15th Annual RESIDENT RESEARCH DAY & JOHN ROCK LECTURE

MAY 18, 2018

ARTHUR H. RUBENSTEIN AUDITORIUM
SMILOW CENTER FOR TRANSLATIONAL RESEARCH
PERELMAN SCHOOL OF MEDICINE
UNIVERSITY OF PENNSYLVANIA
We are pleased to welcome you to the 15th Annual John Rock Lecture and Department of Obstetrics and Gynecology Resident Research Day. Resident Research Day is an opportunity for our trainees to present their basic or clinical research projects to their colleagues with the goal of challenging current thinking to improve women’s health care. We believe this experience will inspire our young physicians to explore basic science, translational and clinical research opportunities in their future careers in order to benefit patients and advance our specialty.

We are honored to welcome Dr. Haywood L. Brown, F. Bayard Carter Professor, Department of Obstetrics and Gynecology, Duke University Medical Center, and 68th President of ACOG, as our guest speaker presenting, “Professionalism in Medicine: Expectations and Challenges.”

A special thank you to the Women’s Health Clinical Research Center, The Maternal and Child Health Research Center, The Penn Ovarian Cancer Research Center and The Center for Research on Reproduction and Women’s Health.

We thank you all for coming today and hope you will join us in congratulating all of today’s participants on their achievements.

Dr. Haywood L. Brown is a native of North Carolina. He received his undergraduate degree from North Carolina Agricultural and Technical State University in Greensboro and his medical degree from Wake Forest University School of Medicine in Winston-Salem, North Carolina. He completed his residency training in Obstetrics and Gynecology at the University of Tennessee Center for Health Sciences in Knoxville, Tennessee, followed by subspecialty fellowship training in Maternal and Fetal Medicine at Emory University School of Medicine/Grady Memorial Hospital in Atlanta, Georgia.

Dr. Brown is Board Certified in Obstetrics and Gynecology and Maternal Fetal Medicine. Dr. Brown returned to North Carolina in 2002 and served as Professor and Chairman of the Department of Obstetrics and Gynecology at Duke University Medical Center in Durham, N.C. for 15 years.

Dr. Brown has served as Chair of CREOG, and is past President of the Society of Maternal Fetal Medicine and the American Gynecological Obstetrical Society (AGOS). He also served as a Director of the American Board of Obstetrics and Gynecology. Dr. Brown is past president of the North Carolina Obstetrical and Gynecological Society and is immediate past District IV Chair of ACOG.

Dr. Brown is the 68th President of the American College of Obstetricians and Gynecologists.
Continental Breakfast
Welcome Remarks by Deborah A. Driscoll, MD
Introduction by Anuja Dokras, MD, PhD

RESIDENT RESEARCH PRESENTATIONS

'Treat and release' Emergency Department Utilization by Patients with Gynecologic Cancers: National Estimates and Associations with Visit Charges by Benjamin Albright, MD, MS
Validation of a Breastfeeding History Questionnaire for the Prediction of In-hospital Formula Supplementation in Multiparous Women by Whitney Bender, MD
Evaluation of the Pain Experience and Use of Opioids after Discharge Following Cesarean Delivery by Sarah Gutman, MD, MPH
Compliance with ACOG Prophylactic Surgical Antibiotic Guidelines and Risk of Postoperative Infection Among Patients Undergoing Hysterectomy by Said Saab, MD, MPhil
Rapid Repeat Pregnancy in an Urban Population: Prevalence and Risk Factors by Maryl Sackeim, MD
Impact of Delay to Hysterectomy for Benign Gynecologic Disease by Jessica Trayler, MD
Barriers to Utilization of Obstetrics & Gynecologic Services after Ectopic Pregnancy by Sevelle Holder, MD

RESIDENT (PGY2) RESEARCH PROPOSALS

Assessing Resident Knowledge of PCOS Diagnostic Criteria and Management by Anat Chemerinski, MD
Racial Disparities in End-of-life Care in Patients with Gynecologic Cancer by Denise Johnson, MD
Severe Preterm Pre-eclampsia: A Retrospective Study of Differential Outcomes Based on Race by Jessica Peterson, MD
Change in Vaginal Axis and Angle in Women Before and After Hysterectomy by Elizabeth S. Ruben, MD
Applying Principles of Implementation Science to the Polycystic Ovary Syndrome (PCOS) Guidelines by Stephanie Sansone, MD

JOHN ROCK LECTURE
Professionalism in Medicine: Expectations and Challenges by Haywood L. Brown, MD, Visiting Professor

AWARD PRESENTATIONS

Resident Teaching Award for Excellence in Medical Student Education
Fellow Teaching Award for Excellence in Resident Education
Robert R. Rascoe MD Award for Excellence in Ambulatory Patient Care
GREOG 2018 National Faculty Award for Excellence in Resident Education
‘TREAT AND RELEASE’ EMERGENCY DEPARTMENT UTILIZATION BY PATIENTS WITH GYNECOLOGIC CANCERS: NATIONAL ESTIMATES AND ASSOCIATIONS WITH VISIT CHARGES

Authors
Albright BB, Delgado MK, Latif N, Giuntoli R, Ko E, Haggerty AF

Background
17% of cancer patients use the Emergency Department (ED) annually, with many patients treated and released without inpatient admission. Avoidable ED utilization represents a major target for cost reduction and quality improvement in ongoing policy reform. This study sought to describe the burden of ‘treat and release’ ED utilization by patients with gynecologic cancers in order to identify opportunities for improved triage.

Methods
Patients with a diagnosis of gynecologic cancer were identified within the National Emergency Department Sample (NEDS), a nationally representative sample of hospital-based ED visits, from 2009 to 2013. Sample weights were utilized to generate national estimates of visits, charges, procedures and diagnoses. Associations with visit charges were assessed with bivariate and multivariate linear regression.

Results
38,487 annual ‘treat and release’ visits by patients with diagnosis of gynecologic cancer were identified within NEDS between 2009 and 2013. Using sample weights, this extrapolated to a national estimate of 174,092 annual ED visits (95%CI 173,991–174,192) corresponding to over $714 million (95%CI $710–720 million) in annual charges, with an average charge of $4,107 per visit (95%CI $4,083–$4,130). Annual visits increased significantly over time, but per visit charges did not increase over time within NEDS between 2009 and 2013. Sample weights were utilized to generate national estimates of visits, charges, procedures and diagnoses. Associations with visit charges were assessed with bivariate and multivariate linear regression.

Conclusion
Patients with gynecologic cancers are frequently seen in the ED with problems or needing procedures that could be less expensively managed in the clinic setting. Pathways such as phone triage and oncologic urgent care centers have potential to avoid unnecessary ED visits and lower global costs. The majority of the cost burden is borne by government payers. Although cervical cancer is less prevalent in the United States, patients with cervical cancer presented to the ED more frequently than those with other gynecologic cancers.

VALIDATION OF A BREASTFEEDING HISTORY QUESTIONNAIRE FOR THE PREDICTION OF IN-HOSPITAL FORMULA SUPPLEMENTATION IN MULTIPAROUS WOMEN

Authors
Bender WR, Koelper NC, Sammel MD, Durnwald C

Background
Breastfeeding is a public health priority, yet few standardized tools exist to predict women at risk of breastfeeding problems. The objective of this study was to validate a prenatal breastfeeding history questionnaire to predict in-hospital formula supplementation among multiparous women.

Methods
This is a prospective observational study of multiparous women with singleton pregnancies who presented to a Baby-Friendly urban tertiary care center for 1st prenatal visit at ≥20 weeks gestation. This study aimed to validate BAP, a questionnaire on prior breastfeeding experience. The questions are: How many babies (B) have you breastfed? How many babies have you been successfully able (A) to breastfeed? How many babies have you had problems (P) breastfeeding? The questionnaire generates a numerical score with the following formula: B+A-P. A higher score indicates prior successful breastfeeding experiences. The primary outcome was occurrence of non-medically indicated formula supplementation during the postpartum hospital stay. Exclusion criteria were: a medical contraindication to breastfeeding, pregnancy loss or termination, delivery < 37 weeks, neonate admitted to ICU, or unplanned delivery at an outside institution. Student’s t-test and Pearson’s chi-square test were used to compare continuous and categorical variables. A multivariable logistic regression was performed to assess the relationship of BAP score to formula supplementation.

Results
Of 587 women screened, 433 (73.8%) mother-infant dyads were analyzed. The rate of formula supplementation in women with BAP scores <1 was 67% compared with 37% in women with BAP scores ≥2 (p = 0.0001). Women with BAP scores <1 were younger, more obese, and more likely to have public insurance compared to those with BAP scores ≥2. After controlling for age, race, insurance, screening BMI, and presence of maternal complications, women with BAP scores <1 were 2.6 times more likely to supplement formula than women with higher scores (aOR 2.62, 95% CI 1.70–4.04, p < 0.0001). BAP scores <1 remained strongly associated with formula supplementation when the analysis was restricted to formula use for >50% and >75% of feeds. (aOR 4.13, 95% CI 2.51 – 6.80, p <0.0001 and aOR 4.64, 95% CI 2.47 – 8.08, p < 0.0001, respectively).

Conclusion
In this prospective validation study, women with BAP scores <1 were significantly more likely to supplement formula during the postpartum hospital stay. Future research should focus on utilizing the BAP tool in prenatal care to identify at-risk women in need of antepartum intervention to increase rates of breastfeeding initiation, duration, and exclusivity.
EVALUATION OF THE PAIN EXPERIENCE AND USE OF OPIOIDS AFTER DISCHARGE FOLLOWING CESAREAN DELIVERY

Authors
Gutman S, Srinivas S

Background
Despite the high prevalence of cesarean delivery (CD), little is known about average opioid use after discharge following CD. We evaluated the quantity of opioids consumed by women after CD, and the association between demographic, surgical, or prescription factors and opioid use.

Methods
102 women discharged between January 2017 and March 2017 from a single, urban academic hospital following a CD were included. Patients were contacted 5-8 days after discharge and were asked about pain intensity, pain relief, ongoing use of opioids, medication storage, and plans for unused medications. If the patient reported completing opioid use, she was asked to count the number of remaining pills. The opioid prescriptions dispensed were verified using the Pennsylvania Prescription Drug Monitoring Program. Demographic information was abstracted from the patients’ medical records. The number of total pills consumed was estimated using a linear regression model.

Results
The majority of initial prescriptions were given for oxycodone/acetaminophen (90%), followed by hydromorphone (8%) and oxycodone (2%). Twenty-one prescriptions were given for 40 pills (21%), 75 for 30 pills (75%), and 4 for 20 pills (4%). Six patients (6%) received refills. The mean number of pills consumed was 24. Excluding patients who received refills, the mean number of leftover pills was 6. In a linear regression model with age, race, obesity, location of prenatal care, HTN, diabetes, and number of prior CD, none of the covariates were associated with number of pills consumed. There was a statistically significant association between pills prescribed and pills consumed. Each additional pill prescribed was correlated to 0.467 more pills consumed (p=0.05). There was no difference in reported pain intensity or relief based on the number of pills dispensed.

Conclusion
Patients are routinely being prescribed more opioid pills than consumed following CD. Larger prescriptions lead to increased opioid use and more leftover pills in the household, contributing to the prescription opioid abuse epidemic. This should be considered when writing prescriptions for opioid medications following CD.

COMPLIANCE WITH ACOG PROPHYLACTIC SURGICAL ANTIBIOTIC GUIDELINES AND RISK OF POSTOPERATIVE INFECTION AMONG PATIENTS UNDERGOING HYSTERECTOMY

Authors
Saab S, Cory L, Mastroyannis S, Finnegan L, Ko E

Background
Minimizing postoperative infections has been the focus of quality improvement initiatives and has led to prophylactic antibiotic guidelines for gynecologic surgery. Previous studies have identified undergoing a gynecologic procedure as a risk factor for receiving non-compliant antibiotics and identified infections as the most common modifiable indication for readmission after gynecologic surgery.

Methods
In a retrospective cohort study, we identified patients who underwent hysterectomy within the University of Pennsylvania healthcare system between May 2016 and May 2017. Compliance with antibiotic guidelines was assessed in four categories: recommended regimen, timing of administration, re-dosing by operative time, and re-dosing by estimated blood loss (EBL). Our primary study outcome was development of a major postoperative infection within 30 days of surgery, as defined by an infection requiring readmission, requiring intervention by interventional radiology or leading to the development of systemic inflammatory response syndrome (SIRS)/sepsis/septic shock. Our secondary study outcome was development of minor postoperative infections within 30 days of surgery, as defined by infections requiring outpatient treatment.

Results
We identified 1,256 women who underwent hysterectomy. Compliance with all four spheres of prophylactic antibiotic guidelines was noted in 87.3% (1,097/1,256) of patients. While 94.6% (1,188/1,256) and 97.6% (1,226/1,256) of patients received an appropriate regimen and appropriate timing of antibiotics, respectively, only 69.2% (171/247) of patients with prolonged operative times and 38.5% (5/13) of patients with large EBL received antibiotics compliant with current guidelines. Patients receiving non-compliant antibiotics were more likely to have a penicillin or cephalosporin allergy, open surgical procedure, concurrent gastrointestinal or genitourinary procedure, longer operative time and larger EBL (all P < .01). In multivariable models, non-compliance with antibiotic guidelines was an independent risk factor for major (OR 2.85, 95% CI 1.40-5.80) and minor (OR 2.05, 95% CI 1.27-3.31) postoperative infections, while open surgical procedures were an independent risk factor for major postoperative infections (OR 2.73, 95% CI 1.36-5.47).

Conclusion
Non-compliance with prophylactic surgical antibiotic guidelines was associated with increased major and minor postoperative infections.
RAPID REPEAT PREGNANCY IN AN URBAN POPULATION: PREVALENCE AND RISK FACTORS

Authors
Sackeim M, Sammel MD, Gurney E, Schreiber CA

Background
Rapid repeat pregnancy (RRP) is associated with adverse perinatal and maternal outcomes. Interventions to reduce the incidence of RRP have focused on adolescents and low-income populations and have shown that long acting reversible contraception (LARC) offered in the immediate postpartum period is a convenient, efficacious, and cost-effective means of decreasing unintended and short-interval pregnancies. Our aim was to evaluate the role of contraceptive method choice in RRP prevention within a large, diverse, urban population with both public and private payers.

Methods
This retrospective cohort study of patients delivered at one of two Penn Medicine hospitals in August 2014 (n=804) was approved by the University of Pennsylvania IRB. We defined RRP as a pregnancy that occurred within 18 months of an index delivery. Data from the index delivery and the subsequent 18 months were extracted from the Clinical Data Warehouse and electronic medical records. Assuming 30% of women would choose a LARC method and a baseline rate of RRP among women who did not choose LARC of 30%, a sample size of 745 women was required to have 80% power to detect a 33% reduction in RRP with LARC use in our population. Exclusion criteria were loss to follow-up after delivery (n=20) and having an immediate postpartum tubal ligation (n=39). SAS 9.4 (Cary, NC) was used to compute associations with pregnancy within 18 months of delivery. Pearson chi-square, Fisher’s exact, and Student’s t tests were used to evaluate associations between risk factors and RRP. A multivariable logistic model adjusted for the potential confounders of age, race, insurance, hospital, and parity.

Results
Seven hundred forty-five women were included. The prevalence of RRP in our cohort was 27.2% (203/745), 95% CI 24.1%–30.2%. Women who had a RRP were younger (aOR 0.95, 95% CI 0.92–0.98, p=0.003) and less likely to have used a LARC method (aOR 0.45, 95% CI 0.24–0.85, p=0.014). Women who chose the progestin-only pill after delivery were at an increased risk of RRP (OR 5.311, CI 2.269–12.434, p=0.0001) when compared with other forms of contraception, including no contraception. In this population, young age and use of a short-acting reversible contraceptive were associated with an increased risk of RRP even when adjusting for hospital location, race, and patient insurance. Women who received a prescription for the progestin-only pill had the highest risk of RRP. Providers and health systems should make immediate postpartum LARC available to all women.

Conclusion
In this population, young age and use of a short-acting reversible contraceptive were associated with an increased risk of RRP, even when adjusting for hospital location, race, and patient insurance. Women who received a prescription for the progestin-only pill had the highest risk of RRP. Providers and health systems should make immediate postpartum LARC available to all women.

IMPACT OF DELAY TO HYSTERECTOMY FOR BENIGN GYNECOLOGIC DISEASE

Authors
Traylor J, Koelper N, Kim SW, Sammel MD, Andy U

Background
Prior studies suggest that surgical delays to hysterectomy are associated with worse outcomes for women diagnosed with gynecologic cancers. However, the impact of surgical delays on outcomes for hysterectomy for benign gynecologic conditions is not known. The aim of this study was to determine the impact of delay to hysterectomy on healthcare utilization and surgical outcomes for benign gynecologic indications.

Methods
We conducted a retrospective cohort study of women who had a hysterectomy for benign disease at the Hospital of the University of Pennsylvania, an academic tertiary care center, between 2012 and 2018. Women were included in the study if they attended a preoperative visit at the resident gynecology clinic and underwent hysterectomy for benign disease. We extracted demographic information, medical history and perioperative data from the medical record. Women were divided into two groups, those with and without delay to surgery. Delay was defined as an initial preoperative appointment that occurred greater than 30 days from the surgery date. Healthcare utilization was measured by the number of discrete patient interactions with the healthcare system via phone calls, secure electronic messaging, office and emergency room visits. Pearson chi-squared, Student’s t-test, or Wilcoxon rank sum tests were used to compare patient characteristics. Multivariable logistic regression models were performed to assess associations between delay and healthcare utilization and perioperative outcomes controlling for confounders.

Results
A total of 277 patients were identified (delay=106, no delay=171). These groups did not differ by age, insurance status, substance use or comorbid conditions. The median (range) amount of time from preoperative appointment to surgery was 47 (34–68) days for women with delay and 19 (12–26) days for those without delay. Delay to surgery was associated with significantly increased healthcare utilization (OR 4.9 95% CI: 2.7 – 8.7, p = 0.001). While there were no differences in intraoperative complications (8% versus 11%, p = 0.482), after controlling for hypertension, women in the delay group were 2.8 times more likely to be readmitted (95% CI: 1.1 – 6.8, p=0.042) than women in the no delay group.

Conclusion
Delay to hysterectomy for benign disease is associated with increased healthcare utilization in the interim. Though women who experience preoperative delays do not experience worse surgical outcomes, they are at higher risk for readmission after surgery. Further research is needed to identify the causes for longer preoperative latency so that we can target interventions to reduce delays.
BARRIERS TO UTILIZATION OF OBSTETRICS & GYNECOLOGIC SERVICES AFTER ECTOPIC PREGNANCY

Authors
Holder S, Koelper N, Sammel MD, Barnhart KT, Butts S

Background
Ectopic pregnancy is associated with long-term challenges to reproductive health, especially in underserved women. Patterns of seeking care after treatment are not well characterized in this population and potential barriers limiting access to gynecologic services should be investigated. We hypothesize that ectopic pregnancy treatment is associated with engagement in gynecologic services by 3 and 12 months after cure.

Methods
A retrospective cohort study of women treated by OB/GYN residents for an ectopic pregnancy between 2006-2017 at the Hospital of the University of Pennsylvania was performed. Women were included if they received medical care at the University of Pennsylvania Hospital System (UPHS) within 12 months prior to diagnosis of ectopic pregnancy. Subjects were extracted from a centralized computerized clinical database of symptomatic women with pregnancy of unknown location and a UPHS clinical data warehouse. The primary outcome was outpatient follow up in the resident clinic at 3 and 12 months from treatment cure. Demographic variables and outpatient follow up were summarized using descriptive statistics. Tests of association included Pearson’s χ², Fisher’s exact and Kruskal-Wallis. Multivariable logistic regression was performed to adjust for confounders and evaluate hypothesized effect modification by key variables in relationship to the engagement.

Results
Of the 797 charts reviewed, 398 subjects met inclusion criteria. Fifty-two percent of patients were surgically managed whereas 42% were medically managed with methotrexate. The two treatment groups did not differ by age, race, insurance status or number of prior ectopic pregnancies. Patients surgically managed were significantly more likely to return for follow up than those medically managed at both 3 months (OR 6.11, 95% CI 3.84-9.73, p<0.0001) and 12 months (OR 2.92, 95% CI 1.93-4.42, p<0.0001) after achieving cure. After controlling for chief complaint, parity, number of healthcare encounters and rupture, surgically treated patients remained significantly more likely than medically managed patients to seek post treatment care at 3 months (OR 4.37, 95% CI 1.55-12.29, p=0.005) and 12 months (OR 2.50, 95% CI 1.39-4.50, p=0.002). History of prior ectopic pregnancy significantly reduced the likelihood of follow up at 12 months (OR 0.52, 95% CI 0.31-0.90, p=0.02). Number of healthcare encounters was not associated with lack of post-treatment care.

Conclusion
Patients with ectopic pregnancy treated medically with methotrexate are less likely to utilize gynecologic services for up to 1 year after treatment. This represents an important challenge to delivering critical counseling regarding potential reproductive risks, contraceptive options, and general well woman care.

RESIDENT AWARDS & ACCOMPLISHMENTS

Whitney Bender, MD
Awarded 2nd place poster, Conference for International Society for Prenatal Diagnosis

Neha Deshpande, MD
Resident Reporter Scholarship, North American Menopause Society
Distinguished Alumni Award, Women’s Pre-Health Leadership Society, Johns Hopkins University
Resident Inductee, Gold Humanism Honor Society, Perelman School of Medicine
S. Leon Israel Research Award, Obstetrical Society of Philadelphia

Alex Mastroynnis, MD
Penn Pearls Teaching Award, Perelman School of Medicine

Maryl G. Sackeim, MD
The Sharon Youcha, MD Compassionate Patient Care Award, The Department of OBGYN

Jessica Traylor, MD
Recognition of Excellence in Minimally Invasive Gynecology, American Association of Gynecologic Laparoscopists

Congratulations to the graduating class of 2018
CONGRATULATIONS

Notes

Notes