Center for Clinical and Translational Science

18th Annual CCTS Spring Conference

Translating Equity into Action

Abstract Book

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Abstracts

Presentation 1

Abstract Title: **Perception of body image is consistent as males age**

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Abstract: Background: Body image (BI), defined as what an individual thinks and feels about their physical self, has become an increasingly prominent societal topic. However, little is known about perception of BI in males. Here we compare males of varying ages to understand how aging can affect BI.

Methods: Participants were recruited in various settings and completed a questionnaire about daily life impact of BI. Answers were scored on a scale from 1 (unnoticeable) to 10 (most severe). Data was analyzed according to age.

Results: Overall, 124 male high school students ages 14-17 (14.23 ± 0.08 years old), 131 male college students ages 18-22 (19.36 ± 0.19 years old), and 165 male adults ages 23+ (43.08 ± 2.88 years old) completed the questionnaire (p < 0.0001 between groups for age). Impact of BI was not significantly different between all groups; male high school students scored 3.25 ± 0.57, male college students scored 3.35 ± 0.49, and male adults scored 3.08 ± 0.432.

Conclusion: There is little published about the impact of aging on perception of BI in males. Here we report that perception of BI does not significantly change as males age from their teen years to adulthood. We also found that males have a mild negative perception about themselves with slight negative impact on their daily lives. It is notable that average scores are higher than 1 (defined as “unnoticeable”). Mores studies should be done comparing the effects of age on BI perception in other genders.

Supported by: Pilot funding from Professional Student Mentored Research Fellowship Program

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Abstracts

Presentation 2

Abstract Title:	**Cancer Risk Reduction Through Tobacco Control Among Mothers in Rural Kentucky: Study Methods**
Author(s):	R.R. Ray, Department of Behavioral Science, U of Kentucky

Abstract: Postpartum is a vulnerable period in the life course for tobacco use and secondhand smoke exposure (SHS) exposure for mothers and their infants. Smoking rates in Kentucky are among the highest in the U.S. and conversely, breastfeeding (BF) rates are lower than the national average. Further, mothers in rural communities have higher rates of tobacco use and SHS exposure and lower rates of BF initiation and duration compared to urban mothers. The purpose of this study is to examine tobacco use and SHS exposure and infant feeding status in mothers residing in rural Kentucky. A cross-sectional, retrospective design using purposive cluster sampling will examine the association of mothers' tobacco use status, SHS exposure status and strength of municipal smoke-free laws with infant feeding status and BF duration. A total of 140 participants will be recruited from three rural counties with strong municipal smoke-free laws (Knott, Owsley and Perry); 140 participants will be recruited from three rural counties without municipal smoke-free laws (Bath, Menifee and Morgan). In each county cluster, 40% of those recruited will be mothers who have used any tobacco product and/or report any member of their household has used tobacco in the past 12 months. The remaining participants in each county cluster will not have personal or household tobacco use during the past 12 months. Inclusion criteria include women between 18-45 who are currently residing in one of the six identified rural Kentucky counties, who have given birth to a live infant in the past 2 years and read and write in English. Participants will complete demographic, infant feeding, depression, anxiety, tobacco use, SHS exposure, lung cancer screening, alcohol and drug use items via a one-time online or hard copy survey.

Supported by: This work was supported by CARERC through Grant 6T42OH010278. Its contents are solely the responsibility of the authors and do not necessarily represent the official views of the NIOSH/CDC.

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Abstracts

Presentation 3

Abstract Title:	**The Race of Health Workers as A Determinant of Black Women's Childbearing Experiences**
Author(s):	P. M. Agbozo, College of Public Health, U of Kentucky F. Y. Sesenu, Communication Studies, U of Kentucky J. R. Thompson, Markey Cancer Center Community Impact Office, U of Kentucky C. Williams, Department of Health, Behavior & Society in the College of Public Health, U of Kentucky

Abstract: Background/Introduction: Black women have the highest rates of maternal mortality in the US and are three times more likely to die of pregnancy related issues as compared to white women. Of the many causes of these statistics, structural racism, implicit bias, and poor quality in healthcare are contributing factors to the disparities black women face when it comes to maternal health. This research seeks to understand what the current childbearing experiences of black women are and how it differs according to the race/ethnicity of the health worker taking care of them.

Methods: We intend on using a qualitative research approach by conducting in-depth interviews to explore the unique childbearing experience of black women in relation to the race/ethnicity of the healthcare workers who cared for them. Overall, we plan on recruiting and interviewing 10 black women who have given birth or are due to give birth for about 30 to 60 minutes. Data will be analyzed using thematic analyses.

Results: According to literature surrounding this topic, we anticipate preliminary results to show that black women experienced several racialized pregnancy stigma and stereotypes requiring several coping strategies. We also anticipate black mothers to also comparatively report better experiences including higher levels of satisfaction, perceived trust and empathy with black health care providers because of racial and ethnic commonalities.

Conclusions: This study will contribute unique insights about the intersections of perceptions of healthcare providers' race/ethnicity with black women's' lived experience of childbearing care. Findings may also contribute to public discourse and interventions to address racialized pregnancy stigma in health care to improve maternal and infant outcomes for Black women.

Supported by: Center for Health Equity Transformation (CHET), the Center for Clinical and Translational Science (CCTS), the Cardiovascular Disease Research Priority Area, and Aetna Better Health of Kentucky

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Abstracts

Presentation 4

Abstract Title:	**Feasibility of Using Daily Diaries in Young Adults with Chronic Overlapping Pain Conditions**
Author(s):	C. Conway, College of Arts and Sciences, U of Kentucky I. Boggero, Department of Oral Health Science, U of Kentucky

Abstract: Chronic overlapping pain conditions (COPCs) affect the lives and alter the course of adulthood for many young adults. Disability associated with COPCs is due partly to SPACE symptoms: Sleep disturbance, Pain, Affect that is negative, Cognitive dysfunction, and Energy depletion. However, because SPACE symptoms often co-occur, little is known about which specific symptom starts first, or is most strongly associated with disability. Daily diary and actigraphy, where participants provide data on space symptoms for 14 consecutive days, can help determine the temporal precedence of SPACE symptoms. However, these methods are burdensome, and it is unclear whether young adults with chronic pain would be willing or able to successfully provide these data. The aim of this study is to test the feasibility of daily diary use and actigraphy methodology in young adults with COPCs. Fifty participants ages 18-34 are being recruited across the United States for an online study through REDCap. For two weeks, each participant will be asked to wear an actigraphy watch and complete short diaries each morning and evening. Primary outcomes to establish feasibility will be: number of participants recruited in a one-month period, percentage of diaries completed, and percentage of actigraphy days completed. As this study is currently in the data collection process, the results are not yet analyzable; however, we anticipate having analyzable data by early March. We hypothesize that this pilot study will find that young adults with COPCs are able to be recruited and complete daily diary and actigraphy methodology, as determined by the following metrics: recruitment of at least 1 participant per week, and greater than 75 percent completion of daily diary and actigraphy data.

Supported by: NIH award: UL1TR001998

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Abstracts

Presentation 5

Abstract Title: **Psychosocial Actors, Stress and Sleep Among Rural Appalachian Residents with Type 2 Diabetes Mellitus**

Author(s):
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N. E. Schoenberg, Department of Behavioral Science, U of Kentucky

Abstract: Background: Although compared to other populations, rural Appalachian residents experience higher rates of most chronic diseases, Type 2 Diabetes Mellitus (T2DM) is particularly pervasive. Stress and sleep deficiency, that can lead to or complicate T2DM, are also extremely common in the region. To better understand these associated health burdens, we examined the relationship between these conditions and psychosocial factors such as depressive symptoms, distress, empowerment, and social support among Appalachian residents with T2DM.
Methods: Using data collected from a community-based sample of Appalachian adults with T2DM, we examined whether psychosocial factors were associated with perceived stress and sleep. The Cohen Perceived Stress Scale (PSS) was used to measure perceived stress and the Epworth Sleepiness Scale was used to measure sleep. Multilevel linear mixed effects regression modeling was used to test these associations.
Results: Depressive symptoms, distress, and social support were all significantly associated with perceived stress while diabetes empowerment was not associated with perceived stress. None of the psychosocial factors were found to be associated with sleep.
Implications: To our knowledge, this is the first known study to examine the relationship among psychosocial factors, perceived stress and sleep in rural Appalachian people with T2DM. With a high prevalence of mental distress in Appalachia, our findings highlight the need to further examine depression, diabetes management, and social support in people with T2DM in rural regions like Appalachia.

Supported by: National Institute of Diabetes, Digestive, and Kidney Disease (R01 DK112136)

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Presentation 6

Abstract Title:	**The Role of Stress in Diabetes Outcomes and Overall Health Status Among Rural Residents**
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Abstract: Background: There is a bidirectional relationship between stress and T2DM, where T2DM outcomes can be worsened by stress but can also cause stress, known as diabetes-related stress. Therefore, the purpose of this study was to assess the relationship among perceived stress, health status (both subjective and objective), and T2DM-related outcomes.
Methods: This study examined baseline cross-sectional data collected as part of an ongoing study of rural residents diagnosed with type 2 diabetes. Psychosocial measures, clinical outcomes, self-care activities, and demographics were collected. Mediation was assessed via a series of regression models. Multilevel linear mixed-effects models incorporating random site effects, and random household effects within sites, were used to account for the possibility of multiple levels of clustering due to the study design.
Results: Most participants (N=318) were White (98.4%), married (58.4%), women (66%), and insured (98.1%). Study results indicate that perceived stress was significantly associated ($p<0.0001$) with each of the five independent variables of interest: mental health, physical health, distress, depression, and the number of chronic conditions in addition to T2DM. Support for the mediating role of perceived stress was only found with depression and T2DM self-care ($p=0.01$).
Conclusion: Our findings warrant further investigation into mechanisms of how perceived stress mediates the relationship between depression and self-management in people with T2DM. Examining protective factors, including social support that might mitigate stress may be useful to better understand the relationship between depression, diabetes self-management, and diabetes outcomes.

Supported by: National Institute of Diabetes and Digestive and Kidney Disease: R01 DK112136

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Presentation 7

Abstract Title: **Perception of Body Image in Male and Female Dermatology Patients**

Author(s): C. A. Krehl, College of Medicine, U of Kentucky
L. A. Ryes, College of Medicine, U of Kentucky
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Abstract: Background: Body image (BI), defined as what an individual thinks of his/her physical self, as well as the associated thoughts and feelings, is an increasingly prominent theme throughout society, and concerns surrounding BI account for a core composition of the patient population in cosmetic and general dermatology. Here we compare male and female dermatology patients to understand the baseline differences in perception of BI.
Methods: Participants completed a questionnaire about impact of BI on daily life, desire to seek cosmetic treatment, and whether treatment improved their BI. Data were analyzed according to age.
Results: 52 male and 64 female dermatology patients (age difference $p = 0.055$) completed the BI questionnaire. The baseline impact of BI on daily life was significantly higher in female dermatology patients compared to males ($p = 0.0071$). The desire to seek cosmetic treatment was significantly different as well (59.375% of females sought cosmetic treatment vs. 25.000% of males, $p = 0.0002$). There was no significant difference between the groups in terms of whether treatment improved BI ($p = 0.3117$).
Conclusion: Perception of BI is a major motivating factor for seeking dermatologic care. Here we found a significant difference between male and female dermatology patients in terms of BI impact on daily life and desire to seek cosmetic treatment; there was no significant difference in whether treatment improved BI. Future studies should investigate the possibility that these differences may be due to female patients seeking treatment for cosmetic purposes while males present for dermatologic medical concerns.

Supported by:

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Presentation 8

Abstract Title:	**Preliminary results of a RCT of a behavioral parent training intervention for families with DHH children**
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Abstract: Deaf and hard of hearing (DHH) children are at risk for behavior problems but are less likely than peers with typical hearing to receive behavioral interventions. Although early diagnosis and treatment of hearing loss improve language development, improvements in behavior do not necessarily result from these interventions, potentially due to entrenched patterns of parent-child interactions. Parents of preschool aged DHH children report a high prevalence (50%) of behavioral concerns. Behavioral parent training (BPT) interventions have demonstrated effectiveness in reducing child behavior problems and improving parenting practices, but there is a gap in research on behavioral interventions to parents of DHH children. Our team has completed the first year of recruitment, intervention delivery, and data collection in a hybrid effectiveness-implementation trial of an adapted BPT program, the Family Check-Up, modified for parents of young DHH children. Parent-child pairs are being recruited from hearing healthcare practices and randomized to either the adapted FCU-DHH program or control group. FCU-DHH families receive up to 6 parent coaching sessions, focused on effective parenting strategies. The FCU-DHH coaches are parents of DHH children who completed FCU-DHH training and receive ongoing supervision. Enrolled families complete research assessments at baseline and every 6 months for up to 3 years, including standardized measures of parenting and child behaviors, parenting sense of competence, parent depression, parent motivation, parent-child interactions, and child language skills. Baseline, 6-month, and 12-month results will be reported for parent-child dyads (N~33) who will have completed these assessments as of March 2023. Preliminary data will be reported.

Supported by: This project is supported by the National Institute of Deafness and Other Communication Disorders, National Institutes of Health (R01 DC016957, PI: Studts).

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Abstracts

Presentation 9

Abstract Title:	**Applying Interdisciplinary Team Science to Support Health Equity Through Holistic Evidence-based Community Collaboration**
Author(s):	C.B. Roberts, Sanders-Brown Center on Aging, U of Kentucky Y.L. Jackson, College of Communication and Information Center for Health Equity Transformation, U of Kentucky R. Glover, First Baptist Church Frankfort E.K. Rhodus, Sanders-Brown Center on Aging and Department of Behavioral Science, U of Kentucky

Abstract: Background: Alzheimer's disease and related dementias (ADRD) disproportionately impacts African Americans compared to non-Hispanic Whites. The goal of this study was to examine holistic programming and evaluations of the interdisciplinary community-based program, "Healthy Aging Workshop Series."

Methods: Initial findings from Unity in the Community health event indicated needs for diabetes prevention, healthy nutrition, and access to healthcare. Community resources collaborated through team science to provide needs-driven education via demonstrations, group discussions, handouts and occupation-based learning opportunities from interdisciplinary lenses of behavioral science, neuroscience, dietetics, occupational therapy and physical therapy.

Results: Participants (n=47) recruited from the faith-based center, with most participants being female (71.1%) with higher education (52% some college, 8.3% bachelor's degree, 11.1% master's degree and 11.1% doctorate degree). 97.9% of participants were satisfied with the quality of the workshops with 97.7% reporting workshops met their health information needs. 39.5% of participants reported knowing only a small amount of the information presented and 18.6% of participants knowing none of the information. Finally, participants reported strong intentions to apply principles learned from the workshop at home (46.8% very likely; 53.2% likely).

Conclusion: Establishing a diversified pool of local health resources in partnership with an established and trusted faith-based community allows for holistic, community-based programming which continues to adapt to identified health needs and desires within that specific community. Results showed an increase in knowledge and confidence to apply healthy workshop principles at home.

Supported by:

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Abstracts

Presentation 10

Abstract Title:	**Examining Equity Among Theory of Planned Behavior Predictors for Intention-to-Use E-cigarettes Among College Students**
Author(s):	D. W. Stenulson, Departments of Educational Policy Studies & Evaluation, University of Kentucky M. Ickes, Department of Kinesiology and Health Promotion, University of Kentucky

Abstract: E-cigarette use continues to be of concern among emerging adults. Supporting the development of tailored and theoretically driven instruments is needed to explore risk and protective factors for initiation and use. The purpose of this analysis was to examine predictive differences across college students when predicting intention-to-use e-cigarettes, considering the constructs of the Theory of Planned Behavior (attitudes, subjective norms, and perceived behavioral control). This cross-sectional, exploratory study design examined demographics of gender, state, and age among college students. The sample group was divided into two groups, current e-cigarette users and individuals who had ever used an e-cigarette. Binary logistic regression was applied to the instrument comparing predictors to intention-to-use in both groups. The instrument was most accurate in predicting intention-to-use among current (N=114) and ever-users (N=147) when controlling for gender, state, and age demographics together with TPB variables. The instrument predicted intention-to-use among current users with high accuracy (classification 84.4%, omnibus P<.001, r=.627), and predicted intention-to-use among ever users with higher accuracy (accuracy 92.6%, omnibus P <.001, r2=.725). DIF was applied to examine for item bias in groups; no bias was detected across demographics. Implications from the results of this study are that campus prevention efforts should aim to equally target students of different genders, as well as consider item development for similar theoretically-driven instruments to ensure unintentional item bias does not create risk due to exclusion.

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Presentation 11

Abstract Title:	**A Wearable Fiber-Free Optical Sensor for Continuous Monitoring of Cerebral Blood Flow Changes During Treadmill Exercise**
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Abstract: Wearable optical microscopes and ultrasonic probes for continuous brain monitoring in conscious animals have made significant contributions to neuroscience; although most techniques require invasive craniotomy, and/or restraining the head/body during cerebral measurements, thus impeding brain assessments during social behavioral conditions, exercise, and sleep. Our group has developed an innovative, wearable, fiber-free optical probe for continuous cerebral blood flow (CBF) monitoring in freely behaving subjects. In this study, a miniaturized optical probe was fabricated by a 3D printer and glued on the animal's skull for continuous monitoring of CBF variations during treadmill exercise in two groups of 6 adult male mice (C57BL) including 3 young mice (28 weeks) and 3 aged mice (65 weeks). The treadmill exercise protocols for the young and aged groups differed in the steps of speed increases and exercise durations. The young group started at 5 cm/s for 1 minute and then increased by 3 cm/s every 1 minute until reaching 14 cm/s, while the aged group started at 5 cm/s for 2 minutes and then increased by 3 cm/s every 2 minutes until reaching 17 cm/s. The results indicated that %CBF increased gradually with the increase of treadmill speeds for both groups until reaching the maximum CBF increases of 26.58 ± 4.42% in the young group and 12.82 ± 2.2% in the aged group respectively, compared to their baseline levels before exercise. Comparing to young mice, aged mice showed remarkable lower CBF responses to treadmill exercise along with reduced physical function and exercise capacity.

Supported by: NIH/NINDS R56 NS117587

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Presentation 12

Abstract Title: **The role of female mentorship on trainees in healthcare and science professions**

Author(s): A. L. Solomon, MS, College of Medicine, U of Kentucky
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Abstract: Strong female mentorship promotes and retains women in professional careers, especially those with historic gender inequality. The role of a mentor is that of a trusted counselor, and the act of mentoring is defined as a partnership collaboratively working towards developing mentee's skills, abilities, and knowledge. Female mentorship allows for professional and personal growth while also promoting a more diverse community. Our study explored the role of female mentorship on trainees in healthcare and science professions. We hypothesized that female mentorship has a significant impact on female trainees with respect to career decision making and both professional and personal growth and development.

Our on-going study used a novel anonymous, online questionnaire exploring demographics, current and past mentor/mentee relationships, academic and professional productivity, and ideal mentor and mentee characteristics.

We found that 312 participants (95% female trainees) completed the survey as of 2/10/23. Of these, 69% reported that they had ever had a female mentor, 90% are current medical students, and 70% of mentees agreed that there should be more programs connecting female mentees and mentors. Moreover, 41% agreed that a female mentor was able to provide advice and resources that a male mentor could not provide, and 59% agreed that having a female mentor encouraged them to become a mentor to other women in the future.

Based on our current data, we conclude that female mentorship provides substantial support for the development of a mentee's skills, abilities, and knowledge.

Supported by: Women in Medicine and Science Booster Award

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Presentation 13

Abstract Title:	**Perceived Barriers & Facilitators to Research in Criminal Justice Settings: Findings from a Survey of CTSA Investigators**
Author(s):	M. Tillson, Center on Drug and Alcohol Research, U of Kentucky, Lexington, KY M. Ramaswamy, Department of Population Health, School of Medicine, Kansas University, Kansas City, KS N. D. Zaller, Department of Health Behavior and Health Education, U of Arkansas for Medical Sciences Fay W. Boozman College of Public Health, Little Rock, AR M. Staton, Department of Behavioral Science, College of Medicine, U of Kentucky, Lexington, KY

Abstract: Individuals with a history of criminal justice (CJ) system involvement (incarceration and/or community supervision) often have significant underlying health issues. Thus, research in these settings is critical to support positive health outcomes for vulnerable and underserved individuals, yet CJ settings are often overlooked. This study aimed to explore barriers and challenges to conducting CJ-based research experienced by CTSA investigators. As part of the Criminal Justice Translational and Clinical Science (CJTRACS) network, a brief web-based survey was developed and distributed to six CTSA institutions. Respondents (N=114) were 84.2% white, 64.0% female, and primarily worked in social/behavioral (56.1%), clinical (50.0%), or health systems/policy (34.2%) research. Most respondents (81.6%) reported no prior CJ-related experience; among those, the majority (79.3%) were interested in conducting research with CJ populations in the future. The most common challenge anticipated in beginning CJ-based research was not having existing relationships with CJ agencies or providers (62.4%), followed by concerns about participant recruitment and retention (41.9%); a lack of understanding of CJ environments (38.7%); and apprehension about IRB requirements and oversight, or obtaining funding for CJ research (both 35.5%). These areas of concern indicate valuable topics for educational resources to support researchers expanding into CJ settings. The CJTRACS network can leverage existing mentorship and training resources at partnering CTSA institutions to enhance trainees' confidence, motivation, and capacity to conduct specialized CJ-related research. A growing network of CJTRACS scholars will further support inter-institutional collaborations and ongoing community-engaged research.

Supported by: UL1TR001998

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Presentation 14

Abstract Title:	**ABL1/2 Drive MEKi Resistance in NRAS-Mutant Melanomas**
Author(s):	A. Lyon, Department of Pharmacology and Nutritional Sciences, U of Kentucky R. Tripathi, Department of Pharmacology and Nutritional Sciences, U of Kentucky C. Meeks, College of Medicine, U of Kentucky D. He, Biostatistics and Bioinformatics Shared Resource Facility, U of Kentucky Y. Wu, Biostatistics and Bioinformatics Shared Resource Facility, U of Kentucky J. Liu, Biostatistics and Bioinformatics Shared Resource Facility, U of Kentucky C. Wang, Biostatistics and Bioinformatics Shared Resource Facility, U of Kentucky J. Chen, Department of Molecular and Cellular Biochemistry, U of Kentucky H. Zhu, Department of Molecular and Cellular Biochemistry, U of Kentucky S. Mukherjee, Department of Pharmacology and Nutritional Sciences, U of Kentucky S. Ganguly, Department of Pharmacology and Nutritional Sciences, U of Kentucky R. Plattner, Department of Pharmacology and Nutritional Sciences, U of Kentucky

Abstract: Melanomas harboring NRAS mutations are a particularly aggressive and deadly subtype. If patients cannot tolerate or the melanomas are insensitive to immune checkpoint blockade, there are no effective 2nd-line treatment options. Drugs targeting the RAF/MEK/ERK pathway, which are used for BRAF-mutant melanomas, do little to increase progression-free survival (PFS). Here, using both loss-of-function and gain-of-function approaches, we show that ABL1/2 are critical nodes during NRAS-mutant melanoma intrinsic and acquired MEK inhibitor (MEKi) resistance. Acquired resistance cells are dependent on ABL1/2 for their survival and are sensitive to highly specific allosteric ABL1/2 inhibitors, which prevent β-catenin nuclear localization and destabilize MYC and ETS1 in an ERK-independent manner. Significantly, targeting ABL1/2 with an FDA-approved anti-leukemic drug, reverses intrinsic MEKi resistance, delays acquisition of acquired resistance, and doubles the survival time in a NRAS-mutant mouse model. These data indicate that repurposing FDA-approved drugs targeting ABL1/2 may be a novel and effective strategy for treating patients with treatment-refractory NRAS-driven melanomas.

Supported by:	This research was funded by the following grants to the R.P. Lloyd Charitable Trust; The University of Kentucky Markey Cancer Foundation Women's Strong Award; National Institute of Health Cancer Center Support Grant Pilot Award (5P30CA177558); NIH/NCI R01CA211137; and Kentuckiana Friends of the V Foundation Award

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Presentation 15

Abstract Title:	**Nonunifrom Sampling-based Breast Cancer Classification.**
Author(s):	S. Posso-Murillo, Department of Electrical and Computing Engineering, U of Kentucky L. G. Sanchez-Giraldo, Department of Electrical and Computing Engineering, U of Kentucky

Abstract: The emergence of deep learning models and their remarkable success in visual object recognition tasks and detection has fueled the medical imaging community's interest in integrating these algorithms to improve medical screening and diagnosis. However, natural images were originally the focus of deep learning models, and they have fundamental differences from breast images. First, breast tissue abnormalities are often more minor than salient objects in natural images. Second, breast images have significantly higher resolutions, and therefore they are heavily downsampled to fit current deep-learning architectures. The spatial resize of the mammograms leads to a loss of discriminative details, which are essential for accurate diagnosis. To address this problem, we develop an approach to exploit the relative importance of pixels in mammograms by conducting non-uniform sampling based on task-salient regions generated by a patch classifier. Experimental results demonstrate that non-uniform sampled images preserve discriminate features at low resolutions and allow classification models to outperform trained models with uniform sampled images at higher resolutions.

Supported by:

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Abstracts

Presentation 16

Abstract Title: **Paclitaxel Loaded Polycaprolactone Particles for Treating Endometrial Cancer**

Author(s): C.E. Rowlands, Department of Chemical and Materials Engineering, U of Kentucky
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Abstract: Endometrial cancer is the most common cancer of the female reproductive organs and is the sixth most common cancer in women worldwide. Since the 1970s, the mortality rate of endometrial cancer has been on the rise. When caught and treated early, surgery is typically enough but once it reaches late stages chemotherapy and radiation are typically required. Currently, there are only four unique FDA approved chemotherapies for endometrial cancer which shows the dire need for more treatment options. There has been a shift toward using micro- and nano-sized particles as drug delivery systems for chemotherapies due to their ability to decrease side effects of the treatment and increase bioavailability, circulation time, and accumulation of the drug in the tumor. A drug delivery system (DDS) was developed by generating paclitaxel loaded poly (caprolactone) (PCL) particles with the double emulsion solvent evaporation method. We investigated the effects of size separating particles and subsequent cell viability, as well as comparing in vitro efficacy in PTX sensitive and PTX resistant cells. Sequential centrifugation successfully separated PCL particles based on their size and removed any unreacted polymer. While the PTX particles had limited effect on the Ishikawa H cell viability and a greater effect on KLE cell viability, the blank particles showed no effect at all in either cell line, again demonstrating that PCL particles are a good drug delivery system.

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Center for Clinical and Translational Science

Abstracts

Presentation 17

Abstract Title:	**Genomic screening methodology not requiring barcoding:Single nucleotide polymorphism-based, mixed-cell screening (SMICS)**
Author(s):	Zhuwei Zhang, Department of Statistics, U of Kentucky Xi Chen, Markey Cancer Center, U of Kentucky and Center for Drug Innovation and Discovery, Hebei Normal University Wen Zhang, Department of Molecular and Cellular Biochemistry and Markey Cancer Center, U of Kentucky Jinpeng Liu, Markey Cancer Center, U of Kentucky Yanqi Xie, Department of Molecular and Cellular Biochemistry and Markey Cancer Center, U of Kentucky Shulin Zhang, Department of Pathology and Laboratory Medicine, U of Kentucky Arnold J. Stromberg, Department of Statistics, U of Kentucky David S. Watt, Department of Molecular and Cellular Biochemistry and Markey Cancer Center, U of Kentucky, Xifu Liu, Center for Drug Innovation and Discovery, Hebei Normal University, Chi Wang, Department of Internal Medicine and Markey Cancer Center, U of Kentucky Chunming Liu Department of Molecular and Cellular Biochemistry and Markey Cancer Center, U of Kentucky

Abstract: Although high-throughput, cancer cell-line screening is a time-honored, important tool for anti-cancer drug development, this process involves the testing of each, individual drug in each, individual cell-line. Despite the availability of robotic liquid handling systems, this process remains a time-consuming and costly investment. The Broad Institute developed a new method called Profiling Relative Inhibition Simultaneously in Mixtures (PRISM) to screen a mixture of barcoded, tumor cell-lines. Although this methodology significantly improved the efficiency of screening large numbers of cell-lines, the barcoding process itself was tedious and potentially changed cellular properties during barcoding and the subsequent selection of stable cell-lines. These concerns led to the development of a new, genomic approach for screening multiple cancer cell-lines using endogenous “tags” that did not require prior barcoding: single nucleotide polymorphism-based, mixed-cell screening (SMICS).

Supported by: This study is supported by University of Kentucky's SPORE Alliance fund and CCTS Pilot Award (UL1TR001998). This project is also supported by the Biostatistics and Bioinformatics Shared Resource Facility of Markey Cancer Center (P30 CA177558).

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Abstracts

Presentation 18

Abstract Title: **Development and Validation of an Interview Guide for Lung Cancer Screening in the Primary Care Setting**

Author(s): K. Brown, Markey STRONG Scholar, U of Kentucky
S. Stanifer, PhD, APRN, AONCS, College of Nursing BREATHE, U of Kentucky
E. J. Hahn, PhD, RN, FAAN, College of Nursing BREATHE, U of Kentucky

Abstract: Kentucky leads the nation in lung cancer mortality. Annual lung cancer screening (LCS) with low-dose CT (LDCT) in high-risk individuals reduces lung cancer mortality, yet in Kentucky, only 15% of eligible individuals have been screened. Healthcare providers play a key role in reducing the burden of lung cancer in Kentucky by identifying eligible individuals and helping them make decisions about screening. The current study aimed to develop and determine the content validity of an interview guide to assess the elements of LCS shared decision-making (SDM) visits, with a focus on counseling to reduce risk from tobacco and radon, within high-referring primary care (PC) offices in Kentucky. This exploratory, descriptive study was conducted in 2 phases: the development of the interview guide and expert evaluation of the guide to assess content validity. Based on a review of the literature, the interview guide was developed and separated into 6 question sets including background, eligibility, shared decision-making, placing the order, after, and closing. Content experts were asked to rate each set on 6 dimensions including relevance, objectivity, clarity, simplicity, practicality, and vocabulary using a 3-point Likert scale (e.g., inadequate to adequate). Median percent agreement across all six sets was 66.7%, reflecting moderate agreement (range: 16.7% [SDM] – 100% [Closing]). Based on the reviewer's scores and comments, revisions have been made to improve the degree to which the interview guide captures the elements of LCS SDM visits in high-referring PC offices.

Supported by: This project was supported by the National Center for Research Resources and the National Center for Advancing Translational Sciences, National Institutes of Health, through Grant UL1TR001998.

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Presentation 19

Abstract Title:	**Microwave Ablation of Hepatic Lesions Near the Inferior Vena Cava, Portal Venous System, and Gall Bladder**
Author(s):	G. Meek, College of Medicine, U of Kentucky B. Myers, Radiology, U of Kentucky D. Raissi, Vascular and Interventional Radiology, U of Kentucky M. Ozen, Vascular and Interventional Radiology, U of Kentucky

Abstract: Purpose: To evaluate the clinical efficacy and safety of microwave ablation (MWA) of hepatic lesions near the inferior vena cava (IVC), portal venous system, and gall bladder, using the MWA system with enabled constant spatial energy control (ECSEC).
Material and Methods: Clinical data of 255 patients with liver lesions who underwent image guided percutaneous MWA at the University of Kentucky were retrospectively analyzed. Cross-sectional imaging and medical records were used for follow up.
Results:Twenty patients were identified as having lesions near a major branch of the portal vein with an average distance of 4.8 mm. The patients were followed for an average of 8.7 months. All patients were still surviving at 30 days. No portal vein thromboses were noted at one month follow up. One patient passed before the 6-month follow-up, giving a 6-month mortality rate of 5%. Twelve patients were identified with lesions adjacent to the IVC with an average distance of 4.7 mm. The patients were followed for an average of 7.9 months with only one complication and one residual tumor noted post-surgery. Two patients recurred and one patient died prior to 30 days. Six patients had lesions near the gallbladder with an average distance of 14 mm. The patients were followed for an average of 2.2 months (1-23 months), and one residual tumor was noted at one-month follow-up. There were no immediate complications. The 30-day mortality was 0%.
Conclusion: According to this study, image guided percutaneous MWA of lesions near the portal vein, IVC, and gall bladder using a single Antenna ECSEC system is a safe and effective means of treatment. Survival was associated with better pre-operative liver function. However, studies with larger numbers of patients are needed.

Supported by: The project described was supported by the National Center for Advancing Translational Sciences, National Institutes of Health, through Grant UL1TR001998.

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Presentation 20

Abstract Title:	**Co-development & refinements of a Facebook Intervention to Promote Human Papillomavirus (HPV) Vaccination (#HPVvaxtalks)**
Author(s):	Ntego T., College of Arts & Sciences, U of Kentucky Ebikwo C., College of Nursing, U of Kentucky Deaton L., College of Nursing, U of Kentucky Adegboyega A., College of Nursing, U of Kentucky

Abstract: #HPVvaxtalks is a theoretically grounded and culturally appropriate Facebook intervention developed in collaboration with a Youth Community Advisory Board (YCAB) to increase awareness of HPV risk factors, risk perception, HPV vaccine-related knowledge, and vaccination intention and uptake for Black individuals. Community advisory boards provide an opportunity for community members to participate in research, voice concerns and priorities reflecting the community's interest in making interventions more relevant and appropriate for the target populations. This study describes the role of a YCAB in the development and refinement, of #HPVvaxtalks prior to pilot testing. Five young Black adults (18-26 y.o) recruited from the community using approved flyers and snowballing were invited to become members of a YCAB. YCAB meetings occurred bi-weekly for three months. YCAB reviewed the preliminary version of #HPVvaxtalks developed by the research team, provided critiques, and generated suggestions for refinement. Following completion of the collaborative process, YCAB participants completed individual interviews to reflect on the iterative process. Feedback from YCAB participants focused on the relevance, engagement, clarity, and organization of the content and the media utilized. Participants suggested using “memes” to improve cultural relevance and engagement for Black individuals. The final intervention consisted of 40 messages to be posted over 8 weeks. All YCAB members expressed satisfaction with the development process and felt they were valuable partners in the process.
Collaboration with a YCAB was crucial in developing a culturally relevant and acceptable #HPVvaxtalks intervention for young Black adults. Formative testing will ensure cultural appeal and engagement.

Supported by: American Cancer Society Institutional Grant

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Presentation 21

Abstract Title:	**Identifying Determinants to Implementing Community-Engaged Colorectal Cancer Screening in Louisville Black Churches**
Author(s):	R. A. Wood, College of Public Health, U of Kentucky C. A. Combs, College of Public Health, U of Kentucky E. Holtsclaw, American Cancer Society, Lexington, KY J. L. Stapleton, Department of Health, Behavior & Society, U of Kentucky; L. B. Williams, College of Nursing, U of Kentucky A. J. Kruse-Diehr, College of Medicine, U of Kentucky

Abstract: Background: Use of colorectal cancer (CRC) screening beyond colonoscopy remains suboptimal among Black populations despite research suggesting patients of all races prefer stool-based tests. We partnered with five Black churches in Louisville, Kentucky to identify determinants that might influence a church stool-based CRC screening intervention.
Methods: We identified project champions (n = 6) in partner churches and conducted interviews aligned with relevant constructs from the Consolidated Framework for Implementation Research (CFIR). Questions probed implementation climate, intervention champions, stakeholders, and compatibility of interventions within the churches. Interviews were recorded, transcribed, and organized using a codebook template to identify common themes.
Findings: Project champions described strong tension for change in their community, with common themes being medical mistrust and inequitable care in health care settings. Champions endorsed outreach and collaboration in non-traditional settings, such as with churches, trusted Black organizations, health care providers, and businesses. Church-based screening interventions were considered compatible with church culture, since interpersonal communication contributed to the success of prior church-based campaigns. Members of pastoral teams, church opinion leaders, and trusted Black health care providers within congregations were identified as potential champions.
Discussion: Given themes of medical mistrust, community-engaged CRC screening interventions hold promise to supplement existing healthcare screening initiatives. Interventions must reflect local culture, context, and include the Black community to increase buy-in.

Supported by: NCATS UL1TR001998 and NCI P30CA177558 via pilot funding from CCTS/MCC Early Career Investigator award

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Undergraduate Student
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Center for Clinical and Translational Science

Abstracts

Presentation 22

Abstract Title:	**Colon Cancer Risk Factor Awareness, Knowledge, and Attitudes for African Immigrants**
Author(s):	M. E. Lemma, College of Public Health, U of Kentucky F. Sesenu, College of Communication and Information, U of Kentucky J. R. Thompson, Markey Cancer Center, U of Kentucky A. Adegboyega, College of Nursing, U of Kentucky

Abstract: In the United States, colorectal cancer (CRC) is one of the top three most commonly diagnosed cancers, with debilitating morbidities and high mortality rates. A general lack of knowledge and misconceptions regarding lifestyle risk factors and screening of CRC increases the risk of acquisition. These problems are recently being identified as underlying factors for CRC racial/ethnic disparities, especially among Blacks in the US. However, US blacks are not a monolithic group in terms of CRC risks and perceptions (Gwede et al., 2011). This study explores the knowledge and attitudes of CRC risk factors for an often-overlooked vulnerable population in the US – African immigrants. This study sought to do this by recruiting 30 participants from the Redeemed Christian Church of God in Lexington, KY to complete an online health survey. We juxtapose and discuss our findings about African immigrants' knowledge, attitudes, and awareness with those of US-born Black Americans and other racial/ethnic groups from previous literature to identify gaps for intervention. This study contributes to unique insights about potential knowledge and attitude barriers among African immigrants to CRC risk recognition and prevention behaviors like early and regular screening. Future research could examine the efficacy of targeting this vulnerable subgroup with community-level strategies, routine counseling on screening, and culturally-sensitive educational material.

Supported by: SPARK program, UK Center for Health Equity Transformation (CHET), UK Center for Clinical and Translational Science (CCTS), Cardiovascular Disease Research Priority Area, Aetna Better Health of Kentucky.

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Abstracts

Presentation 23

Abstract Title:	**Financial Toxicity and Healthcare Transitions among Adolescent and Young Adult Cancer Survivors**
Author(s):	K. M. Todd, College of Medicine, U of Kentucky M. N. Caldwell, Appalachian Career Training in Oncology (ACTION), U of Kentucky E. A. Ruschman, College of Health Sciences, U of Kentucky J. Edward, College of Nursing and Market Cancer Center, U of Kentucky

Abstract: Poor healthcare transitions (HCTs) among Adolescent and Young Adult (AYA) cancer survivors can lead to harmful medical, psychological and financial consequences including decreased treatment compliance, healthcare utilization and increased rates of hospitalizations. The purpose of this study was to examine barriers and facilitators to successful HCTs among AYA cancer survivors in Kentucky. This study was part of a larger research project examining racial disparities in financial toxicity, cost-related health literacy, and healthcare transitions in AYA cancer survivors in KY. Study participants were recruited from a pediatric oncology clinic and participated in qualitative key-informant interviews. Interviews lasted less than 60 minutes and were audio recorded, transcribed, and analyzed in NVivo using a case study approach using the Social-ecological Model of AYA Readiness for Transition. The first case is a 33-year-old male currently in remission from leukemia; diagnosed in 2015; experienced FT (Financial Toxicity) due to loss of assets and subsequent lack of access to proper financial aid. The second case is a 22-year-old non-binary who currently has relapsed with rhabdomyosarcoma; experienced FT due to costs of cancer care and side effects. Major themes that came up in both interviews were related to FT, mistrust in the healthcare system and healthcare providers, cost-related health literacy, and financial navigation. Barriers to successful HCTs resulted in noncompliance with medications and healthcare follow-up after completing cancer treatments. Treatment plans were impacted due to barriers to access, FT, and lack of patient advocacy. Addressing barriers to successful HCTs could lead to better health and financial outcomes among AYA cancer survivors.

Supported by: University of Kentucky's UNITE (United in True Racial Equity) & Markey Cancer Center Pilot Application

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Presentation 24

Abstract Title:	**Evaluating Tobacco and Radon Co-Exposure Risk Messaging During Lung Cancer Screening Shared Decision Making**
Author(s):	S. R. Stanifer, College of Nursing, U of Kentucky A. Darville, College of Nursing, U of Kentucky P. Hull, College of Medicine, U of Kentucky W. Beckett, College of Nursing, U of Kentucky K. Rademacher, College of Nursing, U of Kentucky M. K. Rayens, College of Nursing, U of Kentucky E. J. Hahn, College of Nursing, U of Kentucky

Abstract: Lung cancer screening (LCS) is recommended for high-risk individuals and has been shown to decrease mortality. Co-exposure to tobacco and radon has a synergistic effect on the development of lung cancer. Kentucky leads the nation in lung cancer mortality. Widespread use of tobacco is a major factor in this burden, yet exposure to radon is undoubtedly also a contributing factor as 93% of Kentucky counties have moderate-to-high radon risk potential. Lung cancer screening shared decision-making (SDM), which involves counseling high-risk individuals on the risks and benefits of LCS, is an ideal teachable moment to promote smoking cessation as well as home radon testing and mitigation. Using stratified random sampling by ADD, we invited 1,000 PCPs from across Kentucky to participate in a mailed survey assessing beliefs and practices related to lung cancer prevention and explore current tobacco and radon risk messaging during LCS SDM visits. 147 (14.7%) PCPs responded to the survey,78% APRNs, while the remaining 22% were MD/DOs. Providers frequently reported counseling patients on smoking cessation during LCS SDM, while 70% reported never recommending home radon testing; 77% reported never recommending radon mitigation. Providers who reported ever testing their homes for radon, and those who had higher beliefs regarding the potential harms associated with radon exposure reported higher frequencies of discussing radon risk reducing actions, higher radon testing and mitigation self-efficacy, and frequency of discussing radon during lung cancer screening shared decision making. Lung cancer screening does not prevent most lung cancer deaths; thus risk reduction remains essential.

Supported by: This pilot was supported by the National Center for Research Resources and the National Center for Advancing Translational Sciences, National Institutes of Health, through Grant UL1TR001998.

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Presentation 25

Abstract Title:	**Zebrafish Patient Derived Xenograft Models for Precision Medicine in Glioblastoma**
Author(s):	E. Winter, Department of Molecular and Cellular Biochemistry, U of Kentucky A. Rodriguez, Department of Neurosurgery, U of Arkansas Medical Center J.S. Blackburn, Department of Molecular and Cellular Biochemistry, U of Kentucky

Abstract: Pediatric Glioblastoma (pGBM) patients have a 3 year survival rate of approximately 10% and pediatric brain tumors remain the leading cause of pediatric cancer-related death. There is currently no standard of care treatment for this devastating disease. Intratumoral heterogeneity within the stem cell population of pediatric GBM tumors make the development of personalized therapy strategies difficult. We have previously used bulk tumor gene expression data in a precision medicine platform to identify targets for GBM. However, preliminary unpublished data from single-cell RNA sequencing (scRNA-seq) in a patient with pediatric GBM before and after targeted treatment demonstrates multiclonal diversity amongst the cancer stem cell population which leads to treatment resistance. In order to further understand mechanisms of treatment resistance from intratumoral heterogeneity, we are developing patient-derived zebrafish xenograft (PDZX) models as a precision medicine platform for pediatric GBM. The overall goal of this research is to combine state-of-the-art scRNA-seq with a novel pre-clinical animal model to recapitulate intra-tumoral heterogeneity for uncovering novel targets and mechanisms of treatment resistance. We hypothesize that PDZX can recapitulate the parent pGBM tumors including intra-tumoral stem cell heterogeneity that leads to treatment resistance. The PDZX model can lead to high throughput, clinically relevant drug testing, and rapid evaluation of treatment resistance mechanisms. Ultimately, this strategy can be used to overcome barriers that limit treatment options to underserved pediatric GBM patients.

Supported by: Pilot funding from UK Center for Clinical and Translational Science

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Abstracts

Presentation 26

Abstract Title:	**Comparison of abnormal wall-motion pattern on 2-D Echo in patients with takotsubo versus acute coronary syndrome**
Author(s):	T. Ahmed, Department of Internal Medicine, U of Kentucky M. Duncan, Department of Internal Medicine, U of Kentucky V. L. Sorrell, Department of Internal Medicine, U of Kentucky

Abstract: Introduction: Differentiating Takotsubo (TTS) & anterior acute coronary syndrome (ACS) conventionally requires an invasive coronary angiography due to the similarities in clinical, electrocardiographic, and echocardiographic findings. Given the major differences in the underlying etiology for regional wall motion abnormalities (RWMA) we anticipate a difference will exist in the RWMA pattern if a highly critical comparative echocardiographic analysis is performed.
Methods: 89 patients with TTS (N 49) or LAD-ACS (N 40) who underwent concomitant echocardiographic and coronary angiographic assessment (within 72 hours) were analyzed. Patients were classified as TTS or ACS using clinical, electrocardiographic, laboratory, angiographic and echocardiographic findings. The most discrepant RWMA pattern between TTS and ACS was the apical 2-chamber view. The exact location of the anterior (AHP) and inferior (IHP) myocardial “hinge” points (i.e.: border of normal/abnormal wall thickening) relative to the mitral annulus was therefore quantitatively measured in all patients. Analysis was performed blinded to the underlying classification.
Results: As expected, there were differences in age, gender, clinical presentation, and cardiac biomarker levels. (table). The ratio (1.0) and the absolute distance between the AHP (3.5cm [3.2-3.9])/IHP (3.5cm [3.0-3.9]) in TTS was strikingly different than the ratio (0.82) and absolute difference between the AHP (5.0cm [4.425-5.5])/IHP (6.1cm [5.3-6.9]). An AHP/IHP ratio of 1.185 for TTS and 0.916 for ACS was able to correctly categorize 90% of patients.
Conclusions: We propose a relatively simple 2-D TTE diagnostic tool to differentiate TTS from ACS that will now be tested in a prospective blinded cohort of patients.

Supported by:

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Presentation 27

Abstract Title:	**Identifying Predictors of Post-Discharge Major Adverse Cardiovascular Events in Chest Pain Patients Seen in the ED**
Author(s):	S. Khandani, University of Kentucky College of Medicine; V. A. Gupta, Departments of Internal Medicine and Cardiology, U of Kentucky;

Abstract: Background: Chest pain patients in the Emergency Department (ED) are often ruled out for an acute coronary syndrome, but still have a significant risk of major adverse cardiovascular events (MACE) after discharge. This study aimed to determine whether specific clinical variables, electrocardiography (ECG), and laboratory findings predict early MACE in ED chest pain patients.
Methods: This retrospective study evaluated a cohort of chest pain patients in our ED from December 2018 to June 2019. Clinical variables including chest pain characteristics and risk factors, ECG findings, and laboratory markers were assessed via chart review. The primary outcome was MACE, defined as death, myocardial infarction, or revascularization within 30 days of discharge. Normally distributed continuous variables and dichotomous variables were analyzed using unpaired t-test and Fisher's Exact test, respectively.
Results: 1043 patients were included, with 20 patients experiencing a MACE within 30 days. Patients who experienced a MACE were statistically older (60.8+/-11.0 vs 50.6+/-16.7 years), more likely to have a history of CAD (50% vs 20%), HTN (90% vs 69%), and DM (70% vs 28%). There was no difference in chest pain description, but those who experienced MACE were more likely to have ST depression (20% vs 6%), positive troponins (60% vs 25%), and less likely to have undetectable troponins (5% vs 36%).
Conclusion: In ED chest pain patients, older age, CAD, HTN, DM, ST depression and positive troponins were associated with experiencing a MACE event within 30 days of discharge.

Supported by:	The Professional Student Mentored Research Fellowship (PSMRF) Project is supported by the National Center for Advancing Translational Sciences through Grant UL1TR001998, UK HealthCare and the University of Kentucky College of Medicine. .

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Abstracts

Presentation 28

Abstract Title:	**Stroke-induced CCR3 expression associated with delayed cerebrovascular microbleeds**
Author(s):	S. Claypoole, College of Medicine, U of Kentucky J. Frank, Departments of Neurosurgery and Center for Advanced Translational Stroke Science, U of Kentucky C. Pandya, Departments of Neurosurgery and Center for Advanced Translational Stroke Science, U of Kentucky K. Pennypacker, Departments of Neurology, Neurosurgery, and Center for Advanced Translational Stroke Science, U of Kentucky

Abstract: Introduction: Thirty percent of ischemic stroke patients develop vascular cognitive impairment and dementia (VCID) within 1 year of stroke onset. The expression of C-C motif chemokine receptor 3 (CCR3) has been reported to increase after experimental stroke causing endothelial dysfunction and is associated with memory impairment. Endothelial dysfunction with microbleeds has been cited to be a cause of VCID. Using both in vitro and in vivo models of stroke, our study aims to link CCR3 to VCID.

Methods: 5-hour transient Middle Cerebral Artery Occlusion (5t-MCAO) or sham surgery was performed on rats and tissue was collected at 3- and 30-days post-stroke. Immunohistochemistry was performed on brain tissue sections using Prussian blue to visualize microbleeds and DAB to visualize CCR3. Images were quantified using HALO. Brain microvascular endothelial cells (BMECs) underwent oxygen-glucose deprivation (OGD). GW766994, a CCR3 antagonist, was added prior to OGD and throughout reoxygenation. Immunofluorescence assay (IFA) was performed to visualize CCR3 expression.

Results: CCR3 expression increases in the ipsilateral hemisphere at 3- to 30-days post-5t-MCAO. Prussian blue staining was significantly increased in ipsilateral sections at 30 days post-stroke. Immunostaining for CCR3 was detected in endothelium labeled with Prussian blue. CCR3 is more intensely expressed after hypoxia. Treatment of GW76694 suppressed this expression.

Conclusion: CCR3 expression is associated with the presence of microbleeds at 30-days post-stroke and its expression is suppressed with GW766994 in hypoxic conditions. These results support a link between CCR3 and endothelial dysfunction that lead to VCID with CCR3 antagonists leading to a potential treatment.

Supported by:	The Professional Student Mentored Research Fellowship (PSMRF) Project is supported by the National Center for Advancing Translational Sciences through Grant UL1TR001998, UK HealthCare, and the University of Kentucky College of Medicine.

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Presentation 29

Abstract Title:	**Development of a Fluorescent Microscope Setup to Measure Myosin Conformations**
Author(s):	U.Gulbulak, Division of Cardiovascular Medicine, U of Kentucky A. Wellette-Hunsucker, Department of Physiology, U of Kentucky K. S. Campbell, Division of Cardiovascular Medicine, U of Kentucky

Abstract: The blood is an essential part of the circulatory system, acting as a medium for molecular exchange. The collective contraction and relaxation of cardiomyocytes change the volume of the ventricles and pump the blood. Myosin heads, bound to actin, go through power stroke to generate force. It was shown that not all available myosin motors contribute to force generation. Myosin heads can be found in a disordered relaxed state (DRX), ready to bind actin, or a super relaxed state (SRX), where actin binding is prohibited. In addition to their functional state, DRX myosin heads turn over ATP 10 times faster than SRX myosin. The dynamic equilibrium of force-generating, DRX, and SRX myosin is disturbed in cardiovascular diseases. Here, we present the development of a fluorescent microscope setup to measure the proportion of myosin conformations and the collected pilot data. The experimental protocol involves a fluorescent ATP analog, mant-ATP. It emits light following excitation with an ultraviolet light source. The mant-ATP is chased by non-fluorescent ATP. Then, the decay in fluorescence is analyzed to find the myosin proportions. The experimental setup includes an inverted microscope, an area scan camera, and an LED light source. A custom-written MATLAB pipeline is used to control the hardware, collect the images from the camera, and analyze the images using image segmentation. The experimental setup will identify the differences in SRX/DRX ratio in diseased human myocardium compared to donors in future experiments.

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Cardiovascular

Abstracts

Presentation 30

Abstract Title: **Ophiasis Alopecia Areata in an Infant**

Author(s): M. Shakhashiro, University of Kentucky College of Medicine;
S. Pasagic, University of Kentucky College of Medicine;
C. L. Wilson, MD, Elkhorn Dermatology

Abstract: Introduction: Alopecia areata is a hair loss disorder that affects individuals of all ages and presents in various forms, including the rare ophiasis pattern. However, it is relatively uncommon in neonates and infants with very few documented reports. Young age of onset and ophiasis-pattern have both been shown to be indicators of poor prognosis and severe disease. The exact underlying pathogenesis of alopecia areata remains unknown, with various genetic, autoimmune and environmental factors implicated, including viral infections.
Summary of Case: A four-month-old infant with a past medical history of non-congenital CMV infection (diagnosed with urinary PCR) presented to a dermatology clinic with evidence of hair loss in various stages of regrowth on the bilateral occipital scalp and superior mid-forehead, consistent with ophiasis-pattern alopecia. Remaining skin and nails were unremarkable. No developmental abnormalities were noted. No hair abnormalities were present at birth. There was no family history of alopecia areata, skin disease, or other autoimmune conditions.
Conclusion: The band-like pattern of hair loss present in our patient, known as ophiasis alopecia, is very uncommon, particularly in an infant, and has been associated with a poorer prognosis. This report adds to the existing literature by presenting a rare case of alopecia areata in an infant, presenting in a unique ophiasis pattern, and highlights the importance of differentiating alopecia areata from other forms of pediatric hair loss. The patient was treated with topical triamcinolone 0.1% which resulted in improvement of alopecia at the six-week follow-up, but not complete resolution of symptoms.

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Presentation 31

Abstract Title: **A Case of Linear Focal Elastosis Presenting in an 11-year-old Female**

Author(s): M. Shakhashiro, University of Kentucky College of Medicine
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K. McKay, MD, SkinPath Solutions

Abstract: Introduction: Linear focal elastosis (LFE) is a rare dermal elastic condition that is clinically characterized by yellow horizontal linear plaques that are typically distributed in the lumbar region. Few reports of LFE have been described in the literature, with cases occurring predominantly in males. We present an atypical case of LFE arising in the extremities of a young female.
Summary of Case: An 11-year-old female presented to the dermatology clinic with multiple yellow linear plaques on the left thigh and under skin folds that have been present for numerous months. The rash was completely asymptomatic. There was no history of trauma, rapid or excessive weight gain, or systemic drug use. Family history and past medical history were unremarkable. A punch biopsy was performed on the thigh demonstrating a well-delineated subtle increase and aggregation of elastic fibers in the mid-upper reticular dermis along with an increase in interstitial mast cells.
Conclusion: A fairly consistent feature of linear focal elastosis is its occurrence in the lumbar region and its predominant prevalence in males. We present a case of LFE presenting in a less commonly reported location on the thighs and in a young female. Originally described as a condition occurring on the backs of elderly males, our case along with other recent reports extends the spectrum of this condition to include trunks and limbs of children and adolescent males and females. The inadequate understanding of the true prevalence and demographics of LFE may be due to potential underreporting of the condition.

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Presentation 32

Abstract Title:	**Access to Dermatology Services in Appalachia: A Cross-Sectional Study Using Medicare FFS Data**
Author(s):	S. Daniel, U of Kentucky N. Patel, U of Kentucky J. Newcomer, U of Kentucky C. Wilson MD, U of Kentucky Will Cranford MS, Department of Biostatistics, U of Kentucky Emily Slade PhD, Department of Biostatistics, U of Kentucky Jeffery Talbert PhD, Department of Biomedical Informatics, U of Kentucky

Abstract: Background: The Appalachian region is disproportionately affected by multiple health problems and comorbidities, contributed by poor access to healthcare We performed a cross-sectional study to evaluate access to both generalized and specialized dermatologic care within the region.
Methods: A cross-sectional study using Medicare CPT/HCPCS billing codes from the Physician and Other Practitioners Public Use File from 2019 was performed. Data was evaluated in all zip codes in Appalachian counties, which were established based on counties served by the Appalachian Regional Commission. Counties were then assigned as “urban” (RUCC 1-3) or “rural” (RUCC 4-9) based on the USDA RUCC classification. The rate of utilization of both generalized dermatologic care and specialized procedures was assessed by the rate of beneficiaries billed for procedures per 100,000 FFS Medicare population. Rates were then compared between rural and urban counties to establish urban-rural ratios.
Results: In total, there were 3,105,698 dermatology services performed, with 2,477,960 (79.8%) of these performed in urban counties and 627,728 (20.2%) performed in rural counties. The urban-rural ratios for new and established patient E&M procedures were 3.4 and 3.8, respectively. The urban-rural ratios for more specialized procedures were 6.2 for Mohs micrographic surgery, 7.7 for flaps and grafts, and 15.1 for narrow-band UVB (NBUVB).
Conclusion: Significant disparities exist within the Appalachian region, particularly regarding access to specialized dermatologic procedures such as Mohs surgery and NBUVB. Our study highlights the need for practicing general dermatologists and Mohs surgeons in this region.

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Abstracts

Presentation 33

Abstract Title:	**Assessing Prediction Fairness of AlphaFold2 in Drug Discovery**
Author(s):	Usman Abbas, Department of Chemical & Materials Engineering, U of Kentucky Xingjian Shan, Department of Chemical & Materials Engineering, U of Kentucky Jin Chen, Institute for Biomedical Informatics, Department of Computer science, U of Kentucky Qing Shao, Department of Chemical & Materials Engineering, U of Kentucky.

Abstract: AlphaFold2 is revolutionizing drug discovery by open sourcing more than 200M predicted protein structure predictions ready to use. These predictions enable researchers to investigate protein functions with likely conformations. Even with the claimed high accuracy, it remains unknown whether AlphaFold2 can predict the wide spectrum of protein structures equally well. In this work, we analyzed over 5 million reported protein structure predictions from the AlphaFold2 database regarding model fairness. Our analysis reveals the variation of AlphaFold2's prediction confidence with respect to residue types, secondary structures, and protein sizes. Such variation could shed light on prioritizing AlphaFold's predicted protein structures in drug discovery.

Supported by: Startup funds, UK Artificial Intelligence (AI) in Medicine Research Alliance Pilot, of the University of Kentucky;University of Kentucky Center for Computational Sciences and Information Technology Services Research Computing for the use of the Morgan Compute Cluster.

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Presentation 34

Abstract Title:	**Anti-SSTR2 Octreotide-Ternary Polypeptide Nanoparticles for Neuroendocrine tumor Liver Metastasis Therapy**
Author(s):	P. Agbana, Department of Pharmaceutical Sciences, U of Kentucky C.A. Kunos, Department of Radiation Medicine, U of Kentucky L.B. Anthony, Department of Internal Medicine-Medical Oncology, U of Kentucky Y. Bae, Department of Pharmaceutical Sciences, U of KentuckyP. Rychahou, Cancer Center-Core Support, U of Kentucky

Abstract: Neuroendocrine tumors are a class of malignant tumors that arise from cells throughout the diffuse endocrine tumors. One of the most common forms of neuroendocrine tumors, pancreatic neuroendocrine tumors (pNET) frequently present with advanced disease and is often linked to aggressive metastasis to the liver as well as other distant sites. Surgical resection is the main therapy for pNET, but there are limited treatment options for metastatic disease. Nanotherapy using targeted polypeptide nanoparticles have emerged as a viable strategy to deliver potent drugs to metastatic disease. Here, we designed ternary polypeptide nanoparticles (tPNPs) entrapping a potent chemotherapeutic (SN-38) to treat pNET. To enhance specific delivery, octreotide (Oct), a somatostatin receptor is conjugated onto the surface of tPNPs. These nanoparticles have the advantage of easy formulation, increased drug solubility and targetability. tPNPs were prepared by a modified solvent evaporation method and characterized for particle size, zeta potential and drug release kinetics. Our results revealed Oct conjugated SN-38 loaded tPNPs (Oct-tPNPs/SN-38) having sub-100 nm size with neutral surface charge. Additionally, Oct-tPNPs/SN-38 released drug in vitro and produced a reduction in the viability of BON-1 cells. Ligand-receptor interaction on cell surface allows targeted therapies to be endocytosed into cells for effective treatment. We used confocal microscopy and flow cytometry to confirm the binding of Oct-tPNPs to somatostatin 2 receptor (SSTR2) which is expressed on BON-1 cells. Therefore, taken together, Oct-tPNPs show ability to efficiently encapsulate potent drugs and preferentially target SSTR2 which holds promise for the treatment of pNET.

Supported by: NIH CTSA grant: UL1TR001998

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Presentation 35

Abstract Title:	**Biological Activities and Chemical Characterization of Secondary Metabolites Produced by a Brazilian Endophytic Fungi**
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Abstract: The Brazilian Pantanal biome is known to harbor enormous biodiversity being a potential source of natural bioactive compounds. In a previous study, the endophytic fungi Xylaria arbuscula CMRP5059 isolated from Vochysia divergens, a medicinal plant in Pantanal region, showed promising bioactivity against the citrus phytopathogens Colletotrichum abscissum and Phyllosticta citricarpa. Here we aimed to characterize the bioactive secondary metabolites produced by the fungal strain CMRP5059 and evaluate its biological activity against two phytopathogenic fungi. The endophytic fungi Xylaria arbuscula CMRP5059 was cultured in a large-scale fermentation, followed by solid phase extraction (XAD-16 resin and methanol) resulting in 7.7g of crude extract. The obtained crude extract was subjected to various chromatographic techniques (e.g., Silica gel column, RP-18 reverse column, Sephadex LH-20, semi-prep HPLC), followed by TLC and HPLC analysis. The generated fractions were subjected for biological activity evaluation against C. abscissum and P. citricarpa as well as the cytotoxicity assay evaluation against A549 (non-small lung), PC3 (prostate) and HCT116 (colorectal) human cancer cell lines. Bioactive fractions were subjected for further purification, and the chemical structure of the generated pure compounds have been established by MS and 1D and 2D NMR. So far, over 30 compounds have been isolated and identified from this fungal crude extract, which belong to various chemical classes, including coumarins, peptides, terpenoids, cytochalasins. The endophytic fungi Xylaria arbuscula CMRP5059 has been proved to be a great producer of bioactive natural products that can be useful against phytopathogenic fungi.

Supported by:

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Presentation 36

Abstract Title:	**Development of novel therapeutics for controlling Salmonella enterica subsp. enterica serovar Typhimurium infections**
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Abstract: Salmonella enterica subsp. enterica serovar Typhimurium is a zoonotic foodborne pathogen responsible for non-typhoidal gastroenteritis in humans and animals globally. The consumption of contaminated poultry and poultry products is the main source of human infections. Currently, Salmonella is treated with antibiotics such as fluoroquinolones and cephalosporins, however, the rapid development of antimicrobial resistance against these antibiotics has necessitated the development of new approaches for the control of Salmonella. Quorum sensing is a cell-to-cell communication that is regulated by the production, release, detection, and response of signal molecules called Autoinducers (AI). Quorum sensing is responsible for the regulation of virulence, biofilm formation, and motility of the bacteria inside the host. In this study, we screened approximately 1300 compounds for their effect on growth and QS/AI-2 inhibition of Salmonella Typhimurium. Our results showed that out of 1300 compounds, 27 had an inhibitory effect (>80%) on the growth of the bacteria. The compounds with the lowest growth inhibition (<20%) were subjected to AI-2 luminescence inhibition assay using indicator bacteria (Vibrio harveyi BB170). We identified three compounds that showed inhibition of AI-2 bioluminescence (>80%). Our future studies will focus on determining the effect of the drugs on other resistant serotypes of Salmonella, biofilm formation, toxicity to human intestinal and chicken macrophage cells, and expression of virulence factors. This research will facilitate the development of novel antibiotic alternative therapeutics to treat Salmonella infections in humans and animals.

Supported by: This work was supported by the Center for Pharmaceutical Research and Innovation (CPRI, NIH P20 GM130456) and the National Center for Advancing Translational Sciences (UL1 TR001998).

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Presentation 37

Abstract Title: **Non-antibiotic Azithromycin Analogs for Immunomodulation**

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Abstract: Azithromycin (AZM) is a macrolide antibiotic that is commonly used in respiratory infections. In addition to this, AZM exhibits immunomodulatory properties and has shown utility in a spectrum of inflammatory conditions, including cystic fibrosis, chronic obstructive pulmonary disease and asthma. However, the emergence of antibiotic resistance with increased use of AZM and other macrolides for their secondary anti-inflammatory effects is of major concern. To address this, our studies aimed to pinpoint AZM's mechanism of action while addressing antibiotic resistance issues through generation of nonantibiotic immunomodulatory AZM derivatives. We strategically designed these derivatives by modifying sugar moieties known to be responsible for antibiotic activity while also improving its anti-inflammatory efficacy through targeted synthesis. Standard minimum inhibitory concentration (MIC) assay showed a significant loss of antibiotic potency in 11 out of 12 analogs. Immunomodulatory potential was assessed through both assays testing NF-κB translocation in monocytes as well as interleukin- 12 (IL-12) secretion from J774 macrophages. These assays both indicated that the majority of the nonantibiotic AZM derivatives exerted superior anti-inflammatory effects compared to their parent compound. Together, these data suggest that the anti-inflammatory mechanisms of AZM can be uncoupled from its antibiotic effects using a targeted approach and offer a path forward for rational design of further immunomodulatory agents.

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Presentation 38

Abstract Title:	**Development of novel probiotics as antibiotic-alternative approaches for the control of Salmonella infections**
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Abstract: Salmonella is the leading cause of foodborne illnesses, responsible for foodborne poisoning hospitalization, and outbreaks worldwide. Poultry is the main source and reservoir for human salmonellosis. Multidrug-resistant (MDR) strains of Salmonella can cause outbreaks, highlighting the significance of maintaining public health and food safety. Therefore, the development of antibiotic alternatives to mitigate Salmonella infection and associated antimicrobial resistance are necessary. Probiotics are beneficial microorganisms that live in the intestine and enhance the gut health of their hosts. Next-generation probiotics (NGPs) have shown potential as novel therapeutics to control pathogenic bacteria. In this study, we aim to evaluate the efficacy of novel probiotics in preventing Salmonella growth and pathogenicity in vitro. We tested the anti-Salmonella activity with multiple novel probiotic strains using an agar-well diffusion assay and identified that many NGPs revealed a strong zone of inhibition against Salmonella growth. Probiotics showing a high level of inhibition were then evaluated for anti-Salmonella activity using a co-culture assay in liquid media, and the results illustrated complete inhibition of Salmonella growth after 24 hours of incubation. Additionally, our results showed that the selected probiotic strains have high efficacy on the biofilm formation of Salmonella. In the future, we will evaluate the efficacy of these probiotics in protecting the human intestinal cells from Salmonella infection as well as investigating their effect on Salmonella virulence factors. In conclusion, probiotics show promising potential for controlling Salmonella infections in vitro.

Supported by:

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Drug Development

Presentation 39

Abstract Title:	**Effect of AF-454, A Selective P2X3 Blocker, on Vagal Bronchopulmonary Afferent Sensitivity to Chemical Irritants in Rats**
Author(s):	Y. Y. Chen, Department of Physiology, U of Kentucky L. Y. Lee, Department of Physiology, U of Kentucky

Abstract: Activation of vagal pulmonary afferents, such as bronchopulmonary C-fibers, can elicit airway defense reflexes (e.g., cough). In recent years, rising evidence has shown that the P2X3 antagonist is a potent antitussive agent for treating refractory chronic cough (RCC), suggesting a possible involvement of P2X3 in the pathogenesis of RCC. However, whether P2X3 antagonists can alter the sensitivity of vagal afferents to chemical irritants remains unknown. This study was carried out to answer this question using the single-unit recording technique of vagal bronchopulmonary C-fibers in anesthetized and artificially ventilated rats. Our results showed: 1) A pretreatment with AF-454 (30 mg/kg, i.v.), a selective P2X3 receptor antagonist, did not alter bronchopulmonary C-fiber responses to capsaicin (Cap), a selective activator of the TRPV1 channel and a potent chemical stimulant of C-fibers, and lung inflation. 2) AF-454 significantly inhibited the C-fiber discharges evoked by bolus i.v. injections of ATP, an endogenous activator of purinergic P2 receptor, and completely blocked the response to α,β-methylene ATP, a selective P2X purinergic receptor agonist. 3) The C-fiber responses to inhalations of sulfur dioxide (SO2) and ammonia (NH3) were also mildly attenuated after the AF-454 pretreatment; both SO2 and NH3 are common and hazardous irritant gases present in various industrial facilities. In conclusion, the treatment of AF-454 exerted an inhibitory effect on vagal pulmonary afferent response to the i.v. injection of P2X agonists and inhaled irritant gases, suggesting a possible involvement of P2X3 receptors in the C-fiber responses to inhaled SO2 and NH3.

Supported by:	Supported in part by Merck MISP 100107 and NIH grants AI123832 and ES026529-04S1

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Abstracts

Presentation 40

Abstract Title:	**Acid Rain and Surface Mining: Implications of regional and local stressors on environmental chemistry**
Author(s):	Kenton L. Sena, Lewis Honors College, U of Kentucky Tanja N. Williamson, US Geological Survey Christopher D. Barton, Department of Forestry and Natural Resources, U of Kentucky

Abstract: With the enactment of the Clean Air Act, emissions of acid-forming nitrogen and sulfur oxide decreased within a period of years, resulting in less deposition with rainfall. However, studies across Appalachia have shown that soils and streams have a long road of recovery from acid rain. Our research focuses on a four-decade dataset (1971-2015) of rainfall, soil profile, and stream-water chemistry from the University of Kentucky's Robinson Forest. Decreasing concentrations of nitrate and sulfate in rainfall occurred in years after the implementation of the Clean Air Act based on data from the National Atmospheric Deposition Program (NADP) sites in the region. However, data from the same period at Robinson Forest demonstrate more variability, suggesting that other factors influence precipitation chemistry in Robinson Forest. Satellite imagery was used to demonstrate that surface mining increased to a maximum areal extent along the boundary of Robinson Forest during the period of record. Thus, the rainfall chemistry effects at Robinson Forest that diverge from the NADP records appear to be coincident with surface-mining activities that generated sulfate and nitrate as well as increased dust concentrations. Stream water-quality records show generally decreasing sulfate concentrations over time, reflecting improvements in regional air-quality. However, other soil and stream-water indicators tell a troubling story, with plant nutrients being dissolved from the soil and carried away by streams. These observations illustrate the environmental legacy of acid deposition and surface mining, which has potential implications for environmental health.

Supported by: Funding provided by the National Atmospheric Deposition Program.

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Faculty
Basic Research
Environmental

Presentation 41

Abstract Title:	**Use of Contrast-Enhanced Ultrasound (CEUS) for Assessment of Renal Lesions**
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Abstract: In pre-transplant workups of incidental renal lesions, contrast-enhanced computed tomography (CT) or magnetic resonance imaging (MRI) is routinely used to classify lesions as benign or suspicious/malignant. However, intravenous (IV) contrast is often unsuitable for this patient population because of poor renal function. Contrast-enhanced ultrasound (CEUS) with intravascular microbubbles is an emerging modality which can be used to characterize indeterminate renal lesions. Several studies have shown comparable diagnostic and classification accuracy of CEUS in characterizing renal lesions in comparison to CT. This modality is especially useful for chronic kidney disease patients as this contrast medium does not utilize renal excretion, rather gaseous diffusion via lungs for excretion. The accurate diagnosis of indeterminate renal lesions is critical in the management of pre-transplant patients in order to avoid delays in receiving a transplant.

The exhibit goals are to understand the utility of CEUS in a patient population in which CT/MRI contrast agents are contraindicated, understand the principles of CEUS technique, and recognize the imaging features of a variety of renal pathologies found in pre-transplant assessments. Exhibit will showcase grayscale, doppler and CEUS images of various renal lesions found at pre-transplant workup.

With proper interpretation, the efficacy and accuracy of CEUS in the characterization of indeterminate renal lesions is high. Further, CEUS imaging has proven advantageous regarding repeatability, affordability, and addressing the needs of challenging patients. In the pre-transplant population, CEUS proves to be an efficient diagnostic imaging technique rather than assessing for lesion size stability which can delay time to transplant.

Supported by: The Professional Student Mentored Research Fellowship (PSMRF) Project is supported by the National Center for Advancing Translational Sciences through Grant UL1TR001998, UK HealthCare and the University of Kentucky College of Medicine

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Presentation 42

Abstract Title:	**De Novo Kidney Transplant Recipients using IR Tacrolimus vs Envarsus XR: GI Side Effects from a Randomized Control Trial**
Author(s):	M. Donoho, College of Medicine, U of Kentucky B. James, Department of Pharmacy, U of Kentucky D. Valvi, Department of Surgery, U of Kentucky X. Mei, Department of Transplant Services, U of Kentucky T. Rendulic, Department of Pharmacy, U of Kentucky R. Gedaly, Department of Transplant Surgery, U of Kentucky

Abstract: Tacrolimus is the first line maintenance immunosuppression in kidney transplant recipients with known gastrointestinal (GI) side effects. Different formulations of tacrolimus have been assessed in terms of pharmacokinetics and incidence of adverse effects. This analysis compared differences in GI side effects between twice-daily immediate-release tacrolimus (Prograf, IR-FK) versus once-daily extended-release tacrolimus (Envarsus XR, LCPT) post-kidney transplantation. This is a single-center, randomized controlled trial of adult kidney transplant recipients who received either weight-based dosing of IR-FK or LCPT on post-operative day one. Patients completed a modified Gastrointestinal Symptom Rating Scale (GSRS) at 1- and 3-months post-transplantation. This 15-question survey assessed GI symptom intensity, frequency, duration, and impact on daily living. These questions were then grouped to focus on upper and lower GI symptoms. Of a total of 37 patients, 20 were randomized to the IR-FK group and 17 to the LCPT group. At one month, 66% of patients experienced at least one GI symptom while at three months, 46% of patients experienced at least one GI symptom. At one month, the most commonly reported symptoms in the IR-FK group were abdominal pain, stomach rumbling, burping, excessive gas, and increased frequency of stools which were more prevalent than in those in the LCPT group. Patients on IR-FK experienced significantly increased gas symptoms at three months compared to those on LCPT (26% vs 0%, p = 0.047). This preliminary data shows a trend towards increased prevalence of GI side effects post-transplantation in patients receiving IR-FK compared to LCPT.

Supported by: Sponsored by Veloxis; NIH CTSA grant (UL1TR001998)

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Abstracts

Presentation 43

Abstract Title:	**Simplification of Virus Concentration Methods to Monitor COVID-19 Using Wastewater in Resource-Limited Settings**
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Abstract: In the context of catastrophic disease outbreaks such as the COVID-19 pandemic, the availability of accurate and consistent data on the spread of infection is paramount for public health authorities to make effective and timely decisions. However, conducting frequent testing of large populations presents significant logistical hurdles and requires access to extensive healthcare infrastructure and testing resources. This challenge is more sever in areas with socio-economic disparities and limited healthcare access especially in Low- and Middle-Income Countries (LMICs). To address this issue, one potential strategy is to employ wastewater-based epidemiology (WBE) as a means of monitoring disease trends at the community level by quantifying the concentration of pathogens in wastewater over time. Previous studies have demonstrated that SARS-CoV-2 virus can be found in the stool of COVID-19 patients. However, once the virus enters the wastewater system, it becomes significantly diluted and often requires concentration to reach detectible levels. However, many popular concentration methods rely on complex and expensive protocols/equipment (e.g., ultracentrifugation). This study compares multiple concentration techniques that are modified for simplicity and cost-effectiveness. The methods tested possessed a fast turnaround time (<1 hour) and minimal startup/instrument cost (<$3000), with a total reagent/consumable cost of less than $10 per sample for concentration, extraction, and quantification. While keeping the recovery efficiency high, two of the methods was further simplified to eliminate their dependence on electricity. The findings from this research can facilitate the application of WBE in resource-limited settings.

Supported by: The work was funded by National Institutes of Health (NIH) grants U01DA053903-01 and P30 ES026529, 415 Centers for Disease Control and Prevention (CDC) contract BAA 75D301-20-R-68024.

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Presentation 44

Abstract Title:	**The effects of doxapram (blocker of K2p channels) on resting membrane potential and synaptic transmission**
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Abstract: The resting membrane potential of most cells is maintained by potassium K2p channels. The pharmacological profile and distribution of various K2p channel subtypes in organisms are still being investigated. The Drosophila genome contains 11 subtypes; however, their function and expression profiles have not yet been determined. Doxapram is clinically used to enhance respiration in humans and blocks the acid sensitive K2p TASK subtype in mammals. The resting membrane potential of larval Drosophila muscle and synaptic transmission at the neuromuscular junction are pH sensitive. The present study investigated the effects of doxapram on membrane potential and synaptic transmission using intracellular recordings of larval Drosophila muscles. Doxapram (1 mM and 10 mM) depolarizes the muscle and appears to depolarize motor neurons, causing an increase in the frequency of spontaneous quantal events and evoked excitatory junction potentials. Verapamil (1 and 10 mM) paralleled the action of doxapram. These changes were matched by an extracellular increase in KCl (50 mM) and blocked by Cd2+. It is assumed that the motor nerve depolarizes to open voltage gated Ca2+ channels in presynaptic nerve terminals because of exposure to doxapram. These findings are significant for building models to better understand the function of pharmacological agents that affect K2p channels and how K2p channels contribute to the physiology of tissues. Drosophila offers a genetically amenable model that can alter the tissue-specific expression of K2p channel subtypes to simulate known human diseases related to this family of channels.

Supported by:

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Presentation 45

Abstract Title:	**Human HLA-A2 Molecule Activates Protective CD8+ T Cells Capable of Protecting Against Cerebral T. gondii Reactivation**
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Abstract: Reactivation of chronic infection with T. gondii causes life-threatening toxoplasmic encephalitis (TE) in AIDS patients. We previously identified an importance of IFN-gamma production by CD8+ T cells for preventing TE. Notably, once the CD8+ T cells are effectively activated in the presence of CD4+ T cells, the primed CD8+ T cells can prevent TE without further depending on CD4+ T cells. Thus, if we develop a method that efficiently activates the protective CD8+ T cells in individuals co-infected with HIV and T. gondii before their CD4+ T cell counts decrease, those primed CD8+ T cells will be able to prevent TE even when their CD4+ T cell counts decrease later. CD8+ T cells recognize their target antigens presented by the MHC class I molecules (MHC-I), and the HLA-A2.1 is one of the most common MHC-I molecule in humans. Thus, we examined whether HLA-A2.1 can activate CD8+ T cells capable of providing a protection against TE. We found that T. gondii-infected transgenic mice expressing human HLA-A2.1 have significantly lower cerebral T. gondii loads than did wild-type (WT) mice. When their CD8+ T cells were transferred to infected immunodeficient NSG mice expressing HLA-A2.1, the transgenic T cells conferred a significantly greater protection against reactivation of the infection than did WT T cells in association with greater expressions of IFN-gamma and effector molecules against tachyzoites in the former than the latter. These results provide a valuable foundation for developing an immunological intervention to prevent or reduce the development of TE in HIV-infected individuals.

Supported by:

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Presentation 46

Abstract Title:	**Global landscape assessment of active pharmacovigilance activities and safety data for COVID-19 vaccines**
Author(s):	P. A. Shamaei Zadeh, College of Medicine, University of Kentucky M. D. Knoll, International Vaccine Access Center, Johns Hopkins School of Public Health, Baltimore, Maryland

Abstract: Background: COVID-19 vaccine safety monitoring via pharmacovigilance methods such as Active Vaccine Safety Surveillance (AVSS) systems is necessary to detect rare adverse event (AE) signals to contextualize vaccine risk/benefit assessments for scientists and policymakers. Differences in AVSS capacities between high-income countries (HIC) and low- and middle-income countries (LMIC) have been documented prior to the COVID-19 pandemic.
Methods: A cross-sectional survey was conducted in January 2022-January 2023 to collect information on AVSS evaluating rare adverse events following immunization. The survey was distributed to constituents from WHO, vaccine manufacturers, academic institutions, and public health organizations. A literature review was conducted for COVID-19 safety studies assessing adverse events following immunizations as defined by the Brighton Collaboration. Studies included evaluated serious AEs following COVID-19 vaccine use and excluded clinical trials and case reports/series.
Results: The survey, completed by 42 respondents identified a total of 51 studies in HIC and 25 in LMICs. The literature review will be completed April 2023; 1047 citations met search criteria: 537 excluded, 459 underwent full-text review, and 212 were included.
Conclusions: Estimates of incidence of rare AEs following immunizations in LMICs is limited. Safety evidence for COVID-19 vaccines was primarily generated for only those vaccines licensed and used in the United States and Europe (mRNA and adenovector vaccines). Goals to ensure equitable vaccine access should be considered with a country's capacity to generate robust safety evidence.

Supported by: Funding from Coalition for Epidemic Preparedness Innovations (CEPI)

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Abstracts

Presentation 47

Abstract Title:	**The effects of gram-positive and gram-negative bacterial endotoxins on cardiac function in Drosophila me**
Author(s):	Abul-Khoudoud, M.O.1, Brock, K.E. 1, Elliott, E.R. 1, Li, X2. and Cooper, R.L1. Department of Biology, University of Kentucky, Lexington, KY 40506-0225, USA; Department of Physiology, College of Medicine, University of Kentucky, Lexington, KY, 40536-0298, USA

Abstract: The effects of Gram negative and positive bacterial sepsis depend on the type of toxins released, such as lipopolysaccharides (LPS) or lipoteichoic acid (LTA). Previous studies show LPS to rapidly hyperpolarize larval Drosophila skeletal muscle, followed by desensitization and return to baseline. Heart rate increased, then decreased with exposure to LPS. However, responses to LTA, as well as the combination of LTA and LPS, on the larval Drosophila heart have not been examined. This study examined the effects of LTA and a cocktail of LTA and LPS on heart rate. The combined effects were examined by first treating with either LTA or LPS only, and then with the cocktail. The results showed a rapid increase in heart rate upon LTA application, followed by a gradual decline over time. When applying LTA followed by the cocktail, an increase in the rate occurred. However, if LPS was applied before the cocktail, the rate continued declining. These responses indicate the receptors or cellular cascades responsible for controlling heart rate within seconds and the rapid desensitization are affected by LTA or LPS and a combination of the two. The mechanisms for rapid and direct non-genomic regulatory effects of LTA or LPS or associated bacterial peptidoglycans have yet to be identified in cardiac tissues of any organism.

Supported by: NIH R35GM141478

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Presentation 48

Abstract Title:	**Age affects mesenchymal progenitor cell dynamics and skeletal muscle extracellular matrix remodeling during hypertrophy**
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Abstract: Purpose: The remodeling of the extracellular matrix (ECM) is coordinated by numerous cell types and is critical to promote skeletal muscle hypertrophy. The primary cell of origin for many ECM proteins, fibro/adipogenic progenitors (FAPs, a mesenchymal stem cell), contribute to the regulation of ECM homeostasis and turnover to support muscle hypertrophy. Our purpose in the current study is to investigate the cell-intrinsic mechanisms underscoring FAPs' contribution to ECM remodeling between young and old individuals' during mechanical overload-induced hypertrophy.
Methods: 7 young and 7 old Col1:GFP mice (expressing green fluorescent protein under the collagen 1 promoter) underwent mechanical overload (MOV) or sham control, and were pulsed with EdU (5-ethynyl-2'-deoxyuridine). Following 7 days of MOV, plantaris muscles were collected for immunohistochemical analysis of EdU proliferation and collagen hybridizing peptide (CHP). A second set of mice had their plantaris muscles digested for single cell RNA-sequencing of Col1:GFP+ cells.
Results: Single cell sequencing reveals that FAPs display the most differential gene expression between young and old mice following MOV. Specifically, FAPs from old mice showed enrichment for mitosis-related genes and a depressed collagen biosynthesis gene signature. Following MOV, old mice had greater abundance of EdU+ FAPs, while young mice showed greater CHP signal.
Conclusion: Following 7 days of MOV, our results show that FAPs proliferate more in aged muscle, while collagen undergoes more robust remodeling in young mice. Our data suggests that age alters FAP activity leading to dysregulated collagen (ECM) remodeling post-exercise.

Supported by:

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Abstracts

Presentation 49

Abstract Title: **Skeletal Muscle Exosomal miR-1 Delivery to White Adipose Tissue in Response to an Acute Bout of Resistance Exercise**

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Abstract: Exosomes are small extracellular vesicles that can serve as intercellular delivery vehicles, thus playing an important role in signaling. Our laboratory has previously shown miR-1, a muscle specific microRNA, promotes adrenergic signaling and lipolysis in adipose tissue in response to mechanical overload in a murine model. The aim of this study was to examine the effects of an acute bout of resistance exercise on miR-1 levels in skeletal muscle, white adipose tissue (WAT), and circulating exosomes in humans. Additionally, we interrogated exosomal subpopulations using tetraspanin surface markers (CD81, CD63, CD9). Our results demonstrate increased miR-1 in WAT in response to resistance exercise. qPCR was used to measure the abundance of the miR-1 primary transcripts (pri-miRNA-1) in WAT. This analysis revealed expression of pri-miRNA-1 in WAT was extremely low to undetectable and unchanged in response to resistance exercise. Moreover, subjects with high BMI (>30) had a distinct serum exosome profile characterized by a significantly lower relative abundance of circulating CD81+/CD9+ vesicles. High BMI participants also presented a significantly different response to exercise for circulating CD63+/CD81+ vesicles. Taken together, these findings indicate an increase in miR-1 delivery to WAT in response to exercise, potentially promoting metabolic adaptations, although increased adiposity may affect exosome biogenesis. However, the source of the increased miR-1 in WAT requires further investigation.

Supported by: National Institute of Diabetes and Digestive and Kidney Diseases award: R01DK119619

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Presentation 50

Abstract Title: **TNFα-mediated inflammation in mouse models of VCID**

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Abstract: Background: Neuroinflammation precedes other pathologies associated with Alzheimer's disease (AD) and vascular contributions to cognitive impairment and dementia (VCID). Tumor necrosis factor alpha (TNFα) is a highly upregulated pleiotropic cytokine with dichotomous effects in disease states. Inhibition of soluble TNFα (sTNFα) and deletion of pro-inflammatory TNF receptor 1 (TNFR1) have been shown to decrease severity of amyloid deposition in AD models. However, similar studies have not been conducted regarding VCID outcomes.

Methods: This study examines gene and protein expression of TNFα, TNFR1, and TNFR2 within two mouse models of VCID; the hyperhomocysteinemia (HHcy)-induced VCID and aged Tg2576 with severe cerebral amyloid angiopathy (CAA)-associated VCID. qPCR and Meso Scale Discovery assays (MSD) for mRNA and protein quantification.

Results: In HHcy-induced VCID, TNFα mRNA levels were significantly increased regardless of the presence of amyloid deposition. Similarly, protein levels of TNFα trended higher in HHcy groups compared to their controls regardless of amyloid presence. Levels of TNFR1 mRNA trended lower in the HHcy model but was significantly increased in HHcy-amyloid co-morbid mice. When investigated in aged Tg2576 mice with CAA, TNFR1 protein expression increased at older timepoints compared to younger, and against wild type controls. Anti-inflammatory and innate immune-associated TNFR2 was increased at 20 months in CAA mice when compared to age-matched controls.

Conclusions: These findings display differences in gene and protein expression of TNFa and its receptors in two models of VCID. The unique expression in these models merits further research into the differences in TNF-mediated inflammation in VCID.

Supported by: NINDS award: 5R01NS116990-03

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Abstracts

Presentation 51

Abstract Title:	**Role of TRPA1 Channels on the Maintenance of Cochlear Innervation and the Magnitude of the Medial Olivocochlear Reflex**
Author(s):	D. . S. Llanes-Coronel, Department of Physiology, U of Kentucky S. Torres-Gallego, Department of Physiology, U of Kentucky A. M. Kruse, Department of Physiology, U of Kentucky D. Y. Calderón- Briceño, Department of Physiology, U of Kentucky A. C. Vélez-Ortega. Department of Physiology, U of Kentucky

Abstract: TRPA1 channels are activated by tissue damage, and they are involved in pain-like responses by nociceptive neurons and in regulation of hearing sensitivity after noise exposure. Mice lacking TRPA1 channels (Trpa1-/-) have normal hearing thresholds but exhibit abnormal wave amplitudes in auditory brainstem responses as they age. Our study of the cochlear innervation in Trpa1-/- mice has found age-related abnormalities in fibers presumed to be type II spiral ganglion neurons (SGNs). These unmyelinated afferent fibers innervate the outer hair cells, respond to cochlear tissue damage, activate neurons in the cochlear nucleus following moderate to high sound intensity, and may trigger the medial olivocochlear (MOC) efferent negative feedback. This MOC reflex decreases cochlear amplification in noisy environments and might be a protective mechanism against noise-induced hearing loss. Here we explored in detail the cochlear innervation abnormalities in Trpa1-/- mice and whether the MOC reflex was affected. Ribbon synapse counts in inner hair cells were indistinguishable between wild type and Trpa1-/- mice, but quantifications are still ongoing for outer hair cells. In wild type and Trpa1-/- mice, labeling against NF-H in the first postnatal week showed type II SGNs with largely normal innervation. At six weeks of age, however, the cochlear innervation was significantly disordered in Trpa1-/- mice but the MOC reflex was still present. We are currently tracing the age in which these innervation abnormalities begin to appear.

Supported by: Supported by the Hearing Health Foundation 2018 ERG and UK CCTS pilot grant to A.C.V. through NIH (NCRR and NCATS) UL1TR001998

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Presentation 52

Abstract Title:	**Investigating the effects of iron (ferric) on physiological processes using invertebrate models**
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Abstract: Iron is an abundant and essential element that is found in soil, fresh waters, and marine waters. In plants and animals, ferric (Fe3+) and ferrous (Fe2+) iron serve as co-factors and co-enzymes in many life-sustaining biomolecules. However, overexposure results in bioaccumulation and is associated with neurodegenerative diseases of the mammalian nervous system. Although the physiological effects of iron overload have been examined, the cellular mechanisms underlying acute exposure remain an area of active research. Therefore, the present study seeks to address the effects of Fe3+ on sensory receptors, axonal conduction, and synaptic transmission in invertebrate models. Using electrophysiological recording techniques, the acute effects of Fe3+ were assessed in blue crabs (Callinectus sapidus), northern crayfish (Faxonius virilis), and fruit fly larvae (Drosophila melanogaster). In the blue crab sensory nerves, 20 mM Fe3+ blocks activity of stretch-activated channels. In the crayfish neuromuscular junction (NMJ), 5mM Fe3+ blocks 50% of synaptic transmission while a 10 mM solution results in complete cessation of activity. In the Drosophila NMJ, 10 mM Fe3+ attenuates transmission by more than 50% while a 20 mM solution is required to silence transmission. Although quantal events remain present upon Fe3+ exposure, evoked transmission is inhibited and thus indicates that Fe3+ may block presynaptic, voltage-gated Ca2+ channels. The use of various model organisms to identify the time-dependent effects of acute Fe3+ exposure further uncovers the cellular mechanisms by which Fe3+ may act and thus offers potential targets to improve clinical outcomes for individuals suffering from acute exposure.

Supported by:	Department of Biology, University of Kentucky. Chellgren Endowed Funding (R.L.C.), College of Arts and Sciences Summer Research Fellowship (M.L.W.).

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Presentation 53

Abstract Title:	**Investigating Ischemic Stroke Biomarkers Utilizing a Novel Cerebrovascular Disease Control Group**
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Abstract: Every year approximately 795,000 people have a stroke in the United States. Intraluminal retrieval of a thrombus by mechanical thrombectomy and a thrombolytic agent, tissue plasminogen activator are the only treatments for ischemic stroke. Though these interventions have improved clinical outcomes, stroke remains a leading cause of death and disability, demonstrating a need for predictive biomarkers for functional and cognitive outcomes. These biomarkers are also potential therapeutic targets for treatments. The BACTRAC Tissue Bank at the University of Kentucky collects blood distal and proximal to a thrombus from ischemic stroke patients during the mechanical thrombectomy procedure. For control comparisons, arterial blood samples from cerebrovascular disease (CVD) patients undergoing a diagnostic angiogram are collected and banked. The clinical data retrieved includes demographics and comorbidities for each patient. This study analyzed differences in the proteomic expression of proximal blood of stroke patients compared to CVD control patients. Stroke and CVD control patients were matched for age, sex, BMI and other comorbidities. Proteomic analyses of 184 proteins from proximal stroke and control plasma samples were performed by Olink Proteomics. Proteomic differences were analyzed using unpaired T-tests. We also investigated correlations between proteomic changes with stroke outcome metrics. Our results indicate proteins associated with inflammation increased during stroke, while proteins related to growth and survival decreased during stroke. Human patient data is notoriously variable, thus matching stroke patients with a demographic and diseased matched control may offer an improved approach to identify predictive biomarkers and therapeutic targets.

Supported by: The Professional Student Mentored Research Fellowship (PSMRF) Project is supported by the National Center for Advancing Translational Sciences through Grant UL1TR001998, UK HealthCare and the University of Kentucky College of Medicine.

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Presentation 54

Abstract Title:	**A Systematic Review of Virtual Reality as a Neurorehabilitation Aid for Upper Extremities: Improving Access**
Author(s):	M. Aulisio Miller, Health and Exercise Science Program, Transylvania U A. Biddle, Health and Exercise Science Program, Transylvania U A. C. Glueck, Department of Neurology, U of Kentucky

Abstract: There has been increasing interest in using virtual reality (VR) technologies as aids for upper extremity rehabilitation. VR has the potential to positively impact rehabilitation outcomes for upper extremity deficits for a broad variety of patient populations. With this interest comes the recognition of the challenges associated with access and reimbursement for clinical utilization.
A review of the literature was conducted using recently published studies (within the past five years). The included literature consisted of clinical trials, original research articles, and case studies using VR as a rehabilitation aid for upper extremity deficits. Data were compiled about the study population (age range, reason for rehab), intervention details (VR platform used, intervention duration, and frequency), outcome measures, and adherence to the intervention. Fifty-one articles were included in the rehabilitation review. Overall, the general consensus was that rehabilitation programs using VR alone were as effective as conventional therapy programs. Additionally, there is support for VR plus conventional therapy improving patient outcomes above conventional therapy alone. Furthermore, VR interventions have the added benefit of greater patient satisfaction and compliance than conventional therapy programs.
These results support the adoption of VR as a rehabilitation aid for upper extremities. Research also supports the use of commercially available VR systems to improve upper extremity function. This has the potential to increase access to this beneficial technology for underserved populations.

Supported by: Transylvania University Grant Allocation Committee- Student Award

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Presentation 55

Abstract Title:	**The Application of Digital Pathology on the Study of Cerebral Small Vessel Disease: Promises and Challenges**
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Abstract: Cerebral small vessel disease (CSVD) refers to a heterogeneous group of conditions that adversely impact brain microvessels. CSVD pathology generally involves microvessel wall thickening, decreased elasticity, and luminal impingements. These pathological changes are associated with many clinical morbidities of CSVD including cognitive impairment and Parkinsonism. Despite its underlying association with vascular dementia and its large public health impact on the elderly, research breakthroughs regarding CSVD are lagging. Whereas other dementing diseases such as Alzheimer's disease (AD) and Lewy body dementia have widely accepted neuropathological and clinical criteria, lacking consensus persists in the CSVD domain. Consequently, the ability of translational and clinical science to effectively respond to the disease has been impeded. This study applied digital pathologic methods to achieve increasingly rigorous histopathological assessments of microvessels. Digital pathology provides the advantages of whole slide imaging (WSI), automation, and increased throughput; however, there persist challenges preventing its widespread adoption. We analyzed brains (n=108) from the University of Kentucky AD Research Center (UK-ADRC) autopsy cohort biobank. Hippocampal and frontal cortical (Brodmann Area 9) sections were immunostained for smooth muscle actin (SMA) and CD34. Digitally scanned photomicrographs were then analyzed using image analysis algorithms to produce morphometric parameters for vessel density, vessel diameter, lumen area, and vessel wall perimeter and thickness. These data were then correlated with clinical and comorbid pathological data. We conclude that digital pathology represents a promising future direction for rigorously evaluating CSVD pathology.

Supported by: NIH Grants: P01 AG078116 and P30 AG072946

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Presentation 56

Abstract Title:	**Characterization of Auditory Physiology in FXS in Critical Developmental Timepoints**
Author(s):	I. Ray, Departments of Chemistry, Oklahoma State University; A. Chawla, Department of Integrative Biology, Oklahoma State University; E. McCullagh, Department of Integrative Biology, Oklahoma State University

Abstract: Autism spectrum disorders are strongly associated with auditoryhypersensitivity. Fragile X syndrome (FXS), a common monogenic cause of ASD, results from transcriptional silencing of the Fmr1 gene and reduced expression of fragile X messengerribonucleoprotein (FMRP). FMRP directly impacts myelinproteins and various brain regions show reduced/delayed myelination in FXS, suggesting deficits seen in FXS may be caused by alterations to myelination. FXS is a neurodevelopmental disorder, therefore characterizing when during development auditory dysfunction arises in addition tounderstanding if these changes are myelin dependent is critical to elucidating the full etiology of FXS. Auditory brainstem response (ABR) measurements record 1-4 waves, each corresponding to part of the ascending auditory pathway; the latency of which could be directly related to myelination of auditory areas. To characterize the physiology of myelination deficits in FXS at developmental time points, ABR measurements were taken for transgenic Fmr1 mice and controls before (P8-10), during (P12-14) or after (P21-23 and adult) hearing onset in mice. This allowed us to study the developmental emergence of auditory disruptions in Fmr1transgenic mice and identify critical windows where underlying auditory pathways are established. We hypothesize that transgenic Fmr1 mice will have increased latencies in their binaural ABR waves (3, 4 & BIC) compared to the wildtype at different developmental time points. These data will aid in identifying the critical developmental windows of neural circuitry establishment in auditory sensory systems and potential myelination impairments that underly auditory dysfunction observed in patients and mice with FXS.

Supported by:

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Center for Clinical and Translational Science

Abstracts

Presentation 57

Abstract Title:	**α-synuclein detection for diagnosis of Parkinson's disease and multiple system atrophy using submandibular/GI tissue**
Author(s):	L. Turcios, Department of Neurology, U of Kentucky T. Yamasaki, Department of Neurology, U of Kentucky

Abstract: Parkinson's disease (PD) and multiple system atrophy (MSA) are neurodegenerative movement disorders involving pathological aggregation of alpha-synuclein (a-syn). The similarity in symptoms between MSA and PD at earlier stages represent a challenge because it can lead to misdiagnosis and improper treatment that in turn result in a poorer prognosis. Pathologic forms of a-syn have been detected in non-CNS tissues including skin and GI tissue. In this study, we utilized a seed amplification assay called real-time quaking induced conversion (RT-QuIC) to determine whether aggregation-prone α-syn is present and detectable in GI tissue of patients with synucleinopathies.
In the RT-QuIC assay, α-syn aggregates present in the samples act as seeds and induces recombinant a-syn monomer to incorporate into the aggregates under cycles of shaking and resting. The presence of Thioflavin T in the reaction mix binds to the α-syn aggregates producing a measurable fluorescence. We utilized this assay to compare kinetic differences in the pathological aggregation of a-syn present in soluble and insoluble tissue homogenate fractions from submandibular and esophageal tissue of PD (n=6), MSA (n=4) and control (n=4) samples. We were able to distinguish PD from MSA and control samples in both soluble and insoluble fractions. PD samples demonstrated significant differences in kinetics of aggregation (time to threshold) in the RT-QuIC paradigm, even with a small sample size. These results demonstrate that aggregation-prone forms of a-syn are present in GI tissue in PD patients and that RT-QuIC can be utilized to differentiate PD and MSA and non-synucleinopathy patients. This is important since submandibular biopsy could potentially be a useful diagnostic tool for distinguishing PD and MSA.

Supported by: UK Neurology Department pilot grant and the VA CDA2 IK2 BX004883

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Abstracts

Presentation 58

Abstract Title:	**Investigating Nutritional Adequacy of Lactating Mothers of Premature Infants at the University of Kentucky NICU**
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Abstract: Background: In the breastfeeding mother, nutrition affects many components of milk and infant health. An understanding of maternal nutrition in the United States and especially in Kentucky is sparse. ASA24 is a validated tool to assess dietary intake in adults with built in dietary analysis. The aim of this study is to characterize diet quality of lactating mothers of preterm infants admitted to the University of Kentucky Neonatal Intensive Care Unit. We hypothesize that mothers of preterm infants in Kentucky do not have adequate nutritional quality compared to national guidelines. Methods: Mothers enrolled in a parent clinical trial assessing the effect of Moringa oleifera on milk quantity and quality were included (May 2022 - present). Mothers completed a diet diary. ASA24 was administered by two study staff (JD, ASZ) with mother at one week intervals. Results: The study is ongoing. Three participants aged 33-41 years at 6-7 days postpartum provided 4 data points. Participants were under or over the recommended calorie range (2000-2800 kcal). Vitamin D intake, 2-13.5mcg, met RDA (10mcg) but was suboptimal to influence breast milk vitamin D levels (recommended 100mcg). Vitamin A intake was adequate in 3 of 4 data points (range 425-1900 mcg, RDA: 1300 mcg). Two participants took multivitamins. Total sugar intake (range 18-28% of total calories) exceeded recommended maximum of 10%. Fat intake (range 34-45% of total calories) also exceeded recommendations (20-35%). Conclusions: Kentucky mothers may not meet nutritional guidelines during lactation. Further understanding of micronutrient intake and interventions to improve this are required.

Supported by: National Center for Advancing Translational Sciences, National Institutes of Health Grant (UL1TR001998)

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Presentation 59

Abstract Title:	**Sleep and Eating Rhythms are Associated with Metabolic Risk in Postmenopausal Women**
Author(s):	J. M. Thomas, Department of Biology, U of Kentucky P. A. Kern, Department of Internal Medicine, U of Kentucky D. D. Sears, College of Health Solutions, Arizona State University S. E. Armstrong, Institute for Biomedical Informatics, U of Kentucky C. Bumgardner, Institute for Biomedical Informatics, U of Kentucky A. Mullen, Institute for Biomedical Informatics, U of Kentucky J. L. Fry, Department of Athletic Training and Clinical Nutrition, U of Kentucky J. S. Pendergast, Department of Biology, U of Kentucky

Abstract: Postmenopausal women are vulnerable to metabolic dysfunction. Compelling evidence suggests that this is because they lack the protective effect of estrogens. We have shown that circulating estrogens regulate daily eating and sleep-activity rhythms in female mice and protect them from obesity and diabetes. However, few studies have investigated whether postmenopausal women have disrupted eating and sleep-activity rhythms that could contribute to their metabolic dysfunction. The purpose of this study was to investigate the relationship between eating rhythms, sleep, and metabolic risk in postmenopausal women. For 7 days, we studied sedentary, postmenopausal women who were not taking hormones (estrogens ± progestin) and were metabolically unhealthy (prediabetic or at least one feature of the metabolic syndrome). Sleep timing was assessed by actigraphy and sleep logs. Times of first and last meals were collected from participants with a texting system. Body composition (DXA), BMI, and waist circumference were collected as markers of obesity. Lipid metabolism and glycemic control were assessed by fasting lipid panel and HbA1c as well as oral glucose tolerance test. Twenty postmenopausal women (mean ± SEM; 57.2 ± 1.0 years) participated in the study. We found that later timing of sleep onset was associated with later meal timing and greater BMI and body fat percentage. In addition, longer daily eating window and later eating time was associated with greater waist circumference and BMI. These data suggest that interventions that reduce daily eating window and advance the timing of last meal and sleep onset may improve metabolic risk in postmenopausal women.

Supported by:	Support: Research reported in this abstract was supported by the National Institute of Diabetes and Digestive and Kidney Diseases, the National Institute on Aging, and the National Center for Advancing Translational Sciences, of the National Institutes of Health, under award number R01DK124774, T32 AG078110, and UL1TR001998.

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Abstracts

Presentation 60

Abstract Title:	**Development and Community Review of Text Message Content for Black Post-Bariatric Surgery Patient mHealth Intervention**
Author(s):	M.L. Barr, Department of Dietetics and Human Nutrition, U of Kentucky L. Nunez, Department of Dietetics and Human Nutrition, U of Kentucky S. Lee, Sayre School, Lexington, KY S. Noria, Department of Surgery, Division of General and Gastrointestinal Surgery, Ohio State University B. Smalls, Department of Family and Community Medicine, U of Kentucky A. Gustafson, Department of Dietetics and Human Nutrition, U of Kentucky

Abstract: Acceptability of community intervention programming can be enhanced by pre-implementation expert review. Text message content was developed for a post-metabolic and bariatric surgery (MBS) mHealth intervention for Black patients to improve support and dietary adherence. Messages were developed by a team of four researchers and clinicians, and two student researchers. A subset of messages (20%) were sent via survey to MBS clinicians and Black post-MBS patients for expert review. Along with basic demographics, qualitative data was gathered on lifestyle behaviors perceived to be important to post-MBS success and feedback was provided on intervention text message content. Seventeen Black or African American post-MBS patients (between 1-4 years post-MBS) and four MBS surgery clinicians (2 Registered Dietitians, 1 Surgeon, 1 Nurse; at least 1 year in field) completed the survey. Areas commonly mentioned as important for post-MBS success included: mental/social support such as minority-specific support groups, physical activity, meal planning and eating healthy, following clinic guidelines, balance of discipline and patience, and keeping accountable by knowing personal triggers. For text message feedback, participants valued external links and videos, practical and memorable resources, and key nutrition items (recipes, protein, water, meal planning). Areas for improvement of messages included length of content, unhelpful detailed information (i.e. micro/macronutrients), addition of more motivational or attention-grabbing comments, more meal ideas, being thoughtful of race-specific language, addition of videos delivered by Black clinicians, and information on accessing resources mentioned (i.e. airfryer). To improve program content acceptability, community feedback will be used

Supported by:	Funded supported in part by the National Center for Research Resources and the National Center for Advancing Translational Sciences, National Institutes of Health, through Grant UL1TR001998. Funding was provided, in part, by the Center for Health Equity Transformation (CHET) at the University of Kentucky.

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Presentation 61

Abstract Title:	**Parental Perceptions of Priorities and Features in the Development of an Obesity Risk Reduction Mobile Application**
Author(s):	S. Goggans, College of Medicine, U of Kentucky J. Thompson, PhD, Markey Cancer Center, U of Kentucky M. Brown, MPH, Markey Cancer Center, U of Kentucky L. Maamari, MS, Department of Family Sciences, U of Kentucky P. Hull, PhD, Department of Behavioral Science and Markey Cancer Center, U of Kentucky

Abstract: Introduction: Obesity rates in 2–5-year-old children is increasing rapidly in recent decades causing a need for accessible interventions for child health and wellness. The purpose of this study was to explore the needs and desires of parents of 2- to 5-year-old children for a health-based mobile app designed to reduce childhood obesity by utilizing a novel mixed method approach.
Methods: We conducted qualitative interviews of primary caregivers of a 2–5-year-old children who use a smartphone/mobile phone and smartphone applications to ask about parenting practices, desired areas of improvement, smartphone use, and app design/feature preferences. Additionally, participants completed online concept mapping based on the health and wellness priorities of their child and what app features would help uphold these priorities.
Results: The themes of the interviews fell into two categories: 1) parental priorities and 2) application features. For parental priorities, participants desired features to capture aspects of overall health and wellbeing, to set boundaries and encourage routine behaviors, and to focus on a variety of nutrition and healthy eating features. Participants highly rated features such as healthy recipes, goal tracking, and notifications/tips to improve behaviors. The study team created the corresponding characteristics into the designed app, which will be tested for efficacy in Head Start programs across Kentucky.
Conclusion: This mixed-methods study demonstrates parents' desire to take control of their child's health and eating habits, and the potential usefulness of a goal-tracking app to assist in these priorities. This supports the development of a childhood obesity reduction application.

Supported by:	USDA Grant #2017-68001-34846 NIH CTSA Grant UL1TR001998

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Abstracts

Presentation 62

Abstract Title: **A Community Mini-Grant Program: Health in Motion**

Author(s): H. Hogan, Kentucky River District Health Department

Abstract: People of Appalachia Kentucky experience significant health disparities including having among the highest rates of cardiovascular disease, type 2 diabetes and several forms of cancer in the nation. Unhealthy behaviors that begin in childhood significantly contribute to chronic disease risk including sedentary lifestyle and poor dietary habits. To address these behaviors, the Kentucky River District Health Department (KRDHD) has implemented the “Health in Motion” program. Supported by a University of Kentucky Center for Translational Science (UK CCTS) Community Mini-Grant, the KRDHD has expanded the reach of “Health In Motion” through social media and advertisement on local platforms. This has resulted in increased collaborations with community-based organizations and educational systems. Currently we are providing the program to nearly 300 fifth graders in Lee, Owsley and Wolfe Counties and have had several additional school systems request the program. We have also expanded the program to address physical activity and health diet among adults in these same counties. We anticipate that this broad approach, reaching both children and adults in our Appalachian communities to improve engagement in physical activity and healthier eating, will have a long-term outcome of improved health and reduced rates of chronic disease.

Supported by:

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Other
Community Research
Nutrition

Abstracts

Presentation 63

Abstract Title: **Unveiling Dietary Habits of Rural Kentuckians to Inform a Path to Healthier Eating**

Author(s): M. D. McLeod, College of Arts and Sciences, Kentucky State University
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Abstract: Introduction: Rural Kentucky residents experience chronic disease disparities including higher rates of cardiovascular disease (CVD) and type 2 diabetes (T2D) than urban residents. Unhealthy diet may be a factor underlying these disparities.
Purpose: The purpose of this study was to describe dietary patterns of a sample of rural residents at-risk for CVD and T2D and explore influences on these patterns.
Methods: Baseline data from the Heart of the Family study were used. VioScreen was used to assess dietary patterns from which Health Eating Index (HEI) scores were calculated. Participants completed a sociodemographic survey and BMI measured following standardized protocols. Qualitative interviews were conducted to explore food choices and social factors that influence these and analyzed using descriptive content coding.
Results: The mean age of participants (N=38) was 49.6+14.8 years; 82% were female. Mean BMI was 34.2+7.1. Of a possible 100, mean total HEI score was 53.5+12.5. Individual HEI components including fruit and vegetable, whole grain, protein, sodium, saturated fat, and sugar intake were similarly poor. Themes that emerged from qualitative interviews conducted with 10 participants reflected these findings. Multiple barriers to accessing high quality foods were noted including limited availability in rural communities and prohibitive cost. Another barrier was long work hours and commutes resulting in consumption of unhealthy convenience meals.
Conclusions: This research provides valuable insights into the dietary behaviors that may contribute to chronic disease risk in rural communities. Findings can inform development of targeted interventions and policies to improve dietary behaviors and health outcomes of rural populations.

Supported by: NIH/NINR Grant R01NR019456 and NIH CTSA Grant UL1TR001998

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Abstracts

Presentation 64

Abstract Title:	**Sex differences in the regulation of diet-induced obesity by the molecular circadian clock**
Author(s):	E. J. Kantra, Department of Biology, University of Kentucky J. S. Pendergast, Department of Biology, University of Kentucky

Abstract: Sex differences in obesity in mice are regulated by differential effects of high-fat feeding on daily behavior rhythms, but the role of the molecular circadian clock in regulating sex differences in metabolism is understudied. The Period 1, 2, and 3 genes are core components of the molecular circadian timekeeping mechanism. Disabling the function of Period genes alters behavioral and tissue rhythms, and Period1/2/3 KO mice are arrhythmic in constant lighting conditions. In this study, we investigated the role of the Period genes in regulating sex differences in obesity. Male and female C57BL/6J wild-type and Period1/2 KO, and Period1/2/3 KO mice were housed in 12L:12D and fed high-fat diet for 12 weeks. Male and female Period KO mice had altered daily rhythms of locomotor activity and were active prior to the dark phase. We found a striking sex difference in obesity such that disabling the Period genes exacerbated adiposity in female, but not male, mice. An important function of the circadian system is to stably coordinate eating and activity rhythms with the light-dark cycle, known as interdaily stability. We found that Period KO females had lower interdaily stability than wild-type females. The daily eating rhythm was also more disrupted by high-fat feeding in Period KO females than in wild-type females. Therefore, decreased interdaily stability and disruption of eating rhythms may contribute to exacerbated diet-induced obesity in Period KO females. Moreover, this study demonstrates that sex is a critical factor when studying the interplay between circadian rhythms and metabolic risk.

Supported by:	This study was funded by National Institutes of Health grants R01DK124774, R03DK098321, P30GM127211, and the Diabetes Research Center at Washington University in St. Louis under award number P30DK020579, as well as NSF IOS-2045267, the Gertrude F. Ribble Trust, and the University of Kentucky.

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Presentation 65

Abstract Title:	**Staying within the envelope of function: both joint overloading and under-loading can be detrimental to cartilage health**
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Abstract: Both joint under/overloading after anterior cruciate ligament recon (ACLR) have been associated with cartilage degradation. Conflicting rehab programs are promoted to increase or decrease joint loading at different postop periods. To improve postop rehab, the purpose was to determine if under/overloading is associated with image and/or biochemical biomarkers of cartilage degradation after ACLR and if these associations are time-dependent. PubMed search was conducted to identify ACL-recon patients with knee joint moments/vertical ground reaction forces and image/biochemical biomarkers of cartilage degeneration. Initial search produced 357 publications, with 15 (510 patients) satisfying inclusion criteria. Method of cartilage degeneration measurement, joint loading strategy and associated image/biochemical biomarkers of cartilage degradation, and time of cartilage changes were assessed. There was no clear trend in whether cartilage degradation was associated with under/overloading early postop. 3 studies reported underloading, whereas 2 reported overloading, was associated with early cartilage degeneration. Between 18mo-8yrs after ACLR, overloading was associated with cartilage degeneration on imaging (7/7 studies, 287 patients). 2 studies (49 patients) reported decreased joint loading 2 years or later after ACLR was associated with increased biomarkers of cartilage degradation. Both under/overloading 6 months following ACLR were associated with cartilage degradation biomarkers, whereas overloading was associated with cartilage degeneration on imaging 18mo or more post-operation. The under-rehabilitated knee threatens joint health. These results suggest need for dynamic rehab by promoting optimal loading early post-operation while avoiding overloading 18 mo after ACLR.

Supported by:

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Presentation 66

Abstract Title:	**Save the Meniscus! Incidence of Osteoarthritis Diagnosis Greatest Following Partial Meniscectomy**
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Abstract: Purpose: The purpose of this study was to compare osteoarthritis (OA) prevalence between isolated anterior cruciate ligament (ACL) reconstruction and meniscus repair (MR), partial meniscectomy (APM), both isolated and combined.
Methods: The PearlDiver Mariner database was used which contains insurance claims information on more than 91 million orthopaedic patients. Five cohorts were identified using Current Procedural Terminology (CPT) codes and included those between the ages of 16 and 60 that underwent isolated ACL reconstruction, isolated MR, ACL+MR, isolated APM, or ACL+APM repair. Groups were matched by age, sex, and diagnosis codes for obesity/morbid obesity with each group consisting of 10,125 patients (5440 males). OA prevalence and odds ratio were compared against isolated ACL reconstruction.
Results: A greater proportion of APM and ACL+APM patients were diagnosed with knee OA when compared to isolated ACL patients (APM= 735 (7.3%) and ACL+APM= 459 (4.5%) vs ACL= 338 (3.3%). The odds of knee OA were greater in APM (2.27) and ACL+APM (1.38) patients. Isolated MR demonstrated a slight increase in OA prevalence and odds (MR= 396 (3.9%), Odds=1.18). Patients undergoing ACL+MR showed a decrease in OA (ACL+MR= 254 (2.5%), odds ratio= 0.75).
Conclusions: These results confirm previous reports from prospective ACL cohorts and further support efforts to repair the menisci whenever possible. When matched by age, sex, and obesity, APM was associated with the highest incidence of OA within 5 years of surgery (13.5%). Surprisingly, the lowest OA incidence was observed in patients undergoing ACL reconstruction with concomitant MR (7.5%). Future research is needed to better understand the potentially protective effect of combined ACL reconstruction and meniscus repair.

Supported by: PSMRF-NIH CTSA grant (UL1TR001998)

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Abstracts

Presentation 67

Abstract Title: **Metacarpal Head Coronal Shear Fracture Management**

Author(s): M. Walker, College of Medicine, U of Kentucky; J. Hare, Dept. of Orthopaedic Surgery, U of Kentucky; M. O'Shaughnessy, Dept. of Orthopaedic Surgery, U of Kentucky

Abstract: Hypothesis: The incidence of intra-articular metacarpal head fractures is relatively low, with the occurrence of a coronal shear fracture quite rare. We hypothesized that open reduction and internal fixation with headless compression screws is a reasonable treatment strategy for this rare fracture pattern.

Methods: We reviewed the available literature and found minimal information on the incidence, treatment, or outcomes of coronal shear fractures of the metacarpal head. The senior author treated a rare occurrence of an intra-articular metacarpal head fracture with a complete coronal shear pattern which presented in a delayed manner. Patient was a 27-year-old male laborer, smoker, who injured the hand in a car accident. The patient was taken at three weeks post-injury for open reduction internal fixation. A volar approach was used to access the volar coronal shear. The head fragment was proximally displaced 1.5 cm and noted to have fibrous union starting in this malreduced position. With careful elevation the fragment was able to be reduced back to anatomic position and secured using two small screws, countersunk to be buried below the articular surface. Gentle early motion was allowed. At follow up the fracture was noted to be healed without evidence of osteonecrosis. Motion and grip were full. Scar pain was minimal, and patient had full return to work and activity with no pain.

Conclusion:

-Coronal shear metacarpal head fractures are rare, and the literature is lacking on incidence, management, and outcomes

-We describe an operative case listing the successful outcomes with volar, ORIF with small, buried screws

-Further exploration of this unique fracture pattern is warranted

Supported by:

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Abstracts

Presentation 68

Abstract Title:	**Use of Local Corticosteroid Injection in Treatment of Pregnancy Related Carpal Tunnel Syndrome: A Literature Review**
Author(s):	M. Walker, College of Medicine, U of Kentucky; T. Westbrooks, Dept. of Orthopaedic Surgery, U of Kentucky; M. O'Shaughnessy, Dept of Orthopaedic Surgery, U of Kentucky

Abstract: The literature reports prevalence of carpal tunnel syndrome (CTS) in pregnant women to range between 31-62%. The high prevalence of CTS in pregnant women has been contributed to a variety of gestational physiology including increased progesterone level, weight gain, fluid retention, fetal growth, and subsequent increase in peripheral edema. Historically, treatment of CTS has ranged from splinting and pharmacotherapy to carpal tunnel release via surgical intervention. Based on prevalence of CTS in pregnancy, in which most cases remit in the postpartum state, we aimed to review the current literature regarding efficacy and safety of local corticosteroid injections in pregnancy-related CTS. To explore this, we used the search engine Google Scholar and employed searched terms “Carpal Tunnel Syndrome” OR “Pregnancy”, “Dexamethasone” AND “Carpal Tunnel Syndrome”, “Carpal Tunnel Syndrome” AND “Steroid Injection”, “Corticosteroid Injection” AND “Carpal Tunnel Syndrome” or “Pregnancy” which yielded results from variety of databases including PubMed, MEDLINE, etc. Based on our review, local corticosteroid injections have demonstrated success and safety in treatment of carpal tunnel syndrome refractory to splinting. The literature supports that to date, there is no evidence of local steroid therapy causing adverse effects to fetal development in the third trimester. There is debate in the literature concerning local steroid injection during the first trimester with some reports demonstrating increased rates of cleft lip and palate in this patient cohort.

Supported by:

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Presentation 69

Abstract Title:	**Intentional and Attuned Therapeutic Relationship model: Developing Therapeutic Relationships with Autistic Children**
Author(s):	F. Bernhard, Rehabilitation and Health Sciences, University of Kentucky D.M. Howell, Department of Occupational Science and Occupational Therapy, Eastern Kentucky University

Abstract: The neurodiversity movement necessitates re-evaluating interventions delivered to autistic children. Neurodiversity-affirming therapeutic practices are collaborative and seek to support autistic clients in achieving their goals based on engagement, enjoyment, and meaningfulness. A vital component of this movement is understanding and respecting the autistic experience. While the guiding body of occupational therapy, the American Occupational Therapy Association, has established the importance of this paradigm shift, a clear path to practice change has not been defined. As such, occupational therapists must shift practice by listening to autistic voices. Autistic individuals have reported sensory processing and emotional regulation difficulties as the most impactful person factors on participation in activities of daily living, including access to medical care; therefore, it is a critical need to address these person factors within the context of the therapy environment. Therapeutic use of self, defined by the Intentional Relationship Model (IRM), is a cornerstone of occupational therapy practice as it is the lens therapists view clients and their occupations.
Understanding how therapists can leverage therapeutic modes and interpersonal events to facilitate client achievement of goals is crucial as practice shifts from a skill deficit model to a neurodiversity model. However, therapist attunement, physically and emotionally perceiving the client‚Äôs perspective, and responsiveness to client emotional regulation and sensory processing are not represented in the IRM. This paper examines how the IRM, attunement to emotional regulation and sensory processing can optimize outcomes in pediatric occupational therapy. A model integrating the IRM and attunement is proposed.

Supported by:

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Presentation 70

Abstract Title:	**The association between 25-OH vitamin D level, obesity, and common biomedical markers in Kentucky children.**
Author(s):	B. Taormina BS BA, College of Medicine S. J. Robbins MPH, Department of Biostatistics S. Bidarian BA, College of Medicine D. Zhang PhD, Department of Biostatistics A. Radulescu MD, Department of Pediatrics

Abstract: Low vitamin D level has been suggested to be associated with obesity but there is no consensus among organizations regarding vitamin D screening for children with obesity. The aim of this study was to investigate the relationship of vitamin D, obesity, and common biomarkers in Kentucky children. This was a clinical retrospective study of 442 children with obesity ages 2-18 years, evaluated at a BMI Clinic over a three year period. Data collected included demographics, anthropometrics, and biomarkers (25-OH vitamin D level, lipid profile). Descriptive statistics were used to compare demographic characteristics and vitamin D sufficiency groups (sufficient, insufficient, deficient). Linear regression was used to assess the relationship between vitamin D, obesity predictors, and lipids. Correlation analysis was used to assess vitamin D and hypertension. Of the 442 children, 75.8% (N = 335) of children were identified with insufficient or deficient vitamin D levels. Children with deficient levels (N =144) were more likely to be older and have a higher BMI. Vitamin D was a significant predictor in LDL and total cholesterol levels after adjusting for age, sex, and BMI percentiles ($p < 0.05$). Vitamin D was a significant predictor in BMI percentiles overall. The results show no significant correlation between Vitamin D and hypertension. Low vitamin D levels are highly prevalent in children with obesity and there is a relationship between vitamin D and obesity biomarkers in this population. Our findings support a review of the existing AAP recommendations on laboratory evaluation of the children with obesity.

Supported by: The Professional Student Mentored Research Fellowship (PSMRF) Project is supported by the National Center for Advancing Translational Sciences through Grant UL1TR001998, UK HealthCare and the University of Kentucky College of Medicine.

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Presentation 71

Abstract Title:	**Headaches in Children managed by Pediatric Headache Specialists: Findings from a Regional Pediatric Headache Database**
Author(s):	E. K. Touma, College of Medicine, University of Kentucky K. S. Jones, Department of Child Neurology, University of Kentucky M. Hall, College of Medicine, University of Kentucky S. Qaiser, Department of Child Neurology, University of Kentucky

Abstract: Background: Headache is a common cause of morbidity and missed school days in children aged 6-17 years. A recent article questioned the role of headache specialists in managing children with headaches. To address this, a headache database was created, and patient outcomes were analyzed longitudinally.
Methods: The retrospective cohort analysis used NIH criteria to record diagnoses, patient knowledge, investigations, treatments, and severity measurements for 203 children aged 6-17 years seen by headache specialists at the University of Kentucky College of Medicine.
Results: The study cohort included 203 patients, and first appointment data as well as follow-up data were collected. Using the PedMIDAS questionnaire, 45.8% of patients at their first visits reported moderate morbidity, with 28.7% of patients reporting severe dysfunction. For treatment, Riboflavin and CoEnzyme Q10 were the most prescribed preventative regimens. Medication Washout Regimens were started in 28.9% of patients with a significant improvement in headache frequency -- 62.8% of this cohort had daily or constant headaches at their initial appointments, and only 25.6% reported this frequency at the follow-up appointment. As for patient education, 81.8% of patients did not know their diagnosis at their first appointment. Following the standardized patient education practices, the questionnaire was repeated, where 89.4% reported knowing their diagnosis and how to manage it.
Conclusion: Overall, the study concluded that headache specialists provide personalized care, resulting in high rates of improvement in patient outcomes through treatment and education. These findings suggest that headache specialists play a crucial role in managing children with headaches.

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Clinical Research
Pediatrics

Presentation 72

Abstract Title:	**Representativeness of Participation in Evaluation of Equity of New Health Promotion Regulations in KY Childcare Programs**
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Abstract: In June 2021, childcare regulations related to nutrition, physical activity, and screen time went into effect across Kentucky. A cross-sectional design was used to assess the equity of the implementation and impact of these policy modifications. The purpose of this project is to evaluate the representativeness of centers that participated in the study.

Recruitment occurred between July 2021 and August 2022. Centers were identified from a publicly available database. The list was stratified by the CDC Social Vulnerability Index. Certified recruiters invited randomly selected centers to participate in the study via mail, telephone, and email. Centers that agreed to participate were sent demographic surveys via REDCap. Descriptive statistics, chi-square analyses and Fisher's exact test were completed in SPSS 27.

In total, 331 centers were contacted. Thirty-nine centers were eligible and interested in participating; however, only 18 centers were able to complete data collection. Centers were in 14 counties across the state. Centers with a quality star rating of 4 or 5 (out of 5) ($p<0.001$) and located in less socially vulnerable areas ($p=0.021$) were more likely to participate. Centers were not different regarding size or acceptance of subsidies that support families paying for childcare ($p<0.05$).

Centers participating in the study overrepresented programs with higher quality star ratings located in less socially vulnerable areas. To ensure equitable representation, further research is needed to learn about factors that hinder and support participation of childcare centers that have lower quality ratings or are in socially vulnerable areas.

Supported by: Pilot funding from the Center for Health Equity Transformation and the College of Agriculture, Food and Environment

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Pediatrics

Presentation 73

Abstract Title:	**Astrocyte Activity in the Dorsal Striatum Regulates Cue-Induced Reinstatement of Cocaine Seeking**
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Abstract: The neuroscience community continues to face significant challenges in understanding cocaine use disorder (CUD). Recent literature indicates that astrocytes play an active role in drug seeking. Several of these studies, highlight that suppression of striatal astrocytic activity results in significant alterations in reinstatement of cocaine seeking, indicating their importance in regulating reinstatement. However the effects of astrocytic suppression on neuronal signaling in CUD remain unclear. To investigate the roles of astrocytic suppression on behavioral patterns and neuronal activity we performed intracranial viral injections in the dorsal striatum in rats. Animals received injections of neuronal calcium biosensor, GCaMP6f, and “CalEx”, which suppresses astrocyte activity by continually extruding cytosolic Ca2+, or a sham injection of astrocyte specific orange fluorescent protein, tdTomato. Following recovery, animals underwent cocaine self-administration, extinction, and cue-induced reinstatement. No significant alterations were observed between CalEx and tdTomato groups during self-administration or extinction. However, the suppression of astrocytic activity led to increase in cue-induced reinstatement. Subsequently, brain slices were collected from each animal for ex vivo calcium imaging. There were no significant differences observed in the duration and frequency of Ca2+ events between CalEx and tdTomato. However, the suppression of astrocytic activity increased amplitude of neuronal Ca2+ transients, an indirect measure of cell excitability. These findings reveal that suppression of astrocytes in the dorsal striatum increases cue-induced reinstatement by magnifying neuronal excitability.

Supported by:

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Center for Clinical and Translational Science

Abstracts

Presentation 74

Abstract Title: **An Analysis of Recruitment Strategies in Substance Use Research**

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Abstract: Purpose: 46.3 million Americans aged 12 or older met DSM-5 criteria for a substance use disorder (SUD) in 2021, underscoring the urgent need for research to understand factors contributing to SUDs and develop interventions. Recruiting and retaining eligible participants is integral to furthering this research. Unsuccessful recruitment increases study costs, delays project completion, and impedes future grant funding. The purpose of this analysis was to explore the effectiveness of recruitment strategies on enrollment for inpatient and outpatient studies at the UK Laboratory of Human Behavioral Pharmacology.

Methods: 766 phone screens conducted from 2021-2022 were analyzed based on referral source and outcome. The effectiveness of each recruitment source was calculated by dividing the number of callers from each source by the number of participants from each source that were 1) eligible for further screening following the phone screen and 2) enrolled in a study.

Results: Radio advertisements, past participants returning, and online advertisements produced the most phone screens. Past participants and subjects referred via flyers and word of mouth were most likely to enroll in a study.

Conclusion: Many recruitment strategies can effectively produce a high volume of callers. Importantly, this analysis suggests inexpensive methods of recruitment are as effective as more costly options for enrolling participants. Therefore, less expensive recruitment strategies should be prioritized as they produce equivalent rates of enrollment.

Supported by: This research was supported by grants from the National Institute on Drug Abuse (R01DA048617; R01DA047368; T32DA035200) of the National Institutes of Health

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Presentation 75

Abstract Title:	**Examining Childhood Outcomes in Neonatal Abstinence Syndrome**
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Abstract: Rates of neonatal abstinence syndrome (NAS) have been rising over the past several years. Children born in withdrawal from opioids have known health complications through the first year of life that have been studied extensively in the current literature. However, despite increased mortality rates for these infants, most of these children are surviving and entering childhood, where considerably less research has been conducted on their longer-term outcomes. This study used Kentucky Medicaid claims data and birth certificate data to examine children ages 0 to 5 and determine childhood outcomes associated with NAS. Socioemotional factors were examined, alongside household structure. Physical and mental health conditions were also examined for these children. Finally, long-term health expenditures were analyzed.

Supported by:

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Abstracts

Presentation 76

Abstract Title: **An Evaluation of the "Critical Period" in Contingency Management**

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Abstract: Aim: The dissemination of Contingency Management (CM) for Cocaine Use Disorder (CUD) has highlighted the need for treatment optimization. One area of optimization is improving participant performance during the initial weeks of treatment, which may predict future success. However, this "Critical Period" has not been evaluated in CM. The purpose of this analysis was to determine if, after accounting for the effects associated with incentive condition (Group; primary predictor), later performance in a CM trial could be predicted by performance during the initial 2-week critical period (covariate) in people with CUD.

Methods: Seventy-nine participants with CUD received high or low value incentives for recent cocaine abstinence or were in a non-contingent control group. Generalized estimating equations (GEE) were used to analyze urine drug test results (positive/negative), repeatedly measured over 36 timepoints for each participant during the 12-week intervention. To determine the predictive potential of the critical period, the first six visits (two weeks) were included in the GEE as a covariate for urine test results in the remaining visits.

Results: Participants who provided more cocaine-positive samples during the first two weeks of treatment were significantly more likely to produce a positive urine sample during the remainder of the trial when urine samples from missing visits were counted as positive (odds ratio [OR]=47.62;$p<0.001$) or missing (OR=26.32;$p<0.001$).

Conclusions: Abstinence in the initial weeks of CM is instrumental to the success of treatment, regardless of incentive size. Measures be taken to increase the probability of early success (e.g., Motivational Interviewing, Larger Incentives).

Supported by: This research was supported by grants from NIDA (R01DA043938; T32DA035200) of the NIH.

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Presentation 77

Abstract Title:	**The Relationship Between Childhood Trauma and Future Mental Health and Substance Use Concerns: A Retrospective Analysis**
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Abstract: Background: In a 2019 survey, 61% of adults reported exposure to Adverse Childhood Experiences (ACEs). People who report ACEs can have lasting negative health outcomes including depression, ADHD, and substance use disorders in adulthood. Additional research is warranted to understand the extensive relationship between childhood trauma and future mental health severity. The purpose of this analysis was to explore the relationship between ACEs and mental health disorders in a substance-using population. Data were gathered from screening materials of participants recruited at the UK Laboratory of Human Behavioral Pharmacology.

Methods: One-hundred sixty-eight people (n = 168) completed a screening packet in 2022 to determine eligibility for one of our research studies. A retrospective analysis of standardized assessments of ACEs, depressive symptoms (BDI), history of suicide attempts (ASQ), ADHD (ASRS-A), and substance use (MAST, DAST) was conducted. A correlation matrix was used to determine the linear relationship between these measures.

Results: The exploratory analysis revealed a statistically significant positive linear relationship between ACE and BDI (r = 0.436), lifetime suicide attempts (r = 0.263), ASRS-A (r = 0.329), MAST (r = 0.307), and DAST scores (r = 0.404; p values less than 0.001).

Conclusion: The outcomes of this analysis support the expanding body of research indicating that trauma in childhood is related to future mental health and substance use disorders. Interventions should include prevention strategies in at-risk populations, as well as providing trauma-informed therapy to affected children and adults as a component of a comprehensive treatment program.

Supported by: This research was supported by these grants from the National Institute of Health: R01 DA045023, R01 DA036550, R01 AA026255, R01 DA047391, R01 DA043938, R01 DA052203, R21/R33 DA049130, R01 DA048617, R01 DA047368 and T32 DA035200.

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Abstracts

Presentation 78

Abstract Title:	**Comic Book Conversations: Reaching Youth with E-Cigarette Education with Story-Based Narratives through Comic Books**
Author(s):	M. Ickes, Department of Kinesiology and Health Promotion, U of Kentucky H. Brown, #ICANendthetrend Student Facilitator, U of Kentucky

Abstract: With the increase in e-cigarette use among youth, innovative communication strategies to convey the risks associated with this health crisis are lacking. By utilizing more engaging materials that resonate with youth, like comic books, connected conversations can support the discussion of health issues relevant to youth. The objectives of this presentation are to 1) explore the impact of story-based narrative communication with youth; and 2) collect formative feedback to support the development of future lesson plans and resources to complement a comic as a health education resource. University faculty and staff developed the 'Villainous Vape' by translating research on e-cigarette use among college students to a comic book. The process included translating interpretation of the study findings into a narrative that resonates with youth and young adults. A cross-sectional exploratory research design aims to determine general perceptions of the comic, visual appeal, overall themes identified after reading it, and suggestions to integrate into prevention curriculum. Data were collected through an online survey distributed in partnership with four after school programs, and through 60-minute focus groups conducted with a small subset of these youth. Feedback from youth reinforces the comic book contains incredibly important information that is easily understood through the narrative comic book format. Youth felt as though they could relate to the characters and that the support shown throughout the story was comparable to what they see in their schools and personal lives. This comic shows promise in communicating a public health issue such as e-cigarette use among youth.

Supported by: CCTS Small Grant NIH UL1TR001998

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Presentation 79

Abstract Title:	**Examining Appeal of and Reasons for E-cigarette Initiation Among Kentucky Youth**
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Abstract: While tobacco use has historically been a major problem across the nation, the landscape has changed dramatically over recent years and e-cigarettes have gained popularity, particularly among youth. According to the FDA, approximately 16.5% of high school students reported e-cigarette use in 2022. The industry specifically targets youth and young adults through a number of marketing strategies. However, limited research exists exploring youth perspectives on reasons for initiation and what about the products they find appealing. To better understand this topic, we utilized cross-sectional data extracted from baseline surveys among 1,520 high school students between August 2022 and February 2023. Youth participated in baseline survey prior to the implementation of #iCANendthetrend, a peer led tobacco prevention program, about their experience with, attitudes toward, and knowledge of e-cigarettes. We hypothesize that e-cigarette use is widely initiated due to peer pressure, and social norms. Understanding reasons youth turn to these products from personal perspectives can shed light on the realities targeted marketing has on youth, and likewise inform where efforts are directed, helping to develop tailored strategies to help eliminate the high rates of e-cigarette use.

Supported by: Kentucky Department of Public Health

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Abstracts

Presentation 80

Abstract Title: **Injection Drug Use and Overdose History Among PPW Reporting Co-occurring Methamphetamine and Opioid Use**

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Abstract: The current wave of the opioid epidemic is characterized by widespread polysubstance use. Although existing research has specifically documented an increase in methamphetamine and opioid co-use, this remains understudied among pregnant and postpartum women (PPW). To fill this gap, this study examines co-occurring methamphetamine and opioid use among PPW and its relationship with injection drug use (IDU) and overdose history.

Participants (N=163) were PPW with a history of substance use who were receiving services in a residential treatment agency in Kentucky between 2017 and 2022. Chi-square analyses and t-tests were used to compare women who reported using both methamphetamine and opioids in the 30 days prior to entering treatment (n=58) to those who did not (n=105) – focusing on differences in demographics, IDU, and overdose experiences.

Participants were predominately White (96.9%) and unemployed (90.8%), with an average age of 29 years old. Individuals who reported methamphetamine and opioid co-use were significantly more likely to report IDU in the 30 days prior to treatment ($p < .001$), and were significantly more likely to have overdosed ($p = .024$) and witnessed an overdose ($p < .001$) in the six months prior to treatment. There were no demographic differences.

Results suggest that co-occurring methamphetamine and opioid use is fairly prevalent among PPW, and health risk behaviors may be more common among those individuals. While this has important implications for treatment planning, it also points to a critical need for additional research in this area, including exploring the long-term implications of co-occurring methamphetamine and opioid use for both mothers and children.

Supported by: Chrysalis House/Substance Abuse and Mental Health Services Administration (TI080358 - 1H79TI080358-01) grant.

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Presentation 81

Abstract Title:	**Examining connectedness, gender, and race/ethnicity differences as predictors of vaping among Kentucky youth.**
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Abstract: Vaping is increasingly popular among U.S. middle and high school students, with youth in Kentucky reporting higher trends of ever and current use. Researchers across the country committed to the campaign to reduce vaping among adolescents have begun to examine factors that impact use among adolescents. A recent study found that students with lower peer and school connectedness were more likely to use vaping products as a coping mechanism. More research is needed to understand the relationship between connectedness and other demographic factors and vaping among Kentucky youth, specifically among 8th-12th graders. The current study examined social connectedness, gender, and race/ethnic differences as predictors of adolescent vaping behavior and susceptibility. Using an online survey via Qualtrics, the #iCANendthetrend research team collected baseline data from 1,951 Kentucky middle and high school students between August and December 2022. Preliminary linear regression analyses were conducted to examine whether social connectedness was a significant predictor of vaping frequency and susceptibility. Result shows social connectedness was significant in predicting vaping behaviour, specifically frequency of use (P 0.001). Additional analyses will be conducted to examine gender and racial/ethnic differences in social connectedness, vaping behavior, and perceived susceptibility. The implications of this study highlight the importance of creating inclusive school environments that encourage connectedness and belongingness for all students.

Supported by:

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Presentation 82

Abstract Title:	**Examining Mental Health Symptoms as Predictors of Vaping and Susceptibility Among Kentucky Adolescents**
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Abstract: Previous studies suggest that risk factors, such as mental health, could contribute to increased vaping among adolescents. When comparing adolescents without mental health symptoms, prior research found that adolescents with mental health symptoms were more likely to use vaping products. The purpose of this study is to examine risk factors associated with vaping and whether students,Äô mental health predicted their likelihood of vaping. Gender and racial/ethnic differences in vaping behavior and perceived susceptibility were also examined. The iCANendthetrend research team collected data from 1,951 participants between August and December 2022 using an online survey. A preliminary correlation analysis examining the relationship between mental health symptoms and vaping behavior suggests that mental health symptoms such as depression and anxiety can predict the risks of vaping behaviour daily frequency of use and susceptibility. The overall regression models were significant for vaping behavior with only depressive symptoms adding significantly to the models. This study highlights the importance of identifying potential risk factors that increase the likelihood of adolescent vaping. Identifying depression, anxiety, and other mental health symptoms as possible risk factors can help parents, educators, and mental health practitioners become aware of behaviors that might indicate that a student is at risk of using vaping products. Identifying risk factors of vaping will also be helpful for future prevention programs focused on reducing youth vaping.

Supported by:

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Presentation 83

Abstract Title: **Liver Transplantation for the Treatment of Severe Hepatic Trauma**

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Abstract: Hepatic trauma is a rare indication for Orthotopic Liver Transplantation (LT) but can be a lifesaving therapeutic option in some cases. We queried the UNOS dataset to identify patients who underwent LT for trauma from 1987 to 2022, and compared them to a cohort of patients transplanted for other indications. Cox proportional hazard model and linear regression analyses were performed to assess the impact of severe hepatic trauma on overall graft and patient survival and hospital length of stay. 72 patients underwent LT for trauma during the study period. Those transplanted for trauma were younger (median 45 vs 53, $p<0.001$), more frequently on mechanical ventilatory support at the time of transplantation (26.4% vs. 7.6%, $p<0.001$) and had greater incidence of pre-operative portal vein thrombosis (12.5% vs. 4%, $p=0.002$) than those transplanted for other indication. Patients transplanted for trauma had 30 and 90-day mortality rates of 5.6% and 8.3% respectively and early graft loss at 30 days of 13.9% vs7.1% in the control group, ($p=0.023$). The 1, 3 and 5-year survival rates were 81.8%, 73% and 66.5%, respectively. On multivariable analysis, trauma patients were associated with decreased overall graft survival (HR= 1.42, 95% CI= 1.01-1.98), and prolonged length of hospital stay ($p=0.048$) compared to patients transplanted for other indications. Increased rates of PVT, pre-operative mechanical ventilatory requirement and prolonged LOS suggests increased complexity of trauma cases. Patients transplanted for severe trauma have 42% increased risk of graft loss compared to those transplanted for other indications.

Supported by: Sponsored by the Division of Transplantation at UKHC; NIH CTSA grant (UL1TR001998)

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Abstracts

Presentation 84

Abstract Title:	**Magnitude of Volar Tilt Restoration in Distal Radius Fracture Using the Lift-Off Screw (LOS) Reduction Technique**
Author(s):	A. S. Dripchak, BS, Medical Student, U of Kentucky B. T. Westbrooks, MD, Department of Orthopaedic Surgery, U of Kentucky C. M. O'Shaughnessy, MD, Department of Orthopaedic Surgery, U of Kentucky

Abstract: Distal radius fractures are common orthopaedic injuries that can be treated operatively or nonoperatively. Restoring the patient's natural anatomy is critical for treatment. Failure to restore volar tilt has a significant effect on wrist kinematics—leading to ulnar impaction, carpal instability, and flexor pollicis longus tendon rupture. Open reduction and internal fixation with volar plating is a well-established treatment option in these cases. Using cadaveric models, our anatomical study aimed to incorporate a "lift-off screw" (LOS) technique, which employs a fixed angle peg in the diaphyseal portion and volar plate to aid as a reduction tool to restore volar tilt.

Six fresh frozen cadaver arms with no bony pathology were used as a models. There were four right and two left arms. An extra-articular distal radius fracture was made, reduced, and plated using the LOS technique. Cadaver identifier, laterality, pre-reduction sagittal tilt, and post-reduction sagittal tilt were obtained. Total correction obtained in degrees from pre- to post-reduction was calculated. Prereduction sagittal plane variance ranged from 13 degrees of dorsal tilt to 8 degrees of volar tilt. Post-reduction sagittal plane variance ranged from 21 to 31 degrees of volar tilt. The average correction of volar tilt was 26 degrees (18-34 of volar tilt restoration).

Our study demonstrates that the LOS can successfully correct sagittal plane deformity. On average, we found that a 10mm LOS restored about 26 degrees of volar tilt. This technique is best used as an adjuvant to standard manipulative reduction techniques in treating dorsally displaced distal radius fractures with greater than 15 degrees of dorsal tilt pre-operatively.

Supported by:

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Presentation 85

Abstract Title:	**Importance of Surgical Sequence in Two-Team Treatment of Vascular Injury Secondary to Traumatic Knee Dislocation**
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Abstract: Vascular injury associated with traumatic knee dislocations (KD) involves multidisciplinary management between orthopaedic and vascular surgeons. The optimal operative sequence has yet to be established, but reestablishing perfusion to the injured extremity is critical. The objective of this study is to describe the outcomes of patients with KD and associated vascular injury that required sequential vascular and orthopaedic surgical intervention.

Patients with KD and associated vascular injury that required sequential vascular and orthopaedic surgical intervention between Jan 1, 2008, to Dec 31, 2019, were retrospectively identified. Data collected included patient demographics, time to first procedure, time to vascular surgery, and post-operative complications, including amputation.

A total of 14 patients with median age 30 years (range, 20-62 yrs.) met inclusion criteria. Eight patients underwent orthopaedic intervention first, while six underwent vascular intervention initially. There were no significant differences in patient demographics or post-surgical complications between groups. Median values for time to first procedure were 316 minutes for the Orthopaedic First group, and 262 minutes for the Vascular First group (p=0.70). Median values for time to vascular surgery were 372 minutes for the Orthopedic First group, and 262 minutes for the Vascular First group (p=0.23).

Vascular injuries secondary to KD continue to be a clinical challenge. Although results were not statistically significant, there were existing differences between the two groups that may be clinically significant. To better define and understand the role of surgical sequence in management of vascular injury secondary to KD, large, randomized, multi-center trials are required.

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Abstracts

Presentation 86

Abstract Title:	**Risk Factors For Pulmonary Embolism in Patients Undergoing Posterior Thoracolumbar Fusion: Who Benefits From IVC Filters**
Author(s):	J. R. Heidel, College of Medicine, U of Kentucky R. Motiei-Langroudi, Department of Neurosurgery, U of Kentucky

Abstract: Background: Development of pulmonary embolism (PE) after long-segment posterior thoracolumbar fusion is an uncommon but severe and potentially fatal complication. In order to avoid this, inferior vena cava (IVC) filters are placed prophylactically in all patients undergoing a long-segment thoracolumbar fusion in some centers. This study is aimed to investigate the risk factors for PE development in such surgeries, and the necessity of IVC filter placement.
Methods: This was a single-institution retrospective study. Adult patients undergoing open posterior thoracolumbar fusion on 7 segments between 2010 and 2022 were reviewed. We reviewed the association of factors such as smoking status, illicit drug use and type, body mass index (BMI), gender, age, anticoagulation history and status on presence of PE.
Results: 365 patients that met inclusion and exclusion criteria were identified. The overall rate of PE was 2.2%. Among the 365 patients, 24 (6.6%) had IVC filters placed before the surgery. Analysis showed smoking status, illicit drug use (only for cocaine and cannabis), and history of deep vein thrombosis and PE significantly increased the incidence of PE. A scoring system out of 8 points was set in place to determine risk subgroups for developing PE based on the aforementioned significant risk factors.
Conclusion: Results of our study stratifies a group of risk factors (smoking status, cocaine use, cannabis use, and previous venous thromboembolism history) for PE development after long-segment posterior thoracolumbar fusion. Based on this, we made recommendations for determining prophylactic IVC filter use in high-risk, medium-risk, and low-risk subgroups.

Supported by:	PSMRF Citation: The Professional Student Mentored Research Fellowship (PSMRF) Project is supported by the National Center for Advancing Translational Sciences through Grant UL1TR001998, UK HealthCare and the University of Kentucky College of Medicine.

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Center for Clinical and Translational Science

Abstracts

Presentation 87

Abstract Title:	**Prescription Opioid Use Increases Resource Utilization Following Ventral Hernia Repair**
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Abstract: Studies have shown preoperative opioid use is associated with increased postoperative opioid use and surgical site infection in patients undergoing ventral hernia repair (VHR). This study seeks to determine the impact of preoperative opioid use upon resource utilization following open VHR.

A retrospective IRB approved study of ventral hernia repairs from a single tertiary care practice between 2013 and 2020 was performed. Medical records, National Surgery Quality Improvement Program database, and Kentucky All Schedule Prescription Electronic Reporting data were reviewed for patient demographics, comorbidities, dispensed opiate prescriptions, hernia characteristics, and outcomes. Univariate logistic regression analyses assessed the impact of each patient demographic and clinical characteristic. Primary outcomes were resource utilization variables including readmissions, emergency department (ED) visits, and clinic visits within 45 days of operation.

381 VHR patients were identified, including 101 with preoperative dispensed opioids. Patient sex, obesity status, dyspnea, and COPD history were predictive of one or more outcomes. Surgical site infection was associated with increased rates of readmission (14.3, $P<0.001$), ED visits (5.82, $P<0.001$), and clinic visits (5.96, $P<0.001$). Preoperative opioid use was associated with increased readmissions (1.93, $P<0.05$) and ED visits (2.19, $P<0.05$), particularly ED visits for pain (3.31, $P<0.05$). Preoperative opioid use is a risk factor for post-discharge ED visits and readmission. Understanding drivers of increased utilization is essential to improve healthcare value. Future research may focus upon efficient use of resources in patients who use opioids.

Supported by: The Professional Student Mentored Research Fellowship (PSMRF) Project is supported by the National Center for Advancing Translational Sciences through Grant UL1TR001998, UK HealthCare and the University of Kentucky College of Medicine.

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Presentation 88

Abstract Title: **120-Day ED Visits and Readmission Rates following Common Stone Procedures**

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Abstract: Objectives: To quantify emergency department (ED) visits and hospital admissions (HA) after common urologic stone procedures including ureteroscopy (URS), shockwave lithotripsy (SWL), and percutaneous nephrolithotomy (PCL) which are a concern of payors, providers, and patients.
Materials and Methods: This is a retrospective cohort study using claims data from the IBM MarketScan Commercial and Medicare Supplement databases. Adults with a urologic stone diagnosis and no history of stone procedure in prior 12 months who underwent stone procedures between 2012 and 2017 were included. All-cause ED visits and HA were evaluated during 30, 60, 90, and 120-day periods following the index urologic stone procedure.
Results: 166,287 patients were included in the analytic cohort. For inpatient-indexed procedures, cumulative ED visits rates following stone procedure at 120 days was 18.8% for URS, 19.2% for SWL, and 23.6% for PCL. A similar trend was observed with ED visit rates, following outpatient indexed procedures at 120 days with a cumulative rate of 14.2% of SWL patients, 14.9% of URS patients, and 17.3% of PCL. A similar trend was found when examining HA. ED and HA rates increased steadily through the 120-day time period.
Conclusion: Rates of ED visits and HA following common stone procedures continue to rise at least up to 120 days following the index procedure whether in the outpatient or inpatient settings. While rates of unplanned care are similar for URS and SWL, patients undergoing PCL return to the hospital at higher rates.

Supported by: UK CCTS Investigators, Becton Dickinson, NIH CTSA grant (UL1TR001998)

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Presentation 89

Abstract Title:	**Metabolic reprogramming of intra-lesion microglia and macrophage after neurotrauma**
Author(s):	R. Kumari,1 H. J. Vekaria, 2, A. J. DeSana,1, O. H. Wireman, 1 W. M. Bailey,1 S. M. Maclean, ,1 A. N. Stewart, 1 E. P. Glaser,1 H. C. Williams,1, P. G. Sullivan,2 K. E. Saatman,1, S. P Patel, 1, J. C. Gensel,1 Affiliations: 1: Spinal Cord and Brain Injury Research Center and Department of Physiology, University of Kentucky, College of Medicine, Lexington Kentucky, United States 2: Spinal Cord and Brain Injury Research Center and Department of Neuroscience, University of Kentucky, College of Medicine, Lexington Kentucky, United States

Abstract: Background: Central nervous system (CNS) trauma activates resident microglia and recruits peripheral monocytes (collectively, CNS macrophages) into the injured nervous system. CNS macrophages are known to play role in neuro-pathophysiology, exacerbate neurodegeneration and promote repair/disease resolution. Here, we hypothesized that injury-induced impairments in macrophage metabolism, and specifically oxidative phosphorylation (OXPHOS), drive pro-inflammatory macrophage activation after CNS injury. We tested this hypothesis by analyzing the bioenergetic profiles of macrophages after traumatic brain injury (TBI) and spinal cord injury (SCI).
Methods: We utilized 12-week-old C57BL/6J mice for T9 spinal cord contusion or controlled cortical impact (CCI) to model SCI or TBI, respectively. Spinal cords or brains were collected at 7 days post-injury and subjected to a magnetic bead-associated cell sorting to isolate CNS macrophages (CD11b+). Viable cells (50,000 cells/ well) were subjected to Seahorse XFe96 Analyzer (Agilent) to assess for real-time oxygen consumption rate (OCR). Mitochondrial parameters such as basal respiration, maximal respiration, and ATP production were obtained.
Results: Basal and maximal respiration rates of CNS macrophages were significantly lower after TBI and SCI. Dichloroacetate treatment (DCA 25mM)- a pan pyruvate dehydrogenase PDK inhibitor- significantly increased basal OCR and ATP-linked OCR when applied ex vivo to SCI macrophages.
Discussion/Conclusion: Neurotrauma causes metabolic dysfunction in macrophages by decreasing OXPHOS which can be improved by DCA treatment. Further, we plan to selectively target macrophage metabolism to facilitate improvements after CCI as seen after SCI and develop DCA into a viable in-vivo treatment.

Supported by:	This work supported by the National Center for Research Resources and the National Center for Advancing Translational Sciences, National Institutes of Health, through Grant UL1TR001998.

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Presentation 90

Abstract Title:	**Adverse Childhood Experiences and Mental Health among Justice-Involved Women: Self-Esteem as a Mediating Mechanism**
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Abstract: Adverse childhood experiences (ACEs) and mental health problems are interrelated issues, and highly prevalent among justice-involved women who use drugs. However, less is known about how self-esteem impacts this relationship. Thus, the aim of this study was to investigate the relationship between ACEs and mental health (traumatic stress, depression, and anxiety) and examine self-esteem as a mediator between ACEs and mental health in justice-involved women with OUD. Data were collected under the NIDA-funded Justice Community Opioid Innovation Network (JCOIN) trial. Incarcerated women (N=488) were randomly selected from eight Kentucky jails, screened for OUD, and interviewed by research staff. On average, participants were 36.8 years old, 95.1% non-Hispanic white, 71.7% heterosexual, and reported a high number of ACEs (5.0 of 10). ACEs were significantly correlated with greater mental health issues (traumatic stress, $r = .407$, $p<.001$; depression, $r = .177$, $p<.001$; and anxiety, $r = .213$, $p<.001$) and lower self-esteem ($r = -.241$, $p<.001$). Linear regressions established that ACEs and self-esteem were significantly related to all three mental health variables of interest, controlling for demographic covariates. Additionally, self-esteem partially mediated the relationship between ACEs and both anxiety and traumatic stress, while self-esteem fully mediated the relationship between ACEs and depression. Findings suggest the need to assess for ACEs in mental health assessments and to increase resources for self-esteem interventions for justice-involved women. Additionally, more education is needed to inform communities and justice systems regarding appropriate interventions to address self-esteem for justice-involved women who have experienced ACEs.

Supported by: NIH (NIH HEAL) award: UG1DA050069

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Presentation 91

Abstract Title:	**Temporal Dynamics of B Cell Diapedesis after Traumatic Brain Injury in Mice**
Author(s):	J. B. Miller, Spinal Cord and Brain Injury Research Center, U of Kentucky A. J. DeSana, Spinal Cord and Brain Injury Research Center and Department of Physiology, U of Kentucky B. A. Williams, Spinal Cord and Brain Injury Research Center, U of Kentucky A. M. Stowe, Departments of Neurology and Neuroscience, U of Kentucky K. E. Saatman, Spinal Cord and Brain Injury Research Center and Department of Physiology, U of Kentucky

Abstract: TBI is a leading cause of mortality and morbidity for young adults. Survivors of moderate to severe TBI often face persistent cognitive and neurobehavioral deficits. Repeated failures of clinical trials targeting neuronal injury mechanisms have led to expanded efforts to understand the role of other cell types in the complex secondary injury cascade initiated by trauma. The roles of astrocytes and microglia in driving neuroinflammation are now well established, as are contributions of systemic innate immune cells such as neutrophils and monocytes. Much less is understood about the adaptive immune response to TBI. Although clinical studies describe engagement of systemic adaptive immunity, a significant gap in knowledge exists regarding the timing and extent of B cell diapedesis into the brain after TBI and the role of B cells in posttraumatic neurodegeneration or neuroplasticity. Existing studies in experimental TBI are limited largely to a single timepoint. We hypothesize that TBI triggers delayed B cell diapedesis into the cortex following a cortical contusion injury. To test this hypothesis, tissues collected from adult mice euthanized 1, 3, 7, 14 or 28 days after receiving controlled cortical impact TBI or sham injury were immunolabeled with the B cell antibody B220. Our data demonstrate a small number of B220+ B cells within the contused cortex at 1 and 3 days, increased numbers at 7 and 14 days, and few cells at 28 days. Future studies will characterize morphological and phenotypic characteristics of B cells within the injured brain to gain insight to their potential function.

Supported by:	This work supported by Kentucky Spinal Cord and Head Injury Research Trust grant 22-4, the University of Kentucky Neuroscience Research Priority Area, and the National Center for Research Resources and the National Center for Advancing Translational Sciences, National Institutes of Health, through Grant UL1TR001998.

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Presentation 92

Abstract Title: **Insights into PP1CA-Shoc2-MARS remodeling by PSMC5.**

Author(s): K. Balu, Molecular and cellular Biochemistry, U of Kentucky
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Abstract: Noonan-like Syndrome with Loose anagen Hair is a developmental disorder caused by mutations in the critical regulator of the RAS-ERK1/2 signaling cascade, scaffold protein Shoc2. The efficient transmission of intracellular ERK1/2 signals relies on the formation of the MRAS- SHOC2-PP1CA complex. To fine-tune signals transmitted via the scaffold module, Shoc2 assembles protein machinery consisting of the protein of the ubiquitin machinery, including HUWE1, VCP, USP7, and PSMC5. Previous findings have demonstrated that Shoc2 interaction with PSMC5 is also critical for the intracellular distribution of Shoc2 to intracellular organelles. Additionally, these studies indicated that AAA ATPase PSMC5 is likely to initiate the remodeling of the Shoc2 complex.

To dissect the role of PSMC5 in the Shoc2 scaffolding complex, we aimed to reconstitute Shoc2 protein complexes in vitro. By adopting the recent advancement in the multi-protein expression system using Sf9 insect cells, we purified Shoc2 protein complexes with MRAS and PP1CA. Additionally, we purified the Shoc2 complex with the HECT domain of HUWE1. In these studies, we utilize biophysical methods such as thermal denaturation assay and size exclusion chromatography combined with Dynamic Light Scattering (SEC-DLS). We demonstrated the binding between multimeric GST-PSMC5 and PP1CA-Shoc2-MRAS protein complex. The role of PSMC5 in remodeling the Shoc2 scaffold complex and modulation of the ERK1/2 signals will be addressed by comparing the size exclusion profiles of PSMC5, PP1CA-Shoc2-MRAS , and PSMC5 + PP1CA-Shoc2-MRAS.

In future, the molecular details of the PP1CA-Shoc2-MRAS complex remodeling by PSMC5 will be addressed by employing Hydrogen-deuterium exchange combined with Mass spectrometry (HDX-MS).

Supported by: NIH award: R35GM136295 and pilot funding from UK Center for Clinical and Translational Science

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Dissemination & Implementation Science Mini-Symposium Abstracts

Oral Presentation

Abstract Title:	**Appalachian STAR Trial: ADAPT-ITT Model Utilization for Comprehensive School Hearing Screening**
Author(s):	M. K. Oberman, College of Medicine, U of Kentucky M. Schuh, MPH M. L. Bush, Department of Otolaryngology, Head & Neck Surgery, U of Kentucky

Abstract: Childhood hearing loss is a widespread manifestation of health inequity. Hearing loss particularly impacts children in underserved communities, such as those in rural Kentucky and other parts of Appalachia. Current hearing screening protocols are not adequate to efficiently refer and evaluate children that fail their annual hearing screening in Kentucky. In addition, pure tone assessment does not sufficiently evaluate the nature of a potential hearing loss. The PCORI trial previously demonstrated an evidence-based telehealth screening model which significantly decreased loss to follow up in the Bering Strait region of Northern Alaska. This protocol included a comprehensive hearing screen and telehealth evaluation by a hearing specialist, such as an audiologist, for failed screens. This promising intervention required adaptation to the context of Kentucky public schools and healthcare systems. In 31 qualitative interviews, our team sought the feedback of key stakeholders on four components of the proposed intervention. The components included school hearing screening, telehealth specialist evaluation, and communication from the schools with both healthcare providers and families. Stakeholders included educators, healthcare personnel, and parents from the 14 partner counties which are future implementation sites. We subsequently analyzed the interviews through mixed method rapid qualitative analysis. The data and themes extracted from our qualitative interviews were formative in the production of the intervention protocols to be implemented in subsequent phases of the trial. Our work outlines this feedback and proposes subsequent adaptations.

Supported by: NIH Award: U01OD033247 and Medical Student PSMRF Awardee

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Dissemination & Implementation Science Mini-Symposium Abstracts

Oral Presentation

Abstract Title:	**Parent Perspectives Informing the Adaptation of an Evidence-Based Parenting Program for Families with DHH Children**
Author(s):	J. Bernard, UK College of Medicine, U of Kentucky J. Jacobs, Department of Otolaryngology, U of Kentucky C. Studts, Department of Pediatrics, U of Colorado Anschutz Medical Campus L. Bellnier, Department of Otolaryngology, U of Kentucky A. Mahairas, Department of Otolaryngology, U of Kentucky G. Mullikin, UK College of Public Health, U of Kentucky

Abstract: Behavioral parent training (BPT) programs have consistently demonstrated efficacy and effectiveness in addressing behavior problems in young children and in preventing the costly consequences of those behavioral challenges. Despite evidence that deaf and hard of hearing (DHH) children are at increased risk for disruptive behavioral problems compared to their typical hearing peers, they are less likely to receive behavioral interventions. The objective of this study was to conduct an in-depth qualitative thematic analysis of 40 parent interviews to inform the systematic adaptation of an evidence-based BPT intervention, The Family Check-Up (FCU), to increase its acceptability and effectiveness for families with preschool-aged DHH children. In accordance with qualitative standards, the number of parents recruited was based on the dual goal of reaching saturation and achieving representation. Parents were recruited to participate in interviews through advertising in pediatric hearing healthcare practices and were compensated for their participation. Semi-structured interview guides included questions assessing (1) parents' perceptions of the need for a BPT intervention; (2) their preferences for FCU-DHH delivery (e.g., qualities and characteristics of the person delivering the intervention, location of program delivery); and (3) potential adaptations that would make a BPT program more relatable and useful to families with DHH children, including guidance on communication methods, child advocacy skills, and child development milestones. Results of qualitative analyses of interview transcripts informed the intervention and training protocols for an adapted "FCU-DHH" program, which is currently being tested in an ongoing hybrid effectiveness-implementation trial.

Supported by:	NIH/NIDCD (R01DC016957, 7R01 DC016975-03), Department of Otolaryngology research funds, & the Professional Student Mentored Research Fellowship (PSMRF) Project is supported by the National Center for Advancing Translational Sciences through Grant UL1TR001998, UK HealthCare and the University of Kentucky College of Medicine. The content is solely the responsibility of the authors and does not necessarily represent the official views of the NIH.

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Dissemination & Implementation Science Mini-Symposium Abstracts

Oral Presentation

Abstract Title:	**Implementation-based Pilot Project for Improved Healthcare Access in Community Centers for Underserved Older Adults**
Author(s):	E.K. Rhodus, Sanders-Brown Center on Aging, Center for Health Equity Transformation, and Department of Behavioral Science, U of Kentucky C. Robinson, Bluegrass Area Agency on Aging and Independent Living R. Glover, First Baptist Church Frankfort C. Roberts, Sanders-Brown Center on Aging, U of Kentucky R. Early, UK Telecare Office, U of Kentucky Y. Jackson, Department of Communication and Center for Health Equity Transformation, U of Kentucky R. Kryscio, Department of Statistics and Sanders-Brown Center on Aging, U of Kentucky J. Harp, Department of Neuropsychology and Sanders-Brown Center on Aging, U of Kentucky R. Sprang, UK TeleCare, U of Kentucky

Abstract: Background: By 2030, nearly one-third of Kentucky's population will be over 65 years old. The "demographic tsunami" shift will strain the state's healthcare system, which has been ranked 49th in the country for seniors. Implications are compounded in rural regions where access to healthcare is limited, and health disparities are rampant. Innovative initiatives are needed to improve aging health, well-being, and quality of life. The objective of this project was to assess feasibility of embedded telehealth services in rural, community centers for increased access to healthcare.
Methods: This study was guided by the traditional translational perspective of implementation research and follows the Exploration, Preparation, Implementation, Sustainment (EPIS) model to increase healthcare access in medically underserved communities through use of direct-to-consumer telehealth services as a novel approach in community centers. This approach serves vulnerable seniors who may not have technology, bandwidth, or technical/cognitive skills to operate telehealth services from home.
Results: Four rural centers were enrolled and serve a combine population of 2000 older adults at high risk of health inequities and disparities. Collaboration among the University of Kentucky (UK) College of Medicine, UK TeleCare, Bluegrass Area Agency on Aging, First Baptist Church Frankfort and primary care providers deployed telehealth stations in community-accessible sites.
Discussion: Implementation science methods allowed for research while simultaneously improving healthcare access. This initiative has gained recognition and additional funding from state and national agencies. Continued research is needed to demonstrate sustained reach, utilization, and change associated healthcare outcomes.

Supported by: Translations of Research Interventions in Practice, Populations, and Policy Leadership (TRIPPPLe) Alliance University of Kentucky Pilot Grant

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DREAM Scholars/SPARK Oral Presentation Session Abstracts

Oral Presentation

Abstract Title: **Academic Misconduct: Faculty Attitudes and Behaviors of Student Self-Plagiarism**

Author(s): Laneshia Conner, Ph.D., Katie Showalter, Ph.D., Rujeko Asalou Machinga, Doctoral Candidate, and Sheila Barnhart, Ph.D.; College of Social Work

Abstract: Across institutions, issues related to academic integrity post-pandemic onset have sharply risen, bringing attention to university policies and practices which exacerbate social conditions that affect adult learners. An example is the increased technological presence in higher education and how it presented challenges to institutions and their instructors when examining the proper use and re-use of textual information. To further explore some of the challenges, this study examined faculty perceptions and accusations of academic misconduct related to self-plagiarism. Twenty-four faculty responded to survey questions that asked about plagiarism perception, self-plagiarism perception, detection of plagiarism, and perceptions and accusations of students using previous coursework in current courses. Exploratory analyses showed differences based on the instructors' writing practices, that perceptions were higher than accusations, and faculty who identified as non-White used fewer detection strategies and were younger had higher perceptions of academic misconduct. Overall, faculty varied in perceptions about what students should be able to recycle in courses. Thus, while the characteristics of instructors play a role in perceptions about self-plagiarism-related activities, there continues to be a question regarding the role of student recycling and related practices that instructors use to adjudge scenarios involving academic misconduct. In keeping with the theme of the conference, Translating Equity into Action, faculty that become more aware of issues related to self-plagiarism will be able to consider the variability in what constitutes student self-plagiarism and make considerations to better adapt feedback strategies. Both practices demonstrate greater consideration for the learner's circumstances and support identity-affirming pedagogical practices.

Supported by: DREAM Scholar Program

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DREAM Scholars/SPARK Oral Presentation Session Abstracts

Oral Presentation	
Abstract Title:	**Particles and Prejudice: Using nanoparticle-based drug delivery to address endometrial cancer mortality**
Author(s):	B. Givens, Department of Chemical Engineering, U of Kentucky C. Rowlands, Department of Chemical Engineering, U of Kentucky A. Folberg, Department of Psychology, U of Nebraska- Omaha, Omaha, NE H. Saindon, Department of Chemical Engineering, U of Kentucky A. Manning, Department of Chemical Engineering, U of Kentucky

Abstract: Endometrial cancer is the most common gynecological malignancy worldwide, and the most common form of uterine cancers. Black women are more likely to be diagnosed with the more aggressive form of endometrial cancer, and are more likely to die from endometrial cancer, than their White counterparts. In these cases, race is often viewed as a biological factor, however, we know from existing research that race is also socially constructed and learned. In this case, systemic racism can have significant impacts on an individual's livelihood. Our investigations thus far focus on using drug delivery systems (DDS) to improve chemotherapeutic outcomes in endometrial cancer. We have developed a monodisperse DDS of approximately 500 nm in diameter using poly(caprolactone) polymers and paclitaxel as the model chemotherapeutic. We investigated the efficacy and toxicity of these DDS in several endometrial cancer cell lines that represent both paclitaxel-sensitive and paclitaxel-resistant populations. Our results indicate that DDS improve chemotherapeutic efficacy in paclitaxel-sensitive endometrial cancer cells, thus having the potential to reduce endometrial cancer mortality. Our translational goal of this research is to (1) develop a DDS that preferentially targets endometrial cancer in a minimally invasive way to improve patient survival and (2) quantify the impact of systemic racism on patients and physicians and implement actionable change.

Supported by: DREAM Scholar Program

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DREAM Scholars/SPARK Oral Presentation Session Abstracts

Oral Presentation

Abstract Title:	**Satisfaction with Adaptive Equipment Knowledge and Comfort of Use for Rural Patients with Spinal Cord Injury**
Author(s):	Riya Patel, Sophomore Undergraduate Student, College of Arts and Sciences Dr. Elizabeth Rhodus, Assistant Professor, Department of Behavioral Science, UK CHET Maxwell Groznik, Graduate Student UK College of Communication Dr. Patrick Kitzman, Department of Physical Therapy, UK College of Health Sciences

Abstract: Persons with spinal cord injury (SCI) face numerous mental health challenges, including depression, feelings of inefficiency, and low self-confidence. A contributor is a lack of knowledge and comfort with needed adaptive equipment to be functional in their daily lives; an issue compounded in rural, medically underserved regions. This project investigates relationships among knowledge, comfort, and satisfaction in use of adaptive equipment by persons with SCI in rural hospital settings. Using a cross-sectional approach, participants living in rural communities with a history of SCI completed an 11-question survey generated by the Primary Investigator in which they rated their level of satisfaction with training by healthcare professionals in use, comfort level, and adaptive equipment knowledge on a scale of 1-5 where 1 is least and 5 is most satisfied. 110 participants completed the survey for a response rate of 100%. A significant difference in comfort and equipment knowledge following training by physical therapists was observed between men and women (p-value = 0.002). Additionally, a significant relationship (p-value = 0.0015) exists between recognition of essential adaptive equipment and confidence with operating the equipment in a home setting.
These findings suggest that healthcare practitioners should provide more comprehensive and effective equipment training to patients with SCI to ensure comfort and satisfaction. Results also indicate that health inequities may exist between gender groups and care provision for persons with SCI in rural communities. Additional investigation is needed to assess and ensure patients are comprehending equipment information across gender and rural groups.

Supported by: SPARK Program

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DREAM Scholars/SPARK Oral Presentation Session Abstracts

Oral Presentation

Abstract Title: **Exploring Substance Use Disorders in Kentucky's Refugee Communities**

Author(s): Dr. Firaz Peer, School of Information Science
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Abstract: Existing research points to the increased risk of substance use disorders within refugee communities when compared to other groups. This increased risk is because of the pre and post migrational stressors that refugees go through as they flee political instability, intense trauma, loss, and violence in their home countries and acclimate to new jobs, housing, healthcare, and schooling systems in their new host cities. While Kentucky resettles the fifth highest number of refugees in the United States, we currently know very little about how substance use, and related disorders are impacting them. The goal of this study is to understand how the refugee community in Kentucky is being impacted by substance use and related health disorders. I interviewed 17 individuals in the state of Kentucky who are involved in various aspects of refugee resettlement and substance use recovery services. The individuals I interviews included administrators at refugee resettlement agencies, substance use recovery specialists, and leaders from different refugee communities. A situational analysis of data I gathered from these interviews has revealed the different substances that are typically abused, the impact they are having on the individuals and their families, as well as the complexities and barriers that are preventing them from receiving the help they need. This presentation will briefly describe these aspects and point to next steps that I am taking in this research.

Supported by: DREAM Scholars

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DREAM Scholars/SPARK Oral Presentation Session Abstracts

Oral Presentation

Abstract Title:	**Understanding Lung Cancer Screening Resources and Needs in Appalachian Kentucky**
Author(s):	S. Yalla, College of Arts and Sciences, U of Kentucky J. R. Thompson, Markey Cancer Center, U of Kentucky F. Y. Sesenu, Department of Communication Studies, U of Kentucky P. C. Hull, Markey Cancer Center, U of Kentucky

Abstract: Appalachian Kentucky, an under-resourced rural region, has the highest rates of lung cancer incidence and mortality in the US. As lung cancer screening becomes increasingly available, in Appalachian Kentucky, only 14% of those meeting guideline requirements are being screened. The aims of this study are to identify lung cancer screening health education material needs in the Appalachian Kentucky community and to uncover the social determinants of health (SDOH) affecting lung cancer screening for those inhabitants. We recruited 5 Appalachian KY residents who are eligible for lung cancer screening and not currently in a healthcare-based profession, to participate in 60-minute qualitative interviews. Here, we shared 3 lung cancer screening materials that are available online and asked the participants for their opinions. We then asked participants about specific SDOH in their community and how we can help members to access screening. The interviews were transcribed, and 3 independent coders analyzed the data to determine relevant themes. The insights gleaned from this study can help create better and culturally relevant infographics for this population. There are multiple SDOH at play for rural Appalachian Kentucky residents, which we have uncovered during our research, from accessing transportation, to fear of discovering that they may have lung cancer. Future research can be conducted to determine how to improve access and understand the barriers to lung cancer screening. Overall, this study can help improve the disparate lung cancer incidence and mortality among individuals in this region through generating new, accessible health education materials on lung cancer screening.

Supported by: SPARK Program

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CCTS Oral Scholars Presentations Sessions Abstracts

Oral Presentation – Session A

Abstract Title:	**The estrous cycle coordinates the circadian rhythm of eating behavior in mice**
Author(s):	V.M. Alvord, Department of Biology, University of Kentucky J.S. Pendergast, Department of Biology, University of Kentucky

Abstract: The estrous cycle regulates daily rhythms of locomotor activity in mice. The duration of wheel-running activity is lengthened on the night of proestrus when elevated estrogens cause ovulation. Long activity duration at the time of ovulation may increase the likelihood of finding a mate. Temporal organization of eating on the night of ovulation could also affect reproductive success. Exogenous estradiol regulates eating behavior rhythms in female mice, but it is not known whether endogenous, cycling estrogens regulate daily eating rhythms. The goal of this study was to determine whether eating behavior rhythms are regulated by cycling ovarian hormones. We first studied diurnal eating behavior rhythms in female C57BL/6J mice fed low-fat diet in 12L:12D. The mice had regular 4- or 5-day estrous cycles as determined by vaginal cytology. Wheel revolutions also fluctuated with 4- or 5-day cycles and were greatest on the night of proestrus. We found that the amplitude, or robustness, of the eating behavior rhythm peaked every 4 or 5 days during proestrus or estrus. After removal of cycling hormones with ovariectomy, the amplitude of the eating behavior rhythm fluctuated at irregular intervals. Next, we studied the circadian eating behavior rhythm in constant darkness (DD) and found that the eating amplitude peaked every 3 to 5 days coincident with the greatest wheel activity, and thus ovulation. Together, these data show that fluctuations of ovarian hormones across the estrous cycle temporally organize the robustness of circadian rhythms of eating behavior so that it coincides with ovulation and sexual receptivity.

Supported by:	Gertrude F. Ribble Endowment; Biology Merit Fellowship (S2022); NSF CAREER IOS-2045267; NIH R01DK124774

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CCTS Oral Scholars Presentations Sessions Abstracts

Oral Presentation – Session A

Abstract Title: **The Effects of Cocaine Withdrawal on Cognitive Flexibility and Claustrum Activity**

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Abstract: Cognitive flexibility is the ability to adapt one's behavior in response to environmental changes. Cocaine withdrawal impairs cognitive flexibility, increasing the likelihood of cocaine relapse. 5-HT2A receptors (5-HT2ARs) modulate cognitive flexibility, and cocaine may alter their activity via its effect on serotonin reuptake transporters. We speculate that cocaine withdrawal changes the neuronal activity of the claustrum, a subcortical brain region with an abundance of 5-HT2ARs, which may contribute to cocaine-induced cognitive flexibility deficits. A cohort of 12 Sprague-Dawley rats (6 males, 6 females) was injected with an adeno-associated virus driving the expression of the GCaMP6f calcium sensor. One group of 3 males and 3 females received 7 once-daily IP injections of 10 mg/kg cocaine, and the other group received 7 once-daily IP injections of saline. We employed the strategy set-shifting task to test the cognitive flexibility of both groups after a 7-day withdrawal, and within 24 hours of their testing, we used wide-field calcium imaging to record the neuronal activity of their claustrum in the absence and presence of ketanserin, a 5-HT2AR antagonist. We found no significant differences in cognitive flexibility nor baseline claustrum activity between the cocaine-exposed and saline-exposed groups. Ketanserin significantly decreased the claustrum activity of both groups, but the effect was more pronounced on the claustrum activity of cocaine subjects. Therefore, cocaine-induced cognitive flexibility deficits could be naturally reversible. Additionally, supporting the role of 5-HT2ARs, calcium imaging data indicate a stronger regulation of neuronal excitability by these receptors after cocaine exposure. Further experimentation is needed.

Supported by: 2022 NEU Summer Undergraduate Research Fellowship

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CCTS Oral Scholars Presentations Sessions Abstracts

Oral Presentation – Session A

Abstract Title:	**Traumatic Brain Injury Induces Acute Intestinal Permeability and Subacute Colon Hypoxia and Microbiome Changes in Mice**
Author(s):	A. J. DeSana, Department of Physiology and Spinal Cord and Brain Injury Research Center, U of Kentucky T. A. Barrett, Department of Internal Medicine - Digestive Health, U of Kentucky K. E. Saatman, Department of Physiology and Spinal Cord and Brain Injury Research Center, U of Kentucky

Abstract: Traumatic brain injury (TBI) triggers not only neurovascular and glial changes within the brain, but also systemic responses that can include gastrointestinal (GI) dysfunction. Brain-injured individuals may suffer intestinal inflammation or ulceration, fecal incontinence, or GI-related mortality. Research across a wide spectrum of disorders suggests that dysregulation of the gut microbiota affects brain function. Recent findings associate TBI with altered fecal microbial diversity, but little is known about the timeline of these changes and their relation to gut dysfunction or pathology. Morphological examination of intestinal tissue from mice receiving sham or controlled cortical impact (CCI) TBI revealed no overt damage in the ileum or colon. To interrogate intestinal permeability, FITC-Dextran (4kda) was orally administered prior to euthanasia, and serum fluorescence assessed. 4hr after CCI, intestinal permeability was increased($p<0.01$). To determine a timeline of post-TBI gut microbiome changes, fecal samples were collected prior to and after sham or CCI injury for 16s gene sequencing. The phylum Verrucamicrobiota was differentially abundant in CCI mice at 1, 2, and 3d postinjury(ANCOM-BC; $q<0.05$). qPCR was conducted to identify the Verrucamicrobiota species as Akkermansia Muciniphila, which reside in and regulates the intestinal mucous layer. Quantification of goblet cells, however, revealed no differences in response to TBI. Because A. Muciniphila increases under hypoxic conditions to promote intestinal wound healing, we assessed GI hypoxia at 1 and 3d after CCI using pimonidazole HCl. We observed increased hypoxia at 3d post-CCI($p<0.05$). Our findings suggest that an acute GI disturbance may lead to a potential compensatory response to systemic stress after TBI.

Supported by: NIH Training Grant 5T32 NS077889, Neurobiology of CNS Injury and Repair; Kentucky Spinal Cord and Head Injury Research Trust Fellowship Funds

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CCTS Oral Scholars Presentations Sessions Abstracts

Oral Presentation – Session A

Abstract Title:	**Characterization of Platelets from A Newly Developed Obese Mouse Model: MS-NASH**
Author(s):	C. Peng, Department of Pharmacology, U of Kentucky D. M. Coenen, Department of Molecular and Cellular Biochemistry, U of Kentucky J. T. Lykins, Department of Molecular and Cellular Biochemistry, U of Kentucky S. W. Whiteheart, Department of Molecular and Cellular Biochemistry, U of Kentucky

Abstract: Obesity is a multifactorial disease with many co-morbidities leading to multi-organ dysfunction. Current studies point towards dysregulation of platelet signaling as a key driver for increased risk of cardiovascular disease. However, the exact mechanism remains elusive and warrants the need to further develop our understanding of platelets in metabolic disease. Recently, a newly developed obese mouse model, MS-NASH, proves to be clinically translatable with its ability to respond to anti-diabetic drugs and mimics the multifaceted aspects of the human metabolic syndrome without a high-fat diet. Their disease severity correlates with body weight among littermates and there are currently no studies investigating the hemostasis phenotype in these mice.
MS-NASH mice had higher overall weight, fat, lean, and total water mass. MS-NASH mice had increased resting platelet GPVI and total GPVI protein, correlating with current studies in human obese patients. MS-NASH males showed a significant increase in red blood cells and mean platelet volume without significant change in platelet count. This suggests a younger platelet population is present and potentially an increase in platelet clearance. Megakaryocyte levels were slightly elevated in the MS-NASH mice compared to C57BL/6 mice. Rebleeding incidents were increased in the MS-NASH mice compared to the C57BL/6 mice. Interestingly, bleeding time was positively correlated with body weight in the MS-NASH mice. Microfluidics showed a decrease in thrombus formation on collagen from the MS-NASH mice, corresponding with the tail bleeding assay. Based on this preliminary study, there might be dysfunction in platelet biogenesis and clot stability in the MS-NASH mice.

Supported by: TL1 grant (NIH TL1TR001997)

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CCTS Oral Scholars Presentations Sessions Abstracts

Oral Presentation – Session A

Abstract Title:	**Repurposing PI3K/Akt Inhibitors to Improve Brain Uptake of Anticancer Drugs in Glioblastoma Resection Models**
Author(s):	L. T. Rodgers, Department of Pharmaceutical Sciences, U of Kentucky J. A. Schulz, Department of Pharmaceutical Sciences, U of Kentucky Y. Tega, Department of Pharmaceutical Sciences, U of Kentuck A. M. S. Hartz, Department of Pharmacology and Nutritional Sciences and Sanders-Brown Center on Aging, U of Kentucky B. Bauer, Department of Pharmaceutical Sciences, U of Kentucky

Abstract: Background; Our laboratory has shown that drug efflux transporters at the blood-brain barrier are regulated via the PI3K/Akt signaling pathway. We want to repurpose PI3K/Akt inhibitors to downregulate these drug efflux transporters with the goal to increase anticancer drug brain concentrations. This therapeutic strategy holds the potential for translation into the neuro-oncology clinic.

Methods:GL261 Red-FLuc (GL261-RF) and TRP-mCherry-FLuc (TRP-mCF) cells (2.5K cells/Œºl; 2Œºl/2min) were injected into 8-week-old female J:NU and 7-week-old female B6(Cg)-Tryc-2J/J mice, respectively. Tumor burden, volume, and invasiveness were assessed with IVIS Spectrum imaging, MRI, and histopathology, respectively. On day 14 post-injection, mice received 5-aminolevulinic acid (200 mg/kg i.p.), and tumors were resected with a 2mm punch biopsy tool using a surgical fluorescence microscope (ex/em: 405/635nm). Drug efflux transporter function of isolated brain capillaries was determined by functional assays. Cytotoxicity was assessed after 72-hour drug incubation using CyQuant MTT Assays.

Results: IC50 values from MTT assays with alpelisib were 15.2 and 37.8ŒºM for GL261-RF and TRP-mCF cells, respectively. Median survival of GL261-RF and TRP-mCF mice was 27d and 24d, respectively. Tumor resection significantly increased median survival of GL261-RF mice from 27d to 34d (p=0.0007). Alpelisib (PI3K inhibitor) and capivasertib (Akt inhibitor) significantly reduced P-gp and BCRP transport function. Cytotoxicity studies with capivasertib, resection of TRP-mCF tumors, and in vivo treatment studies in GBM mice are ongoing.

Supported by: NIH TL1TR001997 (LTR); NINDS/NIH R01NS107548 (BB)

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CCTS Oral Scholars Presentations Sessions Abstracts

Oral Presentation – Session A

Abstract Title: **Carnitine Palmitoyltransferase 1a Modulates Sexually Dimorphic NAFLD**

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Abstract: Nonalcoholic fatty liver disease (NAFLD) affects almost 1 billion people worldwide and is considered an independent risk factor for CVD. Genome- and epigenome-wide association studies associated variants and methylation status of carnitine palmitoyltransferase 1a (CPT1a) to perturbations in very low-density lipoprotein (VLDL) cholesterol and triglyceride levels.
Eight-week-old Cpt1a floxed mice expressing the human APOB100 transgene (Cpt1afl/fl/B100Tg) were administered control adenoassociated virus (AAV) or AAV encoding Cre-recombinase under control of a liver-specific promoter (TBG-Cre). Control and LKO mice were placed on low-fat control or western-type diet (WTD; 42% kcal fat, 0.2% cholesterol) for 16 weeks. Livers were collected and used for histological and lipid analysis, while gene and protein expression were measured by single-cell RNA sequencing and immunoblotting, respectively. FPLC and nuclear magnetic resonance (NMR) determined the lipoprotein composition in plasma.
Cpt1a LKO mice exhibited lower circulating apoB levels consistent with reduced plasma cholesterol and triglyceride-rich lipoproteins (TRLP). Despite lower TRLPs, LKO mice secreted more triglycerides in VLDL. Mice fed WTD developed significant hepatic triglyceride accumulation, while only female LKO mice accumulated free and unesterified cholesterol. Single-cell RNA sequencing revealed that Kupffer cells isolated from female LKO mice exhibited an M1 proinflammatory phenotype (Mmp12 and Cxcl13), while the M2 antiinflammatory macrophage markers (Slit3, Ccnd2) were significantly decreased.
Liver-specific deletion of CPT1a reduces plasma LDL-cholesterol and TGLPs, despite an acceleration of VLDL secretion. Only female LKO mice exhibited an accumulation of hepatic free cholesterol levels associat

Supported by: This work was supported in part by the National Institutes of Health grants K01DK128022, UL1TR001998, and P30GM127211 (RNH).

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CCTS Oral Scholars Presentations Sessions Abstracts

Oral Presentation – Session B

Abstract Title:	**Temporal Associations of Sleep and Pain Symptoms in Young Adults with Chronic Overlapping Pain: Preliminary Data**
Author(s):	I. A. Boggero, Department of Oral Health Science, Division of Orofacial Pain, U of Kentucky College of Dentistry; Department of Anesthesia, U of Kentucky College of Medicine; Department of Psychology, U of Kentucky College of Arts and Science

Abstract: Approximately 1 in 9 young adults (ages 18-34) experience chronic pain, representing an important subgroup of chronic pain sufferers because this is a period characterized by key life transitions. Chronic Overlapping Pain Conditions (COPCs) is when two or more chronic pain conditions co-occur in the same person. Disability increases with each additional COPC in a gradient-specific manner, and patients with COPCs exhibit a worse response to treatments than patients with only one chronic pain condition. Additionally, those with COPCs tend to experience a generalized cluster of symptoms, acronymized as SPACE (sleep disturbance, pain, affect that is negative, cognitive dysfunction, and energy depletion/fatigue) that together diminish quality of life. Because SPACE symptoms often co-occur, we know little about the temporal relationships among these symptoms in young adults with COPCs. The current study, conducted in collaboration with U of Kentucky and U of Cincinnati, will collect data from 50 young adults with COPC and have them complete baseline questionnaires before providing two weeks of daily diary and sleep actigraphy data (for full methods, please see abstract submission by Carley Conway). Data collection for the project recently started, at the poster/talk at the CCTS conference will present preliminary results from all the completed data to date. These data will allow us to determine whether certain SPACE symptoms occur before others and/or predict other symptoms at the daily level, allowing us to identify targets for psychological interventions for young adults with COPCs. The data will also serve as preliminary data for a future RO1 grant to be submitted in 2025.

Supported by: This project was funded by the CCTS Pilot Program, NIH CTSA grant (UL1TR001998)

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CCTS Oral Scholars Presentations Sessions Abstracts

Oral Presentation – Session B

Abstract Title:	**Physician Perspectives on Institutional DEI and Strategies to Create and Sustain a Diverse Physician Workforce**
Author(s):	T. Daniels, MD Candidate 2024, College of Medicine, U of Kentucky J. Chadha, Department of Internal Medicine, U of Kentucky L. E. McLouth, Department of Behavioral Science, College of Medicine, U of Kentucky

Abstract: Background: Less than 10% of the academic physician workforce is racially and ethnically diverse. While most institutions are implementing diversity, equity, and inclusivity (DEI) initiatives, physician perspectives on DEI are lacking. This study describes physicians‚Äô perspectives on institutional DEI and DEI strategies.
Methods: Physicians from the University of Kentucky completed a one-time survey of perceived DEI and strategies to recruit and retain a more diverse workforce.
Results: 99 physicians (46% female; 70% non-Hispanic white; 9% Asian; 5% Black; Mean age = 45 years, SD = 10.8; range = 31-74; 29% Internal Medicine) participated. The lowest subscale for institutional DEI was equitable reward/recognition (M = 2.52; SD = 0.98); the highest was access to opportunity (M = 3.03, SD = 0.81). Racially/ethnically minorized physicians rated UK lower for cultural competence (M = 2.49 vs. 2.7, p = .110) and respect (M = 1.5 vs. 1.3, p = .129) compared to white physicians. To improve DEI, physicians recommended: reviewing faculty salaries for inequity (34.3%), training senior faculty to sponsor minority colleagues (21.2%), and providing education for underrepresented and minority faculty on negotiation (20.2%). 50% of white physicians vs. 85% of racially/ethnically minoritized physicians thought cluster hiring would have a positive impact on DEI (p = .009). 90% of racially/ethnically minoritized physicians vs. 75% of white physicians thought including DEI in promotion/tenure criteria would improve DEI (p = .219).
Conclusion: Physicians recommend cluster hiring and including DEI into statements of evidence for promotion and tenure to improve recruitment and retention of diverse faculty.

Supported by: White Coat for Black Lives Fellowship: Department of Behavioral Science DEI Council

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CCTS Oral Scholars Presentations Sessions Abstracts

Oral Presentation – Session B

Abstract Title:	**Six-Month Outcomes of Morphine vs. Clonidine for the treatment of Neonatal Abstinence Syndrome**
Author(s):	S.L. Hargrove, College of Medicine, U of Kentucky; H.S. Bada, Departments of Pediatrics and Neonatology, U of Kentucky.

Abstract: Objective: The study goal was to evaluate whether clonidine treatment of neonatal abstinence syndrome (NAS) would result in better growth, neurological development and overall health outcomes during the first six months of life compared to morphine.
Study Design: A previous study enrolled 120 infants who were admitted for the treatment of NAS. These infants were randomized to receive morphine or clonidine and monitored for effectiveness of each treatment throughout the duration of their stay. Duration of treatment did not differ between clonidine and morphine. The caregivers of these infants were surveyed during follow-up appointments at the NICU graduate clinic. They self-reported visits to the ER and hospitalizations that had occurred since discharge from the hospital. Survey responses were supplemented by comprehensive chart review in EPIC and Sunrise Clinical Manager. Staff members recorded height, weight and head circumference measurements and administered the Bayley Scales of Infant and Toddler Development (BSID), 3rd edition. Analyses include descriptive statistics and comparison of the treatment groups using chi-square and two-tailed t-test.
Results: Infants treated with morphine (n=60) versus clonidine (n=60) did not differ at six-month of age in weight (p=0.45), length (0.62) or head circumference (p=0.72). Six-month motor, cognitive and language scores as well as the number of congenital malformations present did not differ between groups. Neither were there differences as to emergency room visits or hospitalization.
Conclusion: Early health outcomes post discharge did not differ between clonidine and morphine treated infants. A longitudinal study is warranted to determine if clonidine treatment results in more favorable long-term outcomes.

Supported by: NIH CTSA grant (UL1TR001998) and the College of Medicine

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CCTS Oral Scholars Presentations Sessions Abstracts

Oral Presentation – Session B	
Abstract Title:	**Developing a Community Advisory Board: Phase One of the Neonatal Intensive Care Among Queer (NICQu) Families Study**
Author(s):	A. Jones, College of Social Work, U of Kentucky O. S. Yinger, College of Fine Arts, School of Music, U of Kentucky R. H. Farr, College of Arts & Sciences, Department of Psychology K. Fallin-Bennett, College of Medicine, Department of Family & Community Medicine, U of Kentucky C. Gibbs, College of Fine Arts, School of Music, U of Kentucky

Abstract: Having an infant in the Neonatal Intensive Care Unit (NICU) can be stressful or traumatic; it can disrupt parent well-being, the transition to parenthood, and the typical trajectories of infant and child health. For parents who identify as lesbian, gay, bisexual, transgender, queer, or another sexual and gender minority (LGBTQ+), the stress of having an infant in the NICU may be compounded by health disparities and fear of discrimination; however, research on LGBTQ+ parents of infants in the NICU is lacking. Here we describe the protocol for phase one of a sequential mixed methods study to better understand experiences of LGBTQ+ parents of NICU infants, with a goal of improving health equity. Using a community-engaged research approach and drawing on principles of community-based participatory action research, we recruited a community advisory board of stakeholders who self-identify as LGBTQ+ and have had a child in the NICU or who work in a NICU with LGBTQ+ families. Working with the community advisory board, we refined interview questions and protocols for phase two, a qualitative inquiry, of the NICQu (Neonatal Intensive Care among Queer Families) Families study. Attendees will gain an understanding of (a) what is currently known about LGBTQ+ parents of NICU infants, (b) how our research aims to improve health equity and family-centered NICU care, and (c) the process of developing a community advisory board.

Supported by: UK Center for Health Equity Transformation (CHET) and Center for Clinical and Translational Science (CCTS) pilot grant; National Center for Research Resources and the Center for Advancing Translational Sciences, National Institutes of Health, through Grant UL1TR001998.

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CCTS Oral Scholars Presentations Sessions Abstracts

Oral Presentation – Session B	
Abstract Title:	**ASSESSMENT OF HIP JOINT STRUCTURAL AND CLINICAL OUTCOMES IN PEOPLE WITH MARFAN SYNDROME**
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Abstract: The objective of this study was to assess the effects of Marfan Syndrome (MFS) on hip joint cartilage, hip-related patient reported outcomes (PRO), and OARSI-based tasks including the 30-second chair rise test, 40-meter walk test and timed stair climb test. It was hypothesized that the MFS group would exhibit higher severity of cartilage abnormalities, worse hip PRO, and functional performance. All study participants completed the Hip disability and Osteoarthritis Outcome Score (HOOS) to assess hip-related pain, function during activities of daily living (ADL) and quality of life (QOL), where a lower score (0 - 100 scale) indicates a worse outcome. In addition, all participants performed the 30-second chair rise test, 40-meter walk test, and stair climbing test to assess overall performance. Radiographs were used to assess radiographic severity of disease. Individuals with MFS self-reported significantly lower HOOS pain ($p=0.02$), ADL ($p=0.03$) and QOL ($p=0.03$) sub- scores, indicating worse hip-related PRO in MFS. The MFS group performed 56% less repetitions during the 30-second chair rise test ($p<0.001$) and took 50% and 61% longer to complete the 40-meter walk test ($p<0.001$) and stair climb test ($p=0.04$), respectively, thereby indicating worse functional performance. The MFS group also exhibited significantly higher severity of acetabular cartilage abnormalities ($p = 0.01$) than the control group.Overall, our study results suggest that individuals with MFS exhibit early signs of hip joint degeneration in the setting of radiographic hip OA status, poor hip-related clinical outcomes, and overall worse functional performance compared to healthy individuals.

Supported by: NIH S10-OD023573

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CCTS Oral Scholars Presentations Sessions Abstracts

Oral Presentation – Session B

Abstract Title:	**Superwoman Schema: Black Women's Perceptions of How They Should Cope With Sexual Pain**
Author(s):	S. Thorpe, Department of Kinesiology & Health Promotion, U of Kentucky N. Malone, Department of Educational, School, and Counseling Psychology, U of Kentucky J. Dogan-Dixon, Department of Educational, School, and Counseling Psychology, U of Kentucky

Abstract: Superwoman Schema, a conceptual framework that reflects Black women's ability to overcome gendered racism and stress, affects the way Black women choose to cope with health-related issues. The purpose of this study is to investigate how Black women perceive they should cope with sexual pain using the Superwoman Schema as an analytic and interpretative guide. Data were derived from n=17 participants who completed an individual interview on sexual pain and pleasure. Deductive thematic analysis was conducted. Results indicated whereas some Black women endorsed all five components of Superwoman Schema as coping strategies for sexual pain, other Black women resisted SWS completely. Additionally, one participant was an outlier and did not endorse nor resist SWS. Implications for generational sexual health interventions for Black women are discussed.

Supported by: This study was partially funded by the Center for Positive Sexuality, Race and Sexuality Grant.

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Abstracts

College of Health Sciences Research Day

Posters 93-148

Presentation 93

Abstract Title:	**Scoping Review of Interventions for Adults who use AAC**
Author(s):	A. E. Borgstrom, Department of Communication Sciences and Disorders, U of Kentucky M. J. Cooley-Hidecker, Department of Communication Sciences and Disorders, U of Kentucky J. Page, Department of Communication Sciences and Disorders, U of Kentucky

Abstract: Background: Adults with developmental disabilities who use or need alternative and augmentative forms of communication (AAC) struggle to find helpful resources available to them. The aim of this scoping review is to examine the interventions for adult AAC users to become functional communicators in their everyday environments. Methods: First, we decided to search the literature within the Cumulative Index to Nursing and Allied Health Literature (CINAHL) because CINAHL indexes all articles in all of the ASHA journals and the Perspectives of the Special Interest Groups (SiGS). Second, we found the controlled vocabulary used in CINAHL to answer our aim. We reviewed the resulting articles‚Äô abstracts to select those that met our inclusion criteria. The exclusion criteria was to exclude systematic reviews. However, existing systematic reviews were used to identify additional research articles. A data-charting form was developed by undergraduate student (AB) to determine which information to extract. AB read and charted the data. In the next stage, a second reviewer will read and independently chart each article. Results: Eighteen articles were selected for data charting. The following data was extracted from included records: study design, participant descriptions, type of intervention, length of intervention, data collection methods, and outcome measures. Conclusion: Most of the intervention articles used single-subject experimental designs. Types of interventions included (a) caregiver training, (b) Picture Exchange Communication System (PECS) training. Future research is needed to support adult AAC training.

Supported by:

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College of Health Sciences Research Day

Presentation 94

Abstract Title:	**Creating an Online Algorithm for the Autism Classification System of Functioning**
Author(s):	K. Capps, Department of Health Sciences, U of Kentucky; Dr. M. J. Cooley Hidecker, Department of Health Sciences, U of Kentucky, Lexington, KY

Abstract: Classification systems are important because they focus on an individual's strengths, are feasible for users such as parents and clinicians, and help to explain an individual's capability given a disorder (Rosenbaum et al., 2014). The Autism Function Classification System (ACFS) was created to provide a ranking system for individuals with autism. This system ranks individuals on a level I-V based on their social communication. Level I is most functional while level V is least functional. Other classification systems have algorithms to help users more easily find a classification level such as the CFCS and MACS. The ACFS is missing an algorithm for quick usability. This research was designed to test the usability of an ACFS algorithm that was created from the ACFS manual.

The development of this algorithm was divided into two phases: creating the ACFS algorithm and testing its usability using Qualtrics. Using the current ACFS instructions and level descriptions, an algorithm of questions that leads the user to each of the five ACFS levels was created and uploaded to Qualtrics. To test the usability, five participants were asked to complete the algorithm using the Think Aloud method (Jaspers, 2009).

Once input from the five participants was obtained, their comments were analyzed to make changes to the future ACFS algorithm. Participants noted a lack of clarity in the algorithm wording and had difficulty deciphering the differences in some of the questions. Positive remarks were made addressing the level descriptions and their usefulness.

Supported by: CHS Summer Undergraduate Research Fellowship

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Presentation 95

Abstract Title: **Scoping Review on Eye-Gaze as an Access Technique for AAC**

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M. J. Cooley Hidecker, Ph.D., CCC-A/SLP, Department of Communication Sciences and Disorders, U of Kentucky
J. L. Page, CCC-SLP, F-ASHA, FNAP, Department of Communication Sciences and Disorders, U of Kentucky

Abstract: The purpose of this research was to conduct a scoping review on eye-gaze as an access technique for augmentative and alternative communication (AAC). The aim of this eye-gaze access scoping review was to determine what communicative competencies are targeted in interventions and/or measured in outcomes. Initial search of the literature across five databases revealed 76 articles, and an additional 13 were identified through citation searching. Once records were screened and duplicates removed, 16 studies were selected to be included in this review. Although eye-gaze is not typically the preferred access technique due to slow speed of communication, populations including those with cerebral palsy (CP), Rett syndrome (RS), and amyotrophic lateral sclerosis (ALS) may use it due to motor limitations necessitating an alternative access method as opposed to touching with fingers. The presenter will discuss findings from this scoping review and propose a framework for eye-gaze access interventions.

Supported by:

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College of Health Sciences Research Day

Presentation 96

Abstract Title: **Simulation-Based Training and Person-Centered Care for Dementia**

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Abstract: Currently, 55 million individuals worldwide live with dementia. This number is expected to rise to 78 million in 2030 and 139 million in 2050. The implementation of person-centered care is key to evaluating and managing the cognitive-linguistic, personal, and social-emotional well-being of individuals with dementia. However, research on the efficacy of training future healthcare providers to implement person-centered care for individuals with dementia is limited. A pedagogical approach gaining acceptance in healthcare education involves simulation-based learning. Simulation provides realistic learning opportunities through interactive, experiential techniques that mimic real-world experiences. Previous research showed increased knowledge, comfort, patient safety, and confidence of students following simulation-based training. Currently, no measurement is available to guide application of simulation-based training. This study measured the impact of simulation on implementation of person-centered care through goal writing. Twenty-three graduate students in Communication Sciences and Disorders participated in an in-person dementia simulation and wrote short-term goals before and after the simulation. Results showed no significant difference with inclusion of person-centered care between pre and post goals. This may relate to reduced clinical and educational experience writing person-centered goals. However, findings support a method of evaluating the application of simulation-based training through goal writing. Future research may involve implementing a model of goal writing with inclusion of person-centered care earlier in students' academic/clinical careers.

Supported by:

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College of Health Sciences Research Day

Presentation 97

Abstract Title:	**Stepping into the Shoes of a Person with Dementia: Simulation-Based Learning and Person-Centered Care**
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Abstract: Currently, 55 million individuals live with dementia. Dementia creates cognitive-linguistic deficits in the areas of attention, memory, language, and executive functions as well as reduced mobility and sensation (hearing and vision). To address these deficits, individuals with dementia receive treatment from a variety of specialists including speech-language pathologists. The most effective treatment involves person-centered care (PCC) which focuses on the whole person instead of the disease. Despite this finding, the literature supporting speech-language pathologists' implementation of PCC is limited. In order to increase the amount of PCC, graduate programs must prepare future speech-language pathologists to provide appropriate, person-centered treatment for individuals with dementia. A pedagogical approach, simulation-based training has gained acceptance in healthcare education to promote realistic learning opportunities. Therefore, the purpose of this study was to describe perceptions of 23 graduate students in Communication Sciences and Disorders of dementia in relation to PCC following a hands-on simulation. After participating in the simulation, each student wrote a reflective essay answering questions about their experiences, perceptions, and surprises regarding the simulation. Following thematic analysis, findings support the theory that a simulated dementia experience impacts students' intent to provide person-centered care for persons with dementia. Students shared an increased understanding and awareness of dementia as well as empathy and importance of holistic, interprofessional care. Future research may involve the transfer of simulation-based learning to clinical practice in implementation of person-centered care.

Supported by:

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College of Health Sciences Research Day

Presentation 98

Abstract Title:	**Functional Communication Therapy for Individuals with Aphasia: A Literature Review**
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Abstract: Communicating thoughts to family and friends is an obstacle for individuals with chronic aphasia. Day-to-day interactions often diminish, reducing communication opportunities and confidence. Speech-language pathologists aim to restore communication abilities to reduce the potential for isolation and social withdrawal. However, these communication obstacles often persist after dismissal from therapy. Therefore, additional information is needed to guide clinicians in designing therapy sessions and measuring outcomes of functional communication approaches to enhance life participation. This descriptive literature review addresses the effectiveness of a functional communication approach to therapy for persons with chronic aphasia. Functional communication involves communicating using any modality (speech, writing, gestures, drawing) in everyday real-life situations. Three trained researchers reviewed the effects of functional communication on persons with aphasia (PWA) and communication, quality of life, and caregivers' quality of life. We examined peer-reviewed articles published between 2012 and 2022 in the United States within three electronic databases. The search yielded 4 articles with 161 PWA and 63 caregivers. Interventions involved group and/or individual therapy related to naturalistic communication, multidisciplinary practice with physical, occupational, and speech therapy, as well as exercise, cooking, painting, and music. For PWA, outcomes showed significant changes in linguistic measures as well as improved quality of life. Caregivers reported less caregiver burden. Results show that a variety of functional communication strategies impact life participation for individuals with aphasia and their caregivers.

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College of Health Sciences Research Day

Presentation 99

Abstract Title:	**He Said, She Said: Evaluating Attentional Demand in Voice Therapy using the Gender Auditory Stroop Procedure**
Author(s):	C. Kirkham, Department of Communication Sciences and Disorders, U of Kentucky J. Samenuk, Department of Communication Sciences and Disorders, U of Kentucky R. Weaver, Department of Communication Sciences and Disorders, U of Kentucky O. Stevens, Department of Communication Sciences and Disorders, U of Kentucky C. Wing, Department of Communication Sciences and Disorders, U of KentuckyK. Ishikawa, Department of Communication Sciences and Disorders, U of Kentucky

Abstract: Individuals with voice disorders are typically treated with voice therapy, however, the attentional demand associated with using therapy techniques is not yet measurable. Previous research has validated the Gender Auditory Stroop Procedure as a tool for evaluating inhibitory processes, executive control and attentional processes. Performance on the Gender Auditory Stroop Procedure may help determine our patient's ability to integrate the therapy techniques into their everyday communication. This proof-of-concept study aims to examine the effects of gender information on attentional processes using the Gender Auditory Stroop Procedure. In this task, participants are presented with spoken words that are either congruent or incongruent with the gender of the speaker's voice, and their response times are recorded. Our hypothesis is that error rates will become greater and reaction times will become longer when the person is using different voice techniques, compared to completing the Gender Auditory Stroop Procedure without speaking. The participants of our study are 15 college students with healthy voices. Participants are asked to perform a Gender Auditory Stroop Procedure while counting numbers in different speaking conditions: silence, conversational speech, whispering, and clear speech. Each speaking condition is repeated two times in a random order. We hypothesize that the mean reaction time will be significantly longer in whispering and clear speech compared to the baseline (silence) and conversational speech.

Supported by:	This study was funded by the start-up funds granted to Keiko Ishikawa (PI) at the Department of Communication Sciences and Disorders.

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Presentation 100

Abstract Title: **Simon Says: Measuring the Attentional Demands of Voice Therapy Techniques**

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Abstract: Voice therapy is a common approach for treating individuals with voice disorders, but currently, there is no way to measure the attentional demand associated with using therapy techniques. Previous research has validated the Simon Task as a tool for evaluating visuospatial attention, cognitive control, and motor planning based on reaction time and error rate. Performance on the Simon Task may help determine our patient's readiness for integrating the therapy techniques into their everyday communication. This proof-of-concept study aims to examine the feasibility of measuring the attentional demands associated with voice therapy techniques using the Simon Task. Our hypothesis is that error rates will become greater and reaction times will become longer when the person is using different voice techniques, compared to completing the Simon Task in silence. The participants of our study are 15 college students with healthy voices. Participants are asked to perform a Simon Task while counting numbers in different speaking conditions: silence, conversational speech, whispering, and clear speech. Each speaking condition is repeated three times in a random order. The results show that the mean reaction time is significantly longer in whispering and clear speech compared to the baseline (silence) and conversational speech. The preliminary findings of this study suggest the potential of using secondary task reaction time as a proxy for measuring the attentional demands of voice therapy techniques.

Supported by: This study was supported by the start up funds awarded to Dr. Keiko Ishikawa.

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College of Health Sciences Research Day

Presentation 101

Abstract Title:	**Co-Designing a mHealth App to Facilitate Physician-Patient Communication for POTS Patients**
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Abstract: Postural Orthostatic Tachycardia Syndrome (POTS) is a common but misunderstood disorder. POTS patients experience a range of debilitating symptoms, including syncope, dizziness, and tachycardia upon position change. Patients experience long diagnostic delays and spend an average of four years and see seven physicians prior to obtaining a diagnosis. Our recent study indicated that improving physician-patient communication may be one way to decrease the time to diagnosis for POTS patients. More specifically, mHealth technology (e.g., smartphones or wearables) may be one way to improve physician-patient communication due to its wireless connection, computation capacity, and widespread adoption. The current study explores what features POTS patients would like to see in a mHealth app aimed at improving communication with physicians. This poster presentation will examine qualitative data from three focus groups where we solicited design ideas from POTS patients (n = 11) and present themes that emerged from the data. Preliminary themes include challenges patients anticipate with utilizing smart technology. In addition, patients discussed features that would be appealing in smart technology as well as educational content they would hope to access via smart technology to facilitate communication with their healthcare providers. These themes will be utilized to design a mHealth app for POTS patients to improve physician-patient communication in the future. Next steps for this project include securing funding to co-design the mHealth app with POTS patients and also test the app in controlled trials in the future.

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College of Health Sciences Research Day

Presentation 102

Abstract Title:	**Codesign Comprehensive Connected Cancer Care Program: A Qualitative Analysis of Participant Notes**
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Abstract: Background: Cancer patients in Kentucky experience a variety of challenges. This project aims to develop a Comprehensive Connected Cancer Care (C4) program, consisting of remote screening, patient and family navigation, and patient and provider education to meet various needs of cancer patients and their families.
Methods: This analysis is based on 24 participants' responses in a co-design studio in Dec. 2022. Participants were assigned tables to foster interaction among patients, community members, and providers. Written responses to co-design activity questions were coded and summarized.
Results: Participant responses were used to analyze common themes stretching patient access to resources, benefits and drawbacks of technology, and technological adaptations for cancer care. Participants proposed that a personalized, central database of resources would be beneficial for utilization, and that navigator referral and easy access to technology-based resources was best. Accessibility and knowledge deficiencies were cited as barriers to technology incorporation; however, increased provider accountability and flexibility, and enhanced patient autonomy, security, and assistive communication relieved associated stress. Participants identified an ideal application as being accessible, easily navigable, personalized, and visually simple. The significance of "closing the loop" of referrals was also emphasized. Participants stressed the need for enhanced patient-provider communication in an app compatible with EHR systems.
Conclusion: The co-design studio enables program development aligning with patients' ideals and capabilities, and provider interests. Future studios will focus on improving recruitment and participation, and soliciting ideas organized from this studio.

Supported by: Merck Foundation

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College of Health Sciences Research Day

Presentation 103

Abstract Title:	**Mental Health Outcomes of ICU Survivors with Preadmission Comorbidity of Diabetes**
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Abstract: Background: Individuals with diabetes have a greater risk of developing anxiety and depression when compared to the general population. In addition, ICU survivors have a high prevalence (~45%) of depression, anxiety, and post-traumatic stress disorder (PTSD). It remains unknown, if rates of anxiety, depression and PTSD are increased in ICU survivors who have pre-existing diabetes. Therefore, the purpose of this is to compare the mental health outcomes of patients with diabetes who survive the ICU to those survivors without diabetes.
Methods: This study is a retrospective cohort study of electronic medical records (EMR) for patients who attended the University of Kentucky (UKY) ICU recovery clinic from 2016 to 2021. Cognitive and mental health outcomes include the Hospital Anxiety and Depression Scale (HADS), Montreal Cognitive Assessment (MOCA), EuroQol-5D (EQ-5D), and Impact of Events Scale-Revised (IES-R). Descriptive statistics were analyzed for patient demographics, clinical variables, and outcomes. Grouped t-tests were performed comparing patients with diabetes and those without for mental health outcomes.
Results: Of the 79 patients with completed data, 41 (52%) were male with average age of 56.9 ± 11.8 years and 26 (32.9%) had a preadmission diagnosis of diabetes. The average HADS-A score were 6.0 ± 4.9 and HADS-D was 5.5 ± 4.3. The average IES-R, EQ-5D and MOCA were 26.0 ± 23.4, 66.3 ± 23.1 and 24 ± 3.7, respectively.
Conclusions: Our retrospective analysis demonstrates a high prevalence of mental health disorders in survivors of ICU at University of Kentucky. One-fourth of patients attending ICU Recovery Clinic have diabetes as a pre-existing comorbidity; the final statistical analysis to determine if diabetes diagnosis influences outcomes is pending

Supported by:

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College of Health Sciences Research Day

Presentation 104

Abstract Title:	**CSF1R Inhibition Regulates Macrophage Responses and Preserves Muscle Size During Posttraumatic Osteoarthritis**
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Abstract: Posttraumatic osteoarthritis (PTOA) is a cartilage degenerative disease that results in atrophy and weakness of the surrounding musculature, mechanisms of which remain poorly understood. Muscle inflammatory burden and fibrosis have been identified as an effector of poor outcomes following total joint replacement. Here we aimed to identify colony-stimulating factor 1 receptor (CSF1R) inhibition as a novel strategy to improve skeletal muscle health and plasticity in a pre-clinical PTOA model. We employed a surgical ACL transection model (ACLT) and performed RNA sequencing (RNA-seq) on quadriceps muscles seven days post-injury in mice randomized to placebo or CSF1R inhibitor (CSF1Ri) GW2580 (40mg/kg in drinking water). Gene Ontology enrichment analysis of RNA-seq data revealed that CSF1Ri treatment significantly upregulated pathways associated with metabolism, including cellular respiration and ATP synthesis, in addition to muscle cell differentiation and muscle system processes. Noteworthy pathways down-regulated by CSF1Ri treatment after ACLT include immune pathways, such as myeloid leukocyte activation and T cell activation, as well as extracellular structure organization. PTOA mice exhibited significant reductions in quadriceps fiber cross-sectional area ($p<0.01$), which was alleviated with CSF1Ri treatment. At 28d post-injury macrophages were present in quadriceps of CSF1Ri-treated mice, but showed altered polarization compared to non-treated PTOA mice. These findings suggest that modulation of macrophages after ACL injury may mitigate quadriceps muscle atrophy concomitant to the development of PTOA. Given the ongoing clinical testing of CSF1R inhibitors, our findings offer additional support for CSF1R as a therapeutic target.

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College of Health Sciences Research Day

Presentation 105

Abstract Title:	**Mechanotherapy in Female Rats Reduces Collagen Accumulation, but not Muscle Atrophy**
Author(s):	A.J. Mantuano, College of Health Sciences; A.B. Sklivas, Department of Physical Therapy, U of Kentucky; A.L. Confides, Department of Physical Therapy, U of Kentucky; T.A. Butterfield, Department of Athletic Training and Clinical Nutrition, U of Kentucky; E.E. Dupont-Versteegden Department of Physical Therapy, U of Kentucky

Abstract: Background: Mechanotherapy through cyclic-compressive loading (massage) induces an anabolic response in male rats during recovery from atrophy, but not when applied during disuse. Females show a different response to mechanotherapy during recovery than males, however response during disuse has not been evaluated. Hypothesis: Muscle atrophy in female rats will reduce when mechanotherapy is applied. Methods: 10-month-old female BN/F344 rats were randomly assigned to three groups: weight-bearing (WB; n=6), hindlimb suspension to induce atrophy (HS; n=7), and HS with massage (HSM; n=7). HS and HSM were suspended for 7 days during which HSM received 30 minutes of mechanotherapy every other day on the right gastrocnemius muscle beginning day one of suspension (total 4 bouts). Mean fiber cross-sectional area (CSA) and fiber type distribution (MyHC), satellite cell number (Pax7+ cells), collagen percentage (picrosirius red), and myonuclear number (dystrophin-DAPI+) were analyzed on the right gastrocnemius muscle. One-way ANOVA was preformed and statistical significance was assumed at $p<0.05$. Results: HS and HSM bodyweights were significantly lower than WB. CSA was lower in HS CSA was lower in HS (2096±127.4um2;p=0.0011) and HSM (2228±130.7um2;p=0.0050) compared to WB (2892±68.26um2), with no significant difference between HS and HSM. Fiber type distribution and satellite cell number were not significantly different between groups ($p>0.05$). Collagen percentage was significantly higher in HS (10.4±0.3) than in WB (8.0±0.2;$p<0.0001$) and HSM (9.0±0.3;p=0.0040), while HSM was not different from WB ($p>0.05$). Conclusion: Mechanotherapy potentially reduces fibrosis due to atrophy by preventing buildup of collagen in extracellular matrix, but does not attenuate atrophy.

Supported by: Work supported by NIH grant AT009268.

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Presentation 106

Abstract Title:	**Targeting Nicotinamide N-Methyltransferase to Enhance Aged Skeletal Muscle Regenerative Capacity**
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Abstract: With advancing age, skeletal muscle exhibits a striking decline in regenerative capacity post-injury. Satellite cells, the bona fide muscle stem cell, are indispensable for mediating skeletal muscle repair. A major driving factor for delayed and impaired recovery of aged muscle following injury appears to be a significant decrease in satellite cell regenerative capacity and function. Nicotinamide N-methyltransferase (NNMT) is a top up-regulated expressed gene in aged skeletal muscle; NNMT irreversibly catalyzes methylation of nicotinamide, a critical component of nicotinamide adenine dinucleotide (NAD) which is indispensable for metabolic redox reactions. Additionally, NNMT expression is elevated ~12 fold during satellite cell differentiation. We sought to determine if pharmacological inhibition of NNMT (NNMTi) via an orally-delivered novel small molecule inhibitor would enhance regenerative capacity in aged rats. Additionally, we sought to determine if NNMTi would enhance differentiation capacity of primary human-derived myogenic progenitor cells (MPCs) in vitro. Human-derived MPCs underwent differentiation via standard techniques with varying concentrations of NNMTi for three days. Treatment with NNMTi in barium chloride-injured 24-month old rats resulted in a 47% greater fiber cross-sectional area in the injured TA ($p<0.05$) with no difference in satellite cell abundance. Treatment with 3 and 10μM NNMTi resulted in greater myosin heavy chain expression, but higher doses of NNMTi (30 and 60μM) resulted in lower myosin heavy chain expression than control treatment, thus displaying an inverse U-relationship. These data show important in vitro and in vivo efficacy for targeting NNMT as a novel therapeutic strategy to enhance regenerative capacity in aged muscle.

Supported by: NIA R21 AG063056 and U44 AG074107

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College of Health Sciences Research Day

Presentation 107

Abstract Title: **Long Term Effects of an ACL Reconstruction on Muscle Stiffness**

Author(s):
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B. Brian Noehren, Biomotion Lab, Associate Dean for Research, U of Kentucky
C. Megan Graham, Biomotion Lab, Graduate Research Assistant, U of Kentucky

Abstract: Background: In the United States Over 250,000 anterior cruciate ligament (ACL) injuries occur annually with over 100,000 patients electing to undergo surgical reconstruction. There is limited research on the long-term effect on the quadriceps muscle. Work from our lab has shown that the muscle becomes more fibrotic after the injury, but to date if that translates to a stiffer muscle is not known. The purpose of this pilot study was to assess if differences exist in the quadriceps muscle stiffness long-term after an ACL reconstruction (ACLR) using ultrasound elastography. Methods: There were 11 participants recruited for this study. The muscle stiffness was evaluated over the vastus lateralis using a GE Fortis Ultrasound unit. The imaging window was aligned with the midportion of the muscle and 3 images were taken per limb. Data were analyzed with in-house software and the average stiffness was determined in kilopascal (kPa). Limbs were compared using a paired- t-test. Results: Eleven participants completed the study age 21+\- 2.63 years with a 6/5 male-to-female ratio. Of those participants, there was a mean of 3.2 +\- 1.03 years post-op of ACLR. We found a significant difference (p=0.0027) between limbs (involved limb: 30.2 kPa +\- 8.4 and noninvolved limb: 24 kPa +\- 4.2). Conclusions: We show that even years following an ACL reconstruction the involved limbs have increased stiffness in the vastus lateralis. Potentially greater stiffness may make it more difficult for the person to generate high strength values contributing to long-term dysfunction.

Supported by:

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College of Health Sciences Research Day

Presentation 108

Abstract Title:	**Perceptions of Peer and Parental Support: Assessing the Impact of a Physical Activity Intervention for Adolescent Girls**
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Abstract: Physical activity (PA) is known to have a wide range of health benefits. Children with high levels of social support are more likely to achieve adequate levels of PA. The purposes of this pilot study were to examine the impact of an after-school intervention on perceived peer and parental support among adolescent girls and to identify correlates of peer and parental support to explore in future studies. Seventeen low-active girls in 6th – 7th grade were recruited from a local middle school to participate in an 8-week intervention where they were exposed to various types of PA and discussed PA topics with their peers and college-aged mentors. Peer and parental support, days physically active per week, and physical literacy self-evaluation were measured by the Social Support for Exercise Scale, the Youth Risk Behavior Survey, and the Physical Literacy Assessment for Youth, respectively. Paired samples t-tests indicated that parental support increased from pre- to post-intervention ($t=4.4, p<.001$), whereas there was a small, non-statistically significant increase in peer support ($t=1.5$, $p=0.15$). Correlations for the variables at pre-intervention indicated that there were significant correlations between PA and physical literacy ($r=0.67$, $p=0.01$) and between peer and parental support ($r=0.74$, $p=0.004$), whereas at post-intervention there were significant correlations between peer and parental support ($r=0.83$, $p<.001$), and physical literacy with peer support ($r=0.70$, $p=0.008$) and parental support ($r=0.69$, $p=0.009$). These preliminary results suggest that a PA intervention may increase perceptions of parent support and that physical literacy may be a variable to target in future interventions.

Supported by: This study was funded by the University of Kentucky College of Health Sciences Office of Research and Scholarship Pilot Award.

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College of Health Sciences Research Day

Presentation 109

Abstract Title:	**Parent-Daughter Relationships Among Physical Literacy, Physical Activity, and BMI**
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Abstract: Overweight and obese youth are at an increased risk of developing chronic health diseases. Girls are at an increased for poor health consequences due to lower participation in physical activity (PA) and lower physical literacy (PL) scores. PL, a holistic construct, acknowledges one's knowledge, motivation, confidence, and competence to be physically active for life. It has been associated with positive health behaviors among children. The purpose of this study was to examine child PL in the context of parental influences and health indicators. Cross-sectional data from parent/guardian-child dyads were collected in Kentucky girls. Correlations among parents'/guardians' understanding of their child's PL (PLAYparent), parent/guardian evaluation of obesogenic environments (Family Nutrition and Physical Activity Screening Tool), child's self-reported PL (PLAYself), PL testing (PLAYbasic), BMI, and PA were examined using Pearson's Coefficient. There were 34 girls (6.4±1.0 years) and 34 parents/guardians (36.9±5.5 years, 91.2% mothers, 79.4% employed) who completed most surveys. Parents predicted their child's PL was associated with their provided obesogenic environment ($r=0.346$, $p<0.05$). The obesogenic environment was an additional indicator of girls' participation in PA (0.427, $p<0.05$). There were limited associations between a child's observed PL and parents' understanding of their child's PL ($r=0.047$, $p=.793$). Findings suggest parents perceptions of the obesogenic environment may be associated with child PA and parent reported PL. Child perceived and observed PL were not associated with the parent perceived variables. To propose more effective interventions to reduce obesity in the context of PL, more diverse sample sizes should be attempted.

Supported by:

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Presentation 110

Abstract Title: **Effect of Shoe Stiffness on Running Gait**

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Abstract: The stiffness of the soles of running shoes can practically be tailored to an athlete's desire. Changing a shoe's construction (i.e. compressive stiffness of the midsole) can alter the mechanics, kinetics, and energetics of the runner. The purpose of this study was to quantify ground reaction forces across varying shoe stiffnesses. Three shoe types were assessed: A/B has low stiffness in the forefoot and medium stiffness in the rearfoot, B/B has medium stiffness throughout, and C/B has high stiffness in the forefoot and medium stiffness in the rearfoot. 13 individuals (weight: 62.52 ± 4.86 kg) with no current lower-limb injuries ran at a set speed of 3 m/s on an instrumented treadmill in each shoe type. Peak ground reaction force (PGRF), loading rate, and impulse were calculated and averaged for five stance phases and compared with measured ANOVAs. PGRF in N/kg was 2.39 ± 0.27 for A/B, 2.42 ± 0.29 for B/B, and 2.45 ± 0.26 for C/B. Loading rate in N/kg*s was 70.56 ± 14.69 for A/B, 69.91 ± 14.85 for B/B, and 70.18 ± 14.51 for C/B. Impulse in N*s/kg was 215.43 ± 20.26 for A/B, 217.34 ± 17.68 for B/B, and 217.03 ± 19.30 for C/B. PGRF for A/B was significantly higher than C/B ($p = 0.0004$). As forefoot stiffness increased, PGRF increased. Higher PGRF might indicate increased load through the tibia, and thus can be an important metric to consider for reducing long-term injury risk. This can further be studied using instrumented force-measuring shoe insoles.

Supported by:

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Presentation 111

Abstract Title:	**2D Biomechanics and Lower Extremity Asymmetry During a Stability Task**
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Abstract: BACKGROUND: A Hunt Seat Equestrian (HSE) athlete typically rides their horse in a two-point position. This position requires leg support and appropriate lower extremity angles to keep the athlete secure with the horse. When instability occurs, the rider is at greater risk for falls or injury while riding.
PURPOSE: 1) To analyze the relationship between years of experience and prior injury for HSEs to maintain stability. 2) To evaluate if lower extremity limb asymmetries are associated with the angular position of lower extremities during a stability task.
METHODS: Spring of 2023, 26 collegiate HSEs participated in a stability task and isokinetic movement analysis of the lower extremities. The stability task required HSEs to hold their flat riding position on an unstable surface for two minutes while accelerometer and 2D biomechanics data was collected. Data was analyzed for significance (0.05) using ANOVA and general linear models. Lower extremities strength asymmetries were calculated via the Biodex.
RESULTS: Years of participation significantly (p=0.01) influenced movement of the y-axis (left to right) during the stability task. Injury was not associated with movement in the y-axis, lower extremity angle, or strength asymmetry. Hamstring asymmetry predicted knee angle (p=0.05) and trended towards predicting both hip (p=.13) and trunk angles (p=.11). Conversely, quad asymmetry tended to predict knee angle (p=.08).
CONCLUSION: Years of participation is critical for improvement of stability in riding position. Reducing lower limb strength asymmetry through training may positively impact performance, allowing HSEs to maintain a correct riding position. Both may reduce the risk of injury.

Supported by:	The project described was supported by the NIH National Center for Advancing Translational Sciences through grant number UL1TR001998.

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College of Health Sciences Research Day

Presentation 112

Abstract Title:	**UK Rehab Makerspace Making 3D Printing Accessible**
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Abstract: The purpose of this research was to learn how to 3D print assistive technology devices for augmentative and alternative communication purposes. The main focus was simplifying the use of 3D printers so that anyone had the ability to use it by reading a set of directions. Assistive technology and technology used with augmentative and alternative communication can be extremely costly and making it accessible can decrease the price burden. The UK Rehab Makerspace as a whole focuses on assistive technology in several areas, including Toys with a Purpose, interactive switches, and keyguards. The presenter will discuss how the general process of 3D printing works, benefits of 3D printing, and affordability and accessibility of 3D printing.

Supported by:

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College of Health Sciences Research Day

Presentation 113

Abstract Title:	**Sensory Organization Skills of Equestrian Athletes With or Without Multiple Concussions**
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Abstract: BACKGROUND: Balance is a critical part of effective performance in equestrian sport. Nearly half of equestrian athletes (EqA) experience at least one sports-related concussion, which can negatively impact balance. A sensory organization test (SOT) examines a patient‚Äôs somatic (SOM), visual (VIS), vestibular (VEST), and preferential (PREF) ability in a quantitative manner, all of which contribute to rider balance.
PURPOSE: 1) Compare equestrian SOT scores to normative SOT data, and 2) Evaluate the relationship between EqA concussion history and SOT scores.
METHODS: Thirty-one female collegiate EqA underwent an SOT protocol Fall 2022. EqA also completed an injury history questionnaire. The SOT test included six conditions with three trials per condition. The output includes four composite scores (SOM, VIS, VEST, PREF) and normative scores. Concussion history was categorized as individuals with zero to one concussion, and more than one concussion. T-tests and chi-square tests were used to analyze the data.
RESULTS: At least one concussive injury was reported in 51.6% of EqA. Of those EqA with a concussion-history, 93.8% reported more than one concussion. Compared to normative values, EqA had higher than average scores in SOM by 4.2% ($p=0.0003$), VIS by 7.6% ($p<0.0001$), VEST by 24.5% ($p<0.0001$), and PREF by 10.4% ($p<0.0001$). Multiple concussions did not affect SOT scores in EqA ($p>0.05$).
CONCLUSION: Frequent physiological rebalancing in equestrian sports hones a variety of balance skills as shown by the SOT results comparing equestrian athletes with the norm. Practicing equestrian sport may create a protective effect regarding head injury.

Supported by:	The project described was supported by the NIH National Center for Advancing Translational Sciences through grant number UL1TR001998.

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College of Health Sciences Research Day

Presentation 114

Abstract Title:	**Collegiate athletes receiving concussion education are more likely to report head injury**
Author(s):	L. Singer, Department of Health and Clinical Sciences, U of Kentucky M. M. Keener, MS, Rehabilitation and Health Science Doctoral Studies, U of Kentucky H. Hammer, Department of Health and Clinical Sciences, U of Kentucky K. I. Tumlin, PhD, MPH, Department of Epidemiology and Environmental Health, U of Kentucky

Abstract: Introduction: Concussions (mTBI) are among the most serious injuries in collegiate athletes (CA). Attitudes and perceptions surrounding mTBI-reporting behaviors are not well documented in CA. Purpose: 1) To evaluate likeliness to report mTBI between individual and team sports, and 2) To relate mTBI education and likeliness to report head injury considering covariates of age, academic year in school, and mTBI history.
Methods: CA were recruited through a convenience sample to complete an online survey regarding sport participation, concussion history, injury reporting, and concussion training received. T-tests and a multiple linear regression evaluated associations of academic year, sum of concussions reported, and sport type.
Results: A total of 138 respondents (98.5% female) completed the survey. There were 82 “individual” sport participants and 56 “team” participants with 91.2% of respondents attending Division III universities. There was no difference in concussion reporting behaviors by summed total concussions by sport type (p=0.16); reporting between athletes in team or individual sports (p=0.22); or academic year in school (p=0.17). Concussion education was significantly associated with greater likelihood to report concussion (p=0.0027).
Conclusion: Concussion reporting is critical to re-injury prevention, reduction of comorbid psychosocial conditions, and improving overall quality of life. Prevalence of total concussions were similar in our sample suggesting that risk of injury and subsequent awareness of concussion is not affected by sport type or age, rather awareness of symptoms and concussion outcomes. Educational interventions focusing on improving and increasing concussion awareness are critical in encouraging concussion reporting behaviors in CA’s.

Supported by:	The project described was supported by the NIH National Center for Advancing Translational Sciences through grant number UL1TR001998.

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College of Health Sciences Research Day

Presentation 115

Abstract Title:	**Relationships of Concussion and Strength to Chronic Pain in Collegiate Equestrian Athletes**
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Abstract: I.Introduction: Equestrians are at high risk of experiencing a concussion and chronic pain (CP) compared to the average American. No research has defined the relationship between concussions, bilateral strength asymmetries, and CP in equestrians.
II. Purpose: Our purpose was to 1) determine relationships between CP and strength asymmetries, and 2) to characterize the relationship between CP and concussion history in collegiate equestrian athletes (CEAs).
III. Methods: Twenty-four female CEAs completed isokinetic lower limb strength testing in September 2022 and February 2023. CEAs completed a survey reporting injury history and CP during each visit. ANOVA tests were run between categorical and numerical variables, with alpha at 0.05.
IV. Results: Fourteen participants reported experiencing CP. Nine reported a concussion All participants reported right-sided dominance. Quadriceps asymmetry and CP ($p = 0.08$), and quadriceps asymmetry and total number of concussions ($p = 0.09$) tended towards significance. Similarly, the association between medically diagnosed concussions and CP was nearing significance ($p = 0.07$). Individuals with CP had a significantly larger shift in strength in their non-dominant hamstring ($p = 0.02$) and quadriceps ($p = 0.03$) between spring and fall semester, but not in their dominant hamstring ($p = 0.09$) and quadriceps ($p = 0.13$).
V. Conclusion: CEAs who have experienced a concussion demonstrated additional adverse effects it can have on their body. Individuals who experience CP also experience significant changes in their non-dominant leg strength. Future research needs to focus on a larger sample size and a more diverse group of equestrian disciplines and ages.

Supported by:	The project described was supported by the NIH National Center for Advancing Translational Sciences through grant number UL1TR001998.

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College of Health Sciences Research Day

Presentation 116

Abstract Title:	**Accuracy of IMU Sensors for Humeral Thoracic Motion**
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Abstract: Context: Development of a simple clinical three-dimensional inertial measurement system to capture humeral and scapular motion would help clinicians perform assessment and develop treatment plans for shoulder pathologies. Recently a device has come on to the market called ShowMotion (Alyve Medical, Denver CO) that has this potential, but no clinical research has been carried out on this device. Objective: This study is examining the validity of the system of measuring humeral-thoracic motion by comparing the measured angles to the reference standard of goniometry. Participants: Three healthy male participants volunteered for this study. Intervention: An electronic goniometer is strapped to the arm in conjunction with the standard five sensor setup. Pre-determined positions of 30, 60, 90, and 120 degrees of flexion and abduction were measured simultaneously for 15 seconds each. Main outcome measures: Bland-Atlman plots were used to calculate the average difference between the ShowMotion system and electric goniometer to determine accuracy. Result: The average difference between the electronic goniometer and the motion capture system is (14.9 ± 7.7) degrees with 95% CI (-1, 29 degrees). Conclusion: The motion capture system shows an underestimation in detecting humeral-thoracic motion at all positions in both flexion and abduction. Discussion: The underestimation could be a result from the electronic goniometer as it calibrates zero relative to the ground level. Therefore, another project is planned to re-evaluate the ShowMotion system but using arm resting angle to calibrate zero position for the electric goniometer.

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College of Health Sciences Research Day

Presentation 117

Abstract Title:	**The Role of Massage Therapy in Patients with Breast Cancer, Post Surgery: A Systematic Review**
Author(s):	J.S. Cole, Departments of Rehabilitative and Health Sciences Ph. D Program and Integrative Medicine and Health, U of Kentucky A.O. Olson, Department of Communication Sciences and Disorders, U of Kentucky E. E. Dupont-Versteegden, Departments of Rehabilitative and Health Sciences Ph. D Program and the Center for Muscle Biology, U of Kentucky

Abstract: Objective: The purpose of this systematic review was to examine the effect of massage therapy (MT) on pain and anxiety in patients with breast cancer, post-surgery.
Methods: Systematic searches were performed using databases PubMed, CINAHL, and Medline (EBESCO), without date restriction, through February 2022, to identify randomized control trials, randomized pilot, and quasi-experimental studies. The database searches retrieved 794 titles, and after screening, 7 studies were chosen for full analysis using Cohen's d, 95% Confidence Interval (CI), and effect size.
Results: MT techniques reported were massage therapy, classic massage, reflexology, myofascial release, and myofascial therapy, and were performed at day 0 up to 16 weeks post-op. Analyses showed a positive effect size using massage therapy as an intervention for pain and anxiety in women with breast cancer post-surgery. Overall effect size for pain was 0.795 with a p-value of <.0001, and overall effect size for anxiety was 0.363 with a p-value of <0.0001. MT decreased pain and anxiety for patients in the massage group more significantly than the control group.
Conclusion: The current evidence in this study reflects that massage therapy is effective as a non-pharmacological tool in decreasing pain and anxiety in women with breast cancer, measured up to 16 weeks after surgery.
Key Indexing Terms: Massage therapy; Manual therapy; Breast Cancer; Pain; Anxiety

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College of Health Sciences Research Day

Presentation 118

Abstract Title:	**Implementation of Virtual Reality in Hand Therapy Clinics**
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Abstract: Introduction: Virtual reality (VR) technology to enhance movement is more readily available to treat patients. Implementing new technology within rehabilitation clinics has been found to have some barriers and limited evidence is available to guide successful use of virtual reality within clinics.
Purpose: To evaluate implementation strategies for adoption of VR technology in hand therapy clinics.
Methods: A VR in-service was conducted along with one-on-one education for therapists. Prior to the initial in-service a questionnaire was administered to 14 treating occupational therapists using a Likert scale. Therapists identified patients with severe pain, distal radius fracture, and tendon repairs as potential participants. Implementation was evaluated by monitoring use of VR for 6 months by reviewing medical treatment logs.
Results: Forty-six patients were identified as meeting inclusion criteria, however zero patients received VR. The survey results identified that therapists were interested in using VR with an average of 3.5 and felt patients would benefit on a 3.7/5 point scale. However, 6/14 therapists identified efficient use of device in clinic and 5/14 identified technology concerns as the primary barriers.
Discussion: Several implementation strategies were more effective than others, but continued evaluation is ongoing following changes in January 2023. Altering incentives, direct assistance with treating clinicians, and identifying champions may increase implementation.
Conclusion: Several barriers to VR implementation have been identified despite evidence showing its effectiveness and increased availability in other settings. New interventions in a clinical setting must have buy-in by a clinical champion and work seamlessly in typical patient flow.

Supported by:	Funding for this study was provided by the College of Health Sciences, Office of Research, Pilot Grand Award of $6,155, for an initial 1-year term of Dec 2022 to December 2022 and then extended through December 2023.

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College of Health Sciences Research Day

Presentation 119

Abstract Title:	**Experiences and Perceived Outcomes of Adults with Lifelong Disabilities with Therapy Across Their Lives**
Author(s):	C. L. Gohrband, Department of Physical Therapy, University of Kentucky C. Skubik-Peplaski, Department of Occupational Science and Occupational Therapy, Eastern Kentucky Univeristy A. Harrison, Department of Physical Therapy, University of Kentucky

Abstract: Purpose/Hypothesis: The purpose of this study was to explore the experiences of adults with lifelong disabilities (LLD) who have participated in PT and/or OT services along their lives.
Number of Subjects: 12 participants between the ages of 25-65 years with an LLD were recruited.
Materials and Methods: This study used qualitative descriptive approach. Data was provided in responses to semi-structured questions. Predetermined code areas for preliminary units of meaning were identified with codes corresponding to specific categories of self-determination; and further organized into themes.
Results: Major themes emerged from this qualitative data that included Changes over Time; Therapy and Education Services; Transitions and Meeting Therapy Needs as an Adult; and; Communication and Support. Concepts of Self-Determination were all represented in the data.
Conclusions: The participants discussed multiple changes of their development; in therapy and educational systems; and in technology over time. The focus of school should have been academics. They wished they had not spent so much time working on ambulation skills. Pediatric PT services were thought not to have been helpful. They felt that their success was due to their inner persistence and the support of critical persons in their lives. They did not engage in any type of formal transition process toward receiving therapy services as adults. None of the participants seemed to understand the role of PT/OT services to enhance their function and participation as adults.
Clinical Relevance: This study illustrates the need for more education of therapists and individuals with LLDs on the needs for therapy services.

Supported by:

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College of Health Sciences Research Day

Presentation 120

Abstract Title:	**The Effect of Emergency Call Volume on Occupational Stress Exposure and Sleep Quality in Urban Firefighters**
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Abstract: Context: Stress exposure is one factor believed to be associated with poor sleep quality and injury; however, it remains unclear whether specific aspects to firefighting, such as emergency call volume, effects on-duty sleep quality. Therefore, the purpose of this study was to determine the effect of emergency call volume on stress exposure and sleep quality among urban career firefighters.
Methods: Thirty-four firefighters volunteered for the study. Each participant wore a wrist-based monitor to track heart rate variability (HRV) and sleep during a 24-hour shift. Participants then rated their subjective levels of perceived exertion (RPE) and sleepiness after each shift. Total run time (total number of minutes responding to emergency calls) and total run time after midnight were collected. A general linear model with repeated measures and compound symmetry correlation measurement was used to identify predictors of RPE, sleepiness, and sleep on-duty with an alpha set a-priori at 0.05.
Results: RPE, sleepiness, and sleep on-duty were correlated to total run time and total run time after midnight. RPE and sleepiness were correlated to sleep on-duty. No statistical significance was found for HRV. Total run time and sleep accounted for RPE and sleepiness ($p \leq 0.01$). Total run time and total run time after midnight accounted for sleep on-duty ($p \leq 0.01$).
Conclusions: These findings suggest emergency call volume may provide a better method tracking the occupational demands experienced by firefighters on-duty. Future research should consider how emergency call volume may compromise other aspects of firefighting, such as recovery off duty.

Supported by: This work is supported by pilot funding from the Central Appalachian Education and Research Center (CARERC), T42OH010278

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Presentation 121

Abstract Title:	**Title: Frequency of Social Determinants of Health Reported in Literature: A Systematic Review**
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Abstract: Background: Social determinants of health (SDOH) are exacerbated by changes in societal roles, physical impairments, and cognitive deficits in patients who survive critical illness. SDOH are defined as the environments in which we live, work, and play and are known to impact health outcomes. Research demonstrates that SDOH influence the recovery after critical illness, but reporting of SDOH in critical care research is heterogeneous. Thus, the purpose of this study is to describe the frequency of reporting SDOH in critical care literature for ICU survivors based on admission diagnosis.
Methods: A systematic review of Medline Pubmed, CINAHL, Pedro and Web of Science was performed in February 2022. Articles were included if they studied adult patients admitted to the ICU for any critical illness, discharge disposition and at least 2 SDOH from predefined categories. Descriptive statistics were performed, and patients were grouped by admitting diagnosis. SDOH were pooled for the entire cohort as well as stratified by groups.
Results: 7,733 were screened with title and abstract of which 294 underwent full-text review. Fifty-five articles were included with combined total of 513,253 Patients. The majority of the patients were diagnosed with acute respiratory illness (20 articles) upon admission. The SDOH most often reported was race (21 articles) followed by education level (10 articles).
Conclusion: Social determinants of health impact health outcomes and are exacerbated by intensive care unit admission. The frequency of reporting SDOH from the preliminary analysis suggests collecting and reporting of SDOH is limited in critical care literature.

Supported by:	This research was funded in part by a Promotion of Doctoral Studies (PODS) I Scholarship from the Foundation for Physical Therapy Research.

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College of Health Sciences Research Day

Presentation 122

Abstract Title:	**Single Cell Analyses Reveal Dysregulated Extracellular Matrix Remodeling in Older Mice During Mechanical Overload**
Author(s):	A. R. Keeble C. R. Brightwell N. T. Thomas C. M. Latham G. L. Vonlehmden L. K. Eastwood H. A. Noehren K A.. Murach C. S. Fry

Abstract: Purpose: Extracellular matrix (ECM) remodeling is choreographed by the coordinated activity of numerous interstitial cell types within skeletal muscle, and proper remodeling is critical to support muscle hypertrophy. Older adults encounter attenuated hypertrophy in response to resistance training, and meta-analyses of human exercise training suggests alterations in ECM biosynthesis may underscore this phenotype in older adults. Our purpose in the current study was to interrogate extracellular matrix remodeling with single cell resolution in both younger and older mice during mechanical overload. Methods: Six (young) and 24 (old) month-old Col1:GFP mice underwent mechanical overload (MOV) or sham control. Following 7 days of MOV, GFP+ cells from plantaris muscle were isolated, partitioned, sequenced, and processed in silico. Following 14 days of MOV, plantaris muscles analyzed histochemically for fiber size, GFP+ cell abundance, and collagen morphology. Results: Old MOV GFP+ fibro/adipogenic progenitors (FAPs) displayed increased gene set enrichment of mitotic pathways, interestingly coupled with downregulation of ECM assembly. Old mice hypertrophied less at 14 days of MOV and experienced greater collagen content and abundance of GFP+ collagen1-expressing cells. Conclusion: Dysregulated gene expression in GFP+ FAPs with MOV in old mice further underscores a global disruption in the coordinated transcriptional control of extracellular matrix remodeling that occurs with aging. The establishment of a fibrotic muscle phenotype in older mice following MOV likely limits muscle plasticity, shining light on a potential mechanism underlying the attenuated hypertrophic capacity of aged muscle.

Supported by:

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College of Health Sciences Research Day

Presentation 123

Abstract Title:	**Differences in race rider heart rate response and predicting energy expenditure: running and a galloping simulator**
Author(s):	M. M. Keener, MS, Rehabilitation and Health Science Doctoral Studies, U of Kentucky G. Vice, Department of Electrical and Computer Engineering, U of Kentucky K. I. Tumlin, PhD, MPH, Department of Epidemiology and Environmental Health, U of Kentucky N. R. Heebner, PhD, ATC, Department of Athletic Training and Clinical Nutrition

Abstract: Introduction: Race riders (RR) meet strict weight requirements, resulting in unhealthy weight-making habits, leading to mental and physical health disparities. Currently, heart rate(HR) measurements are the only indicator of RR energy expenditure (EE) while galloping, but may not adequately predict EE due to variability in RR movement patterns.
Purpose: 1) Evaluate differences in HR response between running on a treadmill and riding a galloping simulator (SIM), and 2) Determine what variables differ to inform EE (kcals/min) between running and SIM.
Methods: 14 (4 female) RR completed a maximal effort running treadmill test and two simulated races on a SIM. HR, oxygen consumption (VO2), and accelerometer (ACC) data were collected. Maximal HR range (MHRR), VO2reserve(R), EE, ACC gait cycles, and ranges were calculated. T-tests and linear regressions were used to analyze the results.
Results: At the same MHRR, VO2R was different ($p<0.001$)between running and SIM. To predict running EE, MHRR contributed significantly to the regression($p<0.025$,R20.3521). To predict EE, MHRR did not contribute ($p>0.05$), but the range of distal femur ($p=0.0019$) and wrist gait cycle ($p=0.0150$) were significant (R20.70).
Conclusions: The relationship between MHRR and VO2R does not align between running and SIM. HR does not provide an adequate measurement to predict EE while SIM, but movement patterns in the extremities do. Future research should focus on moving a multi-sensor model to live galloping.

Supported by:

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College of Health Sciences Research Day

Presentation 124

Abstract Title:	**Vitamin B12 Status Associates with Progressive Resistance Exercise Training Response in Older Adults**
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Abstract: Progressive resistance training (PRT) attenuates age-related loss of skeletal muscle mass and strength, and nutrition modulates response to PRT.
This study aimed to determine whether vitamin B12 (B12) status is associated with quadriceps muscle fiber cross-sectional area (CSA) changes following a 14-week PRT program in healthy adults (65+years). We additionally queried participants to determine 1) if supplementing with B12 showed higher circulating B12 and 2) if B12 intake was sufficient to meet recommended daily allowance (RDA). We assessed B12 status with holotranscobalamin (Holo-TC) sufficiency with a 50pmol/L cut-point. We used the Nutrition Data System for Research to analyze diet and supplement records. Independent samples t-tests specified status group comparisons.
All participants (70.6±4.9 years, n=84) consumed at least 2.4ug/day (RDA) of B12. Those with Holo-TC <50 pmol/L showed significant increases in CSA by week 14 versus those having insufficient status (p=0.016; 15.6±29.9 vs. -0.2±13.7%, respectively). Participants who supplemented with B12 had higher Holo-TC concentrations when compared with those who reported no B12 supplementation (101±26 vs. 62±25pmol/L, respectively).
Evidence suggests B12 insufficiency negatively influences quadriceps fiber CSA following PRT. Despite meeting the RDA, several participants were below the threshold for adequate Holo-TC, suggesting an increase in the current RDA to meet the needs of older adults.

Supported by: NIH/NIA R01AG046920

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Presentation 125

Abstract Title:	**Using Mixed Methods Implementation Science Research for Exploration of Pediatric Feeding Assessment Practices**
Author(s):	A.E. Norris, Department of Rehabilitation and Health Sciences, U of Kentucky

Abstract: Purpose: The purpose of this implementation research is to expand understanding of the pediatric feeding assessment process, identify barriers, and determine existing facilitators among Speech-Language Pathologists (SLPs).
Methods: This mixed methods study of SLPs specialized in pediatric feeding in the United States explored the various factors influencing assessment practices. Using a purposive, maximum variation sample, each participant represented a pediatric feeding setting type: private practice, inpatient, outpatient, schools, university & community clinics, and the NICU. In the first stage of this study, semi-structured interviews conducted a.) captured the variety of approaches to pediatric feeding assessment and b.) explored barriers and facilitators across settings. Interviews were analyzed thematically to inform an online survey. Survey respondents were summarized descriptively, and SPSS was used to analyze the means and ranges to characterize the data regarding experience, settings, reports of assessment use, and trends in assessment practices.
Results: SLPs (n=8), whose experience ranged from 4-44 years, were interviewed. The results provided insight into the intricate, individualized, unstructured nature of current assessment practices and the barriers and facilitators unique to the specialty of pediatric feeding. The survey results from SLPs (n=112) across 37 states provided further insight into common elements of assessment practices and the most significant barriers at each access point.
Conclusion: This study explored the nature of pediatric feeding assessment practices characterizing the process as necessitating flexibility and readiness for validated structures and that when asked, SLPs were consistently able to describe barriers across settings and reveal the resulting strategies or gaps.

Supported by:

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College of Health Sciences Research Day

Presentation 126

Abstract Title:	**Occupational Therapists,Äô Beliefs and Experiences Managing Chronic Pain, Wellness, and Occupational Performance**
Author(s):	L. Ochoa, Department of Rehabilitation and Health Sciences, U of Kentucky C. Skubik-Peplaski, Department of Occupational Science and Occupational Therapy, Eastern Kentucky University

Abstract: Background: Chronic disease prevention, health, and wellness have become primary practice areas for occupational therapy. Occupational therapists (OTs) in pain rehabilitation are established as essential members of comprehensive and multidisciplinary pain management teams, focusing on increasing occupational performance through participation. Objectives: This study's purpose was to investigate OTs' experiences managing chronic pain and to explore OTs' effectiveness in supporting clients' wellness and occupational performance through interventions. Methods: Eleven OTs (n=11) participated with three themes emerging on chronic pain, interventions, and holistic teams. Results: Findings suggest that OTs are successful at treating chronic pain, supporting wellness and occupational performance when their interventions are health-promoting, and clients are enabled to take an active role in their chronic pain management. Conclusion: This study demonstrates the critical impact OTs can have in multidisciplinary teams on clients' outcomes, such as increased occupational performance, wellness, and quality of life (QOL) through engagement in meaningful occupations.

Supported by:

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College of Health Sciences Research Day

Presentation 127

Abstract Title: **Accumulation of Senescent Macrophages as Targetable Mediators of Muscle Dysfunction during Posttraumatic Osteoarthritis**

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Abstract: Injury to the acute cruciate ligament (ACL) results in perturbation of the surrounding musculoskeleture, mechanisms of which remain poorly understood. We have shown that ACL injury triggers quadriceps atrophy and weakness associated with increased senescent cell burden which together may contribute to poor knee mechanics and development of posttraumatic osteoarthritis (PTOA). Here we aimed to characterize muscle senescent cells after ACL injury on a transcriptomic level using a surgical ACL transection model (ACLT) and investigate if senolytic treatment (dasatiniband quercetin 50; D+Q) during PTOA improves muscle health. scRNAseq on senescent vs non-senescent populations (FACS-sorted by SPiDER βGal) revealed that macrophages accounted for 91% of senescent cells in quadriceps 14d post-ACLT. Senescence-associated macrophages (SAMΦ) exhibited an anti-inflammatory-like phenotype with upregulation of M2-like markers IL-10, Itgam, Cd163, and IL-4 alongside downregulation of M1-like markers IL-6, IL-1β, and Ifn-γ. SAMΦ had markedly increased expression of the collagenase MMP13. Gene ontology enrichment analysis showed downregulation of several extracellular matrix (ECM) remodeling-related pathways in SAMΦ. PTOA mice exhibited significant reductions in quadriceps myofiber cross-sectional area which was alleviated in D+Q-treated mice. D+Q-treated PTOA mice exhibited a trend of improved peak torque compared to controls. These findings suggest that accumulation of senescent anti-inflammatory macrophages after ACL injury may propagate muscle dysfunction via imbalanced ECM-remodeling and contribute to the development of PTOA via secretion of MMP13. Senolytics are an attractive therapeutic strategy to blunt senescent cell burden and improve functional recovery following ACL injury.

Supported by: NIH award: R01AR072061

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College of Health Sciences Research Day

Presentation 128

Abstract Title:	**EXAMINING THE ROLE AND IMPACT OF DISTRACTIONS IN PERSONS WITH MILD TRAUMATIC BRAIN INJURY: A MIXED METHODS STUDY**
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Abstract: BACKGROUND: Chronic cognitive impairments that are exacerbated by distractions are one of the core factors contributing to poor home and community re-integration post injury. Yet, there is a paucity of research investigating the role and impact of distractions on cognition. The purpose of this study was to examine how distractions of varying complexity impact cognition in persons with mTBI through the utilization of novel distraction dosing framework.
METHODS: Eighteen healthy controls and eleven persons with mTBI completed a computerized lexical decision task with auditory and visual distractions selected from the Elements of Distraction Framework. Data analysis included evaluation and triangulation of participants' mean pupil dilation, reaction time, task accuracy, and perceptions about distractions of varying complexity.
RESULTS: Mean pupil dilation during visual distraction conditions were larger in the mTBI group as compared to healthy controls. Additionally, persons with mTBI overall had longer reaction times and more errors during visual distraction conditions. Mean pupil dilation measures during auditory distraction conditions were larger in the mTBI group as compared to healthy controls. Perceptions of distractions revealed several themes and sub-theme suggesting persons with mTBI and healthy controls experience distractions differently.
CONCLUSION: The results from this study provide insights into the utilization of a novel distraction dosing framework, how to measure distractibility, and understanding the impact of distractions in persons with mTBI. Findings will inform and enhance simulation tools for clinical assessments, and individualize patient treatment plans to maximize home and community re-integration post injury.

Supported by: Sources of support for this abstract include: CCTS TL1 grant (TL1TR001997) and RHB pilot study funding from the Endowed University Professor in Health Sciences Fund.

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College of Health Sciences Research Day

Presentation 129

Abstract Title:	**Relationships between three neuromuscular-cognitive assessments in collegiate women tennis athletes**
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Abstract: Context: Integrating neuromuscular and cognitive assessments may provide a more clinically relevant strategy for assessing injury recovery and human performance. Developing neuromuscular-cognitive assessments that mimic the dynamic nature of athletics (i.e., multidirectional cutting and jumping) may enhance contextual relevance. Currently, it is unknown how individuals perform on neuromuscular-cognitive assessments that vary in physical and cognitive demand. Therefore, this research aimed to investigate the relationship between a spectrum of neuromuscular-cognitive assessments in healthy collegiate tennis athletes.
Methods: Ten collegiate female tennis athletes volunteered for this cross-sectional study. During a single visit, participants completed 3 neuromuscular-cognitive assessments: reactive agility (RA), single-leg memory hop (SLMH), and lower extremity reaction task (LERT). Each assessment's average reaction time (seconds) was used for analysis. RA reaction time was normalized to height (seconds/centimeter). The relationship between assessments was examined with Pearson correlation coefficients (alpha=0.05).
Results: No significant relationships were identified between assessments. The normalized RA (0.012±0.001s/cm) had a moderate, positive correlation to the SLMH (1.28±0.19s, r=0.46, p=0.18) and a weak, negative relationship to the LERT (0.65±0.11s, r=-0.218, p=0.55). Additionally, the SLMH had a weak relationship with the LERT (r=0.06, p=0.88).
Conclusion: This study determined that RA had a moderate relationship with the SLMH, and LERT had weak relationships with RA and SLMH. This suggests that each assessment possessed unique attributes, particularly the LERT, which focused on reacting while maintaining a static balance. Furthermore, the moderate relationship between the RA and SLMH may signify that these dynamic assessments required comparable levels of cognitive demand and motor planning.

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College of Health Sciences Research Day

Presentation 130

Abstract Title: **BEAT-PD: A Systematic Review of Drumming with Parkinson's Disease**

Author(s): A. S. Robinson, College of Health Sciences and School of Music, U of Kentucky

Abstract: Much of the research examining music-based interventions and Parkinson's disease (PD) has primarily been focused on treatment of motor symptoms and to a lesser degree non-motor symptoms. Typically, music-based interventions used for PD symptom management involve singing, movement, and to a lesser degree, instrument play. Specifically, few studies examine active drumming as an intervention for PD. Music-based interventions have potential for significant, positive effects on motor and non-motor symptoms for people with PD. This review investigated the effects of drumming for people with PD.Studies reporting the use of active drumming and a participant diagnosis of PD were included in this systematic review. Quality and risk of bias were assessed using criteria in the Joanna Briggs Institute's (JBI) Checklist for RCTs, Checklist for Quasi-Experimental Studies, Levels of Evidence, and Grades of Recommendation. The review suggests the therapeutic application of drumming has a positive impact on PD symptom management. Additionally, rigorous studies are needed to further verify and expand the use of drumming as a valid symptom management option for people with PD and other neurologic-based needs.

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Presentation 131

Abstract Title:	**Males and Females Respond Differently to Mechanical Stimulation following Muscle Disuse Atrophy**
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Abstract: In male rats mechanotherapy has previously been shown to enhance regrowth of skeletal muscle by elevating protein synthesis. The purpose of this study was to determine if mechanotherapy in female rats also enhanced muscle recovery by improving proteostasis. Adult F344/BN female rats were randomly assigned: weightbearing (WB; N=8), hindlimb suspension for 7d (HS7; N=7) or 14d (HS14; N=9), reambulation for seven days after 14d HS (RA; N=9), or RA with mechanotherapy on gastrocnemius (RAM; N=10). Rats received deuterium oxide to determine the rate of myofibrillar protein synthesis (Ksyn) and degradation (Kdeg). One-way ANOVA or unpaired t-test determined statistical significance ($p<0.05$). To account for size differences when directly comparing male and female values, data were represented as a percentage difference from respective mean WB values. Mean fiber cross-sectional area (CSA) was significantly lower in HS14 compared to WB ($p=0.001$), while RA was not different from WB or HS. RAM CSA was not different from HS14 or RA alone, unlike in males. Males lost a significantly higher percentage of CSA relative to their WB counterparts after both 7d HS ($p=0.04$) and 14d HS ($p=0.001$) than females. Males also demonstrated a greater loss in Ksyn relative to WB than females after both 7d ($p=0.04$) and 14d ($p<0.0001$) of HS. Finally, females showed higher Kdeg than males after 7d ($p=0.01$) but not 14d ($p=0.06$) of HS. These data show that male and female rats respond differently during disuse atrophy, as well as during the recovery of disuse atrophy.

Supported by: Funding: NCCIH AT009268.

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College of Health Sciences Research Day

Presentation 132

Abstract Title:	**Person Perspectives of Occupational Performance After Multiple Digit Amputation**
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Abstract: Occupation refers to daily tasks performed in various contexts which we need to do, want to do, and are expected to do. Occupations are often challenging if not impossible after upper limb loss. Those with hand and finger amputations report a higher rate of perceived disability than those with amputations above the wrist and this difference is significant. Logic would suggest that longer limb length would result in greater function. Few studies have explored the client's experiences after hand or finger amputation and none have investigated perceived performance of occupations.

The purpose of this study was to investigate client perception of abilities to perform daily occupations in areas of self-care, leisure, and productivity during the first year after finger amputations.

A qualitative descriptive approach textured with narrative inquiry was utilized and IRB approval was obtained. Six subjects (N=6) with two to four-digit amputations consented and completed recorded Zoom interviews. Qualitative data was analyzed through thematic analysis.

Emerging themes included: a sense of loss - "a part of you is taken away"; daily reminders of injury - "seeing my hand reminds me of what happened"; less use of residual hand due to "sensitivity" and dropping objects from change in body schema, "I forget I don't have fingers"; "I'm more or less one handed"; and using "mindset [as] a tool" to keep out of darkness.

This study highlights client perceptions of daily activity performance and results indicate multiple factors that lead to loss of occupational habits and decreased activity engagement.

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Presentation 133

Abstract Title:	**Emotional Intelligence and Burnout in Healthcare Profession Students**
Author(s):	M. Taylor*, Department of Rehabilitation Science, U of Kentucky R. Andreatta, Department of Communication Sciences and Disorders, U of Kentucky L. Woltenberg, Department of Physician Assistant Studies, U of Kentucky M. Cormier, Department of Kinesiology and Health Promotion, U of Kentucky J. Hoch, Department of Athletic Training and Clinical Nutrition, U of Kentucky

Abstract: Background: Healthcare profession (HCP) students are disproportionately affected by burnout compared to the general student population. Burnout can cause mental distress, diminished academic performance, and decreased quality of life. Emotional intelligence (EI) is a learnable skillset demonstrated to protect against burnout and improve academic performance and wellbeing. The purpose of this study was to determine the prevalence of burnout across HCP program students, examine differences in EI across HCP programs, and explore the relationship between burnout and EI in HCP students.
Methods: This cross-sectional survey study included students from 8 HCP programs (n=147, age=24.04 ± 3.53 years). Participants completed the Oldenberg Burnout Inventory-Student with exhaustion (>=2.25) and disengagement (>=2.21) subscores used to group participants into categories: burned-out (high exhaustion, high disengagement), disengaged (high disengagement, low exhaustion), exhausted (high exhaustion, low disengagement) and no burnout (low disengagement, low exhaustion). The Trait Emotional Intelligence Questionnaire-Short Form was also administered to our participants. Data were collected via REDCap and analyzed using SPSS software (v23.0, Chicago, IL., USA).
Results: 63.9% (N=94) of participants were categorized as burned out, 22.4% were exhausted, 4.1% were disengaged, and 14.3% were not burned out. No significant between-group differences were found in EI across HCP programs. A moderate negative correlation between EI and burnout was noted (r=-0.59, p<.001).
Conclusion: Preliminary findings suggest a high prevalence of burnout in HCP students. Evidence additionally suggests that higher EI may have a positive impact on burnout in HCP students. Further research exploring interventions to improve EI to address burnout is warranted.

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Presentation 134

Abstract Title:	**Muscle-specific multi-omic integration reveals a molecular imprint of ACL injury that may impair muscle recovery**
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Abstract: Anterior cruciate ligament (ACL) tears yield protracted quadriceps weakness and atrophy that remain unresolved despite rehabilitation, and the biological underpinnings of poor muscle recovery are unknown. Recent research shows skeletal muscle possess a long-term DNA methylation profile that influences muscle adaptability. We defined, longitudinally the quadriceps methylome, transcriptome, single muscle fiber volume, and myonuclear abundance after ACL-injury to determine methylation permanence following ACL-injury and surgical reconstruction (ACLR). Muscle biopsies (vastus lateralis) were obtained from ACL-injured and Healthy limbs prior to ACLR, 1-week- and 4-months-post ACLR. RNA-sequencing (n=16) and reduced representation bisulfite sequencing (n=8) were performed to determine whole muscle gene expression and pan-DNA methylation. Single muscle fibers were isolated for volumetric analysis. ACL-injury induced quadriceps fiber volume atrophy that did not recover following rehabilitation ($p<0.05$) and myonuclear loss did not accompany atrophy. ACLR yielded sizeable alterations to promoter methylation (70 hypo- and 184 hyper-methylated promoters) and quadriceps transcriptome (1400 up-, and 600 down-regulated transcripts). Integrated enrichment analysis of methylome and transcriptome alterations revealed down-regulation of targets associated with extracellular matrix organization and nervous system development. Methylation changes were largely retained 4-months-post ACLR, underscoring a persistent methylation profile in quadriceps following ACLR. Our data illustrate that quadriceps DNA undergoes rapid epigenetic changes that influence gene expression, are retained following rehabilitation, and are not associated with altered myonuclear abundance.

Supported by: NIH awards: R01AR072061, R01AR071398, UL1TR001998

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College of Health Sciences Research Day

Presentation 135

Abstract Title:	**Resilience and Professional Quality of Life Among Structural Firefighters**
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Abstract: Firefighters experience occupational stressors which may relate to increased prevalence of psychological symptoms and professional quality of life. Firefighter resilience, or the ability to “bounce back”, has gained attention as it may protect from negative occupational consequences. Unfortunately, limited research regarding this relationship exists. This study examined firefighter professional quality of life and resilience.

This cross-sectional examination included 97 firefighters who completed the Professional Quality of Life(ProQOL) and the Brief Resilience Scale(BRS). The ProQOL includes three subscales: compassion satisfaction(ProQOL-CS), compassion fatigue-burnout(ProQOL-BO) and compassion fatigue-secondary traumatic stress(ProQOL-STS). Higher ProQOL-CS scores indicate greater occupational satisfaction whereas higher ProQOL-BO/ProQOL-STS indicate more negative occupational consequences. Greater BRS scores indicate greater resilience. Chi Square tests of independence with odds ratios(OR) and 95% CIs assessed the relationship between BRS and ProQOL subscales. Questionnaire scores(Mean±SD) were: BRS:4.03±0.50. ProQOL-CS:39.5±5.5, ProQOL-BO:29.7±3.6, and ProQOL-STS:21.9±5.7. Chi square tests indicated a positive relationship between BRS and ProQOL-CS, supporting that those with higher resilience likely have higher compassion fatigue($x^2=9.611$; df=1; p=0.002) (OR:4.3(1.7-11.2)) No significant relationship existed between BRS ProQOL-STS scores. ProQOL-BO was not analyzed due to lack of variability.

The BRS and ProQOL-CS relationship suggests those who “bounce back” well from stressors are more likely to derive occupational reward, supporting the potential benefit of greater resilience. Future studies should examine resilience and other psychological symptoms.

Supported by: This investigation was funded by the NATA Research and Education Doctoral Student Grant

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College of Health Sciences Research Day

Presentation 136

Abstract Title:	**Patient-Reported Outcomes Differ between Civilians and Service Members with Chronic Ankle Instability**
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Abstract: Context: Ankle sprains occur at high rates among civilians and service members and up to 70% of these patients may develop chronic ankle instability (CAI). Individuals with CAI often experience decreased health-related quality of life (HRQL) and heightened levels of injury-related fear compared to healthy counterparts. It is unclear if HRQL and injury-related fear differ between civilians and service members with CAI. Therefore, the objective of this study was to compare HRQL and injury-related fear between civilians and service members with CAI.

Methods: Sixteen active-duty service members from the U.S. Marine Corps (2 Female, Age: 22.9±2.7yrs, Height: 175.9±9.5cm, Weight: 82.0±12.7kg) and twenty civilians (10 Female, Age: 31.6±8.9yrs, Height: 172.5±10.0cm, Weight: 82.6±21.4kg) with CAI volunteered to participate. Participants completed a series of patient-reported outcomes (PRO) including the Fear-Avoidance Beliefs Questionnaire (FABQ), Foot and Ankle Disability Index Activities of Daily Living (FADI-ADL) and Sport (FADI-Sport), and the modified Disablement in the Physically Active scale (mDPA). Separate univariate analyses compared PROs between groups while controlling for sex and age. The alpha level was set at $p \leq 0.05$.

Results: Despite Marines reporting lower scores on the FADI-ADL and FADI-Sport and higher scores on all other PROs, when controlling for sex and age only the group difference in the mDPA-PSC reached statistical significance.

Conclusion: Marines with CAI reported increased levels of physical disablement compared to physically active civilians with CAI, indicating that CAI may create greater perceptions of physical disablement in Marines compared to civilians. However, no differences were identified in injury-related fear or ankle-specific function.

Supported by:	This work was supported by the Congressionally Directed Medical Research Programs, grant W81XWH-20-2-0035.

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College of Health Sciences Research Day

Presentation 137

Abstract Title:	**The Efficacy of Canalith Repositioning Maneuvers in Treatment of BPPV for Individuals following TBI: A Systematic Review**
Author(s):	H. Witt, Department of Physical Therapy, U of Kentucky K. Schaaf, Department of Physical Therapy, U of Kentucky S. Porter, Department of Physical Medicine and Rehabilitation, U of Kentucky N. F. Johnson, Department of Physical Therapy, U of Kentucky

Abstract: Introduction: The objective of this systematic review was to assess the efficacy of canalith repositioning maneuvers in the treatment of BPPV for individuals following TBI. Dizziness following traumatic brain injury can increase fall risk and decrease rate of recovery.
Methods: EbscoHost, PubMed, and Web of Science were the databases used for the literature search. Articles were assessed via a priori inclusion/exclusion criteria. Twenty articles were included. Data extrapolated included year of publication, author, title, number of participants, participant age, sex, setting, severity of TBI, maneuvers required for symptom resolution, canal involved, conclusions, and limitations.
Results: Articles were published between 1999 and 2022 with the majority published after 2014. The most common setting reported was outpatient. Often, the severity of the traumatic brain injury was not reported. The most frequent severity studied was mild or mild to moderate. Multiple canal and bilateral canal involvement were more prominent for traumatic BPPV. Increased canalith repositioning maneuvers were required for traumatic BPPV.
Discussion: There is emerging literature on traumatic BPPV and the efficacy of treatment. Most individuals have full resolution with 1-2 maneuvers, however there is a portion of the traumatic BPPV population that require further canalith repositioning maneuvers. There is an increased likelihood of multi-canal or bilateral canal involvement with traumatic BPPV.
Conclusions: Clinicians should expect a higher likelihood of multiple canal or bilateral canal involvement. Clinicians should educate individuals with traumatic BPPV that it sometimes takes more treatment maneuvers to reach symptom resolution and to allow for increased treatment maneuvers.

Supported by:

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College of Health Sciences Research Day

Presentation 138

Abstract Title:	**When Good Abstracts Go Bad: Navigating the Pitfalls and Perils of Submitting Your Research**
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Abstract: Burn survivors receive a breadth of education that assists in adapting to their new lives. Although proper nutrition plays a crucial role in improving the wellness of burn survivors, nutritional education is lacking for this population. There is a gap between current nutritional education and the use of health behavior theories, and the optimum time and plan for delivering nutritional education for burn survivors is not yet established. Although dietitians are available for nutritional interventions, they rarely provide nutritional education to burn survivors during the rehabilitation phase in outpatient settings. Dietitians require a model to guide assessment of burn survivors' readiness to receive and act on nutritional education. The stages of change model in clinical nutrition practice aims to change unhealthy dietary behaviors. The existing model will be tailored to burn survivors. Therefore, the proposed model, "Stages of Change: How to Deliver Nutritional Education for Adult Burn Survivors," aims to assess the readiness of adult burn survivors to receive, change, and implement dietary habits in their post burn injury lives based on two stages: preaction and action stages. Furthermore, it aims to provide timely and proper nutritional education to improve adult burn survivors' physical and psychological wellness. This model considers placement questions, which assists dietitians in identifying main stages, substages, and transition between stages. Also, it includes four elements that should be applied by dietitians while delivering nutritional education throughout each of the stages. This model will guide dietitians when delivering nutritional education to adult burn survivors.

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College of Health Sciences Research Day

Presentation 139

Abstract Title:	**An Exploration of Polypharmacy and Hospitalizations in Kentucky**
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Abstract: This exploratory, retrospective study examined relationship between polypharmacy and hospitalization rates in patients admitted to the UK Healthcare system and ages 65-85 years old. De-identified UK Healthcare data from 2017-2019 were provided via CCTS. Furthermore, this research explored the relationships between polypharmacy (defined as medications provided 24-hours post admission) and patient outcomes and demographic data (i.e. Charlson Morbidity Index race, ethnicity, age, zip code). Any patient with 5 or more prescriptions is defined as polypharmacy. This project seeks to better understand potential relationship between polypharmacy and hospitalization rate and/or patient demographic data. This study extends prior polypharmacy research as it may help inform future and current providers regarding risk reduction, underscoring patient education, communication, and advocacy for quality care.

Supported by: The project described was supported by the NIH National Center for Advancing Translational Sciences through grant number UL1TR001998.

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College of Health Sciences Research Day

Presentation 140

Abstract Title:	**Advocacy PAthways: Examination of Student Perceptions of the Physician Assistant (PA) Profession**
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Abstract: This study examined the knowledge and perspectives of the Physician Assistant (PA) profession as reported by undergraduate pre-PA students in Kentucky. The purpose of this project was to improve understanding of the profession and inform advocacy efforts, as to spearhead educational initiatives to help increase the awareness and competency of the PA profession within the state. Data were obtained via an anonymous, electronic survey to pre-PA student organizations at Kentucky institutions of higher education. Findings from this project may help inform PA programs, the Kentucky Association of Physician Assistants, and other stakeholders on the perspective of future generations. This is important as healthcare workforce challenges persist and the state of Kentucky continues to struggle with health rankings for its citizens; educating and recruiting passionate PAs committed to the health of Kentuckians is crucial.

Supported by: The project described was supported by the NIH National Center for Advancing Translational Sciences through grant number UL1TR001998.

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Presentation 141

Abstract Title:	**Adverse Childhood Events (ACEs) in Kentucky: Incidence and Considerations for Health Care**
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Abstract: This exploratory study examined de-identified UK Healthcare specifically focused on report adverse childhood events (ACEs) from June 2017 to June 2021. With the support of CCTS for data acquisition, the purpose of this research was to examine instances of one or more ACEs (as per diagnostic codes mapped to defined ACE categories) among pediatric patients age 0 months to 17 years alongside patient demographics to better understand this patient population in terms of incidence, geography, and other demographics. Abundant literature links ACEs with adverse health outcomes, although Kentucky-specific ACEs data are very limited. This study seeks to address that gap. It is imperative to spread awareness on the certain patient demographics that are more vulnerable/susceptible to experiencing ACEs as to improve intervention and care. This research can help inform providers and other social workers to better tackle ACE related health outcomes in KY. This project is compelling as it allows us to raise awareness for which populations are most vulnerable, thus serving as a call-to-action for our community and beyond to prioritize screening in our clinics.

Supported by: The project described was supported by the NIH National Center for Advancing Translational Sciences through grant number UL1TR001998.

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Presentation 142

Abstract Title:	**Opioid Prescribing Patterns: Considerations for Geography and Patient Demographics**
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Abstract: This study employed secondary data analyses of CCTS data from opioid prescription data from the past 12 years. The purpose of this study was to analyze opioid prescribing patterns in non-rural and rural Kentucky, with examination for age as well. We are also looking at prescribing patterns based on age. It is imperative to understand what, if any, relationship exists between prescription patterns and opioid misuse as well as patterns among patient demographics and/or geography to inform risk reduction. Data were also analyzed for prescribing rates via postal codes for population density and rurality as well as in 10 year age range increments. Given the proliferation of Medication-Assisted Treatment (MAT) Programs, it is critical that health care providers learn more about prescribing patterns and care options for patients with substance misuse disorder.

Supported by: The project described was supported by the NIH National Center for Advancing Translational Sciences through grant number UL1TR001998.

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Presentation 143

Abstract Title:	**Examination of Contemporary Leadership Practices and the Physician Assistant (PA) Profession**
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Abstract: This study examined qualitative data via semi-structured interviews from Physician Assistants (PAs) practicing in Kentucky that have a leadership role. The purpose of this study was to describe the Physician Assistant leadership landscape in Kentucky and from the data, identify a model or key elements that future and current PAs may reference to help inform their own leadership trajectory. A priori interview questions were employed in a guide for the interview and data were coded for themes across respondents. Based on the current research, there is not a lot of literature on PAs in leadership roles and what characteristics or experiences they possess that helped them achieve those roles. This study aims to add to the literature by painting a picture of PA leadership in Kentucky, and hope that our research may be utilized by current and aspiring PAs to meet their own goals within the realm of leadership. Findings from this study will inform health professions education and professional advocacy, and particularly for Physician Assistants.

Supported by: The project described was supported by the NIH National Center for Advancing Translational Sciences through grant number UL1TR001998.

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Presentation 144

Abstract Title:	**Burnout Among Primary Care Health Care Providers: Reflections from the COVID-19 Pandemic**
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Abstract: This study examined burnout among primary care providers working in ambulatory care settings in Kentucky with consideration for the COVID-19 pandemic. A modified MBI tool was employed within an anonymous electronic survey to assess levels of burnout and stress in primary care providers. The objective of this study is to measure burnout in primary care providers in the Commonwealth of Kentucky and assess if there are differences present in burnout experience by providers in rural versus urban settings. As a basis for future research, endeavors to combat and reduce healthcare burnout is an avenue of continued importance. It is necessary for the healthcare ecosystem to adopt new methods of screening for burnout in primary care and objectives to attenuate the emotional and physical consequences of burnout. This project is compelling as we consider the health and safety of medical professionals especially in this post COVID-19 era, particularly with workforce and wellness considerations.

Supported by: The project described was supported by the NIH National Center for Advancing Translational Sciences through grant number UL1TR001998.

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18th Annual CCTS Spring Conference
Monday, March 27, 2023 Gatton Student Center

College of Health Sciences Research Day

Presentation 145

Abstract Title:	**Considerations for Rural Transportation and Access to Primary Care**
Author(s):	A. Bergman, Department of Physician Assistant Studies, U of Kentucky A. Bray, Department of Physician Assistant Studies, U of Kentucky A. Ellis, Department of Physician Assistant Studies, U of Kentucky C. Oldendick, Department of Physician Assistant Studies, U of Kentucky A. Sizemore, Department of Physician Assistant Studies, U of Kentucky J. Burkhart MSPAS PA-C, Department of Physician Assistant Studies, U of Kentucky

Abstract: This study examines perception of the impact of transportation access on health care outcomes, particularly in rural Kentucky. An anonymous survey was distributed to rural Kentucky primary care clinics to gather data regarding current health status, mode of transportation, and if this is a crucial factor when it comes to getting to appointments in order to receive adequate care. This project matters because transportation, being one of the social determinants of health, is such an important component to health especially in smaller rural towns. This study explores the potential connection between transportation and health outcomes, with a goal to increase awareness for providers and resources provision for patients. As we endeavor to improve the health of Kentuckians and close the gap between rural and urban care, this project seeks to contribute a contemporary lens into a key barrier to care access.

Supported by: The project described was supported by the NIH National Center for Advancing Translational Sciences through grant number UL1TR001998.

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College of Health Sciences Research Day

Presentation 146

Abstract Title:	**Considerations for Social Determinants of Health Among Patients treated in a High BMI Clinic**
Author(s):	D. Maynard, Department of Physician Assistant Studies, U of Kentucky M. Pardue Dyer, Department of Physician Assistant Studies, U of Kentucky M. Rebsamen, Department of Physician Assistant Studies, U of Kentucky M. Williams, Department of Physician Assistant Studies, U of Kentucky L. Zheng, Department of Physician Assistant Studies, U of Kentucky L. Woltenberg MSEd PhD, Department of Physician Assistant Studies, U of Kentucky

Abstract: This project is to illuminate the impact the social determinants of health have on the children of the UKY Peds High BMI Clinic. The purpose of this study was to examine potential relationship between health metrics among patients treated at the UK Healthcare High BMI clinic (BMI, blood pressure, and labs) and patient attributes such as geographic distance traveled from home to clinic (rurality), insurance status, appointment compliance, and demographics. Five years of de-identified UK Healthcare data from were provided via CCTS. Given national childhood obesity health statistics and Kentucky rates specifically, this is an important population to understand. Through improving our understanding of who is seeking care at the UK Healthcare High BMI clinic and potential relationships in/among these data, this may help improve access and reduce barriers to quality care.

Supported by: The project described was supported by the NIH National Center for Advancing Translational Sciences through grant number UL1TR001998.

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College of Health Sciences Research Day

Presentation 147

Abstract Title:	**Examination of Patient Access to Gender-Affirming Health Care**
Author(s):	A. Ball, Department of Physician Assistant Studies, U of Kentucky L Chaffins, Department of Physician Assistant Studies, U of Kentucky M. Farris, Department of Physician Assistant Studies, U of Kentucky C. Spurlock, Department of Physician Assistant Studies, U of Kentucky S. Taylor, Department of Physician Assistant Studies, U of Kentucky S. Irving MSPAS PA-C, Department of Physician Assistant Studies, U of Kentucky

Abstract: Purpose of this study to examine the travel burden of transgender patients seeking gender affirming care in Kentucky via the UK Transform Health Clinic. The research examined miles traveled of transgender patients seeking gender affirming care at the transform clinic at UK, specifically outside of Fayette County. This project conducted secondary data analysis of de-identified data as provided by CCTS. This study offers a lens to examine access to care for this minority group and considering access and barrier issues as it pertains to health care. By better understanding the population seeking care at the Transform Health Clinic, we can work toward making gender-affirming care even more readily available to Kentuckians.

Supported by: The project described was supported by the NIH National Center for Advancing Translational Sciences through grant number UL1TR001998.

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College of Health Sciences Research Day

Presentation 148

Abstract Title:	**Limited English Proficiency and Access to Care: Considerations for Translation Services**
Author(s):	D. Delcher, Department of Physician Assistant Studies, U of Kentucky T. Gutierrez Chavez, Department of Physician Assistant Studies, U of Kentucky D. Morehead, Department of Physician Assistant Studies, U of Kentucky I. Purcell, Department of Physician Assistant Studies, U of Kentucky J. Sadlo, Department of Physician Assistant Studies, U of Kentucky B. Woosley, Department of Physician Assistant Studies, U of Kentucky S. Chatterjee MD MBBS MPH, Department of Physician Assistant Studies, U of Kentucky

Abstract: This study examines the difference between patient access and healthcare utilization between English and non-English speaking (or, Limited English Proficiency LEP) patients at a large, local healthcare system and specifically those seen in the emergency department. Secondary data analyses were conducted on data as provided from CCTS in a four-year timeframe that spans pre, intra, and post COVID-19 pandemic. The research endeavored to understand and quantify the differences that may exist on a state or local level by examination of use of translation services and health metrics. The Limited English Proficiency (LEP) population struggles to have their basic need met by the healthcare industry, communication. From our data with CCTS, it is evident that language translation has a gap in the documentation, suggesting that translation is occurring in forms outside UK's policy or is not occurring at all. This deviation leaves individuals with less than optimal care and isolation from their care plan. We must be able to communicate with our patients to reduce barriers to care access.

Supported by: The project described was supported by the NIH National Center for Advancing Translational Sciences through grant number UL1TR001998.

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Center for Clinical and Translational Science

Abstracts

College of Nursing Scholarship Showcase

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College of Nursing Scholarship Showcase

Presentation 149

Abstract Title:	**Evaluating the Feasibility and Efficacy of a Motivational Interviewing Intervention in Primary Care**
Author(s):	C. M. Adams, College of Nursing, U of Kentucky

Abstract: Background: The American Diabetes Association recommends lifestyle modification to prevent and treat diabetes in their 2021 Standards of Medical Care in Diabetes. Evidence suggests that motivational interviewing is an effective intervention that clinicians can use to facilitate behavior change in patients with type two diabetes.
Purpose: The purpose of this project is to evaluate the feasibility and efficacy of a motivational interviewing intervention aimed at assisting adult women with type two diabetes and a body mass index greater than 30 to develop a diet improvement goal at a primary care clinic.
Methods: This study was quasi-experimental with a posttest intervention design using the PDSA change model. The study took place in two phases at a women's health primary care clinic. In phase one, providers at the clinic were surveyed assessing current nutrition counseling practices for patients with type two diabetes. The primary provider measure includes survey responses. In phase two, a brief motivational interviewing intervention was carried out for eligible patients at the clinic. Participant demographics and body mass index were collected at baseline. The primary patient measure is a diet modification SMART goal identified during the intervention. Secondary patient measure includes subjective evaluation of the intervention.
Results: To be determined.
Conclusions: To be determined.

Supported by:

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College of Nursing Scholarship Showcase

Presentation 150

Abstract Title:	**General Factors that Reduce Cardiovascular Risk in People with Schizophrenia: A Systematic Review**
Author(s):	J.Y. Alkayed, Nursing college, U of Kentucky C. Okoli, Nursing college, U of Kentucky M. Biddle, Nursing college, U of Kentucky

Abstract: Background: Despite treatment provided for people with schizophrenia, their life expectancy in the U.S. is still 20% shorter than the general population due to cardiovascular disease (CVD). Thus, it is crucial to identify factors that contribute to Cardiovascular reduction for those people.
Objective: This systematic review examines modifiable factors that reduce CVD risk among people with schizophrenia.
Methods: We searched three electronic databases (PubMed, PsycINFO, and EBSCOhost) for articles written in English, published in peer-reviewed journals prior to October 2021, and assessed two CVD health outcomes, Framingham 10-year coronary heart disease (CHD)/CVD risk or peak oxygen uptake (VO2Peak/max) when exercising in people with schizophrenia.
Results: The search identified 17 studies. Seven studies reported on participants who had low metabolic symptoms (i.e., hypertension, and dysglycemia), did not/stopped smoking, visited assessment healthcare facilities on a regular basis, were hospitalized for six months or less, or had normal weight had a lower Framingham 10-year CVD risk compared to those who did not. Five studies found that engaging in physical activity (i.e., walking and low-intensity exercise) improves VO2Peak. Five studies found that antipsychotics medications use significantly increased Framingham 10-year CVD risk and decreased VO2Peak.
Conclusions: Our review provided evidence to reduce cardiovascular risk in people with schizophrenia by engaging in physical activity like walking, stopping/not smoking, prescribing antipsychotics judiciously, performing CVD risk assessment/counseling regularly, and reducing hospitalization. It is important in the future to address a specific exercise that can significantly reduce cardiovascular risk in this population

Supported by: Nursing College, University of Kentucky

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College of Nursing Scholarship Showcase

Presentation 151

Abstract Title:	**Intentions to Seek Mental Health Services among Arabs in the United States: The Effect of a Web-Based Educational Video**
Author(s):	O. Alosais, College of Nursing, U of Kentucky C.T.C. Okoli, College of Nursing, U of Kentucky D. Moser, College of Nursing, U of Kentucky L. B. Williams, College of Nursing, U of Kentucky A. Fernander, College of Medicine, Florida Atlantic U

Abstract: Purpose: Arabs in the United States (U.S.) are exposed to stressors and challenges that make them at high risk of developing adverse mental health outcomes. Researchers have found disparities between the need for mental health services (MHS) and actual utilization among this population. Thus, using the Theory of Planned Behavior as a theoretical framework, this study aimed to develop and test a web-based educational video that may affect intentions to seek MHS and the related intrapersonal factors (attitudes, subjective norms, and PBC) among Arabs in the U.S.
Methods: This is a quasi-experimental, pretest posttest study. A total of 142 Arabs and Arab Americans completed an online survey. A TPB-based questionnaire was used to assess participants‚Äô intentions to seek MHS and the intrapersonal factors affecting their intentions before and after watching the educational video. The video is 15 minutes and addresses barriers and facilitators of seeking MHS among Arabs and is guided by the TPB framework.
Results: About 65% of participants were female, aged 18 to 55 years (Mean=34.44, SD= 8.33). Approximately 75% were married, and about 90% were Muslims. A Wilcoxon signed-rank test showed that the educational video elicits a statistically significant change in intentions to seek mental health services ($Z = -7.039$, $p<0.001$), attitudes toward seeking MHS ($Z = -3.706$, $p<0.001$), subjective norms ($Z = -4.495$, $p<0.001$), and PBC ($Z = -5.705$, $p<0.001$) among Arabs in the U.S.
Conclusion: Health care providers can use the educational video to increase Arabs‚Äô MHS utilization and improve their MHS help-seeking intentions.

Supported by: College of Nursing, U of Kentucky; Delta Psi Chapter of Sigma Theta Tau International

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College of Nursing Scholarship Showcase

Presentation 152

Abstract Title:	**Health Beliefs, Facilitators and Barriers to Engaging in Blood Glucose Screening of Adults in Saudi Arabia.**
Author(s):	A. F. Alsada, College of Nursing, U of Kentucky

Abstract: Background: Diabetes has reached an epidemic level in Saudi Arabia with a prevalence of 18.7%. In 2021, Saudi Arabia spent more than $7 billion on diabetes-related health expenditure. Type 2 diabetes mainly preceded by prediabetes, which is a significant period either it invested in preventing the disease or left toward deteriorating the health. Blood glucose screening is the diagnostic method of prediabetes. In Saudi Arabia, the prevalence of prediabetes had reached 12.9% in 2021.
Aim: The purpose of this qualitative study is to explore the health beliefs and perceived barriers to engaging in blood glucose screenings among Saudi adults.
Sample: This will be a sample of 20 Saudi adults who have not engaged in blood glucose screening for diabetes. The inclusion criteria are Saudi adults who aged between 40 to 65 years with access to the internet. The exclusion criteria are diagnosed with diabetes and live outside of eastern region.
Procedure: Invitations to participate describing the study will be posted on social media platforms.
Data Analysis: Analyzing data will involve a process of identifying themes. Manual data analysis process will be used to arrange the transcribed interviews into themes that emerge from interviews.
Results: Barriers related to personal factors (family and professional responsibilities, limited health literacy, no family history of diabetes, fear of being diagnosed with diabetes, and lack of self-care), and barriers related to health care services (lack of interest by decision makers, long distance to health services, long waiting period, lack of appointments, and health facility working hours).

Supported by:	This study was funded by the College of Nursing at University of Kentucky, RICH Heart Research Award: PRD7E1008805

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College of Nursing Scholarship Showcase

Presentation 153

Abstract Title:	**Does Age Moderate the Effect of a Symptom Management Intervention on Outcomes in Rural Patients with Heart Failure**
Author(s):	M. I. Amin, Department of Gerontology, U of Kentucky A. Latimer, College of Nursing, U of Kentucky C. Lin, College of Nursing, U of Kentucky D. K. Moser, College of Nursing, U of Kentucky

Abstract: Background: Rural patients with heart failure (HF) have worse outcomes than their urban counterparts. Age has an impact on HF outcomes, but how it interacts with interventions designed to improve outcomes is unknown.
Objective: To determine whether age interacted with a symptom monitoring and management intervention in rural patients with HF to produce an impact on event-free survival (i.e., cardiac death or HF related rehospitalization).
Method: A total of 601 patients were included in this secondary analysis from a randomized clinical trial in which a symptom monitoring and management intervention was tested. Cox proportional hazards modeling was used to determine whether age interacted with the intervention to produce an impact on event-free survival. Age was divided into four groups based on interquartile range. Gender, marital status, education, ejection fraction, depression level, New York Heart Association class, and HF medications were used as covariates.
Results: Age and depression were significant predictors of event-free survival, but there was no age by intervention interaction. Patients in the oldest-old age group had 2.2 times higher risk of an event than those in the youngest age group (p =.018). For every one unit increase in depression score patients had a 5% increase (p <.001) in risk of cardiac death or HF related rehospitalization.
Conclusion: Age has little significance in symptom monitoring and management intervention to produce an impact on event-free survival. However, growing old with HF and depression in rural areas may substantially increase the risk of HF related rehospitalization and cardiac mortality.

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College of Nursing Scholarship Showcase

Presentation 154

Abstract Title: **Assessing the Relationship Between MyChart Use and Medication Adherence in Those with Chronic Conditions**

Author(s): J. L. Averbeck, College of Nursing, U of Kentucky

Abstract: Background: Medication non-adherence has become a common behavior throughout the United States. Fifty percent of the population fails to take their medication as prescribed. These actions contribute to increased morbidity and mortality as well as increased healthcare costs for both the patient and the healthcare system. The patient portal is an interactive tool which encourages participation of the patient in their health management. Implementation of this tool has been associated with overall better adherence to treatment and increased patient satisfaction.
Purpose: The purpose of this project was to provide an evidence-based educational approach to improve medication adherence.
Methods: A quasi experimental design was performed to provide patient portal education and to then observe the correlation of subsequent medication adherence. A pre-chart review was conducted, which determined participants meeting specific inclusion criteria. Education regarding online portal use was then administered to eligible patients during their scheduled clinic visit. Finally, a post chart review was completed months later to determine rates of medication adherence after education. This data was compared to patient surveys in order to assess the correlation between patient portal use and medication adherence.
Results/Conclusion: Data collection currently still in progress. Results will be ready to report by March 27th, 2023.

Supported by:

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College of Nursing Scholarship Showcase

Presentation 155

Abstract Title:	**Title: Evaluating Provider's Knowledge, Attitudes, and Intentions Toward Utilizing First Post-Discharge Follow-up Visit**
Author(s):	B. Bashyal, Departments of Nursing, U of Kentucky

Abstract: Background and Significance: Heart failure (HF) is known to affect approximately 6.2 million adults in the United States and 40 million people globally. HF is one of the leading causes of emergency department (ED) visits and hospitalizations in adults. Twenty percent of patients admitted for HF are readmitted within thirty days, and up to fifty percent are readmitted by six months. A first post-discharge checklist could be used to mitigate the problem of readmission.
Purpose: The purpose of this DNP project is to evaluate providers' knowledge, attitudes, and intentions towards utilizing post-discharge follow-up visit checklist to reduce readmissions in HF patients.
Methods: In this quasi-experimental study, one-group pretest-posttest design was used to assess providers's knowledge, attitudes, and intentions regarding the use of the post-discharge follow-up visit checklist in heart failure (HF) patients. The data was gathered via a convenience sample through the Kentucky Association of Nurse Practitioners and Midwives listserv. The evaluation occurred through a survey before and after a five-minute educational module on the first post discharge visit checklist.
Results: At both assessments, almost all providers agreed readmission among HF patients is an issue. Few were aware of the checklist prior to the educational module (15%), which significantly increased post-education (80%, p = .008). There was also a significant increase in intentions to use the checklist (15% pre vs. 85% post, p = .004). Conclusions: The training module was highly effective in increasing providers' awareness of and intentions to use the first post-discharge checklist, which provides the opportunity for increased use of the checklist in primary care to guide the heart failure patients first visit after the hospitalization.

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College of Nursing Scholarship Showcase

Presentation 156

Abstract Title:	**Validation of an Educational Intervention for Black Women: Health is Wealth: A Cervical Health Program**
Author(s):	L. Deaton, College of Nursing, U of Kentucky C. Ebikwo, College of Nursing, U of Kentucky T. Ntengo, College of Nursing, U of Kentucky A. Adegboyega, College of Nursing, U of Kentucky

Abstract: Background: Despite the availability of screening tools that can prevent cervical cancer, Black women remain burdened with high cervical cancer incidence and mortality rates. Health is Wealth was developed as a one-time 90-minute educational intervention aimed at increasing cervical cancer screening, using HPV self-sampling, among Black women aged 30-65 years. This culturally tailored program will increase self-efficacy 'knowledge" address perceived health beliefs and barriers associated with screening. This study details the formative testing of Health is Wealth. We obtained feedback on content relevance, organization, appeal, and credibility of the intervention.
Method: Three cancer researchers reviewed the brochure and interventionist script and 7 Black women participated in a pilot virtual session of Health is Wealth. Researchers and women provided feedback on content, relevance, and credibility of Health is Wealth. Women completed a survey to rate the program. Descriptive statistical analysis was used.
Results: Women's mean age was 45 ± 12.19 years. All women agreed that the presentation was well organized, easy to understand, relevant, held their interest, and informative about cervical cancer screening (100%). Most women agreed that Health is Wealth addressed their concerns about screening, and HPV sampling infographic and video were presented clearly (85.7%). Most participants will keep the brochure for future reference (85.7%). Feedback from both researchers and women informed refinement and content clarification and improvements. Conclusion: Formative testing helped establish relevancy, engagement, and appeal for the target population and generated suggestions for improving the intervention. Recruitment is ongoing for Health is Wealth trial.

Supported by: NIH/NCI Award: KO1CA251487

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College of Nursing Scholarship Showcase

Presentation 157

Abstract Title:	**Validation of content of a Facebook Intervention for HPV Vaccination Promotion (#HPVvaxtalks) for Young Black Adults**
Author(s):	C. Ebikwo, College of Nursing, U of Kentucky T. Ntego, College of Nursing, U of Kentucky L. Deaton, College of Nursing, U of Kentucky A. Adegboyega, College of Nursing, U of Kentucky

Abstract: Despite the expansion in HPV vaccination recommendations, vaccine uptake, and completion remain low among Black individuals. Thus, #HPVvaxtalks was developed as an 8-week Facebook intervention to increase awareness of HPV risk factors, HPV and HPV vaccine-related knowledge, HPV risk perception, and increase vaccination intention and uptake. This study details the formative phase to obtain participants' feedback on the components of the #HPVvaxtalks for content relevance, appropriateness, and appeal to inform further refinements.

A convenience sample of 13 young Black adults (18-26 years) recruited from the community using approved study flyers and snowballing were invited to join a private Facebook group containing the #HPVvaxtalks posts. After viewing the posts, participants participated in a virtual focus group and rated the components of #HPVvaxtalks for content relevance, appropriateness, and appeal to inform further refinement. Qualitative data were thematically analyzed and integrated with ratings

Participants' mean age was 21.2± 1.9 years. Participants agreed that the posts were relevant (77%), helpful (92%), and had important information about HPV (100%). Participants believed the posts were easy to understand (100%) and interesting (92%). Of the 7 individuals who had not been previously vaccinated, 57% agreed that the #HPVvaxtalks will make them more likely to be vaccinated. Qualitative data corroborated survey results and provided areas for improvements of #HPVvaxtalks.

Participant feedback indicated strong content and face validity of #HPVvaxtalks and demonstrates the importance of formative testing in ensuring relevance, engagement, and effectiveness of the intervention for the target population. Next step is feasibility testing of the intervention.

Supported by:

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College of Nursing Scholarship Showcase

Presentation 158

Abstract Title: **A Demographic Description of Perinatal Anxiety and Depression**

Author(s): E. Galdau, College of Nursing, U of Kentucky
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E.Salt, College of Nursing, U of Kentucky

Abstract: Background: Perinatal mood disorders, which include depression and anxiety symptoms that occur during pregnancy and up until 1 year following pregnancy, are reported to affect 1 in 8 women in the U.S. Disparities in perinatal mental healthcare have been reported for those residing in rural areas and identify as a racial or ethnic minority.
Aims: To provide a demographic description of women affected by perinatal depression/anxiety seen at one university health system serving Southeastern, Central and Northeastern Kentucky.
Methods: Using deidentified claims data, the ICD-10 codes for depression, anxiety or postpartum depression and birth within 1 year from the initial encounter were included in this analysis which used descriptive statistics. Additional data extracted and included in the analysis was race/ethnicity, rural/urban residence (Rural Urban Continuum Codes), and the year of service.
Results: There has been an increase in the number of encounters for perinatal mood disorders up until 2022 (2016- 68; 2017-112; 2018-151; 2019- 172; 2020-185; 2021- 257; 2022-144). The encounters for postpartum depression were predominantly made in White women (89.6%); encounters for Black-Non-Hispanic and Hispanic women accounted for only 5.5% and 4.2%, respectively (other = 0.8%). More encounters for perinatal depression and anxiety were identified in those residing in an urban area (63.6% versus rural=36.4%).
Conclusion: The discrepancy in the percent of live births in KY to mothers identifying as Black-Non-Hispanic (10.1%; https://www.marchofdimes.org/peristats/data) versus the percent of encounters for post-partum depression/anxiety to mothers identifying as Black-Non-Hispanic (5.5%) in our sample suggests that a disparity in maternal mental health exists.

Supported by: UL1TR001998

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Presentation 159

Abstract Title:	**Examining Biopsychosocial Factors Associated with Healthcare Outcomes: A Literature Review**
Author(s):	R. Gambill, Doctor of Philosophy in Nursing Student, U of Kentucky

Abstract: Background: A health disparity exists in healthcare outcomes among African American women at risk for Peripartum/postpartum cardiomyopathy (PPCM). Several biopsychosocial factors affect the the health disparity. The purpose of this study was to conduct a literature review to examine how the Biopsychosocial model could be used to understand the health disparity variables among African Americans at risk for PPCM. Methods: A search of the online databases PsychINFO, MEDLINE, and Web of Science was completed on October 20, 2022, using the following search terms: 'biopsychosocial framework' OR 'biopsychosocial model' OR 'postpartum' AND 'cardiomyopathy' AND 'African Americans.' A five-year timeframe was applied to the search filters. Inclusion criteria were 1) articles published in the English language, 2) peer-reviewed journal articles and dissertations,/theses and 3) use of the biopsychosocial framework. Documents excluded were those 1) focusing on phenomena other than pregnancy or cardiac illness 2) social work domain, and 3) pediatric cases. Articles included for the review were stored in EndNote, organized by database. Results: Five studies met inclusion criteria, spanning 11,977 participants and 2 countries. Each study was conducted in a different design: literature review, qualitative semi-structured interview, cross-sectional correlation, retrospective analysis, and secondary analysis. The included studies explored the Biopsychosocial Framework in relation to prenatal care, patient-centered care, gendered racism, medication adherence, and maternal mortality. Discussion: This study, limited by the small number of articles, found the Biopsychosocial model appropriate for examining healthcare outcomes in African American women at risk for permpartum cardiomyopathy.

Supported by:

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College of Nursing Scholarship Showcase

Presentation 160

Abstract Title: **Better family functioning is associated with healthy behaviors in Latino(a) adults with chronic disease risk**

Author(s):
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K. V. Key, College of Nursing, U. of Kentucky
M. Arce, College of Medicine, U. of Kentucky
M. K. Rayens, College of Nursing, U. of Kentucky
D. K. Moser, College of Nursing, U. of Kentucky

Abstract: Background: Latino(a) adults are at risk for type 2 diabetes (T2D) and cardiovascular disease (CVD), due in part to poor health habits. The Latino(a) culture values family and family members influence health behaviors. However, the impact of family functioning on health behaviors is not well understood.

Purpose: To examine the association between family functioning and engagement in healthy behaviors among Latino(a) adults at-risk for T2D and CVD.

Methods: This was a secondary analysis of baseline data from the Corazón de la Familia study. Family functioning was measured with the General Family Functioning scale; averaged scores range from 1 to 4 and lower scores indicate better functioning. Engagement in healthy behaviors was measured with the Health Promoting Lifestyle Profile-II; sum scores range from 34 to 136 and higher scores indicate higher engagement. Linear regression analysis was used to assess the relationship between family functioning and engagement in healthy behaviors controlling for sex, age, race, marital status, employment, financial comfort, education level, and acculturation level.

Findings: Of 201 Latino(a) adults (age 40.72±9.32, 88.6% female), mean family functioning score was 1.83±0.57 and health promoting lifestyle score was 68.60±12.96. The overall model was significant ($F[9, 191]=4.99$, $p < .001$), explaining 19.0% of the variance in engagement in healthy behaviors. Participants with better family functioning had higher engagement (B=-5.90, SE=1.51, 95% CI [-8.87, -2.93], $p<.001$). For every 1-point improvement in family functioning there was a 5.9-point increase in engagement in healthy behaviors.

Conclusion: Supporting family functioning may strengthen engagement in healthy behaviors among Latino(a) adults at risk for T2D and CVD.

Supported by: NIH/NINR grant R01NR016262

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Presentation 161

Abstract Title:	**Evaluating Ky APRN's Confidence and Comfort Levels Regarding Dermatology Care after an Online Educational Module.**
Author(s):	V. L. Hayden, College of Nursing, U of Kentucky

Abstract: Background: It can take on average 38.9 days to see a dermatologist. Inappropriate referrals to the specialty are a significant contributing factor. Providers refer when there is lack of knowledge and confidence in their clinical management. Educational resources equip providers with the tools to feel confident in their management of various skin conditions.
Purpose: The purpose of this project was to evaluate the effect of a short educational video intervention on Kentucky APRN's confidence and comfort levels with identifying and initiating diagnostic procedures for malignant melanoma skin lesions.
Methods: A quasi-experimental one group pretest-posttest design with an educational intervention was used. The education included a five-minute video about malignant melanoma followed by a QR code providing information regarding five common dermatology diagnoses. Assessment of confidence and comfort levels of dermatology care took place through pre- and post- surveys. The education and surveys were sent via the KANPNM listserv and 28 responses were analyzed.
Results: There was a statistically significant increase in providers (n=28) comfort levels with diagnosing dermatology issues and performing dermatology specific diagnostic procedures in their clinics. A significant change was observed after the education in providers feelings of being equipped with the proper risk assessment tools for malignant melanoma. Providers confidence in malignant melanoma identification significantly increased after the education.
Discussion: Consistent with the literature, the education demonstrated increases in the providers confidence and comfort levels regarding their dermatological aspect of care. Long term, this can decrease over referrals and wait times to dermatology.

Supported by:

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College of Nursing Scholarship Showcase

Presentation 162

Abstract Title:	**Physical exercise and nutrit during pregnancy among smokers: A secondary analysis of health outcomes**
Author(s):	J. A. Hicks, College of Nursing, University of Kentucky M. Hutti, College of Nursing, University of Kentucky M. Biddle, College of Nursing, University of Kentucky

Abstract: Background: Pregnant women who engage in moderate physical activity (MPA) are known to have better birth outcomes than women who do not. Among women who smoke during pregnancy, however, there has been limited research conducted to quantify the benefits of MPA. Cigarette smoking during pregnancy negatively impacts pregnancy outcomes including higher rates of low-birth weight neonates, premature births, and maternal complications such as preeclampsia. While pregnant women should abstain from smoking during their pregnancy, many do not. The purpose of this study is to determine if there is an association between maternal, fetal, and neonatal outcomes of women who smoke and engage in regular MPA during pregnancy with outcomes of women who smoke but do not engage in regular MPA during pregnancy.
Methods A secondary analysis using multiple logistic regression to evaluate the impact of first-trimester self-reported physical activity and birth outcomes, adjusting for maternal sociodemographic characteristics, nicotine dependence and psychosocial status (including anxiety, stress and/or perinatal depression).
Results: To be completed and presented at the CCTS Conference.
Conclusions: We anticipate finding a benefit among pregnant women who engage in MPA and smoke of lower negative birth outcomes including improved psychosocial mental health for the mother. Further research may be needed explore additional benefits to mother and baby and the development of specific educational and support programming to promote MPA in tandem with smoking cessation education.

Supported by:

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Other

College of Nursing Scholarship Showcase

Presentation 163

Abstract Title:	**Depression Management Among Primary Care Providers: Evaluation of an Educational Intervention**
Author(s):	W. M. Hunt, Department of College of Graduate Nursing, U of Kentucky

Abstract: Background: Nearly one-third of patients diagnosed with depression and prescribed an antidepressant medication will stop taking their medication within the first month and almost half will stop within three months. Timely follow-up care can improve medication adherence and decrease depressive symptoms among depressed patients on antidepressant therapy however, most patients do not receive timely follow-up. System and provider-based barriers include limited provider time, lack of training and communication, and mental health stigma, among others.
Objective: The purpose of this project is to assess provider attitudes, knowledge level, perceived barriers, and current depression management strategies in a primary care setting.
Methods: In this quasi-experimental one group pre-posttest study a survey was used to assess MD and APRN/APP attitudes, knowledge level, and perceived barriers in managing follow-up of depression before and after an educational intervention. The educational intervention consisted of a presentation describing recommended practice guidelines for depression management including screening, prescribing, and follow-up care.
Results: 50% of providers participated (5 providers, 100% female, Caucasian). Providers felt confident in diagnosing depression in primary care (pre, Mean=4.6, SD=0.5 vs. post, Mean 5.0, SD=0.0; p=.18). After reviewing the educational material providers were more likely to prescribe antidepressants for those with a PHQ-9 score greater than 10 (post, Mean=4.6, SD=0.5). Barriers were identified as not having enough time to care for the patient and limited access to schedule a follow-up appointment.
Conclusions: Provider confidence level improved and anticipated positive changes in practice occurred after the educational intervention.

Supported by:

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Clinical Research

Presentation 164

Abstract Title:	**Role of Diet Monotony Between Financial Status and Dietary Micronutrient Insufficiency in Patients with Heart Failure**
Author(s):	J. Kang, College of Nursing, U of Kentucky D. K. Moser, College of Nursing, U of Kentucky C. Lin, College of Nursing, U of Kentucky A. Latimer, College of Nursing, U of Kentucky T. A. Lennie, College of Nursing, U of Kentucky

Abstract: Dietary micronutrient insufficiencies are common in patients with heart failure (HF). Lower socioeconomic status is associated with poorer diet. Diet monotony is associated with dietary micronutrient deficiencies. Thus, we hypothesized that diet monotony would mediate the association between financial status and the number of dietary micronutrient insufficiencies in patients with HF.
A total of 237 patients with HF (61 ± 12 years old, 69% male) were studied. Financial status included three categories: low, middle, and high. From a four-day food diary, diet monotony was measured by diet variety scores calculated from the number of 23 food types consumed. Dietary micronutrient insufficiency was defined as the number of dietary insufficiencies of 17 vitamins and minerals. A mediation model was estimated using PROCESS, controlling for age, sex, ethnicity, NYHA, and depressive symptoms.
Compared to the patients with HF who were in the low financial status group, the group with middle or high financial status ate a less monotonous diet (p=.004), which in turn reduced dietary micronutrient insufficiency (relative indirect effect=-.341, 95% bootstrap CI: -.643, -.099). Compared to the middle financial status group, those with high financial status had a less monotonous diet (p=.032), which in turn reduced dietary insufficiency (relative indirect effect=-.268, 95% bootstrap CI: -.536, -.026).
The hypothesis that a lower financial status was associated with diet monotony, leading to a higher number of dietary micronutrient insufficiencies, was supported. Future behavioral counseling interventions should consider financial status of patients with HF to increase the variety of foods that can reduce dietary micronutrient insufficiency and enhance diet quality.

Supported by: R01 NR 009280 (Lennie, T.A. PI), P20 NR 010679 (Moser, D.K. PI)

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College of Nursing Scholarship Showcase

Presentation 165

Abstract Title: **The Effect of an Educational Handout on Knowledge and Awareness of Pre-Exposure Prophylaxis (PrEP) Among IV Drug Users**

Author(s): M. Buckel, College of Nursing, U of Kentucky

Abstract: Background: In 2018, the total number of HIV cases in the United States was 1.2 million. Almost 186,500 of these cases were attributed to intravenous drug use. With the adherence to PrEP there is approximately a 49% decrease in the rates of HIV among people who inject drugs and the most significant barrier to PrEP among this population is a lack of awareness and knowledge.
Objective: The purpose of this study was to determine knowledge, awareness and attitudes of PREP after reviewing an educational brochure about PREP among participants of a needle and syringe exchange site.
Methods: A quasi experimental one-group posttest-only design was used. Participants verbally consented after reading cover letter then were provided an education brochure about PREP. After reviewing, participants completed a survey. The sample included 33 participants who presented to the clinic on the days of data collection.
Results: Almost half of participants (45%) had never heard of PREP and 73% learned something new about PREP from the educational brochure. Although only 21% were interested in taking PREP and only 18% were willing to be referred to a provider to start PREP. Many participants appeared to be unsure about their interest. Twenty four percent were not sure about their interest in taking PREP and 30% were not sure about willing to be referred to a provider to start PREP.
Conclusions: In conclusion, knowledge and awareness about PREP among this population was low and unfortunately only a few participants were interested in taking PREP or willing to referred to a provider.

Supported by:

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College of Nursing Scholarship Showcase

Presentation 166

Abstract Title:	**Parental Decision-Making in Substance Using Parents: Rationale, Study Design, and Methods**
Author(s):	A. Fallin-Bennett, College of Nursing, U of Kentucky E. Salt, College of Nursing, U of Kentucky L. Oatts, College of Nursing, U of Kentucky

Abstract: Background: An estimated 1 in 8 of the children in the US reside in a household where at least one parent is affected by a substance use disorder (SUD). SUDs impact a person‚Äôs decision making and create a complex dynamic for child welfare. The Child Fatality and Near Fatality External Review Panel 2020 Report indicated that SUD was a factor in 48.9% of all child fatality or near fatality cases. Parental decision-making in families affected by SUD is not fully characterized in published literature.

Purpose: This study aims to develop a furthered understanding of parental decision-making in families affected by SUD in Kentucky. The study will provide insight into learned behaviors of parenting and the commonalities of parental decisions affected by factors related to SUD, which will inform approaches to mitigate risk for child morbidity and fatality.

Methods: This study will use a qualitative descriptive study design in the form of semi-structured interviews that will be transcribed for further analysis. A purposive sample of 60 participants will be recruited from the Chrysalis House and the Hope Center, organizations offering services to substance using mothers. The participants recruited for the study will be individuals aged 18 years or older, who are currently or have previously used substances, and are a parent with access to a telephone. Interviews will be conducted in-person or via video conferencing and will last approximately 30 to 60 minutes. Participants will answer a series of guided questions regarding parental decision-making. This is an on-going study.

Supported by:

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Clinical Research

College of Nursing Scholarship Showcase

Presentation 167

Abstract Title:	**Impact of Diabetes Self-Management Education Programs on Hemoglobin A1c Levels in African Americans; a Systematic Review**
Author(s):	H. M. Okeyo, College of Nursing, U of Kentucky M. Biddle, College of Nursing, U of Kentucky L. B. Williams, College of Nursing, U of Kentucky

Abstract: Introduction: Diabetes self-management education (DSME) programs are effective at promoting blood glucose control in adults. However, little is known about the impact of DSME programs on hemoglobin A1c (HgbA1c) levels in African American adults with diabetes.
Purpose Statement: To examine the impact of DSME programs on HgbA1c levels of African American adults with diabetes mellitus.
Methods: We followed PRISMA guidelines and searched PubMed and CINAHL databases to identify the most recent peer-review articles published from 2000 to date. The primary outcome reviewed was HgbA1c based on DSME programs within a population of primarily African Americans with diabetes.
Results: Nine randomized control trials (RCTs) were included in this review. Most of the studies (67%) reported a decline in HgbA1c levels post-program, 22% had insignificant changes, and 11% noted no changes in HgbA1c levels. Study sample sizes ranged between 48 to 211 participants. All the studies compared the intervention effect of the DSME program to a control group or another type of diabetes self-management intervention. Four studies reported 100% Black/African American representation, one study 96%, and the other four studies varied from 23% to 57%.
Conclusion: Overall, the results of this review suggest that DSME programs can be effective at lowering HgbA1c levels in African American adults, but there is a need to conduct more research with larger sample sizes. The RCTs in this review provided a high level of evidence. However, the availability of meta-analyses and more RCTs with larger African American sample sizes could further strengthen the external validity of this review.

Supported by:

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Health Equity Research

Presentation 168

Abstract Title:	**Evaluation of a Discharge Clinic Implemented for Patients Without a Primary Care Provider or Access to a Primary Care Provider**
Author(s):	J. Sass, College of Nursing, U of Kentucky

Abstract: Background: Patients transitioning from an inpatient stay to self-care responsibilities are at risk for readmission resulting in increased cost and resource utilization and decreased quality of life. Care transition programs can positively affect outcomes and result in cost avoidance.
Purpose: The purposes of this project were to: (a) determine if implementation of a Discharge Clinic affected 30-day readmission rates in patients without a primary care provider, (b) ascertain if a visit by a paramedicine program impacted 30-day readmission rates in patients who missed their Discharge Clinic appointment, and (c) assess whether a second post-discharge phone call influenced 30-day readmission rates.
Methods: A single-center, retrospective exploratory study was done to identify interventions to improve 30-day readmission rates. Patients scheduled in the Discharge Clinic who missed their appointment were referred to a Paramedicine Program. Those who completed their appointment received a follow-up call after their appointment.
Results: Readmission rates were 17.7% for those who completed a discharge appointment, compared to 24.7% for those who did not. Participants who received a follow-up call after their appointment had a 4% readmission rate compared to 26% for those who did not (< 0.001). Participants referred to the paramedicine program had a lower readmission rate (11.1%) compared to those who were not referred (24.9%, p=.251). A completed follow-up appointment resulted in 34% lower odds of readmission (OR = 0.66, 95 CI = 0.45 – 0.94).
Conclusion: Identifying interventions that improve 30-day readmission rates is imperative for improving outcomes, reducing resource utilization, and avoiding penalties in value-based programs.

Supported by:

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College of Nursing Scholarship Showcase

Presentation 169

Abstract Title:	**Impact of Physical Activity Vital Sign Screening on Physical Activity Counseling and Referrals in Primary Care**
Author(s):	A.V. Selepina, College of Nursing, U of Kentucky

Abstract: Background/Purpose. Physical Activity Guidelines for Americans recommend 150-300 minutes of moderate-intensity physical activity each week for adults; however, half of the adults do not meet this goal, which leads to increased chronic health conditions and poor health outcomes. Physical Activity Vital Sign (PAVS) screening is an evidence-based assessment tool associated with increased physical activity counseling leading to increased physical activity and improved patient outcomes.
Objective: The purpose of this study is to examine the impact of PAVS screening on physical activity counseling and referrals to exercise promotion programs in primary care.
Methods. This prospective study that took place in a small primary care clinic providing care to women. Physical Activity Vital Sign screening was implemented to examine the effect of PAVS screening on the rate of physical activity counseling and referral to exercise promotion programs. Intervention consisted of provider education and implementation of PAVS screening during annual wellness exams. Six primary care providers working in the clinic were given surveys to collect their feedback before and after the intervention.
Results. Pending. Baseline data and post intervention data on physical activity screening, counseling and referrals will be described. Practical application in the clinical setting will be discussed.
Conclusions. Study in progress. Previous studies showed that PAVS is an effective and feasible intervention to increase physical activity.

Supported by:

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College of Nursing Scholarship Showcase

Presentation 170

Abstract Title:	**Utilizing the Protection Motivation Theory to Examine COVID-19 Preventative Practice Engagement Among Nurses**
Author(s):	S. Seng, College of Nursing, U of Kentucky C. T. C. Okoli, College of Nursing, U of Kentucky

Abstract: Background: Differences in intrinsic motivations lead to varying degrees of adherence to infection control protocols among nurses. The aim of this study was to examine associations between the Protection Motivation Theory (PMT) and mandatory adherence to preventative practice among this population during the COVID-19 outbreak.
Methods: This is a secondary analysis of a cross-sectional dataset using a convenience sample of nurses employed at a large academic-medical center (n=235), using anonymous, electronic surveys between May 1st and July 31st, 2020. We performed hierarchical logistical regression analyses to determine if constructs of the PMT predicted self-reported commitment to six-feet physical distancing, while controlling for demographic, behavioral and work-related variables, and psychological distress.
Results: The overall model was found to be statistically significant with adequate fit (Hosmer and Lemeshow Chi-square Test=5.41[df=8], p=.713). Among PMT variables, only Response Efficacy (OR=1.16, CR=1.07-1.25), and Perceived Self-Efficacy (OR=.92, CI=.86-.99) were significantly associated with commitment to six-feet physical distancing. Specifically, for each 1-point increase in the Response Efficacy subscale, nurses were one-time more likely to engage in six-feet physical distancing, and for each 1-point increase in the Perceived Self-Efficacy subscale, nurses were .9 times more likely to engage in six-feet physical distancing.
Conclusion: Both response efficacy and perceived self-efficacy contributed to an understanding of engaging in social distancing preventative practice among nurses. Organizations should intervene in ways to increase nurses's response efficacy and their perceived self-efficacy to support preventive practice adoption during pandemics.

Supported by:

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College of Nursing Scholarship Showcase

Presentation 171

Abstract Title:	**Can Nurse Sensitive Indicators Moderate the Effect of Injury Severity on Discharge Disposition?**
Author(s):	L. A. Silverstein, College of Nursing, University of KentuckyD.K. Moser, College of Nursing, University of Kentucky

Abstract: BACKGROUND: Almost 23 million patients survive hospitalization after trauma injury every year in the United States, but 40% of these patients need further care after the hospital and cannot go home. Nurses are essential contributors to patient care during hospitalization, but their ability to affect discharge disposition by minimizing occurrence of nurse sensitive indicators (catheter associated urinary tract infection [CAUTI], central line associated bloodstream infection [CLABSI], and pressure ulcer) is unknown. These complications occur at high rates, at 1.2-5.3, 0.8, and 0.54 per 1000 hospital days respectively. These indicators serve as surrogate measures of quality nursing care.
OBJECTIVE: The purpose of this study is to determine whether nursing care, as represented by three nurse-sensitive indicators, moderates the relationship between injury severity and discharge disposition.
METHODS: This study was a secondary analysis of data from the 2021 edition of the National Trauma Data Bank. Nurse sensitive indicators were identified as present or not present. Injury severity was quantified with the Injury Severity Score (ISS). Discharge disposition was coded into 3 categories: discharge to home, discharge to outside care, and deceased.
RESULTS: At the time of abstract submission, data analysis is underway. Data analysis and results will be complete prior to presentation.
CONCLUSIONS: We hypothesize that across the range of ISS scores, presence of nurse sensitive indicators will be associated with increase in discharges to other care and that absence of nurse sensitive indicators will predict discharge disposition.

Supported by:

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College of Nursing Scholarship Showcase

Presentation 172

Abstract Title:	**Guideline-Directed Medication Therapy in Patients with Heart Failure: Does Gender Impact Prescribing Practices**
Author(s):	J.H. Thompson, College of Nursing, U of Kentucky D. Adams, College of Nursing, U of Kentucky S. Henderson, Medical Center Library, U of Kentucky

Abstract: Background: Guideline-directed medication therapy (GDMT) in heart failure is proven to decrease mortality and morbidity in individuals with heart failure with reduced ejection fraction (HFrEF). Women with cardiovascular diseases are known to be treated less aggressively than their male counterparts. In this review, we examine gender differences in GDMT prescribing practices in patients with HFrEF, focusing on mineralocorticoid receptor agonist (MRA), renin-angiotensin system (RASS) inhibitors, and beta-blockers.
Methods: In this systematic review, electronic databases (Pubmed, CINAHL, and Scopus) were searched from inception to December 2022. Articles were included if they investigated patients with HFrEF, older than 18 years of age, reported prescription data on RASS inhibitors, beta-blockers, and MRA medications, data collection completed post-2013, and focused on gender analyses.
Results: 404 studies were screened, 102 full-text articles analyzed, and six studies met inclusion criteria. A total of 22,447 patients were included in these studies, with 5,609 women (25% of sample). Three studies were secondary analyses of larger HF studies, two were multi-center, retrospective studies, and one was a prospective study. Three studies found that women were less likely to be on a RASS-inhibitor, three studies found that women were less likely to be prescribed a beta-blocker, and there were no differences between prescriptions of MRAs between men and women. Overall adherence to GDMT was low among both genders.
Conclusion: GDMT in HFrEF is vastly under-prescribed, especially in women. Women are not equally represented in large clinical trials. More studies are needed focusing on gender in HF.

Supported by:	This publication was made possible by Grant Number K12 DA035150 from the Office of Women's Health Research and the National Institute on Drug Abuse at the National Institutes of Health (NIH). Its contents are solely the responsibility of the authors and do not necessarily represent the official views of NIH.

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College of Nursing Scholarship Showcase
Oral Abstracts

Oral Presentation

Abstract Title: **Promoting Rural Health Equity Through BSN Student-Led Peer Education**

Author(s): H. T. Avera, College of Nursing, U of Kentucky
K. E. Wilmot, College of Nursing,. U of Kentucky
A. C. Carney, College of Nursing, U of Kentucky

Abstract: Purpose: This purpose of this project was to increase the level of BSN student knowledge and confidence when communicating and caring for patients from rural backgrounds with low levels of health literacy through a peer-led education intervention.
Methods: The project was a quasi-experimental design using a pre- and post- survey associated with an educational intervention that assessed BSN student knowledge and confidence in caring for and communicating with patients from rural backgrounds with low levels of health literacy. The educational intervention was a peer-led, lecture style presentation utilizing evidence-based literature on the selected topic.
Results: Using descriptive statistics, the results from the pre- and post- survey showed that there was a measurable increase in the knowledge and confidence students had with caring for, communicating with, and providing education to rural patients with low levels of health literacy. The largest increase from baseline was students reported greater levels of confidence in communicating with and providing teaching to this patient population.
Discussion: Nursing students without specific education on the topic of rural health literacy illustrates a gap in nursing education. As nursing school curriculums progress to include more topics of health equity, then creative methods of education should be explored. This intervention was a peer-to-peer presentation with BSN students teaching BSN students. The resulting increase in knowledge and confidence suggests that peer-to-peer education models can be an effective method of education for nursing students.

Supported by:

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College of Nursing Scholarship Showcase
Oral Abstracts

Oral Presentation

Abstract Title:	**The Effect of Mentorship and Social Events on Job Embeddedness and Intent to Stay in Emergency Department Nurses**
Author(s):	K. L. Albertsen, Graduate College of Nursing, U of Kentucky

Abstract: Background and Purpose: The COVID-19 pandemic has drastically impacted nurse retention. According to the Kentucky Nurses Association, 57% of surveyed Kentucky nurses are considering leaving their jobs. Best retention strategies are unclear. Job embeddedness (JE) and Intent to stay (ITS) are factors that influence retention. The purpose of this project is to increase JE and ITS at a level one emergency department (ED) by implementing evidence-based mentorship and social event interventions.

Methods: This study utilized a mixed-methods, one group pretest-posttest design. Mentorship pairs were match by personality type using the Big Five Personality Test. Four mentorship discussion meetings and two social events were held over six weeks. Pre and post-test scores from the Global Job Embeddedness Scale and McCain's Intent to Stay Scale were analyzed using paired t-tests via SPSS software. Open response findings were analyzed by the primary investigator.

Results: Twenty-six ED nurses completed the pre-surveys and eighteen completed the post surveys. Participants were mostly female (92.4%), Caucasian (84.6%), under age 30 (56.5%), and had five years or less of nursing experience (69.3%). Increases in scores on the Global Job Embeddedness Scale ($p= 0.19$) and McCain's Intent to Stay Scale ($p= 0.92$) were non-significant. Participants suggested on-site social activities, increasing pay, increasing staff, and awarding accomplishments to improve retention.

Conclusion: Mentorship and social events may not be enough to overcome other workplace barriers that impact JE and ITS in the ED setting. Future research efforts are needed to assess the impact of the participant suggestions to improve retention.

Supported by:

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College of Nursing Scholarship Showcase
Oral Abstracts

Oral Presentation

Abstract Title: **Electronic Cigarettes: Use of Screening and Knowledge in Young Adults**

Author(s): K. E. Chelf, College of Nursing, U of Kentucky

Abstract: Background: Electronic Cigarette (e-cigarette) use is now more common than traditional cigarette use in adolescents and young adults. There is concern that the lack of screening for use and knowledge about the health consequences of e-cigarette use is driving this growth.
Objective: The purposes of this project were to (1) assess baseline e-cigarette knowledge and screening practices from healthcare professionals, and (2) to evaluate effectiveness of the educational tool on their knowledge about e-cigarettes.
Methods: In this quasi-experimental study, forty members of a national healthcare organization were given a seven-question survey on screening practice and knowledge concerning e-cigarettes in young adults. The survey was followed by an eight-minute educational video reviewing; e-cigarettes, rates of e-cigarettes use in young adults, risks to young adults who use e-cigarettes, FDA regulation of e-cigarettes, and screening tools for e-cigarettes in young adults. To conclude the experiment, members answered a seven-question post survey to evaluate the effectiveness of the educational tool. A paired t-test was used to analyze data.
Results: Statistical significance was observed between the pre-educational and post-educational survey for the following questions. 1) Electronic Cigarettes are safer than traditional cigarettes for young adults ($p = .038$) and 2) Electronic Cigarettes are an effective quit tool to quit using traditional cigarettes in young adults ($p = .013$).
Conclusion: The educational tool was effective in changing attitudes toward electronic cigarette safety in young adults. However, the study was limited by a small sample size (n=40).

Supported by:

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College of Nursing Scholarship Showcase
Oral Abstracts

Oral Presentation

Abstract Title: **A Comparison of Pediatric Poisonings Before and After Sars-CoV-2**

Author(s): K. Rasheed, College of Nursing student, U of Kentucky; E. Mcsween, College of Nursing student, U of Kentucky; E. Salt, PhD, APRN, College of Nursing Associate Professor, U of Kentucky

Abstract: Introduction: Pediatric poisoning is the leading or 2nd leading cause of inpatient hospitalization in Kentucky. An understanding of the effect of COVID-19 on pediatric poisoning has not been fully characterized in published literature.
Purpose: To compare: 1) rates of poisoning in those < 18 years of age between the dates of 3/18/2020-3/18/2021 to 3/18/2019-3/17/2020 and 2) demographic and urban-rural differences in the distribution of poisoning cases in the two time periods.
Methods: Deidentified billed UK Healthcare claims data was extracted for encounters with the ICD-10 code for Poisoning by, Adverse effects of, and Underdosing of drugs, medicants and biological substances (T36-T50) and grouped to Pre- and Post-COVID-19 cohorts. Groups were then compared using incident rates (IR), incident rate ratios (IRR) chi-square tests of association and Whitney Mann U using the factors age, recorded sex, race/ethnicity, Rural Urban Continuum Codes, and visit type.
Results: Those aged 0-4 were less likely to experience poisoning in the Pre-COVID-19 period, and those aged 11-17 were more highly affected by poisoning in the Post- COVID-19 period (p=.002). IRRs, which account for differences in healthcare utilization between the two cohorts, greater than 1 (indicating increased IR in the time-period affected by COVID-19) in nearly every demographic subgroup with the exception of Non-Hispanic Blacks (p<.001) were identified.
Conclusion: Although we identified in increased IR for pediatric poisoning in nearly every demographic category in the Post-COVID-19 time period, those aged 14-17 and residing in a rural area were the most highly affected groups, identifying a significant health disparity.

Supported by: CCTS grant: UL1TR001998 and acknowledgement for the CCTS Bioinformatic Core

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College of Nursing Scholarship Showcase
Oral Abstracts

Oral Presentation

Abstract Title:	**Mediating Role of Functional Status in the Association of Depressive Symptoms with Quality of Life in Heart Failure**
Author(s):	A. Thapa, College of Nursing, U of Kentucky M. L. Chung, College of Nursing, U of Kentucky J. R. Wu, College of Nursing, U of Kentucky C. Y. Lin, College of Nursing, U of Kentucky J. H. Kang, College of Nursing, U of Kentucky D. K. Moser, College of Nursing, U of Kentucky

Abstract: Introduction. Heart failure (HF) reduces health-related quality of life (HRQOL) by causing problems with functional ability, social interactions, and emotional well-being. Depressive symptoms are associated with physical decline and reduced functional capacity in patients with HF. The purpose of this study was to determine if functional status mediated the relationship between depressive symptoms and HRQOL.
Methods. This was a secondary analysis from the RICH Heart Program Database. We included patients who had complete data on variables of interest. Health-related quality of life was assessed using the Minnesota Living with Heart Failure Questionnaire, functional status by the Duke Activity Status Index, and depressive symptoms by the Patient Health Questionnaire-9. Mediation analysis was conducted using PROCESS Macro for SPSS while adjusting for age and gender.
Results. We included 561 patients (mean age 61.2±12.4, 65.6% male). Depressive symptoms were associated with HRQOL (effect coefficient [c'] = 0.059, 95% confidence interval [CI] = 0.030, 0.088, $p < 0.001$). There was a significant indirect pathway between depression and HRQOL through functional status (ab = 0.021, 95% CI [0.010, 0.033]). Those with higher depressive symptoms had lower functional status (a = -0.712, $p < 0.001$), in turn, lower functional status was associated with worse HRQOL (b = -0.030 $p < 0.001$).
Conclusion. Functional status mediates the relationship between depressive symptoms and HRQOL in patients with HF. Thus, targeting functional status through interventions like activity training can lead to improvements in HRQOL. Promoting engagement in activity can decrease depression, which also needs to be addressed to improve HRQOL.

Supported by: NIH CTSA grant (UL1TR001998), Linda C Gill Endowment

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Abstracts

College of Public Health Research Day

Posters 173 - 189

College of Public Health Research Day

Presentation 173

Abstract Title:	**Trauma System Improvement as a Tool for Advancing Health Equity in Kentucky**
Author(s):	J.F. Costich, Department of Health Management & Policy and Ky Injury Prevention & Research Center

Abstract: Effective systems for care of traumatic injury contribute to health equity because trauma's burdens are disproportionately borne by disadvantaged populations. Anyone can sustain a traumatic injury, but those who are unable to afford safe living conditions and who work in high-risk industries are far more likely to sustain life-altering injury. Trauma patients who do not receive comprehensive care, including post-acute rehabilitation, are often unable to return to work and add to the state's human services costs.

Although hospital care is the cornerstone of any trauma system, effective trauma systems include the full range of clinical sites as well as financial systems to support both patients and caregivers. Trauma patients are disproportionately reliant on government payment sources with lower reimbursement rates than commercially insured patients. This is one reason why many Kentucky facilities have declined to participate in the state's trauma system, even if they provide a substantial amount of trauma care.Other barriers to participation include staffing requirements, particularly with regard to surgeons, and the ongoing cost of compliance with quality assessment standards.

Incremental policy development has the potential to address these issues and thereby lower the human and economic toll of traumatic injury for Kentucky. One such program that has already demonstrated success is the expansion of pediatric emergency readiness to the large majority of Kentucky hospitals. Data linkage is a critical starting point to support policy development by providing information about mid- and long-term injury outcomes. Such information would allow policy makers to focus attention on areas of greatest need and circumstances where new initiatives could best improve outcomes.

Supported by:	Support for the Kentucky Trauma Registry is provided by the National Highway Traffic Safety Administration through the Kentucky Office of Highway Safety.

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Health Equity Research

18th Annual CCTS Spring Conference
Monday, March 27, 2023 Gatton Student Center

College of Public Health Research Day

Presentation 174

Abstract Title: **Group-based multi-trajectory modeling for clustering hospital performance**

Author(s):
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Emily Slade, Department of Biostatistics, U of Kentucky
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Abstract: The CMS evaluates hospitals with a single score of one-to-five ("Star Rating") using composite measures from five domains. However, hospital performance is complex and patient-experience oriented. A single composite score cannot fully describe it, and alternative measures should be considered.

Medicare-eligible hospitals (N=5,111) in the current study provided patient care between 2012 to 2021. Hospitals reporting less than three out of five outcomes were excluded. We used GBMTM to identify groups of hospitals with similar performance.

Our results suggested hospitals could be classified into 3 subgroups: 1) "small size-high patient rating" n=2515 hospitals, ~100 beds, with the lowest readmissions, lowest safety risk, low payment value, high patient rating, and perhaps surprisingly, high mortality rate; 2) "large size-medium patient rating" n=2063 hospitals, ~240 beds, with all outcomes ranked in the middle: medium mortality rate, medium readmission rate, etc.; and 3) "large size-low patient rating" n=533 hospitals, ~230 beds, which tended to be more for-profit, with the highest readmissions, safety risk, and payment value, lowest patient rating, but lowest mortality rate. Hospital performance trends are parallel with similar slopes across all outcomes.

We clustered hospitals into subgroups without relying on a singular composite score, using GBMTM. Strikingly, hospitals are often simultaneously high and low performers in different domains. Classifying hospital performance based on GBMTM provides more granular information and increases interpretability. Parallel trends indicate hospital quality patterns in subgroups are overwritten with patterns at the national level. Hospital performances are related to hospital and community heterogeneity.

Supported by:

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College of Public Health Research Day

Presentation 175

Abstract Title:	**Explore pattern of multivariate group-based trajectory modeling convergence issues**
Author(s):	Gaixin Du, Department of Biostatistics, U of Kentucky Emily Slade, Department of Biostatistics, U of Kentucky Richard J Charnigo, Department of Biostatistics, Department of Statistics, U of Kentucky

Abstract: The group-based multi-trajectory model (GBMTM) is a popular tool for tracking temporal trends of single or multiple outcomes. PROC TRAJ is a popular third-party tool for applying GBMTM in the SAS language. Because this tool relies on numerical methodology requiring iteration, there can be convergence issues that limit the application of this model.

We used Monte Carlo simulations to explore convergence issues in GBMTM under multivariate normal distribution under various sample size, number of classes identified, outcomes, time points, mixing probability, variance, and percentage of outliers. We evaluated the effects on the probability of convergence issues with an augmented beta regression model. We investigated strategies to reduce convergence risks by capping (mean¬±2.5/3SD) or scaling [1,2,5,10,20,50,100] separately and together.

Our simulations show that the number of outcomes/classes leads to the largest risk of convergence failure. The increased number of time points, more severely unbalanced mixing probability, and greater variance also increase the chances of convergence failure. Increasing the sample size and percentage of outliers [0, 3%] will decrease the risk of convergence issues. Capping alone does not reduce the convergence issues. Scaling down decreases the risk. Capping with scaling down has 30% cases reduces the risks further.

We explored the pattern of convergence issues with the characteristics of simulated datasets analyzed in GBMTM. Our study gives insight into when convergence failure happens. In case of failure, we suggest reanalyzing the dataset with proper scale and capping. To reduce the risk, scaling down toward one is an appropriate choice to reduce convergence risks. With no clear pattern, capping with scale helps in convergence.

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18th Annual CCTS Spring Conference
Monday, March 27, 2023 Gatton Student Center
College of Public Health Research Day

Presentation 176

Abstract Title: **Model selection with singular BIC in the group-based multi-trajectory model**

Author(s): Gaixin Du, Department of Biostatistics, U of Kentucky
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Abstract: Group-based multi-trajectory model (GBMTM) is widely used to track temporal trends. This model, which can be used for grouping with longitudinal multi-dimensional hospital quality data, has identifiability problems due to a non-invertible Fisher information matrix.
The singular Bayesian information criterion (sBIC), invented by Drton and Plummer, gets around the identifiability problem in mixture modeling by averaging proxies for the marginal likelihood. We applied the sBIC in the GBMTM setting to address model selection in that setting. We compared the performance of sBIC to common model selection criteria in Monte Carlo simulations and hospital quality data.
We applied two types of sBIC to GBMTM: sBIC11-lighter penalty- closer to AIC, sBIC13-heavier penalty - closer to regular BIC. sBIC11 and sBIC are quite consistent with AIC and regular BIC in hospital quality data with identifying hospitals into 3 subgroups. Simulation results also showed sBIC13 has correctly identified true number classes 1%~2% more often than BIC. We also see that the probability of identifying the correct model is related to number of samples, data points collected, and outcome measures.
We compared the performance of sBIC to AIC and regular BIC in the context of GBMTM. Our results showed that sBIC performs competitively. With the relaxing of the penalty, sBIC13 can identify the number of true classes slightly more often. The performances of sBIC11/sBIC13 are comparable to AIC and BIC in some real-world data, like the hospital quality data we applied.

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18th Annual CCTS Spring Conference
Monday, March 27, 2023 Gatton Student Center
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Presentation 177

Abstract Title: **Technology Use and Well-being of K-12 Teachers during COVID-19**

Author(s):
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Abstract: Background: Throughout the COVID-19 pandemic, K-12 teachers rapidly implemented new technologies, often with limited training and support. We describe the technology-related responsibilities teachers assumed during the pandemic and test for an association between satisfaction with technology training and teachers' well-being. Methods: This study leverages data from the School Staff Health and Wellness Study, an academic community partnership. In November 2020, the online survey was distributed by school union leadership to members in IN, KY and OH. We explored qualitatively what additional technology-related responsibilities teachers assumed. Additionally, a priori analyses including comparisons of well-being scores among teachers who were satisfied with their technology training, unsatisfied with their technology training and those who had not received technology training. Results: Participants included 5,873 K-12 teachers. Teachers assumed a diverse array of technology-related responsibilities. Most teachers (88%) had to implement new technologies, and of those, 54% reported being "not at all" or only "a little bit" satisfied with the technology training they received. Teachers who were satisfied with their technology training were less depressed and anxious and scored higher on measures of well-being and sleep. Conclusions: K-12 teachers assumed many technology-related responsibilities in Fall 2020. Teachers' satisfaction with their technology training was positively associated with well-being. Studies are needed to examine which aspects of technology training teachers found most helpful and to identify effective approaches to equipping teachers to implement novel technologies.

Supported by: NIH award: TL1TR001997 from UK Center for Clinical and Translational Science.

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College of Public Health Research Day

Presentation 178

Abstract Title:	**County Health Departments's Approach to Community Health Needs Assessment and Improvement Plans in Kentucky**
Author(s):	B. Firchow, College of Medicine, U of Kentucky K. Boroughs, College of Public Health, U of Kentucky

Abstract: Community Health Needs Assessments (CHNAs) and Improvement Plans (CHIPs) are publicly available population health reports compiled by local health departments (LHD). Questions remain about heterogeneity in quality of reporting, as NACCHO has not provided robust guidance to standardize the CHNA process. Researchers verify whether accredited LHDs in Kentucky are fulfilling CHNA/CHIP requirements for accreditation and whether accreditation improves report quality. Researchers seek to determine whether study design, reporting, and quality of CHNA/CHIP data vary significantly among accredited and non-accredited LHDs. A content analysis of existing accredited and non-accredited LHD CHNA/CHIPs was performed using an evaluation framework developed by Pennel et al, 2014. LHDs were ranked across 17 criteria on a six-point scale to generate composite scores for report quality. An intraclass correlation coefficient was calculated to quantify agreement among raters. SPSS was used to generate descriptive statistics, Pearson correlations, and Spearman rank correlations to determine relationships between the criteria. Univariate regression and multiple regression were used to identify LHD, community, and report variables that contribute to variability in CHNA and CHIP quality. Interrater reliability was high, indicating internally consistent data collection. Higher quality reports were associated with Public Health Accreditation, but report quality varied even among accredited LHDs. CHNA/CHIP approaches among LHDs were varied in study design, reporting and quality. In the absence of robust guidance, LHDs vary significantly in their ability to deliver consistently informative CHNA/CHIPs. The research identifies an opportunity to strengthen CHNA/CHIP reporting standards for KY LHDs.

Supported by:	College of Public Health Undergraduate Summer Research Fellowship, CPH395 Independent Study with Richard Ingram, UK Dept. of Family Medicine's Population Health Research Fellowship.

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College of Public Health Research Day

Presentation 179

Abstract Title:	**Urban-Rural Differences in Mortality among Patients Receiving Buprenorphine for Opioid Use Disorder Treatment**
Author(s):	F. Lei, Departments of Pharmacy Practice & Science, U of Kentucky P.R. Freeman, Departments of Pharmacy Practice & Science, U of Kentucky S.Slavova, Departments of Biostatistics, U of Kentucky

Abstract: Background: Buprenorphine treatment for Opioid Use Disorder (OUD) reduces mortality, with limited accessibility in rural communities compared to urban. In Kentucky, urban counties have higher drug overdose death rates, yet the urban-rural mortality differences in patients receiving buprenorphine medication for OUD treatment (MOUD) are not well understood.

Objectives: To examine urban-rural differences in mortality in patients receiving buprenorphine MOUD.

Methods: We used Kentucky state prescription monitoring data to identify adult Kentucky residents who initiated buprenorphine MOUD from 2017 to 2019. The cohort was followed for 365 days from the initiation day to capture deaths. The cause and date of death were obtained through linkage with Kentucky death certificates. Endpoints were all-cause deaths and opioid-involved overdose deaths. Associations between rural/urban residency and each outcome were evaluated using a multivariable Cox regression model for all-cause deaths and a multivariable Fine and Gray model for opioid-involved overdose deaths.

Results: The study cohort comprised 51,011 patients, with 65.8% from urban and 34.2% from rural areas. During the 365-day follow up, 234 opioid-involved overdose deaths and 449 deaths from other causes occurred. Urban patients had 50% higher all-cause deaths adjusted hazard ratio (aHR) (aHR: 1.50; CI: 1.27-1.78) than rural patients. Urban patients had an adjusted subdistribution hazard ratio of 5.72 (CI: 3.62-9.06) compared to rural patients.

Conclusions: Urban patients receiving buprenorphine MOUD had higher incidences of all-cause and opioid-involved deaths despite easier treatment access. Further research is needed to understand causes for these disparities, including factors like treatment retention and fentanyl.

Supported by:

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College of Public Health Research Day

Presentation 180

Abstract Title:	**Standard vs augmented corticosteroid for mechanically ventilated COVID-19 patients: a multicenter, retrospective study**
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Abstract: Background: Despite evidence suggesting that early, short-courses of corticosteroids improve outcomes in acute respiratory distress syndrome (ARDS), the optimal regimen for ARDS secondary to coronavirus disease 2019 (COVID-19) remains unknown. Our objective was to evaluate the efficacy and safety of dexamethasone 6 mg daily (or daily glucocorticoid equivalent) versus higher dose regimens.

Methods: This retrospective cohort study included adult patients with PCR-confirmed COVID-19 requiring intubation and treated with corticosteroids between June 1, 2020 and June 30, 2021, at 30 medical centers. Patients were classified based on receiving a standard dose (SD) dexamethasone 6 mg daily versus augmented dose (AD) glucocorticoid regimens.

Results: This study included 1405 adults who received corticosteroids for respiratory failure requiring invasive mechanical ventilation secondary to COVID-19. Of these patients, 1032 (73%) received a SD regimen and 372 (26%) received an AD regimen. Unadjusted ventilator-free days and duration of mechanical ventilation were significantly lower with SD regimens. The groups had similar rates for all other endpoints. After adjusting for confounding, there was a non-significant increase in ventilator-free days in the SD group. When safety outcomes were adjusted for confounding, AD regiment patients had a higher incidence of hyperglycemia and a lower incidence of GI bleeding compared to SD regiment patients.

Conclusions: Daily corticosteroid doses greater than dexamethasone 6 mg or equivalent daily did not result in significantly reduced ventilator-free days among mechanically ventilated patients with COVID-19. However, there was a strong trend towards increased ventilator-free days when AD was utilized.

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College of Public Health Research Day

Presentation 181

Abstract Title:	**The association of end-of-life gabapentin use and neuropathological hallmarks in an autopsy cohort of older adults**
Author(s):	OG. Oh, Sanders-Brown Center on Aging, University of Kentucky; D. C. Moga, Department of Pharmacy Practice and Science, University of Kentucky; Institute for Pharmaceutical Outcomes and Policy, University of Kentucky; Department of Epidemiology and Environmental Health, University of Kentucky; Sanders-Brown Center on Aging, University of Kentucky; D. W. Fardo, Department of Biostatistics, University of Kentucky; Sanders-Brown Center on Aging, University of Kentucky; J. P. Harp, Sanders-Brown Center on Aging, University of Kentucky; Department of Neurology, University of Kentucky; E. L. Abner, Department of Epidemiology and Environmental Health, University of Kentucky; Department of Biostatistics, University of Kentucky; Sanders-Brown Center on Aging, University of Kentucky

Abstract: We examined the association between end-of-life gabapentin use and neuropathological features in older adults using National Alzheimer's Coordinating Center Uniform Data Set and Neuropathology Data Set (9/2005-3/2022). We conducted a cross-sectional study including participants [age 65+] with at least one visit in the two-year window before autopsy. Outcomes of interest included Braak stage, diffuse plaques, neuritic plaques, Lewy bodies, infarcts, microinfarcts, arteriosclerosis, hippocampal sclerosis, and cerebral amyloid angiopathy. Thal phase, TDP-43, and atrophy information were assessed in a subset due to data availability. To mitigate bias, we used joint stabilized inverse probability of treatment and censoring weights using two sets of covariates (M1: adjusted for age, sex, APOE, center, and cognitive status; M2: adjusted for M1 confounders plus agitation, depression, antiseizures, and opioids). We identified 213 gabapentin-users (mean age [SD]: 80.9 [8.7]; male 53.5%) and 4107 non-users (82.0 [8.7]; 54.7%). Gabapentin use was associated with reduced odds of Braak stage IV-VI vs. 0-III, moderate/frequent vs. non/sparse diffuse plaques, presence of Lewy bodies, infarct, and cerebral amyloid angiopathy (M1 and M2). For the subset outcomes [116 gabapentin-users (mean age [SD]: 81.0 [8.6]; male 50.9%) and 1919 non-users (81.8 [8.9]; 54.3%)], gabapentin use was associated with increased odds of Thal phase 3-5 vs. 0-2 and decreased odds of hippocampus atrophy (M1 and M2). End-of-life gabapentin use was not significantly associated with burden of neuropathologic features. Further studies with increased sample sizes and better measurement of gabapentin use are needed.

Supported by: National Institute on Aging (NIA) T32 AG057461: “Training in Translational Research in Alzheimer’s and Related Dementias (TRIAD)”

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College of Public Health Research Day

Presentation 182

Abstract Title:	**Marital Status and Retinopathy Screenings Among Patients with Diabetes: Behavioral Risk Factor Surveillance System 2020**
Author(s):	A.O. Oikeh, Department of Health Management and Policy, U of Kentucky J. Lyons, Department of Health Management and Policy, U of Kentucky O. Vsevolozhskaya, Center for Innovation in Population Health, U of Kentucky M.W. Sohn, Department of Health Management and Policy, U of Kentucky

Abstract: Background: The American Diabetes Association and the International Council of Ophthalmologists recommend that people who have diabetes be screened for retinopathy and, if there is no presence of retinopathy, dilated eye examinations should be conducted every 2 years to prevent blindness.
Objective: To ascertain if marital status is associated with the uptake of eye exams among people with diabetes.
Methods: The 2020 Behavioral Risk Factor Surveillance System (BRFSS) data was used for this study. We used survey weights with appropriate subpopulation methods to conduct descriptive and logistic regression analyses.
Results: Our analyses included 12,453 participants, of which 16.6% had not received a recent dilated eye exam, while 83.4% had received recent dilated eye exams. Compared to people who had not received dilated eye exams, respondents who had received dilated eye exams tend to be married/cohabiting (57%), Non-Hispanic White (61.7%), and have some form of health insurance coverage (95.2%). Being married or cohabiting was associated with 24% higher odds of receiving dilated eye exams every two years (OR = 1.24, 95% CI = 1.00, 1.53). Older age and insulin use were associated with 200% and 50% increased odds of receiving eye exams compared to those less than 40 years old and those who did not use insulin, respectively.
Conclusion: People with diabetes who are married, have a significant other or are cohabiting are more likely to go for recommended eye screenings.

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College of Public Health Research Day

Presentation 183

Abstract Title:	**Health Through the Ages: Partnerships to Promote Health**
Author(s):	K. D. Pipgrass, Department of Health, Behavior & Society, U of Kentucky M. Ickes, Department of Kinesiology and Health Promotion, U of Kentucky

Abstract: Health promotion programming goes beyond reducing risk for disease and disability and lowering healthcare costs. It is an opportunity to empower individuals to make healthier choices and improve their quality of life. Unfortunately, aging adults are a vulnerable population that often face disparities in access to tailored health promotion programming. This presentation serves to describe how community engaged programming can be leveraged to strengthen partnerships to promote health among aging adults in skilled nursing facilities across Kentucky. The current UK Bingocize project aims to train staff and community partners to implement Bingocize in 30 skilled nursing facilities. Bingocize is a health promotion program that strategically combines the game of bingo with exercise and health education to reach aging adults and reduce their health disparities related to social isolation and fall prevention. This project relies heavily on both community and academic partnerships to support engagement and sustainability and also provides an opportunity for student engagement to support an intergenerational component. The partnerships formed have added value as the trained staff and student volunteers create a positive social environment conducive to program implementation. This continually engages a vulnerable population, and our hope is this will promote sustainability of program activities after program completion.

Supported by:	Civil money penalty (CMP) grant from the Centers for Medicare and Medicaid Services (CMS) and the Kentucky Office of Inspector General (OIG)

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College of Public Health Research Day

Presentation 184

Abstract Title:	**Mental, Emotional, Developmental, and Behavioral Delays and Food Insufficiency**
Author(s):	K.A. Russ, College of Public Health, U of Kentucky; M.E. Pendergrass, College of Public Health, U of Kentucky; A.G. Hardin, College of Public Health, U of Kentucky; S.E. Cprek, College of Public Health, U of Kentucky

Abstract: Food insufficiency has been found to be a contributor to poor health outcomes in children aged three to seventeen. Food insecurity has been linked to mental, emotional, behavioral, and developmental delays (MEDBs), however, little research to date has been found regarding the relationship between food insufficiency and MEDBs. This study aims to determine if food insufficiency is associated with rates of mental, emotional, developmental, and behavioral problems in children aged 3-17 years using data from the nationally representative 2020 National Survey of Children,Äôs Health (n=35,047). Chi square analysis was completed to assess a potential relationship between food situation and MEDBs. Anxiety problems, speech or language disorders, and ADHD had the highest prevalence at 12.0%, 10.2%, and 10.2% of participants respectively. Chi square analysis results indicated that food insufficiency had a strong correlation with MEDBs in general (p=0.0001). Each MEDB demonstrated a statistically significant correlation with food situation, including Tourette Syndrome (p=0.0056), anxiety (p=0.0001), depression (p=0.0001), developmental delay (p=0.0001), intellectual disability (p=0.0001), learning disability (p=0.0001), speech disability (p=0.0001), attention deficit disorder (ADD) or Attention-Deficit Hyperactivity Disorder (p=0.0001), and autism (p=0.0001). Logistic regression analysis found that when controlling for age, race, sex, poverty level, adult education, and household language, children who experienced food insufficiency were 2.8 times more likely to report one of the 10 MEDBs and children who experienced food insecurity were 1.6 times more likely. The data currently supports a strong correlation between food insufficiency and MEDBs in children aged three to seventeen.

Supported by:

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College of Public Health Research Day

Presentation 185

Abstract Title:	**Novel cerebral amyloid angiopathy APOC2 genetic risk locus may influence disease risk through methylation of CpG sites**
Author(s):	L. M. P. Shade, Department of Biostatistics, University of Kentucky Y. Katsumata, Department of Biostatistics, University of Kentucky, Sanders-Brown Center on Aging, University of Kentucky M. T. W. Ebbert, Sanders-Brown Center on Aging, University of Kentucky, Division of Biomedical Informatics, Department of Internal Medicine, University of Kentucky P. T. Nelson, Department of Pathology, University of Kentucky, Sanders-Brown Center on Aging, University of Kentucky D. W. Fardo, Department of Biostatistics, University of Kentucky, Sanders-Brown Center on Aging, University of Kentucky

Abstract: Genome-wide association studies (GWAS) have identified over 70 Alzheimer‚Äôs disease (AD)-associated loci. However, the clinical- and proxy-based outcomes used in most studies do not reflect the complexity of underlying neuropathologies. Autopsy data combined with GWAS provides the opportunity to study the genetic risk factors of multiple AD-related neuropathologies. We studied the genome-wide risk factors of eleven AD-related neuropathological endophenotypes using four sources of neuropathological data (pooled N = 7,463). GWAS were followed by downstream functional analyses to identify potential molecular functions of risk loci. To confirm molecular phenotypic association with neuropathologies, we performed targeted analyses with DNA methylation and RNAseq data. We identified a locus near APOC2 associated with cerebral amyloid angiopathy (CAA) independently of known APOE alleles. This locus is also associated with DNA methylation at four nearby CpG sites in the cerebral cortex. Methylation levels at two sites, cg0955818 (P value = 0.004) and cg13119609 (P value = 0.0007), were significantly associated with CAA. We also identified two other novel neuropathology risk loci and confirmed associations of known AD risk loci with multiple neuropathologies. Our findings highlight the importance of neuropathological endophenotypes as necessary complements to clinical AD studies to understand the genetic risk of AD and related dementias.

Supported by:	R56AG057191; F30NS124136; P30AG028383; the University of Kentucky Center for Clinical and Translational Science TL-1 Fellowship [grant number TL1TR001997]; the National Center for Advancing Translational Sciences [grant number UL1TR001998]; and the Dean of the College of Medicine, University of Kentucky.

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18th Annual CCTS Spring Conference
Monday, March 27, 2023 Gatton Student Center

College of Public Health Research Day

Presentation 186

Abstract Title: **Firearm Injuries in Kentucky Trauma Centers: Trends from 2010-2021**

Author(s): M. Taylor, College of Public Health, U of Kentucky
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Abstract: In the health care system, trauma centers are an integral part of treating individuals who have sustained potentially life-threatening injuries. The Kentucky Trauma Registry, the statewide database for trauma cases, collects information provided by participating trauma centers. This information is compiled into an annual report that displays data containing many facets of trauma from the previous year. The most common types of traumatic injuries are from falls, motor vehicle traffic accidents, and firearms. Unlike the other injuries, firearm injuries have seen different year to year trends. The reports show how firearm injuries have increased and decreased over the past decade. Starting in 2010, firearm injuries accounted for 4.88% of recorded trauma cases. By 2014, this percentage was at 3.5%, the smallest number in the observed time span. Following that year, the percentage had substantially increased over time. In 2020, the percentage of trauma cases involving firearms was 6.96%, which was nearly double the lowest recorded percentage in the prior decade. It is apparent that now more than in the past decade, firearms pose a risk to the health of Kentuckians. Not only do firearms unintentionally harm individuals, but they also increase the amount of suicide deaths from intentional gunshots. This form of traumatic injury has seen more growth than any other injury, and it is bound to continue trending upwards without interventions in place.

Supported by: 2010-2021 Kentucky Trauma Registry Annual Reports

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College of Public Health Research Day

Presentation 187

Abstract Title:	**Equine assisted dialectical behavioral therapy reduces need and improves strengths in youth with self-harm behaviors**
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Abstract: Dialectical behavioral therapy (DBT) is an evidence-based intervention used to reduce risk behaviors. Using horses in conjunction with DBT (PLUS) permits demonstration of skills in a novel setting; however, effectiveness of PLUS has not been evaluated. We aimed to 1) compare needs resolution of youth in either DBT or PLUS; 2) predict need resolution-based, strength building while in longitudinal DBT. A total of 29 youth with history of at least one hospitalization for self-harm, suicide attempt, or physical violence were recruited into a 30 week intervention as either DBT (n = 15) or PLUS (n = 14). Child and Adolescent Needs and Strengths scores were obtained pre- and post-intervention.T-tests were used to evaluate differences in scores. Linear regression determined contribution of strength development. Mean total actionable need for life functioning was resolved in PLUS (p = 0.0008) but not DBT (p = 0.1879). Following DBT, need was resolved in resources (p = 0.0414), behavioral/emotional (p = 0.0132), and traumatic stress (p = 0.0102) domains. PLUS also reduced need in behavioral/emotional (p = 0.0008) and traumatic stress (p = 0.0081). Development of education strength resulted in life functioning need resolution (p = 0.0234). Community life and natural support strengths predicted a 0.45 and 0.5 point reduction in total actionable need for risk behaviors. Horse interactions were effective in reducing need for at-risk youth. Both DBT and PLUS are important interventions for building strengths.The balance between need reduction and strength building shifts health equity focus from deficit-centric to an assets-centric approach.

Supported by: Funded by the Spartanburg Academic Movement (non-profit foundation)

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Presentation 188

Abstract Title:	**Laurel HARVEST- Helping Appalachia Restore a Vibrant Food Environment for Self-sufficiency Together**
Author(s):	B. Walton, College of Public Health, U of Kentucky M. Barr, Department of Dietetics and Human Nutrition, U of Kentucky C. Mayfield, College of Public Health, U of Kentucky J. Mullins, Department of Human Environmental Sciences, U of Kentucky C. Leucking, Department of Dietetics and Human Nutrition, U of Kentucky M. Swanson, Department of Public Health, U of Kentucky K. Cardarelli, Office of the Provost, U of Kentucky

Abstract: BACKGROUND: Due to geographic isolation, decreased access to nutritious and healthy food, and lower education and income levels, rural areas experience high levels of food insecurity, food deserts, and obesity. Laurel County, an Appalachian county located in southern Kentucky, experiences high food insecurity (16.3%), obesity (44%) and poverty (21% of families). While policy, systems, and environmental (PSE) interventions have often been implemented in urban areas, there is a need for PSE interventions in rural America to create foundational data for future interventions.
PURPOSE: The purpose of Laurel HARVEST is to increase food security and healthy diet in rural Kentucky, while also increasing community partnerships and capacity building using multiple theoretical frameworks and direct community input.
METHODS: The target population for our cohort study is adults in Laurel County (target n=160), where 10% of adults self-reported adequate fruit and vegetable consumption and total number of grocery stores has decreased over 30% in recent years. A comprehensive multiyear intervention will take place in partnership with Cooperative Extension. Year 1 incorporated the planning phase, the development of the community advisory board (CAB), and beginning of data collection using 24-hour dietary recall and carotenoid measurements. The Community Advisory Board, Extension, and our team developed the study interventions: healthy cooking demonstrations (virtual and in-person) using the Cook Together Eat Together model, improvements to the farmers market by strengthening community partnerships, and enhancing gardening skills using the Grow Appalachia model.
FUTURE DIRECTIONS: Years 2-4 include intervention implementation, and both process and outcome evaluations.

Supported by: This project is supported by 2022-68015-36497 from the USDA National Institute of Food and Agriculture.

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College of Public Health Research Day

Presentation 189

Abstract Title:	**Effects of the COVID-19 Stay-at-home Orders on the Trend of Emergency Department Visits for Traumatic Brain Injuries**
Author(s):	Dandan Wang, Department of Biostatistics, University of Kentucky; Svetla Slavova, PhD, Department of Biostatistics, University of Kentucky, and Kentucky Injury Prevention and Research Center, Lexington, Kentucky

Abstract: Background: Traumatic brain injury (TBI) is a leading cause of injury-related mortality and morbidity. The purpose of this study was to evaluate the changes in the Kentucky statewide trends for TBI emergency department (ED) visits in relation with the Kentucky COVID-19-related stay-at-home orders.

Method: We utilized interrupted time series design and segmented regression model to evaluate the impact of the Kentucky executive order to close non-essential businesses and to re-open them on the statewide trend for TBI ED visits.

Results: The segmented regression model identified three distinct segments in the study period. There were estimated 250.11 weekly ED TBI visits at the beginning of Pre-COVID-19 period with a statistically significant decrease of 2.84 visits per week. The estimated weekly ED TBI visits increased significantly by 8.88 per week during the COVID-19 Phase 1. But the weekly increase slowed significantly by 7.22 during the COVID-19 Phase 2 compared with Phase 1. By the end of the study period, the estimated weekly number of ED TBI visits returned to the pre-COVID-19 levels.

Conclusion: The COVID-19-related executive orders in Kentucky interrupted the established pre-COVID-19 trends in ED TBI visits. With the re-opening of businesses, the statewide trend for ED TBI visits returned to the pre-COVID-19 levels. In-depth studies are needed to investigate whether the changes in the trend reflected a true decrease in TBI injuries in the initial COVID-19 period and if people did not seek proper TBI care due to closures of health care facilities or concerns for COVID-19 exposure in EDs.

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Center for Clinical and Translational Science

Abstracts

College of Dentistry Research Day

Posters 190 - 231

College of Dentistry Research Day

Presentation 190

Abstract Title:	**"Subclinical Facial Asymmetry: Normal Variation or an Early/Subtle Indication of Hidden Pathology?"**
Author(s):	Mohamed Adel, Division of Orthodontics, University of Kentucky Alyssa Day, College of Dentistry, University of Kentucky Joseph Van Sickels, Division of Oral and Maxillofacial surgery, University of Kentucky G. Thomas Kluemper, Division of Orthodontics, University of Kentucky

Abstract: A mild degree of facial asymmetry is often noted when assessing patients and is commonly referred to as relative symmetry, subclinical asymmetry, or normal asymmetry. Frequently it is imperceptible to both the individual and those around them. In other instances, it may be problematic to the patient but not to others. This raises an intriguing question: is subclinical asymmetry simply a component of normal facial growth, or might it be, in some cases, an indication of abnormal facial growth or an expression of underlying pathology? To shed light on this important clinical issue, we will present a case of subclinical asymmetry that went unnoticed by many in the individual's extended circle, both laypeople and dental professionals alike. In this case, we utilized modern diagnostic techniques, including 2D, 3D and Technetium - 99M imaging modalities to address the patient's chief complaint and identify the cause of the facial asymmetry. Additionally, we developed a highly personalized treatment plan to effectively resolve our patient's concerns and enhance our treatment outcomes, both aesthetically and functionally.

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College of Dentistry Research Day

Presentation 191

Abstract Title:	**Insomnia is Associated with Higher Pain Intensity in Orofacial Pain Patients**
Author(s):	A. Alessandri-Bonetti, College of Dentistry, Department of Oral Health Science, Division of Orofacial Pain; University of Kentucky L. Sangalli; College of Dental Medicine ,Äì Illinois, Midwestern University I. Boggero; Department of Psychology; University of Kentucky

Abstract: Aim: Good sleep quality is key factor underlying pain control. Few studies have investigated the relationship between pain intensity and insomnia in orofacial pain patients. Our hypothesis was that insomnia symptomatology would be associated with pain intensity. Aims of the study were to assess associations of insomnia symptomatology with pain interference, pain duration, and general medical health in a population of treatment-seeking orofacial pain patients.
Methods: A cross-sectional study was conducted in consecutive adults seen at Orofacial Pain Clinic (University of Kentucky). Demographics, insomnia symptoms (assessed via Insomnia Severity Index, ISI), pain duration, pain intensity and pain interference (Graded Chronic Pain Scale) were extracted. T-tests were used to assess differences in outcomes between patients with and without insomnia.
Results: Of 272 patients (43.1±15.3 y/o, 83% females), 47.8% present with clinically significant insomnia symptomatology, defined by scores of ISI ≥ 11. Compared to patients with elevated insomnia symptoms, those without clinically elevated insomnia symptomatology (52.2%) reported lower pain intensity (44.7±20.8 vs 60.4±20.6, t=-6.158, p<.001), lower pain interference (16.5 ± 20.2 vs 39.9±29.4, t=-7.475, p<.001) and fewer medical diagnosis (4.4±5.3 vs 6.1±5.6, t=-2.505, p<.01). No significant difference was observed in mean pain duration (75.6 vs 79.7 months, p>.05) between the two groups. Group differences remained significant after adjusting for age, sex, and primary orofacial pain diagnosis.
Conclusion: Patients with insomnia experienced higher pain intensity, greater pain interference and poorer general health than patients without insomnia; highlighting the importance of sleep examination in orofacial pain patients.

Supported by:

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18th Annual CCTS Spring Conference
Monday, March 27, 2023 Gatton Student Center

College of Dentistry Research Day

Presentation 192

Abstract Title: **Effect of Phospholipase A2 group IIA (PLA2-IIA) in Alveolar Bone Loss**

Author(s):
D. Bellamy, Center for Oral Health Research, College of Dentistry, U of Kentucky
V. Tubero Euzebio Alves, Center for Oral Health Research, College of Dentistry, U of Kentucky
R. Danaher, Center for Oral Health Research, College of Dentistry, U of Kentucky
R. Arce, Department of Periodontics, School of Dentistry, The University of Texas Health Science Center at Houston
O. A. Gonzalez, Center for Oral Health Research, College of Dentistry, U of Kentucky

Abstract: Objective: The antimicrobial protein PLA2-IIA is associated with intestinal dysbiosis and inflammatory disease (e.g., rheumatoid arthritis). P. gingivalis (Pg) modulates oral epithelial cell antimicrobial responses through upregulation of PLA2-IIA and is resistant to its antimicrobial activity. Although PLA2-IIA levels are elevated in periodontitis, the role of PLA2-IIA in the pathogenesis of this oral disease remains unknown. Here we sought to determine the effect of PLA2-IIA in alveolar bone changes using the Pg oral lavage model.
Methods: Both Tg-PLA2-IIA and WT co-caged littermates (C57BL/6) were Pg- or Sham-infected using oral lavage (n=12/group; 6M and 6F). Four consecutive infections per week, every other week for 6 weeks were performed. Hemimaxilla were harvested, fixed in 10% formalin, and preserved in 70% ethanol. Samples were scanned using micro-Computerized Tomography (µCT) and 3D surfaces used to analyze bone level changes using Autodesk Meshmixer software.
Expected Results/Significance: Alveolar bone loss will be greater in Tg-PLA2-IIA when compared with their corresponding WT littermates in sham-infected mice and Pg infection would exacerbate it. These findings would suggest that elevations in gingival PLA2-IIA levels contribute to enhance alveolar bone loss; however, the mechanisms involved in this observation will need to be further elucidated. Upregulation of PLA2-IIA levels by oral pathogens like Pg could contribute to enhance oral dysbiosis, inflammation, and bone loss.

Supported by: NIH/NIDCR DE029498

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College of Dentistry Research Day

Presentation 193

Abstract Title:	**Agenesis Of The Temporomandibular Condyle In A Three Year Old Patient: A Case Report**
Author(s):	S. Benavides, Department Orofacial Pain. University of Kentucky Lexington C. Perez, Associate Professor and Chief, Division of Pediatric Dentistry University of Kentucky Lexington

Abstract: Aim of investigation: Complete absence of the temporomandibular condyle is an extremely uncommon condition, especially in an otherwise healthy child. At an early age it can be missed due to lack of noticeable facial asymmetry, however as the child grows it can manifest with pain, facial imbalance and functional disturbances. We present a rare case of a 3 year old girl, with left condylar aplasia/agenesis who presented to the Orofacial Pain Clinic at the University of Kentucky for a pain and dysfunction located in the left masseter, preauricular region and ear.
Methods: A thorough history, clinical examination, complemented by imaging was performed. A panoramic radiograph followed by a CT scan confirmed the lack of development of the left mandibular ramus and complete absence of the left temporomandibular condyle.
Results: The patient was referred to plastic surgery who confirmed the diagnosis of left condylar agenesis/aplasia and determined distraction osteogenesis as future treatment. Other management options were discussed by orthodontics and pediatric dentistry including functional appliances that may guide growth and avoid invasive surgery.
Conclusions: The presence of a deviated chin, tilting of the mandibular plane and facial pain in a healthy young child can be early clinical manifestations of a skeletal anomaly of the temporomandibular joint. Prompt recognition is important as it provides reassurance to the parents and initiates treatment options. Making an early diagnosis may also initiate early treatment that uses the child's growth potential avoiding pronounced facial asymmetry and pain.

Supported by:

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College of Dentistry Research Day

Presentation 194

Abstract Title:	**Using Telehealth to Improve Access to Psychological Pain Interventions: An Example from a Multidisciplinary Pain Clinic**
Author(s):	I. A. Boggero, Department of Oral Health Science, Division of Orofacial Pain, U of Kentucky College of Dentistry; Department of Anesthesia, U of Kentucky College of Medicine; Department of Psychology, U of Kentucky College of Arts and Science

Abstract: Chronic orofacial pain, characterized by pain in the structures of mastication lasting more than 3 months, affects between 4-15 percent of the population and often requires specialized, multidisciplinary treatment. Physical Self-Regulation (PSR) is a brief psychological intervention consisting of 3 50-minute sessions where patients are taught to monitor their clenching, relax their jaw, and breath diaphragmatically. While an in-person version of this intervention has demonstrated efficacy in reducing pain intensity and improving quality of life, the intervention has very low utilization and very high attrition when delivered in person. Many of the patients who do not start of complete the intervention are from rural parts of the state where driving to the clinic three times presents a significant obstacle. The current project, completed as part of the DREAM scholars program, will have chronic orofacial pain patients from rural (n=25) and metropolitan areas (n=25) provide pilot acceptability and treatment satisfaction data after completing three sessions of PSR delivered via telehealth. Data for the project are currently being collected at the KY chronic orofacial pain clinic, and data analyses will begin in early March. During the CCTS talk/poster, I will present preliminary results of 1) the acceptability and perceived satisfaction of patients completing PSR virtually, and 2) a comparison of acceptability and satisfaction between patients from rural vs. metropolitan areas. These data will serve as preliminary data for a K23 award I am preparing to submit in June 2023 and will help to inform the clinical care that my team delivers in the orofacial pain clinic, especially to patients from rural communities.

Supported by:	This project was funded by the DREAM scholars program, NIH CTSA grant (UL1TR001998)

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College of Dentistry Research Day

Presentation 195

Abstract Title:	**Social Vulnerability and Oral Healthcare Utilization Persons Enrolled in Medicaid in Kentucky**
Author(s):	Shauntel Brown, Malini Kirakodu, Courtney Brown, Luciana Shaddox, College of Dentistry U of Kentucky

Abstract: Objectives. Kentucky is among the worst US states regarding oral and overall health conditions. Social determinants of Health (SDOH) or "the conditions in the environments where people are born, live, learn, work play, worship and age" are increasingly recognized for their impacts on health and quality-of-life outcomes. The Social Vulnerability Index (SVI) contains community-level data on 15 different social factors categorized into four themes—socioeconomic status, household composition and disability, minority status and language, and housing and transportation. Healthcare access and food security are other important environmental factors for oral health. Data sets like the SVI can be utilized to identify communities at higher risk for poor health outcomes. Thus, the purpose of this study was to evaluate the association of this index, oral health workforce data and food insecurity data with the utilization of Medicaid dental services in Kentucky.
Methods. Kentucky Medicaid claims data from 2017-2022 were grouped into three categories—preventive/diagnostic, restorative and urgent care services. Then services were correlated with the SVI index and four themes as well as with oral health workforce and food security data.
Results. This project will identify social vulnerability factors most associated with the use of urgent care services as well as communities that demonstrate oral health resilience, or higher utilization of preventative services despite high levels of social vulnerabilities.
Conclusions. Evaluations of community-level SDOH and their impact on oral health care

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College of Dentistry Research Day

Presentation 196

Abstract Title:	**Interdisciplinary Knowledge- Need of an hour: A literature review and case report**
Author(s):	A. B. Butul, Department of Orthodontics, Collge of Dentistry, U of Kentucky B. L. Sharab, Department of Orthodontics, College of Dentistry, U of Kentucky.

Abstract: The new definition of Oral Health as evolved by FDI world dental federation includes multifaceted nature and attributes of oral health (i.e. Oral health is multi-faceted and includes the ability to speak, smile, smell, taste, touch, chew, swallow and convey a range of emotions through facial expressions with confidence and without pain, discomfort and disease of the craniofacial complex (head, face, and oral cavity). Emphasis has been given to the multifarious nature of dentistry and having interdisciplinary knowledge is one of the prominent components. Communicating with the patients and providing them with the best treatment options should be the moral of any medical professional. The objective of this review is to illustrate the need for interdisciplinary knowledge among dental practitioners to amalgamate the experience and expertise from different fields of dentistry. In addition, we presented a case to demonstrate the benefits of an interdisciplinary approach and patient education. Our review has documented a patient-centered approach that is not adequately applied in dentistry. PCC Patient-Centered Concept (PCC) is increasing in popularity in recent years. Patient satisfaction and cooperation can be optimized by the level of their involvement. Moreover, oral health and esthetics are best achieved when different specialties of dentistry collaborate for the well-being of the patient. This review will be instrumental to understand and reminisce the basic ethics and principles of dentistry.

Supported by:

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College of Dentistry Research Day

Presentation 197

Abstract Title:	**Digital assessment of Pinhole surgical technique and SECTG for treatment of gingival recession: Split mouth randomized controlled clinical trial**
Author(s):	N. Almehmadi, Department of Periodontics, U of Kentucky R. Abualsoud College of Dentistry, U of Kentucky A. Desai, Department of Periodontics, U of Kentucky M. Al-Sabbagh, Department of Periodontics, U of Kentucky

Abstract: AIM: To compare the outcomes of pinhole surgical technique (PST) and tunnel surgical technique (TST) in gaining soft tissue root coverage and gingival thickness on teeth with recession.
METHODS: The clinical investigation followed a split-mouth longitudinal randomized clinical study. 18 subjects who had two contralateral teeth with Cairo type I gingival recession were recruited. The test group (n=18) underwent PST. The control group (n=18) underwent TST. Clinical variables were probing pocket depths, bleeding on probing, gingival recession, and width of keratinized tissue (KT). Intensity of pain was measured using Visual Analogue Scale. The subjects were followed up to 12 months after procedure.
RESULTS: The PST and TST resulted in an average net gain of 1.68mm, and 1.54mm in root coverage respectively. PST gained average 1.11mm gingival thickness which was comparable to TST. PST and TST resulted in average KT width of 3.16mm and 3.23mm respectively.
DISCUSSION & CONCLUSIONS: PST achieved root coverage, gingival thickness, and KT width results that are comparable to TST. However, pain level was slightly better in PST group compared to TST group, and operative time was significantly shorter for PST surgery. PST is a safe and effective alternative technique for the treatment of gingival recession.

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College of Dentistry Research Day

Presentation 198

Abstract Title:	**Buprenorphine Use is Associated with Higher Oral Disease Across ADI groups**
Author(s):	A. Dong, Department of Dietetics and Human Nutrition, U of Kentucky M. Rojas-Ramirez, College of Dentistry, U of Kentucky A. Grubbs, College of Nursing, U of Kentucky N. Omran, Department of Dietetics and Human Nutrition, U of Kentucky J. Plasencia, Department of Dietetics and Human Nutrition, U of Kentucky

Abstract: Introduction: Buprenorphine is commonly prescribed for the treatment of Opioid Use Disorder. In 2022, the FDA released a warning that linked buprenorphine to oral diseases. However, the available literature mainly includes case reports which are subject to selection bias and inadequate power. This project aimed to investigate the relationship between buprenorphine and dental caries and the changes in this relation across levels of deprivation using the Area Deprivation Index (ADI). ADI is a measure of deprivation, which reflects socioeconomic disadvantage based on census blocks.
Method: A chart review identified 7055 patients who came to the College of Dentistry between June 2021 and September 2022. Their demographic, medical history, and tooth findings data were extracted. ADI data were obtained following instructions based on the Neighborhood Atlas website. Independent T-test, Chi-square test, and ANOVA were used to determine the association between the variables.
Results: The mean age was 40.70 (13.39) with 57.7 % being females (n=4068) and 79% (n=5573) being White. There were 102 patients taking buprenorphine. The mean ADI was 4.13 (2.7). There were no significant differences in the buprenorphine distribution across ADI. Caries number increased as the ADI increased (p=0.02).
Conclusion: The effect of buprenorphine on oral disease does not seem to be associated with ADI. However, the extent of oral disease is directly associated with ADI.

Supported by: Research and Extension Experiences for Undergraduates: grant no. 2019-05108 from the U.S. Department of Agriculture, National Institute of Food and Agriculture

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College of Dentistry Research Day

Presentation 199

Abstract Title:	**Metro vs Rural Orofacial Pain Patients: How are They the Same, How are They Different? A retrospective study**
Author(s):	M. C. Dowling, Department of Oral Health Science, Division of Orofacial Pain, University of Kentucky College of Dentistry, Lexington, Kentucky; F. Yanez-Regonesi, Department of Oral Health Science, Division of Orofacial Pain, University of Kentucky College of Dentistry, Lexington, Kentucky; I. A. Boggero, Department of Oral Health Science, Division of Orofacial Pain, University of Kentucky College of Dentistry, and Department of Psychology, University of Kentucky College of Arts and Science, and Department of Anesthesia, University of Kentucky College of Medicine, Lexington, Kentucky

Abstract: Aim of Investigation: Previous research has found that chronic pain prevalence, intensity, and disability are all influenced by urbanization status, with residents of rural communities showing worse pain-related outcomes than those from metropolitan communities. However, few studies to date have examined the associations between urbanization status and orofacial pain, specifically. The objective of the present study was to describe the metro and non-metro status among treatment-seeking patients in a tertiary orofacial pain clinic and to evaluate any differences in age, sex, and clinical pain and psychological characteristics among them.
Methods: A retrospective study was conducted on consecutive patients seen in a tertiary orofacial pain clinic from May 2010 to March 2020. According to a patient‚Äôs zip code, a rural-urban continuum code was assigned and then grouped into metro and non-metro subcategories. Data were analyzed to observe possible differences in age, sex, pain intensity and disability assessed via the Graded Chronic Pain Scale (GCPS), and anxiety and depression assessed via the four-item patient health questionnaire (PHQ-4).
Results: Results revealed that of 1,106 new treatment-seeking patients in a tertiary orofacial pain clinic, 68.0% were from metro communities and 31.1% from non-metro communities. No statistically significant differences were observed in age, sex, and clinical pain and psychological characteristics.
Conclusions: Despite previous studies suggesting differences in pain prevalence, intensity, and disability, our data revealed no differences among patients living in metro and non-metro communities.

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College of Dentistry Research Day

Presentation 200

Abstract Title:	**Faculty Perception of Mentorship Programs in Dental Academia and its Effect on Career Advancement for Female Faculty**
Author(s):	B. DuMont, DMD Student, University of Kentucky College of Dentistry K. Morris, Undergraduate Student, University of Kentucky L. Sharab, Department of Orthodontics, University of Kentucky College of Dentistry

Abstract: Gender bias and underlying challenges continues to impede female career growth in dental academia. The majority of US dental institutions have failed to apply mentorship programs. The available ones are vaguely defined and lack effectiveness. The quality and accessibility of mentorship impacts the development of female in dental academia and lead to underrepresentation in the leadership positions. The medical literature is rich with factors affecting career advancement for female faculty. Many studies in the medical literature had been done to explore factors related to mentorship and sponsorship. Dental literature however, have not kept pace in topics exploring these issues. Level of awareness of dental faculty on the value and the definition of successful mentorship must be explored. Factors influencing the success of these programs needs to be explored. Awareness of faculty of the proper definition of what mentorship is has not been explored.
Hypotheses: Lack of knowledge on the value of mentorship programs is related to motivation to acquire mentorship opportunities. Other factors including, culture of the college, level of job satisfaction and other factors will be explored.

Supported by: 2021 Undergraduate Research and Creative Scholarship

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College of Dentistry Research Day

Presentation 201

Abstract Title:	**BMI and Dental Development Compared to Chronological Age in Females of Different Ethnic Groups**
Author(s):	Cynthia S. Beeman, Division of Orthodontics, U of Kentucky James K. Hartsfield Jr., Division of Orthodontics, U of Kentucky G. Thomas Kluemper, Division of Orthodontics, U of Kentucky Ronald L. Singer, Division of Pediatrics, U of Kentucky Nicholas Ragland, DMD Program, U of Kentucky

Abstract: Objective: To investigate the relationship between BMI and dental maturity in actively growing females from different ethnic groups in Central Kentucky.
Methods: This retrospective study was approved by the University of Kentucky Institutional Review Board (IRB). Patients' age, height, weight, and self-reported ethnicity were used to pre-screen subjects for inclusion in the study. Inclusion criteria included: healthy females ages 7 to 14Y, covered by the Kentucky Medical Assistance Program, with no missing permanent teeth. Benjamini-Hochberg procedure False Discovery Rate .05 was applied to all p-values
Results: 116 Caucasian, 107 African American, and 98 Hispanic females met the inclusion criteria. Dental age was determined using the Demirjian method. The dental-age difference was calculated by subtracting the estimated dental age from the chronological age at the time the radiograph was obtained. Analyses revealed no statistical difference in dental in the three groups. Our data also demonstrated that the percentage distribution of the BMI categories based on age is not the same among the three groups (p=0.00008). The ordinal logistic regression analysis between the dental age difference and the BMI categories (Underweight-Healthy, Overweight & Obese) showed a significant difference in African American and Caucasian groups (p= 0.016, p= 0.00008 respectively) but not with the Hispanics (p= 0.7367)
Conclusion: The BMI in the three groups differed. Non-parametric comparisons for all pairs found that Hispanic and African American groups were similar, but both differed from Caucasian.
The increase in BMI was associated with a significant acceleration in dental development in African Americans and Caucasians but not in Hispanic females.

Supported by:

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College of Dentistry Research Day

Presentation 202

Abstract Title:	**Biomarkers to Predict Changes in AHI Variations in the Course of Oral Appliance Therapy for OSA: A Pilot Study**
Author(s):	D. Fernandez-Vial, Orofacial Pain Division, U of Kentucky F. Yanez-Regonesi, Orofacial Pain Division, U of Kentucky S. Pasha, Department of Internal Medicine, U of Kentucky I. Boggero, Orofacial Pain Division, U of Kentucky J. Okeson, Orofacial Pain Division, U of Kentucky E. Vazquez, Craniomandibular Institute, Barcelona-Spain I. Moreno-Hay, Orofacial Pain Division, U of Kentucky

Abstract: Aim: To describe the reliability of pulse rate and oxygen saturation variability as biomarkers to predict changes in the apnea-hypopnea index (AHI) during the titration of mandibular advancement devices (MADs) for the management of OSA.
Methods: Preliminary data from an ongoing clinical trial were obtained. MAD was started at 50% of the mandibular protrusive range and then advanced 10% every 14-21 days until reaching a residual AHI<5. Variables considered for analysis: AHI, AHI reduction (ΔAHI; %), level of mandibular advancement (%Adv; %), mean pulse rate (PR-m; bpm), highest pulse rate (PR-h), lowest pulse rate (PR-l), pulse rate variability (PR-v=(PR-h)–(PR-l)), mean oxygen saturation (SpO2-m; %), highest oxygen saturation (SpO2-h), lowest oxygen saturation (SpO2-l), oxygen saturation variability (SpO2-v=(SpO2-h)–(SpO2-l)), pulse rate variability variation (ΔPR-v=(initialPR-v)–(finalPR-v)), and oxygen saturation variability variation (ΔSpO2-v=(initialSpO2-v)–(finalSpO2-v)). Significance was set at $p<0.05$.
Results: 14 participants were included (42.9% males, Agemean=55.14, BMImean=31.01, AHImean=10.98). AHI significantly reduced ($t(13)=4.092, P < .001$) and the PR-l increased ($t(13)=-.227$, $p=.044$). %Adv and ΔAHI were uncorrelated but significant correlations were found between ΔAHI and both ΔHR-v ($r(12)=0.588$, $p=.027$) and ΔSpO2-v ($r(12)=.659$, $p=.01$). When entered as simultaneous predictors in a multiple linear regression, ΔHR-v and ΔSpO2-v together significantly predicted ΔAHI ($F(2,11)=5.52$, $p=.022$, $R2=.50$), however, neither variable were independently associated with ΔAHI ($\beta=0.32, p=.25$ for ΔHR-v and $\beta=0.48, p=.09$ for ΔSpO2-v).
Conclusions: This pilot study found that pulse rate and oxygen saturation variability predict changes in AHI during the titration of MADs.

Supported by: MADs were provided by the OrthoApnea laboratory (Malaga, Spain)

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College of Dentistry Research Day

Presentation 203

Abstract Title: **Effect of PLA2-IIA in Human Subgingival Oral Microbiome**

Author(s):
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V. Tubero Euzebio Alves, Department of Research and Graduate Studies, U of Kentucky
R. J. Danaher, Department of Dentisrty Oral Health Science, U of Kentucky
R. Ghaddafi, Human Health Sciences, U of Kentucky

Abstract: Objective: Phospholipase A2 group IIA (PLA2-IIA) is a potent antimicrobial enzyme associated with intestinal dysbiosis. Although PLA2-IIA levels are increased with periodontitis, its potential role in oral dysbiosis remains unknown. We previously demonstrated that P. gingivalis (Pg) modulates antimicrobial responses of oral epithelial cells by inducing higher levels of PLA2-IIA and that monocultures of oral bacteria, but not Pg, were differentially susceptible to recombinant human PLA2-IIA (rhPLA2-IIA) in vitro. Our goal is to evaluate the antimicrobial activity of rh-PLA2-IIA against human oral subgingival plaque

Methods: Subgingival plaque from a healthy subject was cultivated in SHI-medium and titrated on blood-agar plates and incubated anaerobically to quantify total cultivatable microbiota (CFU/ml). Antimicrobial activity of rhPLA2-IIA will be evaluated by measuring changes in optical density of cultures treated with serial dilutions of rhPLA2-IIA cultivated for 24 and 48hr. Bacteria will then be stained using Live/Death BacLight-kit and sorted by FACS. 16s sequencing will be performed to identify PLA2-IIA resistant and susceptible subgingival bacterial species.

Results: Initial experiments showed that bacteria from diluted aliquots of subgingival plaque samples are viable and cultivatable as determined formation of colonies on agar plates and increased OD600 of cells. Antimicrobial experiments with PLA2-IIA followed by FACS and 16s sequencing are in process.

Conclusion: Positive results could help to identify subgingival bacterial species susceptible or resistant to PLA2-IIA. Antimicrobial activity of PLA2-IIA favoring pathogenic bacterial species suggests that increase in gingival PLA2-IIA levels may be contributing to oral dysbiosis and periodontal disease.

Supported by: R01-NIH/NIDCR DE029498 and UKCD Undergraduate Scholarship

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College of Dentistry Research Day

Presentation 204

Abstract Title: **Antimicrobial effect of Metronidazole-loaded Mesoporous Silica Nanoparticles**

Author(s):
S. Gordon, Center for Oral Health Research, College of Dentistry, U of Kentucky
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Abstract: Currently, the medical field uses nanoparticle technology as a therapy treatment for drug delivery on a cellular level. Mesoporous silica nanoparticles (MSNPs) show great potential in the drug delivery process. The characteristics of the nanoparticle, the drug, and the target release location determine the drug loading of MSNPs. Drug delivery is unique to each nanoparticle and is modified based on its cellular environment. The interaction between the surface pores and the drug molecules regulates the release of the cargo within the MSNP. The properties of MSNPs can be altered for potential use in Dentistry as a local treatment for Periodontal disease. Although sufficient to control disease, current periodontal disease treatments are also limiting in terms of eradicating disease or in persistent non-responsive sites. Currently available local antibiotic delivery systems show limited effectiveness due to lack of tissue penetration, high cost, and the delivered drug often gets washed out by the gingival crevicular fluid. The purpose of our study is to review the possible use of MSNPs as a local delivery adjunctive treatment for periodontal disease. Here we seek to test bactericidal properties of MSNPs loaded with metronidazole against the oral pathogen P. gingivalis in planktonic conditions and after invading oral epithelial cells. The MSNPs are synthesized to include a fluorescent tag for microscopy imaging and tracking. Initial work will evaluate the ability of MSNPs to store and release metronidazole in bactericidal concentrations and the duration of antibacterial action.

Supported by: UK-VPR Igniting Research Collaborations Program, UKCD-Center for Oral Research

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College of Dentistry Research Day

Presentation 205

Abstract Title:	**What are the Effects of Orthodontic Movement on the Periodontium? A Critical Review of the Current Literature.**
Author(s):	Sarah Haerle, College of Dentistry, University of Kentucky Mohamed Adel, Division of Orthodontics, College of Dentistry, University of Kentucky Abdo Ismail, Division of Periodontics, College of Dentistry, University of Kentucky Mauro Pedrine Santamaria, Center for Oral Health Research, University of Kentucky G. Thomas Kluemper, Division of Orthodontics, College of Dentistry, University of Kentucky

Abstract: An increasing number of adult patients are seeking orthodontic treatment, many of whom are likely to have some degree of periodontal disease. Orthodontic treatment involves the use of various force systems to move the teeth and correct the malocclusion. The use of these forces can affect the various components of the periodontium. The impact of orthodontic treatment on the various components of the periodontium is crucial for patients not only during treatment, but for years after as well to ensure long term stability of the treatment results. In this poster, we aimed to search the literature to investigate the evidence about the effects of different orthodontic movements and malocclusions on the periodontium. Our initial search revealed that some orthodontic tooth movements, including proclination and retroclination of lower incisors and intrusion and extrusion might have an impact on the peridontium. Understanding the effects of different orthodontic movements and malocclusions on the periodontium can help clinicians to minimize undesirable effects on both the soft and hard tissues, while achieving the goals of the orthodontic treatment.

Supported by:

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Clinical Research

College of Dentistry Research Day

Presentation 206

Abstract Title:	**Dental Caries experience and Asthmatic Medications in Children Ages 1-5 in Lexington, KY**
Author(s):	Heather Hastings DMD Gregory S. Hawk, PhD Cristina Perez DDS MS

Abstract: Purpose: Both dental caries and asthma are prevalent chronic diseases of childhood. These are both associated with poor quality of life, and are causes of chronic school absenteeism. In fact, children with dental caries are five times more likely to miss school consistently than children with asthma. In 2000-2001 59.8% of Kentucky's third grade students had experienced treated or untreated decay. Forty two percent of Kentucky's children have severe early childhood caries before reaching the age of five. Inhalers for asthma contain ingredients that can further impact the oral health in the pediatric population. They can effect salivary flow, cause dental erosion, oral candidiasis, periodontal disease and eventual tooth loss. This may not only impact a child's primary dentition, but permanent dentition causing long-term effects.The current prevalence of asthma in Kentucky for children is 10.6 percent for children 11 years of age and younger, 13.6 percent for middle school students, 11.8 percent for high school students. The purpose of this study is to examine the association between asthmatic medications and dental caries prevalence in children ages 1-5 years of age.
Methods: A survey completed by parents via REDCap regarding asthmatic inhalers will be utilized. Patients receive a comprehensive dental examination and an accurate dental history to determine dmft scores. Descriptive statistics for all variables will be used, and differences in prevalence will be analyzed using Fisher's Exact tests. All analysis will be performed using SAS 9.4, with a significance level of 0.05.
Results: Pending
Conclusions: Pending, however we believe that children increased use of asthmatic inhaler medication will have a positive correlation to caries experience as depicted.

Supported by:

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Other
Basic Research
Other

College of Dentistry Research Day

Presentation 207

Abstract Title:	**The Clinical Impact of L-PRF, H-PRF, or the Use of a Surgical Stent on Palatal Donor Site Healing**
Author(s):	A. Ismail, Division of Periodontology, School of Dentistry, U of Kentucky B. Camenisch, Division of Periodontology, School of Dentistry, U of Kentucky M. Al Sabbagh, Division of Periodontology, School of Dentistry, U of Kentucky

Abstract: Objective: Postoperative discomfort, and donor site hemorrhage are the main disadvantage of autogenous soft tissue grafting. The objective of this study is to evaluate the clinical impact of two types of platelet rich fibrin (PRF) vs Palatal stent on the healing of the donor palatal site after tissue harvesting.

Materials and methods: A total of 30 subjects indicated for free gingival graft procedure will be enrolled in the study. The sample will be divided into 3 groups according to the postoperative coverage method: Group A (Surgical stent), Group B;(Leucocyte-PRF), and Group C (Horizontal-PRF). Intra-oral photograph will be taken, and grid technique will be used to evaluate percentage of re-epithelialization to assess the postoperative tissue healing. Visual Analog Scale and analgesic consumption will be used to assess the degree of postoperative pain and discomfort. Subjects will be examined in 5, 10, 14, and 21 days. Data will be statistically analyzed to identify if there is any difference between the examined groups.

Conclusion: H-PRF centrifugation protocol results in less trauma to the cells and higher concentration of growth factors compared to L-PRF and surgical stent. Therefore, improved soft tissue healing and less post-operative discomfort will be expected in the Horizontal PRF group.

Supported by:

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Graduate Student
Clinical Research

18th Annual CCTS Spring Conference
Monday, March 27, 2023 Gatton Student Center

College of Dentistry Research Day

Presentation 208

Abstract Title:	**Bone quality and quantity in the maxillary sinus grafted with xenograft or synthetic bone substitute**
Author(s):	Dr. Rachad Kudsi Dr. Mohanad Al-Sabbagh Dr. Dolph Dawson Dr. Ahmad Kutkut Dr. Octavio Gonzalez University of Kentucky

Abstract: Posterior maxillary tooth extraction can cause an inferior expansion (pneumatization) of the sinus in relation to other fixed landmarks such as the teeth. These types of anatomic alterations and alveolar bone defects that arise can create numerous challenges for clinicians to insure successful implant placement. Therefore, if implants are planned to replace missing posterior teeth, sinus augmentation is needed to preserve the three dimensional architecture of the sinus floor. One possible solution to overcome some of the anatomical limitations of these defects is the maxillary sinus floor augmentation procedure, utilizing the lateral window technique. Scaffolding materials such as xenografts or synthetic substitutes have been proven to be a viable alternative.
Eligible subjects will be randomly assigned into one of two treatment groups using a randomization table generated by a computer. The test group (10 sinuses) will receive ShefaBone and control group (10 sinuses) will receive Bio-Oss. Little is known about the distribution of bone quality changes in subjects who receive ShefaBone graft to augment the maxillary sinus. Ten subjects per group is reasonable for providing an 80% probability of estimating the true mean for bone quality and implant stability in each group.
Sinus floor elevation via the lateral window approach represents a reliable technique to augmenting bone volume in the atrophic posterior maxilla. Applying a resorbable collagen membrane has demonstrated reduction in the proliferation of the connective tissue and the graft re-absorption rate. The use of newly-harvested autogenous bone has always been considered the gold standard when grafting the maxillary sinus, nevertheless, the morbidity of the donor site and low volume of available bone has led to the reduction in its use. Scafolding materials such as allografts and synthetic bone substitute have proven successful in clinical studies.

Supported by:

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College of Dentistry Research Day

Presentation 209

Abstract Title:	**Oral health related quality of life in preschool children treated with Nasoalveolar molding (NAM)**
Author(s):	S. A. Laufer, Department of Pediatric Dentistry, U of Kentucky

Abstract: BACKGROUND: Cleft lip and palate is among the most common congenital craniofacial anomalies that can affect facial appearance and oral function. Nasoalveolar molding (NAM), a type of presurgical orthopedic device, was designed to reduce the severity of the cleft lip/nasal deformity by aligning the lip, alveolar segments, and palate. NAM provides many benefits for cleft lip and palate patients including esthetic, functional, economic and psychological outcomes. NAM treatment can also positively impact the development of the primary and permanent dentition especially those in relation to the cleft.

AIM: The aim of this study is to utilize Child Oral Health Impact Profile – Pre-school version (COHIP-PS) instrument to evaluate children with cleft lip and/or palate with history of nasoalveolar molding (NAM) and age/gender matched controls without cleft lip and palate representing a community sample, to compare their health-related quality of life.

MATERIALS AND METHODS: The study population consists of normal health (ASA 1) preschool aged children (2-5 years of age), female/male and their guardian(s), that received NAM treatment at the University of Kentucky Pediatric Dental Clinic located in Lexington, KY and age/gender matched controls without cleft lip and palate. Parents/Legal Guardian complete the Child Oral Health Impact Profile Preschool Version (COHIP-PS), a 10-point questionnaire. All preschool aged participants (ages 2-5) must be ASA 1 with health history free of any medical conditions. Children with a history of isolated cleft palate with and/or lip do not have a syndrome or medical condition associated. A Chi Square analysis and Fisher's Exact analysis to compare data.

RESULTS: TBD

CONCLUSIONS: Pending

Supported by:

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Other

Basic Research

Other

College of Dentistry Research Day

Presentation 210

Abstract Title:	**Esthetic Restorations in Primary Maxillary Anterior Teeth: A Systematic Review**
Author(s):	L. T. Little, DMD, Division of Pediatric Dentistry, U of Kentucky C. Perez Pacheco, DDS, MS, Division of Pediatric Dentistry, U of Kentucky

Abstract: Background and Purpose: Esthetic restorations are very important in dentistry, even within pediatric dentistry. Resin strip crowns have long been used for esthetic restorations in primary maxillary anterior teeth needing full coverage. Prefabricated zirconia crowns more recently have been introduced as an alternative to resin strip crowns for primary maxillary anterior teeth. The purpose of this systematic review was to compare the clinical success of prefabricated zirconia crowns to resin strip crowns in maxillary primary incisors to help develop a protocol to recommend to clinicians.
Methods: The following databases were searched: PubMed, Web of Science, Ovid, and the Journals of the American Academy of Pediatric Dentistry (AAPD). Randomized clinical trials published within the last 10 years in English evaluating the clinical success of prefabricated zirconia crowns and resin strip crowns in maxillary primary incisors were included. Data collection is still ongoing currently. Risk of bias will be performed using the Cochrane risk-of-bias tool.
Results: TBD.
Conclusion: Results TBD.

Supported by:

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Other
Other

College of Dentistry Research Day

Presentation 211

Abstract Title: **Physical Activity As It Relates To Dental Decay**

Author(s): Jordan Marsh, DDS, Gregory S. Hawk, PhD, Cristina Perez DDS MS Diplomate ABOP, ABPD

Abstract: Purpose: The association between increased physical activity and decreased levels of obesity has been well documented. It is believed that this is due to not only an increased expenditure of calories, but also a reduction of negative behaviors, which may include poor oral health and caries promoting behaviors. In theory, children who spend less time being physically active, in turn, spend more time participating in caries promoting behaviors. Previous research has uncovered various causes of dental decay; however, there is very limited information on if levels of physical fitness/physical activity play any role. This study aims to investigate the relationship between levels of physical activity in 6 to 12 year old children and caries experience.
Methods: Participant parents complete a survey via REDCap consisting of questions regarding physical activity, oral health habits, and caries risk factors of their child. Patients receive a comprehensive dental examination, including bitewing radiographs and an accurate dental history to determine DMFT/dmft scores. Descriptive statistics for all variables will be tabulated. To model the relationship between the total number of teeth affected by caries and the various measures of physical activity and oral health habits, a series of quasi-Poisson regression models will be used, which allow for potential overdispersion.
Results: TBDConclusions and practical implications: Pending, however we believe that children with more physical activity will have a negative correlation to caries experience.

Supported by: UK CCTS Investigators

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Other
Clinical Research
Other

College of Dentistry Research Day

Presentation 212

Abstract Title:	**Blood pressure measurements negatively associated to areas of deprivation in Kentucky**
Author(s):	Anna McWhorter, Department of Dietetics and Human Nutrition, U of Kentucky Angela Grubbs, College of Nursing, College of Dentistry, U of Kentucky Nasreen Omran, Department of Dietetics and Human Nutrition, U of Kentucky Julie Plasencia, Department of Dietetics and Human Nutrition, U of Kentucky Marcia V. Rojas-Ramirez, College of Dentistry, U of Kentucky

Abstract: In the United States, 47% of adults have high blood pressure and 39.9% of Kentucky adults do. These numbers would be even higher if undiagnosed hypertension were included. We hypothesized that those in areas of higher deprivation will be more likely to have high blood pressure measurements. This project's aim was to determine if there was a relationship between the area of deprivation index (ADI) and blood pressure measurements in Kentucky adults that visited a community clinic.

A chart review identified 13,858 patients who visited a community clinic between June 2021 and September 2022. Their demographics, blood pressure measurements, and medical history data were extracted. ADI data were obtained following instructions based on Neighborhood Atlas website. Blood pressure was classified as: normal, elevated, stage 1 hypertension, and stage 2 hypertension.

The mean age of participants was 42.2 (13.7) with 59.8% being females (n=8288) and over 79% (n=10,947) being White. The mean systolic and diastolic BP was 126.3 (16.8) and 79.7 (15.3) respectively. Over 69% of the sample had a BP measurement outside the normal range. The mean ADI was 4.13 (2.7). As ADI index increased, so did the BP measurements (p=0.002). Indicating that areas with highest deprivation also had the higher BP measurements.

ADI reflects on many socioeconomic disparities that affect health outcomes. High BP is a major risk factor for chronic diseases such as stroke, heart disease, etc. In the future, more research needs to be done on this topic at a larger scale.

Supported by: United States Department of Agriculture National Institute of Food and Agriculture, grant no 2020 - 67037- 30669/ project accession no 1021699

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College of Dentistry Research Day

Presentation 213

Abstract Title:	**Management of Nummular Headache Using the CGRP Inhibitor Galcanezumab: A Case Report**
Author(s):	A. Mitchell, Division of Orofacial Pain, College of Dentistry, U of Kentucky; I. Moreno-Hay, Division of Orofacial Pain, College of Dentistry, U of Kentucky

Abstract: Aim of Investigation: We detail a case of nummular headache and the introduction of galcanezumab for its management. Nummular headache is a coin-shaped headache of mild to moderate or sometimes severe intensity. It can present anywhere on the scalp, but is typically present in the parietal area. Nummular headache is often refractory to treatment and can be challenging to manage for both patients and clinicians.

Methods: A 59-year-old male presented to the University of Kentucky Orofacial Pain Center with the chief complaint of “TMJ/Headaches”. He reported struggling for over 20 years with pain and disability associated with the headaches. He detailed a long history of failed treatments and many different providers including pharmacotherapy with TCA, gabapentin, botulinum toxin injections, etc. He described his headache as being “nickel” shaped and located in the right temporalis area. The pain was reported to be 7-8/10 intensity on average with a duration of up to 12 hours each day. Extraoral examination revealed pain upon palpation in a well-circumscribed circular area of pain in the right temporal area with no observed lesions. A brain MRI with and without contrast was requested to rule out any intracranial pathology.

Results: A diagnosis of nummular headache was made and the patient was treated with galcanezumab. An initial loading dose of 240 mg was prescribed and administered. The patient reported 60% improvement in pain 16 days after the loading dose. A 120 mg dose was administered 1 month later.

Conclusion: This case illustrates the potential value of galcanezumab in the treatment of nummular headache.

Supported by:

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Other

Presentation 214

Abstract Title: **Medicaid Coverage of Orthodontics in Kentucky: A Nationwide Comparison**

Author(s):
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K. J. Hunt, Orthodontics, U of Kentucky
S. E. Cohen, Orthodontics, U of Kentucky
G. T. Kluemper, Orthodontics, U of Kentucky

Abstract: Access to orthodontic treatment through Medicaid proves to be a challenge for providers and patients alike. Low reimbursement rates, challenging selection criteria, and onerous and expensive submission requirements deter many orthodontists from accepting Medicaid insurance programs. Compounding the problem of a shortage of participating providers, many patients who may benefit significantly from orthodontics do not always meet the strict criteria required for Medicaid coverage. Kentucky in particular is a state that relies heavily on Medicaid for dental services. Kentucky's poverty rate in 2021 was 16.5% which exceeds the national average of 11.6% in 2021. Many Kentucky residents rely on Medicaid coverage to pay for orthodontics. As of December 2022, over 628,000 children in Kentucky relied on Medicaid for dental services. In a state struggling with poverty, it is prudent to both encourage providers to accept Medicaid and to also encourage policies that promote access to care.

A previous 2017 study by Minick et al compared Medicaid criteria and policy throughout the United States between the years of 2006-2015. In this study, we aim to compare orthodontic Medicaid selection criteria, reimbursement rates, and other patient/provider-specific factors related to orthodontic Medicaid coverage as of 2023. Furthermore, we plan to assess how Kentucky compares to states nationwide in these policies and criteria. Comparing Kentucky,Äôs current orthodontic Medicaid policies to other regions may demonstrate unfavorable discrepancies which could support a need to revise current state Medicaid policies.

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College of Dentistry Research Day

Presentation 215

Abstract Title:	**Outcomes of aggressive VS conservative treatments in Children receiving Full Mouth Dental Rehabilitation under general anethesia**
Author(s):	Kaivon Moradi DMD Candidate Gregory S. Hawk, PhD Cristina Perez DDS, MS

Abstract: Purpose: To gauge the varying outcomes of dental treatment in pediatric patients in order to determine whether aggressive treatment options should be used over more conservative treatments when treatment is performed under general anesthesia.
Methods: A chart review using Epic electronic health record at the University of Kentucky was performed. Nine hundred fifty-eight patients who had been treated in the operating room (OR) for full mouth dental rehabilitation (FMDR) one or more times during the study period. Variables recorded included type of restoration utilized during initial OR visit and secondary visits if present. Categorical variables were summarized using frequencies and percentages. Continuous variables were summarized using means and standard deviations. Group differences were tested using chi-square tests for categorical variables and two sample t-tests for continuous variables. Significance was defined as $p<.05$.
Results: Preliminary results show a correlation between the aggressiveness of treatment selection and subsequent visits to the hospital for a second FMDR or to the outpatient clinic to treat the same tooth.
Conclusions: This study suggests that aggressively mediated treatment plans may prove more beneficial than less invasive options. By demonstrating that the prevalence of retreatment decreases with the increased application of aggressive treatment (variable), excluding extractions. This can shift our approach to dentistry to minimize repetitive exposure of treatments, anesthetic and dental trauma to pediatric patients.

Supported by:

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College of Dentistry Research Day

Presentation 216

Abstract Title:	**Temporomandibular Disorders During Titration of Mandibular Advancement Devices for the Management of OSA**
Author(s):	D. Fernandez-Vial, Orofacial Pain Division, U of Kentucky College of Dentistry F. Yanez-Regonesi, Orofacial Pain Division, U of Kentucky College of Dentistry S. Pasha, Pulmonary Critical Care, U of Kentucky College of Medicine I. Boggero, Orofacial Pain Division, U of Kentucky College of Dentistry J. Okeson, Orofacial Pain Division, U of Kentucky College of Dentistry E. Vazquez, Craniomandibular Institute (Barcelona, Spain) I. Moreno-Hay, Orofacial Pain Division, U of Kentucky College of Dentistry

Abstract: Aim of investigation: To assess the variation of temporomandibular disorders (TMD) associated to the titration process of mandibular advancement devices (MAD) for the management of obstructive sleep apnea (OSA).
Methods: Preliminary data from participants diagnosed with mild-to-moderate OSA enrolled in an ongoing clinical trial (January 2022-January 2023) were obtained. MAD was delivered at 50% of mandibular protrusive range. Additional advancements were performed (10% every 14-21 days) until reaching a residual AHI <5 events/hour. TMD diagnoses were assessed according to the Diagnostic Criteria for Temporomandibular Disorders (DC/TMD). A McNemar test was used to assess for differences between time points (baseline (T0), intermediate follow-up (T1; 23.77±9.44 days), and at the last follow-up (Tf; 20.91±6.63 days). Significance was set at P≥0.05 for all analyses.
Results: 22 participants were included (56.5% females, 52.55±16.8 years, mean MAD advancement: 75±9.64%). The prevalence of TMD increased during the intermediate follow ups (T1) but was not statistically significant (T0=45.5%, T1=54.5%, Tf=45.5%). Similar results were obtained when independently analyzing variation of painful-TMD (P-TMD; T0=27.3%, T1=31.8%, Tf=22.7%) and non-painful TMD (NP-TMD; T0=50%, T1=59.1%, Tf=40.9%). Masticatory myalgia was the most common P-TMD (T0=22.7%, T1=22.7%, Tf=18.8%) and TMJ disc displacement with reduction the most common NP-TMD (T0=36.4%, T1=40.9%, Tf=27.3% affected joints). Those without any TMD at baseline significantly developed P-TMDs (arthralgia, myalgia) between T0-T1 (33.3% incidence, p=.046), but then decreased resulting in no significant difference between T0-Tf (p=.157).
Conclusions: OSA patients may develop transient TMD during the initial titration process of MAD.

Supported by: MADs were provided by OrthoApnea.

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College of Dentistry Research Day

Presentation 217

Abstract Title: **Study of The Association Between Periodontal Disease and COVID-19: A Literature Review**

Author(s):
K. Parajuli, College of Arts and Sciences, U of Kentucky
J. J. Mitchell, College of Health Sciences, U of Kentucky
O.M. Andriankaja, Center for Oral Health Research, U of Kentucky
M. Mattos, College of Dentistry, U of Kentucky

Abstract: Background: Studies during the COVID-19 pandemic aimed to determine what existing conditions caused the most complications when the patient had SARS-Cov-2. One of these pre-existing conditions, periodontal disease (PD), was examined extensively. This review aims to observe the association between PD and the risk of COVID-19 development and assess the reverse relationship: does having COVID-19 increase the risk for PD?
Materials and Methods: A 'PubMed' search for 'periodontal disease', 'COVID-19', and related terms was performed. The inclusion criteria for the articles are as follows: clinical examinations, and surveys, all with a minimum of 10 patients; studies ranging from years 2020 to 2022; with all studies being a reliable source of evidence as indicated by the National Library of Medicine within the National Center for Biotechnology Information. Throughout the twenty-eight studies, five were cross-sectional, six were case-control, three were retrospective, three were experimental, and the remaining eleven were informational studies.
Results: Nine out of the seventeen original studies showed a correlation between periodontal disease and the severity of COVID-19 symptoms. Many of these studies were based on small-scale sample sizes and with cross-sectional or historical retrospective designs. Thus, direct causation was not established. There were no studies that examined the reverse effect.
Conclusion: Despite evidence showing a relationship between PD and an increase in the severity of COVID-19, existing studies cannot distinguish the temporal sequence between the two conditions. Longitudinal studies with a large sample size are needed to validate the association and the direction of association between PD and COVID-19.

Supported by: NIDCR award: K23DE025313

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College of Dentistry Research Day

Presentation 218

Abstract Title:	**Characterizing Oral Health Status (Clinical and Physiological) of Individuals Taking Buprenorphine**
Author(s):	R. Payne, College of Dentistry, U of Kentucky M. Rojas-Ramirez, Department of Oral Diagnosis, U of Kentucky C. Miller, Department of Oral Medicine, U of Kentucky

Abstract: Buprenorphine, taken sublingually, is FDA-approved to treat Opioid Use Disorder (OUD) by reducing cravings during withdrawal and used by approximately 1.7 million Americans. Recently, the FDA released a warning indicating that adults using sublingual buprenorphine experienced significant deterioration of oral health. This deterioration could potentially be linked to changes in the oral environment characteristics.

Adults ages 18-65 who seek care at the College of Dentistry and who are currently taking buprenorphine for the management of OUD are being recruited. Consented participants underwent a limited oral examination and their teeth were evaluated and categorized as healthy, decayed, restored, or missing. More so, saliva samples including saliva flow, pH and buffer capacity were collected. Demographic information and medical history were also captured.

This is an ongoing project. To date, 4 male individuals have been recruited. All of them had high prevalence of caries (range 13-23) and missing teeth (range 5-14). Additionally, 2 of them had acidic saliva flow and lower levels of saliva production.

Information obtained in the study can aid clinical decision-making and guide individualized care for this at risk population.

Supported by: Alvin Morris Endowment Professorship given to Dr. Craig Miller

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Clinical Research

College of Dentistry Research Day

Presentation 219

Abstract Title:	**Association Between Diet Habits and Occurrence of Periodontitis in Individuals with Type 2 Diabetes**
Author(s):	L. Puckett, Undergraduate Student Department of Dietetics and Human Nutrition, U of Kentucky; H. Smith, Undergraduate Student College of Arts and Sciences, U of Kentucky; A. Stromberg, Department of Statistics, U of Kentucky; O.M. Andriankaja, Center for Oral Health Research, U of Kentucky

Abstract: Poor diet is identified as a risk factor for periodontal disease (PD) and type 2 diabetes (T2D). Additionally, T2D severity and PD development seem interconnected. Few studies have analyzed relationships between diet and PD among individuals with T2D. Objectives: The present study assessed whether diet habits were associated with high occurrence of periodontal parameters in Hispanic adults diagnosed with T2D. Methods: A cross-sectional study with a convenience sample of 250 Hispanic, Puerto Rican residents, aged 40-65 years old with T2D was conducted. The exposure consisted of participants' diet habits, determined by average weekly frequency of healthy vs non-healthy food consumption during the year prior to the study. The periodontal outcome was log of percent of sites with probing pocket depth (PPD)≥ 4mm. We used linear regression models adjusted for age, gender, educational level, smoking status, alcohol consumption, BMI, and plaque index to estimate association. Results: Average weekly healthy food frequency consumption, including fruits and vegetables, grains, nuts, oats, seeds, or use of olive or coconut oils minus the average weekly non-healthy food frequency consumption, including cheese, fast foods, chips, desserts, mofongo, and fried foods was 0.725. Increase in average healthy food consumption vs. non-healthy food consumption was associated with a significant decreased percent of sites with PPD≥ 4mm (β: -0.16; SE:0.08; p = 0.04) Conclusion: Under the study design limitations, our findings suggested consuming more healthy foods and less non-healthy foods was associated with lower occurrence of periodontal inflammation.

Supported by: NIDCR award: K23 DE025313

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College of Dentistry Research Day

Presentation 220

Abstract Title: **Comparing the Categorization of Caries Risk Assessments**

Author(s): MV Rojas-Ramirez, College of Dentistry
P. Mishra, College of Dentistry
L. Shaddox, College of Dentistry

Abstract: Introduction: Caries risk assessment is the process of utilizing risk factors and clinical information to determine the risk of having caries in a given time period. Many tools are available; however, their predictability and clinical utility are low. The aim of this study was to test the disease categorization of three caries tools.
Methods: Adults ages 18-65 (n=103) who sought care at the College of Dentistry and met the eligibility criteria were recruited. Each participant underwent a comprehensive dental examination and completed a set of questionnaires to gather information about risk factors for oral disease, medical conditions, medication use, and demographics. They also provided saliva samples to quantify salivary flow.
Results: This is an ongoing project. Data is currently being analyzed and will be available for the poster presentation. Currently, we have recruited and collected data on 103 participants.
Conclusion: Information obtained in the study can improve the assessment and classification of risk for the development of caries which allows for the implementation of tailored interventions at the early stages of the disease.

Supported by: Junior Faculty Grant, COHR, College of Dentistry, University of Kentucky.

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Clinical Research

College of Dentistry Research Day

Presentation 221

Abstract Title:	**Evaluation of periodontal disease susceptibility in African American children and adolescent groups vs Caucasian groups.**
Author(s):	Dr. Luciana Shaddox, Periodontics, Associate Dean of Research for the UK College of Dentistry Dr. Mohanad Al-Sabbagh, Periodontics, Department Chief Dr. Dolphus Dawson, Periodontics, Program Director Dr. Marcia Rojas, Oral Facial Pain Dr. Reuben Adatorwovor, Biostatistics

Abstract: Aims: The purpose of this cross-sectional retrospective and laboratory study is to evaluate disparities between African American and Caucasian children/adolescent groups in the oral microbial composition, and inflammatory markers in the saliva and gingival crevicular fluid (GCF) and oral health clinical parameters.
Materials and Methods: A group of 32 Caucasians and 40 African Americans were evaluated for clinical parameters of caries and periodontal disease. Saliva sand GCF were collected and quantified for microbial composition using 16S sequencing and Luminex analysis for 14 inflammatory markers, respectively.
Results: Data showed that when controlling for number of teeth, sex, age at baseline, Caucasians had a higher percentage of caries index (P=0.0069) and higher DMFT (P=0.0089) compared to African Americans. Mean probing depth was also higher for African Americans by (P=0.0075). Local GCF pro-inflammatory markers were higher in the African-Americans. A different microbial profile was found between the two ethnicities (p=0.02), African Americans presented more periodontopathogens and Caucasians presented more caries related bacteria. Bacillaceae and Lactobacillus were associated with higher caries and a DMFT score, whereas red and orange complex bacteria associated with periodontal disease.
Conclusions: There is a different inflammatory and bacterial profile between African Americans and Caucasians, which may predispose these ethnicities to different oral diseases.

Supported by:

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Basic Research

18th Annual CCTS Spring Conference
Monday, March 27, 2023 Gatton Student Center

College of Dentistry Research Day

Presentation 222

Abstract Title:	**Developing an Interdisciplinary Digital Technique to Virtually Plan Dental Implant for Orthodontic Anchorage**
Author(s):	A. Shafi, BDS, 2nd Year Craniofacial Biology Extern, Department of Orthodontic, University of Kentucky L. Sharab, DDS MS MSc Assistant Professor, Department of Orthodontic, University of Kentucky K. Ahmad, DDS, MS, Ph.D., FICOI, DICOI Chief, Division Prosthodontics, University of Kentucky

Abstract: Certain prosthodontic treatments are impossible or would be severely compromised without interdisciplinary prosthodontic-orthodontic therapy. Incorporating an absolute anchorage using the dental implant as a treatment approach has been significantly enhanced through advancements in adult orthodontic treatment, especially when there is a lack of posterior teeth available for anchorage.
The use of implants for orthodontic anchorage can produce superior pre-prosthetic tooth alignments. However, the prosthodontic advantages of using implants for orthodontic anchorage are only fully realized when the location and angulation of the implants are carefully planned so that they are optimally located for prostheses that will be placed after orthodontic therapy.
This pilot study aimed to develop an interdisciplinary digital technique to virtually treatment plan dental implants for orthodontic anchorage to determine the definitive prosthodontic tooth positions with accuracy before the treatment started.

Supported by:

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College of Dentistry Research Day

Presentation 223

Abstract Title:	**The Association between Statin Potency and the occurrence of Periodontitis in Hispanics with Type 2 Diabetes**
Author(s):	R. Shalash, U of Kentucky K. Patel, U of Kentucky A. Astor, School of Dental Medicine, University of Puerto Rico O.M. Andriankaja, Center for Oral Health Research, U of Kentucky

Abstract: Objectives: Statins are a common form of cholesterol-lowering medication that are widely used in individuals who are at risk for cardiovascular disease. Recent studies have shown that statins may reduce periodontitis. However, research on this topic is scarce, and it is unknown whether low or high statin potency is beneficial in Hispanics with Type 2 diabetes (T2D).
Methods: This cross-sectional study involved 257 Puerto Rican participants with T2D, aged 40-65 years. Participants were classified by their statin potency levels (no statin use, low/medium potency, high potency). The periodontal outcome consisted of tertile percent of sites with probing pocket depth (PPD) ≥ 4mm. A Multinomial logistic regression model was used to estimate the association between statin potency and periodontal parameter adjusting for age, gender, smoking status, alcohol consumption, education, BMI, plaque index, HbA1c, anti-inflammatory agents, and dental examiner.
Results: Approximately 36% and 14% of the participants took low/medium and high statin potency, respectively. Participants taking high statin potency had 74% reduced odds of having high percent of sites with PPD ≥ 4mm compared to those not taking statins (Adj. OR: 0.26, 95%CI:0.08-0.89), p= 0.03, high vs. low tertile). There was no association between the use of low/medium statin potency and percent of sites PPD≥ 4mm.
Conclusion: Our findings suggested the use of high statin potency to be associated with reduced occurrence of periodontal inflammation in Hispanic individuals with type 2 diabetes. Further longitudinal studies with a large sample size are needed to validate the association.

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College of Dentistry Research Day

Presentation 224

Abstract Title: **Testing the Validity of Invisalign Go - A Pilot Study**

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Abstract: With the evolution of technology, Invisalign® has carved out a niche in orthodontics. To appeal more to the general practitioner, Invisalign® has recently developed the Invisalign®Go System to aid with assessing case complexity. This study aimed to test the accuracy of the Invisalign®Go case assessment tool, by comparing its results to those by orthodontists.

With oversight from the University of Kentucky-IRB, seven cases (with one duplicate) were distributed via the REDCap-survey-platform to 8 UK orthodontic residents and 13 faculty. For each case, participants and Invisalign®Go assessed the complexity of 9 parameters: crowding and spacing in both arches, smile width/arch width, overbite, overjet, anterior crossbite, and tooth prominence. Case parameters were determined to be either easy or advanced by clinicians and Invisalign®Go.

Class I moderate crowding with anterior crossbite and Class I moderate spacing with deep bite showed the greatest disagreement between clinicians and Invisalign®Go. In these cases, one or a combination of the following parameters was assessed differently between clinicians and Invisalign®Go. Contrastingly, Class II and Class III mild crowding cases, and Class I severe crowding cases showed similar parameter assessment between clinicians and Invisalign®Go. Only one case showed 100% agreement of parameters between the Invisalign®Go and clinicians.

This pilot study provides a glimpse of the short comings of the Invisalign®Go system regarding its assessment of case complexity and questions its usefulness as an effective diagnostic tool for general practitioners. This survey was sent to dental practitioners in the Kentucky Dental Association and will be distributed to orthodontists apart of the American Association of Orthodontics.

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Presentation 225

Abstract Title: **Diabetes Prevalence and Dental Care in Kentucky**

Author(s): G. Thompson
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Abstract: Objective: Kentucky has one of the highest rates of diabetes prevalence and dental disease prevalence. Upon reviewing data, a connection can be made. The purpose of this study is to correlate diabetes data with dental care utilization in the counties of Kentucky.
Method: Diabetes prevalence data was evaluated alongside dental visit prevalence data. Data sets included adults 18 years-and-older referenced from the Centers for Disease Control and Prevention. Data was broken down for all 120 counties in Kentucky. Each county was categorized as rural or urban based on 2020 census data.
Results: The prevalence of diabetes was strongly associated with dental care received. Prevalence of diabetes positively correlated with the percentage of population with all teeth lost ($r=0.9$, $P<0.0001$). While prevalence of diabetes was positively associated with annual medical visits ($r=0.48$, $P<0.0001$), it was strongly and negatively associated with percentage of population receiving a dental visit in 2020 ($r= -0.88$, $P<0.0001$), meaning counties with a higher prevalence of diabetes had a lower prevalence of dental visits. Also, rural counties had lower dental visits (median=50.3 vs 56.2%, respectively, $P<0.0001$), more teeth lost (17.8 vs 13.9%, $P<0.0001$), and higher diabetes prevalence (14.2 vs 11.9%, respectively, $p<0.0001$), whereas no differences were found between rural and urban counties regarding medical visits (77.6 vs 77.2%, respectively, $P=0.46$).
Conclusions: Clear association exists between diabetes, dental health, and dental care utilization, further impacted by environmental conditions in Kentucky. Evaluation of different data sets is warranted to strengthen the connection and to better understand social and health disparities.

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College of Dentistry Research Day

Presentation 226

Abstract Title:	**The Impact of SRP on Clinical Periodontal Parameters in Type II Diabetic Patients and Their Association with HbA1c Level**
Author(s):	J. Tokatlian, Graduate Periodontology, College of Dentistry, U of Kentucky L. M. Shaddox, Division of Periodontology, College of Dentistry, U of Kentucky

Abstract: Background: Diabetes mellitus affects > 422 million people worldwide, with type II diabetes being the most prevalent, affecting more than 95% of the diabetic population. Studies have shown a correlation between periodontal disease and diabetes, where both diseases influence the progression and response to treatment of the other. Control of oral inflammation may improve the level of metabolic control in patients with diabetes. However, mechanisms associated with better response to periodontal treatment and improved glycemic control in diabetic patients are not yet known. The goals of this study are to evaluate periodontal clinical response, local and systemic inflammatory markers and metabolic levels following non-surgical periodontal treatment and investigate associations between these variables.

Methods: We evaluated 45 type II diabetics with stage II-III periodontal disease after non-surgical treatment. Periodontal maintenance was completed every 3 months for 12 months. Glycemic control and local inflammatory mediators were evaluated at baseline, 6 weeks, 3 and 12 months.

Results: All clinical parameters, including pocket depth (PD), clinical attachment level (CAL), bleeding on probing (BOP) and plaque reduced after treatment at all timepoints ($P<0.0001$ from baseline). Although HBA1C levels, did not reduce significantly post-treatment ($p=0.5150$), its reduction was associated with reduction of PD>4mm with BOP. Initial GCF profile seem to be modulated post-treatment ($p=0.05$), especially in the long term.

Conclusions: Uncontrolled diabetics do respond well to periodontal treatment, although HBA1C does not reduce after treatment, it does seem to correlate with a better treatment response. Local inflammation seems to also be modulated post-treatment.

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College of Dentistry Research Day

Presentation 227

Abstract Title:	**The Precision and Reliability of Three- Dimensional Voxel-Based Mandibular Superimposition**
Author(s):	Chair: M Bazina, College of Dentistry Orthodontic Department, U of Kentucky Member: C Beeman, College of Dentistry Orthodontic Department, U of Kentucky Member: D DeVito, College of Dentistry, U of Kentucky Member: J Hartsfield, Jr., College of Dentistry Orthodontic Department, U of Kentucky

Abstract: Cephalometric superimpositions are used in orthodontics for growth evaluation and treatment assessment. However, cephalograms can be distorted and give rise to incomplete two-dimensional data. CBCT provides a three-dimensional and complete patient analysis. Voxel-based superimposition is precise, automated, uses more image content and is user-friendly.

The aim is to evaluate the precision and reliability of different methods of 3D voxel-based mandibular superimpositions compared to the 2D method recommended by the American Board of Orthodontics. The stable structures for superimposition include the internal cortical outline of the symphysis, chin below pogonion and the alveolar canals. It was determined that the Modified Bjork and mandibular body are reliable references for 3D registration.

This is a retrospective study using scans of 15 female and 15 male orthodontic patients with mean age of 12. Each patient had a pre-treatment (T1) and a post-treatment (T2) scan taken within 24 months. The volumes will be superimposed using voxel-based methods from Dolphin Imaging Systems. Two 3D registration areas will be tested and compared to each other, and to the 2D method. The differences between the superimposition methods will be evaluated by measuring the angular, vertical and horizontal linear changes in the position of the mandibular right central incisor and mandibular right first molar as well as vertical condylar changes.

There was a significant difference between L6-vertical and the condyles (p= 6.80e-07, p= 2.13e-06). The condylar difference when ABO method was compared to both 3D-A and 3D-B was significant (p=2.84e-05, p= 2.64e-05). The L6 and L1 angular measurements and L6 AP measurements were not statistically significant (p=0.149, p=0.925, p=0.925).

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College of Dentistry Research Day

Presentation 228

Abstract Title:	**Collagen Matrix Associate with iPRF to Treat Gingival Recession**
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Abstract: Gingival recession (GR) is very prevalent and can affect up to 100% of people. In addition, it can cause dentin hypersensitivity, esthetic problems, increase the chances of carious and non-carious cervical lesions, and plaque accumulation. Collagen matrices (CM) have been used as possible substitutes for connective tissue graft for the treatment of GR. However, the literature shows that the connective tissue graft is still the gold standard treatment for these defects. The aim of this pilot clinical trial is to evaluate if the association of a volume-stable CM with injectable platelet rich fibrin (iPRF) can improve the clinical outcomes in the treatment of single GR. Thirty-two patients presenting a single recession type 1 were randomly assigned to one of the three groups: CAF group (n=11), coronally advanced flap alone; CAF+CM (n=11), coronally advanced flap and the addition of a volume-stable CM; CAF+CM+iPRF (n=10), coronally advanced flap and the addition of a volume-stable CM soaked with iPRF. After 6 months, the mean root coverage was 69.5±20% for CAF, 70±25% for CAF+CM, and 67.8±22% for CAF+CM+iPRF ($p>0.05$). Both groups that received the CM presented significant gain in gingival thickness when compared with the CAF group (0.1±0.1mm for CAF, 0.5±0.2mm for CAF+CM, and 0.5±0.2mm for CAF+CM+iPRF; $p<0.05$). There was no significant difference between groups when esthetics and denting hypersensitivity were evaluated. The addition of iPRF to a volume-stable CM may not provide any extra benefit in the treatment of single GR. Caution should be exercised because this is a pilot study.

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College of Dentistry Research Day

Presentation 229

Abstract Title:	**Association Analysis of Genetic Variation in WWTR1 and External Apical Root Resorption**
Author(s):	B. Vickery, College of Health Sciences, U of Kentucky; J. K. Hartsfield, Department of Oral Health Science, U of Kentucky College of Dentistry; G. T. Kluemper, Department of Oral Health Science, U of Kentucky College of Dentistry; L. A. Morford, Department of Oral Health Science, U of Kentucky College of Dentistry

Abstract: Objectives: This study examined 4 single nucleotide polymorphisms (SNPs) in the WWTR1 gene for potential association with External Apical Root Resorption (EARR) in orthodontic patients.

Methods: With IRB oversight from Indiana University and the University of Kentucky, Caucasian patients receiving orthodontic treatment in Indiana were recruited to study genetic and treatment factors associated with EARR. Initial and final radiographs were assessed for maxillary incisor EARR by 3-independent examiners and 76 cases with moderate to severe EARR were identified. Each case was age and sex-matched with two controls (n=152; having little to no EARR). Data were collected on the patients concerning their length of time in treatment and whether maxillary premolars were extracted for orthodontia. Buccal cells were collected as a source of DNA. Taqman-based genotyping was conducted to determine the genotypes of the WWTR1-associated SNPs in four different Linkage Disequilibrium blocks.

Results: Of the 228 total patients, ~152 subjects have been genotyped for all four WWTR1 SNPs to date. Based on control data, the four SNPs maintained Hardy-Weinberg Equilibrium. Preliminary analysis shows no associations between the individual SNP markers and EARR. The remaining genotyping will be completed before the meeting, and potential associations will be examined on a per SNP basis. A stepwise logistic regression will be utilized to identify any genetic and/or treatment related factors associated with the occurrence of EARR.

Conclusions: The final results of this study should provide new insights as to whether variations in WWTR-1 play a role in the occurrence of EARR concurrent with orthodontia.

Supported by:	Dr David Bixler Research Funds at Indiana University, Generous Financial Gift Dr. Jim Macri, E. Preston Hicks Endowed Professorship (JKH), Research Startup Funds (LAM)

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College of Dentistry Research Day

Presentation 230

Abstract Title:	**Exploring the association between tobacco, dental caries, and areas of deprivation in adults in Kentucky**
Author(s):	Wright, Kim Grubbs, Angela, DNP, APRN, FNP-C Omran, Nasreen Plasencia, Julie, RDN Rojas-Ramirez, Marcia V2, DDS, MS, MPH,

Abstract: Introduction: Tobacco is a risk factor for oral disease onset and progression. More so, it is also one of the most common drugs used around the world. Dental caries is the most prevalent oral disease and influenced by multiple factors including dry mouth. Individuals who smoke experience reductions in saliva production. Finally, caries and tobacco use may vary across different areas of deprivation (ADI). The aim of this study was to explore the association of dental caries and tobacco use across areas of deprivation in adults attending a community clinic in Kentucky.
Methods: A retrospective chart review was conducted to collect data from the electronic medical record EPIC between June 2021 to September 2022. The data extracted included clinical and dental findings, tobacco use and demographics. ADI data were obtained following instructions based on the Neighborhood Atlas website.
Results: A total of 13,858 patients who met the inclusion criteria were identified. Analyses are currently being conducted but will be ready for poster presentation.
Conclusion: Findings from this study can inform the interaction between a known risk factor (tobacco) and the prevalence of dental caries across levels of socioeconomic status.

Supported by: Department of Dietetics and Human Nutrition, College of Dentistry, College of Nursing. University of Kentucky.

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College of Dentistry Research Day

Presentation 231

Abstract Title:	**Predictors of First-onset Temporomandibular Disorders During Mandibular Advancement Device for obstructive sleep apnea**
Author(s):	A. Alessandri-Bonetti, Orofacial Pain Clinic, University of Kentucky, Lexington, Kentucky, USA L. Sangalli, College of Dental Medicine, Illinois, Midwestern University, Downers Grove, Illinois, USA F. Yanez-Regonesi, Orofacial Pain Clinic, University of Kentucky, Lexington, Kentucky, USA I. Moreno-Hay, Orofacial Pain Clinic, University of Kentucky, Lexington, Kentucky, USA

Abstract: INTRODUCTION: First-onset temporomandibular disorders (TMDs) have been shown to develop in some patients during mandibular advancement device (MAD) therapy for obstructive sleep apnea (OSA). The aim of this study was to investigate possible predictors of first-onset TMDs.
METHODS: Retrospective data were collected from 219 TMD-free adult patients (119M, 99F; 56.1+14.3y/o, apnea-hypopnea index: 19.0+14.9) referred to the Orofacial Pain Clinic at University of Kentucky for the management of OSA with MAD. All patients underwent a complete TMD examination according to the DC/TMD protocol at baseline and at each follow-up. Variables recorded were: pain evoked by mouth opening and/or palpation of temporalis, temporal tendon, masseter, SCM, anterior digastric, and TMJ; range of mandibular excursion; and TMJ sounds. Chi-square and Fisher's Exact tests were used to compare subjects developing and not developing TMD with the variables analyzed (α=0.05).
RESULTS: Out of 219 TMD-free adults at baseline, 58.9% never presented TMDs, while 41.1% developed fist-onset TMDs. Participants were followed on average for 1.5 years after delivery of the MAD. Those who developed first-onset TMDs presented at baseline with significantly higher presence of TMJ sounds (p=.026;OR=2.44), pain upon palpation of temporalis (p=.018;OR 9.49), temporal tendon (p=.009, OR=3.61) or masseter muscle (p=.032;OR=5.61). They also presented at baseline with statistically less mouth opening (p=.018) compared to patients not developing TMDs.
CONCLUSION: Presence of TMJ sounds, pain upon palpation of temporalis muscle, and less mouth opening at baseline were significantly more common in those patients that developed first-onset TMDs during MAD therapy, and more likely predicted first-onset TMDs.

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