"The mission of the MEFACOOG is to foster continuing improvements in women's health care. The goals of the MEFACOOG are to support Continuing Medical Education – Undergraduate, Graduate and Post-graduate, Research Programs, Faculty Development and Development of Educational Networks in women's health care.

Medical Education Foundation of American College of Osteopathic Obstetricians & Gynecologists

Year of 2020

MEFACOOG ANNUAL REPORT

Inside This Issue

Message from the Chair

David J. Boes, DO, FACOOG(Dist)

Dear members of the Osteopathic OBGYN Community:

It has been one year since the onset of the COVID Pandemic which has brought challenges and hardships, and for many, loss of loved ones as well. We are hopeful that we are rounding the corner, given a better understanding of best practices in mitigation of this pandemic and with an increasing number of our population receiving vaccination for Covid. We are appreciative of all that our ACOOG members have done to serve their patients during this unprecedented period of crisis in our lifetimes.

While much of our normal in-person activities have been put on hold this year, we want you to know that the Medical Education Foundation of ACOOG (MEFACOOG) remains committed to supporting quality education of Osteopathic resident learners and in fostering resident research and QI projects to support the advancement of excellence in women's health care.

MEFACOOG has supported the **Resident Reporter Scholarship Program** for many years, which has benefitted in excess of 400 osteopathic ob gyn residents. Many of these physicians have gone on to serve in ACOOG leadership positions, as well as in the training of medical students and residents. This program has continued beyond the recent transformation to the ACGME single accreditation system and in spite of our transition to virtual conferences over the past year. This program has allowed many of our DO residents to attend the Annual ACOOG meeting, participate in the educational programs and to report on a chosen presentation from the conference, as a component of scholarly activity and future academic development. This year MEFACOOG sponsored **six residents** to participate at the ACOOG 88th Annual Conference.

Other **MEFACOOG Funded Activities** include:

- Provides Research Awards and Grants to support scholarly activity and opportunities for Osteopathic residents to present their research or QI projects at our College meetings.

- **EDUCATIONAL ENDOWMENTS**
  - MEFACOOG Distinguished Lecture
  - Past Presidents' Honorary Lecture
  - Barbara Hawkes Honorary Fellows Lecture
  - Distinguished Fellows Honorary Lecture
  - Osteopathic Manipulative Medicine Course

- **COMMUNITY SERVICE PROJECTS** at annual ACOOG meeting

For further information on MEFACOOG mission and goals visit our website.

The future of MEFACOOG to be able to support these endeavors relies on the generosity of our donors & members. Funding support from the Pharmaceutical and Medical Device Industry has become less available in recent years secondary to funding constraints that disallows grants for medical education. While we continue to work with industry, we are increasingly reliant on the generosity of our members to provide donations to support these educational activities.

In the past year, we have put our requests for

(Continued on Page 4)

(Continued from Page 3)

donations from our ACOOG membership on hold, due to the many social and economic hardships that the COVID Pandemic has caused. Our focus remains committed to the mission and goals of MEFACOOG to support our osteopathic residents in their education and involvement with ACOOG, as well to support lifelong educational opportunities for our membership.

ACOOG has built a strong osteopathic medical student base through the ACOOG National Student Society along with exceptional educational experiences at our meetings. MEFACOOG endeavors to continue this support during residency, and the training of Osteopathic physicians under the new single accreditation system.

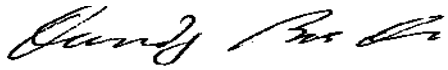
We are kindly requesting that as you reflect on your experiences during resident training, and as your budget allows, that you consider making a donation to MEFACOOG. We would like to thank our past donors and supporters for all you have done to support this educational foundation. It is only through your continued financial support and volunteerism that we can continue with the mission of MEFACOOG.

To donate visit our website or used the donation form in this publication.

We are appreciative of the ACOOG administrative team and the CME committee in rapidly transitioning our meetings to a virtual format but are also hopeful that we will be able to meet in person again at the ACOOG Fall 2021 CME meeting in Chicago, and at our 89th annual meeting in San Antonio in Spring, 2022.

This year marks the end of my service to ACOOG as an officer. I have been honored to have served the College in various capacities during my career including as a member of the Resident Evaluation Committee, as chair of a task force instrumental in starting the National Student Society of ACOOG and as a member of the Board of Trustees. I have been privileged to have been mentored by those that came before me and am thankful to the College membership for the opportunities afforded me. While my service as an officer is complete, I look forward to continuing to support our College and look forward to observing the development of our future leaders in women's health care. Thank you for the friendships and memories.

Fraternally,



David J Boes, DO, FACOOG (Dist)

Message from Executive Director

Valerie Bakies Lile, CAE, FACOOG(Hon)

Dear Members of the Osteopathic OBGYN Community,

We wish to express heartfelt appreciation for the courage and resilience you have demonstrated this past year while continuing to provide excellence in women's healthcare. For this reason, MEFACOOG remains dedicated to quality education and research programs that support your efforts.

2021 marks the 25th Anniversary of the Resident Reporter Scholarship Program and nearly 400 residents have benefitted from the knowledge, mentorship, and experience it provides. Many have gone on to serve in ACOOG leadership roles. If you are a former recipient, please consider paying forward this opportunity by investing in our future leaders. MEFACOOG has a fundraising goal or $50,000 for the Resident Reporter Scholarship by the end of 2021. We hope everyone will support this goal!

Engaging young osteopathic physicians is more important than ever in the unified GME environment. Another way we hope to impact education in single accreditation is by continuing to recognize excellence in osteopathic research. MEFACOOG research awards and grants will provide the foundation for bringing osteopathic education principles to the greater OBGYN community and create scholarly activity opportunities for residency and fellowship programs.

Providing exceptional educational experiences is our priority, beginning with medical students, through postgraduate training, and lifelong learning.

Sincerest Thanks,

Valerie Bakies Lile, CAE, FACOOG(Hon)
Executive Director

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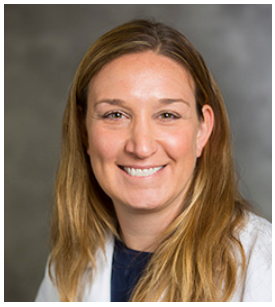

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MEFACOOG/Resident Reporter Scholarship Program

The Resident Reporter Program at the 87th Annual Conference (virtual conference) received commendable contributions from the residents who participated. The top submissions receving awards and publication in the MEFACOOG Annual Report were:

Raquel Cardenas, DO - OSU Medical Center - Tulsa, OK
"Hematologic Disorders in Pregnancy"
Article based upon a lecture by : Dr. Corinna Muller

Sophia Yi, DO - Rowan SOM/Inspira Health Network - Vineland, NJ
"The High Risk Patient on Labor and Delivery"
Article based upon a lecture by: Dr. Emmie Strassberg

Erin Showalter, DO - OSU Teaching Health Center - Tulsa, OK
"Substance Abuse in Pregnancy"
Article based upon a lecture by: Dr. Corinna Muller

Charissa Meredith, DO - Metro Health - Wyoming, MI
"Endometrial Hyperplasia"
Article based upon a lecture by: Dr. Ajit Gubbi

Thomas McCartney, DO - Oakwood Beaumont - Dearborn, MI
"ERAS Pathways to Expedite and Enhance Recovery"
Article based upon a lecture by: Dr. Eric Carlson

Radmila Kirkpatrick, DO - Presence Resurrection/St Francis - Chicago, IL
"A Summary: The Journey from Man to Woman: "
Article based upon a lecture by: Dr. Danielle Weitzer

Plan your research project now!

The MEFACOOG Research Grant of up to $5,000 is open to osteopathic physicians in AOA accredited programs, ACGME programs or any resident or fellow of an osteopathically recognized ACGME residency or fellowship training program.

MEFACOOG/Resident Reporter Scholarship Program

Hematologic Disorders in Pregnancy

Raquel Cardenas, DO

Article based upon a lecture by Corinna Muller, DO

To best understand hematologic disorders in pregnancy, one must first understand some of the physiologic changes that occur in pregnancy.

There is a 40% increase in blood volume during a singleton pregnancy and an increase in venous stasis. Platelet count and protein S activity are decreased. Fibrinogen, plasminogen activator, von Willebrand factor, and factors VII, VIII, IX, X, XII are increased [(1)]. The gravid uterus also presses on the IVC and pelvic veins decreasing venous return from the lower extremities[(2)]. These changes create a hypercoagulable state and contribute to the 4-5 times increased risk of venous thromboembolism in pregnancy and the postpartum period. Knowing the normal changes that occur in pregnancy will allow providers to better detect abnormal findings and decide when additional testing and further management is needed. Inherited thrombophilias, anemia, structural hemoglobinopathies, thrombocytopenia, von Willebrand disease, and antiphospholipid syndrome are topics one should be familiar with when taking care of pregnant patients[(1)].

Inherited thrombophilias include the following: factor V leiden, prothrombin G20210A, protein C deficiency, protein S deficiency, and antithrombin deficiency. It is important to understand these disorders as they increase the risk of venous thromboembolism (VTE) and are possibly associated with negative outcomes in pregnancy[(1)]. Of the inherited thrombophilias, the most common is heterozygous Factor V Leiden, which has a 1-15% prevalence. Forty percent of the VTE's in pregnancy can be attributed to this disorder. Of the inherited thrombophilias, the second most common cause of VTE in pregnancy at 17% is prothrombin G20210A mutation. Although those who are homozygote for either Factor V Leiden or prothrombin gene mutation are less common, they have an increased risk of developing VTE in pregnancy compared to those who are heterozygote. Additionally, for both Factor V Leiden and prothrombin gene mutation the risk of VTE in pregnancy increases significantly if the patients has a history of VTE. The most thrombogenic disorder is antithrombin deficiency. Antithrombin deficiency accounts for only 1% of the venous thrombembolisms in pregnancy, but if the patient has a personal history of VTE with this disorder, the risk of VTE in pregnancy is 40%. Fourteen percent of the venous thromboembolisms in pregnancy can be attributed to Protein C deficiency and 3% can be attributed to protein S deficiency. An uncommon but serious disease called purpura fulminans can occur in neonates with homozygous protein C deficiency or homozygous protein S deficiency[(2)]. Depending on the type of thrombophilia and if the patient has a history of VTE, the patient may require anticoagulation in the antepartum/postpartum period. Treatment should be individualized but the guidelines for treatment are outlined by ACOG[(1)].

Pharmacological therapy for thrombophilias is often with low-molecular weight heparin (LMWH) or unfractionated heparin as these medications do not cross the placenta[(1, 2)]. In those needing anticoagulation, therapy is started upon the establishment of an intrauterine pregnancy and will typically need to be continued for 6 weeks after delivery. Scheduling a term induction of labor can be beneficial in these patients to provide instructions for anticoagulation cessation so

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that the patient may receive neuraxial anesthesia. It is recommended to discontinue adjusted-dose low-molecular weight heparin 24 hours before induction of labor. Prophylactic low-molecular weight heparin and unfractionated heparin (if the dose is >7500 units) should be discontinued 12 hours before induction of labor. Anticoagulation can usually be resumed 4-6 hours after a vaginal delivery and 6-12 hours after a Cesarean delivery. If needed, protamine sulfate can be administered to reverse the effects of unfractionated heparin or LMWH. Patients should additionally wear lower extremity compression devices during delivery and postpartum to prevent thrombosis. Breastfeeding is considered safe in those taking LMWH, warfarin, or unfractionated heparin. The relation of thrombophilias to the formation of thrombi in the placenta and subsequent adverse pregnancy outcomes such as preeclampsia, SAB, stillbirth, and placental abruption is debated as the data is conflicting. Anticoagulation in those with thrombophilias have been shown to reduce the risk of VTE occurrence in pregnancy but its use has not been shown to alter pregnancy outcomes[2]. Thus, a history of an unfavorable pregnancy outcome is not an indication to screen for thrombophilias. Screening should only occur when the patient has a personal history of VTE or has a first degree relative with a history of an inherited thrombophilia. Except for Protein S deficiency, testing for these inherited thrombophilias during pregnancy is reliable; although testing outside of pregnancy is preferred. It is vital to reduce the number of VTE's during pregnancy as well as to accurately diagnose and prevent them since 9.2% of pregnancy-related deaths that occur in the Unites States are associated with VTE[1].

Anemia can be inherited, like hemoglobinopathies, or anemia can be acquired, like iron deficiency or anemia of chronic disease. Anemia can further be classified based on decreased red blood cell production versus increased red blood cell production or classified by mean corpuscular volume (microcytic, normocytic, or macrocytic). A CBC should be obtained in all pregnant patients to screen for anemia[6]. In evaluating anemia in pregnancy, one needs to consider if there is an underlying disease such as cancer or a GI bleed. However most commonly, anemia in pregnancy is due to iron deficiency. This is often physiologic anemia as there is a 40-50% increase in the plasma blood volume and the RBC mass increases by 20-30% during pregnancy, which leads to a decrease in hemoglobin concentration. It is vital to correct anemia in pregnancy as providers need to prepare for a potential large amount of blood loss at the time of delivery[1]. Hemoglobin less than 11 g/dL in the first or third trimester is considered abnormal, whereas hemoglobin less than 10.5 g/dL in the second trimester is considered abnormal[6]. If hemoglobin is below these values a serum ferritin level should be obtained, which is the best lab test to diagnose iron deficiency anemia[1,6]. Iron deficiency anemia can be diagnosed when ferritin levels are <10-15 micrograms/L. The diagnosis of iron deficiency anemia is commonly assumed in clinical practice when hemoglobin levels are below the acceptable range and iron supplementation is started[6]. Patients should be encouraged take Vitamin C with oral iron supplementation to increase absorption[1]. If hemoglobin does not rise in response to supplementation, other causes should be pursued. It is important to treat iron deficiency anemia since preterm delivery, low birth weight, and perinatal mortality are linked to this condition. Many prenatal vitamins contain an adequate dose of iron in order to meet the increased iron supplementation needed in pregnancy and prevent deficiency[6]. Patients with adverse side effects to oral iron supplementation, who have malabsorption syndrome, or have severe anemia are candidates for IV iron supplementation. IV iron will correct anemia more quickly compared to oral formulations. Of note, patients are at increased risk of having an anaphylactic reaction (1%) with parenteral iron dextran as opposed to a lower risk associated with those taking oral iron formulations. If hemoglobin is less than 6 g/dL, the appropriate treatment is a blood transfusion. Fetal oxygenation is decreased at this low level of maternal hemoglobin and can lead to NRFHT, fetal

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cerebral vasodilation, decreased AFI, and death of fetus[6]. The second most common cause of anemia in pregnancy is due to megaloblastic anemia, which is often attributed to folate or vitamin B12 deficiency[1]. The MCV in these patients will be >100 fL[6]. Treatment is with supplementation of the deficient nutrient[1]. It is important that all pregnant women receive at least 400 mcg of folic acid daily to prevent deficiency. Those with a history of gastric resection or Crohn's disease are at risk for Vitamin B12 deficiency and should be screened[6].

As previously mentioned, inherited hemoglobinopathies can cause anemia. Knowledge of hemoglobin structure is important in understanding these disorders. There are different forms of normal human hemoglobin-hemoglobin A, hemoglobin A2 and hemoglobin F. Most of the adult hemoglobin is hemoglobin A while only 2-3% is hemoglobin A2. The main hemoglobin in fetal circulation is hemoglobin F[4]. Hemoglobin A is composed of two alpha chains and two beta chains. Hemoglobin A2 is composed of two alpha chains and two delta chains. Hemoglobin F is composed of two alpha chains and two gamma chains[3]. Hemoglobinopathy can result from a change to the globin (alpha, beta, delta) protein structure or from decreased/absent globin protein production. Common structural hemoglobinopathies include the following: sickle cell trait, sickle cell anemia, hemoglobin SC disease, hemoglobin S/beta-thalassemia, and hemoglobin C trait and disease. The most common of these are hemoglobin C trait and sickle cell trait[1]. Abnormal production in the amount of globin protein results in thalassemia. The most common thalassemias are alpha or beta thalassemia[3].

Point mutations in the globulin genes can significantly alter the polypeptide chain and cause clinically significant disease. If adenine is replaced by thymine in the beta-globin gene, glutamic acid is replaced by valine in the beta-globin polypeptide. This results in the formation of Hemoglobin (Hb) S rather than the normal Hemoglobin A. Those with sickle cell trait are heterozygous for Hb S and those who have sickle cell anemia are homozygous for Hb S. Therefore, it is an autosomal recessive disorder. If adenine is instead replaced by guanine in the beta-globin gene, lysine is then replaced by glutamic acid in the beta-globin polypeptide. This results in the formation of Hemoglobin C and is termed hemoglobin C trait (heterozygous for Hb C) or disease (homozygous for Hb C). The patient can have both hemoglobin S and C, resulting in hemoglobin SC disease[3]. A patient can also have both Hb S and beta-thalassemia (Hb S/beta-thalassemia). With hemoglobin SS, the red blood cell shape is abnormal and is partially responsible for the occlusions that can occur in small vessels, which can lead to decreased blood flow to organs such as the heart, brain, spleen, etc[3]. The abnormal structure is also significant as it can cause hemolytic anemia[3]. These same clinical manifestations are associated with hemoglobin SC and Hb S/beta-thalassemia[3]. If vasoocclusion occurs in the pulmonary vasculature, it can result acute chest syndrome, which is the most common cause of death in those with sickle cell disease[5]. Painful crisis has been prevented in non-pregnant patient with Hydroxyurea but this medication should not be used in pregnant patients as it is teratogenic[3]. With the various clinical manifestations of sickle cell anemia, one may need to involve an intensivist to assist with management of hospitalized patients[1]. Patients with sickle cell disease have significantly increased risks in pregnancy including preterm labor, PPROM, preterm delivery, IUGR, low birth weight, SAB, stillbirth, and infection after delivery. These risks can occur in those with Hb SC disease, although they do not occur as frequently. Antepartum testing should be performed in these patients due to the increased risks[3]. It is also important to remember that pregnant patients with sickle cell

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are at increased risk for UTI's and preeclampsia[1]. Providers should recommend 4 mg of folic acid be taken daily in those with sickle cell disease due to the rapid destruction/production of RBC's. Prophylactic transfusions for the treatment of pregnant patients with sickle cell anemia is currently debated[3].

When a mutation occurs in one of the two beta globin gene leading to its decreased or absent expression, it results in what is termed beta thalassemia[4]. Beta thalassemia major occurs in those who are homozygous for the mutation and beta thalassemia minor occurs in those who are heterozygous[3]. In those with beta thalassemia major, there is absent Hb A leading to an increase in Hb F. These patients require regular blood transfusions due to severe anemia. Usually only mild anemia is seen in those with beta thalassemia minor[3]. A deletion in one or more of the 4 alpha globulin genes leads to alpha thalassemia[3]. If only one gene is deleted there are no clinical manifestations. Alpha thalassemia trait occurs when two alpha globin genes are deleted, and it produces a mild microcytic anemia. Deletions on the same chromosome are referred to as "cis" and deletions on different chromosomes are referred to as "trans." Alpha thalassemia major occurs when three or four of the alpha globin genes are deleted[3]. Deletion of three alpha globin genes (Hemoglobin H disease) causes hemolytic anemia. Deletion of four alpha globin genes (Hemoglobin Bart's disease) can cause hydrops fetalis and fetal death; it is additionally associated with preeclampsia[3]. If the patient has alpha thalassemia trait, it is important that their partner needs to be tested as well since a child with alpha thalassemia major is at high risk for developing hydrops fetalis[1]. Those with alpha thalassemia trait usually have an uncomplicated pregnancy. There are few pregnancy cases with maternal Hb H disease, but in those described, there was a good pregnancy outcome. Beta thalassemia minor patients usually have a good pregnancy outcome as well but may have associated IUGR and oligohydramnios. If a patient with beta thalassemia major desires to become pregnant, they should have normal cardiac function prior to conception. They should further have a history of close monitoring by a physician and treatment with blood transfusions along with iron chelation therapy. Iron chelation therapy is not recommended during pregnancy, but hemoglobin should be monitored to ensure it remains at 10g/dL. Routine fetal growth assessments in these patients are also recommended[3].

Generally, persons of Southeast Asian, Mediterranean and African descent are considered at increased risk of hemoglobinopathies, and carrier screening can be suggested to these persons[3]. Sickle cell disease is usually seen in the African American population with 1 in 600 having sickle cell anemia and 1 in 12 having sickle cell trait[3]. The global prevalence of having some form of thalassemia is approximated at 5%[4]. To screen for thalassemias, first obtain a CBC. If the MCV is < 80 μm3, one should obtain iron studies and a hemoglobin electrophoresis. Results of these studies will guide diagnosis to iron deficiency, alpha thalassemia or beta thalassemia[1]. If the results of the electrophoresis show elevated Hb F and Hb A2, the diagnosis is beta thalassemia. If iron studies and electrophoresis are normal, molecular genetic testing for alpha thalassemia trait should be obtained. Hemoglobin electrophoresis and a CBC can both be performed as initial screening in those of African descent in order to screen for sickle cell[3]. Ideally, testing of the patient (and their partner if necessary) is performed prior to conception. If the child is at risk for inheriting a hemoglobinopathy, the parents should be referred to a genetic counselor.

Thrombocytopenia (platelet count <150 x 109/L) is seen in 7-12% of pregnancies[7]. It occurs due to increased platelet destruction or decreased platelet production during pregnancy.

(Continued on Page 12)

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Nosebleeds, petechiae, and bleeding from the gums are typical symptoms seen with low platelet counts[7]. A peripheral smear should be obtained if thrombocytopenia is diagnosed. This will exclude platelet clumping (pseudothrombocytopenia) as a cause of the reported low platelet count. Bone marrow biopsies are uncommon during pregnancy and obtaining antiplatelet antibody assays is also not recommended[7]. The most common cause of low platelet counts in pregnancy is due to gestational thrombocytopenia where platelet counts are usually 100-150 x109/L but can be lower[1]. Increased platelet clearance and hemodilution play a role in this condition. It is often diagnosed in the mid-second or third trimester. Decreased platelet counts and symptoms of thrombocytopenia outside of pregnancy should be excluded in order to make the diagnosis of gestational thrombocytopenia[7]. There are usually limited side effects from the lower platelet counts and treatment is not usually needed[1]. A CBC should be obtained at every prenatal visit once the patient is diagnosed. The platelet count should additionally be checked in 1-3 months after delivery as platelets should increase to the normal range 1-2 months postpartum[7].

The second most common cause of thrombocytopenia in pregnancy is due to immune thrombocytopenia (ITP) where platelet counts are <100,000 x109/L[1,7]. ITP can be separated into two categories- primary and secondary. Primary immune thrombocytopenia is acquired and has no identifying cause. It is a diagnosis of exclusion. Secondary immune thrombocytopenia has an identifiable factor causing the low platelet count. Examples of such factors include infection, SLE, antiphospholipid syndrome and certain medications. With ITP, the clinical severity varies during pregnancy; patients may experience bleeding episodes such as bleeding from the mucosa, no symptoms, further drop in platelet count, and postpartum hemorrhage. About 25% of neonates will have thrombocytopenia as maternal IgG antibodies against platelets can cross the placenta. However, <1% of neonates will have severe hemorrhagic complications[7]. Treatment for ITP with IVIG or corticosteroids (or both) is reserved for patients with a platelet count <30 x109/L, patients who require surgery or a procedure, or patients with symptomatic bleeding. A platelet count of >50 x109/L is recommended for Cesarean deliveries and platelet count >70 x109/L is recommended for epidural placement. Often the initial therapy is these patients is with Prednisone. Intravenous immunoglobin (IVIG) is usually reserved for patients who have side effects to corticosteroids, failed to respond to corticosteroid therapy, or when platelets need to be elevated quickly[1,7]. Patients resistant to these interventions may require splenectomy[1]. Platelet transfusions in conjunction with IVIG or corticosteroids could be administered in cases of severe hemorrhage or if immediate surgery is necessary[7]. Interestingly, maternal therapies have not been shown to increase the neonatal platelet count or decrease symptoms observed in the neonate. These patients may delivery vaginally, but it is recommended that fetal scalp electrodes and operative deliveries not be performed in patients with ITP in order to decrease the risk of potential hemorrhage in the fetus[7].

Five to twenty percent of thrombocytopenia in pregnancy is attributed to hypertensive disorders, although the exact mechanism causing the low platelet count is unknown. Thrombocytopenia a diagnostic criterion for both preeclampsia with severe features and HELLP syndrome. Thrombocytopenia may be the first sign of preeclampsia and these patients should be carefully monitored. The gestational age will determine the treatment plan, but definitive treatment for these patients is delivery. In the 24-48 hours after delivery the platelet count usually drops, but in 2-6 days it will likely increase to >100 x109/L. If the platelet count remains suppressed after delivery, further causes should be explored[7]. It is recommended that all patients with

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thrombocytopenia undergoing a major surgery, such as Cesarean section, should receive a platelet transfusion if the platelet count is <50 x109/L[7]. Other differential diagnoses that providers should consider as the cause of thrombocytopenia include TTP, DIC, splenic sequestration, nutritional deficiencies or congenital thrombocytopenia. A thorough history and physical should aid in the diagnosis[1,7].

It is additionally necessary to understand von Willebrand disease (vWD) as it is the most common inherited bleeding disorder in the United States[1]. It affects 0.6-1.3% of the population[8]. Von Willebrand factor aids in platelet aggregation and carries Factor VIII. There are 3 types of vWD and symptoms vary among the types ranging from mild in Type I to severe in Type 3[1,8]. Type 1 is inherited as autosomal dominant and is the most common. Type 3 is inherited as autosomal recessive and is the least common. Type 2 can be inherited as autosomal dominant or recessive. A majority of patients will report a history of heavy menstrual bleeding. Others possible signs of vWD include postpartum hemorrhage, excessive bleeding with surgical procedures, nosebleeds, bruising, easy bleeding from the gums, or a positive family history. A CBC, PT, and PTT should be obtained in patients deemed to be at risk for vWD. If these tests are normal or if the PTT is prolonged, von Willebrand disease assays may be obtained. The diagnosis can be difficult and should be made by a hematologist[8]. Different treatments for vWD include desmopressin acetate injection, desmopressin acetate nasal spray, factor replacement therapy (vWF complex infusion and recombinant factor VIII), antifibrinolytic medication (TXA or epsilon-aminocaproic acid), and hormonal therapy (e.g. levonorgestrel IUD, medroxyprogesterone acetate, progestin implant, progestin-only pills)[1,8]. A hematologist should be consulted to help treat these patients, especially for delivery planning as the patient may need factor replacement therapy before and/or after delivery. It is important to remember that NSAIDS should not be used in patients with vWD as they interfere with platelet function. Patients may attempt a vaginal delivery, but the use of fetal scalp electrodes and operative deliveries are not recommended since the fetus may also have vWD. These procedures could increase the risk of bleeding if the fetus does indeed have vWD. For similar reasons, the neonate should be tested for vWD before a circumcision is performed. Often maternal symptoms are controlled during pregnancy as vWF levels increase, but there is an increased risk of bleeding after delivery and providers should be prepared[8].

Lastly, one should have a thorough understanding of antiphospholipid syndrome (APS), which is an acquired autoimmune disorder. It is relevant to pregnancy as it can cause venous or arterial thrombosis, fetal growth restriction, fetal loss, preterm delivery, placental insufficiency and preeclampsia[1,9]. Pregnant patients with antiphospholipid syndrome have a 5-12% risk of thrombosis in the antepartum and postpartum period. Most thrombi occur in the venous system but those that occur in the arterial system are notable as they can cause stroke, TIA, coronary occlusion, or amaurosis fugax. Autoimmune thrombocytopenia can additionally manifest in patients with antiphospholipid syndrome. One laboratory criterion and one clinical criterion are needed to make the diagnosis of antiphospholipid syndrome[9]. Of the laboratory criteria, one of three antibodies is required for the diagnosis and it must be obtained on 2 or more occasions that are at least 12 weeks apart. These include lupus anticoagulant, anticardiolipin antibody, and anti-beta-2-glycoprotein. The clinical criteria required to diagnose APS is a history of a vascular thrombosis or a pregnancy morbidity. Pregnancy morbidity in this criteria as outline by ACOG include one or more deaths of a fetus with normal anatomy at or greater than 10 weeks of gestation with no identifiable cause, one or more

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premature births of a neonate <34 weeks with normal anatomy due to eclampsia/preeclampsia/ features consistent with placenta insufficiency, 3 or more consecutive spontaneous pregnancy losses before 10 weeks gestation with no identifiable cause[1,9]. The clinical criteria to diagnosis APS can also be used as an indication to perform serum testing[9]. Patients with APS and a history of a thrombotic event will require anticoagulation during pregnancy and for at least 6 weeks after pregnancy. Patients with APS and no history of a thrombotic event can either be placed on anticoagulation or followed closely[1,9]. However, those with APS and a history of pregnancy loss, even in the absence of previous thrombosis, should take anticoagulation. It is recommended that all patients with antiphospholipid syndrome be on a daily low dose aspirin to prevent preeclampsia. Corticosteroids and IVIG are not recommended treatments in pregnant patients with APS[9]. Patients with APS will require antepartum surveillance and delivery is recommended at 39 weeks gestation[1]. It is important to continue to closely monitor these patients in the postpartum period as antiphospholipid syndrome can still produce serious complications including renal impairment, cardiopulmonary failure, and multiple thromboses. When discussing contraception options with patients after delivery, they should be advised to avoid formulations with estrogen as the risk of thrombosis is these patients is elevated. Regarding risk outside of pregnancy, patients with APS should be counseled on their persistent increased risk of thrombosis, stroke, and development of lupus; a referral to a provider who specializes in their care is recommended[9].

Understanding hematologic disorders in pregnancy will allow providers to give their patients better care, know when additional testing should be performed, decide when treatment should be initiated, and ensure the best maternal and fetal outcome possible.

References :

1. Muller C. Hematologic Disorders in Pregnancy. ACOOG Spring Conference, April 2020, La Jolla, Ca.
2. Inherited thrombophilias in pregnancy. ACOG Practice Bulletin No. 197. American College of Obstetricians and Gynecologists. Obstet Gynecol 2018;132:e18–34.
3. Hemoglobinopathies in pregnancy. ACOG Practice Bulletin No. 78. American College of Obstetricians and Gynecologists. Obstet Gynecol 2007;109:229–37.
4. McGann P and Quinn C. Methods for hemoglobin analysis and hemoglobinopathy testing. In: Mentzer W, ed. UpToDate. Waltham, Mass. 2020. Retrieved July 2020 from https://www.uptodate.com.
5. Vichinsky E. Pregnancy in women with sickle cell disease. In: Simpson L and DeBaun M, ed. UpToDate. Waltham, Mass. 2020. Retrieved July 2020 from https://www.uptodate.com.
6. Anemia in pregnancy. ACOG Practice Bulletin No. 95. American College of Obstetricians and Gynecologists. Obstet Gynecol 2008;112: 201–7.
7. Thrombocytopenia in pregnancy. ACOG Practice Bulletin No. 207. American College of Obstetricians and Gynecologists. Obstet Gynecol 2019; 133:e181–93.
8. Von Willebrand disease in women. Committee Opinion No. 580. American College of Obstetricians and Gynecologists. Obstet Gynecol 2013; 122:1368–73.
9. Antiphospholipid syndrome. Practice Bulletin No. 132. American College of Obstetricians and Gynecologists. Obstet Gynecol 2012; 120:1514–21.

MEFACOOG/Resident Reporter Scholarship Program

The High Risk Patient on Labor & Delivery

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Article based upon a lecture by Emmie Strassberg, DO

The maternal mortality rate in the US is ranked one of the highest compared to other countries of the developed world. The CDC defines a pregnancy related death to be the death of a woman while pregnant or within 1 year of the end of pregnancy (regardless of the outcome, duration or site of pregnancy) from any cause related to or aggravated by the pregnancy or its management; excluding accidental or incidental causes[1]. Data collected annually since 1987 shows a steady increase in the rate of maternal mortality which prompts the question: what are the factors that contribute to these statistics and how can providers in obstetrics and gynecology work to improve maternal outcomes? This lecture given by Dr. Strassberg aims to focus on the special considerations that may necessitate appropriate management of the high risk patient on labor and delivery.

Examining the data reveal that maternal early warning signs can predict whether an expecting mother will need a higher level of attention or care and if unrecognized or inadequately treated, can contribute to a higher maternal mortality caused by cardiovascular disease, preeclampsia, eclampsia, obstetrical hemorrhage, venous thromboembolism, and amniotic fluid embolism. This lack of timely recognition was found to contribute to maternal mortality more than other factors such as ineffective care, misdiagnosis, lack of continuity of care, or failure to consult. An alarming 40-60% of maternal deaths were found to be preventable, with some of the more common causes being preeclampsia and hemorrhage[2].

Individualized risk factors should be considered for each patient and careful thought should be implemented in their care. When presented with a high risk patient, it is necessary to question if the hospital in which they have presented to is the appropriate location for their needs both intrapartum and postpartum. Is the patient appropriate for that particular Labor and Delivery unit? Could the patient potentially require a higher level of hospital services or their need for tertiary care be escalated? Are specialists required to optimize their care including maternal fetal medicine, neonatology, critical care? Pre-admission patient selection may help determine what kind of specialized care will be required and if a particular patient needs more than what is offered at the local hospital facility. This lecture breaks down the different high risk patients that may present to one's institution and delineates the additional considerations that should be given towards the management.

The Critically Ill Obstetrics Patient

When monitoring pregnant patients, it is important to be aware of maternal early warning signs before the patient requires critical care. These signs include changes in their vitals, oxygen saturation, urine output, or mental status.

When caught early and appropriately triaged, one should be able to prevent maternal mortality in up to 40-50% of cases. The most common causes of pregnant patients who will require critical care include those with cardiovascular complications, hemorrhage, hypertension, thromboembolic disease, sepsis, ARDS, acute fatty liver, and trauma. The role of the obstetrician in the setting of the ICU is to recognize the physiologic changes in pregnancy, provide information on medications that can be used safely in pregnancy and weigh in on the risk of delivery versus the risk of expectant

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management. It is important to note that while special considerations should be taken, there should be no delay in administering medications or obtaining diagnostic imaging in the pregnant patient who requires critical care.

The pregnant patient can pose a unique challenge to medical treatment if the physiologic changes of pregnancy are not appropriately considered. Pregnant patients are more susceptible to thromboembolisms, supraventricular tachycardia, aspiration, labile blood pressures, third spacing and pulmonary edema. Intubation can be more difficult as the pregnant patient's air way is highly vascularized and more edematous. Increasing breast size can also potentially interfere with intubation as well as cardiopulmonary resuscitation. It is also important to keep in mind the increased respiratory rate and oxygen consumption in pregnancy which leads to a compensated respiratory alkalosis when interpreting arterial blood glasses. Anatomical changes in pregnancy also lead to decreased venous return in the supine position which is an important consideration in cardiac arrest. Given this, Manual left uterine displacement is recommended during cardiopulmonary resuscitation and a resuscitative hysterotomy or cesarean should be considered if unsuccessful after 4-5 minutes (beneficial up to 25 minutes with up to 50% injury free survival).

The Obese Patient

The obesity epidemic undoubtedly contributes to the maternal mortality rates observed in this country as obesity alone can lead to various health issues including cardiac, renal, hypertensive, endocrine and respiratory diseases. Therefore, the maternal obese patient contributes to numerous maternal and fetal complications in the antepartum, intrapartum and postpartum period. Obese patients endure higher rates of miscarriage, stillbirth, fetal anomalies, cesarean section, preterm birth, postpartum hemorrhage, complications with anesthesia including epidurals and intubation, abnormal labor patterns, neonatal injury and maternal morbidity during TOLAC. In the postpartum period higher rates of endometritis, wound infection and dehiscence, venous thromboembolisms, breastfeeding termination, and depression are observed.

Logistically, it is important to consider whether the hospital facility has the appropriate bariatric equipment and environment to accommodate the obese patient. For example, it may be necessary to accommodate obese and morbidly obese patients with larger beds and operating tables as well as longer instruments during surgery. Surgically, it is important to remember to dose obese and morbidly obese patients appropriately with antibiotics prior to surgery. One may consider a high transverse or supraumbilical incision as opposed to the classic Pfannenstiel incision if a patient has a large panniculus that may impede with wound healing. It is also important to close the subcuticular layer if it is larger than 2 centimeters to decrease wound complications and seroma formation. At this time, it is not recommended to place any subcuticular drains. Some comorbidities commonly observed in the obese patient can be screened for such as: sleep apnea which may increase the risks associated with anesthesia, preeclampsia, eclampsia, cardiomyopathy, pulmonary embolism, and overall in-hospital mortality. These comorbidities should be managed throughout the hospital stay and postpartum in the outpatient setting.

The Placenta Accreta Spectrum

Placenta accreta is defined as a defect in the endometrial-myometrial interface which causes failure of normal decidualization. This allows deep placenta anchoring of the villi and trophoblast invasion and contributes to maternal morbidity and mortality mainly as a cause for obstetrical hemorrhage. The placenta accreta spectrum (PAS)

(Continued on Page 17)

(Continued from Page 16)

affected 1 in 272 in-hospital births in 2016 alone. Risk factors include previous cesarean section, age, multiparity, prior uterine surgery, and Asherman's syndrome. The risk of placenta accreta with a history of cesarean section increased from 0.3% with one prior cesarean section to 6.74% with a history of five or more prior cesarean sections. The risk of placenta accreta with one prior cesarean section and current placenta previa is 3% and increases to 67% with 5 prior cesarean sections and current placenta previa[4].

Diagnosis is made by ultrasound but it is not predictable of the extent of invasion and furthermore, the absence of ultrasound findings does not exclude its diagnosis, which can make management more difficult. It is also always important to consider the sizable intra-observer variation that can be perceived in diagnoses made by ultrasound. The use of MRI may be helpful.

If PAS is expected, it is recommended that the patient is delivered between 34.0 and 35.6 weeks, after receiving antenatal steroids, by a multidisciplinary care team. The hemorrhage protocol should be reviewed and all members of the team should be intimately familiar. A hysterectomy with the placenta left in situ should be performed by an experienced surgeon in dorsal lithotomy position for optimized deep pelvic visualization and the blood bank should be aware of this potential hemorrhage. Management of unexpected placenta accreta depends on the stability of the patient and aims to reduce the risk of hemorrhage. The risk of recurrence for PAS is 13-29% in future pregnancies so it is important to take a thorough history with all patients and plan for appropriate education and care in the future.

The Use of Antenatal Late Preterm Steroids (ALPS)

There is a known benefit to preterm steroids between 24.0-34.0 weeks for fetal lung maturity. Studies showed that there may also be a benefit late preterm steroids administered between 34.0-36.6 weeks. If preterm delivery is suspected in a patient within 24 hours to 7 days and/or the patient is 3cm dilated or 75% effaced, it is appropriate to give betamethasone 12mg every 24 hours for 2 doses. No tocolysis is necessary in this setting. This study did not look at pregestational diabetes or chorioamnionitis, so it cannot currently be recommended for these patients.

The Delivery for Fetal Anomalies Interfering with Labor

Fetal anomalies including open neural tube defects and fetal arrhythmias do not necessitate cesarean section alone, but consideration should be given in certain cases. In the case of hydrocephalus where the head circumference is over 40cm or the biparietal diameter is greater than or equal to 12cm, cesarean section may prove to be of benefit. Vaginal delivery is appropriate for gastroschisis or omphalocele but caution should be taken when clamping the cord so as to avoid bowel and any open bowel should be wrapped with moist sterile wrapping to minimize insensible fluid loss. It is not recommended to place an IUPC or perform an amnioinfusion in the setting of bulky anomalies. In the setting of a fetal arrhythmia, a vaginal delivery with a pediatric cardiology team is appropriate unless fetal assessment cannot be assessed intrapartum. In this case, a cesarean section is indicated.

In 2018, the maternal mortality rate was 17.4 maternal deaths per 100,000 live births.

The rate continues to rise and forces providers to reflect on the potential factors contributing to these numbers. It is important to note what qualifies a high risk obstetrics patient and consider what collaboration may be necessary to appropriately and safely provide the best care in these situations. With a better understanding of the causes of

(Continued on Page 18)

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maternal mortality and an effort to maximize efficient and safe care, physicians in obstetrics and gynecology can better practice with a uniform goal to decrease morbidity and mortality in the United States[4].

References:

1. https://www.youtube.com/watch?v=oKhj2KHR0-I&feature=emb_logo
2. Belluz, Julia, "We Finally Have a New US Maternal Mortality Estimate. It's Still Terrible." Vox, Vox, 30 Jan. 2020, https://www.vox.com/2020/1/30/21113782/pregnancy-deaths-us- maternal-mortality-rate
3. Petersen EE, Davis NL, Goodman D, Cox S, Mayes N, Johnston E, Syverson C, Seed K, Shapiro-Mendoza CK, Callaghan WM, Barfield W. Vital signs: Pregnancy-related deaths, United States, 2011–2015, and strategies for prevention, 13 states, 2013–2017. MMWR Morb Mortal Wkly Rep.2019;68:423–429. https://pubmed.ncbi.nlm.nih.gov/31071074/
4. Pregnancy Mortality Surveillance System. Centers for Disease Control and Prevention. 4 Feb. 2020, https://www.cdc.gov/reproductivehealth/maternal-mortality/pregnancy- mortality-surveillance-system.htm
5. Placenta Accrete Spectrum, Obstetrica and Gynecology SL Clark, PP Koonings,JP Phelan 1985 July; 66 (1):89-92

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Substance Abuse in Pregnancy

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Article based upon a lecture by Corinna Muller, DO

Substance abuse during pregnancy has become an extremely important focus of conversation, research, and most importantly, patient education. As the number of cases of maternal morbidity and mortality is steadily increasing rise in the United States, Dr. Corinna Muller's lecture during the spring conference of 2020 gave an up-to-date glimpse into various topics associated with substance use. These include: methamphetamine use in pregnancy and its outcomes such as methamphetamine- induced cardiomyopathy, tobacco exposure in pregnancy with the rise of electronic vaping products, as well as cannabis use in pregnancy with sequelae of e-cigarette, vaping use associated lung injury (EVALI), and opioid use in pregnancy. Dr. Muller's lecture also stressed the benefit of offering support, education, and treatment to those patients with opioid use disorder in pregnancy. This lecture was a successful attempt at summarizing the above, offering an overview of the research that she and her nurse practitioner, Jolene Campbell, have been conducting in their practice in Alaska, and stressing the importance of the role of patient education for all of the above topics involved with substance use in pregnancy.

Methamphetamine use in pregnancy is an ever-growing situation that obstetric providers must be aware of. According to the Drug Abuse Warning Network, there has been an 126% increase in the number of emergency department visits related to methamphetamine use. There have been some theories as to why people have shifted their drug of choice to methamphetamines. The American College of Obstetrics and Gynecology (ACOG) notes, being the transition for many drug users from cocaine to methamphetamines secondary to a defined 12 fold increase in half-life of methamphetamines increasing the duration of the effects of the drug. It is important to note that methamphetamines can often cause hypertension, arrhythmias, seizures, and hyperthermia and withdrawal symptoms include depression, anxiety, fatigue, and intense drug cravings. In the neonate, maternal methamphetamine use may be associated with a possible increase in defects of the fetal central nervous system, cardiovascular system, gastrointestinal system, as well as oral cleft and limb defects. In an ongoing prospective study of a cohort of children born to women who used methamphetamines during pregnancy and matched controls, prenatal methamphetamine exposure was associated with decreased arousal, increased stress, and poor quality of movement in the newborn. Children with methamphetamine exposure scored lower on tests of attention, visual motor integration, verbal memory, and long-term spatial memory, but were similar in motor skills, short delay spatial memory, and nonverbal intelligence. ACOG also describes how breastfeeding while using methamphetamines can inhibit prolactin release and reduce supply, as well as cause increased irritability, agitation, and crying in the neonate and they advise that this should, therefore, be avoided.

One of the unfortunate outcomes of methamphetamine use is methamphetamine-induced cardiomyopathy (MAC). When a patient presents to labor and delivery triage or the emergency department with the signs and symptoms of heart failure (shortness of breath, edema, etc.) and the patient either admits to methamphetamine use or has a positive urine toxicology screen, it is crucial to rule this diagnosis

(Continued on Page 20)

(Continued from Page 19)

out. MAC can be treated while maintaining pregnancy for several weeks with drugs used for withdrawal such as gabapentin, LMWH for anticoagulation, and should be managed with a multidisciplinary team approach including Maternal Fetal Medicine (MFM), cardiology, anesthesiology, and the obstetric provider. These women will likely experience return to baseline cardiac function after treatment (this can differ from peripartum cardiomyopathy or cardiomyopathy of pregnancy). These patients are at risk of also having significant neonatal morbidity including the studied and proven increased risks of preterm delivery, low birth weight, and NICU admission. This is cited by ACOG as well, in Committee Opinion #479, titled "Methamphetamine Abuse in Women of Reproductive Age" from March 2011, where ACOG, again, describes how important it is to "screen all pregnant women about their drug use and alcohol use."

Tobacco use and exposure in pregnancy is a topic that has long been studied since the introduction of the poor outcomes of tobacco and nicotine exposure in 1964 by the surgeon general. With known tobacco use in a pregnant patient, it is prudent to conduct serial growth ultrasounds, and to continue to educate and assist with patient cessation at every visit with the 5 As of smoking cessation model (Ask, Advise, Assess, Assist, Arrange). One should educate the patient on the increased risks of placenta previa, placental abruption, low birth weight, SIDS, ectopic pregnancy, and childhood obesity associated with tobacco exposure. The new hot topic that coincides with tobacco use in 2020 is the use of electronic (e) – cigarettes and vaping materials. It has been reported that 14% of the population that uses these do so for assistance with cessation of cigarettes. However, this has been proven to not help with smoking cessation. Instead, it can lead to increased dependence, and at its worst, EVALI (E-cigarette or vaping use associated lung injury). EVALI presents as the patient with known exposure to EVPs (electronic vaping products) with acute or chronic chest pain, shortness of breath, or other signs and symptoms of lung pathology, with subsequent CT findings of ground glass opacities with peripheral sparing. This can lead to decompensation and hospitalization; both of which are not ideal in pregnancy. For these reasons, as well as the potential for a 10% reduction in infant death with smoking cessation, one should be educating our pre-conception patients and our pregnant patients about the benefits of reduction of nicotine use and "vaping."

Interestingly, 86% of the time that EVALI is observed, THC (cannibinoid) use has been included as part of the EVP. A study including Texas and Oklahoma residents, showed that patients with EVALI were more likely to have engaged in THC use. This study also showed that there is an overall self reported decreased use of EVPs with THC three months into a pregnancy than at the beginning of said pregnancy (7.0% reported use prior to pregnancy and 1.4% reported use during pregnancy). Although this is a self-reported statistic, it is evident that obstetric providers have an obligation to continue to educate pregnant patients of the dangers of EVP use. Marijuana does continue to be the most commonly misused substance in pregnancy and is unsafe as supported by research. The surgeon general states, "maternal marijuana use is associated with a 50% increase in low birth weight regardless of maternal age, race, ethnicity, education, or tobacco use." Therefore, per ACOG, "women who are pregnant or contemplating pregnancy should be encouraged to discontinue marijuana."

Cannabidiol (CBD) use is increasing as well in our country secondary to legislative decisions for legalization. However, there continues to only be one medication that is approved by the U.S. Food and Drug Administration (FDA) containing CBD, which is Epidiolex, used for the management of

(Continued on Page 21)

(Continued from Page 20)

seizures. The FDA "strongly advises against the use of cannabidiol (CBD), tetrahydrocannabinol (THC), and marijuana in any form during pregnancy or while breastfeeding."

Opioid use in pregnancy

The history of opioid introduction to society and its use(s), expanding into abuse is was reviewed. With a current report of about 200 overdoses in the United States daily as well as a 400% increase in deaths in women from opioids compared to 265% increase in men, this a crucial topic to understand as obstetric providers. In her lecture, Dr. Muller briefly addressed the consequences of opioid use in pregnancy, but more so highlighted the importance of treating with buprenorphine, in an attempt to decrease the risk of these consequences. Buprenorphine treatment began in the 1980s and is now used as first line treatment for opioid abuse disorder. Buprenorphine is a partial mu receptor agonist with high affinity for the receptor, blocking other opioids for 24 hours and reduces the risk of overdose, as well as the risk of respiratory depression.

Supported recommendations were as follows:

Starting treatment when the patient is in a mild state of withdrawal (calculated in the patient with a COWS (Clinical Opioid Withdrawal Scale) score of >8),

1. Initiating 4 mg (standard dose),
2. Assessing the COWS score again in 2 hours with increase of 2 mg if still >8,
3. Giving additional medications as needed for withdrawal management including clonidine, loperamide, ondansetron, and ibuprofen,
4. If needed, increasing by 2-4 mg increments up to 16 mg on day 2,
5. Assessing again on day 3 and increasing up to 24 mg if needed,
6. Once established on appropriate dose, seeing the patient weekly.

Dr. Muller briefly discussed the waiver process needed to be able to prescribe buprenorphine as just described, which entails an 8-hour course and limitations by year of prescribing. In addition to understanding the concept and having a foundation on how to prescribe buprenorphine in these opioid dependent patients, it is important to understand the implications of this medication in labor and delivery management. During the labor process, it is imperative to maintain current buprenorphine dose and consult the anesthesia service so treatment plans are complementary. One should avoid using mixed agonist and antagonist opioids such as Stadol or Nubain as they may cause precipitated withdrawal, and maintaining adequate pain management for these patients in labor. It is also important to continue these patients on their treatment in the postpartum period and not to wean them during this vulnerable time. There is increased value of education and counseling in these patients during prenatal visits. This can be done with the SBIRT model (Screening, Brief Intervention, and Referral to Treatment if needed).

Dr. Muller presented evidence from unpublished personal research to address the above topics. Her study, performed in Alaska, had the following results: 71.4% of pregnant patients with a mean gestational age of 22 weeks presenting to the practice were screened for substance use and/or abuse. All of the women screened who were at moderate risk had brief intervention initiated, and all of the women screened high risk were referred for treatment. One of the additional findings was, that substance abuse disorder was higher in this data than in the relevant literature, further emphasizing that substance abuse in pregnancy is an ever-present problem in patients and that it is ones duty to address concerns with patients pre-conception counceling, screen them during pregnancy, continue to educate them on the effects of substance abuse in pregnancy, offer or refer for treatment when necessary, use PMP to decrease the risk of continuing addiction, and continue

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to take care of these patients postpartum with education and support. In closer reference to this, ACOG Committee Opinion # 480, from March of 2011, encourages one that "providing empathetic care improves the physician-patient relationship, resulting in improved patient outcomes and satisfaction." Physicians should "make every effort to [be empathetic] because empathy helps physicians enter into the patient's perspective, leading them to be attuned to aspects of the patient's world that physicians may otherwise overlook."

"In addition to understanding the basic science of [drug] use [and abuse] in patients, obstetrician-gynecologists must be aware of the reporting requirements related to alcohol and drug abuse within one's state of practice." For example, "South Carolina relies on a single positive drug test result, Florida mandates reporting newborns that are demonstrably adversely affected. In Texas, an infant must be reported if "addicted" to an illegal substance at birth. In Maryland, the use of drugs such as methamphetamines or marijuana may not be cause for reporting the patient to authorities." ACOG explains in Committee Opinion 473, that incarceration or the simple threat of incarceration has been proven to be ineffective in the incidence of alcohol and drug abuse. However, studies do show that prenatal care with an empathetic obstetric provider, the negative effects of substance abuse in pregnancy are greatly reduced. Overall, it is important for obstetric providers to always remember that addiction is a disease that is characterized as a chronic, relapsing biological and behavioral disorder with genetic components and that it warrants management just as gestational diabetes or gestational hypertension does. One must "adhere to safe prescribing practices, encourage healthy behavior by providing appropriate information and education, and identify and refer at risk patients and those already abusing drugs to addition treatment professionals for help."

References:

1. American College of Obstetrics and Gynecology. Empathy in Women's Healthcare. Committee Opinion (480), March 2011.
2. American College of Obstetrics and Gynecology. Methamphetamine Abuse in Women of Reproductive Age. Committee Opinion (479), March 2011.
3. American College of Obstetrics and Gynecology. Substance Abuse Reporting and Pregnancy: The Role of the Obstetrician-Gynecologist. Committee Opinion (473), January 2011.
4. Hand, D.J., Short, V.I. & Abatemarco, D.J. (2017). Treatments for opioid use disorder among pregnant and reproductive-age women. Fertility and Sterility 108 (2).
5. Martino, S., Ondersma, S., Forray, A., Olmstead, T., Gilstad-Hayden, K., Howell, H., Yonkers, K. (2018). A randomized controlled trial of screening and brief interventions for substance misuse in reproductive health. American Journal of Obstetrics and Gynecology 218 (3).
6. McHugh, K. R., Wigderson, S., Greenfield, S.F. (2014). Epidemiology of substance use in reproductive-age women. Obstetrics and Gynecology Clinics of North America 41 (2).
7. Young, M. (2019). Current landscape of Alaska maternal child health data. State of Alaska Department of Health and Social Serviced. Retrieved from https://www.ashnha.com/wpcontenct/uploads/2019/01/AKPQC_Current-Landscpe-of-MCH-date.pptx

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Endometrial Hyperplasia

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Article based upon a lecture by Ajit Gubbi, DO

The most common gynecological malignancy in developed countries, such as the United States, is endometrial cancer with a mean age of diagnosis being 63 years of age[1]. It is the second most common gynecological malignancy in developing countries. Endometrial cancer is divided into two types: Type 1 which is described as endometrioid, and Type 2 which is described as a non-endometrioid type cancer (clear cell and papillary serous tumors). When comparing the two types of uterine cancer, Type 1 endometrioid cancer is vastly more common (greater than 75% of cases) compared to Type 2 non-endometroid. Type 1 endometrioid cancer is primarily thought to arise from the proliferative effects of unopposed estrogen on the endometrium. When type 1 cancer is diagnosed, the majority of cases are stage 1 with a 90% 5-year survival rate[1]. Alternatively, patients diagnosed with non-endometroid cancer (type 2) are usually found to have a high-grade tumor[1].

Given that uterine cancer is the most common gynecological malignancy in the US and the majority of uterine cancers are endometrioid (type 1), it is important for physicians and mid-levels practicing in women's health care to identify key risk factors for Type 1 endometrial cancer. Risk factors for developing endometrial cancer type 1 are the following: Obesity, Caucasian, Lynch Syndrome, Tamoxifen use. Additional risk factors are medical conditions in which there is unopposed estrogen such as: long term use of unopposed estrogen, nulliparity, menstrual irregularities, early age of menarche, late age of natural menopause, history of infertility[1].

Obesity in itself is a risk factor for developing precancerous endometrial lesions, called endometrial hyperplasia. Additionally, unopposed estrogen is a significant risk factor for developing type I endometrioid cancer, as estrogen has significant proliferative effects on the endometrium. Case–control studies have shown up to a 400% linear increase in risk of endometrial cancer in individuals with body mass index greater than 25. Due to the rising prevalence in our obese population, gynecologist are likely to encounter many more patients who are at an increased risk for having or developing precancerous lesions such as endometrial hyperplasia[3].

Endometrial hyperplasia is described as an increase in endometrial gland to stroma ratio greater than 50% of that observed in the normal endometrium. Though the endometrium during the secretory phase of the menstrual cycle may have greater than 50% gland to stroma ratio, this normal endometrium is organized and not mitotically active. In comparison, a histological specimen of endometrial hyperplasia will show proliferation that is disorganized and atypical. These changes result frequently from chronic unopposed estrogen stimulation. In order to further classify endometrial hyperplasia, there are two main nomenclature systems used by health care providers to describe endometrial hyperplasia: The World Health Organization (WHO) system 2014 and the Endometrial Intraepithelial neoplasia system (EIN)[4].

The WHO updated their classification system in 2014 to include two categories: hyperplasia without atypia (which is non-neoplastic) and atypical hyperplasia (endometrial interepithelial neoplasia)[3,4]. Contrary to the 1994 system in which hyperplasia was classified into four categories: simple hyperplasia without atypia,

(Continued on Page 24)

(Continued from Page 23)

simple hyperplasia with atypia, complex without atypia, complex with atypia. The 2014 classification system was created in an attempt to eliminate a significant limitation of the 1994 system. The main limitation of the 1994 system was that there was great interobserver variability among pathologists reviewing the same slides and whether or not they were identifying nuclear atypia[3,4]. As the findings of nuclear atypia is the most important predictor of disease progression or concurrent endometrial carcinoma. Additionally, the WHO updated their classification system to illustrate that hyperplasia without atypia is a non-neoplastic change, and more importantly, to illustrate that hyperplasia with atypia may be found to exhibit many cellular and genetic changes that are atypically associated with invasive carcinoma [4,5].

In contrast, the Endometrial Intraepithelial Neoplasia system was proposed by an international group of pathologists in 2000. In this system, endometrial hyperplasia is also classified into two categories based on the endometrial changes observed. These categories are the following: benign endometrial hyperplasia (non neoplastic) and endometrial intraepithelial neoplasia (precancer). Benign endometrial hyperplasia illustrates the endometrial changes observed with anovulation. EIN correlates with epithelial crowding and decreased stromal volume. This system uses a "D" score, which is a computerized value based on morphometry (measure of stromal volume as a proportion of the total tissue volume). The D score is then used to further classify/categorize specimens as either: benign (D>1), indeterminate (0<D<1), or endometrial intraepithelial neoplasia (D<0)[3,4,5].

The WHO nomenclature system is the most commonly used, however, governing bodies do not recommend one system over the other. The EIN system has been slow to gain widespread acceptance. This is thought to be due to the cost and/or lack of experience with using the D-score. It is important to note that both nomenclature systems have been further compared in studies and in these studies, both had a similar correlation in regard to the risk of progression of endometrial hyperplasia to endometrial carcinoma[4].

In addition to the wide variability among pathologist in characterizing nuclear atypia, there has also been shown to be wide variability among pathologist in identifying atypical hyperplasia/EIN from carcinoma. In one study of 289 endometrial samples with the diagnosis of complex atypical hyperplasia, pathologists were asked to assign a diagnosis. Of these, 25% made a downgraded diagnosis and 30% of samples were given an upgraded diagnosis of endometrial carcinoma. Furthermore, this evidence illustrates the importance in the WHO's updated system from 1994 to 2004(3).

Once a diagnosis of endometrial hyperplasia has been given, there are three treatment options available that a clinician and patient should discuss. The treatment options include: surveillance, medical management or hysterectomy. In addition to selecting a treatment option, it is of utmost importance to remove the source of the unopposed estrogen, whether it is extrinsic or intrinsic. Surveillance includes a transvaginal ultrasound or endometrial sampling every 6 months for 1 to 2 years. While in surveillance, if an abnormal finding is present, endometrial thickness > 4 mm, a hysteroscopy dilation and curettage should be performed. If a patient would like to opt for medical management, it is important to note that there is presently no United States FDA approved therapy for treatment of endometrial hyperplasia, though, several different progestins are approved for prevention of endometrial hyperplasia. Medical management options include LNG52-IUD, Micronized progesterone, progestin injections and implants, combined OCPS, gnRH agonists in

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(Continued from Page 24)

combination with LNG IUD, aromatase inhibitors, and metformin. Of the progestin options, the LNG-52 IUD has been studies in randomized trials and has been to be more effective than oral progestins. If a surgical option is selected, then a total extra fascial hysterectomy is the treatment of choice for EIN. Additionally, the surgeon and patient must decide whether ovarian preservation is desired. One factor to consider when counseling patients in regard to ovarian preservation is that endometrial carcinoma may metastasize to the ovaries 5% of the time. After surgical management, surveillance depends on the initial pathology specimen. If there is no endometrial carcinoma, no further surveillance is necessary. However, if endometrial cancer is identified in the hysterectomy specimen, surveillance goals are for early detection of recurrent disease. Surveillance includes a thorough review of symptoms and physical exam with speculum and bimanual exam every three to six months for two years, then every six months or annually. The frequency of examinations depends upon the risk of persistent or recurrent disease[2, 4].

Furthermore, as the incidence of endometrial hyperplasia as well as endometrial carcinoma in the United States is rising vastly, consequently due to a rise in the number of obese individuals, it is imperative for women's health care providers to understand the terminology used to describe endometrial hyperplasia as the disease becomes more prevalent in our patient population. In essence, this knowledge will allow OBGYN's to be better equipped to care for patients with endometrial hyperplasia, improve counseling, and facilitate shared decision making when selecting therapeutic options.

References:

1. American College of Obstetricians and Gynecologists. "ACOG practice bulletin, clinical management guidelines for obstetrician-gynecologists, number 149, April 2015: endometrial cancer." Obstet Gynecol 125.4 (2015): 1006-26.

2. Benoit, Michelle and Williams-Brown, Yvette. Uterine Cancer. Demos medical. 2018

3. Cohn, David. "Endometrial Cancer." UpToDate, www.uptodate.com/contents/overview-of-approach-to-endometrial-cancer-survivors?sectionName=FOLLOW-UP+POST-TREATMENT.

4. Gubbi, Adjib. Endometrial Hyperplasia…Is it cancer? ACOOG Spring Conference, April 4, 2020

5. Parkash, Vinita, et al. "Committee Opinion No. 631: endometrial intraepithelial neoplasia." Obstetrics & Gynecology 126.4 (2015): 897.

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ERAS Pathways to Expedite and Enhance Recovery

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Article based upon a lecture by Eric Carlson, DO

Introduction and Background

In the realm of practice in obstetrics and gynecology, surgery is an important tool which unfortunately can present substantial risks. Cesarean sections and hysterectomy are among the most common surgeries performed in the United States. Compared to more conservative management, surgical intervention carries higher cost, increased pain, and increased risk of morbidity and mortality. Dr. Henrik Kehlet, a Danish colorectal surgeon and one of the founders of the original Enhanced Recovery after Surgery (ERAS) Study Group, likened surgery to a marathon or other vigorous exercise. An excellent way to minimize the detrimental effects of surgery is to implement ERAS protocols, with the central goal of maintaining normal physiology in the perioperative period.

ERAS is a multimodal, multidisciplinary approach to the care of surgical patients to accelerate convalescence and reduce morbidity. It is evidence-based, auditable, improvable, and constantly reevaluated and updated. The original tenets were published in 1997, and in 2001 the original ERAS Study Group was formed, consisting of 5 institutions across Europe. The concept has grown and has found success across all surgical disciplines including obstetrics and gynecology.

All parties involved in surgery benefit from the utilization of ERAS protocols, including the patient, physicians, and hospitals. Perioperative complications, both minor and severe, can be reduced by 10-50%. Sequelae and healthcare burden resulting from such complications are reduced by using ERAS protocols, with decreases in postoperative mortality, length of stay, ICU

Table 1

Mean individual costs by administrative subdivision for ERAS and pre-ERAS groups.

	ERAS			Pre-ERAS						
	Mean	Inferior CI	Superior CI	Mean	Inferior CI	Superior CI	Mean difference	Inferior CI	Superior CI	P-value
Total intraoperative	**5 567**	4 784	6 337	**4 938**	4 414	5 499	**-630**	-1 583	360	0.201
Anaesthesia and operating room	5 177	4 444	5 915	4 600	4 142	5 143	-577	-1 490	333	0.226
Disposable materials	391	281	516	338	207	548	-53	-236	186	0.646
Total pre- and postoperative	**7 762**	6 504	9 013	**12 772**	9 670	16 361	**5 011**	1 587	8 998	0.019
ICU/IC	0	0	0	1 402	571	2 305	1 402	571	2 305	0.028
Medical care	1 933	1 654	2 243	3 154	1 938	4 716	1 220	-12	2 820	0.131
Nursing care	2 199	1 707	2 658	4 018	2 955	5 405	1 819	570	3 279	0.039
Physiotherapy	32	3	79	91	42	141	59	-5	120	0.073
Medication	67	39	103	134	78	203	66	1	138	0.076
Blood	163	103	230	167	104	250	3	-93	107	0.953
Laboratory	99	56	150	247	134	393	148	22	295	0.068
Radiology	24	4	54	118	36	223	94	4	201	0.111
Pathology	1 764	1 356	2 200	1 909	1 531	2 353	146	-455	774	0.631
Housing	1 043	859	1 249	1 153	816	1 535	110	-298	558	0.613
Administration	421	418	423	401	396	406	-21	-27	-14	0.001
Others*	16	13	19	37	27	51	21	10	35	0.044
Total	**13 329**	11 301	15 213	**17 710**	14 452	21 005	**4 381**	549	8 752	0.043

Costs are described in US dollars (USD). ICU: intensive care unit, IC: intermediate care, CI: 95% confidence interval. Italic p-value indicates statistical significance.
* Others include the social work, the chaplain/priest, and the occupational therapy costs.

(Continued on Page 27)

(Continued from Page 26)

admission, readmission all reported. The cost of medical care is also significantly reduced, with one study reporting an average savings of $4,381 per gynecologic surgery [Table 1].

Physiologic Stress Response to Surgery

Surgery is a major traumatic insult which results in a stress response comprised of multiple biochemical pathways that lead to alterations in physiology. There is an acute increase in mineralocorticoid, glucocorticoid, catecholamine, and vasopressin release by the neuroendocrine system. The immune system, especially resident macrophages in the tissues directly traumatized in surgery, releases large number of cytokines, of which IL-1, IL-6, and TNF-α are particularly pro-inflammatory. The body enters a catabolic state; myocardial demand increases, along with heart rate and blood pressure; insulin resistance increases; the coagulation cascade and coagulation profile are impaired; and pulmonary and gastrointestinal function are altered. All these can impair postoperative recovery. Stress hormones and cytokines induce and amplify a sympathetic response which causes the myriad of adverse effects that delay recovery, including anxiety, pain, ileus, tachycardia and other hemodynamic disturbances, cognitive dysfunction, hypoxia, poor sleep, hypothermia, acidosis, hyperglycemia, and even altered fibrinolysis. Control of the initial stress response is key in ERAS, and strategies for this include multimodal pain management (including preoperatively), less strict preoperative fasting, euvolemia, maintenance of normothermia, and minimally invasive surgical techniques.

Insulin resistance (figure 1.) is one of the most important pathogenic factors in the stress response to surgery, and is induced by catecholamine release in the early stages of the stress response. Reduced GLUT4 glucose transporter protein

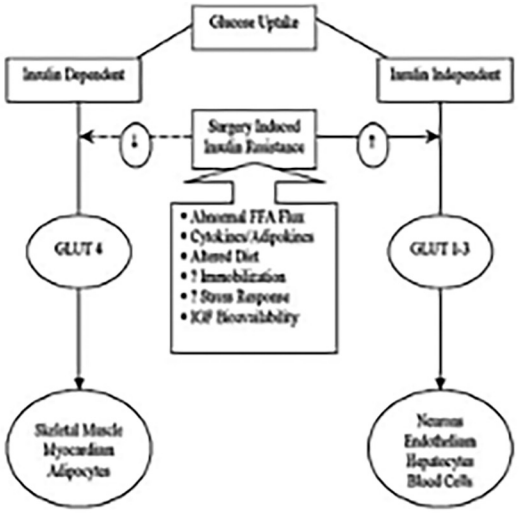

Fig. 1 Physiology of glucose uptake and the biochemical alterations contributing to perioperative insulin resistance. FFA = free fatty acid; GLUT1–4 = glucose transporters; IGF = insulin-like growth factor

expression in skeletal muscle results in less uptake in that tissue and hyperglycemia. The stress response increases GLUT1-3 transporters in neurons, vascular endothelium, hepatocytes, and red and white blood cells. The resultant increases in intracellular glucose lead to production of oxygen radicals and a worsened inflammatory response [Table 2].

While some of this glucose is used for glycolysis, the rest leads to adverse intracellular and local tissue effects. Endothelial cell damage can increase risk of VTE or cardiac complications; immune cell damage would increase rates of

Table 2: Intracellular events during hyperglycemia
Uncontrolled inflow of glucose
• No glucose storage (and decreased reserves postop)
• Excessive glycolysis
• Production of oxygen radicals
• Inhibition of glycolysis and the Krebs cycle
• Altered gene expression
• Enhanced inflammatory responses

(Continued on Page 28)

(Continued from Page 27)

infection, poor wound healing, or both; and neural cell damage may alter pain control effectiveness and functionality. These effects are compounded in diabetic patients, which highlights the importance of preoperative diabetes optimization and postoperative glycemic control, core tenets of ERAS protocols.

The importance of ERAS stems from the benefits it provides over more traditional perioperative management. The goal of the program is maintaining normal physiology during the body's stress response to surgery. The common "NPO after midnight" fasting periods and postoperative diet restriction worsen the stress response and leave the body starved of energy as it enters catabolism. Opioid use has been shown to lead to increased morbidity and longer hospital stays. Overuse of IV fluids can also increase perioperative morbidity. In addition to decreased morbidity, ERAS protocols have been shown to decrease pain scores, increase patient satisfaction, decrease lengths of stay, and improve healthcare costs. These important improvements are achieved in a multimodal fashion with multiple providers involved. The process is divided into the preoperative, intraoperative, and postoperative periods.

Preoperative Components

Of the preoperative components of ERAS, the most important is patient education, engagement, and setting of expectations for the process. This can be started as early as at the initial office visit and is facilitated if all members of the team (including surgeon, office staff, hospital staff, anesthesia team, and nursing units) are involved. For busy practices and hospitals this may be a lofty goal, and specially trained and dedicated ERAS coordinators are a valuable asset in achieving success while implementing and using ERAS protocols. Medical optimization, lifestyle modifications, and preoperative nutrition are other important preoperative components of ERAS. Comorbidities such as diabetes, hypertension, and/or anemia must be identified and treated. Smoking cessation, even short-term, can reduce complications including surgical site infection, poor healing, and wound dehiscence, as well as improve pulmonary function. Patients who ingest alcohol have increased rates of complications, and decreased alcohol intake could significantly decrease complication rates. Obesity, hypoventilation syndrome, and sleep apnea should also be addressed and anticipated, along with the complications these conditions can bring. Preoperative fasting has been studied and most ERAS protocols call for shorter fasting periods than the traditional "NPO after midnight". In addition, preoperative complex carbohydrate drinks have improved outcomes in non-diabetic patients and decrease patient anxiety and thirst while increasing patient satisfaction. Antiemetics such as ondansetron should be used as needed.

Intraoperative Components

Intraoperative components of ERAS include minimizing infection risk, pain management, and proper surgical technique. Infection risk can be minimized by using preoperative antibiotics and doses appropriate for the type of surgery, patient allergies, and patient weight. Additional doses of antibiotics may be required in cases of prolonged operating time and blood loss >1500mL. Proper patient preparation includes clipping hair as needed, and using either chlorhexidine or iodine-based solutions for skin antisepsis and vaginal cleansing.

Multimodal pain management is an important component of ERAS on the day of surgery.

(Continued on Page 29)

(Continued from Page 28)

Opioid use is associated with nausea/vomiting, impaired bowel function, delayed mobilization, and cognitive and pulmonary impairment. In addition, the opioid epidemic has created a need for nonopioid methods of pain management. Preoperative treatment with acetaminophen, gabapentin, and COX-2 inhibitors are an excellent way to decrease opioid use, and ketorolac is effective at controlling postoperative pain without increasing bleeding. Regional and local anesthesia such as epidurals, TAP blocks, paracervical block, and local infiltration with liposomal bupivacaine decrease overall mortality and morbidity when compared to general anesthesia.

The surgical approach should be as minimally invasive as possible. If performing an open procedure, regional and local anesthesia is recommended over general. Euvolemia should be maintained, and fluid management must be coordinated with the anesthesia team. Fluid overload can impair recovery by leading to impaired bowel function by means of bowel edema or delayed mobilization as a result of peripheral edema. Normothermia must be maintained, as even mild hypothermia can lead to an increase in steroid and catecholamine production, which in turn can worsen outcomes. Surgical drains should be avoided or removed as soon as possible. NG tubes should be removed before anesthesia reversal, and urinary catheters and vaginal packing should be removed within 24 hours of surgery, as all of these can delay mobilization and increase morbidity.

Postoperative components

Postoperatively, multimodal pain management should be continued with non-opioid analgesia, and sparing use of opioids. Early mobilization, as early as the same day of surgery, protects against thromboembolism, insulin resistance, and deconditioning. VTE prophylaxis should be individualized, and SCDs, ambulation, and low molecular weight heparin (LMWH) should all be considered. Early feeding along with decrease in IV fluids or even sham feeding with gum promotes earlier return of bowel function and increases patient satisfaction. High-calorie protein drinks should also be included to ensure that increased metabolic demands after surgery are met. Blood glucose must be controlled, especially in diabetic patients, to reduce complications and should not exceed 180- 200 mg/dL. Early discharge planning including patient education, involving case management, and streamlining EMR processes should be implemented to prevent delays in discharge and increase patient satisfaction.

Recommendations Specific to Obstetrics and Gynecology

Major surgeries in Ob-Gyn where ERAS has been implemented and studied include cesarean sections, hysterectomies, apical suspension procedures, colpocleisis, and gynecologic oncology procedures. The basic tenets of ERAS described above apply to all these surgeries, but the ERAS society has published more specific recommendations beyond the basics for these procedures as well.

ERAS for cesarean delivery can broadly be categorized into two pathways: a focused preoperative pathway starting 30-60 minutes before incision and up to discharge, and an optimized preoperative pathway which starts during prenatal care and preferably with preconception care. In the focused pathway, antacids and H2 blockers should be administered for prevention of aspiration pneumonitis. Preoperative sedation should be avoided. Bowel

(Continued on Page 30)

(Continued from Page 29)

preparation before cesarean delivery should not be used. Preoperative fasting can be shortened, and women should be encouraged to drink clear liquids up to 2 hours preop, and a light meal up to 6 hours preop may be eaten. Oral carbohydrate drinks may be administered up to 2 hours preop for nondiabetic women. In the optimized pathway, maternal obesity should be managed with controlled weight gain and multidisciplinary planning depending on the expected complexity. Maternal hypertension, diabetes, anemia, and smoking should all receive timely and effective management well before cesarean delivery.

Intra- and perioperative practices are also important in ERAS protocols. Like in most ERAS recommendations, regional anesthesia is preferred for cesarean delivery. Preoperative antibiotic prophylaxis with a first-generation cephalosporin is recommended, with the addition of azithromycin for women in labor or with ruptured membranes. Chlorhexidine-alcohol scrub is preferred to povidone-iodine solution for skin preparation. Appropriate patient temperature monitoring and options for warming including forced air, warmed intravenous fluids, etc. are recommended to have at hand.

Intraoperative technique considerations during cesarean delivery aim to reduce the stress response. Blunt expansion of the hysterotomy is associated with less blood loss and is preferred over scalped or bandage scissors. 2-layer closure of the hysterotomy, rather than single layer or with imbrication, is associated with decreased rate of uterine rupture. Repair of the peritoneum does not improve outcomes and increases operative time and should not be routine. If subcutaneous tissue is >2cm deep, this layer should be reapproximated as this practice decreases rates of wound complications. Skin should be closed with subcuticular suture. Postoperative practices to enhance recovery after cesarean delivery should follow the general principles of ERAS.

In addition to application in cesarean delivery, ERAS has been extensively studied in benign gynecologic surgery, gynecologic oncology, and urogynecology. The basic tenets of ERAS apply to these fields as well, and several specific recommendations have been made by ERAS Society regarding gynecologic oncology. When patients have had laparotomy for management of malignancy, extended VTE prophylaxis for 28 days is recommended. Routine peritoneal drainage is not recommended for patient undergoing surgery for malignancy, and bowel prep is no longer recommended, even when bowel resection is anticipated. In Urogynecology, barriers to same-day discharge include opioid-induced nausea and somnolence, highlighting the importance of multimodal analgesia.

Implementation

Implementation of ERAS protocols and bundles needs to be multidisciplinary and involve a dedicated team which consists of all stakeholders involved in the surgical process. Patients and surgeons are obvious stakeholders in the process, but just as important are nurses in the peri- and postoperative settings, anesthesia providers, office staff, pharmacists, IT staff, and hospital leadership. Clear goals and evidence-based practices should be established by dedicated steering committees that involve most if not all the stakeholders involved.

Sample timelines of implementation have suggested that ERAS protocols can be instituted in as little as 16 weeks. Educational materials that contain ERAS elements and rational need to be produced for all parties, including surgeons and nursing staff. IT involvement and support

(Continued on Page 31)

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is invaluable when using EMR to produce order sets, monitoring protocols, and discharge planning programs. When going live, perioperative huddles with the teams involved are imperative to continuously monitor the system and improve where needed.

A core tenet of ERAS is that it is auditable, which by definition requires the collection and tracking of objective data. Such metrics include proportion of eligible patients enrolled in ERAS protocols, length of stay, cost of surgery and hospital stay, pain scores and opioid use, time to first ambulation and frequency of ambulation, diet tolerance, return of bowel and bladder function, ileus, wound complications and infections, and postoperative encounters (in both the outpatient setting and emergency department) and readmissions. Many of these examples are easily or automatically tracked in most electronic medical record systems and can easily be accessed by a dedicated ERAS quality and improvement team.

Summary

The initial goal of Enhanced Recovery After Surgery was to aid patients by improving the quality, and less so speed, of recovery after surgery. The body's stress response to surgery, and the control of this response, is key to ERAS protocols. This is achieved with multidisciplinary practices that begin well before surgery and throughout the intraoperative and postoperative stages. Years of study have shown that ERAS protocols that use evidence-based practices have multiple benefits, including healthcare cost savings. ERAS programs can be implemented efficiently and quickly, and can be consistently audited and improved. This is truly an innovation that is applicable in all surgical fields and should be adopted by all obstetricians and gynecologists.

References:

1. Carli F. Physiologic considerations of Enhanced Recovery After Surgery (ERAS) programs: implications of the stress response. Can J Anaesth. 2015;62(2):110-119.
2. Carter-Brooks CM, Du AL, Ruppert KM, Romanova AL, Zyczynski HM. Implementation of a urogynecology- specific enhanced recovery after surgery (ERAS) pathway. Am J Obstet Gynecol. 2018;219(5):495.e491-495.e410.
3. Caughey AB, Wood SL, Macones GA, et al. Guidelines for intraoperative care in cesarean delivery: Enhanced Recovery After Surgery Society Recommendations (Part 2) Am J Obstet Gynecol. 2018;219(6):533-544.
4. Dobson GP. Addressing the Global Burden of Trauma in Major Surgery. Front Surg. 2015;2:43.
5. Eric J. Carlson D. ERAS-Enhanced Recovery After Surgery-Pathways to Expedite & Enhance Recovery. March 21, 2020, 2020; Online due to COVID-19 pandemic.
6. Ljungqvist O, Scott M, Fearon KC. Enhanced Recovery After Surgery: A Review. JAMA Surg. 2017;152(3):292- 298.
7. Macones GA, Caughey AB, Wood SL, et al. Guidelines for postoperative care in cesarean delivery: Enhanced Recovery After Surgery (ERAS) Society recommendations (part 3). Am J Obstet Gynecol. 2019;221(3):247.e241- 247.e249.
8. Nelson G, Altman AD, Nick A, et al. Guidelines for postoperative care in gynecologic/oncology surgery: Enhanced Recovery After Surgery (ERAS®) Society recommendations--Part II. Gynecol Oncol. 2016;140(2):323- 332.
9. 9. Nelson G, Altman AD, Nick A, et al. Guidelines for pre- and intra-operative care in gynecologic/oncology surgery: Enhanced Recovery After Surgery (ERAS®) Society recommendations--Part I. Gynecol Oncol. 2016;140(2):313-322.
10. 10. Nelson G, Bakkum-Gamez J, Kalogera E, et al. Guidelines for perioperative care in gynecologic/oncology: Enhanced Recovery After Surgery (ERAS) Society recommendations-2019 update. Int J Gynecol Cancer. 2019;29(4):651-668.
11. Nygren J, Thacker J, Carli F, et al. Guidelines for perioperative care in elective rectal/pelvic surgery: Enhanced Recovery After Surgery (ERAS(®)) Society recommendations. World J Surg. 2013;37(2):285-305.
12. Pache B, Joliat GR, Hübner M, et al. Cost-analysis of Enhanced Recovery After Surgery (ERAS) program in gynecologic surgery. Gynecol Oncol. 2019;154(2):388-393.Wilson RD, Caughey AB, Wood SL, et al. Guidelines for Antenatal and Preoperative care in Cesarean Delivery: Enhanced Recovery After Surgery Society Rec

MEFACOOG/Resident Reporter Scholarship Program

A Summary: The Journey from Man to Woman: The Good, Bad and the Ugly

Radmila Kirkpatrick, DO

Article based upon a lecture by Danielle Weitzer, DO

The LGTBQ patient population often faces discrimination and many healthcare disparities driving the community's designation as medically underserved. During the lecture given at the ACOOG Spring 2020 Conference, "The Journey from Man to Woman: The Good, Bad, and the Ugly," Dr. Weitzer provided a heart-wrenching personal account of her own experiences as she transitioned throughout her life. As a young child, Dr. Weitzer realized that she associated with a different gender than the sex assigned to her. She battled with discrimination throughout her childhood, forcing her to make very difficult decisions. Social factors drove her to seek medical care much later than one might expect. Aspirations of becoming a medical professional also came with many obsticles and difficulties. Dr. Weitzer, however, was able to overcome complex and personally taxing hurdles throughout her medical training. She was able to share her story, providing valuable insights and teaching opportunities for the medical community at large.

The American College of Obstetricians and Gynecologists states that obstetricians and gynecologists should understand gender identity and be able to treat transgender patients or refer them appropriately for medical and surgical therapeutic options.[1] Dr. Weitzer highlighted that one way one can help become better educated is by understanding common terminology within this community. The first of these terms that we must understand and adopt is proper differentiation between gender identity and sexual orientation. Gender identity is a person's personal sense of whether they are female or male, whereas sexual orientation is based on romantic and sexual attraction. On occasion, a patient may state that they are non-binary which indicates that their gender identity is not restricted to just male or female; or bisexual indicating that they are romantically attracted to both sexes. Other common terms that we might encounter include cisgender and transgender. The term cisgender is used when a person's gender identity correlates to the sex they were assigned at birth. On the other hand, transgender indicates a person whose gender identity does not match their assigned sex. Consistent understanding and usage of this terminology will improve more fluid conversations with our patients, fostering a culture of trust between the LGBTQ and the medical community that serves them.

While terminology is one aspect of caring for this patient population, one must also address the many other fundamentals to better prepare and equip ourselves as physicians and be able to provide compressive care. Studies have shown that fear of discrimination drives patients away from seeking care or disclosing information. If one does not build a culture of trust, one will not be able to provide the level of quality care needed for the patient-provider interaction. A good approach to building a proper culture within one's practice is to provide cultural competency training for of our staff members. This will help facilitate good office practices which will create a place of safety for these patients. One can further expand on

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this by providing gender neutral forms, ensuring confidentiality, and using open-ended questions.[1] These practices have been proven to help patients become more open during their appointments, allowing greater issues to be addressed.

While the care of a transgender patient requires an integrated team of medical providers, obstetricians and gynecologists may be the first point of provider interaction for a patient. Being the initial provider, one may be able to make a critical first impression on behalf of the medical community and must serve as an avenue to provide care and referrals when needed. Office visits require considerations for cultural competency, medical legal forms, mental health, fertility preservation, preventative medicine, and medical and surgical options. In regard to medical legal forms, proper documentation of a patient's gender or gender reassignment may be required. This documentation is also important for insurance matters to help assist these patients in obtaining ongoing insurance coverage.[3] Dr. Weitzer emphasized studies highlighting greater risk of substance abuse, tobacco abuse, anxiety, depression and suicidal thoughts within this patient population. More than half of LGBTQ adolescents have considered suicide and certain studies have shown up to 37.4% of transgender individuals have attempted suicide at some point during their lifetime.[1] Along with these mental health concerns, there is also a correlation between this patient population and higher rates of homelessness compared to the general population. Medical caregivers must be cognizant of these concerns and perform proper mental health screening and refer when necessary. It is also important to remember that many transgender individuals are interested in having biological children. Cases have shown that individuals who have undergone hormone therapy and genital surgery without any kind of fertility preservation have later regretted their inability to genetically parent a child.[2] It is important to have this conversation with patients prior to them undergoing any therapy. One must be prepared to discussed sperm banking, cryopreservation, testicular biopsy with cryopreservation, and oocyte or embryo freezing.[1] Awareness is a key factor in structuring conversations with patients. General obstetricians and gynecologists may also provide expertise in the area of preventative medicine. The fundamentals of preventative medicine in the transgender population are based on several criteria including whether a patient has received hormone therapy and if they have undergone surgical procedures in their journey of transitioning. Cancer screening and prevention is a critical avenue for this patient population. Breast cancer is known to affect all patient populations; thus it is important to stratify the risks for each individual case. There is no evidence to suggest that a transgender woman, who has not undergone hormone therapy, is at an increased risk of developing breast cancer. As a result, there are no current guidelines for routine screening, and thus, breast exams and mammography are not indicated.[3] A transgender woman who has undergone hormone therapy, however, is at an increased risk of developing breast cancer. This patient, nonetheless, is at a lower risk compared to their cisgender counterparts. There is a direct correlation between breast cancer and longer usage periods, use of progestins and family history.[3] Due to the increased risk, screening mammography is recommended. Current recommended guidelines include repeat mammography every one-to-two years for patients over the age of 50 with additional risk factors such as estrogen use for more than five years. At this time, evidence does not suggest an increased risk of breast cancer in those who have

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undergone breast augmentation. The transgender male recommendations are primarily based on whether the patient has undergone surgery. In those who have not undergone surgery, regardless of hormone use, screening guidelines remain the same as cisgender women. In those who have undergone surgery, the risk of breast cancer is decreased. However, one should still consider performing yearly chest wall and axillary exams. Cervical and vaginal neoplasms are another key area of cancer screening. Transwomen without risk factors do not require an additional screening. A practitioner should consider performing a Pap smear in immunocompromised patients or those with a history of genital warts or HPV. When a transman has an intact cervix, cisgender women recommendations persist; however, if a total hysterectomy has been performed, with no underlying history of high-grade dysplasia or cancer, no future screening is indicated. No current screening guidelines exist for ovarian or uterine cancer in cisgender women, and thus, for transgender men with intact pelvic organs one should consider routine yearly pelvic examinations. Many of these screening modalities are common in obstetrics and gynecology and we must provide our expertise to better the medical community.

Initial providers may be asked to initiate therapy, prior to referring to endocrinology, or help maintain a patient's therapy. Therapy can be reversible or irreversible. Fully reversible interventions include GnRH analogues to help puberty suppression and spironolactone to decrease effects of androgens. Partially reversible interventions include hormone therapy to either masculinize or feminize the body. Irreversible interventions including surgical management. Pubertal suppression is beneficial because it provides more time to explore gender nonconformity. Hormone therapy is considered a medical necessity for many and is usually based on a patient's personal interests and goals of their therapy. Currently, no controlled clinical trials exist for specific feminizing and masculinizing hormone regimens which also evaluate the safety or efficacy of the physical transition.[2] Certain contraindications to medical therapy do exist, including: VTE, hypercoagulable states, history of estrogen sensitive neoplasms, end stage liver disease, pregnancy, unstable coronary artery disease, and untreated polycythemia.[2] Eligibility and readiness criteria for pubertal suppression includes: established diagnosis of gender dysphoria, transgender, or transsexualism, tanner stage II or greater, pubertal changes which have worsened gender dysphoria, no psychiatric illness which inhibits diagnosis, adequate support and the patient's appropriate understanding of informed consent. Hormone therapy eligibility criteria includes previously listed puberty suppression criteria and being at least sixteen years old.[1] As a person's transition progresses, one should also familiarize oneself with the surgical options and the criteria that a patient must meet to better help advise patients on options and considerations even if performing the surgery. A surgery one may be requested to perform is a total hysterectomy and bilateral oophorectomy. These patients require proper documentation of persistent gender dysphoria, capacity to undergo informed consent, surgical clearance, age of majority, and at least 12 months of continuous hormone therapy. Other surgeries that patients may want to discuss and likely require referrals for include breast and chest surgery, genital surgery, and cosmetic surgery to feminize or masculinize one's body. Each of these surgeries requires a multistep referral process.[2] Understanding direct aspects of the care ensures

(Continued on Page 9)

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that one can provide necessary support and therapy for the patient.

Dr. Weitzer provided an engaging and informative lecture which stressed many different points where obstetricians and gynecologists can improve and share knowledge to the greater medical community. With this knowledge one can serve in an integrated team and provide the utmost quality of care that these patients deserve.

References:

1. American College of Obstetricians and Gynecologists. (2017, reaffirmed 2020). Care for Transgender Adolescents Committee Opinion No. 685. Obstet Gynecol,129(11), 6th ser. doi:https://www.acog.org/-/media/Committee-Opinions/Committee-on-Adolescent-Health-Care/co685.pdf?dmc=1&ts=20190529T1529040186
2. Coleman, E., Bockting, W., & Botzer, M. (2012). Standards of Care for the Health of Transsexual, Transgender, and Gender Nonconforming People (7th ed.). International Journal of Transgenderism. doi:10.1080/15532739.2011.700873
3. Feldman, J., & Deutsch, M. (2018, October 18). Primary Care of Transgender Individuals. Retrieved May 29, 2019, from https://www.uptodate.com/contents/primary-care-of-transgender-individuals?search=Primary Care of transgender individuals&source=search_result&selectedTitle=1~150&usage_type=default&display_rank=1#H493316724

MEFACOOG Annual Report

Year 2020 Support

The Medical Education Foundation relies on its members to support its mission.

The mission of the MEFACOOG is to foster continuing improvements in women's health care. The financial review below reflects the year ending December 31, 2020. Below are ongoing grants we hope to continue in the upcoming year.

- MEFACOOG Resident Reporter Scholarship Program-educating osteopathic OB/GYN residents at the ACOOG Annual Conference and reporting back to their programs and to the profession.
- MEFACOOG Awards for Excellence in Poster Presentation-encouraging research and rewarding dissemination via poster presentation at the ACOOG Annual conference.
- MEFACOOG Postgraduate Research Grant encouraging research in osteopathic OB/GYN residency and fellowship programs.

The 87th Annual Conference of the ACOOG hosted three funded lectureships. The Barbara Hawkes Memorial Lecture; also the college's first endowment memorial lectureship, was given by Sonja A. Rasmussen, MD. The MEFACOOG Distinguished Lecture was presented by Saroj Misra, DO. The Distinguished Fellows Lecture was presented by Bernard L. Lopez, MD. The Past President's Honorary Lectureship was presented by David Pugach, JD at the 2020 Advances in Women's Health Conference.

The National Student Society of the ACOOG met for the 12th time the ACOOG 2020 Advances in Women's Health (virtual conference). These projects would not be possible without the support of you, the donors. Thank you for your continuing support.

Financial Review

Statement of Activities

Year Ended December 31, 2020

Support	
Corporate Contributions	$5,000
Individual Contributions	$22,705
Interest & Dividends	$17,396
Realized & Unrealized	$3,916
In-Kind Contributions	$53,004
Total Support	**$102,022**
Expenses	
Program Services	$12,686
Support Services	$76,716
Total Expenses	**$89,402**
Net Assets, Beginning of Year	$634,092
Change in Net Assets	$12,619
Net Assets, End of Year	**$646,711**

Statement of Financial Position

Year Ended December 31, 2020

Assets	
Current Assets	
Cash and Equivalents	$15,358
Investments	$631,603
Total Assets	**$646,961**
Liabilities and Net Assets	
Accounts Payable	$250
Without Donor Restrictions	$597,904
With Donor Restrictions	$48,807
Net Assets	$646,711
Total Liabilities and Net Assets	**$634,342**

MEFACOOG Awards for Excellence

87th Annual Conference Posters – 1st Place Winner

A Comparison of Estimate Blood Loss (EBL) & Quantitative Blood Loss as Predictors of Postpartum Hemoglobin Change

Sarah O'Nan, DO

Henry Ford Wyandotte Hospital
Wyandotte, MI

ABSTRACT

Objective:
To determine whether quantitative blood loss (QBL) is more effective than estimate blood loss (EBL) in predicting changes in hemoglobin levels associated with cesarean delivery.

Study Design:
Data collected included EBL, QBL and laboratory-measured pre- and post-delivery hemoglobin levels which were compared to blood loss determined by QBL and EBL in patients who had undergone cesarean deliveries. This was a retrospective chart review performed at Henry Ford Wyandotte and Henry Ford Hospital from January - May 2019. Pearson correlation coefficients (r) were calculated for evaluating the relationship between EBL and change in hemoglobin, and QBL and change in hemoglobin. Hemoglobin changes were measured as post-cesarean hemoglobin minus pre-cesarean hemoglobin. Statistical significance was set at $p<0.05$. Analyses were performed using SAS 9.4 (SAS Institute Inc., Cary, NC).

Results:
The two blood loss groups were treated independently since only 39 of 237 patient records included both QBL and EBL values. Both QBL and EBL had weak correlations with changes in hemoglobin as shown by the correlation coefficients of r=-0.07 and 0.02, respectively (Figures 1 and 2). There was a very weak negative correlation between QBL and hemoglobin change and a weak positive correlation between EBL and hemoglobin change. A Z-test was conducted to measure any difference in magnitude or strength between the two correlations without regard to positive or negative slope direction. The low r-values and insignificant p-value of 0.26 suggest no significant difference in the strength of the two correlations.

Conclusion:
There is insufficient evidence to suggest that one measure of blood loss is superior (more highly correlated) with hemoglobin change than the other. Additionally, both measures show weak correlations with hemoglobin change.

OBJECTIVES

To determine whether the quantitative blood loss (QBL) is more effective than estimate blood loss (EBL) in predicting changes in hemoglobin levels associated with cesarean delivery.

METHODS

A retrospective study was performed using data collected between January 2019 and May 2019. The study was approved by the hospital's Institutional Review Board. Variables included pre- and post-cesarean hemoglobin, EBL and QBL. Blood loss was the calculated difference between pre- and post-delivery hemoglobin levels (laboratory measured) which was compared to the blood loss assessed by QBL and EBL. Pearson correlation coefficients (r) were calculated to evaluate the relationship between EBL and change in hemoglobin, and QBL and change in hemoglobin. Hemoglobin changes were measured as post-cesarean hemoglobin minus pre-cesarean hemoglobin. A medium effect size (6% explained variance) would require 75 patients, or 23 patients for 13% explained variance, both using 0.8 power and an alpha of 0.05. Analyses were performed using SAS 9.4 (SAS Institute Inc., Cary, NC).

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Figure 1: QBL and Hemoglobin Change Scatterplot

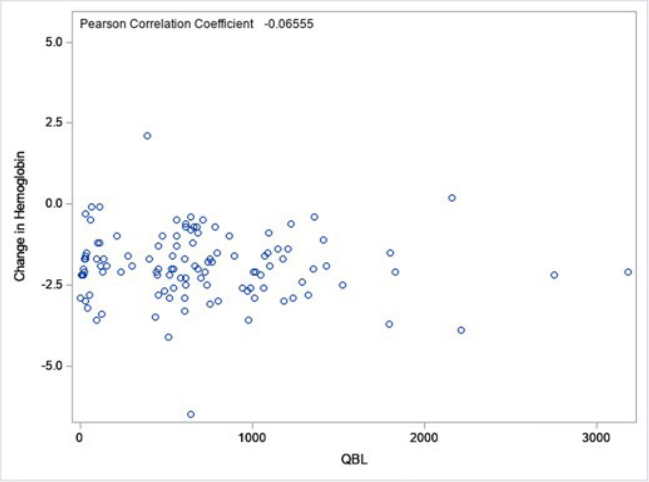
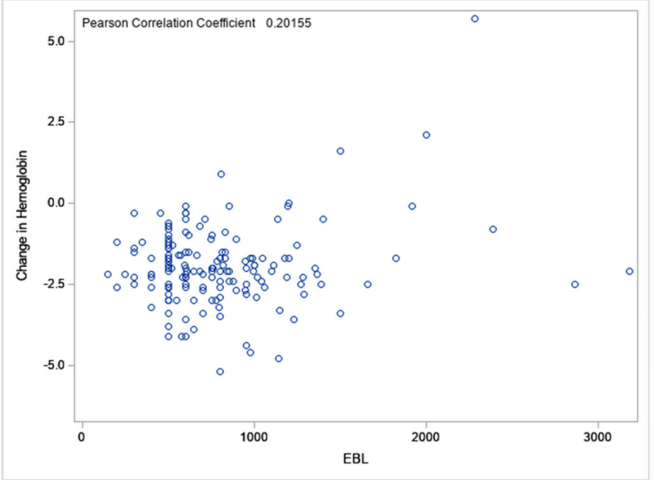


Figure 2: EBL and Hemoglobin Change Scatterplot



RESULTS

The two blood loss groups were treated independently since only 39 of the 237 eligible patients had both QBL and EBL values recorded. There was a very weak negative correlation (r=-0.07) between QBL and hemoglobin change, and a weak positive correlation (r=0.20 between EBL and hemoglobin change (Figures 1 and 2). The weak correlations were overpowered at the large effect size level, but underpowered at the medium effect size level, suggesting a very low, clinically insignificant effect size in the correlations for both blood loss groups. A Z-test was conducted to measure any difference in magnitude or strength between the two correlations (without regard to positive or negative slope direction). The low r-values and insignificant p-value of 0.26 suggest no significant difference in the strength of the two correlations.

CONCLUSION

There is insufficient evidence to suggest one measure of blood loss is superior (more highly correlated) with laboratory-measured hemoglobin change than the other.

Additionally, both QBL and EBL measures show weak correlations with hemoglobin change.

Overall, further research is needed to explore QBL as an effective measurement in reducing maternal hemorrhage morbidity.

KEY REFERENCES

1. Alkema L, Chou D, Hogan D, Zhang S, Moller AB, Gemmill A, et al. Lancet. Global, regional, and national levels and trends in maternal mortality between 1990 and 2015, with scenariobased projections to 2030: a systematic analysis by the UN Maternal Mortality Estimation InterAgency Group.2016; 387 (10017): 462-74.
2. Creanga AA, Syverson C, Seed K, Callaghan WM. Pregnancy-Related Mortality in the United States, 2011-2013. Obstet Gynecol. 2017;130(2),366–373.
3. Say L, Chou D, Gemmill A, Tunçalp Ö, Moller AB, Daniels JD, et al. Lancet Global Health. Global Causes of Maternal Death: A WHO Systematic Analysis. 2014;2(6): e323-e333.

MEFACOOG Awards for Excellence

87th Annual Conference Posters – 2nd Place Winner

The Effect of Excessive Gestational Weight Gain on Neonatal Outcomes in Obese Women with a Normal Estimated Fetal Weight

Bertha Vasquez, DO

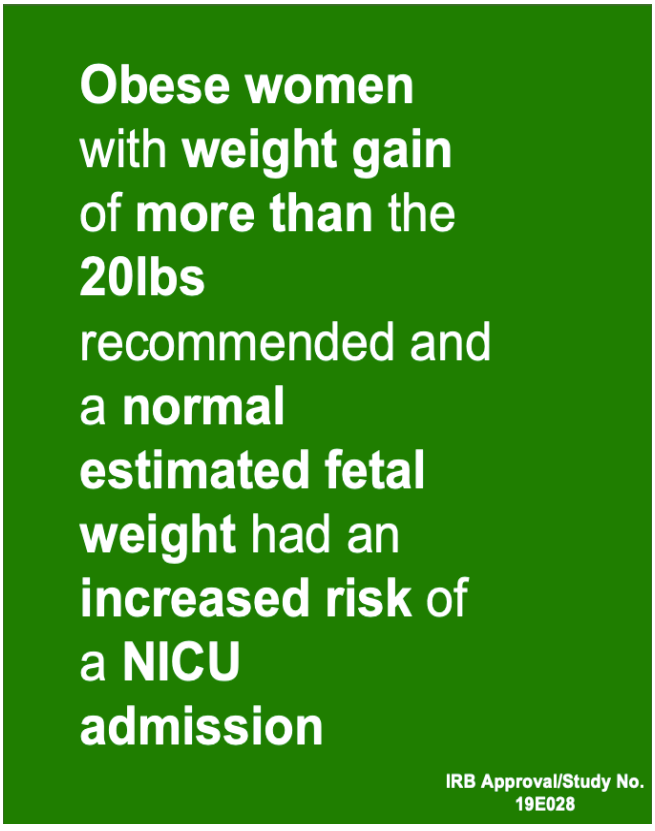
UPMC Pinnacle Harrisburg
Harrisburg, PA

Objectives:

- In the United States from 2016 to 2018 27.5% to 30.5% of women ages 18-44 were obese
  - In Pennsylvania, 26.5% to 28.1% of women ages 18-44 were obese
- Maternal obesity and gestational weight gain above the Institute of Medicine (IOM) recommendations is associated with increased risks of maternal, fetal and infant outcomes
- To study the effect of excessive gestational weight gain (EGWG) on neonatal outcomes in obese women with a normal estimated fetal weight (EFW) who delivered at term

Methods:

- Multi-center observational retrospective cohort study; UPMC Pinnacle Hospitals
- Electronic health record chart review of obese women who delivered at term from Oct 2016 to Jun 2019
- Documented fetal growth ultrasound within 3 weeks of delivery with an EFW within 2500 to 4500 grams
- Obesity was defined as Body Mass Index of 30 or more
- Excessive gestational weight gain (EGWG) was defined as weight gain of more than 20lbs during the pregnancy as defined by the IOM in 2009
- Difference in pre-gravid weight and weight on delivery admission
- Analysis included demographics, risk factor and outcome comparisons between women who had EGWG during the pregnancy and women who gained 20 lbs or less during pregnancy
- Data was described using means, standard deviations, and range for continuous measurements and number and percentages for categorical measurements
- Student t-test were used for comparisons of the continuous data
- Chi-square tests were used for comparisons of the categorical data
- The Fisher exact test was employed when any of the expected frequencies was 5 or less
- All tests were 2-sided with criterion for statistical significance at a p value less than 0.05
- All the analyses were done in SAS 9.4 (SAS



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"The Effect of Excessive Gestational Weight Gain on Neonatal Outcomes in Obese Women with a Normal Estimated Fetal Weight"

(Continued from Page 39)

Inc. Cary, NC)

- Neonatal outcomes evaluated included neonatal intensive care unit (NICU) admission and APGAR scores.
- A second analysis was conducted on the same population of obese women including fetuses with EFW consistent with macrosomia or fetal growth restriction (FGR).

Results:

- Obese women with normal EFW who had EGWG had a significantly higher rate of NICU admissions (p=0.0372)
- Fetal growth patterns had no significant effect on the rate of NICU admissions
- Despite a normal EFW, biometric fetal measurements were significantly larger and HC/AC ratio was significantly smaller in obese women who had EGWG
- Despite the amount of gestational weight gain, there was no significant difference in fetal growth patterns or APGAR scores in obese women
- There was no significant difference in age, race or co-morbidities between study groups

Conclusions:

- Our study showed that obese women with EGWG and a normal EFW within 3 weeks of delivery have an increased risk of a NICU admission
- There were no significant differences in maternal co-morbidities
- Further investigation into the etiologies of the NICU admissions is warranted.

Table 2: Biometric fetal measurements and NICU admissions with normal EFW by maternal weight gain

	Weight Gained </=20 lbs		Weight Gained >20 lbs		p-Value
Total Number of Mothers	184		144		
	Mean (SD)	Range	Mean (SD)	Range	
Head Circumference	327.2 (11.2)	301 - 361	330.5 (11.7)	296 - 354	0.011
Abdominal Circumference	333.9 (17.2)	280 - 373	342.0 (19.1)	296 - 382	<0.0001
Head Circumference to Abdominal Circumference Ratio	0.98 (0.05)	0.85 - 1.11	0.96 (0.05)	0.85 - 1.13	0.013
Estimated Fetal Growth in grams	3082.1 (373.5)	1978 - 4068	3250.0 (396.8)	2182 - 4076	0.0001
Birth Weight in Grams	3283.2 (378.1)	2275 - 4315	3419.4 (421.9)	2239 - 4564	0.0023
	No	%	No	%	
NICU Admission	10	5.43%	17	11.81%	0.0372
Growth Size					0.332
Normal Growth	181	98.37%	140	97.22%	
Macrosomia	0	0.00%	2	1.39%	
FGR	3	1.63%	2	1.39%	

Table 3: Biometric fetal measurements and NICU admissions with no fetal weight exclusions by mater+A120:F128nal weight gain

	Weight Gained </=20 lbs		Weight Gained >20 lbs		p-Value
Total Number of Mothers	270		208		
	Mean (SD)	Range	Mean (SD)	Range	
Head Circumference	328.9 (13.5)	301 - 376	332.5 (14.2)	289 - 383	0.0049
Abdominal Circumference	337.7 (23.2)	280 - 408	346.4 (25.0)	281 - 409	0.0001
Head Circumference to Abdominal Circumference Ratio	0.97 (0.05)	0.84 - 1.15	0.96 (0.06)	0.84 - 1.13	0.0049
Estimated Fetal Growth in grams	3165.4 (526.6)	1978 - 5028	3359.9 (571.6)	1937 - 4909	0.0001
Birth Weight in Grams	3341.2 (494.3)	2209 - 5129	3533.4 (569.1)	2209 - 4890	0.0001
	No	%	No	%	
NICU Admission	22	8.15%	24	11.54%	0.2127
Growth Size					0.332
Normal Growth	181	98.37%	140	97.22%	
Macrosomia	0	0.00%	2	1.39%	
FGR	3	1.63%	2	1.39%	

Please scan for abstract, tables, and references

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MEFACOOG Awards for Excellence

87th Annual Conference Posters – 3rd Place Winner

Inappropriate Prophylactic Use of Antibiotics In Gynecologic Surgeries In Inner City Hospital

Jacquelyn Boyd, DO

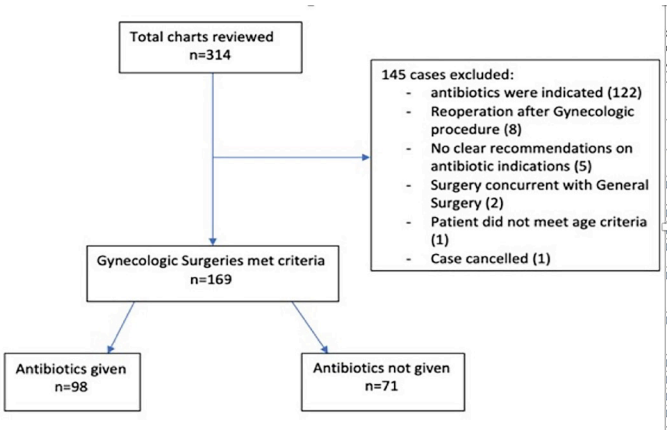
SSM Health - St. Anthony Hospital
Oklahoma City, OK

ABSTRACT

As antibiotic resistance is an increasing healthcare issue, promotion of antibiotic stewardship within hospitals has led to research into their proper use. The American College of Obstetricians and Gynecologists (ACOG) has specific recommendations for antimicrobial prophylaxis prior to gynecologic procedures. We hypothesized that patients in an inner-city hospital in Oklahoma City, Oklahoma undergoing gynecologic procedures were receiving prophylactic antibiotics that were otherwise not indicated for their surgery. A retrospective chart review was performed from July, 2017 to June, 2018. 314 surgeries were performed in this time and 169 cases met inclusion criteria as gynecologic procedures with no indication for antimicrobial prophylaxis. Of the 169 included cases, 98 (57.99%) revealed antibiotics were inappropriately given ($p<0.5$). The most common procedure in which misuse was noted were laparoscopic procedures without entry into the bowel or vagina, composing 61.2% of cases. Cefazolin was the most frequently used medication and was given in 84.7% of the cases. These results reflect the overuse of antibiotics for surgical prophylaxis, which contributes to increasing antibiotic resistance in women undergoing elective gynecologic procedures. Overall, this is hindering the progressive movement towards promotion of antibiotic stewardship. We hope that these study results will limit the misuse of antibiotics in a hospital setting, and specifically in surgical specialties.

INTRODUCTION

- Most gynecologic surgical infections arise when bacteria endogenous to the patient's skin or vagina invade the surgical sites, with the most common bacterial species being gram positive cocci such as staphylococci[2].
- Over-use of prophylactic antibiotics for procedures in which evidence does not support their use leads to the induction of bacterial resistance, and makes future treatment of surgical site infections more complicated.
- Bacterial resistance is becoming a growing healthcare issue in the United States and limiting the unnecessary use of antibiotics is crucial to decrease the chance of growing resistance.
- ACOG has specific recommendations for which surgical procedures require prophylactic antibiotics based on extensive research and meta-analyses (Table 1). Antibiotic prophylactic options on the Integris SW order set include Ancef 2g IV, doxycycline 100mg PO, or Clindamycin 900mg IV and Gentamycin 5mg/kg IV.
- Utilizing antimicrobial prophylaxis when suggested can help decrease the bacterial contamination leading to surgical site infections.



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MESTHODS

A retrospective chart review of gynecologic procedures at Integris Southwest Medical Center between July 1, 2017 and June 30, 2018 approved through the Institutional Review Board (19-014)

- Age criteria was at least eighteen years of age at the time of the procedure.
- Inclusion criteria for this study were gynecologic procedures performed at Integris Southwest Medical Center that did not require antibiotic prophylaxis according to ACOG recommendations (Table 1).
- Cases were separated based on antibiotics administered versus not administered. The Medication Administration Report (MAR) from the specific encounter was reviewed to identify antibiotic and dose administered.
- Cases excluded from this study were those with recommendations for prophylaxis prior to incision (ex. Hysterectomy).
- Other exclusions were re-operative procedures, combined cases with General Surgery and those procedures with no clearly established recommendations for antibiotic prophylaxis.

Table 1. Recommended Antibiotic Prophylactic Regimens by Procedure

Procedure	Antibiotic
Laparotomy without entry into bowel or vagina	Consider cefazolin
Cervical tissue excision procedures (LEEP, biopsy, endocervical curettage)	Not recommended
Cystoscopy**	Not recommended
Endometrial biopsy	Not recommended
Laparoscopic procedures without entry into bowel or vagina	Not recommended
Hysterosalpingogram†† Chromotubation Saline infusion sonography	Not recommended
Hysteroscopy Operative Diagnostic	Not recommended
Intrauterine device insertion	Not recommended
Oocyte retrieval	Not recommended
D&C for nonpregnancy indications	Not recommended
Urodynamics**	Not recommended

RESULTS

- 169 gynecologic surgeries met criteria for no antibiotics indicated for procedure.
- There was misuse of antibiotic prophylaxis in 98 of 169 cases (57.99%).
- Using chi square test, the p-value is 0.00001, which is statistically significant ($p < 0.5$).
- Case categories were laparotomy without entry into the bowel or vagina (5/98, 5.10%), cervical tissue excision procedures (6/98, 6.1%), cystoscopy (2/98, 2.04%), laparoscopic procedures without entry into the bowel or vagina (60/98, 61.2%), operative and diagnostic hysteroscopy (33/98, 33.7%), D&C for non-pregnancy indications (2/98, 2.0%), cervical cerclage (1/98, 1.0%), and vaginal skin procedures (6/98, 6.1%).
- The most common procedure with antibiotic misuse were laparoscopic procedures.
- Cefazolin was the most commonly utilized antimicrobial at 84.8%.
- Other antimicrobials ordered and dispensed incorrectly included Clindamycin (6.1%), Clindamycin in combination with Gentamicin (4.1%), Doxycycline (4.1%), and Doxycycline in combination with Cefazolin (1.0%).

CONCLUSION

- The results of this study demonstrated the overuse of antibiotics prior to gynecologic surgeries, despite antibiotics not being indicated for those procedures as recommended by ACOG.
- According to the Center for Disease Control (CDC), 20-50% of all antibiotics prescribed

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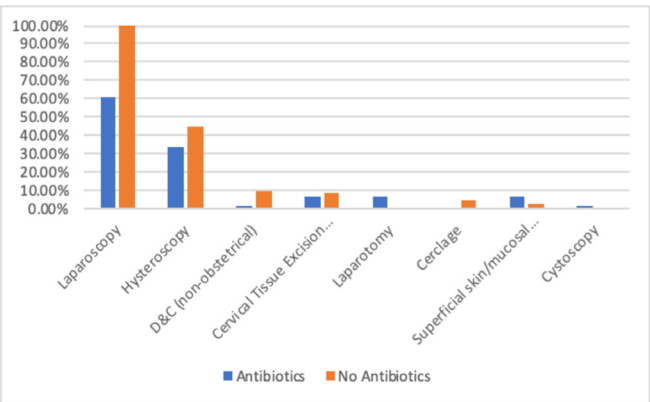
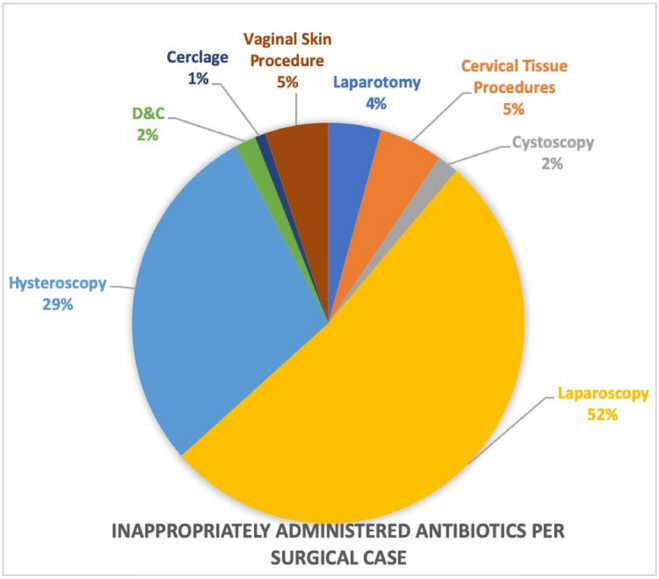


Figure 2: Cases for which antibiotics are not recommended categorized by procedure type. Blue indicates antibiotics given, orange indicates antibiotics were not given.



in the United States are unnecessary or inappropriate (4).

- The CDC reports that more than two million people possess antibiotic resistant organisms, leading to about 23,000 deaths annually from infection that are unable to be treated (4).
- Antibiotic Stewardship Programs contain various aspects to approach limiting antibiotic distribution including antibiotic "time outs" and continued employee education.
- Hospitals should monitor antibiotic distribution to identify trends and correct over-distribution as needed.
- Having one standard set of guidelines and recommendations in each field allows unison amongst practicing physicians (ACOG for OB/GYNs)
- Strengths of the study: moderate case numbers and statistically significant amount of misuse of antibiotics for surgical prophylaxis
- Weakness of the study: limited to one hospital
- Future study ideas: expand data with multiple hospitals, evaluate state-wide and regional differences, implement electronic medical record changes
- The end goal is placing patient health and antibiotic stewardship at the forefront of the healthcare field

ACKNOWLEDGEMENTS

We would like to give a special thanks to Hennah Patel for her assistance in data gathering and chart review for this project. We would also like to thank Michael Smith for the access to the materials provided for this retrospective chart review.

REFERENCES

- Cerclage for the management of cervical insufficiency. Practice Bulletin No. 142. American College of Obstetricians and Gynecologists. Obstet Gynecol 2014;123:372–9.
- Prevention of infection after gynecologic procedures. ACOG Practice Bulletin No. 195. American College of Obstetricians and Gynecologists. Obstet Gynecol 2018;131:e172–89.
- Parker MD. Abdominal Myomectomy. Post TW, ed. UpToDate. Waltham, MA: UpToDate Inc. https://www.uptodate.com (Accessed on October 29, 2019).
- Core Elements of Hospital Antibiotic Stewardship Programs. Centers for Disease Control and Prevention, Centers for Disease Control and Prevention, 15 Nov. 2019, www.cdc.gov/antibiotic-use/core-elements/hospital.html.

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(Continued from Page 38)

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