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 Postgraduate, Research Programs, Faculty Development and Development of Educational Networks in women’s health care.
MEFACOOG’s mission is to foster ongoing improvements in women’s healthcare and support osteopathic lifelong educational opportunities. We achieve this through: continuing medical education; undergraduate, graduate and postgraduate research programs; faculty development; and, facilitating educational networks. MEFACOOG sponsored programs and events staged during the past 12 months have enabled us to make progress towards achieving our mission goals. Highlights for the year include:

• **Resident Reporter Program** – This year, the MEFACOOG Board and the ACOOG Board agreed to co-fund eight Resident Reporters. This represents an increase of 3 scholarships compared to the prior year.

• **Resident Research Forum**- 2nd year residents are required to attend so that they may be educated in research methodology as well as the overall process in conducting research in their respective specialties.

• **$1500 annual stipend available to all COM campuses**- A $500 grant is provided so that a delegate and/or alternate may attend ACOOG Fall Conference NSS Meeting. An additional $1000 is provided to each school scheduling a Visiting Professor. This can be used to fund projects in the community or on campus and to facilitate student clubs. The NSS and Visiting Professor programs help foster mentoring opportunities, student interest in the specialty, and networking with leadership and residents.

• **Community Service Projects** –Past projects have included:
  • Home builds in New Orleans after Hurricane Katrina
  • Women’s support organizations in Fort Worth and Philadelphia
  • After school community center and Build-a Bike program in Chicago

Such projects permit a chance for students, residents, and members to work together and alongside members of a community in a worthwhile project. We look forward to a new program at the Fall meeting in Philadelphia 2017.

• **Provided sponsorship for four endowed lectures:**
  • Gail Goldsmith
  • Barbara Hawkes
  • Past Presidents
  • MEFACOOG Distinguished Lecture

• The Gail Goldsmith Lecture has completed its 10-year run. The MEFACOOG and ACOOG Boards are working together to fund a creative and useful place to deposit the remaining corpus that honors Gail and serves the College and its members.

**New Programs and Initiatives:**

• A new fundraising module and MEFACOOG website have been launched creating an ease of donation we have not experienced in the past.

• For the first time, MEFACOOG received a substantial gift in the form of donated stock. This is one of many available options for planned giving and we hope to educate the membership for increased participation in this regard.

Regardless of any new initiatives, we will maintain our focus on six primary areas:

• Education

• Lectures - Our goal is to have enough money
to fund five fully endowed lectureship ($50,000 each or $250,000 total).

• Scholarship
  • Resident Reporter
  • NSS Society
  • Community Service

• Research
• Fundraising to support the College
• Service projects in the cities we visit

As we continue to develop new programs and events promoting medical education, we would like to extend a heartfelt thank you to all of our donors and supporters. It is only through your continued financial support and volunteerism that we are able to provide such opportunities. The MEFACOG mission is very important and we greatly appreciate your continued support.

This will be my final opportunity to address the College and MEFACOG as an officer. I began my service to the College in 1993 as the resident representative to the Board. After a few years of committee service, I was nominated to the College Board in 2005 and have served continuously for the past 12 years. My service to the College and MEFACOG has been one of the true highlights of my career, and I want to end with deep gratitude for my mentors, for the leaders who came before me and encouraged me, to those who followed me as an officer, to the membership, and to the professional staff of the ACOOG. Thank you for giving me this opportunity to serve the College I love.

Fraternally,

David A. Forstein, DO, FACOOG (Dist)
Dear Members of the Osteopathic OBGYN Community,

The Medical Education Foundation has welcomed many changes this year. New officers were Thomas Alderson, DO-Vice Chair and Kimberlee Perkins, DO-Secretary Treasurer. New trustees are Eric Carlson, DO, Thomas Dardarian, DO, and Miguel Fernandez, DO. Please welcome them and share your ideas.

I wish to express my appreciation for our new donors and those that consistently support the mission of the foundation on an annual basis. The primary fundraising initiative for 2016 (and until achieved) is the $50,000 goal to fund the Distinguished Fellows Lecture endowment for 20 years. Total donations for the endowment at year end were $27,365 approximately 55% of our goal. As you attend the endowed lectures at this annual conference, know that the Foundation and its supporters are committed to providing quality CME for our members far into the future.

Did you know? Donors have the ability to restrict their donation to any of the following programs/initiatives:
- National Student Society of ACOOG
- Resident Reporter Program
- Endowed Lectureships (Distinguished Fellows, OMM, Past Presidents, MEFACOOG Distinguished, Barbara Hawkes)
- Visiting Professor Program (VPROF)
- Osteopathic Graduate Medical Education
- Postgraduate Research Awards
- Fundraising Events
- Community Service Projects

This is a great opportunity if you’ve been a recipient of a particular award or scholarship and want to support the participation of another young ACOOG member. The Resident Reporter Scholarship Program alone has benefited more than 300 residents, many of whom have gone on to serve in ACOOG leadership roles. Other postgraduate training resources supported by MEFACOOG include online evaluation systems, research training modules, and the OMM video curriculum. Endowed lectures ensure that quality CME sessions will continue to be offered while allowing some relief of ever increasing conference production costs. Awarding excellence in research will provide the foundation for bringing osteopathic education principles to the greater OBGYN community.

Continuing to provide educational opportunities for our members is crucial; beginning with medical students, through postgraduate training, continuing medical education, and osteopathic continuous certification.

Sincerest Thanks,

Valerie Bakies Lile, CAE, FACOOG(Hon)
Executive Director
CALL FOR VOLUNTEERS

MEDICAL EDUCATION FOUNDATION OF ACOOG

Are you looking for a new way to be involved? Do you enjoy developing innovative educational programs or social philanthropy? Being a MEFACOOG Board Member could be for you! MEFACOOG volunteer leaders can be physicians, educators, non-physician clinicians, spouses/family of ACOOG members, health care industry supporters….anyone with a passion for women’s health!

Several positions will be open for nomination this year and we need your expertise. The MEFACOOG Board of Trustees meets twice per year with one meeting usually conducted by phone or web conference. The primary, in-person meeting of the MEFACOOG Board coincides with the ACOOG Annual Conference.

Key MEFACOOG activities include:

- Community Service Projects-past projects include work at a youth community center in Chicago, home repairs in New Orleans for Katrina recovery effort, blood drives, and support for a residential home for pregnant mothers in crisis.
- Resident and Postgraduate Fellow Research Awards and Grants
- Resident Reporter Scholarships provide an opportunity for residents to attend an ACOOG conference and potential article publication
- Resident Education Resources (OMM video curriculum, L3 for Residents quarterly learning modules)
- Endowed lectureships for CME (Lifelong Learning for attending physicians)
- Support for Osteopathic Continuous Certification (Lifelong Learning, Practice Performance Improvement for attending physicians)
- Annual Golf Tournament
- Fundraising events such as the ‘Evening with the Stars’ planetarium function and Cirque Du Soleil Mystere

This is just an overview of the potential that exists with MEFACOOG. We welcome new opportunities, new leaders, and new ideas!

If you are interested in MEFACOOG Board of Trustees service, please forward a statement of interest and a brief bio or CV to Valerie Bakies Lile, CAE by email to vblile@acoog.org or by fax to (817)377-0439 by February 1, 2018.
Medical Education Foundation
of the
American College of Osteopathic Obstetricians and Gynecologists

RECURRING GIFT FORM

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☐ Please draft my bank account*  ☐ monthly ($25 minimum) or  ☐ quarterly ($75 minimum)

Enclose a voided check for accuracy ★ Bank Draft Start Date (circle one): 15th  25th

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Signature: ____________________________ Date: __________________________

Please designate to help support the following programs:

☐ MEFACOOG General Support
☐ Gail Goldsmith Memorial Lecture (Annual Conference)
☐ Barbara Hawkes & Honorary Fellows Address (Annual Conference)
☐ MEFACOOG Distinguished Lecture (Annual Conference)
☐ Past President’s Honorary Lecture (Fall Conference)
☐ National Student Society of the ACOOG Scholarship grant
☐ Visiting Professor Program
☐ MEFACOOG Fall Service Project

* This agreement will remain in effect until MEFACOOG receives written notification of termination. Quarterly donations will occur every three months after the first gift.

Return this form to: 8851 Camp Bowie West, Suite 275, Fort Worth, TX 76116
Fax: 817-377-0439

ANNUAL REPORT 2016  MEFACOOG  7
ACOOG Calendar of Events

2017 Fall Conference
In conjunction with OMED
October 7-11, 2017
Philadelphia, PA

86th Annual Conference
March 24-29, 2019
Hilton Riverside
New Orleans, LA

85th Annual Conference
April 8-13, 2018
Waldorf Astoria Bonnet Creek
Orlando, FL

87th Annual Conference
March 29-April 2, 2020
Hilton La Jolla Torrey Pines
San Diego, CA
The Resident Reporter Program at the 83rd Annual Conference in Fort Lauderdale, FL received fine contributions from the residents who participated. The top three papers given monetary awards and publication in the MEFACOOG Annual Report were:

**Sandricka Collier** - Community Health of South Florida, Miami, FL

“Management of Endometrial Hyperplasia in the Young Adult”
Article based upon a lecture by Jeffery James, DO

**Kimberly Portale, DO** - Western U/COMP Arrowhead Regional Med. Ctr, Colton, CA

“Placenta Accreta”
Article based upon a lecture by Rupesh Patel, DO

**Sarah Steele, DO** - Metro Health Hospital, Wyoming, MI

Article based upon a lecture by Jennifer Nichols, DO

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Plan your research project now!

The MEFACOOG Research Grant of up to $5,000 is open to all residents, fellows and junior faculty in Osteopathic Postdoctoral Training Institutions to support research efforts. The deadline date for the MEFACOOG Research Grant is November 1, of each year prior to our Annual Conference. Get your application and guidelines on the MEFACOOG website under Research Grant Award.
Endometrial Hyperplasia (EH) is a complex condition often characterized by the presentation of abnormal uterine bleeding. EH results from increased estrogenic stimulation of the endometrium, leading to increased proliferation of glands resulting in a greater gland to stroma ratio than observed in normal endometrium. Endometrial hyperplasia can be the result of, or a confounding manifestation of, a wide variety of conditions including polycystic ovarian syndrome, uterine fibroids, endometrial polyps, etc. EH is of clinical significance because it is often a precursor lesion to endometrial adenocarcinoma.

Historically, we have been taught to focus on EH during the perimenopausal or post-menopause state when ovulation slows, and progesterone is no longer made. The age of 45 sited as the “threshold” for EH. This is due to the fact that adenocarcinoma of the endometrium affects women primarily in the perimenopausal and postmenopausal periods and is most frequently diagnosed in those between the ages of 50 and 65 years. However, it must not be forgotten that these cancers have also been known to develop before the end of the reproductive years, with approximately 10% to 15% in women younger than 50, and 5% of cases diagnosed in women younger than 40. Additional risk factors for the development of hyper-estrogenic states leading to EH including type II diabetes, exercised induced amenorrhea, polycystic ovarian syndrome, and obesity. All of which are known to occur in younger populations with obesity becoming a major epidemic in young adults and placing those women affected at a 2 to 4 times higher risk of developing endometrial cancer.

It is important to discuss both types of hyperplasia as well as the untreated potential consequence of endometrial cancer. Currently there are two diagnostic classification schemes in place for EH: World Health Organization 1994 (WHO94) classification system and the Endometrial Intraepithelial Neoplasia (EIN) classification system. According to the WHO94 classifications system, Simple Hyperplasia (SH) carries the least risk for progression. This is followed by Complex Hyperplasia (CH), Simple Atypical Hyperplasia (SAH) and Complex Atypical Hyperplasia (CAH). This scheme was developed with a goal of standardizing terminology worldwide and is based on glandular complexity and nuclear atypia, with a known progressive risk of developing endometrial cancer of <1%, 3%, 8%, and 29%, respectively.

In contrast, the EIN classification uses integrated morphological, genetic molecular, cell biological, and prognostic morphometrical studies. This pathologic criteria were used to develop three disease categories: 1) benign (benign endometrial hyperplasia), 2) premalignant (endometrial intraepithelial neoplasia), and 3) malignant (endometrial adenocarcinoma, endometrioid type, well differentiated) 2. This scheme was developed with a goal of removing many of the subjective aspects of the WHO94 criteria, provide increased interobserver reproducibility, and disease-specific classification that inform treatment decisions. Information is then measured using computerized morphometric analysis and assigned a D-score with specimens are classified as benign (D >1), indeterminate (0<D<1), or EIN (D <0) 3.

Endometrial carcinoma itself is the most common malignancy of the lower female genital tract in the United States. With approximately 42,000 new cases developing each year. Overall, approximately 3 in 100 women in the United States will develop this disease during their lives. There are two types of endometrial cancer, subdivided by histology. Type I accounts for 80% of all endometrial cancer and arises in a background of atypical hyperplasia, this is typically the result of unopposed estrogen weather endogenous or

(Continued on Page 11)
exogenous and has been linked to obesity. Type II includes clear cell and papillary serous carcinoma and occurs in the setting of an atrophic endometrium.

In recognition of the facts that the vast majority of endometrial cancer arises from hyper-estrogenic states, and that the various types of hyperplasia are progressive in nature, it is important to remember that those affected are at risk for both concurrent and subsequent endometrial cancer. A few studies, although small in number, have shown in women with the diagnosis of CAH are at a higher risk of having undiagnosed Endometrial Cancer. 17-52% of those women were found to have concurrent Endometrial Carcinoma when further testing was done4-5. Therefore, it is contended that treatment should occur early in the process so as to prevent this said progression.

Management, evaluation, and treatment strategies are multifactorial and should first begin with identification of women at increased risk, without simply allowing age to be the guiding factor. Factors placing young women at risk should be identified including obesity, type II diabetes, polycystic ovarian syndrome, as well as those with persistent abnormal uterine bleeding in spite of medical management. Once these women are identified, initial work-up should mimic that of women in the peri and postmenopausal states, and should involve a thorough physical examination, the use of imaging to rule out additional etiologies, biopsies to assess the category of hyperplasia (simple vs complex, with or without atypia), as well an open and honest discussion with patients to assess their desire for future fertility as well as possible risk for progression to malignancy.

For those women desiring future fertility, as is thought to be the case in many young adults, combination regimens involving systemic as well as localized progestin therapy are suggested. This might include: Depo Provera injections, Levonorgestrel-releasing intra-uterine device, and Megestrol acetate 80mg bid (can increase to 160mg bid), to name a few. Progestin therapy is believed to; reverse hyperplasia by activation of progesterone receptors, producing stromal decidualization and thinning of the endometrium6. Studies have shown, that the use of progestins decreased the risk of endometrial carcinoma by approximately 65% in women with CH and 77% in women SAH, respectively 7,8. Also of note systematic review of the contemporary literature has shown that, EH has a significantly higher likelihood of response (66%) to hormonal therapy than grade 1 endometrial carcinoma (48%), advocating for early hormonal intervention. Suggested intervals for follow-up monitoring and surveillance include initial re-sampling in 3 months with maintenance testing consisting of repeat endometrial biopsies every 6-12 months.

Early identification of at risk young women as well as open dialogs about desire for future fertility and treatment options allow for women to make autonomous decisions. This would offer physicians an opportunity to better assess patient needs, allowing both parties to play an early and active role in the prevention of disease progression.

References:
Placenta Accreta (PA) is an increasingly important topic for an Obstetrician Gynecologist, especially since the number of uterine surgeries during the reproductive life of women seems to be on the incline. The sonographic diagnosis of the potential of a PA may strike fear into the resident or attending contemplating their first cesarean hysterectomy. In the hands of a dedicated, and prepared team, outcomes should be good. The following is an overview of PA types and strategies for treatment.

Placenta Accreta is one of the three conditions labeled as “morbidly adherent placenta” or MAP. This entity includes PA (75-80% of MAP), (PI) Placenta Increta (17%) and Placenta Percreta (5%), all resultant from a defect in Nitabuch’s layer of the uterus. This layer is formed from the decidua basalis layer of the endometrium. As placental trophoblasts invade the endometrium they attach themselves to the spiral arteries and decidua and typically form a basal plate at the decidua basalis, which will allow a physiologic separation at delivery. (1) A defect or even absence of this Nitabuch’s layer is more prevalent in patients who have prior uterine scarring from cesarean sections, vigorous curettage or myomectomy as well as endometrial ablation. Another risk factor is smoking. The condition is also increased if there is a concurrent placenta previa. In fact, the risk of a MAP with a placenta previa and one prior cesarean delivery is 11% and 40% with two prior cesarean scars. (2)

The incidence of MAP in the United States was 1 in 30,000 deliveries in the 1960’s and is steadily increasing from 1 in 2,500 deliveries between 1985-1994 to the current estimate of 1 in 300 deliveries. (2)

The significance of MAP comes from the morbidity and mortality with which it is associated. Estimated blood flow in the intervillous spaces is 600mL/minute in a near term pregnancy. (1) As soon as the placenta separates, all of the avulsed blood vessels must undergo compression and normal coagulation. Due to the abnormal endometrial and myometrial invasion of an accreta, normal mechanisms for coagulation are inadequate. Blood transfusion is required in 90% of deliveries complicated by MAP, with 40% of patients requiring more than 10 units of packed cells. (3) Average blood loss is 3,000-5,000mL. Approximately 90% of patients in one study, had a blood loss of 3,000mL or greater with removal of the placenta during cesarean delivery. (3) Beside hemorrhage, other complications include disseminated intravascular coagulation (DIC), organ failure, thromboembolism, intraoperative injuries, wound separations and infections. (2) Mortality is reported as high as 7%. (2, 3)

Early recognition of PA can lead to optimal patient counseling and delivery planning. Multiple articles agree that ultrasound is a sensitive and accurate diagnostic modality for MAP, and that MRI can be a helpful adjunct especially in cases of posterior placenta or inconclusive ultrasound findings. In two studies referenced by Silver, (2) the sensitivity and specificity of second and third trimester ultrasound for identifying PA are 80-90%. These numbers may be somewhat higher because the clinical history with suspicion for a placental abnormality was known. In the second and third trimester, ultrasound can typically find a hypoechoic boundary between the retroplacental edge and the myometrium. There is also typically a distinction between the uterine serosa and the bladder. If this interface is missing, suspicion is raised for MAP. Also suspicious are multiple, irregularly shaped placental lacunae, thin (1mm) myometrium over the placenta and increased vascularity of the uterine-bladder interface. Even in the first trimester, clues to a potential developing PA include a gestational sac implanting lower in the uterus and irregular placental bed vascular spaces.

Once diagnosis is made or suspected, the patient should be thoroughly counseled and the deliv-
ery plan made. The patient should be referred, if necessary, to an appropriate facility which can accommodate the potential complications. A planned delivery, usually at 34-35 weeks, is shown to have decreased blood loss and offer better outcomes when compared to unplanned delivery. Planned delivery allows for timing to obtain informed consent, give corticosteroids for lung maturity, accrue blood products and assemble a delivery team. The team can include the delivering obstetrician, maternal fetal medicine, anesthesiology, urology, interventional radiology, neonatology, nursing and operating room staff. As appropriate to individual facilities, the team may include more or less than this staff. An example of a predelivery checklist can be found in Silver’s article. Unfortunately, planned delivery cannot always be accomplished, as in the case of antepartum bleeding or preterm labor, but early counseling will at least prepare the patient for potential outcomes.

Delivery is typically accomplished by cesarean hysterectomy without attempt at placental removal. Anesthesia can be regional or general depending on the team’s preference. Combined strategies have also been used, with regional anesthesia employed for the cesarean with subsequent general anesthesia for hysterectomy. The literature provides mixed results on the benefits of placing internal iliac artery balloon catheters for reduced blood loss, but they may be helpful on a case by case basis. The study by Salim found no significant difference in the amount of packed red cells transfused, however, there were reversible adverse effects in 2 of the 13 women who had catheters placed. In Warshak’s study, patients received prophylactic internal iliac balloons based on “the extent of the PA and degree of involved vascularity” but a specific number of patients is not reported. These balloons were inflated only as needed to assist in clearing the surgical field if significant bleeding was encountered. Another consideration is placement of ureteral stents prior to hysterectomy.

Warshak’s article relays the experience of one center and their outcome difference between antenatally diagnosed or suspected accreta versus incidental finding of MAP. Cases of MAP were histologically confirmed and included 99 patients. Their medical records were examined. Of those cases of MAP, 62 had been diagnosed antenatally. Delivery was planned for 34-35 weeks, but, for various reasons, 22 of these patients were delivered early emergently. Patients with a diagnosis prior to delivery had a mean red blood cell transfusion of 4.7 units compared to 6.9 units for those diagnosed at delivery. Steroid administration for fetal lung maturity was 65% in those diagnosed antenatally and the infant neonatal intensive care admission was 86% compared to 60% of those when accreta diagnosed at delivery. Fetal outcomes of respiratory distress syndrome or administration of surfactant were not significantly different. Diagnosis before delivery had a significant effect on maternal hemorrhagic morbidity.

In the event the patient strongly desires to keep her uterus or removal of the placenta may be too dangerous to accomplish (for example in a Placenta Percreta to the liver or abdominal vessels), there is an option to conservatively manage MAP. If this is desired, the umbilical cord is ligated, and the placenta is left in place to resorb. Leaving the placenta in situ is associated with increased infection risk and potential failure including delayed hemorrhage, sepsis, uterine necrosis, DIC or fistula. Patients should be counseled that even a plan to leave the placenta in place may not be possible if there is deep invasion with the percreta. Of 57 cases of Placenta Percreta where the delivery plan was conservative management, 60% of the patients required additional surgery, 40% needed hysterectomy, and 42% had a major morbidity including DIC, sepsis and fistula. In other conservative management options, there may be delayed treatments with hysteroscopic resection of a placental site remnants or even delayed hysterectomy. Hysteroscopic resection was only studied in accreta, not increta or percreta cases. Ultrasound guidance or laparoscopy could be used along with hysteroscopy to monitor depth of resection. Another conservative method is to resect the focal portion of PA or percreta along with its surrounding myometrium and repair the defect. This works best with central defects and not with lateral defects or invasion near the broad ligament, ureters or cervix. Methotrexate does not seem to hasten the involution and is no longer recommended. Success in conservative

(Continued on Page 14)
management should be clearly discussed with the patient and can be defined by the preservation of fertility and/or a decrease in immediate complications. The risks of conservative management and the risk of recurrence of MAP in 28% of those who chose to have a subsequent pregnancy should also be discussed. (2)

The cesarean delivery rate is a current topic of eager discussion, and as long as it remains approximately 30% (2014 CDC data), we will continue to have to manage MAP. With appropriate planning and counseling, this undesired complication of pregnancy could be successfully managed with good maternal and fetal outcomes.

References:
Infertility is a common problem that is encountered by the OB-GYN generalist. With many delaying starting a family, infertility rates appear to be on the raise. Treatment options often appear complex and a consultation may become prudent. A willing generalist, prior to referral, can easily complete many initial steps in the infertility workup.

Infertility is defined as 12 months of frequent, unprotected intercourse without conception. Most consider this the length of time after which an infertility work up or a referral would be warranted. Statistically, 85% of couples will conceive within 1 year. Waiting an additional year before investigation raises the pregnancy rates to only 93%, therefore it makes sense to start a work up or a referral at a year. There are several patients that would benefit an earlier evaluation. If the woman is over 35, has a history of frequent loss, or history of abdominal surgery, for example, a more rapid referral may be considered.

The work up schematic should start with a complete and thorough history and physical exam. The woman should be questioned about her reproductive history, her menstrual history, pain with intercourse, history of STD’s, pap smear history, and symptoms of galactorrhea or signs or hirsutism. She should also be questioned about her general medical history including illnesses, medications, allergies, surgeries, and social history. A family history of birth defects, early menopause or infertility should also be obtained. A comprehensive physical exam including vitals, general appearance, thyroid, breasts exam, pelvic exam, signs of virilization or hirsutism should be done. Obesity also has been well documented as a reversible etiology of difficulty with conception in women compared to their normal weight, age matched controls. Once pregnant, the obese patient carries a higher risk than that of their normal weight peers. While it may be difficult to discuss the very sensitive weight issue, it is imperative that these women understand the effect being overweight or obese has on their likelihood of successful conception. If the patients weight warrants it, this would be the ideal time to counsel this patient on the dangers of insulin resistance, not just in regards to her fertility.

Typical initial labs include thyroid function studies, a prolactin level, hormones that test ovarian reserve, clomiphene citrate challenge test, chlamydia antibody testing, communicable disease testing and possibly preconception genetic testing if there is a family history of genetic diseases.

Diagnostic studies may include Hysterosalpingogram (HSG), saline infusion sonohysterography (SIS) or a hysteroscopy. The value of these testing modalities would be greater if a history or pelvic infection or previous pelvic surgery were obtained. Transvagal ultrasound may be used to diagnose polyps, fibroids, hydrosalpinges, ovarian cysts and endometrial stripe thickness. The ultrasound can also be used to monitor follicle growth.

Semen analysis should be considered early in the workup to rule out male factor infertility. If the initial semen analysis is abnormal, repeat the test as normal values vary with labs. If two abnormal tests are obtained, urologic referral to one who specializes in male factor infertility is warranted. This work up may include: FSH, total testosterone (may require further analysis of free and total testosterone if the initial value is less than 300), LH, TSH, prolactin and possibly an inhibit B.

Additional testing may include a trans-rectal or trans-scrotal ultrasound to evaluate structural defects. Other tests for male factor infertility include: sperm leukocytes, Anti-sperm antibodies, penetration testing, sperm viability and DNA fragmentation testing. The male

(Continued on Page 16)
partner may also undergo genetic testing to look for things like cystic fibrosis or karyotype testing for Klinefelter syndrome, 46XY with SRY gene translocation or Y chromosome micro deletions. The number of sperm needed for successful conception varies greatly from over 20 million for regular intercourse to one sperm for IVF (in-vitro-fertilization) with Intra-cytoplasmic sperm injection (ICSI).

Ovulatory function testing can be done with a variety of methods. Basal body temperature is of limited value since it doesn’t show measurable changes until after ovulation and is not commonly used. The Ovulation predictor kit, which is readily available over the counter, has an advantage of being easy to use. The LH surge is typically seen 1-2 days prior to ovulation, making the kit an excellent tool in timed intercourse or insemination. The downside is ovulation prediction has been shown to have a high false positive and false negative rate. Another way to measure ovulatory function is serum mid luteal progesterone level. A value of greater than 3 is considered predictive of ovulation and a value greater that 10 is thought to be indicative of good luteal function. A transvaginal ultrasound can also be used to count the number of developing follicles (antral follicle count) as a marker of ovarian function. A day 3 FSH (follicle stimulating hormone) and estradiol level can also be used to predict ovarian function as well as portend a poor response to ovarian stimulation attempts. A clomiphene citrate challenge test is another way that can be employed to measure ovarian response and likelihood of success of future ovulation induction attempts. A newer test for ovarian reserve is the measurement of an anti-mullerian hormone level. Anti-mullein hormone is secreted by the granulosa cells of the primordial follicles and becoming a common test due to its relative consistency throughout the menstrual cycle and therefore ability to be drawn at any time. The former gold standard, the late luteal phase endometrial biopsy, is less unreliable and has fallen out of favor.

Female partner tubal factor infertility can be investigated with a SIS, HSG or by chromopertubation at the time of laparoscopy. HSG has long been considered the initial study for evaluating tubal potency and has the advantage of being able to visualize the uterine cavity and the bilateral tubes simultaneously. While this was thought to be both diagnostic and therapeutic, (due to lavage of tubes by the oil media) this same therapeutic effect may not hold true with newer water based media. An SIS is an alternative that provides excellent views of the uterine cavity but has the downside of being unable to differentiate unilateral from bilateral tubal blockage or obstruction. The best study to evaluate the endometrial cavity is hysteroscopy. It provides real time views of the entire uterine cavity as well as the opportunity to treat existing endometrial pathology when it is encountered.

Laparoscopy is no longer considered a primary initial mainstay of the infertility workup except in cases of suspected peritoneal disease (adhesions, endometriosis) where it remains the treatment of choice. Laparoscopy may be particularly useful in cases of unexplained infertility with one small study showing 82% of patients with unexplained infertility having abnormalities at the time of laparoscopy and an impressive subsequent pregnancy rate of 49% when addressing adhesive disease and endometriosis. An additional benefit of laparoscopy includes the ability to obtain visual proof of bilateral tubal patency.

When a general Ob-gyn decides to pursue treatment of infertility with their patients, they should offer “best practice” workup testing and a thorough understanding of any treatment modalities to offer their patients. It would be reasonable, depending on the cause or lack of identification of the cause of infertility, to attempt 3-6 cycles of clomiphene citrate (50 mg cycle days 5-9) or (Letrozole 2.5 mg cycle days 5-9) as initial therapy. Potentially adding on an ovulation trigger such as Ovidrel (chorio gonado-tropin alfa injection, 250 mcg subcuticular) may be considered, as long as the patients are being carefully monitored with labs and/or serial ultrasounds during the ovulation cycle. If no pregnancy has resulted after 3-6 cycles it is unlikely the patient will conceive using oral or injectable ovulation induction agents alone. At this point the generalist may choose to use one of the many available injectable gonadotropin formulations to help a couple conceive, however referral consultation may improve
pregnancy success rates and cost benefit ratios.

If the cause or partial cause of infertility is found to be male factor infertility the provider may combine any of the above modalities with intrauterine insemination (IUI). This process which concentrates the sperm and puts them in closer proximity to the egg, thus increasing the chances of conception. The risk of multiple gestations must also be carefully considered and the patient must be appropriately counseled about this risk. The provider must also be willing to cancel an ovulation cycle or IUI attempt if the risk of multiple gestations exists.

When none of the above options have resulted in fertility, or the general Ob-Gyn is uncomfortable performing any of the procedure or treatment plans outlined above, a referral to Reproductive Endocrinologist is appropriate. This referral may also be done at any point the couple desires IVF or peri implantation genetic diagnosis, both of which would be outside the scope of a general OB-Gyn provider.

A general OB-GYN who undertakes evaluation and treatment should always be cognizant of the need to partner with their patients as they walk through this journey and be willing to keep the patients desires (ie rapid referral vs watchful waiting and expectant management or cost conserving therapies) at the center of any treatment plan. Infertility can be an arduous and frustrating journey for a couple, but a dedicated Ob-Gyn with help from a REI specialist can make this journey easier and ideally end with fulfilling the couples desire for a child.

References:


Unfortunately, our economic status has remained relatively the same the past few years. The Medical Education Foundation relies more and more 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, 2016. As you can see, we were once again down in both individual and corporate contributions. 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 Resident Research Grant- encouraging research in osteopathic OB/GYN residency and fellowship programs.

The 83rd Annual Conference of the ACOOG hosted four ongoing funded lectureships. The Barbara Hawkes Memorial Lecture; also the college’s first endowment memorial lectureship, was given by Michael J Geria, DO. The MEFACOOG Distinguished Lecture was presented by Michael R. Harrison, MD. The Distinguished Fellows Lecture was presented by Michael Krychman, MD. MEFACOOG Gail Goldsmith Memorial Lectureship was presented this year by Roger Smith, MD.

The ninth of a ten year endowment of the MEFACOOG Past President’s Honorary Lectureship was presented by Patrick Catalano, MD at our 2016 Fall Conference in Cleveland, OH.

The National Student Society of the ACOOG met for the eighth time in Cleveland, OH at the ACOOG Fall Conference. The online Research Training Course was funded for all residency programs through a MEFACOOG gant. These projects would not be possible without the support of you, the donors. Thank you for your continuing support.

### Financial Review

#### Statement of Activities

<table>
<thead>
<tr>
<th>Year Ended December 31, 2016</th>
<th>Support</th>
<th>Expenses</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Support</td>
<td>$124,288</td>
</tr>
<tr>
<td></td>
<td>Total Expenses</td>
<td>$96,184</td>
</tr>
</tbody>
</table>

| Corporate Contributions | $5,000 |
| Individual Contributions | $41,811 |
| Fund Raising | $0 |
| Interest & Dividends | $17,138 |
| Realized & Unrealized | $14,249 |
| In-Kind Contributions | $41,567 |
| Donated Stock | $4,523 |
| Restrictions Satisfied | $0 |

### Statement of Financial Position

<table>
<thead>
<tr>
<th>Year Ended December 31, 2016</th>
<th>Assets</th>
<th>Liabilities and Net Assets</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Assets</td>
<td>$566,725</td>
</tr>
<tr>
<td></td>
<td>Total Liabilities and Net Assets</td>
<td>$566,725</td>
</tr>
</tbody>
</table>

| Current Assets | $46,003 |
| Investments | $514,372 |
| Due from ACOOG | $6,350 |

| Accounts Payable | $15,071 |
| Due from ACOOG | $0.00 |
| Deferred Revenue | $0.00 |
| Net Assets | $551,654 |
Abstract:

Objective: The purpose of this study was to determine the likelihood of abnormal Doppler velocimetry in appropriately grown fetuses of high-risk pregnancies, and to evaluate whether these abnormal velocimetry predicted adverse outcomes.

Study Design: Retrospective review of high-risk pregnancies with AGA fetuses that underwent sonographic surveillance with serial biometry and Doppler assessment, between January 2012 and December 2013, at a single institution. High-risk pregnancies included those with maternal and pregnancy-specific conditions known to interfere with uterine-placental perfusion, and fetal nutrition, and therefore increase perinatal morbidity and mortality. Abnormal umbilical artery Doppler (UA) was defined as a pulsatility index (PI) or S/D >95% or absent/reversed end diastolic velocity. Abnormal middle cerebral artery Doppler (MCA) was defined as a PI <5%. Statistics: student’s t-test, chi-squared test, Fisher’s exact test, Welch-Satterthwaite t-test and univariate analysis were used as appropriate. A p-value of <0.05 was considered statistically significant. Multiple logistic regression models were used to detect significant predictors for early delivery and NICU admission.

Results: 287 high-risk AGA pregnancies were evaluated. Pregnancies complicated by hypertension or preeclampsia had statistically significant increased risk for abnormal UA or MCA Dopplers (p=0.0013 and p=0.0086, respectively). Pregnancies with hypertension or preeclampsia and abnormal Dopplers were significantly more likely to deliver preterm (p=0.0066 and p<0.0001, respectively). Fetuses that exhibited abnormal Dopplers were significantly more likely to be admitted to the NICU after birth (p = 0.0107) and to stay in the NICU for > 7 days (p=0.0045), and more likely to exhibit respiratory distress syndrome (p = 0.0338).

Conclusion: In high-risk pregnancies, blood flow patterns within the fetoplacental circulation may be altered, yet these changes may not be reflected in the evaluation of fetal growth.

Objectives:

The purpose of this study was to determine the likelihood of abnormal Doppler velocimetry in appropriately grown fetuses of high-risk pregnancies, and to evaluate whether these abnormal velocimetry predicted adverse outcomes.

Methods:

Retrospective review of high-risk pregnancies with appropriate-for-gestational-age (AGA) fetuses that underwent sonographic surveillance, between January 2012 and December 2013, in Pinnacle Hospital, Harrisburg, PA. The study was approved by the institution’s IRB. High-risk pregnancies included those with maternal and/or pregnancy-related conditions known to interfere with uterine-placental perfusion & fetal nutrition, and therefore increase perinatal morbidity and mortality. Sonographic surveillance included multi-vessel Doppler assessments. Abnormal umbilical artery Doppler (UA) was defined as a pulsatility index (PI) or S/D >95% or absent/reversed end diastolic velocities. Abnormal middle cerebral artery Doppler (MCA) was defined as a PI <5%.

Results:

287 high-risk AGA pregnancies were evaluated. Pregnancies complicated by hypertension or preeclampsia had statistically significant increased risk for abnormal UA or MCA Dopplers (p=0.0013 and p=0.0086, respectively). Pregnancies with hypertension or preeclampsia and abnormal Dopplers were significantly more likely to deliver preterm (p=0.0066 and p<0.0001, respectively). Fetuses with abnormal Dopplers were more likely to undergo emergent cesarean section for suspected fetal compromise (p = 0.0422). Fetuses that exhibited abnormal Dopplers were significantly
more likely to be admitted to the NICU after birth (p = 0.0107) and to stay in the NICU for > 7 days (p=0.0045). Once in the NICU, fetuses that had had abnormal Dopplers in utero were more likely to exhibit respiratory distress syndrome (p = 0.0338).

CONCLUSIONS:

In high-risk pregnancies, blood flow patterns within the fetoplacental circulation may be altered, yet these changes may not be reflected in the evaluation of fetal growth. This finding was noted specifically in pregnancies complicated by pre eclampsia and hypertension. In conclusion, abnormal fetal Doppler velocimetr...
INTRODUCTION:

Intrauterine growth restriction places a fetus at increased risk intrauterine morbidity and mortality, contributes to early and late postnatal complications, and has also been linked with a higher risk of cardiovascular disease in adulthood. (2,3,8,13). The definition of fetal growth restriction is clearly defined as an estimated fetal weight below the 10th percentile for gestational age; while the definition is clear it does not account for individualized growth potential. Our current definition may not identify larger fetuses that have not achieved their growth potential, and conversely may result in the misdiagnosis of fetal growth restriction for constitutionally small fetuses. (1) According to the American College of Obstetrics and Gynecology guidelines, the management of pregnancies with intrauterine growth restriction should incorporate antepartum fetal surveillance, risk factor modification, and delivery when the risks of continuing the pregnancy outweigh the benefits (1). Without the ability to differentiate between placental IUGR and constitutionally small fetuses, we could be adding unnecessary burden to families and the health care system. The ability to assess and accurately diagnose the presence or absence of placental IUGR would offer significant benefits to both the patient and health care system.

Multiple angiogenic factors are expressed in the placenta, and circulating levels of these angiogenic factors within the maternal serum may be markers of placental function. These biomarkers may provide us with the addition of vital information, allowing us to accurately subdivide fetuses with growth restriction into pathological placental IUGR vs. constitutionally small fetuses without underlying pathology.

OBJECTIVES:

The objective of our study was to test the diagnostic and predictive potential of sEng (soluble endoglin). Soluble Endoglin (sENG) is a co-receptor for Transforming Growth Factor (TGF) with antiangiogenic properties. It has been shown in recent studies to act synergistically with other angiogenic/antiangiogenic factors to induce symptoms of HELLP syndrome in animal models as well as the promotion of a preeclamptic phenotype. Retrospective studies have indicated up-regulation of sEng in the preeclamptic placenta, and elevated levels of sEng were detected in maternal circulation prior to clinical manifestation. (14) Our study was designed to evaluate maternal circulating levels of sEng; and evaluation of its predictive potential in cases of fetal growth restriction. There have not been any prospective studies on sEng to date. Other studies which examined the relationship between sEng and IUGR were nested studies within studies of a high risk population (ex: preeclampsia), and contained less than 30 serum samples. We proposed that differences in Soluble Endoglin levels may have the ability to predict IUGR; and may potentially help to discriminate between fetuses with placental IUGR and constitutionally small fetuses.

While there are barriers that may be encountered with implementation of any new testing in medicine we propose that differences in Soluble Endoglin levels may have the ability to predict IUGR; and may potentially help to discriminate between fetuses with placental IUGR and constitutionally small fetuses. We hypothesized that women destined to develop IUGR will show elevated levels of soluble Endoglin in maternal circulation when tested before 24 weeks gestation.

(Continued on Page 22)
"Maternal Serum Concentrations of Soluble Endoglin as an Early Marker of Intrauterine Growth Restriction"

(Continued from Page 21)

MATERIALS AND METHODS:

We developed a nested case-control study to evaluate the predictive and diagnostic potential of maternal circulating soluble endoglin in patients who later develop IUGR.

Our investigation involved a cohort of women enrolled in an archived database of over 700 pregnant women who had urine, serum and plasma collections performed throughout their first and second trimester. The study population consisted of pregnant women with singleton gestations enrolled in the ARCH program. Given the background information regarding IUGR, and the common pathophysiology underlying the diagnosis (suboptimal uterine-placental perfusion) our study included a cohort of women from various ethnicities, ages, economic status and insurance coverage plans. A primary case was defined as infants below the 10th percentile in weight for the birth week of gestation. Cases were restricted to infants with at least one archived pregnancy sample at a mean GA of approximately 13 weeks. To the extent possible, using birth certificates and post-natal surveys, we excluded children with major birth defects/chromosomal anomalies. Each case was matched with one control, randomly sampled from children born in the same gestational week and also with the same exclusions of birth defect/chromosomal anomaly/absent prenatal blood specimen. Our controls were further matched on the following smoking status in pregnancy (yes/no), and maternal race (black vs. non-black) Inclusion Criteria included singleton pregnancy with a serum sample obtained at the first prenatal visit. Exclusion criteria included a known fetal or chromosomal abnormality.

Following determination of eligible cases, and appropriate control matching samples were sent to R&D Systems Biomarker Testing Service where serum soluble Endoglin levels were determined using the Quantikine ELISA Human Endoglin/CD105 Immunoassay (R & D Systems, Minneapolis, MN) according to package insert. Samples were run by qualified lab technicians at R & D Systems who were blinded to pregnancy outcome. The testing personnel was blinded to the clinical data when performing the assays. The results were statistically analysed using the Kruskal–Wallis one-way analysis of variance.

RESULTS:

Of the 769 subjects enrolled in the ARCH database 612 met inclusion criteria. Of the 612 women who met inclusion criteria, there were 74 cases of IUGR, and of those only 45 had available blood. From this cohort 44 cases were determined, and completely match based on matching variables. In terms of matching variables both groups contained 18 smokers. In the case group 18 women were black (42%), 25 were other (58%). In the control group 17 women were black (40%), and 26 were other (60%). Both groups had a mean gestational age of 39, and median gestational age of 39. (See boxplot diagram).
“Maternal Serum Concentrations of Soluble Endoglin as an Early Marker of Intrauterine Growth Restriction”

(Continued from Page 22)

For a formal test of differences between cases and controls a Kruskal-Wallis test was performed. This test sought to see whether cases tended to have a higher or lower level of Endoglin; the result of our Kruskal-Wallis test was p=0.534, indicating insufficient evidence to say that the levels of Endoglin are different between the two groups. Following our initial analysis we then compared levels of soluble Endoglin among only the cases comparing smoking status and race. Both analyses revealed non-significant differences (black vs. other p=.80)(smoker vs. non-smoker p=.39). (see attached density plot and box plots).

CONCLUSIONS:

Intrauterine growth restriction places a fetus at increased risk intrauterine morbidity and mortality, contributes to early and late postnatal complications, and has also been linked with a higher risk of cardiovascular disease in adulthood. (2,3,8,13).

The ability to assess and accurately diagnose the presence or absence of placental IUGR would offer significant benefits to both the patient and health care system. Development of an accessible, convenient, and accurate test to aid in the prediction of pregnancies affected by IUGR is an urgent task. To achieve this, an understanding of the pathophysiology underlying IUGR and placental insufficiency must be attained. A fetus affected by IUGR should theoretically have underlying placental dysfunction preventing them from achieving their growth potential. Conversely there remains a subset of healthy fetuses that are less than the 10th percentile for growth, who have achieved their growth potential, and theoretically have an unaltered angiogenic balance. This study looked at Endoglin, a cell surface co-receptor for TGF-B1 and TGF-B3 isoforms highly expressed in endothelial cells and the trophoblast; however we know that there are multiple angiogenic factors likely playing a role in normal placentation. While the results of our immediate study were not statistically significant, they do suggest that further studies may be worthwhile.

One of the strengths of this study lies in the comparability of the case and control groups for important medical and demographic characteristics. Nonetheless, as a retrospective study it is subject to the biases inherent in this method.

Large prospective studies will be required to determine the single best marker among the various angiogenic factors, or if necessary a combination of various biochemical markers.

REFERENCES:


Acknowledgements:

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• Medical Education Foundation of ACOOG,
• The Statewide Campus System (SCS) is the Michigan State University College of Osteopathic Medicine.
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*The mission of the CPC of the MEFACOOG is to enhance and improve the quality of women’s health care through collaborative partnerships.*

We will accomplish our mission by:

1. Education of:
   - Physicians
   - Residents and other related
   - Health care professionals
2. Increasing industry awareness of the uniquely osteopathic educational model
3. Improving industry access to physicians and the patients they serve
4. Collaboratively identifying, developing and implementing educational programs in women’s health care and thereby,
5. Improving the lives of women through education

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- Development of Educational Networks in women's healthcare.

IN MEMORY OF

Joseph A. Hill, DO, FACOOG  April 27, 2015
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* MEFACOOG regrets that the In Memory donation did not appear in the 2015-2016 Annual Report
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