



**Women's Health Research Day 2017**

**FULL ABSTRACTS**

**ID:1**

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**Title:** The Role of Gender in Brain Function and Recovery after Liver Transplant in Cirrhosis.

**Authors:** Vishwadeep Ahluwalia, PhD, Gastroenterology, Hepatology and Nutrition; Melanie B White, RN, Gastroenterology, Hepatology and Nutrition; Andrew Fagan, BS, Gastroenterology, Hepatology and Nutrition; Richard K Sterling, MD, Gastroenterology, Hepatology and Nutrition; RT Stravitz, MD, Gastroenterology, Hepatology and Nutrition; Douglas Heuman, MD, Gastroenterology, Hepatology and Nutrition; Scott Matherly, MD, Gastroenterology, Hepatology and Nutrition, Virginia Commonwealth University and McGuire VA Medical Center, Richmond, Virginia; HoChong Gilles, PhD, Gastroenterology, Hepatology and Nutrition; Velimir Luketic, MD, Gastroenterology, Hepatology and Nutrition; Jill Gaidos, MD, Gastroenterology, Hepatology and Nutrition; James B Wade, PhD, Dept. of Psychiatry; Jasmohan S Bajaj, MD, Gastroenterology, Hepatology and Nutrition—VCU and McGuire VA Medical Center

**Objective:** To determine gender differences in cirrhosis based on MRS using cross-sectional and pre/post LT analyses.

**Background:** Cirrhosis, the end-stage of liver disease, can have gender-related differences in prognosis, especially related to alcohol susceptibility. Brain dysfunction due to cirrhosis is termed hepatic encephalopathy (HE), which can be studied using cognitive tests and can variably resolve after liver transplant (LT). The neuro-inflammatory brain response due to HE can be studied using brain MR spectroscopy (MRS).

**Method:** Cirrhotic outpatients were evaluated for cognitive function (Psychometric Hepatic Encephalopathy Score PHES; low score=poor performance) and MRS at baseline and 6 months post-LT. Men and women were matched for age, cirrhosis severity (Model for End-stage Liver Disease MELD score), HE, and past alcohol use (all abstinent at testing). With worsening HE we expect high Glx (glutamate+glutamine) and low myoinositol (ml) and Choline (Cho) on MRS. We studied Anterior cingulate (ACC), right parietal white (RPWM) and posterior gray matter (PGM) areas. Cross-sectional analysis between men and women was done for baseline scans. Pre vs post-LT comparisons were performed separately for men and women and delta change was compared between genders. Cross-sectional: 17 women (56yrs, MELD: 10.3, 41% prior HE, 17.6% alcohol) & 23 men (57.5yrs, MELD: 11.3, 43% prior HE, 17.4% alcohol) cirrhosis patients were tested. There were no significant gender differences or trends on the PHES tests (women:  $-2.9 \pm 3.2$  and men:  $-3.2 \pm 3.9$ ;  $p=0.46$ ). MRS metabolites were similar between genders across regions (RPWM: Glx  $p=0.67$ , ml  $p=0.77$ , Cho  $p=0.27$ ; PGM: Glx  $p=0.45$ , ml  $p=0.60$ , Cho  $p=0.10$ ; ACC: Glx  $p=0.24$ , ml  $p=0.67$ , Cho  $p=0.51$ ). Pre vs. Post-LT: 8 women (57yrs, MELD: 14, 62.5% prior HE, 37.5% alcohol) and 10 men (58.5yrs, MELD: 15.5, 60% prior HE, 30% alcohol) cirrhosis patients were tested 6 months post-LT. Post-LT there were significant improvements in PHES scores in women (preLT:  $-2.5 \pm 3.8$  and postLT:  $-1.2 \pm 3.6$ ;  $p=0.02$ ) and men (preLT:  $-3.5 \pm 3.3$  and postLT:  $-1.4 \pm 2.1$ ;  $p=0.01$ ). This was accompanied by MRS improvements (lower Glx & higher Cho/ml) in women (RPWM: Glx  $p=0.01$ , ml  $p=0.01$ , Cho  $p=0.01$ ; PGM: Glx  $p=0.04$ , ml  $p=0.003$ ; ACC: Glx  $p=0.01$ , ml  $p=0.002$ , Cho  $p=0.01$ ) and men (RPWM: Glx  $p=0.01$ , ml  $p=0.001$ , Cho  $p=0.01$ ; PGM: Glx  $p=0.009$ , ml  $p=0.001$ , Cho  $p=0.02$ ; ACC: ml  $p=0.01$ , Cho  $p=0.04$ ) across all regions.

**Conclusion:** However, there were no significant differences in delta change (preLT-postLT) between genders ( $p>0.05$ ). When matched for age, severity of liver disease and alcoholic etiology, men and women with cirrhosis had similar neuro-inflammatory changes on MRS. Both genders improved equally after liver transplant. Gender does not have a significant impact on brain function in patients with cirrhosis.

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**Authors:** Areej, Alhareeri, Department of Pathology, Virginia Commonwealth University; Debra, Lyon, Biobehavioral Nursing Science, University of Florida School of Nursing; R.K., Elswick, Department of Family and Community Health Nursing, Virginia Commonwealth University; Debra, Lynch Kelly, Biobehavioral Nursing Science, University of Florida School of Nursing; Colleen, Jackson-Cook, Department of Pathology, Virginia Commonwealth University

**Title:** Telomere length in women with breast cancer: A longitudinal study of their relationship to chemotherapy and psychoneurological symptoms.

**Objective:** Inflammation and increased oxidative stress/cell turnover have been hypothesized to lead to accelerated erosion of telomeres, structures crucial for maintaining genomic integrity.

**Background:** Breast Cancer (BC) is one of the most commonly diagnosed malignancies in females. While advances in treatment have resulted in improvements in survivorship, the quality of life (QOL) for many women surviving breast cancer may be adversely affected due to treatment/cancer-related side effects, including a constellation of symptoms (anxiety, depression, pain, fatigue, sleep disturbance and depression) that are collectively termed psychoneurological symptoms (PNS).

**Methods:** To gain insight into the contributory role of telomere length (TL) in the development and persistence of PNS, we longitudinally studied 72 women (ages 23-71) with early stage BC (I-IIIa) at 5 time points: prior to chemotherapy (baseline), prior to the fourth cycle of chemotherapy (mid-chemo), 6 months, 1 year and 2 years following the initiation of chemotherapy. Measures quantified included TL [using both a monochrome multiplex qPCR assay (at 5 time points) and a semi-quantitative chromosome-specific Fluorescence In Situ Hybridization (FISH) assay (at baseline and mid-chemo)] and scores for each PNS. Variables predictive of qPCR Mean TLs were age ( $p=0.004$ ) and race (African Americans' mean TLs were longer than Caucasians;  $p=0.019$ ). Chromosome-specific TL shortening was observed at mid-chemo for 1p ( $p=0.022$ ), 5q ( $p=0.041$ ), 7q ( $p=0.025$ ), 9q ( $p=0.045$ ), 18q ( $p=0.002$ ), 20p ( $p=0.020$ ), 21q ( $p=0.040$ ) and 22p ( $p=0.025$ ). The type of chemotherapy administered to the women was shown to be a significant predictor of both mean TLs [Taxotere, Adriamycin, and Cyclophosphamide (TAC) mean TL significantly > Taxotere, Carboplatin, and Herceptin (TCH) mean TL;  $p=0.036$ ] and chromosome-specific TLs on 32 of the 46 chromosomal arms ( $p=0.004$  to  $0.049$ ). Pain was found to be a significant negative predictor of chromosome-specific TLs (higher pain; shorter telomeres) for 5q ( $p=0.040$ ), 8p ( $p=0.047$ ), 13p ( $p=0.019$ ), 20p ( $p=0.036$ ), 22p ( $p=0.035$ ), Xp ( $p=0.014$ ), Xq ( $p=0.039$ ).

**Conclusion:** Expanding upon the knowledge gained from this study offers hope for the future development of biomarkers that could identify patients at risk for PNS and potentially lead to strategies to improve their QOL.

**ID: 3**

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**Authors:** Michael Amendola, Department of Surgery, VCU Health System; Nathaniel Lee, Department of Surgery, VCU Health System; Nital Appelbaum, Office of Assessment and Evaluation Studies, VCU School of Medicine; Kelley Dodson, Department of Otolaryngology, VCU Health System; Brian Kaplan, Department of Surgery, VCU Health System

**Title:** Surgical Resident Well-Being: Implications of Gender and Family Structure

**Objective:** Our goal was to assess surgical resident perceptions of workplace climate, organizational support, burnout, and job satisfaction to test a mediation model identifying antecedents to resident well-being. Our secondary goal was to assess mitigating effects of gender and family structure. With institutional review board approval, an electronic linked and paper based survey was distributed to general surgery and surgical subspecialties residency programs of the south east, mid-Atlantic and northeast. This was undertaken from March to June 2016.

**Background:** Many investigators have examined resident well-being and the factors that affect it. To date limited literature has examined the role gender and family structure has in surgery resident perception of well-being.

**Methods:** Validated assessments of resident well-being included measures of burnout, resilience, work/life strain, as well as job satisfaction. Demographic items included gender and parental status. Data were analyzed through ANOVA and chi-square test of independence. Results: A total of 279 residents across sixty-two surgical residency programs participated in our study. Program affiliations were general surgery (n=158; 57%), otolaryngology (n=46; 17%), orthopedic surgery (n=32; 12%), urology (n=22; 8%), neurosurgery (n=13; 5%), plastic surgery (n=3; 1%). Across all respondents, 183 (66%) were male and 91 (33%) were female. Mean score of self-perception resilience was less in female residents compared to male residents (3.63 +/- 0.83 vs. 3.92 +/- 0.67; p=.002). Females also perceived less organizational support from their residency programs compared to men (3.38 +/- 0.80 vs. 3.63 0.66; p=.007). Respondents with children reported less burnout compared to residents without children (2.58 +/- 0.75 vs. 2.93 +/- 0.92; p=.003). Additionally, residents with children perceived themselves as more resilient compared to residents without children (3.97 +/- 0.73 vs. 3.77 +/- 0.73; p=.046). Greater organizational support was perceived by residents with children compared to those without children (3.21 +/- 0.45 vs. 3.03 +/-0.59; p=.015).

**Conclusion:** We found no significant difference in gender on burnout, perceived workplace climate, job satisfaction, and work/life strain. Female residents perceived themselves as less resilient with less organizational support. Interestingly, residents with children, reported less burnout, more resilience, and more perceived organizational support. This data should inform future organizational efforts to focus support for surgical residents during training.

**ID: 4**

**Submitting Authors:** Awate, Olivia, Postbaccalaureate student, Microbiology & Immunology Medicine, 757 240 3784, awateoa@mymail.vcu.edu

**Title:** Functional Analysis of HpuA Hemoglobin Binding in *Neisseria Gonorrhoeae*

**Author:** Olivia Awate, post baccalaureate, department of microbiology and immunology; Cynthia N. Cornelissen, PhD, department of microbiology and immunology

**Objective:** Studying the hemoglobin transport system and its HpuAB bipartite receptor should provide new insights regarding gonorrhea pathogenesis and potentially help in prevention. To determine if mutating one of the two proteins of the HpuAB bipartite receptor, in this case mutating HpuA, affects the bacterium's ability to bind hemoglobin and pull heme from hemoglobin as well as its ability to grow on hemoglobin as a sole iron source.

**Background:** *Neisseria gonorrhoeae*, the causative agent of the sexually transmitted infection gonorrhea, cannot be prevented by vaccination and an infection does not result in a protective immunity. Moreover, *Neisseria gonorrhoeae* is a "superbug" that resists all classes of antibiotics. In contrast to most bacteria, *Neisseria gonorrhoeae* obtains iron, an essential nutrient for bacterial growth and pathogenesis, directly from the host's iron-binding proteins using a two-component transport system. *N. gonorrhoeae* encodes similar but distinct iron transport systems that recognize transferrin, lactoferrin and hemoglobin as ligands. Therefore, the surface exposed outer membrane receptors of these iron transport systems are ideal targets for the development of a vaccine, which would potentially block iron transport and thereby help in the prevention of gonorrhea.

**Methods:** HpuA mutations in loop 1 and in loop 2 were generated based on the crystal structure of HpuA. Wild type (WT) and mutated copies of hpuA were cloned in a plasmid behind a Lac promoter. Then via transformation and recombination, WT or mutated hpuA copies were placed in an ectopic site on a FA19 hpuA::Kan chromosome behind the Lac promoter. Then, we did a western blot in the presence or absence of IPTG to confirm that mutated and WT copies of hpuA are induced with IPTG at the ectopic site in iron stressed conditions. Next, we did a growth assay to determine whether these mutated and WT copies of hpuA can grow on hemoglobin as their sole iron source by evaluating their growth phenotype after growing them on hemoglobin plates with or without IPTG. For the lanes that had no IPTG (- lanes) no bands were observed. The lanes with IPTG (+ lanes) showed a band at 42kDa. HpuA was expressed in iron stressed conditions and IPTG induced hpuA expression at the ectopic site.

**Results:** The mutant strains grown on hemoglobin with DFO and IPTG were all able to grow on hemoglobin as their sole iron source, except the one in loop 2. Also, none of the mutant strains could grow on hemoglobin with DFO and NO IPTG. HpuA is expressed in iron stressed conditions and IPTG induces HpuA expression in the ectopic site.

**Conclusion:** The amino acids changed in loop 1 are not critical to the growth of *N. gonorrhoeae* on hemoglobin since the mutants can grow just like the WT on hemoglobin as their sole iron source. However, the amino acids changed in loop 2 seem to be critical to the growth of *N. gonorrhoeae* on hemoglobin as their sole iron source.

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**Title:** Sex-, age- and concentration-specific effects of menthol flavor on nicotine consumption and preference in mice

**Author:** Deniz Bagdas, Department of Pharmacology and Toxicology, Virginia Commonwealth University, and Experimental Animals Breeding and Research Center, Uludag University, Bursa, Turkey; Wisam Nabeel Elia, Department of Pharmacology and Toxicology, Virginia Commonwealth University; Rita Yu-Tzu Chen, Department of Pharmacology and Toxicology, Virginia Commonwealth University; Thomas Eissenberg, Department of Psychology and Center for the Study of Tobacco Products, Virginia Commonwealth University; M. Imad Damaj, Department of Pharmacology and Toxicology, Virginia Commonwealth University.

**Objective:** Therefore, we aimed to determine the impact of menthol on oral nicotine consumption and preference in mice.

**Background:** Although the rate of smoking has decreased in the last decade, the smoke-free laws in the United States induced the alternative marketing of nicotine. There is an increasing interest to use oral nicotine delivery systems such as strips, orbs, sticks, and lozenges. These products are also included different flavors to increase their appeal, smells and palatability. One of the most preferred flavors is menthol. However, there is limited knowledge on the possible interactions between menthol and nicotine with regard to the oral nicotine consumption in adult and adolescents.

**Methods:** Adolescent and adult C57BL/6J mice (n=10/per group/per sex) were given a choice of nicotine (60 µg/ml) or mentholated nicotine (a range of concentrations of menthol (30-210 µg/ml) plus nicotine (60 µg/ml) solution using two bottle free choice drinking assay. Our results showed that menthol increased nicotine intake and preference in both female and male adult mice without a considerable effect on total fluid intake and body weight change. However, compared to male mice, the effect of menthol in female animals was observed with a wider range of menthol concentration. Although a similar trend in adolescent mice was seen, menthol seems to be more potent in increasing nicotine intake and preference in female adolescent mice compared to adult ones. Moreover, menthol failed to increase nicotine consumption in male adolescent mice. Menthol increases nicotine drinking behavior in both adolescent and adult female mice more than male. The effects of menthol are sex-, age- and concentration-dependent.

**Conclusion:** The results of this study will contribute to our understanding on the impact of menthol flavor addition in oral dissolvable nicotine products.

**ID: 6**

**Title:** Gender Differences in Adult and Childhood Trauma Exposure in an At-Risk Community Sample.

**Authors:** Allison Baylor, M.S., Erin Smith, M.S., Sarah Griffin, M.S., Michael Trujillo, M.S., Paul Perrin, Ph.D., & Bruce Rybarczyk, Ph.D.

**Objectives:** 1) to characterize the present sample in terms of key demographic variables; 2) to evaluate gender differences in childhood trauma exposure (both experienced and witnessed); 3) to compare gender differences in adult interpersonal trauma exposure.

**Background:** Socioeconomic status (SES) is a key predictor of trauma exposure, which, in turn, has been linked to adverse physical and mental health consequences. Additionally, previous literature demonstrates that gender differences exist between types of trauma exposure. Despite these findings, the extant literature is limited regarding potential gender differences in low-SES samples who are at an elevated risk for multiple trauma exposure.

**Methods:** Participants ( $n=210$ , 84 women) from an urban, safety-net clinic completed measures assessing trauma exposure, including the Childhood Trauma Questionnaire and the Adverse Childhood Experience Scale. Constructs were summed and treated continuously; descriptive and multivariate statistics were run using SPSS.

**Results:** 80% of participants endorsed  $\geq 1$  interpersonal adult trauma ( $m=2.43$ ,  $SD=1.83$ ), 68% experienced  $\geq 1$  childhood trauma ( $m=1.92$ ,  $SD=1.78$ ), and 53% witnessed  $\geq 1$  childhood trauma ( $m=2.05$ ,  $SD=1.54$ ). Overall, there were not significant gender differences in either witnessed or experienced trauma in childhood. However, women were significantly more likely to have experienced sexual abuse in childhood,  $t(206)=4.62$ ,  $p<.05$ , and more likely to experience interpersonal trauma in adulthood,  $t(206)=-2.51$ ,  $p<.001$ .

**Conclusion:** Overall, trauma exposure was highly prevalent in the present sample, with a majority of participants endorsing childhood and adult trauma. Women were at increased risk for both adult interpersonal trauma and childhood sexual trauma. These findings underscore the importance of trauma-informed care in safety net clinics. The gender differences outlined in this study may have clinical implications for increased screening and targeted intervention for at-risk women.

**ID: 7**

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**Title:** HIV alters PTSD symptomology and psychophysiology in traumatized individuals.

**Objective:** However, it remains unclear how HIV infection influences PTSD presentation in trauma-exposed women, and answering this question is essential to developing tailored treatment strategies.

**Background:** Women bear a growing burden of the HIV epidemic, and HIV-infected women (HIW) experience higher rates of trauma that can lead to the development of posttraumatic stress disorder (PTSD). HIW who go on to develop PTSD are more likely to show decreased compliance with anti-retroviral therapy, higher transmission risk behaviors, and poorer health outcomes.

**Method:** We tested the hypothesis that HIV exacerbates PTSD symptoms and augments underlying neurobiological correlates of PTSD. Two cohorts of adult women were recruited from Grady Memorial Hospital (Atlanta, GA) (n=42, 25 HIV-, 17 HIV+) and Women's Interagency HIV Study (WIHS) (n=75, 37 HIV-, 38 HIV+). All Grady subjects were assessed via a clinical interview for trauma exposure and PTSD symptoms, and a subset underwent a fear potentiated startle (FPS) paradigm to assess psychophysiological hyperarousal previously described to be present in PTSD, as well as deficits in physiological learning. We also assessed whether HIV was associated with impaired glucocorticoid (GC) signaling, a sign of altered stress physiology linked to PTSD, in peripheral blood mononuclear cells acquired from the WIHS cohort. Expression of the genes *Fkbp5* and *Nr3c1*, which regulate GC signaling, was assessed via quantitative Polymerase Chain Reaction. HIW exhibited higher levels of re-experiencing and avoidance PTSD symptoms compared to the HIV- group, after controlling for trauma exposure. HIW also showed impaired fear learning in the FPS paradigm compared to the trauma-matched HIV- controls. We investigated whether HIW displayed alterations in GC signaling, which could mediate the demonstrated lack of fear learning. Cells from HIW showed increased *Fkbp5* ( $p=0.041$ ) and *Nr3c1* ( $p=0.008$ ), suggesting impaired GC signaling.

**Conclusion:** Our finding of increases in symptoms of re-experiencing and avoiding the traumatic event in HIW has treatment implications as these symptoms promote avoidance of PTSD treatment. Furthermore, the finding that HIW show psychophysiological fear learning deficits also has clinical implications for PLWH, as the most effective evidence-based treatments for PTSD are based on fear learning mechanisms. Impaired GC signaling, a hallmark of PTSD, may disproportionately affect HIW, and may be one mechanism mediating the demonstrated deficits in fear learning.

**ID: 8**

**Submitting Author:** Bodas, Mandar, Doctoral Candidate, Healthcare Policy & Research Medicine

**Title:** Improving Maternal Healthcare in Rural India: Policies That Work and Health Facilities That Do Not.

**Author:** Mandar Bodas, Department of Health Behavior and Policy, Virginia Commonwealth University

**Background:** Most global maternal deaths occur in developing countries. The World Health Organization (WHO) recommends providing antenatal care to mothers and increasing the proportion of births at health facilities (institutional births) in developing nations. India is a major contributor to the global burden of maternal deaths; where a combination of policies was recently implemented - the National Rural Health Mission (NRHM) which improved the conditions of healthcare facilities and the Janani Surksha Yojana (JSY) which provided cash incentives conditional on giving birth at a health facility. Under each of these policies, greater policy attention was provided to a group of states that lagged behind the rest of the country in terms of maternal health outcomes.

**Methods:** I examine whether the rural areas of states that were targeted by policymakers had a relatively higher increase in the proportion of institutional births compared to the rest of the country and whether this change was associated with the conditions of the local health facilities. I used data from two rounds of the India Human Development Survey (IHDS), which contained information about maternal health outcomes and about the conditions of the local health facilities available to mothers. Reproductive age women (between the ages 15 to 49 years) living in rural areas who had at least one childbirth in the five-year period prior to the survey interview were part of the sample (N=17,833).

**Results:** I employed difference-in-differences logistic regression models. Proportion of institutional births and of mothers receiving appropriate antenatal care in rural areas of targeted states increased at a significantly higher rate compared to other parts of the country. The change does not appear to be different between mothers who had access to better local health facilities compared to mothers that did not.

**Conclusion:** Targeting specific regions seems to have improved maternal health in India. However, better maternal health outcomes could have been the effect of improvements in socioeconomic conditions of mothers. Despite the recent progress in maternal health, improving the conditions of local health facilities available to mothers in developing countries is essential to reduce the global burden of maternal deaths.

**ID: 9**

**Submitting Author:** Bodnar-Deren, Susan

**Title:** Association between race, ethnicity and nativity with breastfeeding rates at 6-months postpartum.

**Author:** Susan Bodnar-Deren PhD, Department of Sociology and Institute for Women's Health, Virginia Commonwealth University; Katherine A. Legare MD, Department of Obstetrics, Gynecology and Reproductive Science, Mount Sinai School of Medicine; Amy N. Balbierz MPH, Department of Population Health Science & Policy, Mount Sinai School of Medicine; Elizabeth A. Howell MD, MPP, Department of Population Health Science & Policy and Department of Obstetrics, Gynecology, and Reproductive Science, Mount Sinai School of Medicine.

**Background:** Breastfeeding rates, in the U.S., fall short of Healthy People 2020 goals, particularly for minority women with disparities mirroring socioeconomic inequalities. Research indicates that foreign-born women living in the U.S are more likely to breastfeed than are native-born women which may mask how low the breastfeeding rates for Latinas and Blacks are.

**Objective:** An understanding of how nativity affects racial/ethnic differences in breastfeeding may enhance the adoption of best-practices to increase breastfeeding. To examine the association between nativity and race/ethnicity with 6-months breastfeeding status and to explore the type/number of breastfeeding problems that a cohort of diverse women encountered after initiating.

**Methods:** As part of two RCTs, 837 women were interviewed 24-48 hours after delivery and again at 1, 3 and 6-months postpartum to assess breastfeeding status, clinical and psychosocial factors. Bivariate and multivariate analyses to examine the association between six-month breastfeeding and nativity, race/ethnicity, clinical and psychosocial factors. Foreign-born women were more likely to breastfeed than U.S. born women (OR=2.68, CI: 1.65-4.33). Among U.S. born women, black (OR=0.148, CI: 0.07-0.30) and Latina (OR=0.120, CI: 0.06-0.25) women were less likely to breastfeed at 6-months than white women. However among, foreign-born women, there were no significant differences in breastfeeding rates between black and white women. Foreign-born Latina women were less likely to breastfeed than foreign-born white women (OR=0.389, CI: 0.16-0.95). We found significant racial/ethnic differences in breastfeeding in a diverse cohort of women living in the U.S. However, this difference was only present in U.S. born women when compared to foreign-born women.

**Conclusion:** Nativity was a major factor in breastfeeding rates and may mask how low rates of breastfeeding are among U.S. born Latinas and Blacks, such that interventions to increase breastfeeding among minority women should account for nativity. Differences in breastfeeding problems did not account for racial/ethnic differences in breastfeeding rates.

**ID: 10**

**Submitting Author: Sarah E. Braun, MS**

**Title:** Gender Differences in Depression in Brain Tumor Patients

**Authors:** Sarah E. Braun, MS, Ashlee Loughan, PhD

**Objectives:** The purpose of the present study was to investigate gender differences in depressive symptoms in brain tumor patients.

**Background:** Research shows that women are at greater risk for depression. However, whether this relationship is present in brain tumor patients is largely unknown, a population for whom depression rates are consistently higher than the general population. Identifying potential gender differences in depression will help guide early intervention in brain tumor patients.

**Method:** Patients at the Massey Cancer Center being treated for a primary brain tumor (N=46) completed the Beck Depression Inventory –II (BDI-II) during a neuropsychological evaluation with a licensed neuropsychologist. An independent-samples t-test was conducted to investigate whether gender differences were present in BDI-II scores.

**Results:** Ages ranged from 21 to 81 ( $M= 48.85, SD=13.87$ ). Participants were 45.7% female. An independent-samples t-test revealed a near-significant difference between men and women on the BDI-II [ $t(44) = 1.91, p = .063$ ], such that women reported higher levels of depression ( $M=17.48, SD=10.38$ ) than their male counterparts ( $M=12.56, SD=6.98$ ). Gender differences between physical and cognitive depressive symptomology will also be presented.

**Discussion:** Similar to the general population, depression in brain tumor patients differs based on gender, with women reporting higher levels than men. These results suggest that female brain tumor patients may be more at risk for depression. Further, efforts should be made to develop interventions specific for women diagnosed with brain tumors. Future research should investigate whether there are gender differences in other markers of quality of life in brain tumor patients, and whether these differences are affected by tumor location, tumor type, and cognitive functioning.

**ID: 11**

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**Title: Cigarette smokers interested in reduction: Does sex influence the relationship between depression/anxiety risk, health symptoms, and smoking behaviors?**

**Authors:** Phoebe Brosnan, Department of Psychology, VCU; Center for the Study of Tobacco Products, VCU, BA; Nicole Nicksic, Center for the Study of Tobacco Products, VCU; Department of Health Behavior and Policy, VCU; Nadia Chowdhury, Department of Psychology, VCU; Center for the Study of Tobacco Products, VCU, BS; Jacob Graham, Department of Psychology, VCU; Center for the Study of Tobacco Products, VCU, BS; Miao-Shan Yen, Center for the Study of Tobacco Products, VCU; Department of Biostatistics, VCU, MS; Caroline Cobb, Department of Psychology, VCU; Center for the Study of Tobacco Products, VCU, PhD;

**Objectives:** Characterizing this group of smokers is important and can inform targeted intervention development. The current study aimed to examine the influence of sex on psychosocial characteristics, health/disease symptomatology, and smoking behaviors

**Background:** Extant literature documents a positive relationship between cigarette smoking and depressive/anxiety symptoms with stronger effects for women. Few studies have examined the interplay of these factors in a sample of cigarette smokers seeking smoking reduction.

**Methods:** Participants (n=232) were current cigarette smokers (>9 cigarettes per day [CPD] for >1 year) interested in smoking reduction and enrolled in a randomized controlled trial testing the influence of a novel tobacco product on health outcomes, adverse events, and tobacco use. Data were collected prior to randomization: demographics, Center for Epidemiological Studies-Depression Scale (CES-D), Kessler Psychological Distress Scale (K6), tobacco-related health/disease symptomatology, age of smoking initiation (ASI), and CPD. Analyses utilized descriptives, t-tests, and chi-squares ( $p < 0.05$ ).

**Results** Average age of the sample was 45 years with 57% female and 75% White NH. Forty-seven percent were at risk for clinical depression (CES-D), 37% had moderate/high distress (K6), and 17% reported tobacco-related health problems. On average, participants started smoking at 17 years and smoked 21 CPD. When examined by sex, neither depression risk, distress, health problems, ASI, nor CPD differed significantly. When restricted to females, depression risk was significantly associated with health problems ( $p=0.001$ ), marginally associated with older ASI ( $p=0.051$ ), but not CPD; high distress was significantly associated with health problems ( $p=0.003$ ) but not ASI or CPD. When restricted to males, neither depression risk nor high distress were significantly associated with health problems, ASI, and CPD.

**Conclusion** Among this sample of heavy smokers, many were at risk for clinical depression and high distress while a smaller percentage indicated tobacco-related health problems. While no overall differences were observed by sex, having depression risk and high distress were associated with reporting tobacco-related health problems only among women. This observation may be due to telescoping whereby women who abuse substances are at higher risk for negative health effects. Treatment approaches should be cognizant of depression and anxiety comorbidities among this population and increased negative health symptomatology among women.

**ID: 12**

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**Title:** Gender differences in misophonia and related personality traits

**Authors:** Alina Massey, Department of Psychology, VCU; Shannon Cusack, Department of Psychology, VCU; Danielle Dick, Departments of Psychology, African American Studies, and Human and Molecular Genetics; Kenneth Kendler, Department of Psychiatry; Scott Vrana, Department of Psychology, VCU

**Objective:** This study investigates whether the relationship between misophonia and personality traits (agreeableness, conscientiousness, extraversion, neuroticism and urgency [impulsiveness]) differ by gender.

**Background:** Misophonia is a strong, negative emotional response to human sounds such as people chewing, swallowing and slurping, and is often associated with significant emotional distress and impairment in functioning. Research findings are inconclusive on gender differences in misophonia. Past research shows that misophonia is related to several “Big Five” personality traits, including agreeableness, extraversion, and neuroticism. Gender differences are also found in the same personality traits. However, it is not known whether personality factors may play a different role in misophonia for men and women.

**Objectives:** The relationship between misophonia, personality traits, and gender has not been thoroughly examined. This study investigates whether the relationship between misophonia and personality traits (agreeableness, conscientiousness, extraversion, neuroticism and urgency [impulsiveness]) differ by gender.

**Methods:** Data from longitudinal health and genetics survey study of undergraduates were analyzed. Two cohorts (total N = 1939; 69.9% female, M age =18.5 years) completed a screen for presence of misophonia and questionnaires about personality traits.

**Results:** In this sample 40.9% of women and only 25.4% of men said that they at least sometimes experience misophonia ( $\chi^2(2)=44.4$ ,  $p<.001$ ). Personality traits differed as a function of both gender and misophonia. Compared to males, females reported greater levels of agreeableness ( $F = 10.9$ ,  $p = .001$ ), conscientiousness ( $F= 10.48$ ,  $p = .001$ ), extraversion ( $F= 12.14$ ,  $p = .001$ ), and neuroticism ( $F = 63.52$ ,  $p < .001$ ), and less positive urgency ( $F = 8.72$ ,  $p = .003$ ). People reporting that they sometimes experienced misophonia symptoms reported lower levels of agreeableness ( $F = 9.85$ ,  $p < .001$ ) and extraversion ( $F= 23.04$ ,  $p < .001$ ), and higher levels of negative urgency ( $F= 7.40$ ,  $p = .001$ ) and neuroticism ( $F= 17.66$ ,  $p < .001$ ), compared to those reporting no misophonia symptoms. However, personality variables were related to misophonia in the same way for both men and women; that is, there were no significant interactions between gender and misophonia.

**Conclusion:** Although there are gender differences in misophonia prevalence and personality traits, the relationship between personality and misophonia appears to be similar in men and women.

**ID: 13**

**Submitting Author:** Do, Elizabeth, MPH, PhD Candidate, Other, 571- 830- 4427, [doek@mymail.vcu.edu](mailto:doek@mymail.vcu.edu)

**Title:** Sex Differences in Fagerstrom Test for Nicotine Dependence Items

**Authors:** Elizabeth K. Do, C. Kenneth and Dianne Wright Center for Clinical and Translational Research, Virginia Institute for Psychiatric and Behavioral Genetics, VCU; Hermine H. Maes, Virginia Institute for Psychiatric and Behavioral Genetics, Departments of Human and Molecular Genetics, and Massey Cancer Center, VCU; Danielle M. Dick, Departments of Psychology, African American Studies, and Human & Molecular Genetics, VCU; Kenneth S. Kendler, Department of Psychiatry, Virginia Institute for Psychiatric and Behavioral Genetics, VCU

**Objective:** The current study was conducted to compare sex differences in the response to FTND items within African and White/Caucasian Americans and investigate the psychometric properties of FTND across these groups.

**Background:** The Fagerstrom Test for Nicotine Dependence (FTND), comprised of four dichotomous and two multi-response items, is the most commonly used measure of nicotine dependence. It is calculated by adding together scores for the six items, which have a range of 0 to 10. A score of 4 or greater is indicative of nicotine dependence. However, factor analyses of FTND items have yielded inconsistent results: while some studies indicate that the measure is comprised of only one factor, others have identified two. Previous studies also suggest that the psychometric properties of these items may differ by sex and race/ethnicity.

**Methods:** The sample was obtained through Spit for Science, a longitudinal study of college students' emotional and mental health, who reported ever using tobacco in their lifetime. Chi-square tests were conducted to determine whether males and females were statistically different in how they respond to items of the Fagerstrom Test for Nicotine Dependence. Following these analyses, Item-by-item responses and exploratory factor analyses (EFA) were compared by sex. Promax rotation was selected based upon findings from prior studies conducted on the Fagerstrom Test for Nicotine Dependence, suggesting the presence of correlated factors. A confirmatory factor analyses (CFA) was conducted to determine whether the same factor structure was found across the following four groups: African American males, African American females, White/Caucasian males, and White/Caucasian females. Some FTND items showed differences in response rates by sex. Within African Americans, differences in response rates by sex were found for all items, except for: which cigarette/dip/chaw would you hate most to give up, did you smoke/use tobacco more frequently during the first hours after waking than during the rest of the day, and did you smoke/use tobacco if you were so ill that you were in bed most of the day. Within White/Caucasian Americans, differences in response rates by sex were found for all items, but how many cigarettes/smokeless tobacco products per day did you smoke/use.

**Conclusion:** Across each of these groups a two-factor model fit the data well. However, the factor loadings across groups differed; CFA was used to provide evidence for this finding using a correlated, two-factor solution, with two items loading on one factor and all items loading on another). Sex differences exist in the response to FTND items, and its psychometric properties. Thus, further studies are needed to determine how nicotine dependence measures perform within race/ethnicity groups in other population-based samples.

**ID: 14**

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**Title:** Joint effect of perceptions of early-life neighborhood stressors and current stress on preterm delivery among urban African American women

**Authors:** Shawnita Sealy-Jefferson, PhD, MPH, Department of Family Medicine & Population Health; Megan Edmonds, MPH, Department of Family Medicine & Population Health; Dawn P. Misra, PhD Wayne State University

**Background:** Stress from multiple sources, across the life-course, may jointly impact preterm delivery (PTD) rates in African American (AA) women.

**Objective:** We tested whether the association between perceived stress and PTD was modified by perceptions of early-life neighborhood social control and social disorder.

**Methods:** Data from the Life-course Influences on Fetal Environments Study (2009-2011) of post-partum AA women from Metropolitan Detroit, Michigan (n=1,365) were for the analysis. PTD was defined as birth before 37 completed weeks of gestation. To measure exposures, we used Cohen's Perceived Stress scale, as well as valid and reliable scales of perceptions of the social control and social disorder of the neighborhood in which study participants lived at age 10. PTD occurred in 16.4% (n=221) of the sample. We estimated prevalence ratios (PR) and 95% confidence intervals (CI) with log binomial regression models, and included separate interaction terms for perceived stress and each early-life neighborhood measure. We considered  $p < 0.10$  significant for interaction terms.

**Results:** In the overall sample, perceived stress was not associated with PTD rates. However, there was evidence of a joint effect between perceived stress and early-life neighborhood social disorder ( $p$  for interaction = 0.07), such that among women who reported high early-life neighborhood social disorder (n=584), perceived stress was positively associated with PTD (adjusted PR: 1.28; 95% CI: 1.03, 1.61). No association between perceived stress and PTD was observed for women who reported low early-life neighborhood social disorder (n=574) (PR: 0.95, 95% CI: 0.74, 1.20). Early-life neighborhood social control did not modify the association between perceived stress and PTD.

**Conclusion:** Our results suggest that exposures from early-life neighborhood stressors exacerbate the impact of current perceived stress on PTD rates, in AA women. Future mixed methods studies should be able to elucidate the mechanisms of the reported associations.

**ID: 15**

**Submitting Author:** Effi Comfort, Pathology Medicine, 717- 599- 1256, [effic@mymail.vcu.edu](mailto:effic@mymail.vcu.edu)

**Title:** CCL2/CCR2 Pathway Mediates Antitumor Effects of Treg Cell Ablation in Metastatic Breast Cancer.

**Authors:** Matthew Mariyampillai, Medical College of Virginia; Briana James, Department of Microbiology and Immunology, Virginia Commonwealth University; Leandro M. Martinez, Department of Pathology, Virginia Commonwealth University; Paula Bos, Department of Pathology, Virginia Commonwealth University.

**Objective:** In our preliminary work using a PyMT-driven model of breast carcinogenesis, we demonstrated that genetic ablation of Treg cells leads to inhibition of tumor growth and of lung metastasis. CD4<sup>+</sup> T cells, IFN- $\gamma$ , and CCR2<sup>+</sup> cells are required for this effect, but not cytotoxic CD8<sup>+</sup> T or NK cells.

**Background:** Metastatic breast cancer will result in the deaths of 40,000 women in the US this year. Therapeutic options are limited, but immunotherapy holds significant promise. Regulatory T (Treg) cells, a subset of lymphocytes with immunosuppressive functions, are prominent in the breast tumor microenvironment and correlate with poor prognosis in patients.

**Methods:** To evaluate the role of CCR2<sup>+</sup> cells in the Treg cell ablation-mediated anti-tumor effect, we injected tumor cells in the mammary gland of Foxp3<sup>DTR</sup>; CCR2<sup>DTR</sup> mice, in which injection of diphtheria toxin (DT) leads to ablation of Foxp3<sup>+</sup> Treg cells and CCR2<sup>+</sup> cells. Mice were separated into four groups in which no cells, Treg cells alone, CCR2<sup>+</sup> cells alone or Treg and CCR2<sup>+</sup> cells were ablated. Tumor growth was monitored by caliper measurements, and lung metastasis quantified at the end of the experiment by counting lung metastatic nodules under a dissecting scope. In addition, we will determine the identity of CCR2<sup>+</sup> cells recruited to tumors by using Foxp3<sup>DTR</sup>; CCR2<sup>GFP</sup> mice, where the fluorescent protein GFP enables the tracking of the CCR2<sup>+</sup> cell trafficking and differentiation.

**Conclusion:** Flow cytometry and immunofluorescence are currently underway to evaluate co-expression of CCR2<sup>+</sup> and fibroblast, macrophage, endothelial and gamma delta T cell markers. We have confirmed that CCR2<sup>+</sup> cells recruited from the bone marrow are necessary for the anti-tumor phenotype observed during Treg cell ablation in breast cancer. Currently, we are performing experiments to evaluate whether the inflammatory monocytes are the essential cell types performing this function, and what is the fate of these cells upon recruitment into the tumors.

**ID: 16**

**Submitting Author:** Guidry, Jeanine, Social & Behavioral Health Medicine, 804- 683- 4512, [guidryjd@vcu.edu](mailto:guidryjd@vcu.edu)

**Authors:** Jeanine Guidry, Health Behavior & Policy, Virginia Commonwealth University; Kellie Carlyle, Health Behavior & Policy, Virginia Commonwealth University

**Title:** #Zika on Instagram: How publics discuss the health crisis through online visuals and text

**Objective:** Therefore, the goal of this study is to determine how the public is talking about and responding to conversations about a current infectious disease outbreak, Zika, on visual social media platform Instagram. This analysis will shed light on current trends in social media engagement surrounding this key health topic, and will provide health professionals and communications practitioners with important insights to improve the dissemination of information about infectious diseases and better engage with audiences on visual social media platforms.

**Background:** Until recently, Zika was relatively obscure disease with only 14 cases documented worldwide before 2007 (CDC, 2016a). Prior to 2015, Zika outbreaks had only occurred in parts of Africa, Southeast Asia, and the Pacific Islands; however, in May 2015 the Pan American Health Organization (PAHO) confirmed the first known case in Brazil (Lupton, 2016). Currently, outbreaks are occurring in many countries, and local mosquito-borne Zika cases have been reported in the U.S. in Florida and Texas (Centers for Disease Control and Prevention, 2016b). Additionally, this recent outbreak of the Zika virus has been associated with a dramatically increased incidence of microcephaly in newborns whose mothers were infected with Zika (Centers for Disease Control and Prevention, 2016a). These developments have brought the Zika virus to the forefront of people's minds and, as with many other health problems, social media is now one of the primary places where people go to seek information about the virus. However, little is known about what the content of these messages and their public engagement is. In addition, visual social media platforms like Instagram are under-studied in social media research as a whole. These same visual platforms carry a special significance because of the different manner visuals are processed as compared to text-based messages (Houts, Doak, Doak, & Loscalzo, 2006).

**Method:** This study, using a quantitative content analysis, analyzed a random sample of 1,000 Instagram posts, published between September-November 2016 and which included the hashtags #Zika and #ZikaVirus, focusing specifically on the type of information included, and the frequency of likes and comments on these posts. Further analyses on the public's social media engagement will focus on health behavior and risk perception theories (Covello, Peters, Wojtecki, & Hyde, 2001).

**Conclusion:** The study is currently ongoing and will be completed by February 15, 2017. The findings will provide insights for health communication researchers and practitioners about how the Zika virus is portrayed on Instagram, how the Zika outbreak should be approached on visual platforms like Instagram from a public health perspective, and how public health communities can engage publics more effectively during an outbreak of this kind.

**ID: 17**

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**Title:** The Effects of Adolescent Stress on Gene Expression in the Hippocampus of Adult Female Rats

**Authors:** Rockelle S. Guthrie, Department of Anatomy and Neurobiology, Virginia Commonwealth University, Richmond, VA; Sydney A. Rowson, Mandakh Bekhbat, Department of Physiology, Emory University, Atlanta, GA ; Gretchen N. Neigh, Department of Anatomy and Neurobiology, Virginia Commonwealth University, Richmond, VA

**Objective:** Aim 1 was to assess the extent to which chronic adolescent stress has the ability to cause persistent changes in angiogenic factors and Aim 2 assessed the effect of chronic adolescent stress on factors that regulate the cell cycle.

**Background:** The detrimental effects of chronic stress during adolescence may play a major role in the hippocampal atrophy seen in adults suffering from major depression. Given that depression is more prevalent in those suffering from cardiovascular illnesses, characterization of the state of microvessels within the hippocampus is a region involved in regulating the stress response, learning, and memory is a valid avenue of research in the elucidation of the physiology of depression. Analysis of the expression level genes indicative of vascular morphological changes can further our understanding of how hippocampal atrophy associated with major depression occurs and has the potential to identify genetic targets for therapeutic approaches.

**Method:** 16 female Wistar rats were divided into experimental and control groups. Experimental animals were exposed to a mixed-modality chronic adolescent stress paradigm and controls were not exposed to stressors. Rats were exposed to a combination of isolation, social defeat (6 exposures), and restraint (6 exposures) from postnatal day (PND) 35-49 or were pair-housed throughout the study as controls. At (PND) 94, tissue was collected without stressor exposure. RNA was isolated from hippocampal tissue and comparative Real-Time qPCR was used to determine differential expression of the following genes: Vascular endothelial growth factor (VEGFA), von Willebrand Factor (vWF), Kruppel-like Factor 11 (KLF11), and Bcl2. A 15% decrease in expression of the angiogenic and neuroprotective factor VEGFA as well as a 12% decrease in expression of the pro-apoptotic factor KLF11 in the experimentally stressed group. vWF, associated with decreased vessel length in prenatal stress and anti-apoptotic Bcl2 showed no significant change in expression between experimental groups. A down regulation of VEGFA was consistent with previous reports from stress studies conducted using adult males whereas a down regulation of KLF11 was inconsistent with existing literature, suggesting a potential sex differences.

**Conclusion:** Further immunohistological analyses are necessary to determine the impact on vascular morphology and physiological significance of the stress-driven decrease in mRNA expression of VEGFA. This study provides novel evidence that chronic stress in adolescence is sufficient to alter the expression of angiogenic and cell cycle regulatory factors in adulthood even months following removal from stress exposure.

**ID: 18**

**Submitting Author:** Hassan, Zaneera, 703- 864- 3656, hassanzh@vcu.edu

**Title:** Proteomic Characterization of the Vaginal Metaproteome

**Authors:** Zaneera Hassan, Department of Pharmaceutics, VCU; Adam Hawkrige, Department of Pharmacotherapy and Outcomes Science & Department of Pharmaceutics, VCU; Gregory Buck, Department of Microbiology and Immunology & Center for the Study of Biological Complexity, VCU; Jennifer Fettweis, Department of Obstetrics and Gynecology & Center for the Study of Biological Complexity, VCU; Kimberly Jefferson, Department of Microbiology and Immunology, VCU; Myrna Serrano, Center for the Study of Biological Complexity

**Objective:** This research will establish methodological approaches to comprehensively characterize and quantifying the vaginal metaproteome. Label free quantification was used within a mass spectrometry-based (LC-MS/MS) workflow to comprehensively characterize five vaginal swab extracts from the Multi-Omic Microbiome Study-Pregnancy Initiative biorepository.

**Background:** The impact of the female reproductive tract microbiome on pregnancy-related complications including preterm birth (PTB) is not fully understood. While the heterogeneous etiology of PTB makes prediction and prevention challenging, it is known that mechanisms leading to PTB may be affected by protein fluctuations in the mother, microbial communities, and/or protein interactions between the mother and microorganisms within the female reproductive tract. Thus, strategies are needed to measure the complex fluctuations in the metaproteome to better understand the causes of PTB and potentially develop intervention strategies.

**Methods:** Samples were prepared for proteomics analysis using standard protocols including protein extraction, total protein assay, and filter aided sample preparation. Samples were then separated and analyzed by nanoflow, reverse phase LC-MS/MS after which the proteomics data files were searched against the human protein database from UniprotKB and human urogenital tract database from the NIH Human Microbiome Project. A total of 1,188 proteins were identified from five vaginal swab samples, with ~80% being of human origin while ~20% was bacterial. Annotation for the top 10 most abundant host proteins suggest major roles in structural function and immune response, with the most abundant protein, KRT6C, being a keratin with known expression in female reproductive tract tissues. Identification and characterization of the vaginal microbiota for the five samples identified 32 species from 20 genera with the most predominant genus overall being *Lactobacillus*.

**Conclusion:** Mass spectrometry-based metaproteomic methods are still in the developmental stages but have the potential to reveal novel host-microbiome interactions. The preliminary sample preparation and data analysis methods established in this research form the foundation for future metaproteomic analysis which may have translational impact in identifying candidate biomarkers for early detection of PTB and drug targets to facilitate full-term pregnancy.

**ID: 19**

**Submitting Author:** Hughes, Kelly, Medical Student, Radiation Oncology Medicine, 267- 614- 1473, [khughes6591@gmail.com](mailto:khughes6591@gmail.com)

**Title:** HDR Salvage Interstitial Brachytherapy: A Creative Approach to the Treatment of Therapeutically Challenging Recurrent Vulvar Cancer

**Authors:** Kelly Hughes, Radiation Oncology, VCU Massey Cancer Center; Christopher McLaughlin, MD, Radiation Oncology, VCU Massey Cancer Center; Emma Fields, MD, Radiation Oncology, VCU Massey Cancer Center

**Objective:** To develop a unique approach for the treatment of recurrent vulvar cancer and provide a baseline guide for others attempting to treat similar cases; to assess the efficacy and tolerability of high dose rate (HDR) interstitial brachytherapy.

**Background:** Vulvar cancer accounts for only 4% of gynecological malignancies, however incidence rates have been steadily increasing over the past 10 years at about 0.6% per year. Recurrence after primary treatment is relatively common, up to 40-50% in patients who initially present with locally advanced disease. Salvage treatment for recurrent disease is particularly difficult because most patients have been previously treated with surgery +/- radiation (RT). Surgery changes the vascular and lymphatic anatomy making additional surgical or RT attempts less successful, and re-RT is limited due to the proximity of dose limiting organs such as the bladder and rectum.

**Methods:** Patient data was collected in a retrospective manner from the gynecologic radiation oncology database. Both patients signed waivers allowing the use of their images for publication.

**Results:** Two patients with recurrent cases of vulvar carcinoma were treated with HDR salvage interstitial brachytherapy. Our first patient was diagnosed with stage IB squamous cell carcinoma (SCC) of the vulva and was initially treated with surgery and full dose adjuvant RT followed by additional surgery for a first recurrence. When the patient developed a second perianal recurrence, her only surgical option was WLE with posterior exenteration and bowel diversion. Salvage brachytherapy provided an alternative to extensive surgery and allowed for preservation of her rectum and bladder. Our second patient was diagnosed with extensive stage IVA SCC of the vulva and was initially treated with full dose RT. This patient was not a good candidate for surgery or chemotherapy given her history of CAD, DM, left BKA, and other comorbidities, and therefore, when her disease recurred, brachytherapy was her only option. Her treatment was setup using a modified Syed-Neblett template with cutout for transrectal US probe allowing us to use US guidance and real time fluoroscopy for needle placement. For both patients, we used CT imaging to create a virtual treatment plan and map prior to interstitial implants. Both patients tolerated the RT well and were able to complete their treatment as planned with local control of disease at last follow-up (4 and 2 months).

**Conclusion:** Both patients treated in this report had few, if any, options available at the time HDR salvage interstitial brachytherapy was implemented. Our unique implantation techniques allowed accurate delivery of high doses of RT directly to the tumor bed while sparing other nearby organs, ultimately allowing avoidance of permanent colostomy and preservation of good quality of life.

**ID: 20**

**Submitting Author:** Johnson, Candace, Other, Nursing, 804- 828- 707, [johnsoncm7@vcu.edu](mailto:johnsoncm7@vcu.edu)

**Title:** Awareness, accountability and taking the time: Perceptions of barriers and facilitators to health promoting behaviors in African-American women at risk for chronic disease.

**Authors:** Candace, Johnson, Nursing, Virginia Commonwealth University School of Nursing; Leigh, Small, Nursing, University of Colorado School of Nursing; Leroy, Thacker II, Biostatistics, Virginia Commonwealth University School of Nursing; Chelsea Sales, Biomedical Engineering Major, Virginia Commonwealth University School of Engineering; Pascaline, Ezoah, General Science Major, Virginia Commonwealth University. Camille Brenke, Nursing Major, Virginia Commonwealth University School of Nursing.

**Objective:** The purpose of this study was to determine the feasibility and acceptability of a theoretically-based, 6-week, yoga-based video intervention (YogicDance) using activity trackers and other internet-based technology to increase healthy behaviors (physical activity) and lower Mets risk in at-risk AA women between the ages of 35 and 50 years. Mets profile measures (blood pressure, glucose, waist circumference and blood lipids) were drawn at baseline and post intervention.

**Background:** African-American (AA) women comprise the U.S. subpopulation with the highest death rates from heart disease and complications from type 2 diabetes. Hypertension, obesity, pre-diabetes, and physical inactivity rates are the greatest in AA women as compared to all other racial/ethnic subpopulations worldwide. Metabolic syndrome (MetS) is a symptom cluster that precedes heart disease and diabetes, thus identifying individuals at highest susceptibility for these diseases is paramount, since many are not aware of their mortality risk. Researchers suggest that initial therapies for high-risk groups should emphasize multiple risk factor interventions versus those that focus only on weight loss through dietary changes or physical activity alone.

**Methods:** Three focus groups (total N=19) were used to assess and provide context for feasibility measures of the intervention and to explore barriers and benefits to participating in YogicDance. Twenty-eight women were enrolled in the study and 22 women completed the study as structured. When considering facilitators of preventative health behaviors: three major themes emerged 1) Awareness; 2) Accountability; and 3) Taking the time for oneself. Among the topics discussed were concepts regarding participants' identification and ambivalence with the Strong Black Woman syndrome, an identity in which AA women are seen as responsible burden-bearers within their communities and workplaces. Additionally, the women expressed a renewed interest in identifying with improvements in their general health status including their typical resting blood pressures, steps per day/week, hours of sleep per night and needs for stress self-management.

**Conclusion:** This pilot work laid the foundation for translating population-specific self-management of physical activity in this high-risk group and will assist in determining effect sizes necessary to appropriately power and test this intervention as well as methodologies that will be feasible and acceptable in a full-scale RCT.

**ID: 21**

**Submitting Author:** Kelpin, Sydney, MS

**Authors:** Sydney Kelpin, MS, Scott Rusteikas, DO, Nicole Karjane, MD, and Dace Svikis\*, PhD.  
VCUHS, Richmond, Virginia

**Title:** Identifying Women at Risk for Tobacco, Alcohol and Other Drug Use: Does Age Matter

**OBJECTIVES:** The present study examined ability of several standardized screening tools to detect problem use of alcohol, tobacco and other drugs in adolescent ( $\leq$  age 21) and adult ( $>$  21) pregnant and non-pregnant women attending an urban, university-affiliated obstetrics and gynecology clinic.

**BACKGROUND:** The American College of Obstetricians and Gynecologists and the US Preventative Services Task Force recommend screening adults for at-risk alcohol and tobacco use in the primary care setting. In pregnant and postpartum women, such use is associated with increased maternal and fetal/infant morbidity and mortality (Wong et al., 2011). Standardized screening tools (e.g., TACE, CAGE, TWEAK) are available and in widespread use in clinics serving adult pregnant and non-pregnant women. Much less is known about the usefulness of such measures with adolescent patient groups.

**METHODS:** Women were recruited while awaiting their medical appointments. Those providing consent completed a brief anonymous survey with standardized questions about recent alcohol, tobacco and other drug use and associated problems. They included the TACE (Sokol, Martier, & Ager, 1989), TWEAK (Russell, 1994) and the Drug CAGE (Ewing & Rouse, 1970). A total of 3,443 women participated in the study, with 3,317 completing the Drug CAGE screener and 3,286 completing the TWEAK screening questionnaire. Individual item responses and screener summary scores (% above and below clinical cut-off scores) were compared for pregnant and non-pregnant adolescent (ages 18-21) and adult ( $>$  21 years of age) women using chi-square for categorical and t-tests for continuous variables.

**RESULTS:** Demographically, the majority of participants were pregnant (78%) and African American (67%), with a mean age of 26.2 years (SD = 5.73). There were no group differences in positive screens for drug use among pregnant women. However, pregnant adolescents were significantly less likely to screen positive for at-risk alcohol abuse compared to pregnant women ages 22 years and older (15.2% vs. 21.8%,  $p < 0.001$ ). In addition, non-pregnant adolescents were significantly less likely to screen positive for at-risk alcohol (14.4% vs. 21.6%,  $p = 0.03$ ), as well as drug use compared to older women (6.9% vs. 13.5%,  $p = 0.02$ ). Lastly, adolescents were significantly less likely to report a history of tobacco use among both pregnant (46.5% vs. 55.3%,  $p < .001$ ) and non-pregnant women (44.1% vs. 56.9%,  $p < .001$ ).

**CONCLUSION:** The present findings suggest a strong need to screen for and address alcohol and substance abuse problems in adolescent women as well as adults.

**ID: 22**

**Submitting Author:** Legakis, Luke, Pharmacology & Toxicology Medicine, 631- 645- 7983, legakisl@vcu.edu

**Title:** Effects of repeated morphine in female and male rats with chemotherapy-induced neuropathy: Antinociceptive tolerance and reward enhancement.

**Authors:** Luke, Legakis, Pharmacology and Toxicology, Virginia Commonwealth University; Steve, Negus, Pharmacology and Toxicology, Virginia Commonwealth University

**Objective:** This study evaluated antinociceptive and abuse-related effects of repeated morphine in female and male rats treated with paclitaxel.

**Background:** Paclitaxel is a cancer chemotherapy with adverse effects that include chemotherapy-induced peripheral neuropathy (CIPN) and neuropathic pain. Opioid analgesics are used clinically during or after chemotherapy to treat pain due to cancer or CIPN, but opioid addiction is a risk.

**Method:** Sprague-Dawley rats (n=44) were treated with saline or a paclitaxel regimen (2.0 mg/kg x 4 injections; total dose=8.0 mg/kg) sufficient to produce peripheral neuropathy and mechanical allodynia. On days 22-29 after initiation of saline/paclitaxel treatment, rats were treated with morphine and tested in assays of (1) von Frey filament-induced paw withdrawal to assess mechanical allodynia or (2) intracranial self-stimulation (ICSS) to assess abuse-related effects. Cumulative morphine doses (0.32-10 mg/kg) were administered on Days 22 and 29. On days 23-28, rats received 3.2 mg/kg/day morphine, which was the lowest dose to produce full antinociception on Day 22. Paclitaxel produced sustained mechanical allodynia but did not alter baseline ICSS performance. Morphine produced dose-dependent antinociception on Day 22, and tolerance developed to this effect on Day 29. There were no sex differences in morphine potency, efficacy, or tolerance. In ICSS, morphine produced primarily abuse-related ICSS facilitation on Day 22 in females, but only ICSS depression in males.

**Conclusion:** Repeated morphine produced tolerance to ICSS rate-decreasing effects and enhanced expression of ICSS facilitation in both sexes. Effects of repeated morphine were similar in saline- and paclitaxel-treated rats. These results suggest that repeated morphine produces antinociceptive tolerance but enhanced rewarding effects in paclitaxel-treated rats. Females were initially more sensitive to abuse-related morphine effects, but repeated treatment eliminated this sex difference.

**ID: 23**

**Submitting Authors:** Neale, Zoe, Doctoral Student, Psychology, College of Humanities & Sciences, 804- 837- 2786, [nealez@vcu.edu](mailto:nealez@vcu.edu)

**Title:** Sex Differences in the Effectiveness of a Web-based Intervention for College Student Alcohol Use

**Authors:** Zoe E. Neale, Department of Psychology, Virginia Commonwealth University; Linda Hancock, The Wellness Resource Center, Virginia Commonwealth University; Kristen Kidd Donovan, The Wellness Resource Center, Virginia Commonwealth University; Danielle M. Dick, Departments of Psychology and Human and Molecular Genetics, Virginia Commonwealth University

**Objective:** To further explore potential sex differences in the efficacy of a web-based alcohol intervention for college students.

**Background:** Previous studies have shown that there are sex differences in rates of alcohol use among college students (Hoepfner et al., 2013; Johnston et al., 2016); however, less is known about the way that males and females may differ in their response to intervention. In-person, brief motivational interventions (BMIs) appear to be comparably effective for males and females (Carey et al., 2008); however, results for web-based or computerized interventions are mixed. One study found that females responded better than males to a web-based brief motivational intervention, (Chiauzzi et al., 2005) while others have found no evidence of sex differences in outcomes for web-based interventions (Hustad et al., 2010).

**Methods:** We recruited freshman college students to participate in a web-based adaptation of the Brief Alcohol Screening and Intervention for College Students (BASICS) at the beginning of spring semester of their freshman year. The sample was comprised of 153 (69% female) students who completed the intervention, and a control group (n=151, 69% female) matched to intervention participants on sex, race/ethnicity, and baseline drinking characteristics. Using moderated multiple regression, we tested for an interaction between treatment assignment (BASICS or control) and sex on post-intervention drinking days, typical drinks per occasion, maximum drinks consumed in 24 hours, and alcohol use disorder (AUD) symptoms, after controlling for self-reported race/ethnicity and baseline drinking characteristics.

**Results:** We found no evidence for an interaction between treatment assignment and sex on post-intervention drinking days, drinks per occasion, or maximum drinks in 24 hours. There was, however, a significant interaction between treatment assignment and sex on post-intervention AUD symptoms ( $\beta = -.21$ ,  $t(264) = -2.74$ ,  $p = .007$ ). Male students who completed the intervention showed significantly lower mean AUD symptoms compared to males in the control group, whereas we observed no evidence of a difference in the mean number of AUD symptoms for females based on treatment assignment.

**Conclusion:** Findings suggest that web-based interventions may need to be revised to better address the problems of alcohol use among female college students.

**ID: 24**

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**Title:** Gender Differences in Anxiety Sensitivity and Distress Tolerance Profiles and Associations with Posttraumatic Stress Disorder in a College-aged Sample.

**Authors:** Cassie Overstreet, M.S., Psychology Department, Virginia Commonwealth University; Emily Brown, M.S.W., Virginia Institute for Psychiatric and Behavioral Genetics, Virginia Commonwealth University; Sage McNett, B.S., Virginia Institute for Psychiatric and Behavioral Genetics, Virginia Commonwealth University; Erin Berenz, Ph.D., Department of Pediatrics, University of Virginia; Dawn W. Foster, Ph.D., Department of Psychiatry, Yale University; Carolyn E. Sartor, Ph.D., Department of Psychiatry, Yale University; Ananda Amstadter, Ph.D., Psychology Department, Virginia Institute for Psychiatric and Behavioral Genetics, Virginia Commonwealth University

**Objective:** The aims of the present study were to establish empirically derived typologies resulting from response patterns on the Anxiety Sensitivity Index and Distress Tolerance Scale, and to examine each subtypes relevance to PTSD symptoms among a sample of trauma-exposed undergraduate students (N=964; Mean age=19.95; 71.2% female). Further, we aimed to determine whether sex significantly predicted profile membership.

**Background:** A growing theoretical literature suggests a relationship between a high anxiety sensitivity (AS)/low distress tolerance (DT) profile and posttraumatic stress disorder (PTSD) symptoms, yet limited empirical examination of specific profiles has occurred. Moreover, despite rates of PTSD being substantially higher among women than men, sex differences in emotion regulation (e.g., AS, DT) have not been examined as a putative mechanism driving these disparate prevalence rates.

**Methods:** We hypothesized that an at-risk profile (high AS/low DT) would exist, and would be associated with PTSD symptom severity. Moreover, we expected that sex would significantly predict profile membership. Latent profile analysis was utilized to identify AS/DT profiles. A series of ANOVAs with post hoc analyses were conducted to examine the relationship between each AS/DT profile and PTSD symptoms. Finally, a multinomial regression was used to determine if sex was a significant predictor of profile membership. Results indicated a four profile solution including a high AS/low DT “at-risk” profile, low AS/high DT “resilient” profile, average AS/DT “intermediate” profile, and a high AS/high DT “tolerant” profile. The high AS/low DT “at-risk” profile was associated with significantly greater PTSD symptoms when compared to the other three profiles. Sex did not significantly predict profile membership.

**Conclusion:** These findings extend the previous literature by identifying a high AS/low DT cluster and its differential association with PTSD symptoms, underscoring the potential utility in targeting these affect regulation constructs for clinical intervention. Interestingly, differential associations were not identified based on sex which highlights an area in need of additional research.

**ID:25**

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**Title:** Work-related musculoskeletal disorders in computer professionals: Gender and age differences.

**Author:** Priyadarshini, Pattath, School of Education, Virginia Commonwealth University

**Objective:** The objective of this pilot study was to explore the incidence of work-related musculoskeletal disorders in different age groups in male and female computer professionals.

**Background:** Computers professionals are at an increased risk of neck and upper extremity musculoskeletal disorders (Ketola, Toivonen, Hakkanen, Luukkonen, Takala & Viikari-Juntura, 2002). Some of the risk factors include awkward postures, repetitive motions and contact stressors (Bao, 2015). Neck pain and carpal tunnel syndrome has been identified as a prevalent and costly musculoskeletal condition in the United States adult working population with an estimated \$ 86 billion cost in medical care (Yang, Hitchcock, Haldeman, Swanson, Lu, Choi, Nakaha & Bakev, 2016). There is much evidence of musculoskeletal disorders in the working population, with females being more affected. However, the differences of musculoskeletal disorders within age groups have not been much explored.

**Method:** A web-based questionnaire was administered to 41 computer professionals based in India. The survey was adapted from the Cornell Musculoskeletal Discomfort Questionnaire (Hedge, 1999). The results showed that 72.7% of females and 47.4% males reported musculoskeletal discomfort. Forty four percent of computer users reported assuming an awkward posture at least "sometimes" and 18% reported "quite often" while using a desktop computer. Thirty nine percent reported that they assumed awkward positions at least "sometimes" while 19.5% reported "quite often" while using a laptop. In female participants reporting incidence of work-related musculoskeletal disorders, 87.5% assumed awkward positions "sometimes" while 100 % of the participants who assumed awkward position "quite often" reported musculoskeletal discomfort. In participants under 25 years of age, 80 % females reported musculoskeletal discomfort. In males between 31-35 years, 20% reported incidence of musculoskeletal discomfort.

**Conclusion:** In general female participants reported higher frequency of musculoskeletal discomfort than males, and females under 25 years of age reported higher discomfort than their male counterparts. Those under the age of 25 years are referred as Generation Z or post-millennial's that have grown up in the digital age. Given the greater risk for females, and younger participants, there is a greater need for health promotion and to incorporate ergonomics while using computers to prevent developing musculoskeletal disorders.

**ID: 26**

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**Authors:** Kathryn, Polak, Psychology Department, College of Humanities & Sciences; Sebastian, Tong, Family Medicine and Population Health, Medicine; Michael Weaver; Dace, Svikis, Psychology Department, College of Humanities & Sciences; David, Pomm, Psychology Department, College of Humanities & Sciences; Enkelejda, Ngjelina, Psychology Department, College of Humanities & Sciences.

**Title:** Gender differences in prescription drug misuse in a sample of primary care patients.

**Objective:** Given the gender-based vulnerabilities associated with SUDs, the recent increase in Rx misuse, and the renewed NIH focus on gender/sex as a fundamental variable in research, the present study afforded an opportunity to examine comparative profiles of Rx misusers vs non-users within gender. Participants were N=4,557 primary care patients who completed an anonymous, computer-administered health survey at an urban, central Virginia hospital.

**Background:** Important gender differences have been found in the development, course and treatment of substance use disorders (SUDs), indicating women are at increased risk for physiological and psychosocial consequences of substance abuse (Polak et al., 2015). While these differences appear to extend to psychiatric comorbidity, medical problems, employment, and family/social impairment in those dependent on prescription opioids (Rx; e.g., Back et al., 2011), little is known about the gender-specific characteristics associated with overall Rx misuse.

**Method:** Chi-square analyses were used to compare Rx misusers with non-users within gender for demographic, medical, and mental health variables. Male Rx misusers were more likely to be Caucasian (45% vs 26.2%;  $p < .001$ ) and less likely to be African American than male non-users (49.6% vs 67.5%;  $p < .001$ ). No such racial differences were found for females ( $p = .36$ ). Differences in employment status were found between female Rx misusers and non-users ( $p = .02$ ), but not for males ( $p = .94$ ). While male Rx misusers were more likely to report COPD (16.8% vs 9.9%;  $p = .02$ ) and migraines (13.7% vs 7.3%;  $p = .009$ ) than non-users, this pattern was not found for females (all  $p > .05$ ). Female Rx misusers were significantly less likely to have heart disease than non-users (5.7% vs 11%;  $p = .01$ ); no such difference was found for males ( $p = .45$ ). Male and female Rx misusers were more likely than non-using counterparts to report anxiety and depression (all  $p < .01$ ).

**Conclusion:** Preliminary analyses found multiple gender differences in demographic and medical variables among Rx misusers and non-users. These findings highlight the unique gender-specific profiles of Rx misusers. Such information may help to inform identification, prevention and treatment of Rx misuse.

**ID: 27**

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**Title:** Increasing age predicts poor cervical cancer prognosis with subsequent effect on Radiation Oncology Medicine

**Authors:** Bridget A. Quinn, Radiation Oncology, VCU; Xiaoyan Deng, Biostatistics, VCU; Adrienne Colton, Obstetrics and Gynecology, VCU; Dipankar Bandyopadhyay, Biostatistics, VCU; Jori Carter, Obstetrics and Gynecology, VCU; Emma C. Fields, Radiation Oncology, VCU.

**Background:** Increasing age predicts poor cervical cancer prognosis with subsequent effect on treatment and overall survival. Stage and histology are well-established prognostic factors for cervical cancer, but the importance of age has been controversial and a clear role for this factor has not yet been defined. We aim to evaluate the significance of age as an independent prognostic factor in women with cervical cancer and evaluate the therapeutic consequences and survival outcomes as they relate to this factor.

**Methods:** Surveillance, Epidemiology, and End Results (SEER) database was used to retrospectively analyze patients diagnosed with cervical cancer from 1973 to 2013 in the United States. Statistical analysis performed included the Log-Rank test, Chi-squared analysis, and the Cox Proportional Hazards model. 46,350 women were identified for analysis. Taking stage, histology, race, and treatment into account, increasing age demonstrates negative prognostic significance with a HR of 2.87 for women over age 70 and 1.46 for women ages 50-69. Additionally, women over 70 are significantly more likely to receive non-aggressive treatment ( $p < 0.0001$ ) or no treatment at all ( $p < 0.0001$ ). Of note, these women gain a significant survival advantage from treatment, even if less aggressive, as compared to no treatment ( $p < 0.0001$ ), with brachytherapy alone showing the greatest benefit ( $p < 0.0001$  vs NT;  $p < 0.0087$  vs EBRT) among less aggressive therapies. Brachytherapy continues to hold a significant survival advantage for all stages in women over 70 (localized:  $p = 0.0009$  vs. NT; regional and distant:  $p < 0.0001$  vs. NT). Older women with cervical cancer show a poor survival trend with risk analysis supporting that age is an independent negative prognostic factor when accounting for stage, histology, race, and treatment. They receive less aggressive treatment as compared to their younger counterparts, with a significant number receiving no treatment at all. Despite this, less aggressive therapy still extends survival, particularly with brachytherapy, supporting the immense potential clinical benefit. This study is novel in that it demonstrates that older women, who we show are at risk for a poorer prognosis because of their age, are not only receiving appropriate treatment less often, they are dying more frequently because of it.

**Conclusion:** Our data supports that older women are a high-risk group of patients that would benefit significantly from treatment, even if only brachytherapy. Brachytherapy for cervical cancer is a tolerable procedure, even for most elderly women, and should, therefore, remain a standard clinical option for this population, regardless of their stage or histology at diagnosis.

**ID: 28**

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**Title:** The Glass Ceiling: Does It Exist in Vascular Surgery Departments?

**Objective:** Despite this trend, we hypothesize there are gender differences in vascular faculty that are based at either integrated vascular surgery residencies versus vascular surgery fellowships. We further hypothesize there will be gender differences among vascular surgery and general surgery program directors.

**Background:** Surgery, in particular vascular surgery, is becoming the career choice for female undergraduate medical students and general surgery residents. Current data from The American Board of Surgery indicates a total of 370 (9.8%) boarded vascular surgery diplomats to date with increased applications greater than twenty percent in the last three years.

**Methods:** The Accreditation Council for Graduate Medical Education (ACGME) database was queried for all vascular surgery residencies and fellowships registered as of July 1, 2016. The programs were broken into two groups those with solely dedicated vascular surgery fellowships and those that has a vascular surgery integrated residency. If a program had both a fellowship and residency, it was listed in the residency group. Department websites were examined for the total, male and female faculty personnel listings. Additionally, vascular surgery program directors (VS-PD) and general surgery program directors (GS-PD) sex were also collected. A total of 112 programs were found, of which 61 were solely fellowships. A total of 133 (16.4%) female faculty were identified in all programs of the 813 total faculty examined. Comparing the two groups:

	Fellowships (n=63)	Residencies (n=51)		p value	
Total Faculty (SD)	6.61	2.83	8.04	3.09	0.01%
Female Faculty (%)	13.4%	19.3%	0.03*		
Female VS-PD (%)	7.9%	11.7%	0.53*		

\*Fisher's exact two-tail t-test

Females comprised 23.8% GS-PD positions in vascular surgery fellowships verses 21.6% in integrated vascular surgery residencies (p=0.83\*).

**Conclusion:** Integrated vascular surgery residencies were more likely to have more total and female vascular surgery faculty. VS-PD listings were not significantly different between the two groups. Comparatively there were fewer female VS-PD compared to GS-PD. These data should be used to enlighten potential recruiting efforts made by vascular surgery departments to address the lack of female presence not only as vascular surgery faculty but as program directors.

**Id: 29**

**Title:** Comparing health care needs and service utilization patterns for males and females enrolled in substance abuse treatment

**Authors:** Ngjelina, E., Polak, K., Safford, L., Dibble, A., May, J., Farrell-Moore, D. and Svikis, D.S.

**Background:** Individuals with substance use disorder (SUDs) often have co-occurring medical conditions including HIV, hepatitis, pancreatitis, cardiovascular disease, trauma-related injuries, and mental health conditions, resulting in high medical care utilization(MCU),(Chalk et al., 2010,SAMHSA, 2003, Macmillan et al.,2001). Gender differences have been found in comorbidities with SUD, with a higher rate of lifetime psychiatric disorder in women vs men (Marcus et al., 2015).Additionally, women appear to use more health care services than men in general population (Bertakis et al, 2000).However, little research has examined specific health care needs and utilization among individuals in community based and publically founded behavioral health.

**Objectives:** The purpose of the current study was to better understand healthcare needs and barriers to utilization among individuals in publicly-funded SUD treatment.

**Methods:** Participants ( $N=286$ ) were recruited from 5 publicly-funded SUD treatment programs in Richmond, VA and completed an anonymous computer-administered health survey. Survey domains included: demographics; substance use; health care experience; medical, dental, and mental health; and sexual behavior. Females and males were compared using chi-square analyses for categorical variables and t-tests for continuous measures.

**Results:** The sample was 54.2% male, 77.8% African American and had a mean age of 41.8 years. Over three-fourths (79%) of participants were in treatment for illegal drugs, with almost half (45.5%) citing opioids as primary drug problem. Males were less likely than females to report having a primary care physician (51% vs 74.8%,  $p<.001$ ), with more women reporting a routine check-up in the past year (66.9% and 43.8%, respectively). Women were more likely than men to report depression (48.9% vs 30.3%,  $p<.01$ ) and at least one psychiatric comorbidity (60.6% vs 39%,  $p<.01$ ). They were also more likely to rate their general health as “fair “or “poor” (40%) compared to men (26.1%)(  $p<.05$ ). In addition, more women than men reported at least one ER visit (past year) (78.6% vs 61.9%,  $p<.01$ ).

**Conclusion:** Preliminary findings showed women in treatment for SUDs presented with greater physical and mental health problems and different health care utilization patterns than males. The impact of such comorbidities on male and female SUD treatment engagement, retention and outcomes warrants further study.

**ID: 30**

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**Title:** Understanding College Student Survivors' Utilization of Campus Resources: Impact of Campus Connectedness and Gender Identity

**Authors:** Jennifer Underwood, School of Education; Andrea Moreau, School of Education; Abigail Conley, School of Education

**Objective:** The purpose of this study was to better understand college student survivors' help seeking behaviors after IPV victimization. Researchers used survey data to look at the relationship between survivors' feelings of campus connectedness and their use of campus resources. Specifically, researchers sought to determine if there were differences in female and male survivors' feelings of campus connectedness and utilization of campus resources.

**Background:** Interpersonal violence (IPV) includes domestic/dating violence, sexual violence, and stalking. College students are at high risk for IPV victimization (Cantor et al., 2015), yet most do not report their assault or seek help from campus resources (Krebs et al., 2016). For campus professionals to effectively serve survivors, factors that impact survivors' decisions about utilizing campus resources need to be explored.

**Methods:** VCU undergraduate students (N=5,000) were randomly selected to participate in an anonymous online campus climate survey measuring interpersonal violence experiences, perceptions about campus climate, and utilization of campus resources. Of those selected, 1,160 students participated, with 37.8% identifying as survivors of IPV. As this is a very new project, the data are still being analyzed. Results will include correlational analyses to explore the relationships between survivor gender identity, campus connectedness, and utilization of campus resources. We hypothesize that survivors who report higher campus connectedness will report more utilization of resources. We also hypothesize that female survivors will report higher utilization of campus services than male survivors.

**Conclusion:** The results of this research will add to the understanding of female and male survivor help seeking behavior. Implications for institutional IPV policy and service provision will be explored. Additionally, researchers will discuss directions for future research.

**ID: 31**

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**Title:** Proficiency-based cervical cancer brachytherapy training: An effort to combat recent trends in radiation oncology that result in worse outcomes for an underserved population through resident education.

**Objective:** To develop and implement a proficiency-based cervical BT simulation curriculum. A pelvic model was modified to permit cervical BT.

**Background:** Cervical cancer is the 4th most common cancer in women worldwide, and radiation therapy is the mainstay of treatment for women with disease outside of the uterine cervix. To deliver the high doses needed for cure, brachytherapy (BT) is necessary to avoid toxicity to surrounding tissues. This treatment places a tandem and ovoid (T+O) applicator into the uterus and vagina, and many studies have shown that improper placement leads to lower tumor control. Sadly, a rising number of radiation oncologists are not comfortable with the procedure, leading to a decline in its use (83% in 1988; 58% in 2009). Despite the need for adequate cervical BT training in residency, recent ACGME case logs showed many programs lacking any.

**Method:** Each resident placed T+O applicators with attending guidance and again alone two weeks later. BT quality was checked using x-rays of each implant against 5 components (symmetry, packing positioning, etc.) important for tumor control. Other metrics included retention of key procedural details, the time taken for each procedure and pre and post-session surveys to assess confidence. Research was funded by the ACRO resident education grant. In the 1st session, residents on average met 4.5 out of 5 placement criteria, which grew to 5 the 2nd session. Novice residents (n=3) improved the most, from 4 to 5, whereas experienced residents (n=5) started at 4.8. On average, residents were able to remember 7.6 of the 8 key steps, with novice and experienced residents remembering 7 and 8, respectively. Execution time decreased by an average of 10.5%, with novices taking 15.2% and experienced residents 5.6% less time the 2nd session. Confidence improved dramatically, from 2.6 to 4.6 out of 5, with novices improving from 1.3 to 3.5. All residents strongly agreed that the training helpful and wanted to participate again the following year. Simulation training plays a crucial role in medical education, but is underused in radiation oncology.

**Conclusion:** Residents involved in this program had measurable improvements in the time to perform the procedure, applicator placement quality and confidence, which translate to fewer complications and better patient outcomes. This training model allows residents and attendings to become and remain proficient in this challenging but incredibly important skill.

**Research Category:** clinical   **Eligible for an Award:** yes   **Previously Presented:** no