement in symptoms occurred after the woman gave birth. Concerns for worsening pneumonia and the potential for developing pulmonary edema led to an electrocardiogram (EKG); repeat chest X-ray, blood, urine, and placental cultures; pregnancy-induced hypertension labs; cardiac enzymes; arterial blood gases; and an echocardiogram. An arterial line was placed and a diuretic was administered.

Cardiology was consulted and the woman was transferred to cardiac catheterization lab so that a cardiac catheterization could be completed and endomyocardial biopsies could be obtained. Coronary arteries were patent and the ejection fraction was less than 10%. She developed ventricular fibrillation, was defibrillated twice, stabilized, placed on extracorporeal membrane oxygenation, and had an aortic balloon pump inserted in the operating room.

She was transported to the cardiac intensive care unit for further management. Because the results of her myocardial recovery reveal lymphocytic myocarditis, cardiology determined that a biventricular assist device (BIVAD) will be required for a prolonged period to allow time for myocardial recovery. Her aortic balloon pump was removed and she was transferred out for BIVAD placement and further evaluation.

**Conclusion**

Acute lymphocytic myocarditis is rare and difficult to diagnose except by biopsy and is usually an immune response to a viral infection. Case reports in pregnancy are almost nonexistent. Our labor and delivery unit routinely cares for women with preeclampsia, and this woman's preliminary laboratory results determined routine care. Persistence of her symptoms indicated the need for further testing, which revealed significant abnormalities, prompting additional testing for less common alternate diagnoses. Ultimately, her rare diagnosis of acute lymphocytic myocarditis was determined after delivery. We learned that pregnancy could complicate and conceal a variety of ailments. Symptoms as common as unresolved persistent nausea and vomiting, tachycardia, and tachypnea require further testing, which in turn may lead the healthcare team to eliminate additional differential diagnoses. A well-coordinated interdisciplinary team makes a great impact on the outcome of patients in the mother–infant unit.

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**Spinal Muscular Atrophy Type II: Implications in Pregnancy and Cesarean Delivery**

**Background**

We examined the care provided and the complications addressed for an expectant mother with spinal muscular atrophy type II (SMA II). We will discuss the preoperative testing and education provided, inpatient plan of care, and postoperative outcomes. We will focus on the woman's SMA II with chronic pain and neuromusculoskeletal complications and how it affected the pregnancy and outcome.

**Case**

A 29-year-old G3P1111 woman presented for a repeat cesarean. Her case was significant for a history of SMA II that resulted in bilateral lower extremity contractures, surgical rods in spine, severe scoliosis, and chronic pain. The woman had no use of her lower extremities and was confined to a wheelchair. A multidisciplinary team consisting of members from anesthesia, maternal–fetal medicine, and neonatology, identified evidence-based interventions based on the patient's extensive medical history, prenatal records, and phone interview.

**Conclusion**

The woman had a cesarean and gave birth to a newborn who weighed 4 lbs 6 ounces and had an Apgar scores were 1/1/3 at 1, 5 and 10 minutes. The pediatric team was in attendance at birth and provided bedside resuscitation and intubation. The newborn was transferred to the neonatal intensive care unit for admission. The woman recovered in the perioperative area with an increased need of pain medicines but recovered appropriately and was transferred to the postpartum unit for the remainder of her hospital admission.
Ignoring the Odds: Interprofessional Planning for Positive Outcomes in Abdominal Pregnancy

**Background**
Abdominal pregnancy is rare and risky. Interdisciplinary collaboration, comprehensive clinical management, emotional support, and family inclusion in planning have a positive effect on outcomes as was demonstrated in this case.

**Case**
A 33-year-old gravida 2, para 1 woman presented at 19 weeks/3 days gestation with an abdominal pregnancy during a routine prenatal anatomy scan. An early transvaginal ultrasound obtained in the emergency department because of bleeding confirmed the pregnancy but did not confirm fetal location. Because of this finding, the woman was transferred to the high-risk obstetric service at a large academic medical center.

Her health history included smoking, anxiety, and a cesarean that was performed because of nonreassuring fetal heart tones. A magnetic resonance imaging indicated a placenta that enveloped and adhered to the left pelvic sidewall, sigmoid colon, bladder, right ovary, left iliac, and left ureter. Medical recommendation to remove the fetus was counter to the woman’s religious beliefs. Though the medical team and her spouse disagreed with her decision, they accepted it and developed a comprehensive plan of action to preserve the life of the mother and the fetus.

Upon admission to the hospital, a special team developed a woman-centered plan of care. This team included a core set of registered nurses and representatives from obstetrics, interventional radiology, vascular surgery, gynecologic–oncology, neonatology, blood bank, pastoral care, and obstetric social work. Multiple family meetings were held and limited options were discussed. Obstetrics coordinated the care team that would be present during delivery. The delivery process was discussed with the woman early in her hospitalization and she verbalized awareness of the steps needed to ensure maternal and fetal safety. Despite a poor prognosis, the pregnancy continued, and the neonate was delivered at 24 weeks gestation because of perigestational hemorrhage. At delivery, the woman lost 5,500 ml of blood, received 37 units of blood products, and was transferred intubated to the intensive care unit. The woman was discharged home on postoperative day 8, and the infant was discharged home on room air after 6 months.

**Conclusion**
The focus of evidence-based nursing care is patient-centered and holistic. Though nursing staff agreed that termination of the pregnancy was the best option for the mother, they respected and advocated for her choices. Facilitating lengthy bed rest, maintaining deep vein thrombosis prophylaxis, and providing emotional support were priorities for the nursing team. Once nursing staff detected status changes, clear interdisciplinary communication and rapid mobilization for delivery improved the odds of survival for this woman.

A Multidisciplinary Approach to Delayed Interval Delivery in Twin Pregnancy

**Background**
Multiple gestation occurs in approximately 32/1,000 births. This number has increased during the past 30 years primarily because of assisted reproduction technology and advanced maternal age. One in eight twins is born before 32 weeks gestation. Typically, fetuses of a multiple gestation are born within a short interval of time, however, if membranes rupture, or an intrauterine demise occurs, there may be benefit in attempting to delay delivery of the second twin to achieve viability. Caring for these patients is challenging and will be best served by a multidisciplinary team approach.

**Case:**
1. A 31-year-old woman (gravida 1, para 0) had an in vitro fertilization-conceived pregnancy and presented at 19 weeks 5 days gestation with preterm premature rupture of membranes (PPROM) of twin A. She and her husband chose to attempt to maintain the pregnancy for the benefit of twin B. Twin A was delivered at 19 weeks 6 days gestation, and twin B was born at 28 weeks 3 days gestation and went home from the neonatal intensive care unit (NICU) 9 weeks later. During the newborn’s hospitalization, the parents met with staff from maternal–fetal medicine
(MFM), neonatology, supportive care, and spiritual care. This couple supported each other well and acknowledged the bittersweet experience of grieving for one child and being happy for the positive outcome of the other.

2. A 41-year-old woman (P5034) presented at 22 weeks 1 day gestation with PPROM of twin A and gave birth shortly after admission. She desired to continue the pregnancy for the benefit of twin B and gave birth at 26 weeks 1 day gestation. Her newborn died at 16 days of life in the NICU. Her hospitalization was challenging for all involved because she had a strong psychiatric and substance dependence diagnosis. During her hospitalization, she met with staff from MFM, neonatology, supportive care, and psychiatry. She continues to struggle with her grief.

3. A 29-year-old woman (gravida 1, para 0) had an intrauterine insemination (IUI)-conceived pregnancy and was admitted for PPROM of twin A at 20 weeks 0 day of gestation. She delivered twin A 1 day later but desired to maintain the pregnancy for the benefit of twin B. She developed chorioamnionitis 24 hours later and labor was augmented for twin B. During her hospitalization, she met with staff from MFM, supportive care, and spiritual care.

Conclusion
When delayed interval delivery is chosen, families and caregivers must be educated about the risks of infection and potential poor outcome for the remaining fetus. Identifying and providing supportive care is vital for the family and staff.

Necrotizing Fasciitis in an Obstetric Patient

Background
Premature rupture of membranes (PROM) in a preterm infant is a serious concern. Additional complications, such as chorioamnionitis and a primary herpes outbreak, mean the delivery team must be vigilant in the care of such a patient.

Case
A 32-year-old woman was transferred to our facility with a singleton pregnancy at 35 weeks gestation. The woman presented with unidentified PROM and had brown watery discharge for the past 3 weeks. Additionally, she had a primary herpes outbreak, was positive for group B streptococci, and reported flu-like symptoms for the past 3 weeks. The woman was febrile and her abdomen was tender to touch. Once stabilized with appropriate antibiotic and antiviral treatments, the woman underwent a primary cesarean. During the surgery, the uterus was found to be full of pus. The neonatal intensive care unit (NICU) team was present at the delivery. The newborn had a low Apgar score, oxygen saturation in the 30 s, no respiratory effort, and required prolonged respiratory support.

The woman’s postpartum course was progressing well until bowel sounds and urinary output decreased. Reddened areas around her incision were shown to her physicians and were attributed to tape burn. With no improvement, the woman was transferred back to the labor and delivery unit where she could receive a higher level of care. The nurse noticed the reddened area around the surgical site and convinced the physicians that this was not due to ordinary tape burn. A surgical consult was ordered and the woman was taken to the operating room (OR) to have her wound reopened. In the OR, her wound was cleaned and debrided but necrotizing fasciitis had set in. The woman was moved between the intensive care unit (ICU) and the OR for serial debridements. Eventually it was determined that her uterus could not be saved, and the woman had a hysterectomy. Soon after the surgery, she began to improve.

The clinical nurse specialist was involved with keeping family and staff from the ICU, NICU, and OB departments up to date on the clinical condition of the dyad and provided resources to all areas as needed. The infant remained depressed for several days but did not contract herpes and was discharged appearing normal at 25 days of life.

Conclusion
As this complex patient deteriorated, she was cared for by many specialists, including clinicians from obstetrics, infectious disease, neonatology, nephrology, general surgery, and critical care. Though this case was very medically intensive, nurses had a key role in identifying subtle changes in the patient, communicating and advocating for increased medical surveillance and treatment.

Necrotizing Fasciitis in an Obstetric Patient

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Keywords
teamwork
patient advocacy
interdepartmental communication

Childbearing Poster Presentation
An Amniotic Fluid Embolism Survival Story

Background
A full-term woman in labor presented with a history of gestational diabetes and no pulmonary disease. Until the insult, the labor was uncomplicated and the fetal monitor tracing was a category I. The labor and delivery registered nurse was at the bedside charting when the woman (who had an epidural and was taking Pitocin) first began to cough.

Case
The woman suddenly began to cough, and could not stop. It appeared as if the woman was choking. A prolonged fetal heart rate deceleration was noted, and maternal oxygen saturation and maternal heart rate also dropped. Additional nurses and an anesthesiologist were called to the bedside stat. The patient's radial pulse became non-palpable, and the oxygen saturation finger clip connected to the electronic fetal monitor did not register a pulse or an oxygen saturation reading; however, an apical pulse via stethoscope was still heard. The woman was moved quickly to the labor and delivery operating room where she was rapidly intubated by the anesthesiologist. Her respiratory status stabilized after intubation. A stat cesarean was performed, and a live newborn was delivered and handed to the awaiting neonatal intensive care unit staff. Bleeding during surgery appeared to be slightly increased. The circulating nurse looked under the operating room drape to check lochia flow and discovered the woman (who had an epidural and was taking Pitocin) first began to cough.

Conclusion
The woman and newborn were discharged in stable condition on postpartum day 6.

Evidence-Based Quality Improvement Measures Contributed to Saving a Woman and Experiencing Amniotic Fluid Embolism and her Fetus in the Second Stage of Labor

Background
In 2007, the World Health Organization listed the United States as 41st in the world for maternal mortality. This report triggered a call for action to improve care for pregnant women. The Institute for Healthcare Improvement (IHI) advocates for the development of rapid response teams to improve outcomes in critical situations by providing critical care expertise at the bedside. In 2009, IHI cited a study that reported a 56% reduction in the number of deaths from cardiac arrest and a 25% reduction in total number of deaths after the implementation of a rapid response team. At our facility we have had similar results. Along with a rapid response team, our hospital has established special codes to bring additional needed personnel to the bedside in situations of suspected sepsis (gold alert), stroke (stroke alert), and hemorrhage (code white). A massive transfusion protocol has been put in place when large blood volume replacement is needed. To improve outcomes by improving communication, our maternal–child unit piloted implementation of Team STEPPS training.

Case
Our team training was put to the test when a 34-year-old multiparous woman was admitted to the labor and delivery unit in active labor with an uncomplicated pregnancy. The labor progressed rapidly, but shortly after she started to push, the woman coughed, said “I don’t feel very well,” and then lost consciousness. A code blue was called, and the team arrived within 2 minutes. Within 7 minutes the infant was delivered by the midwife and resuscitated by the neonatal intensive care unit team. We suspected the woman had an amniotic fluid embolism (anaphylactoid syndrome of pregnancy). Over the next 9 hours, the woman went into cardiac arrest four times and developed a disseminated intravascular
Coagulation. A code white (hemorrhage) was called, the rapid response team was called for extra help, and the massive transfusion protocol was implemented. Communication and teamwork were evident throughout the night, and as a result a healthy newborn male infant was discharged home with his family at 5 days of age; the mother followed 11 days later.

Conclusion
After this dramatic event a debriefing was held so the team could discuss successes and opportunities for improvement. The word heard repeatedly to describe the care provided was seamless. Some confusion regarding the massive transfusion protocol was identified, and plans to improve the process were put in place.

Sim Huddles: A Team STEPPS Approach for Emergency Preparedness

Background
Obstetric nurses and team members need rapid responses and a coordinated team effort when emergencies arise. Maintenance of emergency preparedness skills, including advanced cardiac life support (ACLS), is critical for patient safety; yet few obstetric nurses feel confident in these high-risk, low-frequency skills.

Case
Sim huddles involve melding Team STEPPS principles and practices with simulation to increase nurse confidence and preparedness for emergency skills. Team STEPPS principles are proven to enhance teamwork and improve patient safety. Short random in situ simulations of obstetric critical events involve huddling to review key elements, completing a simulated mock code, and then completing a debriefing experience for the students. The debriefing evaluation of the simulation is a practical and effective way to provide the perinatal team the opportunity to refresh their knowledge, perfect their skills, and increase their confidence in response to a patient with an obstetric emergency. Every sim huddle has uncovered at least one latent safety threat, such as equipment or process issue, that is immediately corrected to support safety and preparedness.

Conclusion
Through the implementation of sim huddles, participants develop a higher level of readiness that contributes to optimal outcomes when emergencies arise. Improved performance, knowledge, and confidence gained through simulation-based training with the application of modifications for pregnancy will facilitate the prompt initiation of basic life support and ACLS, which are critical for the survival of the mother and the fetus during a maternal code. With a foundational knowledge of the changes and challenges that occur in pregnancy, appropriate treatments can be instituted, and two lives saved.
Role of the Clinical Nurse Specialist in Multidisciplinary Care Planning for an Obstetric Patient with Cardiac Arrhythmia

Background

Though rare, maternal cardiac arrhythmias can have significant clinical repercussions for the mother and fetus. Proper preparation is key to preventing adverse outcomes. Collaboration of all potential services that may be involved in the care of complex patients can lead to positive patient outcomes. By remaining an advocate for patient- and family-centered care, the clinical nurse specialist (CNS) plays a crucial role in assisting staff, patients, families, and medical systems to reach these outcomes.

Case

A woman presented to the Regional Perinatal Clinic for high-risk obstetric (OB) care because of her history of a cardiac arrhythmia during a previous pregnancy. Care management was complicated by the inability of staff to review the chart from her previous pregnancy. During her prenatal course, the plan of care was flexible and changed several times. She was seen as an inpatient for her cardiac arrhythmia and was followed up by cardiology as an outpatient. Care, which included planning multidisciplinary meetings and phone conferences and coordinating delivery plans for the team, was managed by the maternal–fetal medicine (MFM) specialists who consulted multiple disciplines during prenatal care.

Interventions included meetings attended by cardiac and perinatal case managers, nurse managers, assistant nurse managers, OB patient placement facilitator, MFM, medical director of labor and delivery, anesthesiologist, and cardiac intensivist. Close monitoring of maternal cardiac status before, during, and after delivery was maintained. Constant contact with the woman was available through text messaging to the CNS and facilitated prompt response to her questions.

The care coordination that included medical specialists and inpatient and outpatient nursing teams led to a healthy mother and newborn at discharge, an improved patient and family experience, and decreased confusion during the delivery of care. Additionally, staff were able to understand the role of the CNS in direct patient care as a nurse educator and as a change agent in the organizational sphere of influence.

Conclusion

Evidence-based care and multidisciplinary care planning are central to producing positive patient outcomes in complex OB cases. The CNS can affect three spheres of influence: patient, staff, and organization.

The Perfect Storm: Severe Penicillin Reaction 3 Weeks After Intrapartum Antibiotic Prophylaxis

Background

Because of the devastation of early onset group B streptococcal (GBS) infection in the neonate, intrapartum antibiotic prophylaxis (IAP) has been recommended since 1996 for colonized women. Administration of at least two doses of intravenous penicillin before birth has significantly reduced the incidence of neonatal GBS disease. Penicillin is a common drug that sometimes causes adverse effects and allergic responses. Risk factors for developing drug allergies include age, gender, route of administration, frequent administration of antibiotics, and presence of other allergies. Women who receive IAP may be at risk of developing penicillin allergy.

Case

A multipara (gravida 4 para 3) woman received IAP after testing positive for GBS on routine late-term screening. She also received IAP as recommended by the Centers for Disease Control and Prevention (CDC) guidelines during her previous three labors. She had a normal physiological labor and birth for her fourth child, a healthy girl, and initiated breastfeeding immediately after giving birth. Three weeks later, she developed mastitis and was prescribed oral dicloxacillin. She experienced significant urticaria, pruritus, and angioedema 7 days after starting this drug. She had swelling of the lips and face but did not experience respiratory distress. In the emergency room, she was given a dose of oral prednisone and...
discharged. She discontinued the dicloxacillin as instructed by the emergency care provider. Within 18 hours she reported back to the emergency room with increased severity of symptoms. At this time, she was started on high doses of steroids, hydroxyzine, and antihistamines and referred to an immunologist.

Conclusion
Though IAP has been effective in reducing early onset GBS disease in the neonate, infusion of penicillin in healthy childbearing women may increase their risk of penicillin allergy, especially when penicillin or a related drug is administered shortly thereafter. Several consequences of this newly acquired allergy have nursing implications. Careful history is necessary when women report drug allergies because most people who state having a drug allergy do not when tested. This underscores the importance of a good history and accurate patient records. Nurses were important in providing the patient with education about allergic reactions, giving comfort measures for her symptoms, and assisting her with pumping because she had to discard the milk that was laden with drugs. Assisting the woman to find a formula and nipple that her completely breastfed infant tolerated and ensuring that the woman understood SAFE (Seek help, Allergen identification, Follow-up care, and Epinephrine for emergencies) care was important nursing care.

Gestational Carrier Delivery: What Do I Do Now?

Background
Surrogacy is becoming increasingly more common in the United States. Recent publications and high-profile surrogate births have opened the discussion for many to consider surrogacy. Though surrogacy presents a viable option for childbearing, it can be stressful for all involved. Issues surrounding surrogacy include physical, psychosocial, economic, and legal concerns. Clear policies and procedures that outline the legal processes coupled with an advanced practice nurse acting as a care coordinator are integral for a smooth process of care and to promote satisfaction for the birth mother and intended parents. Several gestational carrier births (domestic and international) will be discussed to demonstrate nursing care related to the birth mother and the intended parents.

Case
The clinical nurse specialist collaborated with lawyers, physicians, and all parties involved from mid second trimester to the postpartum period. Legal processes were determined and explained, and desires of involved parties were incorporated into individualized care plans. Communication with nurses and unit managers occurred through detailed checklists and review of case specifics. Nursing care was directed toward providing maternal and neonatal care to appropriate parties with an emphasis on enhancing the birth experience for all.

Conclusion
Because of assisted reproduction technology and changing family dynamics, the rate of surrogate pregnancies will continue to rise. Nurses play a key role in addressing the issues of gestational carriers, their families, and intended parents. Optimal outcomes will occur only through clear policy development, coordinated multidisciplinary efforts, and fair equitable care with a focus on meeting physical and psychosocial needs for all involved.
Caring for a Patient with Previously Undiagnosed Hyperparathyroidism at 35 Weeks Gestation

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Keywords
hypercalcemia
hyperparathyroidism
pregnancy

Background
Primary hyperparathyroidism is an endocrine disorder rarely diagnosed in pregnancy. Most cases are usually diagnosed in the first or second trimester of pregnancy with very few reported in the third trimester. If untreated, hyperparathyroidism has the potential for serious maternal and/or neonatal complications, including but not limited to neonatal tetany and serious electrolyte imbalances.

Case
A 28-year-old Hispanic, gravida 1, para 0, woman at 35 weeks gestation was admitted for management of elevated blood pressures to rule out preeclampsia. She denied headache, nausea and/or vomiting, shortness of breath, heart palpitations, chest pain, abdominal pain, visual disturbances, contractions, and vaginal bleeding. Her medical history was significant for hypothyroidism, which was treated with Synthroid. She denied any other significant medical issues.

The results of her physical examination were within normal limits (WNL): blood pressure remained WNL with one elevation of 143/74, fetal ultrasonography was normal, and fetal heart rate tracings were Category I. Routine laboratory tests included complete blood count, which was WNL; pregnancy-induced hypertension panel, which was WNL; and chemistry screen, which revealed a serum calcium of 12.2 ng/dl. Additional laboratory tests included a 24-hour urine calcium of 370 mg/day and 24-hour urine protein of 567 mg/day. Thyroid-stimulating hormone and free thyroxine (T4) were WNL. The diagnosis of hypercalcemia was made. The woman had an ultrasound of the thyroid and a magnetic resonance imaging of the neck resulting in diagnosis of hyperparathyroidism secondary to left lower pole adenoma.

Multiple consults were conducted with maternal–fetal medicine, endocrine, ear nose and throat surgery, and neonatology. The options discussed with the woman and her partner included conservative management, surgical management, and potential neonatal outcomes. The woman initially opted for conservative management that included treatment with calcitonin, but it did not decrease calcium levels. Premature delivery of the fetus also was discussed but was decided against. The woman opted for surgical removal of the adenoma. Serum parathyroid hormone (PTH) levels obtained 30 minutes postoperation decreased from 175 pg/ml before the operation to 35 mg/ml after. The postoperative calcium levels decreased from 11.3 to 8.0 mg/ml.

The woman was discharged on postoperative day 2. She returned at 39 weeks 1 day of gestation for elective primary cesarean for persistent breech presentation. Her serum calcium was 9.2 mg/ml and PTH was 23 mg/dl. The neonate serum calcium was 9.7 mg/dl and demonstrated no adverse symptomatology of the maternal hypercalcemia. The woman was discharged with her newborn on postoperative day 4.

Conclusion
Though hyperparathyroidism is uncommon during pregnancy, it has the potential for serious negative outcomes. With surgical treatment, outcomes are much improved.

Successful Pregnancy and Delivery with Maple Syrup Urine Disease

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Background
Maple syrup urine disease (MSUD) is a rare autosomal recessive disorder that affects branched-chain amino acids. Worldwide, there are less than a dozen documented cases of successful pregnancies of women with MSUD. I describe the challenges of caring for a woman with a disease that is rarely seen in obstetrics and the interdisciplinary care that was required for her to have a successful pregnancy and delivery. I will provide education on MSUD and outline a plan of care intended to prevent metabolic decompensation of an obstetric patient with MSUD and to ensure her health and the health of her newborn.

Case
The woman was 27 years old, gravida 1, para 0, with MSUD and an expected inpatient stay of 10 to 14 days to closely monitor and adjust her amino acid levels. Multiple interdisciplinary meetings were conducted to review laboratory test results and metabolic and nutritional status...
before her arrival and daily during her admission. Specialists were involved from nursing, obstetrics, metabolic genetics, nutrition, pharmacy, intravenous therapy, laboratory services, and social services. Amino acid levels were drawn daily and couriered to another facility; a peripherally inserted central catheter line was placed before admission; close monitoring of insulin levels and fluids was conducted; weight was checked daily; frequent urinalysis was done for ketones; specialized total parenteral nutrition (TPN) and daily adjusted nutrition were monitored; specialized testing of the newborn was conducted; and continued close monitoring was maintained. This woman did very well until day 10 when her leucine levels started to increase and she was restarted on TPN. She was eventually discharged home on her normal diet. Her newborn required admission to the level II nursery for hypoglycemia, which resolved on day 4 of life, and was discharged home with her parents.

**Conclusion**

Very few cases of pregnant women with MSUD are described in the literature. This meant that providing care for a woman with MSUD during labor, delivery, and postpartum was challenging. An in-depth look at the disease, understanding metabolic control, and having a multidisciplinary approach with clear communication helped our team care for this woman and see her through to a safe delivery of a healthy newborn.

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**Effects of a Massive Transfusion Protocol in Obstetric and Gynecologic Populations**

**Background**

Large volume blood loss management is vital to survival, especially in obstetric and gynecologic surgery in women of childbearing age. For this reason a protocol was developed to ensure availability of blood products for transfusion during acute blood loss in this patient population.

**Case**

A failed trial of labor, a woman consented to a cesarean delivery, which resulted in the loss of 1 L of blood after the birth. In the recovery room, the woman reported increasing abdominal pain from her right pelvis to her right upper quadrant. As her blood pressure decreased, the team quickly attempted to stabilize her, and she was moved back to the operating room for exploration. A massive transfusion protocol (MTP) was initiated because of a large hemoperitoneum (blood collection in the abdomen) of 3.5 L (total estimated blood loss of 4.5 L). Surgical repair of a right cervicovaginal laceration was performed as eight units of packed red blood cells (PRBC), two units of fresh frozen plasma (FFP), and a pack of platelets was transfused. The woman remained on mechanical ventilation and was admitted to the women’s intensive care unit where she remained intubated overnight. A review of the laboratory results revealed a decrease in hemoglobin from 10.7 mg/dl on admission to 6.5 mg/dl, with a return to 11.6 mg/dl the day following these interventions. The breathing tube was removed the same day, and the woman was discharged home on day 6 after the MTP was initiated.

**Conclusion**

The MTP was initiated in 2010 along with a maternal urgent surgical team to manage this complex population. Each cooler from the blood bank contains six units of PRBC, six units of FFP, and a pack of platelets. During the MTP, the blood bank will release a cooler every 20 minutes until the MTP leader terminates the MTP. From December 2010 to December 2012, 43 protocols (MTP I: 22; MTP II: 21) were used in obstetric and gynecologic patients. The ratio of red blood cells to FFP transfusion ranged from 1:0.54 to 1:0.66; the mean patient age was 33.6 years. The average length of stay (LOS) from time of MTP to patient discharge was 4.3 to 5 days with a mean LOS in the intensive care unit of 2.3 days. Exemplary practice and quality outcomes are a direct result of this collaborative effort in patient-first care.
Beat to Beat: Antenatal Fetal Arrhythmia to Newborn Ventricular Tachycardia Caused by Rhabdomyomas and a Subsequent Diagnosis of Tuberous Sclerosis

**Background**

The findings of an irregular fetal heart rate antenatally and subsequently rhabdomyomas in the fetus suggest a genetic disease of considerable importance. Multiple rhabdomyomas trigger suspicion of tuberous sclerosis complex (TSC) because it is present in more than 80% of cases of rhabdomyomas. Usually, rhabdomyomas regress without intervention, but the association with TSC is life changing for the family. Knowledge of the outcome of affected fetuses and the true incidence of TSC in fetal cardiac rhabdomyomas is critical for accurate prenatal counseling, planning of prenatal treatment, and infant care after delivery.

**Case**

We will discuss a woman with an irregular fetal heart rate detected at 34 weeks gestation. Initial ultrasonography revealed a slightly irregular fetal heart and a somewhat thickened cardiac septum. Ultrasonography at a Level III perinatal center revealed probable rhabdomyomas of the heart and ruled out tuberous sclerosis (TS). The fetal echocardiogram demonstrated intracardial rhabdomyomas with compromised outflow. Consults with a geneticist and pediatric cardiologist occurred. Weekly nonstress testing along with ultrasonography for signs of cardiac failure was done. At 38+ weeks gestation, a left ventricular enlargement was identified. At 39 weeks 4 days gestation, fetal lung maturity was ascertained and labor was induced. The infant weighed 3,460 g and had an Apgar score of 8/9. The infant echocardiogram showed multiple intracardiac lesions, including a tumor obstructing aortic outflow near the aortic valve, one on the anterior leaflet of the mitral valve, a tumor in the left ventricle (2/3 of the ventricle size), and multiple nonobstructive lesions. The infant was admitted to the neonatal intensive care unit for monitoring. Family bonding with the infant was encouraged and facilitated by the nursing staff. At 26 hours of age, the infant developed supraventricular/ventricular tachycardia. Cardioversion was done and antiarrhythmic drugs were started. The parents were notified, and the options and the definitive diagnosis of TS were discussed. On day 11 of life, the infant had open heart surgery to remove the tumors and did well postoperatively.

**Conclusion**

This family was not expecting a child with a significant health problem. Support from staff was crucial. Initially, they focused on the risks of cardiac surgery and not on the more significant diagnosis of TSC. However, the diagnosis and its implications were addressed by the multidisciplinary team. TSC is an autosomal dominant multisystem disorder and early diagnosis is critical; recent literature suggests that early rapamycin use may prevent the development of TSC manifestations.