

THE DEPARTMENT OF OBSTETRICS AND GYNECOLOGY  
PRESENTS:

# Resident Research Day 2021

## KEYNOTE SPEAKER

### Professor Methodius G. Tuuli, MD, MPH, MBA

Executive Chief of Obstetrics and Gynecology for Women & Infants Hospital, Chair of the Department of Obstetrics and Gynecology at The Warren Alpert Medical School, Chase-Joukowsky Professor of Obstetrics and Gynecology at Brown University

**Monday, June 7, 2021**  
**8:00 AM—1:00 PM**



## Welcome

**S. Abbas Shobeiri MD, Vice Chair**  
8:00 AM—8:05 AM

## Keynote

**Professor Methodius G. Tuuli, MD, MPH, MBA**  
Whither Prophylactic Negative Pressure Wound Therapy after Obstetrics and Gynecology Surgery?  
8:05 AM—8:50 AM

## Resident Research Presentations

9:00 AM—10:50 AM  
10:50 AM—11:00 AM Break  
11:00 AM—12:30 PM

## Awards, Closing Remarks

12:40 PM—1:00 PM

**G. Larry Maxwell, MD**  
Chairman

**S. Abbas Shobeiri, MD**  
Vice Chair

**Samantha Buery-Joyner, MD**  
Residency Program Director

## Research Presentations

Each presentation is 8 minutes with 2 minutes for questions.

1	<b><u>Marie Nakhoul MD</u></b> 9:00-9:10am	Detection and Surveillance of Behavioral Health Disorders Among Pregnant Population – A 2021 Update
2	<b><u>Ashley Bonamer, DO</u></b> 9:10-9:20am	Isolated Premature Menarche: Two Rare Cases of Menarche Prior to Other Pubertal Progression
3	<b><u>Mira Henien, MD</u></b> 9:20-9:30am	COVID-19 Impact on Intrahepatic Cholestasis of Pregnancy Within a Unique Predominately Latinx Patient Population
4	<b><u>Leah Allbright, MD</u></b> 9:30-9:40am	Promoting Vaginal Births Through Simulation and Teamwork
5	<b><u>Sara Hamade, MD</u></b> 9:40-9:50am	Risk Factors for Urinary Retention Following Colpocleisis
6	<b><u>Carmen Proctor, MD</u></b> 9:50-10:00am	Integrated Telehealth Prenatal Care in the Underserved Community During Coronavirus Disease 2019
7	<b><u>Angela Nolin, MD</u></b> 10:00-10:10am	Impact of Stage and Grade on Conditional Survival in 173,211 Women with Endometrioid Endometrial Carcinoma
8	<b><u>Cassandra Presti, MD</u></b> 10:10-10:20am	The Impact of Age and Stage on the Competing Risk of Cancer-Related and Non-Cancer Death in Low or High Grade Endometrioid Endometrial Carcinoma and Uterine Serous Carcinoma
9	<b><u>Masooma Raza, MD</u></b> 10:20-10:30am	Outpatient Mechanical Cervical Ripening at Inova Fairfax Hospital: A Quality Improvement Initiative
10	<b><u>Conway Xu, MD</u></b> 10:30-10:40am	Impact of Histology on Disparities in Survival between Non-Hispanic Black and Non-Hispanic White Women with Epithelial Ovarian Cancer in Commission on Cancer®-Accredited Facilities
11	<b><u>Meredith Hoover, MD</u></b> 10:40-10:50	Racial Disparities in Maternal Morbidity and Mortality in Virginia

## Research Presentations

Each presentation is 8 minutes with 2 minutes for questions.

	<b><i>10:50-11:00am</i></b>	<b><i>BREAK</i></b>
12	<b><u>Anh Nguyen, MD</u></b> 11:00-11:10am	Pregnancy Outcomes in Adolescent Pregnant Patients Infected with SARS-COV-2
13	<b><u>Shannon Osborne, MD</u></b> 11:10-11:20am	A Longitudinal, Multimodal Palliative Care Curriculum for Obstetrics and Gynecology Residents
14	<b><u>Helen Shi, MD</u></b> 11:20-11:30am	Tips and Tricks for Removal of Trans-Obturator Sling Tapes
15	<b><u>Catherine Kim, DO</u></b> 11:30-11:40am	Inova Women's Program for Gynecologic Robotics Effectiveness System Strategy (IW-PROGRESS) Project
16	<b><u>Riley Kraus, MD</u></b> 11:40-11:50am	Degenerating Uterine Leiomyoma Perforating Into Small Bowel: A Case Report
17	<b><u>Briana Kyne, MD</u></b> 11:50-12:00pm	A Case of Term Delivery after Radical Abdominal Trachelectomy and Cerclage Placement in a Pregnant Patient with Invasive Cervical Cancer
18	<b><u>Omotomilade (Tomi) Olopoenia, MD</u></b> 12:00-12:10pm	Post-Partum Post-Traumatic Stress Disorder in Women after Pelvic Floor Trauma
19	<b><u>Alexandra (Alex) Snyder, MD</u></b> 12:10-12:20pm	Successful Removal of Giant Uterine Leiomyomata with Minimal Blood Loss: Case Report and Literature review
20	<b><u>Alicia St. Thomas, MD</u></b> 12:20-12:30pm	WED2FIT: A Health and Wellness Initiative for Inova Women's Service Line Employees

## Detection and Surveillance of Behavioral Health Disorders Among Pregnant Population – A 2021 Update

Marie Nakhoul MD, G. Larry Maxwell MD

**Background/Objective:** Previous studies have reported that approximately 20% of pregnant women may suffer from stress, anxiety, and or depression the prevalence of behavioral health disorders may be increased among minority populations. The objective of our study will be to determine the prevalence of behavioral disorders among different racial and ethnic groups during pregnancy and identify associations with patient reported outcomes following delivery.

**Methods:** A retrospective longitudinal cohort comprised of over 5,000 patients who provided self-reported stress, anxiety and depression at baseline enrollment during pregnancy was followed at 6, 12, and 18 months intervals following delivery using the PHQ-2 and Edinburgh Postnatal Depression Scale, Perceived Stress Scale and Life Orientation Evaluation and then at 24 and 36 months with the maternal-child interaction questionnaire. A data procurement protocol has been deployed to allow for prospective collection of behavioral health information from pregnant patients at baseline using web-based tools and an APP tool is being beta-tested to allow for continued collection of follow-up data.

**Results:** Preliminary assessment of over 3,200 pregnant mothers has demonstrated an overall prevalence of 8% depression and 13% stress or anxiety at baseline. Pilot assessment of patients prospectively enrolled to a high-risk pregnancy unit has revealed a much higher prevalence of behavioral health disorders (i.e. 40% stress, 11% depression and 22% anxiety). Ongoing efforts are aimed at finalizing quality assurance of the full retrospective longitudinal cohort dataset prior to a comprehensive analysis of racial and ethnic disparities in the prevalence of behavioral health disorders. These will then be correlated with maternal-child interaction scores at 24 and 36 months.

**Conclusion:** Our team continues to assemble data to trigger analyses using our retrospective longitudinal cohort while our prospective enrollment of high-risk patients is underway. We anticipate having definitive data for analyses and presentation in 2022.

## Isolated Premature Menarche: Two Rare Cases of Menarche Prior to Other Pubertal Progression

Ashley Bonamer DO, Rachel Casey MD

**Background:** Isolated premature menarche is an uncommon occurrence described rarely in the literature, with an underlying etiology that remains incompletely understood. We present two cases of isolated premature menarche in an 8 year old and 6 year old, respectively.

**Case 1:** An 8 year old patient initially presented for evaluation of an episode of prepubertal vaginal bleeding which lasted for approximately 3 days. She subsequently experienced 3 additional episodes of bleeding over the next 4 months, each lasting 2-3 days. Physical examination revealed prepubertal appearance, including Tanner Stage I development. Pelvic ultrasound revealed prepubertal uterus and ovaries, and subsequent vaginoscopy also revealed normal anatomy. Endocrinology evaluation was negative for precocious puberty. The patient continues to be managed conservatively with monitoring for signs of pubertal development.

**Case 2:** A 6 year old patient with OHVIRA presented for evaluation of intermittent prepubertal vaginal bleeding over a one month period. One month later she again experienced vaginal bleeding which continued in a cyclical pattern over a 3 month period. Physical examination revealed Tanner Stage I development. Pelvic ultrasound revealed known didelphic uterus as well as an enlarged right ovary with numerous small follicular cysts. Endocrinology evaluation for precocious puberty was noted to be negative. Vaginal flushing did not expel a foreign body. The patient continues to undergo surveillance due to OHVIRA and prepubertal vaginal bleeding.

**Conclusion:** Isolated premature menarche is an uncommon occurrence, most often characterized by cyclical vaginal bleeding prior to the expected preceding signs of pubertal progression. This is a diagnosis of exclusion after other causes of prepubertal vaginal bleeding have been ruled out. Further studies are needed to further determine etiology and possible long-term implications of isolated premature menarche.

### Teaching Points:

- Normal female pubertal development
- Differential diagnosis and workup of prepubertal vaginal bleeding
- Long-term implications of isolated premature menarche

## COVID-19 Impact on Intrahepatic Cholestasis of Pregnancy Within a Unique Predominately Latinx Patient Population

Mira Henien MD, Colleen Kepner MD, Michael Sheridan ScD,  
Rasha Ebeid MD, PhD

**Background/Objective:** To determine whether the prevalence of cholestasis increased from 2019 (pre-COVID-19) to 2020 (post COVID-19) and the impact on hepatic function for COVID-19 positive patients in a primarily Latinx patient population disproportionately affected by the pandemic.

**Methods:** We conducted a retrospective chart review of cholestasis patients from March to October of 2019 and 2020 receiving prenatal care at the Inova Cares Clinic within the Inova Health System. We included patients aged 18-45 receiving regular prenatal care at the Inova Cares Clinic and excluded patients that received a diagnosis of cholestasis of pregnancy prior to 20 weeks gestation. Intrahepatic cholestasis of pregnancy at this institution is determined as bile acids > 10. Demographic and laboratory outcomes were evaluated using exact tests for categorical data and a Wilcoxon Rank Sum test for interval level data.

**Results:** The prevalence of cholestasis did not increase from 2019 to 2020 (1.33% versus 1.15%, with a p value = 0.52). In the 2020 cohort, positive COVID-19 patients had higher bile acid levels than negative patients, 68.8 (CI 40.7, 96.9) versus 35.8 (CI 19.5, 52.1), with a p value = 0.01. Mean AST levels were higher in the positive COVID-19 patients than in the negative patients, 70.0 (CI 27.6, 111.8) versus 46.5 (CI 26.3, 66.7), with a p value = 0.003. Mean ALT levels in the positive COVID-19 positive patients were higher than in the negative patients, 109.8 (CI 26.6, 192.9) versus 62.3 (CI 250, 99.6), with a p value = 0.006.

**Conclusion:** The prevalence of cholestasis in pregnant Latinx women did not increase from 2019 to 2020 using parallel time periods, but bile acids and liver function tests were significantly increased in the 2020 COVID-19 positive group. This study suggest that further research is required regarding how COVID-19 impacts intrahepatic cholestasis of pregnancy and vice versa.

## Promoting Vaginal Births Through Simulation and Teamwork

Leah Allbright MD, Veronica Peterkin MD, Emily Marko MD et al

**Background/Objective:** Cesarean sections rates have been increasing since the early 2000s to approximately 30% in 2020. Several key initiatives have been utilized to attempt to combat the cesarean section rate of primigravid cephalic term deliveries. Simulation and teamwork, by increasing and changing the skills, knowledge, and attitudes of participants, has previously been applied to alternative surgical skills to improve multidisciplinary performance.

**Methods:** Over a period from 2017-2019, participants were enrolled in a simulation program at the Inova Center for Advanced Medical Simulation, IFMC, IAH, and IFOH. Pre and post knowledge tests and culture surveys were taken utilizing a 5 point Likert scale. Partial task trainers were utilized in a variety of settings applied toward unit culture, OB Triage, Induction of Labor, and management of First and Second Stage of Labor. Primary outcome was determined to be the perception of unit culture and the knowledge and skills of the providers. Secondary outcome was cesarean section rates. Following this initiative, two other key initiatives were added in 2020 including the Spinning Babies™ protocol and mechanical cervical induction protocols.

**Results:** 354 interdisciplinary providers including medical staff, physicians, residents, medical students, and nurses participated in this hybrid study. Knowledge of obstetrical skills increased by 35% with post-test knowledge averaging around 97% and performance increased by 43% with post-performance averaging also around 97%. In the safety culture surveys, safety culture scores dropped from 3.56 to 1.28, a perceived 45% improvement. Secondary outcome revealed primigravid cesarean section rates dropped from almost 40% in 2016 to 30% by 2019. The cesarean section rate in 2020 was calculated to be 32%.

**Conclusion:** Multidisciplinary obstetric simulation can increase the knowledge and attitudes of the providers and can be attributed to a perceived culture shift at an institution. This may be an easily replicated program to combat rising cesarean section rates. However, despite additional additions to simulation program, cesarean sections rates continue to fluctuate.

## Risk Factors for Urinary Retention Following Colpocleisis

Angela DiCarlo-Meacham MD, Katherine Dengler MD,  
Eva Welch MD, Sara Hamade MD, Nicolette Horbach MD,  
Jeffre Welgoss MD, Donna Mazloomdoost MD,  
Walter Von Pechmann MD

**Background/Objective:** Transient urinary retention occurs frequently following pelvic organ prolapse surgery. While the prevalence of postoperative urinary retention has been reported for reconstructive procedures, there is a paucity of data for colpocleisis. The objectives of this retrospective cohort study were to identify risk factors for development of urinary retention following colpocleisis.

**Methods:** A retrospective chart review was performed for patients undergoing colpocleisis from January 2015 to December 2019 in a high volume urogynecology practice. Patients were excluded if they required prolonged catheterization postoperatively, were using a catheter prior to surgery, or if a suprapubic catheter was placed during surgery. Potential patient and procedural risk factors were analyzed. Transient urinary retention was diagnosed if patients failed their postoperative voiding trial and were discharged home with a catheter.

**Results:** A total of 172 patients met inclusion criteria. The overall prevalence of transient postoperative urinary retention was 55%, with rates of 36.7% with LeFort colpocleisis, 51.5% with post-hysterectomy colpocleisis, and 64.9% with colpocleisis with concomitant hysterectomy. Logistic regression analysis revealed an increased risk of postoperative urinary retention if hysterectomy was performed at the time of colpocleisis (OR 2.9; CI 1.23, 6.84;  $p=0.015$ ). Patient age, prolapse severity, preoperative post-void residual volume, and concomitant anti-incontinence procedure were not associated with transient postoperative urinary retention.

**Conclusion:** Transient urinary retention is common following colpocleisis, occurring in over half of patients. Patients undergoing concomitant hysterectomy have the highest risk of postoperative urinary retention. Surgeons can use this information both for counseling and to tailor treatments for individual patients.

## Integrated Telehealth Prenatal Care in the Underserved Community During Coronavirus Disease 2019

Carmen Proctor MD, Francine McLeod MD, Masooma Raza MD,  
Julie Kane FNP, Rasha Ebeid MD PhD, Rolel Mbaidjol MD,  
Michael J. Sheridan ScD, Samantha Buery-Joyner MD

**Background/Objective:** To implement and evaluate a novel integrated telehealth platform for vulnerable obstetrical patients who are susceptible to coronavirus disease 2019.

**Methods:** We conducted a single site prospective observational study comparing two prenatal care delivery methodologies. Patients were randomized either to an Integrated or a Traditional delivery model. The Integrated telehealth model consisted of an audio-assisted communication for review of history, risk stratification, laboratory tests, and counseling. The face-to-face encounter was only performed for assessment of fetal well-being. The Traditional model consisted entirely of face-to-face prenatal care. Provider and patient satisfaction surveys were distributed after the respective visits. The total time of visit and face-to-face time was recorded for each cohort. Nominal data were analyzed with chi-square techniques, while ordinal and interval data were analyzed using a Wilcoxon Rank Sum test. A p-value of  $\leq 0.05$  was considered statistically significant.

**Results:** We enrolled 234 patients and obtained satisfaction scores from 215 (91.8%). Patients were allocated to receive the Integrated model ( $n=107$ ) or Traditional model ( $n=108$ ). The average age of participants was 29, average BMI was 31, and average gestational age was 31 weeks. Participants were mostly Latinx, multiparous, obese, unemployed, and without computer access. There were no statistically significant differences between groups for patient satisfaction (overall  $p=0.32$ ), and the average response for both was high ( $>4.5$ ). Providers felt safer utilizing the integrated model ( $p < 0.0001$ ), were able to complete the visit ( $p < 0.0001$ ), and were more likely to continue with this model ( $p=0.002$ ). In the Integrated model, face-to-face time accounted for 44% of the total visit time.

**Conclusion:** A novel model of integrated telehealth prenatal care during the COVID-19 pandemic was an effective methodology for our underserved population. Patients were equally satisfied with both models of care, providers more satisfied with the integrated telehealth methodology, and potential exposure to COVID-19 was reduced.

## Impact of Stage and Grade on Conditional Survival in 173,211 Women with Endometrioid Endometrial Carcinoma

Angela C. Nolin MD, Chunqiao Tian PhD, Chad A. Hamilton MD, John K. Chan MD, Yovanni Casablanca MD, Matthew A. Powell MD, Craig D. Shriver MD, Nicholas W. Bateman PhD, Thomas P. Conrads PhD, G. Larry Maxwell MD, Kathleen M. Darcy PhD

**Background/Objective:** Conditional survival (CS) expresses the probability of survival as a function of time. The purpose of this study was to investigate the impact of stage and grade on overall survival, CS, and relative mortality risk in women with endometrioid endometrial carcinoma (EEC).

**Methods:** Participants were registered in the National Cancer Database with low grade (LG)-EEC or high grade (HG)-EEC between 2004 and 2014. Survival was compared by stage with log-rank test and multivariate Cox modeling. Five-year CS was evaluated by stage using Kaplan-Meier method. Standardized mortality ratio (SMR) was estimated based on the mortality risk of general US population.

**Results:** 147,944 women with LG-EEC and 25,267 with HG-EEC were included. Adjusted HR was 1.67, 2.88, and 7.25 for stages II, III, IV vs stage I LG-EEC and 1.78, 3.20, and 6.73 for stages II, III, IV vs stage I HG-EEC ( $P < 0.0001$ ). Five-year CS for women with stage I, II or III LG-EEC or with stage I HG-EEC changed minimally after surviving at least 1 and up through 5 years. In contrast, five-year CS improved in women with stage IV LG-EEC from 48.7% to 58.1% and 69.4% after surviving 2 and 4 years. More rapid improvements in CS occurred after surviving 1, 2, 3 and 5-years for women with either stage III HG-EEC (52.4% to 57.2%, 64.7%, 69.2% and 75.3%) or stage IV HG-EEC (24.9% to 35.7%, 49.2%, 63.4% and 75.0%). The change in SMR over time mirrored the change in CS and dropped from 10.73 to 5.37 in women with stage IV LG-EEC, 4.08 to 2.33 with stage II HG-EEC, 7.34 to 3.27 with stage III HG-EEC and 19.50 to 3.42 with stage IV HG-EEC after surviving 5 years.

**Conclusion:** Prognosis for EEC improves over time in almost all groups with the most significant improvement in women with advanced stage and high-grade disease.

## The Impact of Age and Stage on the Competing Risk of Cancer-Related and Non-Cancer Death in Low or High Grade Endometrioid Endometrial Carcinoma and Uterine Serous Carcinoma

Cassandra Presti MD, Chunqiao Tian, PhD, Emma Robinson BS, Tahimi Gonzalez MS, Chad A Hamilton MD, John K Chan MD, Annette Bicher MD, Craig D. Shriver MD, Nicholas W. Bateman PhD, Thomas P Conrads PhD, Yovanni Casablanca MD, G. Larry Maxwell MD, Kathleen M. Darcy PhD

**Background/Objective:** To investigate the individualized risk of cancer-related death (CRD) and non-cancer death (NCD) in subtypes of endometrioid endometrial carcinoma (EEC) and uterine serous carcinoma (USC) by accounting for the prognostic impact of age and stage.

**Methods:** Women diagnosed with stage I-IV low-grade EEC, high-grade EEC or USC between 1988-2016 in the Surveillance, Epidemiology, and End Results program were eligible. Fine and Gray's sub-distribution hazards method was applied to evaluate the competing risk of death within histologic subtypes stratified by age and stage.

**Results:** Of the 121,028 patients, 77.4% had low-grade EEC, 14.8% had high-grade EEC, and 7.8% had USC. The 5-year CRD rate increased incrementally across the histologic subtypes and by age and stage. It was 1.1, 6.5 or 7.8% in patients  $< 55$  years old with stage I disease versus 68.4, 80.5 or 82.9% in patients  $\geq 75$  years old with stage IV disease and low-grade EEC, high-grade EEC or USC, respectively. The 5-year NCD rate, however, did not vary by histologic subtype or stage but increased with age from 1.7 to 2.9, 6.6 and 19.3% when diagnosed at  $< 55$  relative to 55-64, 65-74 and  $\geq 75$  years old, respectively. CRD rates plateaued after 4 years, whereas NCD rates continued to increase through 10 years from diagnosis across the histologic subtypes.

**Conclusion:** Integration of age, stage and histology enhances the prediction of CRD and NCD risks for endometrial cancer patients. This comparison allows for enhanced personalization of cancer care and prioritized treatment of comorbid conditions, particularly when CRD risk is low. CRD risk increased dramatically over the first 4 years from diagnosis with higher stage then with older age and was incrementally higher in HG-EEC and USC relative to LG-EEC. Risk of NCD increased with age over 10-years from diagnosis but not by histology or stage.

## **Outpatient Mechanical Cervical Ripening at Inova Fairfax Hospital: A Quality Improvement Initiative**

Masooma Raza MD, Jean Thermolice MD, Rolel Mbaidjol MD,  
Rasha Ebeid MD

**Background/Objective:** Over the past 20 years, the percentage of patients undergoing IOL has increased from 10 to 25%; this uptrend of induction rate is expected to continue in light of findings of the ARRIVE trial. Historically, induction of labor for our underserved population was performed exclusively in the hospital setting on Labor and Delivery. The objective of this project was to implement an outpatient cervical ripening protocol to decrease hospital stay, improve allocation of resources, and increase patient satisfaction.

**Methods:** Low-risk women at term with uncomplicated singleton gestation, cephalic presentation, and intact membranes were identified at the Inova Cares Clinic for Women. Exclusion criteria included preeclampsia, intraamniotic infection, and contraindications to vaginal birth. After informed consent was obtained, mechanical ripening was initiated with either foley balloon or Cook Catheter. Pre- and post-placement non-stress tests were performed. Patients were instructed to arrive for their scheduled induction 12-18 hours post placement. Strict return precautions for earlier presentation were discussed. Mode of delivery, cervical dilation at presentation, length of induction (foley placement to delivery), length of total hospital stay, and complications, if any, were noted.

**Results:** Of 61 women who qualified for and accepted outpatient cervical ripening, 20 ultimately had a foley balloon placed in the outpatient setting prior to their scheduled induction. Five patients (25%) underwent cesarean delivery, for indications including arrest of descent (3), cord prolapse (1), and failed vacuum extraction (1). The average length of induction for patients who had a vaginal delivery was 26.69 hours. The average time spent on L&D was 11.73 hours. The average cervical dilation at time of presentation was 3.95cm. The average total length of hospital stay was 1.6 days.

**Conclusion:** Preliminary results have demonstrated that outpatient cervical ripening is a feasible method to reduce duration of labor and overall length of hospital stay.

## **Impact of Histology on Disparities in Survival between Non-Hispanic Black and Non-Hispanic White Women with Epithelial Ovarian Cancer in Commission on Cancer®-Accredited Facilities**

Conway Xu MD, Chunqiao Tian PhD, Christopher M. Tarney MD,  
Kathryn Osei-Bonsu MSPH, RD, Michael T. Richardson BA,  
John K. Chan MD, Rodney P. Rocconi MD, Craig D. Shriver MD,  
Nicholas W. Bateman PhD, Thomas P. Conrads PhD, Chad A. Hamilton MD,  
Yovanni Casablanca MD, G. Larry Maxwell MD, Kathleen M. Darcy PhD

**Background/Objective:** To investigate racial disparities in survival between Non-Hispanic Black (NHB) and Non-Hispanic White (NHW) women with high grade serous carcinoma (HGSC), endometrioid carcinoma (EC), mucinous carcinoma (MC), or clear cell carcinoma (CCC) of the ovary.

**Methods:** NHB and NHW women diagnosed with stage I-IV HGSC, EC, MC or CCC of the ovary between 2004 and 2014 in the National Cancer Database were eligible. A propensity score approach was applied to sequentially balance the population within these four histologic subtypes. The following seven characteristics were included: demographics, neighborhood income, insurance, comorbidity score, grade, stage, and treatment. Hazard ratio (HR) was calculated from weighted Cox modeling and excess relative risk of death (ERR) was expressed as a proportion of the individual contribution of each factor.

**Results:** Racial disparity in survival was evident in all four histologic subtypes. The largest disparity was seen in MC, followed by CCC, HGSC and EC. After sequentially balancing for the seven explanatory variables, the HR dropped from 1.31 to 1.18 for HGSC, 1.31 to 1.04 for EC, 1.91 to 1.20 for MC and 1.49 to 1.07 for CCC. The individual contributions to the ERR of death in NHB versus NHW varied by histology. The largest contributor to racial disparity in survival for HGSC were unexplained factors (58.1%) compared with neighborhood income (41.9%) for EC. Stage accounted for 70.3% of the ERR of death in MC whereas it only accounted for 61.2% in CCC.

**Conclusion:** The largest disparity in survival between NHB and NHW women diagnosed between 2004-2014 was observed in MC, followed by CCC, HGSC and EC. Neighborhood income and insurance represent potentially actionable factors to mitigate survival disparities between NHB and NHW women.

## Racial Disparities in Maternal Morbidity and Mortality in Virginia

Meredith Hoover MD, Alison Hauffstetler MD

**Background/Objective:** As of 2018, the rate of maternal mortality in the United States is 17.4/100,000 live births. This number is more than double that of many other high-income countries. Additionally, nationally wide disparities have been noted in the rate of mortality between Non-Hispanic Black, Non-Hispanic White and Hispanic patients. Non-Hispanic Black women in America are more than two times more likely to suffer from severe complications or death in the peripartum time period. Therefore, this project aims to clarify the association in effort to identify populations that need additional resources to reduce health inequities

**Methods:** We will use the all-payers claims database (APCD) to identify the association between race and maternal morbidity and mortality. The VA-APCD contains ICD, CPT, pharmacy and provider information for 5 million claims annually representing 70% of the VA population. This database is maintained by the Virginia Health Institute and contains claims data from Medicare, Medicaid and 60% of commercial insurers. First we will identify pregnancies during 2018 based on Virginia claims. We will then use ICD-10 codes to determine the prevalence of certain pregnancy related complications as well as pregnancy related mortality in the year 2018. The complications and the ICD-10 codes used were based on a list of ICD-10 codes for severe maternal morbidity released by the CDC. Maternal mortality will be defined as mortality during pregnancy or within one year of the end of pregnancy. The mortality data related to pregnancy is held by the Virginia Department of Health. A data use agreement will be submitted to VDH to obtain data on mortality in the state as well as identifiers such as rurality, race and ethnicity, patient age, and patient comorbidities.

**Results:** pending

## Pregnancy Outcomes in Adolescent Patients Infected with SARS-COV-2

Anh Q Nguyen MD, Luis M. Gomez MD, MSc.E

**Background/Objective:** Adolescents have fewer severe outcomes from SARS-CoV-2 than adults. Pregnancy puts adolescents at higher risk of both severe disease and perinatal complications. We aimed to investigate obstetric outcomes in adolescent pregnant patient infected with SARS-CoV-2 compared to (i) adult infected pregnant patients, and to (ii) their non-infected adolescent pregnant counterparts.

**Methods:** Observational cohort study of teenage pregnant patients (age 14-19) who delivered at 4 Inova Health System hospitals from March-2020 to January-2021. We evaluated outcomes in 2 sets of group comparisons: (1) adolescent pregnant patients who tested positive to SARS-CoV-2 (Teen SARS-CoV-2-pos) compared to adolescent pregnant patients who tested negative (Teen SARS-CoV-2-neg), and (2) Teen-SARS-CoV-2 positive compared to adult pregnant patients who tested positive (Adult SARS-CoV-2-pos).

**Results: 1st set of comparisons:** Compared to Teen SARS-CoV-2-neg (N=394), Teen SARS-CoV-2-pos (N=48) were more likely to be Hispanic (91.7% vs 12.2%; OR 77.9) and uninsured (50% vs 7.9%; OR 11.7). Infected adolescents were more likely to deliver at a greater gestational age (39-1 weeks vs. 38-4 weeks, p=0.02) and to require CD (25% vs 11.9%; OR 2.46). There was no difference in PTD, FGR, APGAR score at 5 minutes and NICU admission. **2nd set of comparisons:** Compared to Adult SARS-CoV-2-pos (N=695), Teen SARS-CoV-2-pos were more likely to deliver at a greater gestational age (39-1 weeks vs. 37-6 weeks, p=0.004). There was no difference in the prevalence of PTD, FGR, CD, APGAR score at 5 minutes and NICU admission. Teen SARS-CoV-2 pos were less likely to be symptomatic at diagnosis compared to their infected Adult counterparts (20.8% vs. 39.3%; OR 0.43).

**Conclusion:** Teen SARS-CoV-2-pos had similar adverse obstetric outcomes compared to Teen SARS-CoV-2-neg and Adult SARS-CoV-2-pos. However teen SARS-CoV-2 were more likely to be asymptomatic at diagnosis compared to their adult infected pregnant counterparts.



## A Longitudinal, Multimodal Palliative Care Curriculum for Obstetrics and Gynecology Residents

Shannon Osborne MD, Catherine Kim MD, Emily Marko MD,  
Alva Roche-Green MD, Samantha Buery-Joyner MD

**Background/Objective:** End of life care (EOL) is a critical component of any physician's practice, yet it is a skill that is poorly taught in current medical education. These encounters can cause great emotional distress for both the patient and the provider especially when the provider is not trained or prepared to engage in these conversations. Missed opportunities for training during undergraduate medical education translates into resident physicians who continue to feel underprepared to facilitate these discussions. A survey of 175 residents from 18 various specialties showed that 54.3% of residents reported that they received little to no training on EOL care during their medical school education. Moreover, most residents (88.1%) receive little to no training on EOL care in residency although 50.6% of these residents reported that these conversations come up frequently. The purpose of our study is to incorporate a longitudinal palliative care curriculum into an Obstetrics and Gynecology (OBGYN) residency training program.

**Methods:** This study will be conducted amongst OBGYN residents (PGY 1 – 4) at Inova Fairfax Hospital. Instruction will be provided longitudinally throughout the academic year in a multi-modal fashion providing lecture-based, simulation, and experiential learning. One module will be provided each quarter. Topics include palliative care in gynecology, perinatal palliative care, social/emotional support, and communication skills for breaking bad news.

Pre and post knowledge surveys will be collected for each didactic learning module and a score sheet grade will be provided for each resident during the patient simulation module. A confidence survey will be collected from each resident before and after the entire year long curriculum. The PGY1 class will additionally have the opportunity to spend four, half-days on the palliative care inpatient service to gain additional clinical exposure. The score sheet grades for the PGY1 class will be used to compare PGY 1 residents who have received the inpatient clinical experience with PGY 1 residents who did not receive the clinical experience curriculum in a cross over fashion. Finally, the number of palliative care consults ordered by the department of Ob-Gyn will be assessed pre and post the year curriculum to evaluate behavioral change as a result of palliative care education.

**Results:** Pending

**Conclusion:** Pending

## Tips and Tricks for Removal of Trans-Obturator Sling Tapes

Helen Shi MD, Roni Tomashev MD, S. Abbas Shobeiri MD

**Background:** Sling tapes are commonly used for the treatment of female stress urinary incontinence. The sling tape can be placed through a trans-obturator or retropubic approach. The aim of both is to provide increased support of the mid-urethra to prevent involuntary urine leakage. Common complications with the surgery include: hemorrhage, urinary tract perforation, voiding dysfunction, urinary retention and obstruction.

Voiding dysfunction, urinary retention and obstruction, although rare, do affect about 3% of women after a sling procedure. Surgical options such as sling excision, transvaginal urethrolisis, retropubic urethrolisis and suprameatal transvaginal urethrolisis may be needed to remedy urinary retention and obstruction.

Newly diagnosed urgency incontinence may affect 6% of women after sling tape placement. It is important to evaluate the cause of the urgency incontinence and exclude obstruction as the cause for urgency. Initial treatment for urgency incontinence after sling placement is identical to treatment for overactive bladder.

Mesh erosion occur rarely as a delayed post-op complications in an estimated 2-4% of patients. This complication is diagnosed on average nine months after the sling placement. Other post-op complications include recurrent UTIs, wound related infection, pain and dyspareunia. Some of these post-op complications may persist and require surgical intervention to improve.

**Video:** Tips and tricks for removal of trans-obturator sling tape

**Conclusion:** Video highlighting tips and tricks for completing a sling tape or removal

### Teaching Points:

- Removing or revision of a sling tape requires experience and specific methodologic steps.
- Using ultrasound can aid in distinguishing the mesh from surrounding scar tissue.

## Inova Women's Program for Gynecologic Robotics Effectiveness System Strategy (IW-PROGRESS) Project

Catherine Kim DO, Wendy Zheng CSSBB, Thea Velarde BSN, Kelly McDowell BSN, Jamie Addo BSN, Paula Graling DNP, Jarrod Frazer MD, Roni Tomashev MD, S. Abbas Shobeiri MD

**Background/Objective:** Inova Fairfax Women's and Children's hospital is a highly ranked in the United States. Our study aimed to utilize Lean Six Sigma methodology and a Kaizen event to validate our processes by creating value stream maps of the current and the post-intervention state.

**Methods:** Our prospective study was conducted in a tertiary care, teaching institution that performs over 700 robotic gynecological surgery cases every year. A team of continuous improvement engineers observed the workflows of gynecologic robotic surgeons and OR staff teams. A value stream map was created and validated for each surgical role. Surgical cases were analyzed by compartmentalizing three different phases in the operating room (OR): wheels-in to console start, console complete to wheels-out, and wheels-out to wheels-in. Movement analysis was performed and movement was categorized as: procedure-related, equipment management, communication, staff needs, documentation, and areas for improvement. The Kaizen event comprised of two breakout rooms focusing on these phases. Each team was composed from a group of twelve gynecological surgeons, two OR robotic teams, preoperative nurses, anesthesia, and engineers.

**Results:** Preliminary value stream map was constructed through a total of 36 meetings. Turnover time (TOT) analysis revealed average times of 43.6 minutes for wheels-in to console start, 31.8 minutes for console complete to wheels-out, and 45.2 minutes from wheels-out to wheels-in. The average TOT was 120.6 minutes. Movement analysis found 96.4% of movements as essential, while 3.6% as areas for improvement. Post-Kaizen event value stream map was validated through 55 meetings, and modifications were implemented on April 27, 2021.

**Conclusion:** The validation and revision of our existing processes brought highly efficient compartmentalized units together to enhance collegiality and communication; the result will inherently yield a reliable first case start and reduced TOT by placing patient safety and satisfaction at the center of care delivered.

## Degenerating Uterine Leiomyoma Perforating Into Small Bowel: A Case Report

Leah Allbright MD, Riley Kraus MD, Christine Rojas MD, Annette Bicher, MD

**Background:** Uterine leiomyoma, also known as fibroids, are benign growths that develop in several areas within the uterus that can be present in up to 80% of women. Several complications of fibroids are known to exist, including chronic constipation, pain, heavy menstrual bleeding, urinary retention and frequency, and at their worst, degeneration, bowel obstruction, and uterine rupture.

**Case:** A healthy 26-year-old gravida 1, para 0 woman with known past medical history of fibroids underwent therapeutic dilation and suction curettage at 10 weeks for a twin gestation. Three months later, she presented to the Emergency Department with severe abdominal pain, nausea, and vomiting. Computed tomography revealed loops of small bowel penetrating into the uterus. She underwent emergent exploratory laparotomy, which found fibrinous tissues extending from within the myometrium into a 2.5cm ileal defect and an appendix that was also found to be densely adherent to the uterine adjacent to the fundal defect. The contents of the small bowel defect were noted to contain tissue consistent with infarction of uterine fibroids.

**Conclusion:** There are limited cases describing whether fibroids can cause small bowel perforation and obstruction through either introduction via complications of dilation and curettage, by preexisting perforation, or by parasitic entry. To our knowledge, this is the first documented case report detailing fibroid degeneration and delayed presentation of small bowel perforation following dilation and suction curettage.

### Teaching points:

- Uterine fibroids being the most common benign tumors in women of reproductive age may become involved in the pathology of uterine perforations.
- Fibroids, if present and found to be perforating into the small bowel, may degenerate and cause obstruction.

## Radical Abdominal Trachelectomy and Cerclage Placement as an Approach to Pregnancy-Sparing Treatment of Early-Stage Cervical Cancer

Briana Kyne MD, Graham Nelsen MD, Amanda Jackson MD,  
Annette Bicher MD

**Background:** There is a lack of consensus regarding the optimal surgical technique to address early-stage cervical cancer in pregnancy. Depending on stage and lymph node status, the current recommendations suggest simple trachelectomy, delayed treatment after delivery, neoadjuvant chemotherapy, or termination of pregnancy. Cases of radical trachelectomy and cerclage placement have been published as an alternate treatment approach in select candidates. Additional evidence in support of this approach is needed to actuate a change in treatment guidelines.

**Case:** A 32 year old G4P1021 patient with known poorly differentiated cervical cancer presented at 5w6d with an unplanned pregnancy. Review of cervical cytology screening is significant for LEEP three years prior. Recent pap smear returned negative for intraepithelial lesion or malignancy, high risk HPV positive. Subsequent colposcopy showed poorly differentiated carcinoma in a background of endocervical adenocarcinoma in situ. PET-CT demonstrated mild hypermetabolism of the cervix consistent with malignancy. Cold knife cone biopsy and McDonald cerclage placement was performed at 9w4d. Pathology revealed moderate to poorly differentiated invasive adenosquamous carcinoma, tumor size 12 mm with 3.5 mm invasion, FIGO Stage IB1. After counseling, the patient underwent radical abdominal trachelectomy with cerclage placement at 18w5d. Pathology demonstrated squamous metaplasia and chronic cervicitis of the ectocervical and endocervical mucosa, CIN1. The margins were free of dysplasia and lymph nodes were negative. The patient subsequently received serial cervical length assessments until 32 weeks gestation. A cesarean delivery was performed at 37 weeks for a viable male infant, weighing 2835 grams, Apgars 1 and 9. The postoperative course was uncomplicated. The plan for cervical cancer surveillance is interval examinations every 3-6 months for 2 years and annual vaginal cytology screening.

**Conclusion:** The case presented serves as further evidence in support of the radical abdominal trachelectomy/cerclage placement approach to early cervical cancer treatment in pregnancy.

### Teaching Points:

- There is a lack of consensus regarding the optimal surgical technique to address early-stage cervical cancer in pregnancy.
- Abdominal radical trachelectomy and cerclage placement serves as a pregnancy-sparing approach with acceptable early oncologic outcome for pregnant women undergoing treatment for early-stage cervical cancer.
- Further research on the efficacy of this approach in appropriate candidates is needed to inform the Gynecologic Oncology and Obstetric community regarding treatment modality for pregnant women with early-stage cervical cancer.

## Post-Partum Post-Traumatic Stress Disorder in Women after Pelvic Floor Trauma

Omotomilade Olopoenia MD, Rachel Noble MS, Roni Tomashev MD,  
S. Abbas Shobeiri MD

**Background/Objectives:** Pelvic floor trauma as a consequence of childbirth is perceived as a physical phenomenon. The physiological effects of these injuries are well documented, but there are limited studies that examine the psychological ramifications of pelvic floor related traumatic experiences. Postpartum Post-Traumatic Stress Disorder (PP PTSD) has been under-investigated. The effects of pelvic floor injury coupled with a highly traumatic childbirth experience may be significantly detrimental to maternal mental health beyond the postpartum period. We hypothesize that PP PTSD is associated with pelvic floor injury. The primary aim is to investigate the incidence of PP PTSD in patients with vaginal delivery related pelvic floor trauma. The secondary aim is to investigate the incidence of vaginal delivery related pelvic floor trauma in patients with PP PTSD.

**Methods:** To investigate the primary outcome, we will conduct a retrospective cohort analysis among post-partum women who visited the INOVA perineal clinic. The data collected already in the database are age, parity, diagnosis, fetal weight, length of labor, forceps/vacuum use, and pelvic floor ultrasound parameters. The patients will be administered City Birth Trauma Scale Questionnaire (CBTSQ). We will measure PTSD as a categorical outcome using the diagnostic criteria included in the questionnaire. Primary exposure is pelvic trauma sustained during vaginal delivery and will be classified based on the ultrasound diagnostic criteria. We will also review the electronic health records of all participants to measure other potential confounding factors including age, number of pregnancies, co-morbid history and extent of pelvic floor trauma. Chi-square tests will be used to compare the association between trauma sustained during delivery and PTSD. For the secondary outcome, screening 1000 patients 6 weeks after vaginal delivery will result in identifying 30-60 patients with PP PTSD (prevalence 3.1-6.3%), who will be invited for evaluation at the perineal clinic.

**Results:** pending

**Conclusion:** pending

## Successful Removal of Giant Uterine Leiomyomata with Minimal Blood Loss: Case Report and Literature review

Alexandra Snyder MD, Christine Rojas MD, John C Elkas MD

**Background:** Giant uterine leiomyomata, defined as those greater than 11.4 kg, are a rare presentation of extremely common gynecologic tumors. Most case reports of surgical resection of these tumors describe significant blood loss requiring blood transfusion. The two largest tumors successfully resected as reported in the literature weighed 51 kg and 45.45 kg.

**Case:** The patient is a 72-year old female who underwent exploratory laparotomy, radical total abdominal hysterectomy, bilateral hypogastric artery ligation, and infracolic omentectomy. Her past medical history was significant for a prior cerebrovascular accident, heart murmur, hyperlipidemia, and hypertension. She had no history of prior abdominal surgery. CT imaging showed a 39.6 x 40.4 x 26.9 cm heterogeneous mass.

Intraoperatively, the mass was found to originate from the lower uterine segment and cervix. The hypogastric arteries and vessels of the infundibulopelvic ligament were suture ligated bilaterally. The mass was then resected en bloc with the uterus and a section of the bladder serosa muscularis due to dense fibrosis and size of the mass. Frozen section showed benign spindle cell leiomyoma and final pathology revealed a subserosal lipoma leiomyoma weighing 45,000 g (99.2 lbs) and measuring 45 cm. The estimated blood loss was 350 cc.

Other reports of similarly sized leiomyomata resections describe significant hemorrhage either intraoperatively or postoperatively. The surgical technique of hypogastric artery ligation prior to dissection of the tumor or uterus aided in preventing hemorrhage during this surgery. This represents one of the largest uterine leiomyoma ever successfully removed from a living patient and the largest myoma ever removed, as reported in the literature, without requiring blood transfusion.

**Conclusion:** Resection of giant leiomyomata is often complicated by significant blood loss. Ligation of all major vessels including hypogastric arteries may help prevent the need for volume resuscitation and transfusion.

### Teaching Points:

- Surgical resection of very large leiomyoma is rare and often includes significant hemorrhage requiring transfusion.
- Artery ligation, including hypogastric artery, can be utilized to successfully achieve hemostasis.

## WED2FIT: A Health and Wellness Initiative for Inova Women's Service Line Employees

Alicia St. Thomas MD, MA, Marla Booker MSHCA, BSN, NEA-BC, Susan Van Glandan, Sira Perez-Visona, Lauren Trosch DPT, Kirstie Pomaranski CPT, CES, CETI- CES, Jenna Spector MS, NBC-HWC, Stephanie Herbert CPT, Marisa Little MSN, Tory Asfahani MPH, LCCE, Rachel Noble MS, LPCS, S. Abbas Shobeiri MD, G. Larry Maxwell MD

**Background/Objective:** Health care worker burnout is prevalent and has increased over the past decade. The implementation of wellness programs is one method of reducing burnout. INOVA Women Service line's WED2FIT program is an initiative to promote health and wellness among employees. The program entails a 5-week challenge with a different focus each week (e.g. steps, hydration, exercise, nutrition, stress relief) and a small daily goal related to each week's focus. Our objective was to implement and evaluate WED2FIT program with specific aims at wellness, quality of life, physical activity and healthy eating habits, and fostering team-work.

**Methods:** The robust WED2FIT development and implementation team included 13 leaders from the OBGYN department, nursing management, physical therapy department, Inovawell, and behavioral health. Members from the group met on 12 occasions from December 2020 through April 2021 for planning and program development. A pre and post survey was developed to assess program efficacy. Throughout the program, information was disseminated via social media and email. Prior to program start, "Influencers" were identified in various locations and units to assist in promoting the program.

**Results:** Sixty -five individuals responded to the program pre-survey. Post-survey data collection is in process. Paired sample t-test will be used to assess average change in individual's responses before and after the program. The Facebook group that was utilized to disseminate information received 80 new members over the course of the program and the WED2FIT Instagram page has 31 followers. Over the course of the program there were 70 Facebook posts with a total of 5,508 views. Six individuals signed up for the email list serve.

**Conclusion:** Data collection on measures of program efficacy is in progress. Overall, the program appears to have been well received. Future directions include implementation of system-wide changes to address barriers to physical activity and healthy eating.

*To our residents, congratulations on your  
research!*

*To our faculty and staff, thank you for  
your continued guidance and support!*