Diabetes, Metabolism, and Nutrition, Mayo Clinic Minnesota, Rochester, MN; Women’s Health, Mayo Clinic Minnesota, Rochester, MN; 4Division of General Internal Medicine, Mayo Clinic Arizona, Scottsdale/Phoenix, AZ; 3Mayo Clinic Thurston is supported by a grant from the National Heart, Lung, and Blood Institute.

Sources of Funding:

... suggest... of preventive care. Our study examined receipt of cancer screening in the last 5 years, and there were no differences by race (p=0.791).

Factors associated with... and Black, Hispanic, and “other” women were less likely to have up-to-date screening compared to White women (OR 0.61 (0.28, 1.35), 0.38 (0.17, 0.84), 0.65 (0.16, 2.70), respectively; p=0.049). Other factors associated with up-to-date colon cancer screening in multivariable analyses included no physical disability (OR 2.24 (1.18, 4.79), p=0.029). Other factors associated with up-to-date mammogram screening were no physical disability (OR 2.25 (1.02, 4.95), p=0.043) and no history of hysterectomy (OR 5.38 (2.94, 9.88), p<0.001).

Conclusion: Within this community sample, there were racial/ethnic differences in receipt of cancer screening. Black and Hispanic women were less likely to have up-to-date colon cancer screening relative to White women, while White women were less likely to have up-to-date mammograms relative to Black women. Racial and ethnic differences in preventive care persist, but providers, such as disability and health insurance coverage, also influence receipt of preventive care.

Sources of Funding: The Sinai Community Health Survey 2.0 was funded by the Chicago Community Trust (C2013-00-630, C2014-01-723, C2015-04-294). Dr. Thomas is supported from the National Institutes of Health (NIH). Thurston is supported by a grant from the National Heart, Lung, and Blood Institute (K24HL123565).

S-2.

Associations of Self-reported Endometriosis and Female Sexual Dysfunction from the Data Registry on Experiences of Aging, Menopause, and Sexuality (DREAMS)

S-3.

Real-world treatment and resource utilization for menopausal symptoms in the United States

Objective: Vasomotor symptoms (VMS) are the most frequently reported menopausal symptoms leading women to seek medical care. Current treatment options include hormonal as well as nonhormonal therapies (eg, selective serotonin reuptake inhibitors [SSRIs] or serotonin-norepinephrine reuptake inhibitors [SNRIs], herbal remedies, dietary supplements, lifestyle modifications). Our objective was to describe current treatment patterns for menopausal symptoms and associated healthcare resource use in the United States. Design: This noninterventional, observational study was performed among a convenience sample of 258 health care practice (HCP) respondents from the US region. Participating HCPs were gynecologists (38%), primary care physicians (43%), and advanced practice providers in gynecology (9%) and primary care (11%) who provided patient data. 87% of HCPs were in-office-based private practice. Data on participants and nonprescription or prescription therapy for menopausal complaints were abstracted from medical records of US women who initially presented with menopausal complaints (including VMS) between 1 Jan 2016 and 31 Dec 2019 and were aged 40 to 60 years. Data were collected from 16 Oct 2020 to 28 Jan 2021.

Results: Data from 1,016 women (mean age [SD]: 53 [4.4] years) were analyzed; 342 were current (9%) or former (25%) smokers. Menopausal symptoms were the primary reason for making an appointment for 50% of the sample and were discussed at a routine visit by 49%. The most common symptoms at initial presentation were hot flashes (91%), sleep problems (50%), and vaginal dryness (47%). Half (513 [51%]) had menopausal symptoms for ≥6 months before reporting them to the HCP. At least one comorbidity was present in 464 (66%) women, most commonly hypertension (407 [40%], headaches/migraines (184 [18%]), and diabetes (144 [14%]). Therapy for menopausal symptoms was recorded for 883 (87%) women, of whom 249 (28%) initiated prescription medication only, 272 (31%) initiated nonprescription therapy only, and 362 (41%) initiated both; 133 (13%) had no recorded therapy. Demographic characteristics were generally similar regardless of the use of therapy. Among the 611 women with a documented prescription medication for treatment of menopausal symptoms, the most prescribed therapies were estrogen (systemic or local) alone (244 [40%], includes compounded in 15 [2.5%]), combination estrogen/progestogen (228 [37%], includes compounded in 26 [4.3%]), SSRI/SNRIs (126 [20%]), and other nonhormonal treatments (5% each). Most (88%) of the women prescribed treatment did not receive prescriptions for more than one medication for menopausal symptoms. Estrogen-based treatments were initiated primarily because of established efficacy, HCP recommendation, and patient perception. Among the 634 women reporting a nonprescription therapy, the most common, excluding lifestyle interventions, was black cohosh (190 [30%], compounded in 34 [5%], synthetic in 94 [94%], advice from family/friends [51 [27%]], and efficacy (41 [22%]).
S-4. Quality and readability of accessible online information on menopausal hormone replacement therapy in Canada: what are our patients reading? Fahmeeda Murtaza1, Lindsay Shirreff2, Liu Huang1, Michelle Jacobson1, Radomir Jarcevic5, Marie K. Christakis, MD, MPH 1,2. 1Obstetrics & Gynecology, Toronto, ON, Canada; 4Obstetrics & Gynaecology, Hopital general du Lakeshore, Pointe-Claire, QC, Canada; 5Obstetrics & Gynecology, Universite de Montreal, Montreal, QC, Canada. Objective: Background: Menopause hormone therapy (MHT) is the most effective treatment for vasomotor symptoms in menopause. However, most women do not feel fully informed about the benefits and risks associated with MHT use and are uncertain about current evidence on MHT. Recent studies have found that menopausal women resort to various online resources, including the internet, to inform themselves. Objective: To assess the quality and readability of the top 24 MHT websites Design: Methods: The top 24 websites from Google, Bing, and Yahoo were identified using the search term “hormone replacement therapy”. Five menopause specialists assessed websites using the DISCERN (System for the DIScrimination of the Credibility and quality of medical information for patients) and the American Medical Association (JAMA) benchmarks, and Abbott’s Scale. One reviewer evaluated website credibility using the Health on the Net Foundation Code of Conduct (HONcode) certification, and website readability using the Simple Measure of Gobbledygook (SMOG), Flesch-Kincaid Grade Level (FKGL) and Flesch-Kincaid Read Ease (FKRE) formulae. Results: Results: Scores for quality of information varied. The mean JAMA score was low at 2.3 ± 1.1 (out of 4). Only one website met all benchmarks. Fourteen websites (58%) had a good/excellent DISCERN score, while four (17%) had a poor/very poor score. For Abbott’s Scale, both the mean authorship score at 2.2 ± 1.0 (out of 4) and mean content score at 45.9 ± 9.8 (out of 100) were low. Inter-rater reliability was high for all tools. Fifteen websites (63%) were HONcode certified. The mean FKRE score was 42.7 ± 10.3, mean FKGL was 12.3 ± 1.9 and mean SMOG grade level was 11.3 ± 1.5. Only one website presented content at a reading level recommended for the public. Websites meeting more JAMA benchmarks were significantly less readable (p < 0.05). Conclusion: Conclusion: Although good quality MHT information exists online, most resources are inaccurate or incomplete. Overall, these resources are not considered comprehensible by the average woman. There is a need to disseminate accurate, comprehensive, and understandable MHT information online. Sources of Funding: None

S-5. Delivery of Menopause Care During a Pandemic: An Evaluation of Patient Satisfaction with Virtual Visits Emily H. Wright, M.D.1, Ola Shaltout1, Mary Ann Zovicki1, Lindsay Shirreff, MD1, 2, 4, Obstetrics and Gynecology, The University of British Columbia Faculty of Medicine, Vancouver, BC, Canada; School of Medicine, Royal College of Surgeons in Ireland, Dublin, Ireland; 3Obstetrics and Gynecology, University of Toronto, Toronto, ON, Canada; 4Obstetrics and Gynecology, Sinai Health System, Toronto, ON, Canada; 5University of Toronto Temerty Faculty of Medicine, Toronto, ON, Canada. Objective: At the start of the coronavirus disease 2019 (COVID-19) pandemic, most patients visited in the Menopause Clinic at Mount Sinai Hospital, a tertiary care hospital in Toronto, Ontario, Canada were transitioned to telephone appointments. We aimed to evaluate patient satisfaction with telephone visits during the first wave of COVID-19 pandemic, determine the proportion of women preferring in-person visits and identify predictors of visit type preference. Design: In this cross-sectional study, patients with an appointment in one provider’s weekly Menopause Clinic during the first wave of the pandemic (March 23–July 15, 2020) were asked to complete an electronic survey. We recorded demographics and patient-reported cost to attend an in-person appointment (company expense and time away from work). For those who attended a pre-pandemic in-person appointment, visit type preference (telephone versus in-person) was determined. Participants completed a modified, 12-question Telemedicine Satisfaction Questionnaire (TSQ). The primary outcome was the mean composite satisfaction score (1 to 5). Secondary outcomes were predictors of visit type preference. Chi square tests were used to compare proportions, and odds ratios were calculated. Binary logistic regression and multivariate analysis were performed to assess the factors associated with in-person versus telephone visit type preference. Results: During the first wave of COVID-19, 214 women made 246 visits to the clinic, attending 212 (221/246, 90%). Thirty-one percent (77/246) were new consults with the remaining being follow-up visits. Survey response rate was 72% (139/193). Mean age of patients was 53 years (SD 7.37 years) with most having education beyond high school (130/139, 94%) and living in the Greater Toronto Area (GTA) (117/139, 84%). The mean TSQ composite score was 4.21 (SD 0.72). Of patients who attended a pre-pandemic in-person appointment (118/139, 85%), a minority (24/118, 20%) preferred in-person appointments. Those favouring in-person visits were more likely to report a commute less than 30 minutes (OR 3.78, 95% CI 1.16-12.29, p = 0.027), require less than 2 hours away from work (OR 4.05, 95% CI 1.07-15.4, p = 0.04), and spend less than $10 to attend (OR 3.67, 95% CI 1.12-12.6, p = 0.035) compared to patients favouring phone visits. Conclusion: There is high satisfaction among patients having Menopause Clinic telephone visits, with most preferring this type of appointment. In-person visits are still preferred among a minority of women, with predictors being short commute time, minimal time away from work and low monetary expense per visit. Sources of Funding: None
S-7. Endometrial Progesterone Receptor Expression with Softgel Vaginal Estradiol (4-µg or 10-µg) Inserts
James A. Simon, MD, James H. Liu, MD, David F. Archer, MD, Patricia D. Castro, PhD, Shellie Graham, PhD, Brian A. Bernick, MD, Sébastien Mirkin, MD, Barry Komm, PhD.1 IntimMedicine, The George Washington University School of Medicine and Health Sciences, Washington, DC; 2University Hospitals, Cleveland, OH; 3University of Rochester, Rochester, NY. Vaginal estradiol was administered for 12 weeks, and then a 24-week wash-out phase was added. Patients were randomized to double-blind 1:1:1 treatment with 4-µg (E2), 10-µg (E2), or placebo. Endometrial biopsy tissue sections were immunostained with an anti-PR (A/B) monoclonal antibody (G9R1294; Agilent, Santa Clara, CA). Staining was quantified (Pathology & Histology Core, Baylor College of Medicine, Houston, TX), and mean expression levels between baseline and week 12 were analyzed by 2-sided t-tests.

Results: PR expression results were available for all women, except three in the 4-µg E2 group. At baseline, mean endometrial PR expression levels ranged from 0.301 pmol/mg to 0.470 pmol/mg for all groups. Similar PR expression levels were observed after 12 weeks of treatment (0.312-0.432 pmol/mg). No significant differences in mean PR expression from baseline to week 12 were observed among the placebo and both active co-administrators. No meaningful differences in endometrial PR expression were observed following 12 weeks of exposure to low-dose E2 vaginal inserts. This supports the hypothesis that exposure to a low-dose E2 insert placed near the vaginal opening will not be sufficient to increase estrogen responsiveness in the uterus. Sources of Funding: Therapies MD

S-8. Effect of Abaloparatide on Fracture Incidence and Bone Mineral Density in Postmenopausal Women with Osteoporosis at Highest Risk for Fracture
Bar Clarke1, Paul Kosteniuk1, Yamei Wang2, Kristi Tough-DeSapri1.1 Mayo Clinic, Rochester, MN; 2Ramsey Health, Inc, Boston, MA; 3Northwestern Medicine, Chicago, IL. Objective: Identifying postmenopausal women at very high risk for fracture (fx) is critical to counseling on appropriate parenteral therapies that can rapidly improve bone mineral density (BMD) and reduce fx risk. For many high risk patients, the goal is to prevent a second or subsequent fx. Medicare claims data have shown that in women ≥65 years old with an incident fx, 10% will sustain another fx in the next year and 30% in 5 years. In the 18-month phase 3 ACTIVATE study in women with postmenopausal osteoporosis, abaloparatide (ABL) significantly increased BMD, and decreased vertebral, nonvertebral, and clinical fx risk vs placebo (PBO), and major osteoporotic fx (MOF) risk vs teriparatide (TPTD) and PBO. The objective of this post hoc analysis was to evaluate efficacy of ABL in a subgroup of patients meeting ≥1 of the high/high-fx risk criteria defined in the 2018 ACTIVATE guidelines. Design: Single center, randomized, double-blind, placebo-controlled acute intervention study. Endothelial function was measured using brachial artery flow-mediated dilation (FMDBA) measured via duplex ultrasonography as the percent change in brachial artery diameter in response to reactive hyperemia following 5-minutes of forearm ischemia. FMDBA was measured during acute intravenous infusions of saline (control) and VITC (2–3g) approximately 3-hours after a single dose of oral BH4 (Kuvan®; 10mg/kg) or placebo (randomized cross-over, separated by 4 days) in postmenopausal (n=14, 36±9 years) and postmenopausal (n=19, 58±5 years) women. Results: FMDBA after the placebo condition, FMDBA was reduced in postmenopausal women compared with premenopausal women during the saline infusion (5.6±2.1 vs. 11.6±4.2%, p<0.001), and was selectively increased in postmenopausal women during VITC (8.6±3.3%, p<0.001). Acute BH4 treatment selectively increased FMDBA in postmenopausal women during saline (to 7.2±2.5%, p<0.001) and VITC (p<0.01) or BH4 (p=0.85) in premenopausal women. ABL also did not significantly change during co-administration of VITC+BH4 in either group (p=0.14). ABL remained significantly reduced in postmenopausal compared with premenopausal women (p=0.003). Conclusion: Both VITC and BH4 treatment alone improve FMDBA in healthy estrogen-deficient postmenopausal women. Co-administration of VITC+BH4 does not restore FMDBA to levels of premenopausal women, suggesting additional mechanisms may be involved.

Sources of Funding: US National Institutes of Health (UL1 TR002535, KL2 TR002534, TL1 TR002533, R01 HL114073-03, T32AG000279, CTSA UL1 TR002535, KL2 TR002534, TL1 TR002533)

S-9. Role of BH4 Deficiency as a Mediator of oxidative Stress-Related Endothelial Dysfunction in Postmenopausal Women.
Vanessa G. Del Bosque, PhD, Kerry Hildreth, MD, Cemal Ozumakci, PhD, Kerrie Moreau, PhD.1 Department of Medicine, University of Colorado, Denver, CO; 2Applied Health Sciences, University of Illinois at Chicago, Chicago, IL. Objective: Cardiovascular disease risk is lower in premenopausal women compared with postmenopausal women. We hypothesized that estrogen deficiency, caused by unopposed estrogen administration to premenopausal women, would increase nitric oxide (NO) bioavailability, secondary to oxidative stress. Under physiological conditions, endothelial NO synthase (eNOS) produces NO from the interaction with L-arginine and tetrahydrobiopterin (BH4), an essential cofactor for normal eNOS function. However, BH4 can become limited when there is decreased synthesis or oxidation via the BH4 radical, a potent inhibitor of eNOS, leading to increased production of reactive oxygen species (ROS) and decreased NO. Vitamin C (VITC) administered intravenously at a supraphysiological dose (~2-3g) is a commonly used mechanistic probe to evaluate the tonic suppression of vascular function by ROS. VITC is a potent scavenger of ROS, but a weak scavenger of peroxynitrite. BH4 reacts with peroxynitrite 6-10x faster than VITC, suggesting that VITC alone may not fully protect BH4 from oxidation by peroxynitrite. In support of this, FMDBA increased, but not fully restored, in postmenopausal women following acute intravenous VITC or oral BH4 supplementation. In vitro studies demonstrate that co-administration of VITC with BH4 prevents eNOS uncoupling and reductions in NO by peroxynitrite; however, this remains untested in humans. Accordingly, we assessed the separate and combined effect of VITC and BH4 on FMDBA in postmenopausal women.

Design: healthy premenopausal and postmenopausal women not on vascular-altering medications (e.g., anti-hypertensive or lipid lowering medications) or taking hormonal contraceptives or hormone therapy were recruited to complete a randomized, placebo-controlled acute intervention study. Endothelial function was measured using brachial artery flow-mediated dilation (FMDBA) measured via duplex ultrasonography as the percent change in brachial artery diameter in response to reactive hyperemia following 5-minutes of forearm ischemia. FMDBA was measured during acute intravenous infusions of saline (control) and VITC (~2-3g) approximately 3-hours after a single dose of oral BH4 (Kuvan®; 10mg/kg) or placebo (randomized cross-over, separated by 4 days) in premenopausal (n=14, 36±9 years) and postmenopausal (n=19, 58±5 years) women. Results: FMDBA after the placebo condition, FMDBA was reduced in postmenopausal women compared with premenopausal women during the saline infusion (5.6±2.1 vs. 11.6±4.2%, p<0.001), and was selectively increased in postmenopausal women during VITC (8.6±3.3%, p<0.001). Acute BH4 treatment selectively increased FMDBA in postmenopausal women during saline (to 7.2±2.5%, p<0.001) and VITC (p<0.01) or BH4 (p=0.85) in premenopausal women. ABL also did not significantly change during co-administration of VITC+BH4 in either group (p=0.14). FMDBA remained significantly reduced in postmenopausal compared with premenopausal women (p=0.003). Conclusion: Both VITC and BH4 treatment alone improve FMDBA in healthy estrogen-deficient postmenopausal women. Co-administration of VITC+BH4 does not restore FMDBA to levels of premenopausal women, suggesting additional mechanisms may be involved.

Sources of Funding: UL1 TR002535, KL2 TR002534, TL1 TR002533

S-10. Justifying bilateral salpingo-oophorectomy at hysterecetomy: A large retrospective cohort study
Ana Iancu, MD1, Ally Murji, MD, MPH2, Ovina Chow, BSc1, Adebunke Adeola, MD1, Lindsay Shireeff, MD, MSc(HQ), FRSCC1,2. Obstetrics and Gynecology, Mount Sinai Hospital, Toronto, ON, Canada; Obstetrics and Gynecology, University of Toronto, Toronto, ON, Canada; 3University of Toronto Temerty Faculty of Medicine, Toronto, ON, Canada. Objective: 1) To evaluate the proportion of patients with justifiable bilateral salpingo-oophorectomy (BSO) at hysterecetomy based on pathologic diagnosis. 2) To determine rate and predictors of avoidable BSO based on preoperative considerations, surgical characteristics and pathologic diagnosis. Design: A retrospective review of hysterectomies at 7 Ontario, Canada hospitals (4 academic, 3 community) from July 2016 to December 2019 was performed. Cases by gynecologic oncologists were excluded. Data was extracted from health records (ICD-10 coding) and electronic medical records. Of patients who had concomitant BSO, patient demographics (age, body mass index, ASA class, preoperative diagnosis), surgical factors (presence of adhesions and endometriosis) and surgeon characteristics (academic vs community, generalist vs fellowship-trained) were recorded. A BSO was considered justifiable if pathologic diagnosis was endometriosis or any malignant or premalignant diagnosis except for gestational trophoblastic neoplasia, cervical cancer or cervical dysplasia. Criteria for avoidable BSO were: age less than 51 years; preoperative diagnosis of cervical dysplasia or benign diagnosis other than gender dysphoria, risk reduction or premenstrual dysorphic disorder; absence of intraoperative findings of malignancy and adhesions; and discord in surgical specimen and Chi-square tests compared patients with avoidable BSO to those who had at least one criterion for BSO. Multivariate analyses identified factors most strongly associated with having an avoidable BSO. Results: During the study period, 4191 hysterectomies were completed with 1422 (33.9%) patients having concomitant BSO. Final pathologic justified BSO in a most patients (1035/1422, 72.8%).
their CF measures were assessed 2.7 (SD=1.5) years before the 1st used cognitive tests.

### Results:

and systolic blood pressure.

scan: age, menopausal status, HDL-C, fasting glucose, triglyceride, waist circumference, site, education level, and race, as well as the following covariates measured at the CT scan at one of the SWAN visits 4-7 as the baseline. Working memory (digit span backward) verbal, episodic memory immediate and delayed recall (East Boston memory test), as well as processing speed (symbol digit modalities) were assessed repeatedly beginning at SWAN visit 4. Cognitive tests completed after the CT scan were examined after adjusting for race.

A worsening cardiovascular profile after menopause may contribute to the fact that women are disproportionately affected by dementia. Cardiovascular fat (CF) deposition, found to be higher in postmenopausal women compared with premenopausal women, is a novel risk factor for cardiovascular disease (CVD). As a metabolically active organ, CF may impact cognitive function through neuroinflammatory pathways by changing secretion of inflammatory cytokines and adipokines. The quality of CF can be reflected by its radiodensity. Associations of CF volume and radiodensity with cognitive function are not clear among midlife women as well as by race groups, which may be critical for these associations considering the lower epidemiological evidence for postmenopausal women with higher risk of CVD and higher prevalence of Alzheimer’s disease, compared with Whites. We aimed to assess associations of CF volume and radiodensity with future cognitive performance among midlife women and check if there are racial differences in these associations.

### Design:

Table: The relationship between CF and cognitive performance

<table>
<thead>
<tr>
<th>Standardized CP</th>
<th>Proportional Change in Performance</th>
<th>Delayed recall</th>
<th>EAT Volume</th>
<th>EAT Density</th>
<th>EAT Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\beta$</td>
<td>p-value</td>
<td>$\beta$</td>
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<td>$\beta$</td>
<td>p-value</td>
</tr>
<tr>
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<td>0.77</td>
<td>-0.04(0.06)</td>
<td>0.16</td>
<td>0.12(0.09)</td>
<td>0.17</td>
</tr>
</tbody>
</table>

*The distribution of verbal episodic memory was skewed, so we applied linear mixed regression with robust standard error.
Score. Other secondary endpoints: effect of fezolinetant vs placebo on weekly mean change in frequency and severity of moderate and severe VMS from baseline to week 12. Treatment-emergent adverse events (TEAEs) assessed were safety, tolerability, and adherence.

After 12 weeks, women on placebo were re-randomized to fezolinetant 30 mg or 45 mg, and those originally on fezolinetant stayed on their dose for a 40-week extension period. **Results:** 501 women were randomized and 500 took ≥1 dose of medication (placebo n=145, fezolinetant 30 mg n=166, fezolinetant 45 mg n=167). Both fezolinetant doses statistically significantly reduced VMS frequency and severity at weeks 4 and 12 vs placebo (Table). Fezolinetant 45 mg, but not fezolinetant 30 mg, significantly reduced PROMIS-assessed sleep disturbance vs placebo at week 12. Improvement in VMS frequency and severity was observed as early as 1 week after treatment onset and was maintained throughout the 12-week placebo-controlled period. TEAEs were reported by 40% (fezolinetant 30 mg), 36% (fezolinetant 45 mg) and 32% (placebo) of women. Headache was the most common TEAE in the fezolinetant groups: 3% (fezolinetant 30 mg), 4% (fezolinetant 45 mg) and 2% (placebo). Serious TEAEs were reported by 2% (fezolinetant 30 mg), 1% (fezolinetant 45 mg) and 0% (placebo) of women; there were no drug-related serious TEAEs. **Conclusion:** Fezolinetant 30 mg and 45 mg once daily were efficacious for the treatment of moderate-to-severe VMS associated with menopause. Efficacy was evident by week 1 of treatment and maintained throughout the 12-week placebo-controlled period. Fezolinetant 45 mg improved patient-reported sleep. No safety signals of concern were apparent for either fezolinetant dose.

**Sources of Funding:** Astellas Pharma Inc.
no significant interactions between menstrual cycle phase and menopausal transition stages on symptom severity. Women experience premature exacerbation of symptoms, whether in the LR without cycle irregularity or in the ET with cycle variability meeting STRAW criteria. Further study of symptom experiences during subsequent years of the SMWHS is needed to identify whether cyclic symptoms persist through the early menopausal transition stage and to support an integrated view of menstrual cyclicity and progression through menopausal transition stages in clinical practice with women during these complex stages of reproductive aging.

Sources of Funding: NONE

S-16. Does a history of polycystic ovary syndrome predict more severe menopausal vasomotor symptoms? Annie S. Lobo, M.D.1,2, Stephanie Faubion, MD,1,4, Carol Kuhle, D.O., M.P.H.1,3, Kristin Mara1, Felicity Enders1, Eika Kapoor1,2,3, General Internal Medicine, Mayo Clinic, Rochester, MN; 1Division of Endocrinology, Diabetes, Metabolism, and Nutrition, Mayo Clinic, Rochester, MN; 2Department of Quantitative Health Sciences, Mayo Clinic, Rochester, MN; 3Division of General Internal Medicine, Mayo Clinic, Jacksonville, FL; 4Women’s Health, Mayo Clinic, Rochester, MN

Objective: Vasomotor symptoms (VMS) are the most common symptom experienced by women in the menopause transition. In addition to their impact on mood, sleep, and quality of life, VMS are now recognized as a predictor for cardiovascular disease (CVD). Polycystic ovary syndrome (PCOS) is also a unique risk predictor for CVD in women. The association between PCOS and menopause symptoms, particularly VMS, is not known. The two conditions may be independent predictors of CVD risk in women or they may each be a marker of CVD risk with a common, shared pathophysiology. These relationships have not been studied. The objective of this study was to assess the association between a self-reported diagnosis of PCOS compared to women without PCOS and severity of menopausal symptoms, particularly VMS.

Design: This was a cross-sectional study from the Data Registry on the Experiences of Aging, Menopause and Sexuality (DREAMS) performed in women aged 45-60 years presented to women’s clinics at Mayo Clinic Rochester, Minnesota, Scottsdale, Arizona, Jacksonville, Florida between May 2015 and December 2019. The participants completed multiple questionnaires at the time of their clinic visit, including the Menopause Rating Scale (MRS) for assessment of menopause symptoms. The diagnosis of PCOS was based on self-report. The association between a prior diagnosis of PCOS and menopause symptoms, particularly the presence and severity of VMS, was studied utilizing a multivariable linear regression model for total scores, and a multivariable logistic regression model for presence/severity of VMS. Models were adjusted for menopause status, body mass index (BMI), depression, anxiety, and current use of menopausal hormone therapy.

Results: The study population included 3308 participants of average age 53 years. Most were white, educated, and postmenopausal. Of these, 151 (4.6%) women reported a history of PCOS. Women with PCOS were more likely to report depression (56.3% vs 42.1%) and obesity (41.9% vs 22.5%) versus those without PCOS. Women with PCOS had a significantly higher mean overall MRS score (17.7 vs 14.7, p<0.001) and higher mean MRS domain scores in the somatic (6.7 vs 5.6, p<0.001), psychological (5.8 vs 4.9, p=0.016), and urgenital (5.2 vs 4.3, p<0.001) domains when compared to women without PCOS. The differences remained significant in the somatic and urgenital domains, but not in the psychological domain, after adjustment for BMI, depression, anxiety, menopausal status, and hormone therapy use. However, women with PCOS were no more likely to experience severe or very severe or very hot flashes [OR 1.31 (0.81-2.10), p=0.27] than those without PCOS, and this lack of significant following adjustment. Conclusion: This large cross-sectional study confirms an association between a history of PCOS and the overall burden of menopause symptoms in midlife women. Contrary to our hypothesis, a history of PCOS did not associate with VMS severity in midlife women. The mechanisms underlying the correspondence between PCOS and menopause symptoms are not yet understood. The psychological and somatic symptom domains requires further study, although the well-known association between PCOS and mood disorders may explain the high psychological symptom burden in these women during the menopause transition.

Sources of Funding: Dr Kapoor receives funding from the NIH/National Institute on Aging Grant U54 AG044170.

S-17. Does Migraine Associate with Vasomotor Symptoms? Stephanie Faubion, MD,1,2 Taryn Smith1, Jacqueline Thieler1, Juliana M. King, MD, MPH1,2, Eika Kapoor1,2,3, Felicity Enders1, James E. Tisdale, PharmD 1,2, Janet Carpenter3, Heather A. Jaynes, MSN1, Ying Sheng, MD1,2, Richard Kovacs, MD2, Rebecca C. Thurston, PhD1,2, Pharmacology, Mayo Clinic, Rochester, MN; 2Department of Quantitative Health Sciences, Mayo Clinic, Rochester, Mn; 3Division of General Internal Medicine, Mayo Clinic, Jacksonville, Fl; 4Mayo Clinic Florida, Jacksonville, Fl; 5Women’s Health, Mayo Clinic, Rochester, MN

Objectives: Migraine is prevalent, affecting approximately 20% of women with 2-3:1 sex ratio, and does not necessarily represent the official views of NIH.

Migraine is also prevalent, affecting approximately 20% of women with 2-3:1 sex ratio. Migraine is also more likely to report depression (56.3% vs 42.1%) and obesity (41.9% vs 22.5%) versus women without PCOS. The diagnosis of PCOS was based on self-report. The association between a prior diagnosis of PCOS compared to women without PCOS and severity of menopausal symptoms, particularly VMS, was studied utilizing a multivariable linear regression model for total scores, and a multivariable logistic regression model for presence/severity of VMS. Models were adjusted for menopause status, body mass index (BMI), depression, anxiety, and current use of menopausal hormone therapy.

Results: The study population included 3308 participants of average age 53 years. Most were white, educated, and postmenopausal. Of these, 151 (4.6%) women reported a history of PCOS. Women with PCOS were more likely to report depression (56.3% vs 42.1%) and obesity (41.9% vs 22.5%) versus those without PCOS. Women with PCOS had a significantly higher mean overall MRS score (17.7 vs 14.7, p<0.001) and higher mean MRS domain scores in the somatic (6.7 vs 5.6, p<0.001), psychological (5.8 vs 4.9, p=0.016), and urgenital (5.2 vs 4.3, p<0.001) domains when compared to women without PCOS. The differences remained significant in the somatic and urgenital domains, but not in the psychological domain, after adjustment for BMI, depression, anxiety, menopausal status, and hormone therapy use. However, women with PCOS were no more likely to experience severe or very severe or very hot flashes [OR 1.31 (0.81-2.10), p=0.27] than those without PCOS, and this lack of significant following adjustment. Conclusion: This large cross-sectional study confirms an association between a history of PCOS and the overall burden of menopause symptoms in midlife women. Contrary to our hypothesis, a history of PCOS did not associate with VMS severity in midlife women. The mechanisms underlying the correspondence between PCOS and menopause symptoms are not yet understood. The psychological and somatic symptom domains requires further study, although the well-known association between PCOS and mood disorders may explain the high psychological symptom burden in these women during the menopause transition.

Sources of Funding: Dr Kapoor receives funding from the NIH/National Institute on Aging Grant U54 AG044170.

S-18. MSHArts Analysis of Palpitations During the Menopause Transition James E. Tisdale, PharmD1,2, Janet Carpenter3, Heather A. Jaynes, MSN3, Ying Sheng, MD1,2, Richard Kovacs, MD2, Rebecca C. Thurston, PhD1,2, Pharmacology, Mayo Clinic, Rochester, MN; 1Data Registry on the Experiences of Aging, Menopause and Sexuality (DREAMS) performed in women aged 45-60 years presented to women’s clinics at Mayo Clinic Rochester, Minnesota, Scottsdale, Arizona, Jacksonville, Florida between May 2015 and December 2019. The participants completed multiple questionnaires at the time of their clinic visit, including the Menopause Rating Scale (MRS) for assessment of menopause symptoms. The diagnosis of PCOS was based on self-report. The association between a prior diagnosis of PCOS compared to women without PCOS and severity of menopausal symptoms, particularly VMS, was studied utilizing a multivariable linear regression model for total scores, and a multivariable logistic regression model for presence/severity of VMS. Models were adjusted for menopause status, body mass index (BMI), depression, anxiety, and current use of menopausal hormone therapy.

Results: The study population included 3308 participants of average age 53 years. Most were white, educated, and postmenopausal. Of these, 151 (4.6%) women reported a history of PCOS. Women with PCOS were more likely to report depression (56.3% vs 42.1%) and obesity (41.9% vs 22.5%) versus those without PCOS. Women with PCOS had a significantly higher mean overall MRS score (17.7 vs 14.7, p<0.001) and higher mean MRS domain scores in the somatic (6.7 vs 5.6, p<0.001), psychological (5.8 vs 4.9, p=0.016), and urgenital (5.2 vs 4.3, p<0.001) domains when compared to women without PCOS. The differences remained significant in the somatic and urgenital domains, but not in the psychological domain, after adjustment for BMI, depression, anxiety, menopausal status, and hormone therapy use. However, women with PCOS were no more likely to experience severe or very severe or very hot flashes [OR 1.31 (0.81-2.10), p=0.27] than those without PCOS, and this lack of significant following adjustment. Conclusion: This large cross-sectional study confirms an association between a history of PCOS and the overall burden of menopause symptoms in midlife women. Contrary to our hypothesis, a history of PCOS did not associate with VMS severity in midlife women. The mechanisms underlying the correspondence between PCOS and menopause symptoms are not yet understood. The psychological and somatic symptom domains requires further study, although the well-known association between PCOS and mood disorders may explain the high psychological symptom burden in these women during the menopause transition.

Sources of Funding: Dr Kapoor receives funding from the NIH/National Institute on Aging Grant U54 AG044170.
S-19. Validation of Novel Menopause Transition Scale in Women aged 40-65
Diana Blot*, Nicholas J. Andrews*, Simone Pettifor*, P.A. Jameson Parker, M.S. Gustin1, 2, Women’s health, true, Women’s Health, Grand Rapids, MI; 3Obstetrics, Gynecology and Women’s health, Michigan State University, East Lansing, MI; 4Research, Spectrum Health, Grand Rapids, MI

Objective: To experience the menopause transition and a majority will experience symptoms which affect quality of life. Effective care of women requires symptom tracking tools which are uncomplicated, validated, and meaningful. Current validated menopause symptom scales are time consuming, phrased in clinical language, and difficult to adopt for digital use. The first attempt to develop an instrument to address the above limitations resulted in a weak symptom correlation of all 7 questions and the failure for the loading of vaginal bleeding symptom into a factor. We performed minor changes to the survey and reperformed survey validation. Design: The Menopause Transition Scale (MTS) is composed of 7 questions and scores on a 3, 3, and 1 ranking with 3 being the least bothersome. The questions and scale were identified and then modified through face validation and a pilot study of patients. In this study, the MTS scale was provided to patients during a regular office visit with ages ranging from 40 to 55 who self-identified as having at least one symptom of menopause. The subjects also filled out commonly used menopause surveys (MENQOL, and Greene Climacteric Scale), Decreased Sexual Desire Screener (DSDS), and Major Depressive Disorder identifier (PHQ-9). The MTS was analyzed using a Cronbach’s alpha, Pearson Correlation Coefficient, Factor Analysis, and descriptive statistics. MTS was compared with the other surveys using a Pearson Correlation Coefficient. Results: The MTS had an error-free completion rate of 96.6% while the routinely used MENQOL completion rate without error was 59.0%. The MTS inversely correlated with the menopause symptom scales MENQOL (-0.83), VAS and Greene Climacteric Scale (4.65, p<0.0001) for the specific MTS questions correlated with other symptoms scales and subscales demonstrating construct validity. By exploratory factor analysis, the MTS questions loaded into three unique factors. The most often reported major concern was Vaginal Dryness at 45.8%. The concerning the lowest reported severity was Vaginal Bleeding with 93.8% of patients reporting symptoms as mild. Conclusion: The MTS is the first menopause symptom scale, to our knowledge, to be patient-centric in wording, designed to be self-administered in a short time with accurate results, and amenable to digital use. This study validates the utility of the MTS to measure symptoms associated with menopause transition during regular office or telehealth visits, or for patient self-management. Ideally, this tool may serve to monitor symptom progression as women transition to and through menopause, and in response to a prescribed intervention or lifestyle modification. Furthermore, the brevity and accuracy could lead to scalability and ability to monitor and treat large populations of women in hopes of improving health outcomes.

Sources of Funding: Unrestricted grant from TherapeuticsMD

FRIDAY CONCURRENT SESSION #2

S-20. The effect of an at-home ultrasound device in treating symptoms of vulvovaginal atrophy (VVA) in postmenopausal women: 1-year follow-up data from a randomized controlled trial
Mimina J. Brennan*, Janelle Brennan, MD5, Deborah Bateson, MD6, Holly Rockweiler, MS7, Darlene Dreon7.
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Objective: To determine the utility of an at-home, self-application of non-invasive therapeutic ultrasound improved VVA symptoms and vaginal health after 1 year of treatment. VVA was assessed after 3 months, 6 months, and 1 year of therapy. Treatment of VVA with repeated ultrasound could offer a new therapeutic option as it is well tolerated (no serious adverse device effects were recorded) and has demonstrated promising early signs of symptom relief and tissue improvement.

Sources of Funding: Madorra, Inc.

S-21. Do Longitudinal Changes in Pituitary and Ovarian Hormones Associate with White Matter Hyperintensities in Menopausal Women after the Randomized Early Estrogen Prognosis Trial? Jula M. Kling, MD, MPH1, Nirbul Tosakulwong2, Timothy G. Lesnick2, First Kar3, Val J. Lowe4, Christopher G. Schwarz5, Samantha M. Zuk6, Jane Kendall-Thomas2, Kaely B. Thostenson2, Denise A. Reyes2, Julie A. Fields2, Matthew M. Senjem7, Clifford R. Jack Jr2, Kent R. Bailey2, Taryn T. James3, Rogerio A. Lobo4, JoAnn E. Manson5, Lubna Pal6, Dustin B. Hammers7, Michael Malek-Ahmadi7, Marcelle I. Cedars2, Frederick Naftolin3, Virginia M. Miller2, Sherman M. Harman1, N M. Dowling2, Carey E. Gleason2, Kejal Kantarci2, Mayo Clinic Scottsdale, Scottsdale, AZ; 2Mayo Clinic Minnesota, Rochester, MN; 3University of Wisconsin-Madison, Madison, WI; 4Columbia University, New York, NY; 5Brigham and Women’s Hospital, Boston, MA; 6Yale University School of Medicine, New Haven, CT; 7University of Utah Health, Salt Lake City, UT; 8Banner Alzheimers Institute, Phoenix, AZ; 9University of California San Francisco, San Francisco, CA. 19-Bio Corp, New York, NY, 19Phoenix VA Health Care System, Phoenix, AZ. 2The George Washington University, Washington, DC

Objective: The effect of menopausal hormone therapy (HT) on brain structure in midlife women and how pituitary and ovarian hormones influence outcomes over time is unclear. We previously found that levels of pituitary-ovarian hormones associated with changes in white matter hyperintensity (WMHI) volume, a marker of small vessel ischemic changes in the brain, in recently menopausal women using HT for 48 months. Decreases in follicle stimulating hormone (FSH) and increases in estroline (E2) only increases in E1, an androstenedione (AE) metabolite, slowed development of WMHI in women randomized to oral CEE. The current study objective is to detect and evaluate associations of longitudinally measured serum ovarian steroids and pituitary gonadotropins in healthy, naturally postmenopausal women studied before and 12 years after random assignment to 4 years of HT or placebo plus 8 years of observation with WMHI volumes measured at the end of the 12 year period. Design: Cognitively healthy women aged 42-56 years within 6-36 months of their last menstrual period enrolled in the Early Estrogen Prognosis Study were randomized to estrogen (E2) 0.625 mg/d o-CEE daily or 50 mg/d tE2 weekly, plus micronized progesterone (200 mg/d x 12 d) or placebo pills and patches compliant to treatment and followed for approximately 8 years post-treatment (±12 yrs total follow-up, N=121). E2, 1E, AE, testosterone (T), luteinizing hormone (LH), and follicle stimulating hormone (FSH) were measured by liquid chromatography/mass spectrometry from serum samples collected before randomization and in follow up. Brain MRIs were performed at the same time. WMHI volume was determined from 3D FLAIR MRIs using a semi-automated image segmentation algorithm. Linear regressions were run predicting log-transformed total WMHI vs hormone levels (separate models for baseline, 12-year follow-up, and slope of change from baseline to yr 12) adjusting for age and log-transformed total intracranial volume. Additional models adjusted for age, randomization, and cardiovascular (CV) factors potentially impacting WMHI (lipids, waist to hip ratio, mean arterial blood pressure). 18 women who continued HT to follow up were excluded. Results: Higher baseline serum AE levels were associated with lower WMHI volume after either treatment or placebo (p=0.04). Greater increases in AE and 1E from baseline to follow-up were associated with higher WMHI volume (p=0.04). In the adjusted models, only the association of baseline AE and WMHI volume remained significant (p=0.05). No statistically significant associations between other hormones at baseline, or year 12, and WMHI were found. Conclusion: In recently postmenopausal women, higher baseline androstenedione levels, the primary steroid hormone of the postmenopausal ovary, appears to be associated with protection from WMHI load years later, even after accounting for CV risk factors and randomization arm. Greater longitudinal increases in AE plus its metabolite E1 relate to greater WMHI load in the long-term reflecting more small vessel ischemic changes, but these relationships were no longer significant after adjusting for CV factors. Investigating associations and changing ratios of pituitary ovarian hormones over time for women who used HT vs placebo may further explain these relationships.

Sources of Funding: NIH RF1 AG57547, American Federation of Aging Research, and the support Avid Radiopharmaceuticals, Eli Lilly and Co.
S-22. Sexual Assault and Cerebral White Matter Hyperintensities among Midlife Women

Rebecca C. Thurston, PhD1, Karen Jakubowski1, Minjie Wu, PhD2, Howard Aizenstein, MD2, Yuefang Chang, PhD2, Carol Derby, PhD3, Karestan Koenen4, Emma Barinas-Mitchell2, Pauline Maki, PhD2. Psychiatry, University of Pittsburgh, Pittsburgh, PA; 2Epidemiology, University of Pittsburgh, Pittsburgh, PA; 3Neurology, Albert Einstein College of Medicine, Bronx, NY; 4Epidemiology, Harvard University T H Chan School of Public Health, Boston, MA; 5Psychiatry, University of Illinois at Chicago, Chicago, IL

Sources of Funding: None

Objective: Traumatic experiences, including sexual violence, have been linked to poor mental and cardiovascular health in women as they age. However, there has been little examination of their relationship to cerebrovascular risk. White matter hyperintensities (WMHs) are markers of brain small vessel disease which can be detected decades before the onset of dementia, stroke, and other disorders and can serve as early markers for these outcomes. We tested whether traumatic experiences were associated with brain WMH volume among midlife women.

Design: In the MsBrain study, 145 midlife women (mean age=59 years) without clinical cardiovascular disease, stroke, or dementia were recruited. Women completed questionnaires [trauma checklist assessing nine trauma types, depression, post-traumatic stress measures]; physical measurements [body mass index (BMI), blood pressure (BP)]; phlebotomy; actigraphy sleep measurement, and 3 Tesla magnetic resonance brain imaging for WMHs. Associations between traumatic experiences and WMH volume were assessed in linear regression models. Covariates were age, race/ethnicity, education, BMI, BP, lipids, preeclampsia, sleep, and additionally depressive and post-traumatic stress disorder symptoms. Results: 68% of women endorsed at least one trauma, with the most common trauma being sexual assault (23% of women). Women with traumatic history had greater WMH volumes than women without trauma [B(SE)= .24 (1.09), p<0.01, multivariable]. The particular trauma significantly associated with WMH was sexual assault [B(SE)= 25, (11), p=0.02, multivariable; see Figure]. Results persisted when adjusting for depressive or post-traumatic stress symptoms. Conclusion: A trauma history, particularly sexual assault, was associated with greater WMH volume controlling for multiple potential confounders, as well as depressive and post-traumatic stress symptoms. Sexual assault may place women at risk for poor brain health. Prevention of sexual assault and management of its sequelae may support stroke and dementia prevention.

Sources of Funding: NIH grants R1FAG053504 (Thurston & Maki) and K24HL125365 (Thurston)

S-23. Incarcerated Menopausal Women: Need for Trauma-Informed Care

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Objective: Traumatic events have both psychological and physiological effects on an individual’s health. Adverse consequences from these events can range from substance abuse to mental illness. The incarcerated population is more vulnerable to trauma exposure both pre-incarceration and then, with incarceration, re-traumatization. Menopausal symptoms in the midlife and older incarcerated population can be exacerbate the effects of the trauma. This review evaluated the available data on trauma-informed care in the prison population, with a focus on menopausal women. Design: A literature review was conducted of peer-reviewed journal articles published from 2017 to 2021. Key words included trauma-informed care, menopause and incarceration. Results: Six papers dealing with these topics were identified, which suggest that there is limited research on trauma-informed care for incarcerated menopausal women. The available data note, however, that trauma-informed care, although essential for improving quality of care and increasing long-term patient engagement, both inside and outside of the criminal justice system, is not universally provided. And although adverse menopausal symptoms can add to the trauma, there are no data addressing this population of incarcerated women. Conclusion: Women in the criminal justice system are prone to both Pre-Incarceration Trauma (PIT) and Incarceration-Based Trauma (IBT) at rates higher than incarcerated men. Furthermore, the experience of menopause during incarceration can have significant impact on a woman’s overall wellbeing and contribute to IBT. Barriers to medical care and medication, as well as a lack of informational support, exacerbates the adverse effects for symptomatic menopausal incarcerated women. Given the existing prevalence of trauma for incarcerated women and the potential adverse health outcomes for menopausal women, trauma-informed care is necessary to prevent further IBT in this population further, to prevent victimization and re-traumatization in the clinical setting, providers may implement staff training on the impact of trauma, universal screening for past traumatic events and symptoms of menopause.

Sources of Funding: None

P-2. TIME FOR CHANGE: Improving the menopausal experience in the workplace for UK doctors

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Objective: NHS doctors are currently not well supported in the workplace during their menopause. A recent BMA survey revealed that very few doctors felt comfortable discussing their symptoms with their managers and many feel unable to make changes to their working lives to accommodate their menopausal symptoms. An improved menopausal experience in the workplace has been associated with increased job satisfaction, increased economic participation and reduced absenteeism. However, there is a lack of research exploring the experiences of menopausal doctors. Existing literature is composed of mostly single-sector studies and no study has considered the perspective of male-menopausal colleagues. This qualitative study aimed to explore the barriers and facilitators of an improved menopausal experience for doctors in the workplace.

Design: We conducted a cross-sectional qualitative study using semi-structured interviews of both menopausal (n=21) and non-menopausal (n=20) doctors. Participants were recruited using purposive sampling. Interview questions were designed to capture the menopausal workplace experiences of both cohorts. Interviews were transcribed and then thematically analyzed using the Gioia method. Results: Our qualitative study identified a total of 8 barriers to an improved menopausal experience: taboo, the negative symptomatic effects of menopause, a lack of discussion, a lack of knowledge, a superhero mentality, unhelpful gender dynamics, the archaic culture of the NHS and a lack of support from both colleagues and the organisation. We also identified a total of 5 facilitators: Accommodating working conditions, knowledge, a supportive organisational culture, non-occupational support streams and open discussion. Conclusion: This study highlights that many barriers and facilitators to an improved menopausal experience for working doctors are comparable to other work sectors, however novel themes specific
P.3. Cannabis Use in Menopause: Capturing the Experiences and Perspectives of Women
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Objective: Use of cannabis has increased in Canada since the legalization of recreational cannabis in 2018, with growing interest to manage health issues. Midlife women may be using cannabis to help with symptoms overlapping with menopause. Yet, there is a lack of evidence available on the benefits of cannabis for this, despite anecdotal reports and online promotion of cannabis products for menopause. Moreover, it is unclear how many women are currently using cannabis, specifically for medical reasons related to menopause. As part of a mixed methods study, the purpose of the survey was to characterize cannabis use patterns and perceptions in a population of midlife women living in Alberta, Canada. The overall goal of this study was to go directly to women to learn from them and examine the rates of cannabis use in this population. Design: A cross-sectional, web-based survey was designed by the research team and hosted on Qualtrics. Survey questions included self-reported menopause status, symptoms, and questions on cannabis use, reasons for use, information resources and overall perceptions about medical cannabis use. Inclusion criteria for participating women were aged 35 and over, and living in Alberta. Recruitment was done between October to December 2020 through social media platforms (Facebook, Instagram, and Twitter) using post-sharing and targeted-ad campaigns. A link to the survey was publicly available and respondents first completed screening questions off inclusion criteria. Eligible participants then completed the survey, available in English-only. Free response answers underwent content analysis to depict general perceptions towards cannabis use in menopause. Descriptive statistics summarized the sample, and demographic and clinical data from current cannabis users and non-users were compared using chi-square test. Results: A total of 1,781 responses were collected and 1,495 were included for analysis. The median age was 49.0 years (IQR:43.0-55.0). Of the survey respondents: 272 (18%) women self-reported in pre-menopause, 486 (33%) women in perimenopause, and 522 (35%) in post-menopause. Overall, 187 (13%) had undergone a hysterectomy and 64 (4%) a bilateral oophorectomy. The respondents were predominantly white (93%) and 119 (8%) were current tobacco smokers, while 524 (35%) were past smokers. Over a third of women (33%) reported using cannabis within the last 30 days, and 65% indicated ever using cannabis. Current cannabis use rates were similar among the different menopause stages. Of the 499 current cannabis users, 374 (75%) reported use for medical purposes and 213 (43%) used at least once daily. Most common reasons for current use included: sleep issues (65%), anxiety (45%), muscle/joint ache (33%), irritability (29%), and depression (25%). Compared to current non-users, current users were more likely to report sleep issues (73.5% vs. 62.8%, p<0.0001), depression (42.3% vs. 28.0%, p<0.0001), irritability (54.5% vs. 43.0%, p<0.0001), mood swings (44.7% vs. 32.2%, p<0.0001), anxiety (58.6% vs. 51.3%, p<0.0001), difficulty concentrating (65.7% vs. 46.0%, p<0.0001). Of current users, 52% compared muscle/joint ache (52.7% vs. 39.1%, p<0.0001), and painful intercourse (14.8% vs. 10.4%, p=0.01). Edibles (52%) and oils (47%) were the most commonly used formulation. Common sources of cannabis information for medical purposes were friends and family/friends (34%). Of current cannabis users, 75% had discussed cannabis with a health care professional. Over a third of respondents identified women were seeking more information on this topic, some experienced symptom improvement with cannabis, whereas others expressed desire to relieve menopause symptoms with cannabis. Conclusion: Midlife women are using cannabis for symptoms which overlap with menopause. Women who currently use cannabis reported more symptoms compared to women who are not using cannabis. Information about cannabis was more frequently accessed through online searches and personal contacts rather than healthcare providers. Further research is required to assess the safety and efficacy of cannabis for menopausal symptoms, as well as develop clinical resources for women.

Sources of Funding: Canadian Institutes of Health Research (CIHR)

P.4. Results of a patient experience survey to evaluate the effects of Relizen to treat vasomotor symptoms in women
Devon Bernsley1, Sarah Sylla1, Alyssa Dweck1, James Komorowski1. 1JDS Therapeutics LLC, Harrison, NY; 2New York Medical College, Valhalla, NY

Objective: Menopausal women often experience vasomotor symptoms (VMS) including hot flashes, night sweats, irritability, and fatigue. Relizen® is a unique floral pollen extract that is non-hormonal and efficacious in the treatment of hot flashes, night sweats, irritability, and fatigue. Relizen has been shown to work through a serotonergic mechanism and has no estrogenic effects. In a randomized, double-blind, placebo-controlled clinical trial, Relizen significantly reduced hot flashes compared to placebo. This national survey study was conducted to further confirm the results of controlled trials in a real-world setting and gather patient experience data on the use of Relizen for the relief of vasomotor symptoms. Design: Data were compiled from 4,925 Relizen customers who participated in three optional, rolling online surveys, conducted between January 2015 and April 2021. Participating women had been taking Relizen for at least three months and were given a $5-10 gift card for completing the survey. The survey results were pooled and analyzed. Results: Major survey findings reflecting the opinions of women taking Relizen for at least three months include: 84% responded that they would recommend Relizen to any friends or family members experiencing menopausal symptoms. Conclusion: The results of this survey study demonstrated that Relizen frequently improved multiple vasomotor symptoms, including hot flashes, night sweats, and quality of sleep. Furthermore, the benefits reported in women taking Relizen in an uncontrolled, at-home setting are consistent with the findings of previously published controlled clinical studies.

Sources of Funding: This study was funded by JDS Therapeutics, LLC, the parent company of Bonafide®.

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Objective: Urinary triclosan (TCL) is a ubiquitous, putative endocrine disrupting compound, and menopausal status using Centers for Disease Control and Prevention’s National Health and Nutrition Examination Survey (NHANES) 2003-2016 data. Design: We used data from female participants enrolled in the reproductive and fetal outcome module of NHANES to calculate. Multivariable logistic regression examined the association between quartiles of urinary TCL (Q1 as reference) and menopausal status after adjusting for age at menopause, race/ethnicity, smoking status, and BMI. Sensitivity analysis re-examined the relationship of urine TCL with menopausal status in women of age <65. P-values < 0.05 were deemed statistically significant. We used Stata V 16.1 for analyses. Results: The mean age at time of survey for the menopausal population (n=5,664) was 46.8 years (SD 11.3). The mean age at menopause was 45.0 years (SD 8.26). Urinary TCL levels (ng/ml) did not relate to age at menopause (p=0.027, p=0.316). Urinary TCL levels were not associated with age at the time of survey (p=0.010, p=0.899). Urinary TCL levels were significantly higher in the menopausal compared to premenopausal population (median 8.2, 25th-75th percentile 1.63-49.5 vs median 7.3, 25th-75th percentile 1.36-7.7; p<0.001). Among urinary TCL quartiles of higher quartiles of urinary TCL (OR=1.15, 95% CI: 1.03-1.28) compared to the non-menopausal population. On sensitivity analyses restricting the menopausal population to age less than 65 (n=2,336) at the time of survey completion, the magnitude of association between urinary TCL and menopausal status using quartiles of urinary TCL was calculated. Conclusion: Our findings identify menopausal status as an independent predictor of higher urinary TCL levels in the general U.S. population. Sources of Funding: None

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Objective: In the U.S., millions of prescriptions are filled annually for compounded bioidentical hormone therapy (cBiHT). In the light of an increasing demand and supply for a personalized and natural approach to hormonal imbalance, the clinical utility of cBiHT has been recently questioned. A nationwide survey research of clinical practices was conducted with the objective to provide current evidence-based data on the safety, effectiveness and use of compounded hormones for female patients. Design: The survey research was developed using Google Forms and a bit.ly web link was disseminated to a clinic-affiliated network of physicians who commonly prescribe compounded hormones for female patients in the U.S. The survey was launched on December 7th, 2020 and closed on February 15th, 2021. It was organized in 5 sections and 12 brief questions, of which 5 were required. The majority of the survey questions were multiple-choice or closed ended. The introduction stated the objective of the research and a confidentiality disclaimer. The first section was demographic and included an eligibility question. The following section gathered data on the prescribing
Survey question number 6: Do you test laboratory values before initiating hormone therapy? Physicians’ responses: ‘Yes’ displayed in blue colour (97%) and ‘No’ displayed in black colour (3%).

P-7. Impact of viewing a 10-minute educational video prior to initial consultation in Mature Women’s Health and Menopause Clinic

Jeanne Bouteaud, MD, MSc,1,2 Ola Shalout1, Marie K. Christakis, MD, MPH,2,3 Fahmeeda Murtaza,2 Wendy Wolfman2, Lindsay Shireff, MD, MSc(HQ), FRCSC1,3
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Objective: To assess acceptability of a 10-minute educational video about menopause, vasomotor symptoms and available treatments among women before first appointment at a menopause clinic and to determine its impact on participants’ menopause knowledge and certainty about treatment choice.

Design: This was a before-after intervention study among new patients referred with vasomotor symptoms to the Menopause Clinic at Mount Sinai Hospital, a tertiary care hospital in Toronto, Canada. Participants completed an online pre-intervention survey collecting baseline demographics (age, ethnicity, education level, household income and referring physician), prior and current menopause treatments, menopause knowledge and certainty about treatment choice. They were then prompted to view a 10-minute video on basic menopause facts as well as information about vasomotor treatment options available (lifestyle modification, natural supplements, non-hormonal prescription treatment and menopause hormone therapy). After the video, participants answered the post-intervention survey assessing menopause knowledge, certainty about treatment options and acceptability of the education video. Menopause knowledge was evaluated using a 19-item true/false questionnaire and decisional certainty and acceptability were assessed using validated instruments (Decisional Conflict Scale (DCS) and Acceptability questionnaire, respectively). Demographic information and acceptability were summarized descriptively and independent samples t-test compared knowledge and DCS total and sub-scores before and after viewing the education module.

Being “sure” about treatment was defined as a DCS total score ≤ 25. Multivariable analysis was used to identify factors associated with achieving treatment certainty after watching the video.

Results: Ninety participants were recruited with 78.8% (71/90) completing pre- and post-intervention surveys. Of those who completed the study, mean age was 64 years (range: 40-84 years). Most participants were Caucasian (58/71, 81.7%), had a university degree (24/71, 63.3%), had a household income > $90,000 (53/71, 74.6%) and were referred by a family physician (52/71, 73.1%). After watching the video, there was a significant increase in knowledge score (12.7 ± 2.15 vs 16.9 ± 1.79) and decision certainty with all DCS scores (total and all five sub-scores) decreasing from pre- to post-video surveys (p < .001). There was also an increase in those who “sure” about treatment choice (3/71, 4.2% vs 21/71, 29.6%, p < .001). Acceptability of the tool was high with most participants (62/71, 87.3%) indicating it was useful in helping to make a decision about therapy. These findings were independent of level of education, annual household income, or type of referring physician.

Conclusion: Viewing a 10-minute educational video on menopause and treatment of vasomotor symptoms was acceptable among patients, improved knowledge and increased decision certainty about treatment for vasomotor symptoms.

Sources of Funding: This project was awarded a quality improvement competitive grant from Pfizer Canada.

P-8. The use of vaginal CO2 laser for the management of genitourinary syndrome of menopause in gynecological cancer survivors: a systematic review


Objective: Our objective is to evaluate the published data on the use of CO2 vaginal laser for the management of GSM in gynecological cancer patients. Design: Databases searched included MEDLINE, Embase, PubMed (for non-MEDLINE records only), Cochrane Central Registry of Controlled Trials, Cochrane Database of Systematic Reviews, and Google Scholar. No date, age, or geographic restrictions were applied to the searches. Databases were searched from their inception dates. Selected studies assessed the use of CO2 vaginal laser in gynecological cancer patients with GSM. Results: A total of 269 studies were retrieved. Three studies met the inclusion criteria. All these studies were conducted in Italy. Each study used a different type of CO2 vaginal laser for the management of gynecological cancer patients. All of the three different laser protocols, and used a vaginal probe only. None of the studies used a vulvar probe. Two studies were prospective, and one study was a retrospective chart review. There are no randomized controlled trials that assess the use of CO2 vaginal laser in gynecological cancer patients. The number of gynecological cancer patients treated with CO2 laser for the management of GSM is extremely limited (N=100) to recommend its use outside of the clinical setting. There are no studies that support the use of CO2 vaginal laser to manage GSM in vulvar or vaginal cancer patients. Conclusion: There is a lack of literature on the impact of vaginal CO2 laser use in gynecological cancer patients to manage GSM. Research into vaginal CO2 laser use is essential, as it is frequently used to alleviate symptoms without evidence of its benefits.

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Objective: Greater understanding of biological mechanisms associated with heart palpitations (feelings of skipped, irregular, or exaggerated heartbeats) during the menopause transition could further treatment efforts. Cortisol diurnal pattern may be an important biomarker of palpitations. Cortisol may affect the myocardial tissue through cytokine and glucocorticoid signaling and indirectly by heightening catecholamine and renin-angiotensin effects. Using the Menopause Strategies Finding Lasting Answers to Symptoms and Health (MsFLASH) data repository, the objective was to evaluate the relationship between diurnal salivary cortisol patterns and distress from palpitations in peri- and postmenopausal women.

Methods: Baseline data from 293 women with vasomotor symptoms from the MsFLASH behavioral intervention trial were analyzed. “Palpitations distress” was defined as “distress from heart racing or pounding in the past two weeks”. Responses of “not at all” were coded as no distress. Responses of “a little bit”, “moderately”, “quite a bit”, and “extremely” were coded as yes. Salivary cortisol values were obtained via self-collected swabs at 4 time points on each of two days: upon awakening (wake), 30 minutes later (wake+30), early afternoon, and bedtime. Demographic, clinical, and symptom data were compared between palpitations distress groups (no, yes) using t-tests and chi-square tests. Cortisol values were log transformed and geographic means and 95% confidence intervals were graphed. Data from both days of cortisol collection were included as repeated measures in linear regression models of log cortisol values at each time point as a function of palpitation distress (yes/no), day (1st or 2nd), clinical center, and other potential confounders. Robust standard errors were calculated via generalized estimating equations to account for correlation between repeated measures from each participant. Results: Women were white (67%), Black (23%), or other races (10%) and peri- (16%) or postmenopausal (84%). Palpitations distress was reported by 30% of women. Palpitations distress did not vary by age, race/ethnicity, smoking, marital status, employment, body mass index, blood pressure, or menopausal status. Compared to those without palpitations distress, those with palpitations distress had significantly more VMS, perceived stress, depressive symptoms, and insomnia severity. Further, relative to their non-distressed counterparts, women with palpitations had significantly lower wake+30 cortisol that remained significant in models adjusted for multiple covariates. Conclusion: Distress from heart palpitations was associated with blunted morning salivary cortisol, which may be associated with increased cardiovascular mortality in some populations. The cardiovascular consequences of the relationship between menopausal palpitations and blunted morning cortisol response in women warrants further study.
Sources of Funding: IU Ethel Clarke Fellowship. Collaboration in Translational Research Pilot Grant (Carpenter/Tisdale MPI) from the Indiana Clinical and Translational Sciences Institute (UL1TR002529) NIH/NCATS Award. Dr. Sheng is supported as a postdoctoral fellow under ST23CA117865 (V. Champion, PI). MsFLASH studies were funded as a cooperative agreement by NIA, in collaboration with the Eunice Kennedy Shriver NICHD, NCCAM, ORWH, and grants U01AG032566, U01AG032569, U01AG032669, U01AG032682, U01AG032699, U01AG032700, U01AG032702, and via UL1RR025761. The content is solely the authors’ responsibility and does not necessarily represent the official views of NIH.

P-10. A Systematic Review of Demographic, Clinical, and Symptom/Quality of Life Factors Associated with Palpitations in Menopausal Women

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Objective: Up to 40% of peri- and 54% of postmenopausal women report palpitations (feelings of skipped, irregular, or exaggerated heartbeats). Understanding demographic, clinical, and symptom/quality of life (QOL) factors related to palpitations can assist clinical practitioners identify women who may be at risk for these symptoms and help women who may be at high risk for severe symptoms. In addition, understanding factors can help researchers in designing descriptive studies that appropriately control for possible confounding variables and in developing interventions targeting modifiable factors. Thus, the objective of this integrative review was to summarize research documenting associations between various factors and palpitations prevalence and severity.

Design: An integrative review was conducted of English-language, full-length, peer-reviewed studies. Data were extracted from studies pertaining to palpitations in postmenopausal women published prior to May 19, 2020. Articles identified from PubMed, Cumulated Index to Nursing and Allied Health Literature (CINAHL), and PsycINFO searches were de-duplicated and screened in two stages (abstract and full text) for their inclusion by independent reviewers. Data extraction was done by independent reviewers for verification of accuracy. Quality and risk of bias were assessed with the AXIS Tool for cross-sectional studies. Results: A total of 74 articles were included in this review. All were cross-sectional, descriptive studies. Most (n=72, 97%) were considered poor quality. Articles originated most often from China (n=10), Turkey (n=6), and the USA (n=5). Article results provided information on factors related to palpitations presence (57%, n=42), severity (35%, n=26), or both (8%, n=6). Articles included analysis of demographic factors (22%, n=16), clinical factors (81%, n=60), or symptoms/QOL (18%, n=13). Although 12 articles (16%) evaluated two categories of factors, no articles (0%) evaluated all three categories of factors in relationship to palpitations. Factors associated with higher palpitations prevalence were different from factors associated with palpitations severity. Variables associated with greater palpitations prevalence included: demographic (race/ethnicity, lower education and income); clinical factors (higher body mass index, advancing menopausal stage), greater dietary animal fat intake, hyperthyroidism (e.g., Grave’s disease, low thyroid stimulating hormone, higher free thyroxine), greater parity, past smoking, hormone therapy use, Chinese herbal medicine use, low physical activity; and symptom/QOL factors (poor sleep, greater vasomotor, depressive, and anxiety/stress symptoms, poor quality of life). Variables associated with greater palpitations severity were: demographics (race/ethnicity, being divorced); clinical factors (advanced menopause stage, low bone mineral density, 1-2 pregnancies, older age at menopause), use of aromatherapy, Chinese medicine practitioners, use of Yang-xu constitution, and low soy intake); and symptom/QOL factors (poor sleep, poor sexual function). Conclusion: This review showed heterogeneity in factors that were studied and the relatively sparse and variable quality evidence for associations of all these factors with palpitations. Additional research from well-designed, prospective, and longitudinal studies is needed to understand risk and protective factors related to menopausal palpitations.

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P-11. Childhood maltreatment, blood pressure, and arterial stiffening among midlife women

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Objective: Childhood maltreatment, i.e., abuse and neglect, is prevalent and increases risk for later life adverse health outcomes. Cardiovascular disease (CVD) is the leading cause of death in women, and arterial stiffening plays a key role in the pathophysiology of CVD. While past research demonstrated associations between childhood maltreatment and arterial stiffness, research has yet to examine this relationship specifically among midlife women. Studying midlife women is critical, as midlife and the menopause transition is a time of accelerated arterial stiffening. Further, the mechanisms underlying relationships between childhood maltreatment and CVD risk are not fully known, elucidating these mechanisms can guide efforts to reduce the cardiovascular sequelae of childhood maltreatment. This study tested whether childhood maltreatment is associated with arterial stiffening among midlife women and investigated mechanisms that may underlie this relationship.

Design: Participants (N=170, 71% white, 25% black, 4% other ethnicity) were members of the MsFLASH cohort of peri and postmenopausal women. At enrollment, all women were aged 40-60, without clinical CVD, non-smoking, not taking hormone therapy, and had their uterus and at least one ovary. Participants underwent two waves of data collection (baseline and follow-up) approximately 5 years apart. Child abuse and neglect was measured at baseline via the Child Trauma Questionnaire. At follow-up, participants self-reported demographics and completed seated heart rate and blood pressure measurement. Carotid-femoral pulse wave velocity (cPWV) was assessed via ultrasound. Hierarchical linear regression analyses tested associations between childhood maltreatment in relation to cPWV while adjusting for age, education, race/ethnicity, body mass index (BMI), hypertension medication, heart rate, and time between visits. Systolic blood pressure (SBP) was evaluated as a mediator by calculating the indirect effect of SBP in the association between childhood maltreatment and cPWV using the products of coefficients method and bootstrapping.

Results: Seventy-three women (43% of the sample) reported a history of childhood maltreatment. Women with a history of childhood maltreatment had higher cPWV [t(51)=-5.10, p<0.02] controlling for age, education, race/ethnicity, BMI, heart rate, hypertension medication, and time between visits. Associations between childhood maltreatment and cPWV were mediated by SBP [indirect effects of childhood maltreatment on cPWV through SBP: effect (95% confidence intervals) = -23.83 (-47.4, -7.3)].

Conclusion: In this sample of midlife women, childhood maltreatment was associated with arterial stiffness. This association was largely accounted for by SBP. These findings underscore the long-term cardiovascular implications of childhood maltreatment. Blood pressure control should mitigate the impact of childhood maltreatment on cardiovascular health.

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as environmental, nutrition, and genetics. Here we can conduct a retrospective study observing the effect of multiple factors (melatonin, metformin, parity, ethnicity, body mass index, age of menarche, age at first birth, smoking history, and diet) on ovarian aging. **Design:** This is a future study. Pending IRB approval. We will conduct a retrospective chart review of postmenopausal women to review for certain factors such as the use of metformin or melatonin, age of menarche, and age at first birth and age at last birth, diet, BMI, ethnicity, parity, and smoking history. **Results:** Pending results as awaiting pending IRB approval Plans to complete retrospective study by 09/2021. **Conclusion:** Pending as awaiting pending IRB approval Aim of discussion points: These specific cases of return of ovarian function sparked curiosity in questioning the mechanism. Since age is a factor not identified as a critical marker of a woman's health, we planned efforts to investigate the physiology of ovarian aging and factors that influence ovarian reserve are imperative. We know ovarian aging is influenced by multiple factors such as environmental, nutrition, and genetics. Here we can conduct a retrospective study observing the effect of multiple factors (melatonin, metformin, parity, ethnicity, body mass index, age of menarche, age at first and last birth, smoking history, and diet) on ovarian aging.

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**P-13. Impact of sleep fragmentation and estradiol withdrawal on cortisol levels in a human experimental model of menopause**

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**Objective:** Sleep fragmentation is prevalent during the menopause transition - a reproductive stage characterized by estradiol withdrawal and hot flashes. It remains unclear if fragmented sleep and/or estradiol withdrawal perturb the hypothalamic-pituitary-adrenal (HPA) axis, which may contribute to increased cardiovascular risk after menopause. Therefore, we examined the impact of experimental sleep fragmentation and pharmacologically-induced estradiol withdrawal on the HPA axis in healthy young women. **Design:** Twenty-two premenopausal women (age 31.6 ± 5.5 years, BMI 25.3 ± 2.1 kg/m²) completed a 5-night inpatient study during their mid-late follicular phase, a high estrogen state; a subset (n=14) completed the same inpatient protocol during leuprolide-induced estrogen deficiency. Each inpatient stay included 2 nights of undisturbed sleep with an 8-hour sleep opportunity followed by 3 nights of experimental sleep fragmentation with a 9-hour sleep opportunity, including ~60 min of wakefulness after sleep onset (WASO) per night. HPA axis outcomes included serum cortisol levels at bedtime, and the cortisol awakening response (CAR), calculated as the difference between cortisol values at wake and wake + 30 min. Generalized linear mixed models were used to assess the effect of sleep fragmentation, estradiol withdrawal, and their interaction on HPA axis outcomes, and to quantify the magnitude of the associations between polysonomography (PSG)- derived WASO and total sleep time (TST) with HPA axis outcomes. PSG-based sleep assessments and fragmentation protocols were validated against average, individual WASO compared to 37.7 min of spontaneous WASO on undisturbed nights (p<0.01), whereas, as intended, TST was no different on undisturbed and fragmented nights (p=0.51). **Results:** Bedtime cortisol levels were significantly higher (p<0.03) following nights of sleep fragmentation (adjacent measures: MAE = 3.28 ± 0.50 µg/dL) compared to undisturbed sleep (2.06 ± 0.77 µg/dL), and CAR was blunted (p=0.01) after sleep fragmentation (1.59 ± 0.71 µg/dL) compared to undisturbed sleep (3.69 ± 0.51 µg/dL). Bedtime cortisol was significantly higher (p=0.02) in the estrogenized state (3.39 ± 1.1 µg/dL) compared to the hypoestrogenic state (2.58 ± 1.08 µg/dL); however, CAR was similar in both estradiol conditions (p=0.38). The effect of sleep fragmentation on HPA axis outcomes was not modified by estradiol state (interaction p=0.41). PSG-derived WASO was significantly negatively associated with CAR (r=-0.22 µg/dL lower CAR for each additional hour of WASO, p<0.01) and positively associated with bedtime cortisol (0.21 µg/dL higher bedtime cortisol for each additional hour of WASO, p<0.01). However, as expected, neither HPA axis outcome was associated with PSG-derived TST (both p=0.10). **Conclusion:** Our results show that sleep fragmentation, as seen commonly during the menopause transition, adversely impacts HPA axis activity by elevating bedtime cortisol and blunting CAR. Importantly, the magnitude of change in both bedtime cortisol and CAR after sleep fragmentation were associated with the amount of increase in objectively assessed WASO. In contrast, estradiol withdrawal did not increase bedtime cortisol or alter CAR, counter to what might be expected for menopause. These results highlight the central role of menopause-related sleep fragmentation in disrupting the HPA axis, which in turn may lead to adverse health effects in aging women. Our findings underscore the clinical relevance of menopause-related sleep fragmentation even when women meet the recommended guidelines for sleep duration.

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**P-14. The Effect of Burdensome Ambulatory Hot Flushing Monitoring on Sleep and Physical Activity**

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**Objective:** It is essential to understand how ambulatory hot flush (HF) monitoring affects behavior, which may in turn affect HF burden. This analysis aims to evaluate the effect of ambulatory HF monitoring on physical activity (PA) and total sleep time (TST), and examine the relationship between amount of waking sedentary time (ST), light PA (LPA), and moderate-to-vigorous PA (MVPA), and number of HFs occurring in a 24-hour period. **Design:** Fifteen menopausal people with daily HFs (age (mean±SD): 54.4±3.3 yrs, BMI: 28.3±4.4 kg/m², 100% assigned female sex at birth, 4.0±5.8 yrs since last menstruation) who are not taking any pharmaceutical HF treatments volunteered to complete one baseline and one ambulatory HF monitoring session. In session 1 (V1) and session 2 (V2) participants were an ActiGraph GT3X+ on the non-dominant wrist; in V2 they also wore a montage of sensors to assess vasomotor symptoms and a wrist worn digital marker to self-report HF onset. Participants were encouraged to adhere to their usual PA and sleep habits for both sessions. Twenty-four hours of HF and ActiGraph data from each session were analyzed, beginning at sleep onset on the first night. Cumulative step count (CSC) was obtained with ActiGraph’s proprietary algorithm then adjusted with a regression yielding a more accurate assessment of CSC from a wrist worn monitor. Time spent in ST, LPA, and MVPA was calculated using vector magnitude count (VMC) points. TST was calculated with Cole-Kripke’s sleep-wake detection algorithm. The HF count was calculated by the participant-reporter. *Results:* Participant-reported HFs were identified with UFI’s FlashTrax software using an identification criteria of a ≥2.0 uMho rise in skin conductance within a 30 second window. In 5 participants the threshold was lowered to 1.5 uMho in 30 seconds; these participants’ skin conductance peaks were usually lower than participant-reported HFs compared to the standard criteria. Cohens' d were calculated to examine effect size of differences in CSC, ST, LPA, MVPA, and TST between V1 and V2 and were deemed appropriate due to the small sample size of this preliminary analysis of an ongoing study. Pearson correlation coefficients were calculated to explore the relationship between ST, LPA, and MVPA and HFs in V2. **Results:** Mean CSC were 11425.0±2010.0 and 11090.0±1377.4 steps/day for V1 and V2, respectively. Participants spent 662.4±156.0 daily minutes in ST in V1 and 611.1±152.1 minutes in V2; 78.0±22.1 minutes in LPA in V1 and 97.8±28.0 minutes in V2; and 266.0±68.5 minutes in MVPA in V1 and 263.3±75.9 minutes in V2. Mean TST in V1 was 437.4±120.4 and 467.5±130.7 in V2. Effect sizes between sessions revealed a large effect size difference for the increase in LPA (d=0.82), small effect size differences in ST (d=0.53) and TST (d=0.24), and negligible effect size differences in CSC (d=0.11) and MVPA (d=0.01). On average, 9.7±4.8 HFs occurred during V2. Pearson correlation coefficients showed a statistically significant large negative association between V2 ST and HFs (r=-0.56, p<0.03) and nonsignificant moderate positive associations between V2 LPA and HFs (r=0.45, p=0.10) and 2V MVPA and HFs (r=0.50, p=0.06). **Conclusion:** The negative association between ST and HFs and the positive association between MVPA and HFs in V2 warrant further investigation as they contradict previous reporting on fitness and its positive effect on vasomotor symptoms. These trends appear to be driven by a few highly active individuals with high HF frequency; analysis of the larger sample is ongoing. As part of our ongoing study we are collecting data on comorbidities of this disorder during the peri- and postmenopausal transition. There are three known cognitive behavioral therapy protocols to help women with problematic menopause symptoms, but these protocols do not target women on the bipolar disorder spectrum. This is a future study. Pending IRB approval. We will conduct a qualitative study to learn more about the group experience and participants’ treatment needs for women diagnosed on the BD spectrum with problematic menopause symptoms, but these protocols do not target women on the bipolar disorder spectrum. The purpose of this qualitative study was to learn more about the group experience and treatment needs for women diagnosed on the BD spectrum with problematic menopause symptoms. **Design:** This was an analysis of qualitative data from a single group, pre- to post-test of cognitive behavioral group therapy (CBGT). Narrative data from intake forms, interventionist notes, and a post-intervention evaluation survey from eight of the 11 women diagnosed with bipolar disorder and with complete data were included in the post-test data. All women had provided informed consent and participated in the parent study. Ethical approval for this qualitative study was obtained from University Hospitals Cleveland Medical Center Institutional Review Board. Qualitative data were analyzed by two team members using standard content analytic procedures. The two
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Objective: The late reproductive stage (LRS), which precedes the menopausal transition (MT+), is characterized by subtle changes to menstrual cycle length, duration, and flow. Recent studies suggest that during the LRS women may experience symptoms typically associated with the MT+, such as hot flashes, sleep disturbances, mood changes, joint pain, and fatigue. Despite evidence of racial and ethnic differences in symptoms during the MT+, the majority of research on symptoms during the LRS has been conducted in English among non-Hispanic White women. The aims of the current study were to characterize and compare the symptoms women report experiencing during the LRS and MT+ in the Spanish-language Women Living Better (WLB) survey. Design: This is a cross-sectional analysis using data from the Spanish-language WLB survey. WLB is an evidenced-based online resource about the years leading to menopause. Women age 35 to 55 years were invited to complete an 82-item online survey to assess menstrual cycle changes, and symptoms they experienced. A random sample of 821 was identified, and the survey was distributed through the WLB email newsletter and social media channels. Demographic and health-related data were also collected, including age, country of residence, race/ethnicity, educational attainment, parity, smoking, and alcohol use. Data on menstrual cycle patterns were used to categorize women as LRS or MT+ according to the Stages of Reproductive Aging Workshop (STRAW) criteria. Women were excluded from the current analysis if they were using therapies or had conditions that affect their menstrual cycles (e.g., hormone therapy, endometrial ablation, hysterectomy, pregnancy). Descriptive statistics were used to characterize symptoms and chi-square tests or t-tests were used to compare symptoms between the LRS and MT+ groups. Results: Of 853 respondents, 358 (267 LRS, 82 MT+) were included in the analytic sample. Women were on average age 40.2 ± 4.4 years, 40% reported difficulty paying for basics, 37% reportedly lived in Spain and 22% in Mexico. The most commonly reported symptoms in the LRS group were sleep disturbances (67%), less interest in sex/lover libido (52%), and difficulty concentrating or forgetfulness (50%). A similar proportion of women in the LRS and MT+ groups reported the following: anxiety/worried, low feelings (sad, blue, depressed); difficulty concentrating or forgetfulness; dishomogeneous or sexual pain; urinary frequency and urgency. A greater proportion of women in the MT+ group reported that symptoms interfere with their overall health (79.7% vs. 64%, p<0.02). LRS and MT+ women similarly report that symptoms interfere with personal relationships. Conclusion: Our findings that women classified as LRS or MT+ groups experience multiple similar symptoms support other studies with earlier stages. However, the prevalence of symptoms that women reported during the LRS differed from those in an analysis among English-speaking populations (e.g., sleep disturbance, less interest in sex/libido, difficulty concentrating or forgetfulness). A better understanding of the symptoms experience during the LRS experience is needed. Future cross-cultural research on the epidemiology of symptoms during the LRS is necessary as many women and healthcare providers do not expect symptoms associated with this stage.

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P-17.

Menopause Management: Need for Global Perspective

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Objective: The United States of America is a melting pot of many different ethnic groups living on American soil. One’s natural cultural beliefs influence the mindset and attitude of an individual towards the societal norms of the country in which they live. Understandably, cultural belief systems can have a significant impact on how, when and to what extent a person will engage with the healthcare system in a country that has different cultural norms. Haitians are one example of a population that typically maintains their ancestral cultural practices when confronted with illness. This is particularly true when discussing women’s health issues such as menopause. In Western culture, women frequently seek formal medical attention for management of menopausal symptoms and are counselled on the pharmacologic options, including local and systemic hormonal therapies. However, for Haitian women, pharmacologic interventions, are not the norm. Rather, these women pursue traditional folk remedies consisting of herbs or roots prepared as teas for menopausal symptoms, including hot flashes, mood swings, irritability, anxiety, depression and insomnia. In Haiti, even moderate to severe symptoms are managed with bush teas of varying formulations. Although significant strides towards inclusivity have been made in medicine, an understanding of and appreciation for health-related cultural practices, such as those that address menopause that predominate in other parts of the world, is lagging. Education of the health care team in these practices would not only improve medical care but would allow a more thorough discussion of all management options. Perhaps provider bias against culturally based therapies is a barrier to health care for women outside of the Western culture. The purpose of this study is to investigate cultural attitudes and beliefs that differ from Western society in the management of menopause. This review discusses current understandings of cultural beliefs on menopause in Haiti and the Haitian diaspora at large. Design: Review of current literature explores a dearth of recent information regarding women’s health in Haiti and or Haitian cultural practices of the diaspora regarding menopause. No prior studies investigating the effectiveness of folk remedies were found despite a long history of Haitian women using bush teas to treat a variety of ailments, especially their menopausal symptoms.

Results: Information directly from Haitian women suggest that they will use a bush tea concoction of lemon balou, rosemary and soursop to combat irritability and palpitations. Vervain tea is often used to treat depression, anxiety and sleeplessness. Knowledge of various herbs and roots are passed down between generations of Haitian women. However, formal research and data are needed to substantiate these practices to lend legitimacy to their purported therapeutic effects. To elucidate their safety profile for adequate dosing. Investigating bush teas to corroborate their medicinal effects would broaden the current treatment options available to all women globally. Furthermore, it would help combat bias against non-Western approaches to managing menopause.

Conclusion: As communities throughout the world continue to become more diverse, more research, education and amplification of legitimate non-harmful cultural practices used to treat menopause are needed. Haitian women for generations have managed their menopausal symptoms with herbal remedies successfully. When treating women of Haitian descent, providers should make the effort to ascertain all information regarding what remedies they may be using, what preparation, dosage, frequency and any side effects. When discussing cultural remedies, it is crucial to not dismiss a woman’s beliefs and when safe support the woman in her continued use of natural, non-harmful medicines.

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P-18.

Reduced Breast Cancer Incidence in Women Treated with Subcutaneous Testosterone: The Testosterone Therapy and Breast Cancer Incidence Study

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Objective: Testosterone therapy has been shown to be breast protective in both pre- and post-menopausal patients. Additionally, estradiol does not cause breast cancer in the majority of the world’s literatures. This study aimed to investigate the incidence of invasive breast cancer in pre- and post-menopausal women treated with testosterone implants or testosterone in combination with estradiol implants. Breast cancer incidence rates were reported based on newly diagnosed invasive breast cancer cases in the total study. Total cases divided by the total sample size and years in study was expressed as an incidence rate/100,000 person-years. Moreover, the incidence rates were age- and race-specific Surveillance Epidemiology and End Results (SEER) incidence rates. Results: As of October 2020, 14 cases diagnosed with invasive breast cancer have been found in 9,746 person-years of follow up for an incidence of 144 cases per 100,000 person-years, significantly less than the age-specific SEER incidence rates (223/100,000), placebo arm of Women’s Health Initiative Study (330/100,000), and never users of hormone therapy from the Million Women Study (312/100,000). Conclusion: Testosterone and/or testosterone in combination with estradiol implant significantly reduced the incidence of invasive breast cancer in pre- and post-menopausal women. This increase in breast cancer incidence, was compared with age-
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P-22. **Associations between hormone replacement therapy and cardiorespiratory fitness with verbal and visual memory performance in post-menopausal women**

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**Objective:** Hormone replacement therapy (HRT) and cardiorespiratory fitness (CRF) influence cognitive performance in older women. A small human study showed an interaction between HRT duration and CRF on cognitive outcomes and some animal studies have indicated that effects of exercise on brain-derived neurotrophic factor might be augmented by estrogen supplementation. Therefore, there have been few studies examining whether HRT and CRF interact to modulate cognitive functioning among post-menopausal older women. The goal of this study was to examine whether an association between CRF and verbal and visual memory would be moderated by current or prior HRT use in post-menopausal women. We expected that women with higher CRF and with a history of HRT use would exhibit higher verbal and visual memory performance.

**Design:** The sample included 352 women, 65-80 years old (age M=69.40±3.501), who were recruited for a 12-month exercise intervention. Prior to randomization, baseline cognitive and fitness assessments were conducted, and information about HRT use was collected. HRT use was coded as present (1) or absent (0). Participants completed the Hopkins Verbal Learning Test-Revised (HVLT-R), Brief Visual Memory Test (BVMT), Logical Memory Test, and Paired Associates Test, immediate and delayed recall trials. CRF was assessed using a maximal graded exercise test. Main interaction and effects were evaluated using linear regression. **Results:** Participants who reported HRT use (current or past) had greater HVLT-R, BVMT, Logical Memory Test, and Paired Associates Test (β range=.218-.279; all p<.05). Duration of HRT use did not relate to cognitive performance (p=.220), though initiation of HRT during the postmenopausal period (as opposed to before or during menopause) was associated with higher HVLT-R, BVMT, Logical Memory, and Paired Associates performance (β range=–.218 to .279; all p<.05). Higher CRF was associated with higher performance on numerous outcomes including HVLT-R, Logical Memory, and Paired Associates (β range=–1.10–.159; all p<.05). There were no significant interactions between CRF and HRT use on any cognitive outcome (p=.102). **Conclusion:** Current or prior use of HRT and higher CRF were correlated with higher episodic memory performance among post-menopausal women. However, there was no evidence of a moderating effect of HRT on the association between CRF and memory performance. Though no interaction was observed, the independent benefits of subjective HF experience. The Actigraph GT3X+ PA monitor (Pensacola, FL) was instructed to press a button on the Biolog monitor when they felt a HF—a measure skin conductance allows HFs to be objectively measured, questions arise as to whether self-reported physical activity (PA) may influence the HF experience. As with objective HF data, we predicted to increase by 0.283 per minute of vigorous PA (CI:.000, .002), and by .261 per minute of moderate PA (.CI:.000, .001), p<.041. Vigorous PA explained 6.8% of variation. While moderate and vigorous PA were not significantly associated with objective HF frequency. Concordant HF frequency was predicted to increase by 0.283 per minute of vigorous PA (CI:.000, .002), and by .261 per minute of moderate PA (.CI:.000, .001), p<.041. Vigorous PA explained 6.8% of variation. Subjective HF frequency was not associated with any form of PA, nor did any PA explain more than .1% of variation. **Conclusion:** Overall, our data suggest greater amounts of time in moderate and vigorous PA predicts increases in objective and concordant HFs in women aged 45-55. Understanding the role of PA on HF experience may advance efforts to provide accurate information to women undergoing menopause and optimize therapies.

**Sources of Funding:** NSF (Sievert and Brown, BCS-1848330), NHLBI (Witkowski, 1R15HL145650-01A1), and Smith STRIDE program (Evard).

P-24. Comparing the impact of hormone replacement therapy versus estrogen containing oral contraceptive pills on bone outcomes in women with Premature Ovarian Insufficiency: A systematic review

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**Objective:** Premature ovarian insufficiency (POI) affects up to 3.7% of women and is associated with the loss of ovarian function before the age of forty. POI is characterized by low levels of estrogen, which leads to a range of health consequences, including decreased bone mineral density (BMD) and increased risk of osteoporosis and subsequent fractures. The current standard of care to mitigate low BMD is estrogen-containing hormone therapy. Both hormone replacement therapy (HRT) and oral contraceptive pills (OCP) are recommended by clinical practice guidelines though there are important differences between them. There is limited evidence regarding the preferred formulation of hormone therapy for optimizing bone health in women with POI. The objective of this systematic review is to critically evaluate the evidence regarding optimal estrogen-containing hormone therapy on bone outcomes in women with POI.

**Design:** We conducted a systematic review that adhered to the Preferred Reporting Items for Systematic Review and Meta-analysis (PRISMA). The protocol was registered in the International Prospetive Register of Systematic Reviews (PROSPERO). We searched Ovid MEDLINE, EMBASE, Cochrane Library and Web of Science databases from inception until December 2020 for randomized controlled trials (RCTs) and observational studies. Studies met criteria for inclusion if the study population was women aged 40 at the time of POI diagnosis, if both the primary exposure and comparator were either OCP or HRT, if the primary outcome was difference in bone mineral density and/or change in bone turnover markers. Studies were assessed for risk of bias using the Newcastle-Ottawa Scale and the Cochrane Risk of Bias Tool according to study design. **Results:** Our initial search results identified 1563 abstracts, of which 38 full-text papers were assessed for eligibility by two reviewers, and 5 studies were ultimately included in our review: 3 RCTs and 2 observational cohort studies. Both observational studies were rated as having a low risk of bias. Out of the 3 RCT’s, 1 study was found to be at high risk of bias, while the other 2 raised some concerns of bias. Studies varied in type of hormone therapy formulations, doses, and regimens used as well as cause of POI. Across all studies, women with Turner Syndrome (n=265) were the most common etiology for POI, followed by idiopathic (n=146), cancer treatment (n=8), autoimmune (n=3), and one study did not differentiate between surgical and idiopathic etiologies (n=17). Of the 4 studies that assessed changes in BMD, two studies reported a significantly increased BMD at the lumbar spine with HRT as compared to OCP (+0.050 g/cm², p<0.025; +0.019 g/cm², p<0.001), one study found similar improvement in lumbar spine BMD comparing OCP and high-dose HRT (HRT -0.003 g/cm², p=0.824), and one study did not directly compare OCP and HRT treatments. Results for effect of different hormone therapy on bone turnover markers were inconsistent among 3 studies that evaluated this outcome. **Conclusion:** To our knowledge, this is the first systematic review to directly compare studies that evaluate the effects of different estrogen-based hormone therapy on bone outcomes in women with POI. While we found that 2 studies reported higher BMD scores at the lumbar spine with HRT versus OCP, these results were not consistent across studies. Furthermore, studies had important differences in terms of etiology of POI, treatment regimen and dose of estrogen therapy. Further studies are required to better understand the ideal hormonal treatment for optimizing bone outcomes in POI.

**Sources of Funding:** None
A literature search of Ovid MEDLINE, Ovid EMBASE, and Scopus was conducted by a medical librarian in May 2020. Three researchers independently reviewed each title and abstract to determine whether it met inclusion or exclusion criteria. Each article was evaluated for the following curriculum content and structure items: (1) year introduced; (2) method of delivery; (3) the type of curriculum; (4) curriculum content; (5) effectiveness of the curriculum; (6) barriers experienced in implementing the curriculum. Results: A total of 56 articles met criteria, most were for medical school learners (32/56) and short-term curriculum; (6) barriers experienced in implementing the curriculum.

P-26.

What Midlife Women Value Most When It Comes to Digital Health and Menopause: Findings from the Elektra Health User Survey
Jamey Versi, BA; BA; MBA; LA; LCBCN; Grace Sun, BA1,2, Eboss Versi, MD PhD3, Jacqueline Giannelli, FNP-BC, NCMP1, Brown University, Providence, RI; Elektra Health, New York, NY; OB/GYN, Rutgers Robert Wood Johnson Medical School, New Brunswick, NJ

Objective: Elektra Health is a women’s health company that offers a digital solution for integrated menopause care. The aim of this survey was to assess the digital preferences among members of Elektra Health’s free online community. Design: On Sept 16, 2020, a survey was sent by email to Elektra’s members, eliciting information on demographics and preference for type of help regarding menopause. The 4 elicited domains are shown in the figure and the data was divided into pref-, peri- and post-menopausal status based on respondents’ self-identification. The responses were “very,” “somewhat,” or “not” important. For the purpose of the analyses, “very” and “somewhat” were grouped together as important. Chi-square and ANOVA analyses determined statistical significance as p<0.05. Results: Of the 5,481 members sampled, 877 opened the email and 113 (13%) completed the survey. Of these, 97 offered their menopausal status; all met eligibility criteria of having Internet access and fluency in English. Half of the respondents (50.5%) were over the age of 50 and their menopausal status was pre- (n = 16, 14%), peri- (n = 35, 31%), or post- (n = 46, 41%). Of the 4 domains, peer network was considered the least important (F = 21.0, p<0.0001). Menopausal status did not appear to influence preference for types of help (Chi-square, p = 0.05). Surprisingly, respondents did not favor clinical expertise over education or tools and products (ANOVA, F = 0.57, p = 0.56). Limitations are that the Elektra Health community is self-selected and there was a low sample response. Conclusion: The respondents’ preferences were not influenced by menopausal status. They valued education as well as tools and products on an equal footing with clinical expertise. This data, if confirmed by larger studies, suggests that women want more help than what clinical experts alone can provide. This validates Elektra Health’s hypothesis that a multifaceted digital approach to menopause can provide an effective solution to meet the needs of midlife women.

Sources of Funding: Elektra Health.

P-25.

A Systematic Literature Review of Published Intimate Partner Violence Curricula for Medical Trainees
Summer Ghaith, BS1, Sandeep Voleti, BS1, Zachary Ginsberg, BS2, Lisa Marks, MLS, AHIP3, Julia A. Files, MD2, Juliana M. Klang, MD, MPH2, Mayo Clinic School of Medicine - Scottsdale Campus, Phoenix, AZ; 2Education, Library Services, Mayo Clinic Arizona, Scottsdale, AZ; 3Women’s Health Internal Medicine, Mayo Clinic Arizona, Scottsdale, AZ

Objective: In the United States, over a third of women have been victims of intimate partner violence (IPV) in their lifetime. Midlife women are also at risk and clinically significant symptoms of posttraumatic stress disorder have been found to be associated with menopause symptoms. Victims of IPV have an increased risk for adverse physical health outcomes. Healthcare provides a safe space for IPV victims, but physicians lack of time, lack of IPV specific education and patients’ perceived unresponsiveness as barriers to IPV screening. Despite the rates of IPV rising 46% higher in 2015 over the previous year, the Liaison Committee on Medical Education (LCME) removed violence and abuse as an example of a societal problem that should be covered in medical school curricula. The objective of this study was to complete a comprehensive review of published curricula on IPV in medical school, residency training, and post-residency training and provide a summary of the findings to guide future curricular work in standardizing the optimal curriculum for medical students. Design: A literature search of Ovid MEDLINE, Ovid EMBASE, and Scopus was conducted by a medical librarian in May 2020. Three researchers independently reviewed each title and abstract to determine whether it met inclusion or exclusion criteria. Each article was evaluated for the following curriculum content and structure items: (1) year introduced; (2) method of delivery; (3) the type of curriculum; (4) curriculum content; (5) effectiveness of the curriculum; (6) barriers experienced in implementing the curriculum. Results: A total of 56 articles met criteria, most were for medical school learners (32/56) and short-term curriculum; (6) barriers experienced in implementing the curriculum.

P-27.

Sex Differences in Predictors of White Matter Abnormalities among Older People Living with HIV
Alvin Giordano-Aroyo, MPH1, Nancy Reame1, Jose Gutierrez-Contreras, MD, MPH2, Rebecca Schnall, RN, MPH, PhD3, Columbia University School of Nursing, New York, NY; 2Department of Neurology, Columbia University Irving Medical Center, New York, NY; 3Department of Population and Family Health, Columbia University Mailman School of Public Health, New York, NY

Objective: One of the trademark features of aging in the brain is the deterioration of cerebral white matter. The progression of white matter loss, while strongly related to aging and neurodegeneration, has also been linked with vascular risk factors and sex hormones. Additionally, human immunodeficiency virus (HIV) has been found to be associated with abnormalities in white matter structure; however, not much is known about sex-specific differences in the brain among people living with HIV (PLWH). While postmenopausal estrogen decline is believed to contribute to reduced white matter volume among aging females, few studies have outlined sex differences in predictors of white matter abnormalities within the context of HIV infection. We compared vascular and HIV risk factors, sex hormone levels, cognitive domain scores, and measures of white matter pathologies between older females and males living with HIV. We also investigated whether biological sex mediated any relationships between white matter abnormalities and neuropsychological performance. Methods: 85 participants age 50 or older and living with HIV participated in a cross-sectional study and completed a neuropsychological assessment, a blood draw, a demographic survey, and a magnetic resonance imaging (MRI) scan. Participant demographic data, vascular risk factors, and history of CVD count and viral load were self-reported on the
Shelli Graham, PhD, Ginger Constantine, MD, Andrea V. Margulis, MD, ScD,1, Catherine W. Saltus, MA, MPH,1 Catherine B. Johannes, PhD, James A. Kaye, MD, DrPH1, Sebastian Mirkin, MD1,2 TherapeuticsMD, Boca Raton, FL;1 EndoRheum National Institutes of Health [R01NR015737]

Objective: A Postmarketing Noninterventional Study Evaluating the Risk of Endometrial Cancer in Women Who Have Been Prescribed Imvexxy®

Consultants LLC, Malvern, PA;3 RTI Health Solutions Barcelona, Barcelona, Spain;3 RTI Health Solutions Waltham, Waltham, MA

Study population: This study will recruit 270 postmenopausal women with a uterus who have used Imvexxy® at any point during their lifetime. Women with a history of endometrial cancer or who are currently pregnant will be excluded. The study will be conducted in the US, Canada, and Europe.

Inclusion Criteria: Women aged 18-80 years old, postmenopausal women with a uterus, and women who have used Imvexxy® at any point during their lifetime will be included in the study.

Exclusion Criteria: Women with a history of endometrial cancer or who are currently pregnant will be excluded from the study.

Methods: This study will be a noninterventional, observational study. The primary endpoint will be the incidence of endometrial cancer among women who have used Imvexxy®. The study will use electronic health record data and billing claims data to identify women who have used Imvexxy® and will compare them to women who have not used the drug.

Results: The study will recruit 270 women and will follow them for a period of 2 years. The primary endpoint will be the incidence of endometrial cancer among women who have used Imvexxy®. The study will be completed in 2023.

Conclusion: This study will evaluate the risk of endometrial cancer among women who have used Imvexxy®. The study will use electronic health record data and billing claims data to identify women who have used the drug and will compare them to women who have not used the drug.

P-30. Feasibility and Effectiveness of Utilizing Personalized Thermal Interventions for Improving Quality of Life in Women with Symptomatic Hot Flashes
Harika Dabbara, BS1, Kathryn Rexrode1, Guohai Zhou1, Heather Hirsch1. Medicine, Brigham and Women’s Hospital, Boston, MA; 1Center For Clinical Investigation, Brigham and Women’s Hospital, Boston, MA

Objective: This study will assess the feasibility of using personalized thermal interventions for improving quality of life in women with symptomatic hot flashes. The study will also evaluate the effectiveness of these interventions for reducing hot flashes.

Design: This study will be a randomized controlled trial. Women with symptomatic hot flashes will be randomized to either a personalized thermal intervention group or a control group. The personalized thermal intervention group will receive a thermal intervention that is customized to their specific hot flash pattern.

Sources of Funding: This study is supported by the National Institutes of Health.
and 90’s fully completed data collection. Baseline scores showed significantly reduced quality of life, mild daily interference, and sleep disturbance indicated by high average composite scores for the aforementioned areas of health vs the topic of menopause. Higher the baseline score, the more severe the symptoms. However, with the prolonged life longevity, lower risk for osteoporosis, decreased cardiovascular comorbidities classically associated with PCOS may be inversely related to time to menopause. Conversely, studies have also shown that increasing BMI and other medical comorbidities may be predictive of higher AMH levels. Prior studies have shown that AMH may be predictive of the onset of menopause whereas the current study does not support the inverse relationship between AMH and PCOS.

Source of Funding: None

P-33. Mindfulness Techniques for Amelioration of Menopausal Symptoms

Dwyala M. Carty, Associates in Science1, Aquenea Mary P. Fernandez2, Gloria Bachmann, MD1, Juana Hutchinson-Colas, MD1, Middlesex County College, Edison, NJ, University of Florida, Gainesville, FL, Rutgers Robert Wood Johnson Medical School New Brunswick, New Brunswick, NJ

Objective: Counseling of menopausal women usually centers on the topics of vaso-vomotor symptoms and primary care symptoms of menopause. However, with the extended life expectancy increasing into the ninth decade for women in many countries and advanced reproductive technologies now available, childless years beyond the menopause may no longer be the norm. Design: A literature search using PubMed and Google Scholar with use of English language literature was retrieved and reviewed. Results: Natural menopause, which can occur as early as 40 years of age, usually heralds the end of reproductive capability. Yet, many women can expect to live an additional 40 to 50 years beyond their cessation of menses. This longevity coupled with advanced reproductive technologies and/or women to build their families during these perimenopausal and postmenopausal years not only through adoption, but also through both natural and assisted conception. Birth rate data support that the fact that older women are indeed pursuing childbirth. For example, the birth rate in 1990 for women 40-44 years was ~51,000 females. This number jumped to ~111,000 females in 2016 and 121,000 females in 2019. For women 45-49 years (which includes women aged 50 years and older) the birth rate was 0.9/1,000 females in 2018 and 2019.* Conclusion: These data suggest that yoga lessens pain, which has positive implications for menopausal symptoms such as headaches, joint pain, sleep and mood. Meditation is another technique in reducing menopausal symptoms, persons can meditate while lying down on the floor, sitting in a chair, or sitting on the floor. Breathing techniques such as, Paced-respiration, is a slow, deep breathing approach, that has shown to be effective in reducing the impact of hot flashes and managing stress and anxiety. For instance, sitting or lying down in a comfortable position while breathing in deeply through the nose and holding your breath for four counts; and slowly exhale through the mouth. Women who are experiencing hot flashes are instructed to practice this exercise daily for 15 minutes to lessen hot flashes, reduce stress as well as anxiety. Body Scan has proven to be an essential form in healing in meditation. This technique allows an individual to focus on each part of their body; starting at the toes and slowly moving to each part of the foot, then scan the whole leg, and lastly ending scanning the face and head. It can be done by laying down, sitting, or even standing up. The purpose is to draw attention to the different sensations one experiences when focused on one specific body part. Works Cited Health, Lisa. “Menopause: A Natural Way to Manage Menopausal Symptoms.” Lisa Health Blog, 14 Feb. 2021, https://blog.lis_health.com/blog/2021/1/19/menopause-a-natural-way-to-manage-menopause-symptoms Design: A Google Scholar search was done of the English literature exploring mindfulness and menopausal symptoms. Results: Data is minimal in this area. Research from a British 2018 evaluated the outcome of persons who practiced mindfulness-focused therapy and how it does appear to help with hot flashes and menopausal symptoms. It explored the results for symptoms of depression, anxiety and sleep problems. Further, since the pandemic, a number of consumer mobile health apps would allow individuals to connect with others who are experiencing similar experiences. Overall, menopause mobile apps appear to have a role in the education and management of menopause for midlife and older women.

Sources of Funding: None

P-32. Menopause Mobile Health Applications: An Innovative Educational Modality

Samantha Rozario, Juana Hutchinson-Colas, MD, Gloria Bachmann, MD. Women’s Health Institute, Rutgers The State University of New Jersey, New Brunswick, NJ

Objective: A large number of mobile applications are available that address topics of menstruation, maternal and infant health, and reproductive health. Menopause mobile health applications allow users to track symptoms and gain educational resources. Certain health apps also allow users to chat with experts and link health records to the app. The utility of mobile health apps is growing and most are geared to significantly helping the individual manage their own health. However, there appears to be a stark difference in the number of applications available for the aforementioned areas of health vs the topic of menopause. Increasing the number of menopause tracking mobile apps should be considered in order to not only help individuals track symptoms and find resources, but also empower menopausal individuals. Design: A review on current menopause mobile applications available on mobile app stores was conducted to assess the number of menopause mobile applications on the market. To determine the utility of menopause apps, the features of certain menopause apps were reviewed. As well, comparisons of menopause and other mobile health applications were made to determine the differences in the number of these apps on the market. Results: Data suggests that there is a limited number of mobile applications focused on menopause that are currently available. In researching different menopause apps, a common feature present in most apps is the ability to input data and track symptoms. Menopausal apps differ based on intended purpose. A few of the more commonly used menopausal apps include Menopause View, Caria: Menopause & Midlife, and My Luna. The app Menopause View provides a calendar feature and daily journal to allow users to record symptoms and schedule times to take medicine. Caria: Menopause & Midlife, which is a paid app, offers a chat feature, chat with experts, and connect with other users in an online community. My Luna allows users to track their health and generates predictions that can be shown to a health care provider. However, in comparison to menstruation and maternal health apps, the number of menopause apps were significantly less than the other health apps. Conclusion: The need for more mobile health applications directed towards menopause is apparent, given the limited number of menopause apps on the market. Some of the current menopause apps are not able to connect with the patient’s health record, necessitating the use of non-medical or non-hormonal treatment modalities for menopause related symptoms.

Sources of Funding: None

Table 1. Average Composite Change for MENQL, HFQDIS, and PROMIS Scales

<table>
<thead>
<tr>
<th>Scale</th>
<th>Baseline Score</th>
<th>Intervention Score</th>
<th>Change in Average Score (Baseline - Intervention)</th>
<th>Mixed-effects model-estimated change in score (95% CI) and (P) value</th>
</tr>
</thead>
<tbody>
<tr>
<td>MENQL</td>
<td>3.51</td>
<td>2.96</td>
<td>0.55</td>
<td>0.53 (0.04-0.91) (0.007)</td>
</tr>
<tr>
<td>HFQDIS</td>
<td>3.75</td>
<td>2.79</td>
<td>0.96</td>
<td>1.03 (0.38-1.68) (0.004)</td>
</tr>
<tr>
<td>PROMIS</td>
<td>2.56</td>
<td>2.47</td>
<td>0.14</td>
<td>0.24 (0.00-0.48) (0.052)</td>
</tr>
</tbody>
</table>

*The mixed-effects model estimated change in score and takes into account the within-participant correlation (participant with higher/lower baseline score may tend to have higher/lower intervention score), whereas the crude change in average score does not.

P-34. Menopause in Women with Polycystic Ovarian Syndrome (PCOS)

Tara K. Iyer, MD, Tiffany Cochran, MD, Christine Hur, MD, Holly L. Thucker, MD, Detti Laura, MD. Ob/Gyn and Women’s Health Institute, Cleveland Clinic, Cleveland, OH

Objective: Polycystic ovary syndrome (PCOS) is the most common endocrinopathy affecting women. It is well known that women diagnosed with PCOS are at an increased risk of obesity, heart disease, insulin resistance, and psychiatric disorders (anxiety and depression). Menopause has also been associated with increased risk of these conditions, however, only limited research exists evaluating how PCOS may affect the prevalence and severity of menopausal symptoms and chronic disease. Although it is not included in the diagnostic criteria, women with PCOS are known to have higher serum hormone (AMH) levels. Prior studies have shown that AMH may be predictive of time to menopause, with higher AMH levels being suggestive of later time to natural menopause. Conversely, studies have also shown that increasing BMI and other medical comorbidities classically associated with PCOS may be inversely related to time to menopause. Furthermore, menstrual irregularities make it difficult to determine the age of natural menopause in midlife women with PCOS. The age at menopause is an important marker of a woman’s health. Later onset of menopause has been associated with prolonged life longevity, lower risk for osteoporosis, decreased cardiovascular

Sources of Funding: None

Table 1. Average Composite Change for MENQL, HFQDIS, and PROMIS Scales

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</table>

*The mixed-effects model estimated change in score and takes into account the within-participant correlation (participant with higher/lower baseline score may tend to have higher/lower intervention score), whereas the crude change in average score does not.
null finding of the study does not provide reassuring evidence supporting the breast safety of cBHHT. This study adds to the growing evidence that cBHHT may need to be reevaluated for breast safety.

Relevant clinical trial registries: clinicaltrials.gov NCT00018851


Comparison of mammography findings and breast pathologies in postmenopausal women treated with compounded “bioidentical” hormone therapy versus FDA-approved hormone therapy

Xuezhi (Daniel) Jiang, MD, PhD1,2, Anna Roble1, Waneza Mugehees1, Margaux Everingham1, Danielle Hovington1, Kendyl Schreiber1, Rim Saab2, Schyler Saaf1, Christina Fleckenstein1, Jannah Wing1, Hannah Kim1, Saira Kohar1, Madison Newman1, Angeline Nguyen1, Shana Talbot1, Anna Bossert1, K. Nathan Parthasarathy1, Kristine Leeman1, Shahab S. Minassian1, Peter F. Schnatz, DO, FACOG, FACP, NCMP1,2, Mark B. Woodland, MD, MS3,4, OBGN, Reading Hospital, Reading, PA; OBGN, Thomas Jefferson University, Philadelphia, PA; Drexel University College of Medicine, Philadelphia, PA; Philadelphia College of Osteopathic Medicine, Philadelphia, PA

Objective: To compare mammography findings and breast pathologies after initiation of Custom compounded “bioidentical” hormone therapy (cBHHT) vs. FDA-approved hormone therapy (FHT) in postmenopausal women. Design: We performed a retrospective cohort study of 280 postmenopausal women on hormone therapy (HT), including 127 on pellet hormone therapy (PHT) and 153 on FHT. A total of 700 patients (450 on PHT, 250 on FHT) were initially retrieved from electronic medical record with 420 being excluded due to duplicate records, no mammogram or breast ultrasound readings available after HT initiation, personal history of breast cancer prior to HT, sequentially receiving both PHT and FHT. Incidence of noninvasive and invasive breast cancer, including ductal carcinoma in situ, invasive ductal carcinoma, invasive lobular carcinoma, and other types of invasive breast cancer, was analyzed as a primary outcome. Results: Mean (SD) of treatment duration (4.3±3.0 to 6.9±5.1 years, p<0.001) and length of follow-up (7.8 [1.3] to 10.1 [4.4] years, p<0.001) were significantly shorter in PHT compared to FHT. Mean (SD) age at HT initiation was significantly younger in women on PHT than those on FHT (51.2 [8.1] vs. 57.5 [11.7] years, p<0.001). Significantly higher number of women on PHT had breast tenderness compared to those on FHT (41[3.1%] vs. 24[16.6%], p<0.001). There were no significant differences between PHT vs. FHT in the number of BI-RADS a4 based on the worst BI-RADS readings (2[1.5%] vs. 2[1.5%]), the number of women undergoing a breast biopsy (28[21.9%] vs. 25[16.2%]), and the incidence of noninvasive and invasive breast cancers (9.1% vs. 5.3%) during the follow-up. In logistic regression model with HT type, treatment duration, length of follow-up, and risk factors considered (table 1), a family history of breast cancer (odds ratio[95%CI]=1.4[1.02-2.0], p=0.036) significantly predict the future risk of breast cancer. Interestingly, many women in both HT groups had a family history of breast cancer (PHT 49[38.6%] vs. FHT 65[42.5%], p=0.51). Conclusion: A null finding of the study does not provide reassuring evidence supporting the breast safety of pellet use in postmenopausal women, due to a likelihood of type 2 error. Women with a family history of breast cancer should be intensively counseled on the increased risk of breast cancer prior to HT initiation.

Sources of Funding: None

Table 1. Baseline comparison of demographic characteristics, breast cancer risk factors, and incidence of breast cancer between PHT and FHT

<table>
<thead>
<tr>
<th>Age at HT initiation (Mean [SD], years)</th>
<th>PHT (n=127)</th>
<th>FHT (n=153)</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>BMI (N [%], kg/m2)</td>
<td>29.6 (5.3)</td>
<td>28.4 (7.2)</td>
<td>ns</td>
</tr>
<tr>
<td>Ethnicity - White (N [%])</td>
<td>116 (90.8)</td>
<td>142 (92.8)</td>
<td>ns</td>
</tr>
<tr>
<td>Marital status - Married (N [%])</td>
<td>94 (74.0)</td>
<td>56 (43.4)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>History of breast cancer (N [%])</td>
<td>49 (38.6)</td>
<td>65 (42.5)</td>
<td>ns</td>
</tr>
<tr>
<td>History of diabetes (N [%])</td>
<td>12 (9.6)</td>
<td>23 (15.1)</td>
<td>ns</td>
</tr>
<tr>
<td>History of smoking (N [%])</td>
<td>57 (45.4)</td>
<td>55 (36.2)</td>
<td>ns</td>
</tr>
<tr>
<td>Alcohol use (N [%])</td>
<td>15 (11.9)</td>
<td>4 (2.6)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>HT duration (Mean [SD], years)</td>
<td>4.3 (3.8)</td>
<td>6.9 (5.1)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Length of follow-up (Mean [SD], years)</td>
<td>7.9 (3.8)</td>
<td>10.1 (4.4)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>BMI and HT duration (Mean [SD], years)</td>
<td>8.6 (4.4)</td>
<td>10.0 (4.4)</td>
<td>ns</td>
</tr>
<tr>
<td>Progestin use (N [%])</td>
<td>57 (45.4)</td>
<td>43 (28.4)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Breast tenderness during HT (N [%])</td>
<td>41 (33.1)</td>
<td>24 (16.1)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>BI-RADS 3/4 based on the worst mammogram reading (N [%])</td>
<td>21 (16.5)</td>
<td>23 (15.7)</td>
<td>ns</td>
</tr>
<tr>
<td>Breast biopsy taken after HT (N [%])</td>
<td>28 (22.0)</td>
<td>25 (16.3)</td>
<td>ns</td>
</tr>
<tr>
<td>Breast cancer (noninvasive and invasive) (N [%])</td>
<td>9 (7.1)</td>
<td>5 (3.3)</td>
<td>ns</td>
</tr>
<tr>
<td>Age at breast cancer diagnosis (Mean [SD], years)</td>
<td>60.4 (7.7)</td>
<td>66.5 (7.5)</td>
<td>ns</td>
</tr>
</tbody>
</table>

Table: Breast cancer (noninvasive and invasive) indicates women with invasive breast cancer including ductal carcinoma in situ, invasive ductal carcinoma, invasive lobular carcinoma, and other types of invasive breast cancer. For this abstract is solely the responsibility of the authors and does not necessarily represent the official views of the NIA, NIH, ORWH, or NIH.

<table>
<thead>
<tr>
<th>Depression symptoms (OR [95% CI])</th>
<th>Anxiety symptoms (OR [95% CI])</th>
<th>Sleep problems (OR [95% CI])</th>
<th>Conflict (husband-only OR [95% CI])</th>
<th>Conflict (family outside husband-only OR [95% CI])</th>
</tr>
</thead>
<tbody>
<tr>
<td>Childhood trauma</td>
<td>1.67 (1.11-2.52)</td>
<td>2.00 (1.25-3.19)</td>
<td>0.89 (0.50-1.67)</td>
<td>2.26 (1.45-3.87)</td>
</tr>
<tr>
<td>Intimate partner violence</td>
<td>1.58 (1.05-2.43)</td>
<td>1.71 (1.03-2.80)</td>
<td>1.47 (0.83-2.65)</td>
<td>1.57 (1.03-2.43)</td>
</tr>
</tbody>
</table>

P<0.05 was considered significant. Bold text represents adjusted P value (P<0.05). OR (95%CI)=odds ratio (95% confidence interval)
Objective: The objective of this study was to assess the effect of menopausal hormone therapy (MHT) on blood pressure control in postmenopausal women with hypertension. Design: The Women’s Health Initiative MHT clinical trials were double-blinded, randomized, placebo-controlled studies of women aged 50-79 years testing the effects of MHT (conjugated equine estrogens [CEE, 0.625 mg/day] or CEE + medroxyprogesterone acetate [MPA, 2.5 mg/day]) on risks for coronary heart disease and invasive breast cancer among postmenopausal women with hypertension at baseline. However, this increase in SBP was associated with increased SBP by mean (95%CI) = 0.8 (0.1, 1.4) mm Hg (P = 0.02). Compared to placebo, CEE-alone (P = 0.02) and CEE+MPA (P = 0.001) were both statistically significant increases in SBP at the end of the 6-year intervention. Conclusion: There was a small but statistically significant increase in SBP in both CEE-alone and CEE+MPA arms compared to placebo, during both the intervention and cumulative follow-up phases among postmenopausal women with hypertension at baseline. Over time and years 1, 3, 6 and 9 during the study, and self-reported during extended follow-up; 2009–2010 and 2012–2013 that occurred median of 13 and 16 years after randomization, respectively. The intervention effect was estimated through year-6. Cumulative follow-up included all visits. Results: Compared to placebo, CEE-alone had significantly higher SBP by mean (95%CI) = 0.9 (0.2, 1.5) mmHg during the intervention phase. For cumulative follow-up, the CEE arm was associated with increased SBP by mean (95%CI) = 0.8 (0.1, 1.4) mm Hg (P = 0.02). Furthermore, CEE+MPA relative to placebo was associated with increased SBP by mean (95%CI) = 1.8 (1.2, 2.5) mmHg during the intervention phase (P < 0.001). For cumulative follow-up, the CEE+MPA arm was associated with increased SBP by mean (95%CI) = 1.6 (1.0, 2.3) mm Hg (P < 0.001). The mean number of antihypertensive medications taken at each follow-up visit did not differ between randomization groups during the intervention or long-term extended follow-up of 16 years. Conclusion: There was a small but statistically significant increase in SBP in both CEE-alone and CEE+MPA arms compared to placebo, during both the intervention and cumulative follow-up phases among postmenopausal women with hypertension at baseline. Over time and years 1, 3, 6 and 9 during the study, and self-reported during extended follow-up; 2009–2010 and 2012–2013 that occurred median of 13 and 16 years after randomization, respectively. The intervention effect was estimated through year-6. Cumulative follow-up included all visits. Results: Compared to placebo, CEE-alone had significantly higher SBP by mean (95%CI) = 0.9 (0.2, 1.5) mmHg during the intervention phase. For cumulative follow-up, the CEE arm was associated with increased SBP by mean (95%CI) = 0.8 (0.1, 1.4) mm Hg (P = 0.02). Furthermore, CEE+MPA relative to placebo was associated with increased SBP by mean (95%CI) = 1.8 (1.2, 2.5) mmHg during the intervention phase (P < 0.001). For cumulative follow-up, the CEE+MPA arm was associated with increased SBP by mean (95%CI) = 1.6 (1.0, 2.3) mm Hg (P < 0.001). The mean number of antihypertensive medications taken at each follow-up visit did not differ between randomization groups during the intervention or long-term extended follow-up of 16 years. Conclusion: There was a small but statistically significant increase in SBP in both CEE-alone and CEE+MPA arms compared to placebo, during both the intervention and cumulative follow-up phases among postmenopausal women with hypertension at baseline. However, this increase in SBP was not associated with an increased antihypertensive medication use over time among women randomized to MHT compared to placebo.

Source: Women’s Health Initiative (WHI) program is funded by the National Heart, Lung, and Blood Institute, National Institutes of Health, U.S. Department of Health and Human Services through contracts 5N92021D00001, 5N92021D00002, 7N92021D00003, 7N92021D00004, and 7N92021D00005.

P-38. Addressing Menopausal Symptoms in Primary Care: An Opportunity for Improvement? The Results from a Registry of Midlife Women in US Tertiary Care

Eka Kapoor1, Rajeev Chaudhry1, Joan M. Griffin1, Juliana M. Kling, MD, MPH1, Kristin Mara2, Felicity Enders2, Stephanie Faubion, MD, MPH3, Mayo Clinic, Rochester, MN; Mayo Clinic, Scottsdale, AZ; Mayo Clinic, Jacksonville, FL.

Objective: Menopause symptoms affect most midlife women. Despite the significant health and economic burdens faced by untreated menopausal women, many do not receive adequate care for menopausal symptoms. It is not well understood whether this is a result of women’s hesitancy to report their symptoms and seek treatment, reluctance of their providers to treat these symptoms, or both. The study’s objective was to assess the burden of menopausal symptoms and to evaluate potential barriers to menopausal care in women receiving primary care at a tertiary medical center in the US. Design: This study was a cross-sectional study of participants already included in the Mayo Clinic registry of midlife women (Hormones and Experiences of Aging, HERA). The registry includes women aged 45-60 years who receive primary care at one of 4 Mayo Clinic sites—Rochester, MN; Scottsdale, AZ; Jacksonville, FL; and Mayo Clinic Health System, NW WI. From March 1, 2014 to May 31, 2015, women were sent a questionnaire that included the Menopause Rating Scale, and questions about the impact of menopause symptoms on their personal and professional lives. They were also asked whether they received care for these symptoms and their perception of the quality of care received. Reasons for not seeking or receiving care were also queried. Results: As of June 1, 2015, 22,125 surveys had been sent, and 3,036 (13.7%) responses received. The mean age of the respondents was 54.2 years. Most were white (95.2%), educated (college or higher, 93.4%), and non-smokers (94.4%). Thirty-four percent reported menopausal symptoms that were moderate, severe or very severe (Figure). The most common symptoms rated as severe or very severe were sleep and sexual problems. About 80% of women did not seek medical care for menopausal symptoms, with most of them reporting being too busy or a lack of awareness about effective treatment options. Conclusion: This large cross-sectional study reveals a significant symptom burden among menopausal women. Given the availability of safe and effective treatments to manage menopausal symptoms, there is a need for additional education of women and their primary care providers. Future steps may include building algorithms in primary care practice that enable providers to identify and counsel women with bothersome menopause symptoms.

Sources of Funding: NIH Grants: R01 AG034676, R01 AG052245, U54 AG044170
P-40. Efficacy of sequential treatment with bisphosphonate compared to prolonged denosumab treatment after discontinuation of denosumab in postmenopausal osteoporosis

Young-Jin Kim, Sung-Woo Kim, Soo Jin Han, Chang Suk Suh, Seung-Yup Ku, Hoon Kim. Obstetrics and Gynecology, Seoul National University Hospital, Jongno-gu, Korea (the Republic of)

Objective: Denosumab, a recently developed receptor activator of nuclear factor-κB ligand (RANKL) inhibitor, has been widely used as the primary treatment for osteoporosis. In Korea, the National Health Insurance limits the administration of denosumab in patients diagnosed with osteoporosis to up to one year, and can only be re-dosed if osteoporosis persists afterward. If bone mineral density (BMD) improves in subsequent bone densitometry and is not diagnosed with osteoporosis denosumab is not covered by the insurance. However, sequential treatment should be considered because of the severe rebound-associated vertebral fractures after denosumab discontinuation. In this study, we aimed to compare the changes in BMD between women sequentially treated with bisphosphonate and those who continued treatment with denosumab after completion of denosumab treatment postmenopausal women with osteoporosis. Design: A retrospective cohort study was conducted on postmenopausal patients diagnosed with osteoporosis who initiated treatment with denosumab at Seoul National University Hospital from 2017, when the insurance support for denosumab in patients with osteoporosis began in Korea. We reviewed patient records by April 2021. We compared the changes in BMD between women sequentially treated with bisphosphonate and those who continued treatment with denosumab after denosumab discontinuation. Bone density of the spine, femur neck, and femur total regions were compared based on the T-score of DXA.

Baseline characteristics

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Denosumab (n=35)</th>
<th>Denosumab followed by bisphosphonate (n=19)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>66.71</td>
<td>67.64</td>
<td>0.665</td>
</tr>
<tr>
<td>Body Mass Index (BMI)</td>
<td>21.974</td>
<td>24.292</td>
<td>0.047</td>
</tr>
<tr>
<td>Follow up period (months)</td>
<td>18.58</td>
<td>23.09</td>
<td>0.170</td>
</tr>
<tr>
<td>Baseline DXA</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spine (L-4)</td>
<td>-2.787</td>
<td>-2.391</td>
<td>0.101</td>
</tr>
<tr>
<td>Femur neck</td>
<td>-1.643</td>
<td>-1.727</td>
<td>0.673</td>
</tr>
<tr>
<td>Femur total</td>
<td>-1.771</td>
<td>-1.736</td>
<td>0.912</td>
</tr>
</tbody>
</table>

Results:

In postmenopausal women treated with denosumab, there is no significant difference in bone density change between groups. Conclusion: Since 2017, a total of 57 women diagnosed with postmenopausal osteoporosis were included in the study. Of these, 19 were patients who continued treatment by changing to bisphosphonate after treatment of denosumab, and 38 continued treatment with denosumab. The average follow-up period for patients who administered only denosumab was 18.58 months, and 25.09 months for patients who administered denosumab followed by bisphosphonate. The baseline BMD before treatment also had no difference between the two groups. The BMD changes before and after treatment were 8.61% for spine, 5.65% for femur neck and 6.12% for femur total in the group that changed the medication to bisphosphonate. In Denosumab-persistence group, spine for 18.76%, total hip for -4.55%, and femur neck for -4.35%, there was no difference between the two groups (p=0.472, p=0.364, p=0.133, respectively).

Conclusion: In postmenopausal osteoporosis women, there is no significant difference in bone density change between patients treated by switching to bisphosphonate to prevent rebound after denosumab treatment and those who continued denosumab treatment. In this denosumab-persistence group, the treatment effect was stable in spine and femoral bone, while the change to bisphosphonate tended to vary greatly depending on the site. Although it was not a statistically significant difference, it can be inferred that bone density can be maintained stably in the denosumab dose group, and follow-up studies are needed. The BMD difference between the two groups was not significant with insufficient periods of follow-up, as DXA is often follow-up every one year. Due to increased compliance due to ease of administration and side effects lower than bisphosphonate administration, denosumab prescription is expected to increase gradually, and further research will be conducted on whether it will be scalable in osteopenia patients through long-term follow up.

P-41. Consumer Acceptance and In-Use Study Evaluating a Vulvar Moisturizer

Michael Keychman1, Alissar Zahr, PhD2, Tatiana Kononov, BSC3, So Cal Center for Sexual Health, Newport Beach, CA; 1Revision Skincare, Irving, TX

Objective: There is a limited number of peer-reviewed medical publications concerning non-invasive topically genital cosmetic products that could act as a frontline treatment for aesthetic concerns. The vulval area has received limited research and attention in the cosmetic and skin care industry. Many topical creams exist primarily for medical conditions; however, topical cosmetic products are an unmet consumer need in that they have less risk than surgical intervention when seeking enhancement or improvement of the female genital appearance. The unmet consumer need can be realized with a non-invasive vulvar moisturizer developed to improve vulvar aesthetics. This prospective study was conducted to assess consumer acceptance and tolerability of a vulvar moisturizer product (VMP) when used by healthy women twice-daily for the course of four weeks. Design: This was an institutional review board (IRB)-approved single-center consumer-in-use study that was performed at a sexual medicine center by a trained sexual medicine physician. Twenty-five female subjects, 18-85 years old, and in good medical and gynecological health with no active untreated medical conditions were recruited in the study. Subjects applied the VMP on both the left and right sides of the external vulvar tissue twice daily for four weeks. At the end of the study, subjective tolerability measurements and self-assessment were completed. A binomial exact test was performed on responses to each question. The null hypothesis was that the response rate was ≥35%.

Results: Twenty-five, female subjects, with an average age of 39 +/- 10 years completed the consumer-in-use study. Female subjects were primarily Caucasian (48%) and 44% Hispanic or Latino completed the study. Self-assessment results indicated highly statistically (**p < 0.001) favorable responses for each category: vulva perception, product characteristics, product package, and overall satisfaction. Specifically, after 4 weeks: 100% of subjects responded favorably to “After product use, my vulva feels soft.” 100% of subjects responded favorably to “This product nourishes vulvar skin.” 96% of subjects responded favorably to “After product use, my vulva feels overall healthy and beautiful.” 96% of subjects responded favorably to “This product maintained and improved my natural healthy vulvar skin.” Overall, subjects felt confident and valued that the VMP was formulated with high-quality ingredients and appreciated that it did not contain hormones. Results from subjective tolerability evaluation showed the VMP yielded no vulvar burning, itching, or stinging, or other adverse events for any subject by the end of the study. Conclusion: This single-center consumer-in-use study supports the hypothesis that the VMP when used twice daily for four weeks achieved consumer acceptance and was tolerable. Consumer acceptance was demonstrated in all self-assessment categories, vulva perception, product characteristics, packaging, and overall satisfaction. Further research is currently being conducted with the VMP for a post shave utilization test.

Sources of Funding: Revision Skincare®

P-42. Knowledge Gaps in Women’s Health: Results of a Survey of Primary Care Providers

Lisa Larkin, MD, FACP, NCMP, II2, Sheryl A. Kingsberg, PhD1, Aylin Madore, MD3, Leanne Walker, MBA2, 1Ob Gyn, University Hospitals, Cleveland, OH; 2reproductive biology, Case Western Reserve University, Cleveland, OH; 3Pri-Med, Boston, MA; 4Ms. Medicine, Cincinnati, OH

Objective: To better understand the knowledge gaps and educational interests in women’s health among primary care clinicians, a survey was conducted to measure clinician knowledge and interest in several women’s health topics. We report on the topics of menopause and sexual health. Design: A survey was distributed via email on 3/16/21 to 5916 primary care clinicians who had participated in a Pri-Med in-person or online activity within the past 24 months. The sponsor (Pri-Med), topic (Women’s Health), survey length (~4 minutes), and incentive (4 x $100 Amazon Gift card for compliers) were revealed in the survey invitation. Two-hundred eighteen clinicians (response rate 3.7%) completed the survey. Clinicians with no female patients or not identifying as primary care were excluded from the analysis. Analysis was conducted on 150 completed surveys including 48 physicians (MDDOs) and 102 nurse practitioners or physician assistants (NPAs). Results: When responding to options about which health conditions they manage, 65% indicated menopause, 63% indicated perimenopause and 53% indicated sexual complaints. MDDOs were significantly more likely than NPAs to indicate treatment options are sometimes (57%) vs 50%) and, although not significantly different, MDDOs were also more likely to manage perimenopause symptoms (75% vs 57%). When provided a list of barriers to managing women’s health conditions, 65% indicated menopause, 63% indicated perimenopause and 53% indicated sexual complaints. MDDOs were significantly more likely than NPAs to indicate treatment options are sometimes controversial (53% vs 28%), p<0.05. When asked how frequently they ask about the following women’s health topics, the following responses were revealed in the survey invitation. Two-hundred eighteen clinicians (response rate 3.7%) completed the survey. Clinicians with no female patients or not identifying as primary care were excluded from the analysis. Analysis was conducted on 150 completed surveys including 48 physicians (MDDOs) and 102 nurse practitioners or physician assistants (NPAs). Results: When responding to options about which health conditions they manage, 65% indicated menopause, 63% indicated perimenopause and 53% indicated sexual complaints. MDDOs were significantly more likely than NPAs to indicate treatment options are sometimes controversial (53% vs 28%), p<0.05. When asked how frequently they ask about...
symptoms of perimenopause or menopause in patients between the ages of 45 and 64, only 53% reported asking more than 50% of the time. MDDOs were more likely to ask about perimenopause or menopause in patients between the ages of 45 and 64, and with age at menopause onset. We used linear and logistic regression, respectively, to determine the relationship between AMH levels and age at menopause.

Conclusion: Very low AMH in

P-43

Associations of antimullerian hormone levels in women in their mid-30s with menopausal symptoms - 15 years later

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Objective: Circulating antimullerian hormone (AMH) levels correlate with antral follicle counts and can predict menopause age of onset. However, it is unknown whether AMH levels in fertile women during their reproductive years, within a few years of a pregnancy, are associated with menopausal symptoms in mid-life. Our objective was to examine the associations of AMH levels in reproductive aged women with menopausal symptoms - 15 years later, and with age at menopause onset. Design: We studied 430 women enrolled in Project Viva, a prospective, longitudinal cohort of women enrolled during pregnancy between 1999-2002 and followed since. We measured AMH levels at a 3-year postpartum visit and participants completed the 11-item Menopause Rating Scale (MRS) - 15 years later. Outcomes included total score and individual item responses on the MRS, adjusted age at menopause. We used linear and logistic regression, and survival analyses, adjusted for race/ethnicity, education, household income, parity, age at menarche, and age at BMI at time of AMH measurement. Results: 75% of participants were white and 80% had a college degree at recruitment. Mean (SD) age at AMH measurement was 47.8 (3.8) years and age at follow-up 52.2 (3.8) years. Mean (SD) AMH level was 2.84 (2.81) ng/mL and mid-life total MRS score was 8.1 (8.5). At time of MRS completion, 51% of the participants had reached menopause by median age 50 years. AMH in the lowest quartile (mean [SD] 0.31 [0.21] ng/mL) was associated with higher odds of severe to moderate vaginal dryness (Odd Ratio: 2.81; 95% CI: 1.05, 7.50) and greater risk of earlier attainment of menopause (Hazard Ratio 13.3; 95% CI 6.0, 29.9) compared to AMH in the highest quartile (mean [SD] 7.04 [2.11] ng/mL). We did not find associations of AMH levels with total MRS score. Conclusion: Very low AMH in the mid-thirties was associated with earlier menopause, and higher likelihood of vaginal dryness -15 years later in this longitudinal cohort. Higher level of AMH, a proxy for greater ovarian reserve, in fertile women following a pregnancy appears to protect against early menopause and the experience of moderate to severe vaginal dryness.

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It just makes me feel a little less alone: A qualitative exploration of the podcast ‘menopause: unmuted’ on women’s perceptions of menopause

Amy K. Brown,1 Candia Halton,2,3 Emma Andrews,4 Mary Edmonds,4 Tina Cartwright1. 1University of Westminster, London, United Kingdom; 2Pfizer Inc, New York, NY; 3Yale University School of Medicine, New Haven, CT

Objective: Many women report inadequate information and support during the menopause transition. Research has been found to be an accessible method to gather knowledge and challenging perceptions of stigmatized topics. The current research aimed to understand the impact of the podcast ‘menopause: unmuted’ on women’s menopause-related knowledge, understanding, and communication practices. ‘menopause: unmuted’, is a five-episode podcast series using immersive storytelling to share the experiences of US women. Alongside these first-hand accounts, a women’s health professional provides a medical perspective to contextualize the women’s stories, offer evidence-based lifestyle advice and address menopause myths. The podcast was funded by Pfizer Inc Women’s Health Team. Design: A diverse sample of 30 women in the United States, aged 40-60 years listened to the podcast series, which focused on menopause stories, before taking part in semi-structured interviews to discuss the impact of the podcast on how they understood and communicated about menopause. The interviews were analyzed thematically. Results: Two overarching themes were identified in the data. A ‘journey of pressure’ theme explores participants’ small percentage of clinicians (9%) reported they are very comfortable, and the level of comfort corresponded with increasing age. Similarly, when asked about comfort prescribing FDA approved and off-label non-HT, 43% reported being very comfortable. MDDOs were more comfortable than NPPAs (29% vs 9% very comfortable, p<0.05). When asked about comfort addressing sexual complaints, only 14% of clinicians reported being very comfortable, while 15% of all clinicians reported being not at all comfortable. When asked about comfort in treating genitourinary syndrome of menopause only 13% of all clinicians reported being very comfortable. A very small percentage of clinicians (5%) reported being very familiar with FDA approved medications for low sexual desire while 53% of all clinicians reported not being at all familiar with these medications. Seventy-two percent of all clinicians are interested in learning more about women’s health. Conclusion: Although most respondents report they ask about and treat menopausal and sexual symptoms in women between the ages of 45 and 64, many are unfamiliar with treatment guidelines, feel they lack training, and are unfamiliar or uncomfortable with HT, FDA approved and off-label non-HT. A very small percentage of clinicians (5%) reported being very familiar with guidelines appears to correspond to clinician age, with MDDOs being very familiar, and 39% reported being not at all familiar. NPPAs were significantly less familiar than MDDOs and over half reported being not at all familiar (51% vs 13%, p<0.05). When asked about comfort addressing sexual complaints, MDDOs (15%) reported being very comfortable. MDDOs were more comfortable than NPPAs (29% vs 9% very comfortable, p<0.05). When asked about comfort addressing sexual complaints, MDDOs (15%) reported being very comfortable. MDDOs were more comfortable than NPPAs (29% vs 9% very comfortable, p<0.05). When asked about comfort addressing sexual complaints, MDDOs (15%) reported being very comfortable. MDDOs were more comfortable than NPPAs (29% vs 9% very comfortable, p<0.05). When asked about comfort addressing sexual complaints, MDDOs (15%) reported being very comfortable. MDDOs were more comfortable than NPPAs (29% vs 9% very comfortable, p<0.05). When asked about comfort addressing sexual complaints, MDDOs (15%) reported being very comfortable. 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Associations of the premenopausal Life’s Simple 7 components and high-density lipoprotein metrics later in life: The SWAN HDL Study

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Objective: Higher level of high-density lipoprotein cholesterol (HDL-C) in midlife women is not only cardioprotective and suggested as an additional hallmark of functional HDL. Novel metrics of HDL may provide further information on its protective cardiovascular effects. The American Heart Association developed the Life’s Simple 7 (LS7) score based on 7 lifestyle components [4 health behaviors (body mass index, physical activity, diet and smoking) and 3 health factors (cholesterol, glucose and blood pressure)] as a measure of cardiovascular health. A higher LS7 indicates a healthier lifestyle. We aimed to assess if higher LS7 score and individual health behavior components before menopause were associated with a cardioprotective HDL metrics profile [higher HDL cholesterol efflux capacity (HDL-CEC), HDL-phospholipids (HDL-PL) levels, and large HDL-particles (HDL-P)], lower small HDL-P and HDL-triglycerides (HDL-Tg) levels, and larger HDL size] later in life. Design: We included 529 women [baseline age 46.4 (2.6) years, 57% White] from the Study of Women’s Health Across the Nation (SWAN) HDL ancillary study who had premenopausal LS7 components and repeated HDL metrics at later visits [mean interval between LS7 and first HDL metric measure: 3.9 (1.4) years]. The LS7 and each health behavior component were categorized as ideal, intermediate or poor. Multivariable linear mixed models were used to analyze the independent associations between each component and each HDL metric. Final models were adjusted for race, education, and baseline age, menopause status, economic hardship, and log C-reactive protein. Results: In final models (Table), ideal LS7 score was associated with lower levels of HDL-Tg, higher levels of HDL-PL, large HDL-P and HDL-C and larger HDL size, all P <0.05. Ideal BMI status was associated with higher HDL-CEC, HDL-PL, large HDL-P, and HDL-C, and with lower HDL-Tg, small HDL-P and larger HDL size, all P <0.05. Increased physical activity was associated with higher HDL-PL, total HDL-P, and HDL-C, and lower medium HDL-P, all P <0.05. Ideal smoking status was associated with lower HDL-Tg. Diet was not associated with any HDL metrics. Conclusion: Ideal premenopausal cardiovascular health behaviors, particularly BMI and physical activity, were related to favorable HDL metrics, such as contents and subclasses, later in life. This indicates that a better premenopausal lifestyle may contribute to a better HDL profile later in life.

Sources of Funding: SWAN HDL study has grant support from NIA (AG058690). SWAN has grant support from the NIH, DHHS, through the NIA, NINR and NIH ORWH (Grants NR040046; AG12505, AG12553, AG012531, AG12553, AG012546, AG12553, AG012545, AG12553). The SWAN Repository (U01AG017191).

Associations between AHA LS7 Score and health behaviors with HDL Metrics

Data presented as standardized HDL metrics. Bonferroni’s adjustment for multiple comparisons applied.

- Diet not included since it was not related to any HDL metrics
- Discriminant in Ideal

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P-47

Utilizing Telehealth to Reinforce Patient Comprehension in Complex Vulvovaginal And Gynecologic Disorders

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Objective: Studies have shown that up to 50% of patients leave their health care provider appointment either not understanding what was told to them, not remembering their diagnosis, or not understanding the prescription medication orders. The Center for Vulvovaginal Health (CVVH) assesses and treats complex vulvovaginal disorders such as vulvodynia, vaginismus and the genitourinary syndrome of menopause. Sexual Medicine and Vulvovaginal Endoscopy are also addressed, as are non-vulvar menopausal symptoms and treatment with menopausal hormone therapy. As a referral center, many women have already seen multiple providers and often present frustrated or disheartened because of lack of diagnosis or previous unsuccessful treatments. Their initial visit is a comprehensive history and directed physical exam with a detailed discussion of treatment options (including imaging if applicable). There is no ‘right’ treatment for this condition and the goal of care is met through a shared decision making process between the patient and their provider.

Design: Studies have shown that up to 50% of patients leave their health care provider appointment either not understanding what was told to them, not remembering their diagnosis, or not understanding the prescription medication orders. The Center for Vulvovaginal Health (CVVH) assesses and treats complex vulvovaginal disorders such as vulvodynia, vaginismus and the genitourinary syndrome of menopause. Sexual Medicine and Vulvovaginal Endoscopy are also addressed, as are non-vulvar menopausal symptoms and treatment with menopausal hormone therapy. As a referral center, many women have already seen multiple providers and often present frustrated or disheartened because of lack of diagnosis or previous unsuccessful treatments. Their initial visit is a comprehensive history and directed physical exam with a detailed discussion of treatment options (including imaging if applicable). There is no ‘right’ treatment for this condition and the goal of care is met through a shared decision making process between the patient and their provider.

Design: All patients are provided a diagram of findings, including multiple possibilities of both suspected diagnosis and treatment strategies. The women are provided with a copy of the diagram and written instructions prior to leaving the office. Despite this, many return 6–12 weeks later without having appropriately initiated treatment due to misunderstanding, inability to schedule testing or incorrect use of medications. Our objective was to determine if, in these patients with complex vulvovaginal or gynecologic disorders, the introduction of a telemedicine follow-up shortly after an initial visit may improve the level of comprehension and increase patient compliance and satisfaction.

Design: Patients who present to the Rutgers Center for Vulvovaginal Health for an initial visit are scheduled for a 2-3 week follow up telehealth visit to review their understanding and satisfaction with their initial visit, ability to obtain medications or other required supportive care, and to address any concerns or questions that may have prevented initiation of treatment. Additionally, as Covid restricts in-person appointment to just the patient, we have appreciated the opportunity to ask questions after knowing and, in many cases, researching their diagnosis. Medication side effects or concerns that may have prevented initiation of treatment can now be resolved. Conclusion: Telemedicine may be an effective short interval follow up opportunity for assessing patient perception and comprehension in women with complex vulvovaginal or gynecologic problems. Trials looking at the impact on this short term follow up on patient satisfaction, compliance and short- and long-term outcomes should be considered.

Sources of Funding: none

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P-48

Design of OASIS-1 and -2: Phase 3 trials to assess the efficacy and safety of elinzanetant for the treatment of vasomotor symptoms related to menopause

JoAnn Pinkerton1, Nicholas Panay2, Cecilia Caetano3, Christian Seitz1, Linze Zumaran4, James A. Simon, MD1,6,7. Obstetrics and Gynecology, UVA Health, Charlottesville, VA; 1Queen Charlotte’s and Chelsea Hospital, London, London, United Kingdom; 2Bayer Consumer Care AG, Basel, Switzerland; 3Bayer AG, Berlin, Germany; 4George Washington University, Washington, DC; 5IntimMedicine Specialists, Washington, DC

Objective: Vasomotor symptoms (VMS) are one of the most common and distressing symptoms associated with menopause and there is an unmet need for additional safe and effective treatment options. Elinzanetant (NT-814) is a first-in-class dual NK-1,3 receptor antagonist which has previously shown efficacy in reducing the frequency and severity of VMS as well as improving patient-reported outcomes. Additionally, as Covid restricts in-person appointment to just the patient, women have appreciated the ability of a support person to attend the telehealth appointment. Conclusion: Telemedicine may be an effective short interval follow up opportunity for assessing patient perception and comprehension in women with complex vulvovaginal or gynecologic problems. Trials looking at the impact on this short term follow up on patient satisfaction, compliance and short- and long-term outcomes should be considered.

Sources of Funding: none

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JoAnn Pinkerton1, Nicholas Panay2, Cecilia Caetano3, Christian Seitz1, Linze Zumaran4, James A. Simon, MD1,6,7. Obstetrics and Gynecology, UVA Health, Charlottesville, VA; 1Queen Charlotte’s and Chelsea Hospital, London, London, United Kingdom; 2Bayer Consumer Care AG, Basel, Switzerland; 3Bayer AG, Berlin, Germany; 4George Washington University, Washington, DC; 5IntimMedicine Specialists, Washington, DC

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Sources of Funding: none
Impacts of sleep fragmentation on perceived sleep quality and daytime sleepiness are not well characterized. Therefore, we studied the impact of parasomnia sleep fragmentation, more PSG-assessed WASO distributed across the sleep episode correlated with poorer subjective sleep quality and increased daytime sleepiness even when PSG-assessed TST was maintained within the recommended range. Poorer sleep quality and increased daytime sleepiness induced by fragmentation are likely explained by the dispersed WASO and shift toward lighter sleep. Estradiol withdrawal, however, did not affect WASO or TST (both p>0.05) and was not associated with subjective sleep quality or sleepiness (both p>0.04).

**Conclusion:** In an experimental model of menopausal sleep fragmentation, more PSG-assessed WASO distributed across the sleep episode correlated with poorer subjective sleep quality and increased daytime sleepiness even when PSG-assessed TST was maintained within the recommended range. Poorer sleep quality and increased daytime sleepiness induced by fragmentation are likely explained by the dispersed WASO and shift toward lighter sleep. Estradiol withdrawal, however, did not affect WASO or TST (both p>0.05) and was not associated with subjective sleep quality or sleepiness (both p>0.04).

**Sources of Funding:** NIH-NIA R01AG035388.

**P-51. Long-term Efficacy of a Nutraceutical Supplement for Promoting Hair Growth in Perimenopausal, Menopausal, and Postmenopausal Women with Self-perceived Thin Hair.** Glynis Ablon, MD, MS, Sheryl Berkowitz, MS, Sophia Kogan, MD, Isabelle Raymond, PhD, Abion Skin Institute & Research Center, Manhattan Beach, CA; Dermatology, University of California Los Angeles, Los Angeles, CA; Research and Innovation, NutraScience Labs, New York, NY.

**Objective:** Hair loss in women increases with age and menopause. The most common diagnosis is female pattern hair loss, also known as androgenetic alopecia, which affects an estimated 40% of women over 60. Hormonal changes of menopause are associated with decreased hair growth rate as well as percentage of hairs and time spent in anagen phase. Here, we present results of a 12-month study assessing the efficacy of a nutraceutical supplement in promoting and improving growth of hairs in perimenopausal, menopausal, and postmenopausal women with self-perceived thinning hair.

**Design:** This was a 6-month randomized, double-blind, placebo-controlled trial with a 6-month open label extension phase, whereupon placebo subjects were crossed over to active treatment. The interim 6-month results were previously reported showing statistically significant improvements in hair growth and shedding compared to placebo. The full 12-month study period, including the extension phase, consisted of six clinic visits at baseline, Day 90, 180, 270 and 360. Phototrichograms were obtained of the target area during each visit via macrophotography for hair count analysis. Hair wash shed count was also conducted at each visit. During each clinic visit, a 2-dimensional standardized global photographs were obtained of the entire head, hair and target region. Two-D images were used to assist a blinded investigator in grading general hair growth and hair quality (texture, shine, dryness, scalp coverage, hair brittleness and overall appearance) improvement from baseline.

**Results:** Sixty (33 active and 27 placebo) per protocol population completed the 12-month trial. Improved and the open label extension phase phase. Improvement was shown in the mean age of 55.2 (4.6) years with no significant differences between groups. Among subjects in the active treatment group for 12 consecutive months, mean total hair counts increased significantly and progressively from Day 0 to 360, culminating in a mean increase of 1.7% (p=0.001, p<0.001) in hair density and 2.6% (p=0.01, p<0.001) in hair density from Day 0 to 360. Global hair assessments also showed progressive improvements throughout the study duration. Global hair growth improvement ratings increased significantly 43% from Day 90 to 180 (p<0.001) and 25% from Day 90 to 360 (p<0.005). Global hair quality improvement ratings significantly increased by 24% from Day 90 to 180 (p<0.05) and by 57% from Day 90 to 360 (p<0.005). A 13% increase was noted from Day 180 to 360 but was not statistically significant. Subjects who were initially in the placebo group had a 5.1% increase in hair growth (p<0.001) and a 39% decrease in shedding (p<0.0001) from Day 180 to 360 when they were switched over to the active treatment. Global hair growth improvement ratings across 6-month of active treatment for this group increased by 30% (p<0.05) versus 11% when they were taking placebo (p>0.05). Global hair quality improvement ratings significantly increased by 40% (p<0.001) versus 11% when they were taking placebo (p>0.05). Daily administration of the nutraceutical supplement was well-tolerated.

**Conclusion:** With progressive aging of society and the fact that women now spend approximately one-third of their lives in the postmenopausal period, research into interventions for menopausal symptoms including hair thinning are needed, especially since therapeutic options are limited. The results of this study showed significant and progressive improvements in hair growth during 6 and 12 months, demonstrating the ability of a nutraceutical supplement to effectively improve hair growth and quality in per-, menopausal and postmenopausal women with thinning hair.

**Sources of Funding:** Nutraceutical Wellness.
P-52. Seeking Healthcare for Perimenopausal Symptoms a Mixed Experience: Findings from the Women Living Better Survey

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Objective: The aim of this research is to evaluate the experiences of women aged 35-55 who consulted a healthcare provider (HCP) about their most bothersome and an exhaustive list of possibly perimenopausal symptoms. We explore the factors which contributed to making interactions with clinicians satisfying or unsatisfying.

Design: The Women Living Better Survey collected data from women ages 35-55 via an e2-question online survey from March to August 2020. After they reported current menstrual patterns, participants were queried about symptoms, their frequency and degree of bother. Respondents then identified their most bothersome symptom and whether they had consulted a HCP about it. Those who responded positively were invited to answer the open-ended question “How did that go?” We used conventional content analysis as described by Hsieh et al. to identify themes in the responses. We divided the responses into three groups and each of the investigators reviewed two of these. Using an open coding approach, each investigator suggested codes reflecting participant’s descriptions of their experiences. In the first round of coding, we evaluated whether the comment was positive or negative then created categories reflecting components of responses and defined these. Content that was neutral or had insufficient information was coded as “not enough information” and excluded from further analysis. Investigators completed iterative reviews of the responses until consensus on the final scheme was reached. Then we analyzed a third set of responses we had not previously seen to determine whether saturation had been reached, and to identify overarching themes in the data.

Results: Of the 2407 women who initiated responding to the survey, 890 said they did not consult a HCP about their most bothersome symptom, while 1024 had, and 493 did not answer the question. Of the 1024 who answered “Yes”, 966 responded to the open-ended question “How did that go?” and 57 consulted a provider but provided no additional information. Of the respondents who gave input, 49% shared what we judged negative experiences. 18% of experiences seemed positive and 32% did not provide enough content to code. Responses reflecting a positive affect were collapsed into four themes; 1) Validating Experiences: being heard and supported, an indication that symptom(s) were “normal”, typical for age and perimenopause status; 2) Matching Explanatory Models: a shared view between provider and patient of the cause of symptom and rationale for addressing; 3) Supported by a Team: having multiple providers involved in care and 4) Shared Decision Making: engaging in shared treatment-planning or decision-making with their HCP. We identified 4 negative themes: 1) Invalidating Experiences: having concerns dismissed, being told they couldn’t have being symptoms related to perimenopause because of age or cycle regularity or being told “that’s just how it is.” 2) A Mismatch in Expectations: inconsistency between patients’ expectations or their explanatory model of their experiences and those of the HCPs, seeking but not receiving an explanation of the root cause of their symptoms, receiving what they perceived to be incorrect information about a remedy offered or receiving conflicting information from different providers; 3) Barriers to treatment: the need to see multiple providers, treatment perceived as too expensive. 4) Not feeling helped: received no helpful advice, told that nothing could be done, had testing but results were not helpful, offered a treatment that wasn’t helpful. Conclusion: Conclusions: Women consulting healthcare providers for perimenopausal symptoms during perimenopause responded with both positive and negative comments in the WLBY Survey. Negative experiences were more frequent but both positive and negative comments could be classified into a small number of patient-provider interaction types. Awareness of the character of experiences that were either satisfying or unsatisfactory to patient and provider interactions are key to reveal opportunities for both HCPs and patients to improve health care visits related to perimenopause.

Sources of Funding: None

P-53. Comparing Urinary Estrone Concentrations of Women on Transdermal Estradiol Patches, Gels, or Creams

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Objective: Transdermal (TD) E2 patches and gels are the most commonly used types of TD E2; however, some providers choose to treat select patients with compounded TD E2 creams. A need exists to understand the comparative effects of these 3 different TD delivery systems given their complex and differing pharmacokinetics and the lack of data to support the efficacy of compounded E2 products. E2 levels are most often measured in serum; but these values may not be the most accurate, especially since creams and gels show significant variation in E2 levels throughout the day, and serum only represents 1 moment in time. In contrast, urinary E2 levels may provide a representation of serum E2 levels over a 24-hour period. The aim of this study was to compare the effects of increasing doses of E2 patches, gels, and creams on urinary E2 in postmenopausal women. Design: This study utilized data from a retrospective observational study, Precision Analytical Retrospective Data Correlation (NCT04305093). The dataset from this larger study contained measures of increasing doses of TD E2 patches, gels, and creams, which were divided into 3 dose range categories to facilitate comparison. Comparisons between groups were made by Kruskal-Wallis 1-way ANOVA and the nonparametric Jonckheere-Terpstra (JT) trend test. Results: Analysis of the data demonstrated that for patients in the patch and gel groups, E2 concentrations were similar within the defined dose ranges and the E2 concentrations for each of the 2 formulations showed an ordered trend with dose-proportional increases (P<0.0001 for patches and P<0.0001 for gels). E2 concentrations for patients using creams also showed an ordered trend for dose-proportional increases (P<0.0001); however, the concentrations were lower than those observed with patches and gels in the same dose ranges. Conclusion: Our results demonstrated the differences in urinary E2 profile changes in response to increasing doses of E2 patches, gels, and creams. These results suggest that the validated dried urine assay used in this study may provide an attractive alternative or complement to serum when monitoring TD E2 therapy. Future studies utilizing this assay may help illuminate the degree to which these measurements correlate with clinical improvement, which could lead to improved precision and personalization of MHT.

Sources of Funding: Precision Analytical

P-54. Monitoring Estradiol Patch Therapy with a Validated Dried Urine Assay

Mark Newman, MS1, Bryan P. Mayfield, PharmD-D1, Doreen Saltiel, MD, JD,2 Frank Stanczyk, PhD,1 Precision Analytical, McMinnville, OR; 2Department of Pharmacy Practice, Texas Tech University Health Sciences Center, Lubbock, TX; 1Obstetrics and Gynecology, and Preventive Medicine, University of Southern California Keck School of Medicine, Los Angeles, CA

Objective: Estradiol (E2) patches are one of the most commonly used menopausal hormone therapy (MHT) formulations, and, as a result, are also one of the most studied. Many of these studies use serum testing, the most common tool for monitoring therapy in both research and clinical practice; however, a great deal of intra- and inter-subject variability exists in serum levels. Urine may provide a representation of serum levels over a 24-hour period while being non-invasive and easier to collect. The aim of this study was to evaluate a multi-spot, dried urine assay to determine if it may be a viable option for monitoring MHT administered via transdermal (TD) E2 patch. Design: This study utilized data from a retrospective observational study, Precision Analytical Retrospective Data Correlation (NCT04305093). The dataset from this larger study contained measures of multiple urinary markers obtained via a 4-spot dried urine sampling method. For this analysis, we used a subset of the data that included only the urinary E2 profiles of premenopausal women (n = 16308), postmenopausal women on non-MHT (n = 17827), or postmenopausal women using TD E2 patches (n = 1350). Urinary E2 was measured using gas chromatography/tandem mass spectrometry (GC-MS/MS) with a lower limit of quantification of 0.092 ng/mL. The nonparametric Jonckheere-Terpstra (JT) trend test was used to assess for ordered differences across groups to determine if expected dose-proportional increases in urinary E2 excretion were seen with increasing doses of TD E2 patches. Results: Increasing doses of E2 patches resulted in dose-proportional increases of median (IQR) E2 concentrations, which were 0.35 ng/mg-Cr (0.20, 0.73) for postmenopausal women on no therapy, 0.97 ng/mg-Cr (0.65, 1.59) for women on a 0.025 mg patch, 1.34 ng/mg-Cr (0.88, 1.90) for women on a 0.0375 mg patch, 1.70 ng/mg-Cr (1.11, 2.52) for women on a 0.05 mg patch, 2.70 ng/mg-Cr (1.55, 4.15) for women on a 0.075 mg patch, and 3.60 ng/mg-Cr (2.06, 5.36) for women on a 0.1 mg patch. A stepwise, dose-proportional, ordered trend existed for E2 with each increase in dose of the E2 patch (JT trend test all with p<0.0001). Conclusion: This study demonstrated that a validated dried urine assay is a viable method of monitoring changes in women’s urinary E2 profiles in response to MHT with differing doses of TD E2 patches. Because the urine collection process is simpler and urinary E2 potentially represents serum E2 levels over a 24-hour period, the dried urine assay used in this study may provide an attractive alternative or complement to serum for exploring not only the changes in the urinary estrogen profile but also the efficacy and effectiveness of TD E2 patches.

Sources of Funding: Precision Analytical, Inc.
P-55.
Monitoring Transdermal Estradiol Gel Therapy with a Validated Dried Urine Assay
Mark Newman, MS\(^1\), Bryan P. Mayfield, PharmD\(^1,2\), Doreen Saltiel, MD, JD\(^2\), Frank Staniczek, PhD\(^3\). Department of Pharmacy Practice, Texas Tech University Health Sciences Center, Lubbock, TX; \(^2\)Precision Analytical, McMinnville, OR; \(^3\)Departments of Obstetrics and Gynecology, and Preventive Medicine, University of Southern California Keck School of Medicine, Los Angeles, CA

**Objective:** Transdermal (TD) estradiol (E\(_2\)) gel is a commonly used menopausal hormone therapy (MHT). In research studies investigating gel use, serum is often used to measure E\(_2\) levels, but the results only represent a moment in time during phlebotomy. In contrast, urine may provide a representation of serum E\(_2\) levels over a 24-hour period, and it is non-invasive and easier to collect. The aim of this study was to evaluate a dried urine sampling method to determine if it may be a viable option for monitoring MHT administered via TD E\(_2\) gel. **Design:** This study utilized data from a retrospective observational study, Precision Analytical Retrospective Data Correlation (NCT04305093). The dataset from this larger study contained measures of multiple urinary markers obtained via a 4-spot dried urine sampling method. For this analysis, we used a subset of the data that included only the urinary E\(_2\) profiles of premenopausal women (n = 16308), postmenopausal women not on menopausal hormone therapy (n = 17827), and postmenopausal women using TD E\(_2\) gel (n = 261). Urinary E\(_2\) was measured using gas chromatography/tandem mass spectrometry (GC-MS/MS) with a lower limit of quantification of 0.092 ng/mL. Doses were divided into 3 ranges: low dose (0.25 mg, 0.26 mg, 0.375 mg, 0.5 mg, and 0.52 mg), mid-dose (0.75 mg and 1 mg), and high dose (1.5 mg, 2.0 mg, 2.25 mg, and 3 mg). The nonparametric Jonckheere-Terpstra (JT) trend test was used to assess for ordered differences across groups to determine if dose-proportional increases in urinary E\(_2\) were seen with increasing doses range of TD E\(_2\) gel. **Results:** Increasing dose ranges of TD E\(_2\) gel resulted in dose-proportional increases of median (IQR) concentrations of E\(_2\) which were 0.35 ng/mg-Cr (0.20, 0.73) for women on no therapy, 1.51 ng/mg-Cr (0.71, 2.49) for women on low dose TD E\(_2\) gel, 2.04 ng/mg-Cr (1.12, 3.63) for women on mid dose TD E\(_2\) gel, and 2.70 ng/mg-Cr (1.15, 4.60) for women on high dose TD E\(_2\) gel. A stepwise, dose-proportional, ordered trend existed for urinary E\(_2\) with each increase in dose of TD E\(_2\) gel (p < 0.001). **Conclusion:** This large population-based study conducted using real-world data demonstrated that an assay performed with dried urine samples is a viable method of monitoring changes in women’s urinary E\(_2\) profiles in response to MHT with differing dose ranges of TD E\(_2\) gel. These results suggest that the validated dried urine assay used in this study may provide an attractive alternative to serum for exploring not only the changes in the urinary E\(_2\) profile but also the efficacy and effectiveness of TD E\(_2\) gels.

**Sources of Funding:** Precision Analytical

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P-56.
The association between a history of childhood maltreatment and depression in midlife women
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**Objective:** The objective of the current study was to characterize the influence of early life childhood maltreatment and incident depression among women experiencing bothersome menopausal symptoms. **Design:** Women were prospectively recruited from two university-affiliated specialty menopause clinics. In addition to basic demographics, participants were asked to complete the Childhood Trauma Questionnaire (CTQ), the Center for Epidemiological Studies—Depression (CES-D) scale and the Greene Climacteric Scale. A general linear model (GLM) was used to evaluate the impact of childhood trauma (as measured by the CTQ) and other clinical variables on current depressive symptoms (CES-D scores) and climacteric symptoms (GCS scores). Secondary analyses were done to evaluate the impact of the CTQ scores on the frequency of daytime VMS and night sweats. **Results:** Findings from this cross-sectional study indicate that adverse childhood experiences, as measured using the CTQ, were highly prevalent among women seeking care for bothersome menopausal symptoms (66%). Further, a greater score on the CTQ was significantly associated with higher CES-D scores, as well as with a greater burden of menopausal symptoms, after adjusting for confounding. **Conclusion:** Our findings lend support to the growing body of literature suggesting that early life stress affects mental health well into adulthood.

**Sources of Funding:** not applicable

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P-57.
Effect of Menopausal Symptom Treatment Options on Palpitations: A Systematic Review
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**Objective:** Menopausal palpitations are reported by 20% to 44% of perimenopausal women and 16% to 54% of postmenopausal women as sensations of skipped, missed, or exaggerated heartbeats. Menopausal palpitations distress has been associated with more severe insomnia, and worse depressive symptoms and menopausal quality of life. Similar to untreated vasomotor symptoms, untreated palpitations may lead to poorer health, lower work productivity, and greater healthcare utilization and costs. To date, evidence about the effect of menopausal symptom treatment options on palpitations have not been reviewed and summarized to create recommendations for practice. The objective of this systematic review was to provide an overview of the effects of menopausal symptom treatment options on menopausal palpitations. **Design:** A systematic review was carried out to identify articles that were full-length, peer-reviewed, English-language, randomized, non-randomized, controlled, and uncontrolled trials of menopausal symptom therapies that included data on palpitations as an outcome or adverse effect. Searches were conducted in PubMed, CINAHL, and PsyCInfo in May 2020 to identify articles meeting pre-specified inclusion criteria. **Results:** Of the 670 unique articles identified, 37 were included in the review. Palpitations were studied as an outcome in 89% of articles and an adverse effect in 11% of articles. Articles were mostly grade II/III evidence due to their design and/or small sample sizes. Treatments included (1) drug therapies (hormone therapy (n=14), SSRIS/SNRIs (n=3), antagonists (n=1), and SNRI (n=3)) (2) non-drug therapies (supplements – isoflavones and other phytoestrogens (n=5), dietary/behavioral (n=5), and exercise (n=4)) and (3) psychological intervention (n=2), and auricular acupuncture (n=1)). There was no level 1 efficacy/ effectiveness data for any intervention and level II evidence was sometimes equivocal or negative. **Conclusion:** Based on available evidence, no therapy can be recommended in decreasing/eliminating palpitations. Only hormonal therapy can be recommended for control of palpitations and further research is recommended to evaluate other treatments from the reviewed articles cannot be recommended at this time. Additional well-designed randomized controlled trials focusing on menopausal palpitations as the outcome are needed to advance the field.

**Sources of Funding:** This publication was made possible with support of the Indiana University Ethel Clarke Fellowship and a Collaboration in Translational Research Pilot Grant (Carpenter/Tisdale MPI) from the Indiana Clinical and Translational Sciences Institute funded, in part by Grant Number UL1TR000529 from the National Institutes of Health, National Center for Advancing Translational Sciences, Clinical and Translational Sciences Award. Dr. Sheng is supported as a postdoctoral fellow under ST32CA117865 (V. Champion, PI). The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health.

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P-58.
Review of Menopausal Palpitations Measures
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**Objective:** Palpitations are reported commonly by women during the menopause transition as skipped, missed, irregular and/or exaggerated heartbeats or heart pounding. However, much less is known about palpitations than other menopausal symptoms such as vasomotor symptoms. It is unclear whether and to what degree various symptom measures of palpitations have been evaluated in clinical trials and are recommended for clinical use. **Design:** A systematic review was to provide an overview of the effects of menopausal symptom measures of palpitations. **Results:** Of the 670 unique articles identified, 37 were included in the review. Palpitations were studied as an outcome in 89% of articles and an adverse effect in 11% of articles. Articles were mostly grade II/III evidence due to their design and/or small sample sizes. Treatments included (1) drug therapies (hormone therapy (n=14), SSRIS/SNRIs (n=3), antagonists (n=1), and SNRI (n=3)) (2) non-drug therapies (supplements – isoflavones and other phytoestrogens (n=5), dietary/behavioral (n=5), and exercise (n=4)) and (3) psychological intervention (n=2), and auricular acupuncture (n=1)). There was no level 1 efficacy/ effectiveness data for any intervention and level II evidence was sometimes equivocal or negative. **Conclusion:** Based on available evidence, no therapy can be recommended in decreasing/eliminating palpitations. Only hormonal therapy can be recommended for control of palpitations and further research is recommended to evaluate other treatments from the reviewed articles cannot be recommended at this time. Additional well-designed randomized controlled trials focusing on menopausal palpitations as the outcome are needed to advance the field. **Sources of Funding:** This publication was made possible with support of the Indiana University Ethel Clarke Fellowship and a Collaboration in Translational Research Pilot Grant (Carpenter/Tisdale MPI) from the Indiana Clinical and Translational Sciences Institute funded, in part by Grant Number UL1TR000529 from the National Institutes of Health, National Center for Advancing Translational Sciences, Clinical and Translational Sciences Award. Dr. Sheng is supported as a postdoctoral fellow under ST32CA117865 (V. Champion, PI). The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health.
dimensions of palpitations are being assessed and reported. The objective of this review was to integrate evidence on menopausal palpitations measures. **Design:** An integrative review was conducted of English-language, full-length, peer-reviewed, descriptive research studies pertaining to palpitations in menopausal women published prior to May 19, 2020. Articles were de-duplicated and scanned in two stages for their inclusion by independent reviewers. Data extraction was also conducted by independent reviewers for verification of accuracy. **Results:** Of 1754 identified citations, 6747 unique references were identified, and of these, 110 met criteria for the review. Pullpitations were measured with standardized instruments (76%) or other methods (24%), such as unspecified self-administered questionnaires or interviews. Measures included the Menopause Rating Scale (n=69), unspecified self-administered questionnaires (n=14), interviews (n=10), the Clamp Kupperman Menopause Index (n=8), Kacmarz menopause-specific questionnaire (n=2), Simplified Menopause Index (n=2), unspecified (n=2), Cardiovacular Symptom Index (n=1), Menopausal-specific Quality of Life (n=1). Studies adapted from menopausal symptom list (n=1), or Women's Health Questionnaire (n=1). All measures used a single item to assess palpitations. In all articles, palpitations were measured along with other menopausal symptoms. Heterogeneity and inconsistencies in the wording of measurement items, recall periods, and response options were observed even when standardized measures were used. For example, the Menopause Rating Scale item varied (e.g., “heart discomfort,” “palpitations,” “cardiac discomfort,” or “cardiac symptoms (palpitations, racing heartbeat, irregular beats, tightness in chest)” and response options varied from 1 to 10 to various Likert-response options. In addition, only 10% (7/69) of articles reported recall periods and these varied from 1 week to 1 month. Different response options measured different concepts, such as discomfort, heart rate sensations, and heartbeat sensations. Most articles used uni- or bi-dimensional measures (pre- vs. post). Only seven (6.4%) articles measured other palpitations symptom dimensions, such as distress of bother, frequency, or interference/impact. No articles addressed temporal pattern, duration, quality, degree of unpredictability, perceived control over, symptom representations, or electrocardiogram findings. **Conclusion:** Although palpitations have been assessed in menopausal women, nearly all assessments have been limited to a single item. There was a lack of consistency in item wordings and response options, limited information on recall periods, and a limited number and type of symptom dimensions measured. Findings suggest that efforts should be used to standardize conceptual and operational definitions of menopausal palpitations and (2) develop a user-friendly, conceptually clear, and psychometrically sound measure of menopausal palpitations. **Sources of Funding:** Funded by an Indiana University Ethel Clarke Fellowship and a Collaboration in Translational Research Pilot Grant (Carpenter/Tisdale, MPI) from the Indiana Clinical and Translational Sciences Institute and Grant Number UL1TR002529 from the National Institutes of Health, National Center for Advancing Translational Sciences, Clinical and Translational Sciences Award. Dr. Sheng is supported as a postdoctoral fellow under ST32CA117865 (V. Champion, PI). The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health.

P-59. A Comparison of Stress, Symptoms, Physical Activity, and Adiposity Before and During the Pandemic

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**Objective:** This study of hot flashes began in October 2019 and was brought to a halt by the COVID pandemic in March 2020. The study started again in October 2020 and is ongoing. Anecdotally, participants described how their eating habits, exercise patterns, levels of stress, and social interactions changed due to COVID precautions. The primary objective of this analysis is to evaluate the onset of flibanserin’s treatment effect in naturally postmenopausal women with HSDD across the 6 subdomains of the FSFI. **Design:** A post-hoc analysis was conducted using FSFI data from a randomized, controlled, double-blind trial of flibanserin in 895 naturally postmenopausal women with HSDD (Flibanserin, n=432; placebo, n=463) who had at least one on-treatment efficacy assessment. The FSFI is a validated, 19-item self-report questionnaire comprising 6 subdomains of sexual functioning: desire, arousal, lubrication, orgasm, satisfaction, and pain. Each subdomain has a maximum score of 6 and higher scores indicate better sexual functioning. For each subdomain, change from baseline at each assessment visit (4, 8, 16, and 24 weeks) was calculated as the least squares mean difference. Comparisons between flibanserin and placebo groups were performed using analysis of covariance. **Results:** Postmenopausal patients treated with flibanserin had significantly greater sexual desire and arousal scores than those treated with placebo at Week 4 and at every assessment timepoint thereafter. By Week 8, patients in the flibanserin group had significantly higher scores for all FSFI subdomains compared to the placebo group. This treatment effect was maintained at Week 24 for all subdomains except for pain. **Conclusion:** Results from the post-hoc analysis indicate that postmenopausal women treated with Flibanserin experienced improved sexual function compared to those treated with placebo with regard to sexual desire, arousal, lubrication, orgasm, and satisfaction. This improvement was maintained over the entire course of treatment. These findings are consistent with the findings from the previously reported clinical trial conducted in premenopausal women and suggest that flibanserin treatment of postmenopausal women was associated with improvement of multiple aspects of sexual function in addition to sexual desire. **Sources of Funding:** Sprout Pharmaceuticals
Objective: To characterize osteoporosis (OP)-related treatment rates and healthcare costs of patients with OP or fragility fracture by physician specialty making their initial OP or fracture diagnosis. Design: Two samples were identified in the IBM MarketScan Commercial and Medicare Databases among women 50 years of age or older; women with newly diagnosed OP (index date = first diagnosis) without prior OP-related treatment in the preceding year and women with a fragility fracture between 1/1/2013 and 6/30/2018. Patients were categorized based on the physician specialty making the initial diagnosis of OP or fracture and healthcare costs during the 12-month follow-up were reported. Results: 216,988 patients (mean age 67) with OP and 108,965 patients (mean age 69) with fragility fracture met the inclusion criteria. For OP patients, the initial diagnosis was made most often by family practice (25%) and internal medicine (25%) specialists. Orthopedic (37%), family medicine (17%), and emergency medicine (12%) physicians most often made the initial diagnosis of the fragility fracture. The proportion of patients receiving OP-related treatment varied by physician specialty from 15% to 44% for OP patients and from 9% to 32% for fragility fracture patients (Table). For patients diagnosed with OP, rheumatologists, endocrinologists, and obstetrics & gynecology (OB/GYNs) had the highest treatment rates, while emergency medicine physicians had the lowest rate. Patients whose initial fragility fracture was diagnosed by orthopedists had the lowest OP-related treatment rate (14%) as compared with other specialties. Healthcare costs for OP patients whose diagnosis was made by OB/GYN and for fragility fracture patients whose diagnosis was made by orthopedics. Conclusion: The initial diagnosis of OP and fragility fracture tended to be made by different physician specialties. Both OP-related treatment rates and healthcare costs differed based on the specialty where the first diagnosis of OP or fracture was made. Though there was a lot of heterogeneity between physician specialties, fewer than half of patients were treated during the 1 year follow-up. Further studies are needed to determine whether these differences reflect differences in attitude or knowledge about OP-related treatment or the assigned roles of different specialties in the medical management of OP.

OP = osteoporosis; N/A = non-applicable

P-61. Treatment Rates and Healthcare Costs of Osteoporosis and Fragility Fracture Patients by Site of Care: A Real-World Data Analysis
Andrea Singer1, Michael McClung2, Steven Goldstein3, Risa Kagan4, Oth Tran5, Cynthia D. Morrow6, Michele McDermott2, Alon Yehoshua1, Amgen Inc, Thousand Oaks, CA; 2Georgetown University Medical Center, Washington, DC; 3NYU Grossman School of Medicine, New York, NY; 4University of California San Francisco, San Francisco, CA; 5East Bay Medical Foundation, Berkeley, CA; 6Osteoporosis Center, Portland, OR; 7IBM Watson Health, Cambridge, MA; 8Australian Catholic University, Melbourne, VIC, Australia; 9MedStar Georgetown University Hospital, Washington, DC

Objective: To characterize osteoporosis (OP)-related treatment rates and healthcare costs of patients with OP or fragility fracture by specialty making their initial OP or fracture diagnosis. Design: Two samples were identified in the IBM MarketScan Commercial and Medicare Databases among women 50 years of age or older; women with newly diagnosed OP (index date = first diagnosis) without prior OP-related treatment in the preceding year and women with a fragility fracture between 1/1/2013 and 6/30/2018. Patients were categorized based on the site of care for their initial diagnosis of OP or fracture affected treatment and healthcare costs. The proportion of patients receiving OP-related treatment varied by clinical site of care from 5% to 32% for OP patients and from 9% to 32% for fragility fracture patients (Table). Annual healthcare costs were lowest for patients whose initial diagnosis of OP or fracture was made at an outpatient office visit. Annual healthcare costs were highest for patients whose initial diagnosis of OP or fragility fracture was made at an inpatient setting. Conclusion: The clinical site of care for the initial diagnosis of OP or fragility fracture affected treatment and healthcare cost. Though there was a lot of heterogeneity between groups, in all settings, less than a third of patients were treated during the initial 1 year follow-up. Further studies are needed to determine whether these differences reflect differences in attitude or knowledge about OP treatment or healthcare experiences at various clinical sites of care in the medical management of OP.

P-62. Treatment Rates and Healthcare Costs of Osteoporosis and Fragility Fracture Patients by Site of Care: A Real-World Data Analysis
Andrea Singer1, Michael McClung2, Steven Goldstein3, Risa Kagan4, Oth Tran5, Cynthia D. Morrow6, Michele McDermott2, Alon Yehoshua1, Amgen Inc, Thousand Oaks, CA; 2Oregon Osteoporosis Center, Portland, OR; 3MedStar Georgetown University Hospital, Washington, DC; 4University of California San Francisco, San Francisco, CA; 5IBM Watson Health, Cambridge, MA; 6Australian Catholic University, Melbourne, VIC, Australia

Objective: To characterize osteoporosis (OP)-related treatment rates and healthcare costs of patients with OP or fracture by specialty making their initial OP or fracture diagnosis. Design: Two samples were identified in the IBM MarketScan Commercial and Medicare Databases among women 50 years of age or older; women with newly diagnosed OP (index date = first diagnosis) without prior OP-related treatment in the preceding year and women with a fragility fracture between 1/1/2013 and 6/30/2018. Patients were categorized based on the site of care for their initial diagnosis of OP or fracture affected treatment and healthcare costs. The proportion of patients receiving OP-related treatment varied by clinical site of care from 5% to 32% for OP patients and from 9% to 32% for fragility fracture patients (Table). Annual healthcare costs were lowest for patients whose initial diagnosis of OP or fracture was made at an outpatient office visit. Annual healthcare costs were highest for patients whose initial diagnosis of OP or fragility fracture was made at an inpatient setting. Conclusion: The clinical site of care for the initial diagnosis of OP or fragility fracture affected treatment and healthcare cost. Though there was a lot of heterogeneity between groups, in all settings, less than a third of patients were treated during the initial 1 year follow-up. Further studies are needed to determine whether these differences reflect differences in attitude or knowledge about OP treatment or healthcare experiences at various clinical sites of care in the medical management of OP.

Table

<table>
<thead>
<tr>
<th>Site of Care</th>
<th>OP Dx (N=216,988)</th>
<th>Fracture Px (N=109,825)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inpatient Setting</td>
<td>3.16</td>
<td>15.91</td>
</tr>
<tr>
<td>Outpatient Setting</td>
<td>28.27</td>
<td>32.09</td>
</tr>
<tr>
<td>Emergency Room</td>
<td>14.51</td>
<td>27.64</td>
</tr>
<tr>
<td>Total</td>
<td>39.94</td>
<td>75.64</td>
</tr>
</tbody>
</table>

P-63. Polycystic ovary syndrome and female sexual dysfunction: Is there an association?
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Objective: Female sexual function is complex and can be influenced by multiple determinants including physical and emotional health, hormonal status, medication use, and relationship factors. While female sexual dysfunction (FSD) is prevalent and a source of significant distress in affected women, it is often underdiagnosed and undertreated. Women with polycystic ovary syndrome (PCOS) may be at greater risk of FSD as they are often affected by conditions that can negatively influence sexual function, including greater odds of having obesity, body-image related concerns and mood disorders. Moreover, treatments used for PCOS such as oral contraceptives can have a negative impact on sexual function. Limited data exist regarding associations between PCOS and sexual function. We sought to investigate associations between self-reported history of PCOS and female sexual function in pre-, peri- and postmenopausal women. Design: This cross-sectional study utilizing the Data Registry on Experiences of Aging, Menopause and Sexuality (DREAMS) was performed in women over the age of 20 years who presented to women’s clinics at Mayo Clinic in Minnesota, Arizona and Florida between May 2015 and December 2019. Women self-reported history of PCOS and completed the Female Sexual Function Index (FSFI) and Female Sexual Distress Scale-Revised (FSSD-R) for assessment of sexual function as part of their clinic visits; only women who reported being sexually active in the prior 4 weeks were included. The association between a prior diagnosis of PCOS and the presence of FSD, defined by the combined diagnostic thresholds defined for the FSFI and FSSD-R questionnaires, was assessed using logistic regression. The results were adjusted for multiple variables known to impact female sexual function including age, body mass index, partner satisfaction, menopause status, depression, anxiety, and current use of menopausal hormone therapy. Results: Responses from 5,294 women with a mean age of 51.4 years were included in the analysis. The majority were white (95.2%), partnered (85.5%), educated (92.6% with some college education) and postmenopausal (61.7%). A history of PCOS was reported by 254 (4.8%) women. Women with PCOS were more likely than women without PCOS to have obesity (40.8% vs 20.4%, p<0.001) and to report anxiety (48.5% vs 31.4%, p<0.001), depression (57.7% vs 36.2%, p<0.001), relationship distress (32.1% vs 25.3%, p=0.019) and FSD (FSFI < 26 and FSSD-R > 11) (62.6% vs 55.9%, p=0.036). After multivariable analysis, factors associated with a higher risk of FSD included postmenopausal status (OR 2.03, 95% CI 1.58-2.62; p=0.002), anxiety (OR 1.60, 95% CI 1.36-1.88; p<0.001), depression (OR 1.73, 95% CI 1.48-2.03; p<0.001), relationship distress (OR 2.12, 95% CI 1.82-2.47; p<0.001). However, self-reported history of PCOS was no longer associated with a significant risk for FSD in multivariable analysis (OR 1.07, 95% CI 0.78-1.46; p=0.68). Conclusion: Women who self-reported PCOS were
P-64. Clinical effect and Metabolic Safety of Medically-Supervised Ketogenic Therapy in Midlife Women with Major Depressive Disorder – A protocol for a pilot open-label study

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Objective: To investigate the efficacy of Medically-Supervised Ketogenic Therapy (MSKT) in reducing severity of depressive and vasomotor symptoms in midlife women suffering from Major Depressive Disorder (MDD) and to evaluate the metabolic safety of this intervention. Design: Proof-of-concept, open-label single arm clinical trial. Sample: Thirty women aged 45-55 years in menopause transition or early postmenopausal years (stages 2-3 of the STAGEON model) with MDD (DSM-5 criteria) will be enrolled in a 12-week (24-week induction phase) study. Participants will be considered eligible despite being on antidepressant medications if receiving a stable dosage for at least 6 weeks prior to study entry. Intervention: Patients will be assessed for maintaining weight during this trial and meal prescription will be developed based on this assessment. A registered dietitian (RD) will assess diet history, anthropometrics and prescribe a MS-KT intervention that will be started at low ketogenic ratio and slowly titrate to a tolerable isocaloric ketogenic diet prescription. Titration will involve gradual reduction in carbohydrate with concurrent increase in fat intake that will be offered in a calorie prescribed meal plan with goal to offer calories to support weight maintenance during the study. Meal plans, food exchange lists and recipes will be provided to patients along with regular RD support & KetoSuite software support. Meal plans will be adjusted to support flexibility for patient food preferences, budget and cooking ability. Food diaries will be used to register daily intake of solid and fluids throughout the study. The adherence to the intervention and proper achievement of the ketotic state will be checked weekly through a food diary and capillary blood and urine ketone assessment. Only those showing adherence to the MSKT and testing positive for ketones during the run-in phase will be further enrolled in the maintenance phase. Most procedures will take place virtually due to the COVID-19 pandemic. Outcomes: Primary outcome measure: Changes in depressive symptom severity evaluated by the Montgomery-Asberg Depression Rating Scale (MADRS) total scores. Secondary outcome measures include changes in anxiety in the greater nearly universal (GHQ-12) and depression (PHQ-9) scores, quality of life (SF-36v2) and anthropometric-related symptoms (Greene Climacteric Scale) from baseline to endpoint. Ketonuria will be weekly assessed. Clinical assessments will occur at baseline (week 0) and at weeks 2, 4, 8, 12 and 16; metabolic profile (serum fasting glucose and serum lipids), serum electrolytes, vitamins and urea and creatinine levels, bone density biomarkers (CTX-1 and PIPN – procollagen type I N-propeptide) and hormone profile (Folic acid-stimulating hormone [FSH] and estradiol [E2]) levels will be evaluated at baseline and at the endpoint. Treatment will be discontinued in case of: 1) unacceptable weight loss; 2) serious treatment-emergent symptoms; 3) severe worsening of depression; 4) protocol non-adherence. Results: The study has been approved by the Queen’s University Institutional Review Board and the project has received funds from the Canadian Menopause Society (2020 Canadian Menopause Society/Pfizer Research Award) and the Brain and Behavior Research Foundation (2020 BBRF Early Investigator Award). Recruitment is ongoing. Conclusion: This pilot study has the potential to open new avenues for research on the efficacy and safety of dietary interventions for the treatment of symptomatic midlife women with depression.

Sources of Funding: Canadian Menopause Society/Pfizer and BBRF Early Investigator Award


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Objective: To evaluate the effects of dietetic or nutraceutical interventions on depressive symptoms among women during the menopause transition and postmenopausal years. Design: A systematic review registered with the International Prospective Register of Ongoing Systematic Reviews (PROSPERO) on January 2020 (CRD42021231479), reported according to the PRISMA statement guidelines. We conducted a systematic review of databases (PubMed, Cochrane and Embase), searching for articles indexed from inception until January 31st, 2021; primary focus was on dietetic or nutraceutical interventions (low sodium-DASH diet, caloric restriction, and low-fat diet) and 32 studies with nutraceuticals (nutritional supplements, natural extract, herbal products and vitamins). Of those, all dietary interventions and 85.7% of the nutraceuticals showed positive outcomes (i.e., improvements in depressive symptoms) when compared to placebo or control intervention. Moreover, there were favorable outcomes among women with diagnosis of MDD, as 2 out of 3 studies showed improvement compared to control conditions. There was significant heterogeneity among studies with respect to sample sizes, duration of intervention and rating scales used as outcomes measures.

Conclusion: Several nutritional approaches have been investigated for the management of symptomatic, midlife women. Preliminary results are promising, with most studies indicating favorable outcomes; yet, they should be interpreted with caution given the heterogeneity of interventions and methodologies applied to date.

Sources of Funding: Partially funded by grants/awards from the Canadian Menopause Society and the Brain and Behavior Research Foundation.

P-66. Correlation of Remotely Monitored Sleep, Exercise and Heart Rate by Fitbit and Patient-Reported Psychometric Outcomes in Menopausal Women with Stable Ischemic Heart Disease

Benita Tjo, MD, Gillian Gresham2, Sandy Joung3, Corey Arnold4, Garth Fuller5, William Speier2, Mitra Mastali2, Irene van den Broek2, Janet Wei6, Brennan Spiegel7, Jennifer Van Eyk2, Noel Bairey Merz2, Chisandra Shufelt2, 1Barbra Streisand Women’s Heart Center, Cedars-Sinai Medical Center, Los Angeles, CA; 2Cedars-Sinai Medical Center, Los Angeles, CA; 3Computational Diagnostics Lab, University of California Los Angeles, Los Angeles, CA

Objective: Cardiovascular disease remains the leading cause of death in women and risk increases at menopause. Patients with ischemic heart disease (IHD) may have anaemia, sleep disturbance and depression that limit quality of life. Remote patient monitoring with consumer-grade biosensors is increasingly utilized, but the clinical implications of collected data are poorly understood. The study aims to evaluate associations between biosensor indices with patient-reported outcomes (PROs) in a cohort of menopausal women with IHD. Design: Women aged ≥55 years with stable IHD were followed for 12 weeks. Biometric (steps, resting heart rate [HR], moderate-to-vigorous activity [MVPA], sleep duration) and PROs (global health, mental health, depression, anxiety, fatigue, physical function) were collected data are poorly understood. The study aims to evaluate associations between biosensor indices with patient-reported outcomes (PROs) in a cohort of menopausal women with IHD. Design: Women aged ≥55 years with stable IHD were followed for 12 weeks. Biometric (steps, resting heart rate [HR], moderate-to-vigorous activity [MVPA], sleep duration) and PROs (global health, mental health, depression, anxiety, fatigue, physical function, sexual function, relationship satisfaction) were assessed at baseline and at the endpoint, based on standardized depressive rating scales.

Results: From 263 participants who initially identified, 39 studies were identified. After 32 studies in which depression was assessed as a primary or secondary outcome; 31 studies (1 triple-blind, randomized, controlled trial; 17 double-blind, placebo-controlled, randomized trials; and 17 randomized, controlled trials) with a total of 19,039 participants receiving active treatments and 27,327 participants in the placebo group. We identified 3 studies with dietary interventions (low sodium-DASH diet, caloric restriction, and low-fat diet) and 32 studies with nutraceuticals (nutritional supplements, natural extract, herbal products and vitamins). Of those, all dietary interventions and 85.7% of the nutraceuticals showed positive outcomes (i.e., improvements in depressive symptoms) when compared to placebo or control intervention. Moreover, there were favorable outcomes among women with diagnosis of MDD, as 2 out of 3 studies showed improvement compared to control conditions. There was significant heterogeneity among studies with respect to sample sizes, duration of intervention and rating scales used as outcomes measures.

Conclusion: Several nutritional approaches have been investigated for the management of symptomatic, midlife women. Preliminary results are promising, with most studies indicating favorable outcomes; yet, they should be interpreted with caution given the heterogeneity of interventions and methodologies applied to date.

Sources of Funding: Partially funded by grants/awards from the Canadian Menopause Society and the Brain and Behavior Research Foundation.
P-67. Digital Health for Predicting Cardiac Hospital Visits in Menopausal Women with Stable Ischemic Heart Disease

Benita Tjoa, MD,1,2 Giliian Gresham3, Sandy Joong, Corey Arnold1, Garth Fuller1, William Speier1, Mitra Mastafi2, Irene van den Broek,1 Janet Wei3, Brennan Spiegel1, Jennifer Van Eyk2, Noel Bairey Merz1, Chrisandra Shufelt1. 1Barbra Streisand Women’s Heart Center, Cedars-Sinai Medical Center, Los Angeles, CA; 2Cedars-Sinai Medical Center, Los Angeles, CA; 3Computational Diagnostics Lab, University of California Los Angeles, Los Angeles, CA

Objective: Ischemic heart disease (IHD) is prevalent amongst women in midlife, a time coinciding with menopause. Patients with IHD are at risk for major adverse cardiac events (MACE). Remote patient monitoring using consumer-grade biosensors allows for collection of clinical data beyond the traditional health care setting, but the utility of these measures in predicting outcomes is not well known. We analyze associations between remotely monitored biosensor data, patient reported outcomes (PROs) and cardiac hospital visits in women with stable ischemic heart disease. Design: Women 55 years or older with stable IHD were followed for 12 weeks for biometric (steps, resting heart rate, sleep duration) and psychometric (physical function, anxiety, depression) measures. This data was obtained via Fitbit and weekly smartphone administered NIH-PROMIS surveys, respectively. Participants were then followed for 12 months for cardiac hospital visit including MACE, revascularization, suspected acute coronary syndrome, transient ischemic attack or arrhythmia. Multivariable regression models were fit to evaluate for associations between change in biometrics and PROs at 12 weeks from baseline with occurrence of cardiac hospital visits to 12 months, adjusted for age and BMI. Results: 92 women (mean age 67.5 years ± 6.9; BMI 27.5 ± 13.2) were enrolled. One (1.1%) was on systemic hormone therapy. There was a total of 51 adjudicated cardiac hospital visits. Cardiac hospital visits were twice as likely in women reporting physical function decline (NIH-PROMIS) (HR: 2.2, 95% CI: 1.2-4.6, p=0.027), reduced steps from baseline (HR: 2.1, 95% CI: 1.1-3.9, p=0.024), and increased resting heart rate (1.9, 95% CI 1.1-3.4, p=0.025) (Figure). Sleep duration, anxiety and depression were not associated with an increased risk of cardiac hospital visits. Conclusion: In menopausal women with stable IHD, patient reported decline in physical function and Fitbit measures of decreased daily step count and increased heart rate at 12 weeks from baseline were predictors of cardiac hospital visits within a year. Additional analyses will evaluate heart rate more closely including measures of variability and maximum rate during exercise. Future studies will also seek to concurrently collect remote data while following patients for hospitalization and other outcomes to assess for acute predictors.

Sources of Funding: CA Initiative to Advance Precision Medicine; Cedars-Sinai Medical Center, The National Heart, Lung, and Blood Institute

Change in physical function, steps, resting HR and sleep at 12 weeks compared to baseline

P-68. S-equol improves Quality of Life for peri- and menopausal women with high vasomotor symptoms

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Objective: Numerous symptoms related to menopause impact the quality of life of women. We have previously reported the benefits of S-equol on vasomotor symptoms (VMS) (1,2); however, other symptoms (sleep, mood, and vaginal disturbances) are also associated with menopause and often have a higher impact on quality of life. The aim of this study was to assess the effects of S-equol, a novel fermented soy isoflavone, over 12 weeks on various symptoms related to menopausal transition including VMS and quality of life measures in otherwise healthy women (40-65 years). Design: A double-blind, randomized, placebo-controlled, parallel study was conducted comparing the effects of oral consumption of an S-equol (10 mg/day) (N = 58) vs. placebo (N = 60) for 12 weeks in premenopausal or menopausal women aged 40-65 experiencing menopausal vasomotor symptoms (VMS). This study was conducted at Biofortis Research (Addison, IL). Results: Though a decline in VMS was observed, a large placebo effect, not uncommon in VMS studies (3,4), resulted in a lack of statistical significance in the reduction of VMS episodes and severity between placebo and S-equol in the intent to treat (ITT) and per protocol (PP) populations. There was a statistically significant increase in sleep minutes (p = 0.013) and the duration in bed (p = 0.005) from baseline to 12 weeks in the S-equol group, which was non-significant in the placebo group. Post-hoc analysis was performed when subjects were categorized into groups based on reporting ≥9 vasomotor episodes/day (Low VMS) and ≥9 vasomotor episodes/day (High VMS). In the High VMS group, participants receiving S-equol suffered fewer VMS and had an improvement in the measure of health-related quality of life (RAND-36), and Profile of Mood States (POMS), particularly lower vigilance (p = 0.012), tetching (p = 0.014), and soreness (p = 0.003) (Fig. A), better emotional well-being (p = 0.049) (Fig. B), and a different pattern of change in the POMS anger-hostility domain score (p = 0.049), total mood disturbance (p = 0.049), and vigor-activity (p = 0.017) compared to the placebo group. Conclusion: Peri- and menopausal women experiencing high episodes of VMS demonstrated an improvement in quality of life measures, particularly sleep, mood and vaginal health benefits in response to S-equol therapy. By alleviating multiple menopausal symptoms, quality of life can thereby be improved. References: 1. Aso et al. J Women’s Health, 2012, 21(1), 92-100. 2. Jenks. et al. J Women’s Health, 2012, 21(6) P6746-682 3. Li et al. Menopause, 2017, 24(8) 1302-1309 4. Al-Nimari et al. Cochrane Database of Systematic Reviews 2004, Issue 4. Art. No.: CD002978.

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P-69. Attitudes Regarding Vaginal Dilation Following Pelvic Radiotherapy for Cancer Treatment

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Objective: Radiation therapy may cause scarring, dyspareunia, and painful pelvic examinations. Vaginal dilators are often recommended to female patients completing pelvic radiation therapy in order to mitigate these known side effects, but there are no evidence based guidelines on the timing and timing of counseling. Purpose: To elicit information about the counseling patients received regarding vaginal dilation and their experiences and preferences. Transcription of the recordings will be performed and common themes will be extracted. Examples of facilitator questions include: Do you recall being given information about the need to perform vaginal dilation as part of pelvic radiation treatment. If so, at what visit did this occur? What do you remember being told regarding how to perform dilation and how often to perform dilation? Were you given dilators or did you have to purchase your own? How did you feel (emotionally and/or physically) about performing vaginal dilation? How might counseling have been improved regarding vaginal dilation? Do you think multiple sessions where this information was discussed would have been helpful? Who do you feel was the best provider to deliver this information? Do you wish you had been improved regarding vaginal dilation? Do you think multiple sessions where this information was discussed would have been helpful? Who do you feel was the best provider to deliver this information?

Design: Four online, hour-long focus groups with 4-5 women per group, aged 18-70 years, all of whom had been treated with pelvic radiation therapy in order to mitigate these known side effects, but there are no evidence based guidelines on the timing and timing of counseling. Facilitators are trained to elicit information about the counseling patients received regarding vaginal dilation and their experiences and preferences. Sources of Funding: None.

P-70. Is there a disconnect? Gynecologic oncology patients’ and providers’ perspectives of surgical menopause

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Objective: Surgical menopause occurs in 30 to 40% of pre- and perimenopausal women with gynecologic malignancy. The symptoms and sequelae of surgical menopause have been well characterized and numerous studies have summarized the safety of hormonal and non-hormonal treatments for these symptoms in patients with gynecologic malignancies. The primary objective of this study was to assess gynecologic oncology patients’ perspectives about surgical menopause care during their perioperative treatment and surveillance visits. A secondary objective was to assess gynecologic oncology providers’ preferences for managing surgical menopause and to compare these perspectives. Design: We surveyed women under age 51 who underwent surgical menopause as a part of their treatment of gynecologic malignancies between 2017 and 2019 at a tertiary academic medical center. The survey included a modified Utian Quality
of Life Scale focusing on health, emotional and sexual quality of life. We collected baseline demographic characteristics and documented counseling about surgical menopause and management plans from the electronic medical record. By asking the patients if they had had counseling about surgical menopause from any or all of these: attending physicians, fellow physicians, physician assistants, or a nurse practitioner. Of the 38 patients (82%) who had post-operative menopause symptoms, 53% reported that they were “not at all” or only “somewhat satisfied” with the overall menopause symptom management by their health care providers. The majority (70.5%) of all patients preferred to receive information about surgical menopause from their oncologist; however, 28.5% of patients were “not at all” to only “somewhat comfortable” in initiating discussion about menopause with their oncologist. Additionally, one third of patients (32.3%) did not recall discussions about surgical menopause at their preoperative visit, in contrast to 92.3% of providers who “always” discuss surgical menopause at the preoperative visit when planning bilateral oophorectomy. Despite this, only 23.5% of patients’ medical records had documented counseling of surgical menopause at preoperative visits. Finally, 66.7% of providers reported time as a barrier to discuss surgical menopause, whereas 23.5% of patients reported lack of time and perception that their oncology is not the appropriate person to discuss symptoms of menopause as barriers. Conclusion: Gynecologic oncology patients and providers have discrepant perspectives about surgical menopause counseling. Most gynecologic oncology providers prefer to obtain information about surgical menopause from their oncologist and understanding patient and provider preferences may improve counseling and management of surgical menopause in pre- and peri-menopausal gynecologic oncology patients. Sources of Funding: None

P-71. Sedentary Behavior Predicts Objectively Measured Hot Flashes in Midlife Women
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Objective: In women around the age of menopause, some data suggest that greater number and severity of hot flashes (HFS) are related to increased risk for cardiovascular disease (CVD). This is remarkable as approximately 80% of women report experiencing HFS. Sedentary behavior (SB) often constitutes a large portion of a midlife woman’s wakeful day and is related to CVD risk. Few studies have evaluated the effect of SB on hot flash experience. These findings were based on self-reports and did not consider objective measures of HFs or SB. Our aim was to determine whether objectively measured SB is a predictor of objective and subjective HF experience. Methods: Design: Women aged 45–55 who were not taking hormone therapy or other medications that may reduce HF frequency or severity were recruited for the study. We targeted women with irregular menstrual cycle length or their last menstrual period within the past two years. HF experience and SB were monitored simultaneously for 24hr. Sternal skin conductance (Biolog, UFA) was used for ambulatory objective HF measurements. The correlations were significant P<.05. Objective HFs were correlated with hrs of SB (r = -.279, p = .023) and positively correlated with mins of MVPA (r = .303, p = .013). Subjective HFs were not significantly correlated with SB (r = -.063, p = .617) or MVPA (r = -.129, p = .300). Concordant HFs were significantly positively correlated with MVPA (r = .286, p = .020), but not with SB (r = -.115, p = .358). When Biolog (17.4 ± 7.2hr) and AG wear times (92.5 ± 8.5%) and menopausal status were controlled for, the number of hours spent in SB significantly predicted objective (Δ R² = .178, β = -.417, p = .000) and concordant HFs (Δ R² = .063, β = -.280, p = .036), but not subjective HFs (Δ R² = .029, β = -.191, p = .131). When MVPA (161.57 ± 74.82min/hr) was added to the model, SB significantly predicted objective HFs (Δ R² = .134, β = -.383, p = .002), but not concordant HFs (Δ R² = .057, β = -.224, p = .098) or subjective HFs (Δ R² = .029, β = -.196, p = .139) HFs with MVPA included. Conclusion: Our findings suggest that SB predicts objective and concordant HFs in women ages 44–55, independent of time spent in sedentary behavior. As time spent in sedentary behavior represents a large portion of daily activity among this population, it is important to understand its influence on menopausal HFs. Knowledge regarding the influence of SB on HFs can improve evidence-based lifestyle recommendations for women experiencing HFs.

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P-72. Perimenopause Meets Life: Observations from the Women Living Better Survey
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Objective: A variety of symptoms arise in the years leading to the final menstrual period, beginning in the late reproductive stage (LRS) and continuing through the menopausal transition (MT) as defined by STRAW. In addition to changes related to reproductive aging and overall health, midlife entails managing a nexus of relationships with children, aging parents, life partners, and workplace colleagues. Therefore, the purpose of our analyses was to test a model relating personal characteristics, reproductive aging stages, health behaviors, life roles, stressors, stress management efforts and overall satisfaction with life to bothersome symptoms experienced during the LRS and MT. We also examined the effects of symptoms on interference with activities and relationships, perceived health, and “not feeling like myself.” Design: The online Women Living Better Survey was open from March to August 2020. In addition to personal characteristics and reproductive aging stage, participants described their health behaviors, stress management efforts, overall stress levels and stress associated with life partners, family, other relationships, work, finances, overcommitment and health. Also they rated bother from 61 symptoms. Five symptom groups identified from principal components analysis were used in hierarchical multiple regression analysis to test models of: brain fog, volatile mood, fatigue/pain, and vasomotor/sleep onset, and vigilance/anxiety symptoms. Using two-stage models, we linked personal characteristics (age, education, difficulty paying for basics), reproductive aging stage (LRS, MT), and health behaviors (smoking and alcohol use) to symptom groups (stage 1). In stage 2 we added effects of roles (i.e., caregiver, partner, employment-related), satisfaction with life, and stressors associated with roles to symptom groups. All tests of significance used Bonferroni correction for p values, such that p<.005 was considered significant. Results: The mean bother rating for the brain fog symptom group was highest, followed by volatile moods, pain/fatigue, VSM/sleep onset, and vigilance/ anxiety symptoms. More bothersome brain fog symptoms were significantly associated with lower education level, greater difficulty paying for basics, and reproductive aging stage (MT > LRS) in stage 1 and in stage 2 low satisfaction with life roles, greater health-related and over-commitment stress were significant. More bothersome volatile mood symptoms were significantly associated with less education and greater difficulty paying for basics in stage 1, but these variables were not significant in stage 2. Instead health-related, partner relationship, and other relationship stress were significantly associated with greater volatile mood. More bothersome fatigue/pain symptoms were associated with less education and greater difficulty paying for basics in stage 1. Stage 2 also included health-related and other relationship stress. Vasomotor/sleep onset symptoms were associated with less education, more difficulty paying for basics and being in MT versus LRS in stage 1. In stage 2, paying for basics was no longer significant and health-related and work stress were more. More bothersome vigilance/anxiety symptoms were associated with lower education level and more difficulty paying for basics in stage 1 and with health and work stress in stage 2. All five symptom groups were associated with greater interference with daily activities and relationships and with “not feeling like myself.” In addition, perceived health was negatively associated with each symptom group except vasomotor/sleep onset difficulty. Conclusion: All five symptom groups were associated with life stressors related to roles. Lower education levels and difficulty paying for basics were both associated with all symptom groups as well. Only brain fog and vasomotor/sleep onset symptoms were associated with reproductive stage. Each of the symptom groups was associated with interference with daily living and relationships. These analysis surfaces 3 ideas to improve navigation of the years preceding menopause for both those experiencing it and their providers: 1) vasomotor symptoms are not the most bothersome symptom group; 2) bothersome symptoms occur in the LRS, prior to the MT and 3) these symptoms greatly interfere with lives and relationships.

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