Center for Clinical and Translational Science

19th Annual CCTS Spring Conference

Dissemination and Implementation Across the Translational Spectrum

Tuesday, April 9, 2024
Central Bank Center

Poster Abstract Book

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Abstracts

Presentation 1

Abstract Title:	**Association of the Neuregulin Signaling Pathway with Nicotine Dependence and Smoking Outcomes**
Author(s):	D. Peterson, College of Medicine, U of Kentucky; E. Prantazalos, Department of Research and Graduate Education, U of Kentucky; J. Turner, Department of Pharmaceutical Sciences, U of Kentucky; C. Wang, Division of Cancer Biostatistics, U of Kentucky; J. Kolesar, Department of Pharmacy Practice and Science, U of Kentucky; J. Valentino, Department of Otolaryngology, U of Kentucky

Abstract: Genome-wide association studies have identified several risk alleles for nicotine dependence, including those within the Neuregulin Signaling Pathway (NSP). Genetic alterations in this pathway have been identified as significantly contributing to many psychiatric conditions, including tobacco use disorder. This study examines single nucleotide polymorphisms (SNPs) within the genetic regions coding for Neuregulin-3 (Nrg3) and their association with smoking behavior and cessation outcomes in two independent large cohorts.

Genetic association analyses on a Finnish cohort consisting of 2063 individuals from the Nicotine Addiction Genetics Finland (NAG-FIN) study (N=2265) were done using GEMMA (Genome-wide efficient mixed-model association). The association between 23 Nrg3 SNPs and nicotine dependence and withdrawal were evaluated. Further analyses of these SNPs will be explored within the Markey Cancer Center (MCC) population using the somatic, whole genome data from the Oncology Research Information Exchange Network (ORIEN) obtained from 5,000 MCC patients, with Fisher's exact test used to compare the frequency of each SNP between active smokers, ex-smokers and non-smokers, the polytomous regression model to adjust for potential confounding factors, and the Benjamini-Hochberg procedure to adjust for multiple comparisons. A false discovery rate <0.05 is considered statistically significant.

The NAG-FIN population identified eight Nrg3 SNPs associated with DSM-IV nicotine withdrawal and dependence diagnoses. These SNPs will be used to identify association with smoking behaviors in the MCC population. The findings of this study explore the involvement of the NSP, principally Nrg3, in nicotine dependence and withdrawal. Dysfunctionality in the NSP may contribute to behavioral trait deficits observed in nicotine-dependent individuals.

Supported by:	PSMRF - NIH CTSA grant (UL1TR001998), KL2 grant (KL2TR001996) or TL1 grant (TL1TR001997); This study is supported by National Institute of Health Grants R01-DA-044311 (JRT), R01-DA-12854 (AL), and F31-DA-057812 (ERP); Data collection of the Finnish twin cohort samples has been supported by the Academy of Finland Center of Excellence in Complex Disease Genetics (grants 213506, 129680), the Academy of Finland (grants 265240 and 263278), Sigrid Juselius Foundation, and Global Research Award for Nicotine Dependence, Pfizer Inc.; ERP is also supported by an American Foundation for Pharmaceutical Education (AFPE) regional award and the Substance Use Priority Research Area (SUPRA) Graduate and Professional Student Pilot Award

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Presentation 2

Abstract Title:	**Implementing an Adapted Smoking Assessment in People with Intellectual and Developmental Disabilities**
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Abstract: There is a concerning lack of published smoking cessation research on people with Intellectual and Developmental Disabilities (IDD). The Functional Assessment for Smoking Treatment Recommendations (FASTR) is an assessment designed to help personalize patients' treatment and identify supports necessary to decrease their smoking. Adapting and utilizing this assessment to understand putative environmental variables that maintain smoking for people with IDD may improve current treatments.

The purpose of this study was to administer an adapted FASTR to people with IDD who smoke cigarettes. The FASTR contains 27 statements that may apply to someone's smoking habits and was modified to be more inclusive for people with IDD in a prior study. Participants (N = 28) described the extent to which they agreed with each FASTR statement, which corresponded to one of five potential functions of smoking (i.e., Automatic Positive, Automatic Negative, Social Positive, Social Negative, Antecedent). For each participant, a function was "endorsed" if the average response was greater than 3 for that function.

The Automatic Negative function was endorsed by 96% of participants (e.g., smoking to cope with anger, sadness). Less than a third of participants endorsed the Social Negative (e.g., smoking when bored) and Antecedent (e.g., smoking in the car) function. Of all participants, 71% endorsed multiple functions.

Participants were more likely to endorse the Automatic Negative functional compared to people without IDD in prior studies using the FASTR. Additional research is needed to determine the ability of the modified FASTR to improve function-based smoking cessation interventions in this population.

Supported by: This research was supported by a UK Behavioral Science Pilot Grant and grants from the National Institutes of Health (TL1TR001997, T32DA035200).

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Abstracts

Presentation 3

Abstract Title:	**"Being Treated as the Experts": Perspectives from Serving on a Community Advisory Board for People who use Drugs**
Author(s):	T. Moffitt, Substance Use Priority Research Area, U of Kentucky; J. Byard, Arthur Street Hote, Louisville, KYl; R. Vickers-Smith, College of Public Health, U of Kentucky; S.L. Walsh, College of Medicine, U of Kentucky; A. Fallin-Bennett, College of Nursing, U of Kentucky.

Abstract: Purpose: People who use drugs (PWUD) have lived experience and expertise in the needs of their community. To facilitate their meaningful involvement in research, a community advisory board (Survivors Union of the Bluegrass; SUB) comprised of PWUD was formed. The SUB hosts and provides feedback for UK researchers each month.

Methods: During a regularly scheduled virtual SUB meeting, we invited members to participate in a 45-minute focus group. Using a semi-structured interview guide, the questions focused on member perceptions of their SUB experiences (e.g., What was memorable from your participation on the board? How does the SUB help researchers?). An audio recording and Zoom transcript were kept from the meeting for transcription purposes with the consent of all board members. Data will be analyzed using qualitative content analysis.

Results: Based on preliminary results, members viewed their participation with the SUB as beneficial to themselves, visiting researchers, and the substance use community. Responses indicated that the SUB provides a space where individuals are “not being treated as [less than]” and several people reported that “it feels good to be looked at as an expert.” Overall, SUB members believe that their contributions during meetings have “allowed [visiting researchers] to refine their understanding of addiction”, providing hope that “drug addiction will finally be treated in a way that works… in a healthy way.”

Conclusion: SUB members’ experiences suggest that an advisory board can be an empowering and impactful venue for PWUD to share expertise that benefits both the research and substance using communities.

Supported by: The Survivors Union of the Bluegrass is funded by the UK Substance Use Priority Research Area, Voices of Hope, and the UK Center for Clinical and Translational Science.

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Abstracts

Presentation 4

Abstract Title:	**Assessing Implementation of Permanent Medication Disposal Receptacles in Kentucky Community Pharmacies**
Author(s):	L. Stinson, Substance Use Priority Research Area, U of Kentucky; D.K. Miracle, Department of Pharmacy Practice and Science, U of Kentucky; D.R. Oyler, Department of Pharmacy Practice and Science, U of Kentucky; M. Roberts, Substance Use Priority Research Area, U of Kentucky; A. Matson, Department of Pharmacy Practice and Science and Center for the Advancement of Pharmacy Practice, U of Kentucky; S. L. Walsh, Department of Behavioral Science and Center on Drug and Alcohol Research, U of Kentucky; H. Knudsen, Department of Behavioral Science and Center on Drug and Alcohol Research, U of Kentucky; P.R. Freeman, Department of Pharmacy Practice and Science, U of Kentucky

Abstract: Objective: To describe implementation of the community pharmacy medication disposal program offered by the HEALing Communities Study (HCS) Kentucky using the EPIS (Exploration, Preparation, Implementation, and Sustainment) framework.

Methods: Sixteen Kentucky counties participated in the HCS 1/1/2020-12/31/2023. Exploration and preparation included gathering and review of evidence-based literature, state/community data, and key opinion leader input. Implementation and sustainment were assessed using implementation outcome data collected (e.g., number of receptacles placed, location, amount of drug returned) and semi-structured qualitative interviews to evaluate common themes, including barriers and facilitators related to implementation, maintenance, and sustainment.

Results: Disposal receptacles were placed in 58 pharmacies within Kentucky's 16 HCS counties. The average increase in receptacles per county was 4.3 (SD 4.2) among counties without pre-existing receptacles (n=4) and 3.3 (SD 2.7) among counties with pre-existing receptacles (n=12). Between August 2021 and January 2024, an average of 465.5 (SD 509.9) pounds of drug per county were returned via these receptacles. Twenty-one pharmacists participated in qualitative interviews. Most (70.0%) reported weekly receptacle usage; however, few (35.0%) reported routinely discussing disposal with patients. Thematic analysis revealed the primary positive gain of the program to be patient-centered benefits (90.5%). While 42.9% reported no barriers, the most frequently reported barrier (33.3%) was receptacle limitations (e.g., only available during business hours, no liquid medications). The greatest unmet need reported by the participants was further promotional materials (47.6%).

Conclusions: Implementation of the HCS community pharmacy medication disposal receptacle program led to notable increases in disposal locations that were highly utilized by communities.

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Abstracts

Presentation 5

Abstract Title:	**Activation of Estrogen Receptor Alpha Increases the Amplitude of the Eating Behavior Rhythm in Female Mice**
Author(s):	Victoria M. Alvord, Department of Biology, U of Kentucky; Oluwabukola B. Omotola, Department of Biology, U of Kentucky; and Julie S. Pendergast, Department of Biology, U of Kentucky

Abstract: Meal timing is a critical regulator of metabolism and energy balance. Consolidation of food intake during the active phase inhibits obesity and metabolic dysfunction in mice and humans. Circulating estrogens in female mice increase the amplitude of the eating rhythm to protect them from high-fat diet-induced obesity, but the mechanism is unknown. The objective of this study was to investigate the role of estrogen receptor alpha (ERα) in the regulation of eating behavior rhythms and diet-induced obesity in female mice. To investigate this, we ovariectomized female mice and implanted them with pellets containing a selective ERα agonist, PPT, or vehicle. Ovariectomized females treated with vehicle rapidly gained body weight and adiposity when fed high-fat diet, whereas PPT-treated females were resistant to diet-induced obesity. PPT-treated females ate fewer calories than controls, but both groups had similar levels of activity. The feeding efficiency ratio of PPT-treated mice was markedly lower than that of control mice, suggesting that activation of ERα reduces the conversion of calories to body mass during high-fat diet feeding. Consolidating food intake to the active phase may reduce feeding efficiency and thus inhibit diet-induced obesity in females. Consistent with this hypothesis, we found that PPT-treated females fed low- and high-fat diet had extraordinarily high amplitude eating rhythms that peaked at night. Together these findings demonstrate that ERα is a potent regulator of the eating rhythm. Thus, studying ERα signaling in the brain could reveal the neural circuitry underlying the eating rhythms.

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Abstracts

Presentation 6

Abstract Title:	**Obesity is Associated with Sleep Disruption in Postmenopausal Women**
Author(s):	Jasmine Coatley-Thomas, Caleb P. Dotson, Courtney Murray, Philip A. Kern, J. Matthew Thomas, Julie S. Pendergast; University of Kentucky

Abstract: Sleep is vital to good health. Epidemiological studies have shown that poor sleep quality is associated with increased metabolic risk, including obesity. In women, the loss of estrogens after menopause is associated with poor sleep quality and increased abdominal fat. While complaints about poor sleep during menopause are well-documented, few studies have investigated the relationship between sleep and metabolic risk in postmenopausal women. The goal of this study was to study the relationship between sleep and metabolic risk in postmenopausal women. Fifty-three postmenopausal women (age mean ± SEM; 57.9 ± 0.6 years), participated in the study. We used actigraphy and sleep logs to measure sleep timing and sleep quality for 7 days. Body fat % (total body DXA scans), BMI, abdominal circumference, and HbA1c were collected as markers of adiposity and metabolic risk. We found that later onset of sleep and shorter sleep duration were associated with greater BMI and waist circumference. In addition, later sleep onset was associated with a greater body fat %. Interestingly, markers of sleep quality, including total sleep fragmentation index and sleep efficiency, were not associated with metabolic risk factors in postmenopausal women. Together, these findings suggest that interventions that modify behavior toward earlier sleep times could be effective in reducing metabolic risk in postmenopausal women.

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Abstracts

Presentation 7

Abstract Title:	**Snoring and Systemic Inflammation are Associated with Greater Likelihood of Depression Diagnosis**
Author(s):	N. D. Farr, Department of Health Management and Policy, College of Public Health, U of Kentucky; M.W. Sohn, Department of Health Management and Policy, College of Public Health, U of Kentucky; J. Jayawardhana, Department of Health Management and Policy, College of Public Health, Department of Pharmacy Practice and Science, College of Pharmacy, U of Kentucky

Abstract: Research Question: Are self-reported total sleep time (TST) and sleep-related symptoms-including snoring, orthopnea, apnea, and difficulty sleeping-associated with depression and systemic inflammation? Hypothesis: Fewer hours of self-reported TST and sleep-related symptoms will be associated with higher odds of having elevated CRP. High CRP will be associated with higher odds of having a diagnosis of depression.
Data: The study utilized Wave V data from The National Longitudinal Study of Adolescent to Adult Health. Primary analyses included participants with a valid measurement of hs-CRP (n = 1581), which was considered elevated if <3 mg/L according to CDC/AHA relative risk categories. Data preparation and analysis were completed using Stata 18.0.
Analytic Approach: Multiple logistic regression was used to predict elevated hs-CRP and depression as functions of self-reported TST, the square of TST, snoring, orthopnea, apnea, and difficulty sleeping. Covariates in each of the models were those considered to be essential for a study of sleep, depression, and serum c-reactive protein.
Results: Snoring was associated with higher odds of having elevated hs-CRP (OR = 1.37, 95% CI 1.12, 1.69). Elevated hs-CRP was associated with higher odds of having a diagnosis of depression (OR = 1.55, 95% CI 1.02, 2.35).
Conclusion: Snoring is a key predictor of depression and perhaps of inflammatory depression, a meaningful depression subtype with distinct treatment demands for optimal management. Pharmacological treatments for inflammatory depression will benefit from understanding its underlying risk factors, either for clinical trials of future psychiatric medications or by the application of existing anti-inflammatory drugs/biologics.

Supported by: None

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Abstracts

Presentation 8

Abstract Title: **Implementing a Time-restricted Eating Intervention in Postmenopausal Women**

Author(s): J. M. Thomas, Departments of Biology and Sanders-Brown Center on Aging, U of Kentucky; P. A. Kern, Department of Internal Medicine, U of Kentucky; D. D. Sears, College of Health Solutions, Arizona State University; D. L. James, Edson College of Nursing and Health Innovation, Arizona State University; S. E. Armstrong, Biomedical Informatics, U of Kentucky; C. Bumgardner, Biomedical Informatics, U of Kentucky; A. Mullen, Biomedical Informatics, U of Kentucky; J. L. Fry, Department of Athletic Training and Clinical Nutrition, U of Kentucky; C. Murray, Department of Biology, U of Kentucky; J. S. Pendergast, Department of Biology, U of Kentucky

Abstract: Time-restricted eating (TRE) is an emerging intervention to improve metabolic health. Prior studies investigating TRE involved logging methods that were labor intensive for participants and/or researchers. As timed eating interventions become increasingly popular, easy and effective methods to monitor and reinforce daily meal times are needed. Here, we implemented an automated state-based text messaging system to support a TRE efficacy trial among metabolically unhealthy postmenopausal woman. Our objective was to investigate implementation of this text messaging system for monitoring meal times and promoting compliance. First and last meal times were collected using the text messaging system for 2 weeks at baseline and for 16 weeks after randomization to the control (maintain usual meal timing) or TRE intervention (consume all calories during 10h window with last meal before 8pm). All 19 participants completed the 18-week study and texted their meal times on 123.6 ± 2.8 days. Participants in the TRE group reduced their average calorie window by 3.13 h, from 13.0 ± 0.9 h at baseline to 9.9 ± 0.2 h during TRE. Participants complied with the TRE intervention 92.2 ± 5.1% of days during the 16-week intervention. We investigated whether daily texting of first and last meal times affected the calorie window of control participants. The calorie window of control participants was virtually unchanged from baseline, increasing by only 0.2 ± 1.1 h. Findings show that the state-based text messaging system is effective for implementing a TRE intervention and measuring ad libitum first and last meal timing in postmenopausal women.

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Abstracts

Presentation 9

Abstract Title:	**Implementation of RCT Intervention with Wearable Digital Biometric Collection in Rural Community-residing Dementia Dyads**
Author(s):	C. Roberts, Department of Behavioral Science, U of Kentucky; S.H., Onim, EECS Department, University of Tennessee; S. Kumar, EECS Department, U of Tennessee; A.M., Burhan, EECS Department, U of Tennessee; H. Thapliyal, EECS Department, U of Tennessee; E.K. Rhodus, Department of Behavioral Science, U of Kentucky;

Abstract: Background: Use of remote measurement of physiological parameters using digital biometrics (i.e., Electro Dermal Activities, heart rate, oxygen saturation, blood volume pulse, etc.) has a multitude of opportunities for implementation particularly in rural contexts. This study assessed feasibility and acceptability of advanced digital biometric data collection among rural, community-residing adults living with Alzheimer's disease (AD) with support from primary caregivers (dyad).
Methods: Initial feasibility and acceptability of a wrist-worn wearable device (Empatica E4) were assessed among participants of a larger randomized controlled trial which was aimed to improve behavioral symptoms of AD. Feasibility was assessed based on completeness of digital biometric data recordings and acceptability was determined based on wear schedules for the device in participants with AD (worn >;50% of allotted time).
Results: Digital biometric data collection via remote, wearable devices is feasible and acceptable among participants with AD in rural settings (person with AD age $\bar{x}$=77±2.4 years, 10 female; caregiver age years $\bar{x}$=57±2.9 years, 8 female). The E4 correctly captured biometric signals. The device was acceptable as 14 of the 16 participants with AD wore the device >50% of allotted time with proper completion of the caregiver-reported behavior tracking. Further, we observed that unsupervised machine learning models were able to create digital biometrics that mirrored caregivers' notes.
Conclusion: Advances in technology, evolution of health status surveillance, and vast needs in rural areas create an ideal scenario to implement and disseminate research in cutting-edge digital biometrics. The findings presented here illustrate feasibility and acceptability among geographically remote communities.

Supported by: NIH Award: K23-AG075262

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Abstracts

Presentation 10

Abstract Title:	**Adapting an Engagement Index for a Childhood Obesity Reduction mHealth Application**
Author(s):	S. L. Goggans, College of Medicine, U of Kentucky; J. R. Thompson, Community Impact Office, Markey Cancer Center, U of Kentucky; M. B. Brown, Community Impact Office, Markey Cancer Center, U of Kentucky; L. Maamari, Department of Family Sciences, College of Agriculture, Food, and Environment, U of Kentucky; C. Canedo, Community Impact Office, Markey Cancer Center, U of Kentucky; T. Burus, Community Impact Office, Markey Cancer Center, U of Kentucky; P. C. Hull, Community Impact Office, Markey Cancer Center, U of Kentucky

Abstract: Introduction: Mobile health (mHealth) interventions can be an effective method to initiate behavior change, but only with adequate intervention exposure. This study's purpose is to develop a comprehensive measure of engagement of the Children Eating Well (CHEW) mobile application (app) designed to improve health behaviors and, ultimately, prevent obesity in 2- to 5-year-olds.
Methods: A literature review was conducted on previous engagement measures in mHealth interventions, many of which only captured one element of engagement (e.g., number of clicks). The "engagement index," originally developed to measure website engagement, incorporates multiple measures of engagement. We utilized updates from two mHealth applications to adapt the engagement index for the CHEW application. The index was tested with data (N=8) from the application usability testing.
Results: The developed CHEW app engagement index includes the summation of the following measures: 1) Click Depth: sessions with a threshold level of activity, 2) Loyalty: frequency of app utilization, 3) Duration: sessions opened >5 minutes, 4) Interaction: total number of actions, and 5) Recency: average time between visits. Data from the usability testing users revealed an average engagement index score of 2.006 (0.000-4.086) with participants scoring highest in loyalty at 3.940 and lowest in duration at 2.405.
Discussion: Overall, our developed index successfully captures variable engagement scores for testing users. In the CHEW efficacy trial in 2024, the engagement score for each user will be used to assess app engagement variance across demographic groups and identify barriers to engagement in the low engagement groups.

Supported by: USDA grant number: 2017-68001-34846

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Abstracts

Presentation 11

Abstract Title:	**Assessing the Need for Empowerment Related Resources to Reduce Gender-based Violence and Improve Health in Ecuador**
Author(s):	L. Armstrong, Medical Student, U of Kentucky; H. C. Feld, PhD, MSN, Chair of Global Affairs/Global Health, College of Nursing, U of Kentucky; J. Knight, Nursing Student, U of Kentucky

Abstract: Background: Over 60% of women in Ecuador experience gender-based violence in their lifetime, which is associated with chronic and acute physical, emotional, and sexual health issues. Empowering women financially and psychologically can improve economic opportunities that lead to reductions in gender-based violence. The University of Kentucky's Shoulder to Shoulder Global has a long-standing partnership with a foundation and health clinic to supplement primary care in Santo Domingo, Ecuador and recently was awarded a USAID grant that includes funding for a women's empowerment center.
Methods: We conducted a brief cross-sectional survey with patients at the Centro de Salud Hombro a Hombro clinic to explore the mental health impact of gender-based violence in the community and assess gaps/needs related to the empowerment of women.
Results: Twenty-one women between the ages of 18-61 years participated. Gender-based violence was reported to be a concern in their community by over half (55%) of the participants. When asked about their personal mental health, more than half reported experiencing depression (60%) and low self-esteem (55%) in the past two years. 88% were optimistic that the ability to become more financially independent would lead to a reduction in violence. Participants reported interests developing restaurant/food-related business skills, followed by financial literacy classes, and general entrepreneurship.
Discussion/Conclusion: Considering the poor mental health and concerns related to violence and financial stability in this community, the women's empowerment opportunities were well received. This data will inform programming of the women's empowerment center as we continue to partner with the community to improve women's health.

Supported by: None

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Abstracts

Presentation 12

Abstract Title:	**Recipe Creation for a Mobile Application to Encourage Healthy Food Choices Among Parents of Preschool-age children**
Author(s):	L. Maamari, Community Impact Office, U of Kentucky; J. Thompson, Community Impact Office, U of Kentucky; M. Brown, Community Impact Office, U of Kentucky; S. Goggans, Community Impact Office, U of Kentucky; P. Hull, Community Impact Office, U of Kentucky

Abstract: Introduction: Young people can avoid obesity and chronic diseases by eating well. Targeting families and their practices increases the likelihood of positive behavior change since parents influence children's food habits. To combat childhood obesity, this project created family-friendly, high-nutrition seasonal meals for a preschool parent health-based mobile app.
Methods: We developed seasonal, healthy, and easy-to-make meals for a health-based mobile app by analyzing 26 formative qualitative interviews with primary caregivers of 2-5-year-old children. Interviews helped the study team choose weekly seasonal food guide recipes. The team chose traditional seasonal dishes, vegan and vegetarian seasonal recipes, tree nut and peanut-free recipes, and shellfish and dairy-free recipes. We also made sure the weekly entrees were affordable, simple, and kid-friendly, and the app included nutritional information.
Results: Our selection yielded 208 seasonal, kid-friendly dishes per year. Two weekly featured recipes appear at the top of the app's recipe selection screen. Participants' filter selections “such as nut or shellfish allergies and vegan or vegetarian diets” select two recipes from four weekly seasonal dishes. The app includes preparation time, calorie count, and serving size for each dish. Nutritional information, ingredients, and recipes are available.
Conclusion: A preschool parent health-based mobile app should include a variety of seasonal, child-friendly recipes. In the app's efficacy trial, we will assess participant preferences, recipe use, and the app's ability to prevent preschooler obesity.

Supported by: Supported by USDA grant number: 2017-68001-34846

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Abstracts

Presentation 13

Abstract Title: **Overcoming Communication Barriers Between Dentists and Patients with Aphasia**

Author(s): M. N. Feaheny Moskal, College of Arts and Sciences, U of Kentucky; C. G. Page, College of Health Sciences, U of Kentucky

Abstract: Overall health and wellbeing require consistent oral care and hygiene. Many people have extreme anxiety around the dentist, leading to a lack of oral care. Much of the time, fear is conversationally alleviated between the patient and the dentist; however, for people with conversational hardships such as aphasia, this is limited. Part of the issue is a lack of knowledge on the provider side of effective methods of communication. The most influential and tangible way to reduce this discrepancy between communication and understanding is to educate dentists on ways to constructively interact with their patients. This presentation will provide a person with aphasia's perspective of receiving dental care as well as communication strategies. This information can be shared with dental care providers to enhance consistent oral care for persons with aphasia.

Supported by: None

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Abstracts

Presentation 14

Abstract Title:	**Characterizing Patient Attitudes Towards Healthcare in the Appalachian Region of Kentucky**
Author(s):	W. Van Nort, Martin-Gatton College of Agriculture, Food, and the Environment, U of Kentucky

Abstract: Rural communities constitute approximately 20% of the U.S. population. However, disproportionate health statistics drastically separate the rural population from the rest of America. With higher rates of heart and lung disease, as well as certain cancers, rural communities exhibit a higher age-adjusted mortality rate when compared to their urban counterparts. On the state level, Kentucky presents the same urban-rural health disparities. Despite such differences, rural communities tend to avoid their local healthcare system, failing to seek preventative care and routine cancer screenings. Upon further investigation, sociocultural factors appear to influence this behavior, including a lack of trust between rural patients and local providers. The goal of this study is to characterize these relationships, between the rural patient and provider, in hopes of providing more details into the disconnect within the rural healthcare system. Specifically, this study uses both quantitative and qualitative data, collected from surveys distributed to community members, to better describe the relationship between patients and the local healthcare system in the Appalachian region of Kentucky.

Supported by: None

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Presentation 15

Abstract Title:	**The Incidence of Multiple Primary Cancers in Patients with Pancreatic Ductal Adenocarcinoma**
Author(s):	Hannah McDonald, MD, Department of Surgery, Division of Surgical Oncology, The University of Kentucky College of Medicine; Sadie Junkins, MS2, The University of Kentucky College of Medicine; Kaitlyn Weyman, MD, Department of Surgery, Division of Surgical Oncology, The University of Kentucky College of Medicine; Megan Harper, MS, MD, PhD, Department of Surgery, Division of Surgical Oncology, The University of Kentucky College of Medicine; Samuel Walling, MD, Department of Surgery, Division of Surgical Oncology, The University of Kentucky College of Medicine; Mautin Barry-Hundeyin, MD, Department of Surgery, Division of Surgical Oncology, The University of Kentucky College of Medicine; Michael Cavnar, MD, Department of Surgery, Division of Surgical Oncology, The University of Kentucky College of Medicine; Prakash Pandalai, MD, Department of Surgery, Division of Surgical Oncology, The University of Kentucky College of Medicine; Erin Burke, MD, MS, Department of Surgery, Division of Surgical Oncology, The University of Kentucky College of Medicine; Joseph Kim, MD, Department of Surgery, Division of Surgical Oncology, The University of Kentucky College of Medicine.

Abstract: Objective: Inherited pancreatic ductal adenocarcinoma (PDAC) syndromes and associated alternate primary cancers (APCs) has been an expanding focus in the community of surgical oncology research. Kentucky has the highest rates of cancer incidence and death in the nation, making its patients the ideal population to analyze multiple primary cancers in relation to PDAC risk factors, incidence, and genetic syndromes.
Methods: Data on all PDAC cases between 2010-2020 including those with an alternate primary cancer (APC) were collected from the Kentucky Cancer Registry (KCR). Clinicopathologic, demographic, treatment, and outcomes variables were analyzed.
Results: 5632 PDAC patients were identified between 2010-2020 and 13.8% (n=777) of these patients 1 or more APC. Patients from Appalachian Kentucky comprised 27.2% (n=1532) of the entire cohort and 26.7% (n=208) of the cohort of PDAC + APC. When focusing entirely on Appalachians, 29.6% (n=454) had at least one APC, in comparison to only 13.8% in Non-Appalachians ($p < 0.00001$). Intriguingly, for all patients, prostate cancer was the most common APC, followed by renal cell carcinoma and lung cancer, respectively. Regarding PDAC stage at initial diagnosis, Appalachian Kentuckians more frequently presented with advanced disease (67.8% vs 63%, $p = 0.0214$).
Conclusion: Compared to Non-Appalachian Kentucky, patients of Appalachian Kentucky had higher prevalence of PDAC, with a greater than a two-fold increased rate of APC. Additionally, Appalachian Kentucky patients more commonly had an advanced disease at diagnosis. There is an urgent need for further studies to expand on the genomic underpinnings behind this disparate disease burden.

Supported by: NIH T32CA60003

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Abstracts

Presentation 16

Abstract Title:	**Incidence and Characterization of Carcinoid Crises Post Embolization of Neuroendocrine Tumor Liver Metastases**
Author(s):	N. Meredith, College of Medicine, U of Kentucky; W. Denton, College of Medicine, U of Kentucky; G. Gabriel, Department of Radiology, U of Kentucky

Abstract: Embolotherapy of neuroendocrine tumor liver metastases (NETLMs) may instigate a potentially life-threatening period of hemodynamic instability, termed a carcinoid crisis. Currently, this life-threatening complication is not well studied or reported post NETLM embolizations. Furthermore, there is poor evidence supporting the use of octreotide, the current prophylaxis and standard of care for perioperative crises. The aim of the current study is to investigate the incidence of carcinoid crises post embolotherapy and direct future studies addressing the management of carcinoid crises. Data were collected retrospectively from patients undergoing transarterial embolization (bland embolization, chemoembolization, and radioembolization) for a NETLM from January 1, 2010 to January 1, 2024 at the University of Kentucky. There were nine suspected crises of 211 procedures (4.3%) and 113 patients (8.0%). Eight of these occurred post-procedurally, three of which met the criteria for a SIRS response in the absence of infection. The management of these crises was highly variable with five patients receiving prophylactic octreotide and only two patients receiving octreotide during the crisis. The incidence reported here is lower than the incidence reported for surgical resection, which is typically reported around 30-40% during hepatic debulking of NETLMs. In the absence of a standardized protocol for prophylaxis and management of these potentially life-threatening complications post surgery or embolizations, future studies should focus on prospective trials investigating a standardized protocol for management of carcinoid crisis as well as the role and efficacy of prophylactic octreotide.

Supported by: PSMRF award: NIH CTSA grant (UL1TR001998)

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Abstracts

Presentation 17

Abstract Title:	**Novel STK11 adnexal tumor in a premenopausal woman originally misdiagnosed as mesothelioma, a case report**
Author(s):	C. R. Rutherford, College of Medicine, U of Kentucky; T. A. Rives, Division of Gynecologic Oncology, U of Kentucky; D. Piecoro, Department of Pathology, U of Kentucky; C. S. Dietrich, Markey Comprehensive Cancer Center, U of Kentucky

Abstract: STK11 germline mutations are typically associated with Peutz-Jeghers syndrome, an autosomal dominant disease characterized by hamartomatous polyps in the gastrointestinal tract, hyperpigmented patches, and increased risk of stomach, colorectal, small bowel, and breast cancers. Mutations in this gene have also been identified in skin, pancreatic, testicular, and ovarian cancer. To date, there have been less than 30 cases of ovarian cancer reported associated with mutated STK11. In this report, we discuss a rare case of a recurrent STK11 adnexal tumor, originally misdiagnosed as malignant mesothelioma in a 39-year-old woman with no significant past medical history. After 33 months with no evidence of disease following debulking surgery, HIPEC, and adjuvant chemotherapy, a recurrence of a retroperitoneal lesion was noted on imaging with pathology indicating an STK11 mutation consistent with an STK11 adnexal tumor.

Supported by: None

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Presentation 18

Abstract Title:	**Is TRPS1 Truly Specific and Sensitive for A Breast Primary?**
Author(s):	H. E. Short, College of Medicine, U of Kentucky; S. E. Bachert, Department of Pathology and Laboratory Medicine, Markey Cancer Center, U of Kentucky; J. Di, Department of Pathology and Laboratory Medicine, U of Kentucky; S. Zhang, Department of Pathology and Laboratory Medicine, U of Kentucky; D. W. Piecoro, Department of Pathology and Laboratory Medicine, U of Kentucky; R. J. McDonald, Department of Pathology and Laboratory Medicine, U of Kentucky; Z. W. Myint, Department of Internal Medicine, Division of Medical Oncology, Markey Cancer Center, U of Kentucky; P. J. Hensley, Department of Urology, Markey Cancer Center, U of Kentucky; D. B. Allison, Departments of Pathology and Laboratory Medicine and Urology, Markey Cancer Center, U of Kentucky

Abstract: Trichorhinophalangeal syndrome type 1 (TRPS1) has been reported to be a sensitive and specific immunohistochemical (IHC) marker for breast carcinomas. However, there is limited data on TRPS1 expression in other cancers. A two-phase study was performed with 1) an exploratory cohort analyzing TRPS1 gene alterations in prostate, bladder, and breast carcinoma and TRPS1 mRNA expression data in prostate and bladder carcinoma; and 2) TRPS1 and GATA3 IHC in a confirmatory cohort in prostate, bladder, and breast carcinoma samples. Gene alterations were identified in a subset of breast, bladder, and prostate carcinomas and mRNA was consistently detected. In the IHC cohort, 183/210 (87.1%) of breast, 22/69 (31.9%) of prostate, and 20/73 (27.4%) of urothelial carcinomas showed staining with TRPS1. Intermediate to high expression of TRPS1 was observed in 173/210 (82.8%) of breast, 17/69 (24.6%) of prostate, and 15/73 (20.5%) of urothelial carcinomas. In prostate cancer, 26.9% of pelvic lymph node metastases and 50% in sites of distant metastases showed expression. By comparison, GATA3 IHC stained 136/210 (64.8%) of breast, 0/69 (0%) of prostate, and 63/73 (93%) of bladder carcinomas. Intermediate to high expression of GATA3 was seen in 131/210 (62.4%) of breast and 63/73 (93%) of bladder carcinomas. This study shows there is significant staining of TRPS1 in bladder and prostate cancers. As a result, comprehensive studies are needed to establish the true specificity of TRPS1 IHC stain across various tumor types before its widespread clinical adoption.

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Presentation 19

Abstract Title:	**Outpatient Healthcare Utilization for Pancreatic Ductal Adenocarcinoma in Appalachian and non-Appalachian Kentucky**
Author(s):	Carrigan Wasilchenko, U of Kentucky; Rachel Hill, Departments of Internal Medicine and Biomedical Informatics; Kshitij Thakur, Department of Internal Medicine, U of Kentucky; Brooks Richardson, Department of Internal Medicine, U of Kentucky, Darwin Conwell, Department of Internal Medicine, U of Kentucky; Radmila Choate, Department of Epidemiology and Environmental Health, U of Kentucky

Abstract: Background: As the 3rd leading cause of cancer deaths in the United States, pancreatic ductal adenocarcinoma (PDAC) accounts for significant morbidity and mortality. Kentucky is an underserved state with significantly higher cancer burden than the national average. We aim to characterize outpatient encounters with PDAC in Appalachia versus non-Appalachian Kentucky.
Methods: The Kentucky Hospital Inpatient Discharge and Outpatient Services Database was utilized to identify outpatient encounters with a primary diagnosis of PDAC from 2015-2019. Outpatient encounter-level clinical and demographic data were stratified by Appalachian versus non-Appalachian counties.
Results: Primary diagnosis of PDAC was identified in 25,919 outpatient encounters in Kentucky. The crude rate was higher in Appalachia than non-Appalachia (151.0 versus 104.2 per 100,000 population, $p<0.001$). In Appalachian Kentucky, more PDAC outpatient encounters occurred among adults ages 18-64 (50.3% vs 44.7%, $p<0.001$), females (51.7% vs 49.5%, $p=0.001$), and non-Hispanic Whites (94.3% vs 87.3%, $p<0.001$) compared to their non-Appalachian counterparts. History of tobacco use, alcohol use, obesity, and chronic pancreatitis were less prevalent in Appalachian Kentucky encounters. Hereditary susceptibility to malignant neoplasms (i.e. HNPCC) was higher compared to non-Appalachia (0.9% vs 0.1%, $p<0.001$).
Conclusions: There are differences in PDAC presentation and resource utilization among Kentucky Appalachian and non-Appalachian populations. PDAC in Appalachian Kentucky is more prevalent and likely to be in younger adult females without lifestyle risk factors. Interestingly, Appalachian PDAC is associated with a hereditary susceptibility to cancer. Future studies are needed to identify the relationship between rural residence, hereditary susceptibility, and increased outpatient healthcare utilization rates in Appalachian KY.

Supported by: None

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Presentation 20

Abstract Title:	**Perceptions of Health Care Communication and Trust Related to Colorectal Cancer Screening among Black American Adults**
Author(s):	S. H. Mussie, SPARK Program, Kentucky State U; F. Sesenu, Center for Health Equity Transformation, U of Kentucky; A. J. Kruse-Diehr, Department of Family and Community Medicine, U of Kentucky

Abstract: Background: Black Americans in Louisville face higher colorectal cancer (CRC) incidence rates and have an even higher mortality rate compared to their white counterparts. Barriers related to CRC perceptions, trust in health care providers, and providers' communication style were tested by analyzing surveys completed by participants.

Methods: Survey data were collected from 39 Black American men and women (aged over 45 years) at community health fairs in Louisville. The 70-item survey covered respondents' socio-economic characteristics; CRC perceptions of susceptibility, severity, benefits, and barriers; trust in providers; and patient-provider communication. This survey was used to determine how Black Americans' perceptions about CRC screening beliefs differ based on their experiences in health care settings.

Results: Respondents indicated moderate CRC perceptions with mean scores for susceptibility, severity, and barriers ranging from 2.4 to 2.8 (range,1–5). Perceived benefits of CRC screening was high with a mean score of 4.1 (SD = 0.8). Fairly high average scores were also reported for trust in providers (M = 3.8, SD = 0.7) and patient-provider communication (M = 3.7, SD = 0.4). Furthermore, threat perceptions (severity and susceptibility) were positively correlated with perceived barriers and negatively correlated with trust in providers and patient-provider communication. Whereas patient-provider communication was positively correlated with trust in physician, CRC screening barriers were negatively correlated with screening benefits and patient-provider communication.

Conclusion: When screening benefits and patient-provider communication was low, barriers to CRC screening increased. Participants were able to better trust their physicians when patient-provider communication was emphasized.

Supported by: SPARK is a collaboration between the UK CCTS, the UK Center for Health Equity Transformation, and the UK Cardiovascular Research Priority Area. Additional financial support is provided by the Aetna Foundation.

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Center for Clinical and Translational Science

Abstracts

Presentation 21

Abstract Title:	**Exploring Perceptions of Lung Cancer Prevention in Appalachia**
Author(s):	C. B. Smith, Department of Health and Clinical Sciences, U of Kentucky; F. Y. Sesenu, Department of Communication Studies, U of Kentucky; J. R. Thompson, Markey Cancer Center Community Impact Office, U of Kentucky; M. J. Ickes, Department of Kinesiology and Health Promotion; U of Kentucky

Abstract: Appalachian Kentucky, a relatively under-resourced region, has the highest rates of lung cancer incidence and mortality in the United States. While much of this burden may be linked to smoking and second-hand smoking rates, environmental factors such as exposure to radon may also be a contributing mechanism. Radon is an undetectable gas that can build up inside the home by entering through cracks in the foundation. Using a quantitative cross-sectional survey among a convenience sample of residents (n=77), this study explores the knowledge and attitudes around environmental factors contributing to lung cancer among adults in Laurel County, Kentucky. Preliminary results indicate that half of the respondents were unaware of radon and its effect. Of those who were familiar with radon, 80% believed in the importance of radon education within their community. There is a need for tailored resources for Appalachian citizens to take precautions against radon. Culturally relevant messages may better support the uptake of risks to reduce radon exposure.

Supported by: SPARK Program is a collaboration between the UK CCTS, the UK Center for Health Equity Transformation, and the UK Cardiovascular Research Priority Area. Additional financial support is provided by the Aetna Foundation.

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Presentation 22

Abstract Title:	**Enhancing Cancer Care through Education Material Analysis and Community Resource Validation**
Author(s):	Authors: Kailyn Moran, Phoebe McCowan, Grant Carlsen, Christine Stroebel, Joseph Alexander, Pamela Hull, Timothy Mullett, Ming-Yuan Chih, K. Moran, P. McCowan, M. Chih, Department of Health & Clinical Sciences, U of Kentucky; G. Carlsen, Department of Biology, U of Kentucky; C. Stroebel, J. Alexander: Markey Cancer Center, U of Kentucky; P. Hull, Department of Behavioral Medicine, U of Kentucky; T. Mullett, Department of Surgery, U of Kentucky

Abstract: Background: This research includes an in-depth analysis of patient education materials (PEM) and community resources to develop a smartphone-based patient navigation system. We aim to improve cancer care in Kentucky by involving stakeholders and enhancing available resources.
Methods: We conducted a thorough analysis of patient education materials complied by the Markey Cancer Center PsychOncology team, employing tagging and validation processes, particularly aligning content with the needs listed on the problem list in the National Comprehensive Cancer Network (NCCN) Distress Screening tool. Lexington area and nearby counties community resources from the CareKY database were collected, validated with existing databases, such as Pathfinder, and categorized based on services provided and addressed needs.
Results: PEM analysis revealed 397 resources addressing NCCN Problem List needs. Notably, 22.2% guided patients in self-care, and 27% were related to treatment decisions, emphasizing a patient-centric nature. Concurrently, validating 356 community resources in Lexington and surrounding counties unveiled that 37.4% assisted with housing, 18% addressed food sufficiency, 7.9% supported transportation, and 58.7% offered financial assistance, emphasizing the focus on social drivers of health (SDOH) needs on the NCCN Problem List.
Conclusion: Our approach offers a comprehensive understanding of cancer care resources. The diversity of community resources, particularly in addressing SDOH aspects, underscores their role in cancer care. Insights from PEM, concentrating on self-care and treatment decisions, align our program with local needs. Our purpose is to meet the holistic needs of cancer patients by making patient-focused education and SDOH-oriented resources available in a smartphone app.

Supported by: None

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Presentation 23

Abstract Title:	**Impact of a Cancer Education Curriculum on Appalachian Kentucky Middle and High School Student**
Author(s):	Lauren Hudson Rose, College of Medicine, U of Kentucky; L. Todd Weiss, College of Medicine, U of Kentucky; Nathan L. Vanderford, PhD, MBA, Department of Toxicology and Cancer Biology, U of Kentucky

Abstract: Background: Kentucky has the highest cancer incidence and mortality rates in the US, with higher case rates concentrated in Appalachia. One factor contributing to this disparity is low education levels and cancer literacy. To increase cancer literacy, a 3-part cancer education curriculum was developed for Appalachian Kentucky middle and high school students. The goal of this study was to evaluate the impact of the curriculum on students' cancer knowledge.
Methods: The curriculum was divided into 3 1-hour long lessons that teach cancer biology, risk factors, and treatments, respectively. The curriculum was disseminated to Appalachian Kentucky middle and high school teachers who engaged 223 students with the material. For each lesson, students filled out a 10-question pretest and an identical 10-question posttest. The average percent of correct responses from the pre- to posttests were analyzed.
Results: The average percentage of correct responses significantly increased from 40% to 70%, 52% to 69%, and 33% to 53% on lessons 1, 2, and 3, respectively. A significant increase in the average percentage of correct responses on each individual question was observed. These increases demonstrate that the three-part cancer education curriculum intervention can improve Appalachian Kentucky students' cancer literacy.
Conclusions: Increased cancer literacy has the potential to result in behavioral modifications that will decrease students' future cancer risk. Students may also feel compelled to share this knowledge with others. Future work will include implementing the material with a broader group of audience and working with legislators to include cancer education into formal school curriculum.

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Abstracts

Presentation 24

Abstract Title:	**Half-Sarcomeres Relax with a Biphasic Time-Course in Spatially-Explicit Simulations with Series Compliance**
Author(s):	C. Squarci, Division of Cardiovascular Medicine, U of Kentucky; K. S. Campbell, Division of Cardiovascular Medicine, U of Kentucky

Abstract: Experiments with isolated myofibrils or muscle cells show that force relaxes with a biphasic profile when the intracellular Ca2+ concentration is reduced. Force initially declines slowly and linearly before the preparation transitions to a different mode where force falls with an exponential time-course. The transition is associated with a sudden increase in half-sarcomere heterogeneity. Prior computer modeling has shown that the biphasic relaxation profile can be reproduced if the half-sarcomeres shorten against a series compliance. These calculations were performed using a distribution-based approach (MyoSim, PMID 26840730) to simulate cross-bridge cycling. In this new work, the spatially-explicit FiberSim model (PMID 34932957) has been extended to simulate myofibrils composed of half-sarcomeres connected in series with an elastic element. These new calculations confirm that series compliance can accelerate relaxation by allowing the thick filaments to move relative to actin. An important feature of spatially-explicit models is that they can mimic different potential functions of myosin binding protein-C, like stabilize the SRX state of myosin dimer and/or bind the thin filament. In our simulations different modes of myosin binding protein-C produce different effects on relaxation: if it binds to the actin filament, the linear phase of relaxation is prolonged, while if it stabilize SRX the linear phase it get shorter.

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Abstracts

Presentation 25

Abstract Title:	**Plasminogen Activator Inhibitor-1 Deficiency Augments Angiotensin II-induced Cardiac Fibrosis, but not Aortic Aneurysm in Mice**
Author(s):	Alex Pettey1-3, Sohei Ito2, 3, Deborah Howatt2, 3, Michael Franklin2, 3, Nancy Zhang2, 3, David Graf2, 3, 4, Hisashi Sawada1-3, Hong S. Lu1-3, Alan Daugherty1-3 1Department of Physiology, College of Medicine, University of Kentucky, KY. 2Saha Cardiovascular Research Center, College of Medicine, University of Kentucky, KY, 3Saha Aortic Center, College of Medicine, University of Kentucky, KY, 4College of Engineering, University of Kentucky, KY.

Abstract: Background: Plasminogen activator inhibitor-1 (PAI-1) is highly abundant in human thoracic aortic aneurysms (TAA). This high abundance is mimicked in TAAs created by chronic infusion of angiotensin II (AngII) into mice. The purpose of this study was to determine whether deletion of PAI-1 influenced the development of thoracic aortic aneurysms during AngII infusion.

Methods and Results: To determine the role of PAI-1 in acute and chronic phases of AngII-induced pathology, whole-body PAI-1 deficient mice (PAI-1 -/-) and wild type littermates (PAI-1 +/+) were infused with AngII (1,000 ng/kg/min) for 7 or 28 days, respectively. Aortic diameters were measured by ultrasonography and in situ measurement. PAI-1 deficiency did not alter maximal luminal or external aortic diameters at 7 or 28 days of AngII. At 7 days of AngII, ventricular hemorrhage was visibly evident in PAI-1 -/- mice. Mid-ventricular heart sections were next examined by hematoxylin and eosin staining, and red blood cell accumulation was found primarily within the epicardium. Masson's trichrome staining revealed interstitial fibrosis in the epicardium, myocardium, and posterior septum of PAI-1 -/- mice. At 28 days of AngII, PAI-1 -/- mice displayed primarily epicardial fibrosis evident by trichrome staining and gross appearance. The posterior septum presented less fibrosis after 28 days of AngII relative to 7 days of AngII.

Conclusions: PAI-1 deficiency did not alter aortic dilatation, indicating that PAI-1 is not a key contributor to AngII-induced TAAs. Paradoxically, PAI-1 deficiency augmented AngII-induced cardiac fibrosis with distinct distributions between acute and chronic phases.

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Abstracts

Presentation 26

Abstract Title:	**GelBox: open-source software to improve rigor and reproducibility when analyzing gels and immunoblots**
Author(s):	U. Gulbulak, Division of Cardiovascular Medicine, U of Kentucky; A. Wellette-Hunsucker, Division of Cardiovascular Medicine, U of Kentucky; K. S. Campbell, Division of Cardiovascular Medicine, U of Kentucky

Abstract: GelBox is open-source software that was developed with the goal of enhancing rigor, reproducibility, and transparency when analyzing gels and immunoblots. It combines image cropping, brightness, and contrast adjustments with the analysis. The software provides repeatable background correction for the analysis and lets users link their sample metadata with the lanes in the images. GelBox stores all the raw data with the performed adjustments and the analysis boxes for traceability. GelBox has a user-friendly interface and was developed using MATLAB.

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Abstracts

Presentation 27

Abstract Title:	**Enhancement of High Density Lipoprotein-Associated Elastase Inhibitor Activity Prevents Atherosclerosis Progression**
Author(s):	M. Mobilia, Saha Cardiovascular Research Center, U of Kentucky; C. Whitus, Saha Cardiovascular Research Center, U of Kentucky; A. Karakasian, Saha Cardiovascular Research Center, U of Kentucky; L. A. Johnson, Department of Physiology, U of Kentucky; G. A. Graf, Department of Physiology, U of Kentucky; S. M. Gordon, Department of Physiology, U of Kentucky

Abstract: Inflammatory cells within atherosclerotic lesions secrete various proteolytic enzymes that contribute to lesion progression and destabilization increasing risk of an acute cardiovascular event. Elastase is a serine protease produced by macrophages and neutrophils in plaque and may contribute to development of unstable plaque. We have previously demonstrated enrichment of protease inhibitor proteins on plasma high density lipoprotein (HDL), including alpha-1-antitrypsin, an inhibitor of elastase. These data support a potential role for HDL as an endogenous modulator of protease activity. In this study, we test the hypothesis that enrichment of HDL-associated elastase inhibitor activity is protective against atherosclerosis lesion progression.

We designed an HDL-targeting protease inhibitor (HTPI) to bind to HDL and confer elastase inhibitor activity. HTPI is a small peptide with an elastase inhibitor domain, a soluble linker, and an HDL-targeting domain. Venous administration to mice resulted in binding to plasma HDL and increased elastase inhibitor activity on isolated HDL from mice that received HTPI. Accumulation of HTPI within plaque was observed after administration to Ldlr-/- mice. To examine the impact of HTPI treatment on atherosclerosis, Ldlr-/- mice were fed Western diet for 12 weeks to establish atherosclerosis (WD-Saline) followed by two additional weeks continued on diet while receiving either saline or HTPI three times per week. Lesion area quantification by en face analysis revealed that HTPI prevented further lipid deposition in plaque. Histology and immunofluorescence staining of aortic root sections were used to examine the impact of HTPI on lesion morphology and inflammatory features.

These data support the hypothesis that HDL-associated anti-elastase activity could contribute to the athero-protective functions of HDL and support the potential utility of enrichment of anti-protease activity on HDL for stabilization of atherosclerotic lesions.

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Presentation 28

Abstract Title:	**Mechanical unloading disrupts the relationship between cardiomyocyte titin isoforms and cardiac function and remodeling**
Author(s):	J. N. Tinnell, College of Medicine, U of Kentucky; G. N. Milburn, Department of Physiology and Division of Cardiovascular Medicine, U of Kentucky; A. Wellete-Hunsucker, Department of Physiology and Division of Cardiovascular Medicine, U of Kentucky; K. S. Campbell, Department of Physiology and Division of Cardiovascular Medicine, U of Kentucky

Abstract: Remodeling of myocardium through cellular, structural and functional changes underlies the pathophysiology of heart failure (HF). A small subset of patients receiving a left ventricular assist device (LVAD) undergo reverse remodeling which leads to myocardial recovery. The mechanisms underlying reverse remodeling are not known but likely involve mechanotransduction. One protein involved in this process is titin. The ratio of the compliant N2BA to stiff N2B titin isoform modulates cardiomyocyte stiffness. The impacts of mechanical unloading on cardiomyocyte stiffness and titin-based signaling is unknown. Myocardium was collected from 31 patients with HF prior to LVAD implant and before heart transplantation. Using gel electrophoresis, we quantified the titin isoform ratio from these samples and examined LV function and remodeling using data from right heart catheterization and echocardiography.

Titin isoform ratios did not change after unloading regardless of HF etiology and duration of unloading did not correlate with changes in titin isoform. Prior to unloading, higher N2BA titin isoform correlated with increased cardiac output. While wall thickness had no relationship to titin isoform, there was a positive correlation between increased N2BA isoform and smaller chamber diameters. After unloading, this relationship disappeared suggesting it disrupts pathways that couple titin and chamber size. These results indicate that higher N2BA isoform correlates with less LV dysfunction and remodeling in patients prior to LVAD support. Further studies examining the regulators of titin isoform shifts and titin-based signaling could show how unloading disrupts these pathways and whether modulation of these pathways can improve cardiac function and remodeling.

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College of Health Sciences Research Day
Poster Presentation Abstracts

Presentation 29

Abstract Title:	**From Inhibitors to Insights: Examining the Impact of TFPI Inhibition on Protein S and Protein C Activity**
Author(s):	Kidus Shiferawe, Saha Cardiovascular Research Center, U of Kentucky Martha M.S. Sim, Saha Cardiovascular Research Center, U of Kentucky; Gill Heart and Vascular Institute, U of Kentucky; Dlovan F. D Mahmood, Saha Cardiovascular Research Center, U of Kentucky; Jeremy P. Wood, Saha Cardiovascular Research Center, U of Kentucky; Gill Heart and Vascular Institute, U of Kentucky; Department of Molecular and Cellular Biochemistry, U of Kentucky

Abstract: Background: Hemophilia A (HA) is a bleeding disorder caused by deficient factor VIII. Protein replacement therapy, while standard, poses the risk of developing inhibitory antibodies. Inhibitors of the anticoagulant Tissue Factor Pathway Inhibitor (TFPI) are in development as bypassing agents, which allow coagulation in the absence of factor VIII. This research investigates the impact of TFPI inhibition on the anticoagulants Protein S (PS) and Protein C (PC). PS, PC, and TFPI cooperatively inhibit thrombin generation in healthy individuals, and we hypothesize that TFPI inhibition reduces PS/PC function in HA, further increasing thrombin generation.

Method: We previously developed a thrombin generation protocol sensitive to the activity of the PS/PC system, via thrombomodulin (TM) supplementation. An anti-TFPI antibody was added to mimic pharmacologic TFPI inhibition.

Result: In the control group, anti-TFPI decreased lag time and increased endogenous thrombin potential (ETP), peak thrombin, and velocity, consistent with the function of TFPI in blocking the initiation of coagulation, while TM decreased ETP, peak thrombin, and velocity. Results were similar in all parameters in HA samples except for lag time, which was prolonged by TM in HA plasma.

Conclusion: Low baseline thrombin generation, even in the presence of TFPI inhibition, renders HA plasma more sensitive to the PS/PC system, which prolongs the lag time in patients but not healthy controls. As the lag time correlates with initial clot formation, understanding this effect will provide crucial insights into hemophilia A-associated bleeding, and help to tailor management strategies that minimize thrombotic complications.

Supported by: PSMRF, NIH CTSA grant (UL1TR001998); Investigator-initiated grant through Pfizer, Inc.

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Center for Clinical and Translational Science

Abstracts

Presentation 30

Abstract Title: **Deep Learning to Improve Cardiac CT Image Quality of Obese Patients**

Author(s): A. Zhang, Paul Laurence Dunbar High School, Lexington, KY; N. Biondi, College of Medicine, U of Kentucky; S. Leung, College of Medicine, U of Kentucky; J. Zhang, Department of Radiology, U of Kentucky

Abstract: Introduction: Cardiovascular disease is a leading cause of death in the U.S., with obesity significantly raising risk levels. CT scans are essential for diagnosing heart disease but pose challenges in obese patients due to higher image noise from inadequate x-ray penetration. This study investigates the use of deep learning denoising techniques to improve cardiac CT image quality for obese patients.
Methodology: We retrospectively analyzed 11 anonymized CT images from the University of Kentucky. Images were reconstructed using filtered back projection (FBP) and iterative reconstruction (IR) at strength levels 1-5. FBP images underwent denoising with PixelShine, a deep learning technique, in three settings: A1, A5, A9. Image quality was assessed using the naturalness image quality evaluator (NIQE) and comparisons with FBP and IR methods, alongside Structural Similarity Index (SSIM), Peak Signal-to-Noise Ratio (PSNR), and Root Mean Square Error (RMSE).
Results: NIQE scores showed IR2 as producing the highest quality images, aligning with clinical practices. PixelShine-treated images displayed lower similarity to FBP images compared to IR methods for levels 1-4, with IR5 showing similar PSNR and RMSE to PixelShine settings. Differences among PixelShine modes were minimal, with IR5's SSIM closely matching PixelShine modes, and IR3 and IR4 showing alignment in PSNR and RMSE.
Conclusions: PixelShine could potentially improve cardiac CT image quality in obese patients. Further research is required to assess clinical usefulness and evaluate additional software parameters.

Supported by: None

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Abstracts

Presentation 31

Abstract Title:	**Human myocardium with ATTR amyloidosis has decreased force generation and increased fibrosis with no changes in titin**
Author(s):	G.N. Milburn, Department of Physiology, U of Kentucky; J. Bell, Division of Cardiology, U of Kentucky; A. Yackzan, Division of Cardiology, U of Kentucky; A.G. Wellette-Hunsucker, Department of Physiology, U of Kentucky; U. Gulbulak, Division of Cardiology, U of Kentucky; K.S. Campbell, Division of Cardiology, U of Kentucky

Abstract: Cardiac amyloidosis is a restrictive cardiomyopathy characterized by the infiltration of abnormally folded protein into the extracellular matrix. The clinical condition is thought to reflect ventricular stiffening and is characterized by diastolic and late-stage systolic dysfunction. Wild type ATTR is an age-related form of amyloidosis that can be diagnosed via a septal myocardial biopsy or non-invasive tc-99 PYP scan. Using samples from five patients with ATTR amyloidosis and five non-failing donors, we measured muscle force production, fibrosis, and titin isoform ratios, both regulators of myocardial stiffness. Additionally, we quantified amyloid deposition and stained for calcium in the myocardium.

Compared to non-failing myocardium, amyloid hearts had significantly decreased force production, increased fibrosis, and microcalcifications which colocalized with amyloid deposits. Titin isoform ratios were unchanged in amyloid myocardium compared to controls and no differences were measured between the right ventricle, septum, and left ventricle in both amyloid and non-failing myocardium. These results provide tissue-level data showing that both end-stage cardiac amyloidosis and non-failing myocardium titin isoform ratios are homogeneous across regions of the heart. Additionally, colocalization of calcium and amyloid deposits provides a potential mechanism underlying the affinity of tc-99 PYP, a bone tracer, for ATTR myocardium. While amyloidosis is often discussed with emphasis on the extracellular matrix, cardiomyocyte death and dysregulation of sarcomeric proteins may result in decreased force production and contribute to disease progression. Additional work on how amyloid deposition impacts the intra- and extracellular space are required to fully understand amyloidosis pathogenesis.

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Presentation 32

Abstract Title:	**Paracorporeal Pump-Integrated Artificial Lung for Safe Transport of Warfighters with Acute Respiratory Distress Syndrome**
Author(s):	Yazan Alrefai, MS2; Li Li, MD; Jinsong Chen, PhD; Dongfang Wang, MD, PhD; Joseph B. Zwischenberger, MD; Cherry Ballard-Croft, PhD University of Kentucky College Medicine and University of Kentucky Surgery Department, Research Division

Abstract: Objective: Acute Respiratory Distress Syndrome (ARDS) significantly contributes to combat casualty and has a high mortality rate. Existing lung support systems for ARDS warfighter transport have been problematic due to separate pump and artificial lung (AL), which require remote positioning with dangerously long blood connection tubing. Our objective is to create a compact, one-piece paracorporeal pump-integrated AL (pPIAL) system for safe ARDS warfighters transport from combat zones to regional medical centers.
Methods: The pPIAL system includes the pPIAL prototype, a double lumen cannula (DLC), short connection tubing, and a pneumatic console prototype. This pPIAL system was tested in adult sheep (n=6). A 29 Fr DLC was inserted into the right jugular vein with the tip ending in the inferior vena cava. The pPIAL was then connected to the DLC and to the pneumatic console. Hemodynamics, O2 transfer/CO2 removal, pumping flow, and initial hemocompatibility were assessed for 6 hrs.
Results: Six pPIAL prototypes were successfully fabricated with subsequent design iterations to improve in vivo performance. The final pPIAL prototype achieved an average pulsatile pumping flow of 4.7 L/min, which was near total cardiac output. The O2 transfer was 119-165 mL/min, and the CO2 removal was 119-173 mL/min in the six tested pPIAL prototypes. The final pPIAL prototype had negligible hemolysis as shown by plasma free hemoglobin levels <15 mg/dL.
Conclusion: Our compact pPIAL prototype achieved excellent gas exchange performance with near cardiac output pulsatile pumping flow. Thus, our pPIAL system shows great promise for the safe transport of ARDS warfighters.

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Abstracts

Presentation 33

Abstract Title:	**Astrocyte Reactivity and Interleukin Biomarkers link with Regional Brain Thickness and Volumes in Older Adults**
Author(s):	Maria Clark, University of Kentucky College of Medicine; Yuriko Katsumata, Sanders Brown Center on Aging, University of Kentucky; Xian Wu, Sanders Brown Center on Aging, University of Kentucky; David K Powell, University of Kentucky College of Medicine; Anders Andersen, University of Kentucky College of Medicine; Gregory A Jicha, University of Kentucky College of Medicine, Sanders Brown Center on Aging; Tiffany L Sudduth, Sanders Brown Center on Aging, University of Kentucky; Donna M Wilcock, Sanders Brown Center on Aging, University of Kentucky, Indiana University; Christopher M. Norris, University of Kentucky College of Medicine, Sanders Brown Center on Aging; & Yang Jiang, University of Kentucky College of Medicine, Sanders Brown Center on Aging.

Abstract: Abstract: Medial temporal and parietal atrophy in the brain are associated with preclinical Alzheimer's Disease and vascular diseases. Further, astrocyte reactivity contributes to vascular/AD diseases. The plasma immune biomarkers GFAP, IL-6, and IL-10 which are associated with Astrocyte reactivity in the brain. Leveraging UK-ADRC neuroimaging and biomarkers data, we test the hypotheses that increased GFAP (Astrocyte reactivity) and IL-6 mediated inflammatory responses are associated with reduced brain thickness and regional volumes.
Methods: 34 (18 women) cognitively intact volunteers, and 3 (1 woman) mild-cognitively impaired volunteers, average age 79 (SD= 8.53) years old, from UK-ADRC longitudinal cohort participated. Thickness and Volume was assessed for each participant using Magnetic Resonance Imaging and vascular/AD plasma markers were collected and measured.
Results: We observed increased GFAP correlates with thinner cortical thickness in the lh/rh inferior (-0.416/-0.343), superior, and transverse temporal area (-0.321/-0.255, -0.258/-0.286), and smaller transverse temporal volume (-0.262, -0.286). The volume of both bilateral accumbens areas showed moderate negative correlations with both GFAP (-0.539, -0.462) and IL6(-0.345, -0.313). In contrast, IL-10 biomarker positively correlates with bilateral inferior parietal (IP) volume, right IP thickness, left superior parietal and right paracentral volume.
Discussion: Results show the negative correlation of GFAP & IL6 in superior and transverse temporal regions indicate that astrocyte activity plays a key role in the neuroinflammatory process as neurodegenerative process. In comparison, the positive correlation with IL-10 seen in parietal cortices, suggesting the anti-inflammatory property of this cytokine may be serving as a compensatory response to similar processes of atrophy.

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Abstracts

Presentation 34

Abstract Title:	**Artificial Intelligence Software Impacts Ischemic Stroke Intervention Rates At a Comprehensive Stroke Center**
Author(s):	Hunter S. Hazelwood, Jacqueline A. Frank, Jessica Lee, Margie Campbell, Lesley Wise, Douglas E. Lukins, David L. Dornbos, Maiz Al-Kawaz, Shivani Pahwa and Justin F. Fraser

Abstract: Introduction: Viz.ai is a specialized artificial intelligence software engineered to discern aneurysms and emergent large vessel occlusions (ELVO) from CT-Angiography (CTA) imaging. As with any diagnostic tool, it is imperative to understand how the use of Viz.ai impacts procedural frequencies. In this study, we conducted a thorough examination of mechanical thrombectomy procedures post-implementation of Viz.ai, compared with those performed prior to the integration of Viz.ai.

Methods: Viz.ai was used to analyze CT angiography images from September 2020 through April 2023. The number of thrombectomy procedures performed in the 32 months after introduction of Viz.ai was compared to the number of thrombectomies performed in the 32 months prior to the implementation of Viz.ai. All images were secondarily reviewed by a faculty neuroradiologist.

Results: In the 32 months after the installation of Viz.ai, we found a 67% increase in total thrombectomies compared to the 32 months prior to the use of Viz.ai. In the 32 months prior to the use of Viz.ai, 270 thrombectomies were performed. In the 32 months after the use of Viz.ai 451 thrombectomies were performed.

Conclusion: This study shows the use of Viz.ai in the detection of emergent large vessel occlusion may lead to higher intervention rates via mechanical thrombectomy. Previous studies have shown an increase in procedure rates after extending the thrombectomy time window from 6 to 24 hours. One prior study found a 26.7% increase after this change, and we think this change does not fully account for the 67% increase at our center.

Supported by: Commercial funding from Viz.ai

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Presentation 35

Abstract Title:	**Surgical Management of Tricuspid Valve Endocarditis: Single Center Experience**
Author(s):	Omkar More, BS Neuroscience, MS2,; 1Sibu Saha, MD, MBA, 2; 1-University of Kentucky College of Medicine; 2-Division of Cardiothoracic Surgery, University of Kentucky, Lexington, KY

Abstract: Objective: Tricuspid valve endocarditis (TVIE) is a serious disease that caries high morbidity and mortality. The aim of this study was to review the outcomes of surgical treatments for TVIE.
Methods/Materials: This is a retrospective chart review of 48 patients who received surgical treatment for TVIE at UK Healthcare medical center between January 1, 2010 and December 31, 2021. This study was completed with IRB approval. There were 48 patients ages 18-54, 34 women and 14 men, and 47 White and 1 African American. 47 patients were IV drug users (IVDU).The most common presenting symptoms were fever, chills, dyspnea, and chest pain. Some patients presented with sepsis and respiratory failure. All patients received preoperative antibiotic regimens for around 6 weeks. Surgical interventions included 38 tricuspid valve replacements, 5 tricuspid repairs, and 5 AngioVac debulking procedures.
Results: 30-Day Mortality: 1 patient. 90-Day Mortality: 2 patients. Over 90-Day Mortality: 3 patients. Postoperative complications: Complete heart block (8), Bleeding (1), Fluid volume overload (1). 1 patient experienced cardiogenic shock and multiple organ failure post-op.
Conclusion: Tricuspid valve endocarditis is a dreadful disease that is very commonly seen in patients who commit IV drug abuse. Although patients benefit from antibiotic treatment, surgical intervention is required when infection leads to structural damage of the tricuspid valve.

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Abstracts

Presentation 36

Abstract Title:	**Noncontact optical imaging of tissue blood flow and oxygenation using a novel MW-scDCT**
Author(s):	Samaneh Rabienia Haratbar*, Department of Biomedical Engineering, U of Kentucky; Fatemeh Hamedi, Department of Biomedical Engineering, U of Kentucky; Faraneh Fathi, Department of Biomedical Engineering, U of Kentucky; Mehrana Mohtasebi, Department of Biomedical Engineering, U of Kentucky; Faezeh Akbari, Department of Biomedical Engineering, U of Kentucky; Xuhui Liu, Department of Biomedical Engineering, U of Kentucky; Guoqiang Yu, Department of Biomedical Engineering, U of Kentucky

Abstract: The efficiencies of oxygen delivery to tissues and removal of wastes depend on tissue blood flow. Imaging of both tissue blood flow and oxygenation allows for the assessment of tissue oxygen consumption rate, another crucial functional parameter linked to tissue physiopathology. An innovative, noncontact, noninvasive, portable, camera-based speckle contrast diffuse correlation tomography (scDCT) technology has been developed in our laboratory, enabling high-density 2D/3D imaging of deep tissue blood flow. In this study, we extended it to a multi-wavelength scDCT (MW-scDCT) by integrating multiple lasers at different wavelengths for simultaneous imaging of tissue blood flow and oxygenation. The MW-scDCT uses an electronically controlled galvo mirror to sequentially scan long-coherence near-infrared point lights at different wavelengths to multiple source positions. A scientific CMOS camera captures boundary spectral images obtained at multiple source locations on the tissue surface. Tissue blood flow image was reconstructed by analyzing spatial laser speckle contrasts resulting from red blood cell motions. Tissue blood oxygenation image was reconstructed from measured spectral attenuations by the tissue. The MW-scDCT was first optimized and evaluated using standard tissue-simulating phantoms with known optical properties. The MW-scDCT was then assessed for in-vivo imaging of tissue blood flow and oxygenation variations in human forearms during the artery cuff occlusion on the upper arm. The artery occlusion and releasing protocol resulted in significant variations in tissue blood flow and oxygenation, meeting physiological expectations. We are currently testing the MW-scDCT for real-time imaging and management of mastectomy skin flaps and premature brains.

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Abstracts

Presentation 37

Abstract Title:	**Genomic Characterization of Patients with Advanced Heart Failure at the University of Kentucky**
Author(s):	A. T. Minton, Department of Physiology, U of Kentucky; A. T. Yackzan, Department of Physiology, U of Kentucky; A. G. Wellete-Hunsucker, Department of Physiology, U of Kentucky; G. N. Milburn, Department of Physiology, U of Kentucky; U. Gulbulak, Department fo Physiology, U of Kentucky; K. S. Campbell, Divisions of Cardiovascular Medicine and Internal Medicine, U of Kentucky

Abstract: The Campbell Muscle Lab has spent 15 years building a cardiac biobank that now contains more than 15,000 myocardial specimens from 520 human hearts. Most of the samples were acquired from patients who received Ventricular Assist Devices or Heart Transplants. Genotyping has not been part of standard clinical care for this patient population, but cardiomyopathy panels were acquired for 33 patients (6%) who were considered at high risk of familial disease.

To further characterize our myocardial repository, DNA was extracted from 350 specimens and sent for whole exome sequencing. The average patient age is 51 years, ranging from 18 to 81 years, and over 90% reported non-Hispanic or Latino ethnic origin. There is a 7:1 male-to-female ratio, and the most common diagnoses were forms of non-ischemic heart failure (51%). Tertiary genomic analysis involves probing for 91 cardiomyopathic variants within the specimens. Collating this data will provide a genetic atlas representative of heart transplant recipients in central Kentucky. Further investigation will be required to evaluate the physiological deviation within specimens, which may elucidate the impact of variants on myocardial biophysical and biochemical properties.

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Abstracts

Presentation 38

Abstract Title:	**Association Analysis of CXCR4 and CXCL12 Polymorphisms with External Apical Root Resorption Concurrent with Orthodontia**
Author(s):	E. C. Melcher, College of Medicine, U of Kentucky; L. A. Morford, Department of Oral Health Science, U of Kentucky; J. K. Hartsfield Jr, Department of Oral Health Science, U of Kentucky

Abstract: Objectives: The aim of this study was to identify potential associations between External Apical Root Resorption (EARR) in patients undergoing orthodontic treatment and polymorphisms in the C-X-C Motif Chemokine Ligand 12 (CXCL12) and C-X-C Chemokine Receptor Type 4 (CXCR4) genes.
Methods: IRB oversight is provided by the University of Kentucky and Indiana University. A total of 231 white orthodontic patients from Northern Indiana were enrolled in this study. The extent of EARR was rated independently by 3 orthodontists using clinical records. Seventy-seven cases diagnosed with EARR and were age- and sex-matched to two control patients with little to no EARR (n=154). The length of time in treatment and maxillary pre-molar tooth extractions were recorded and DNA was collected from the buccal cells of each patient,Äôs mouth for genetic testing. Using a Taqman-based protocol, single nucleotide polymorphisms (SNPs) with or near the CXCL-12 gene (rs1801157, rs2297630, rs1746048, rs501120) and the CXCR4 gene (rs2228014, rs2680880) were genotyped.
Results: Genotyping of ~137 DNA samples are completed, and analysis of the remaining 94 samples are underway. Based on a mid-study evaluation, the case group appears to have been in orthodontic treatment ~4 to 5 months longer than the controls, cases were more likely to have maxillary 1st premolars removed, and there is a trend for moderate association to the rs2680880 SNP within the CXCR4 gene. The poster will summary our updated findings.
Conclusion: Results of this study should provide new information on the genetic influence of CXCL12 and CXCR4 on EARR concurrent with Orthodontia.

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Abstracts

Presentation 39

Abstract Title:	**Assessing the effectiveness of next-generation probiotics against Rhodococcus equi infection in vitro**
Author(s):	Md. Monowarul Islam, Department of Veterinary Science, U of Kentucky; Bibek Lamichhane, Department of Veterinary Science, U of Kentucky; Yosra A. Helmy, Department of Veterinary Science, U of Kentucky

Abstract: Rhodococcus equi is a zoonotic pathogen that causes pneumonia in foals and immunocompromised people. The efficacy of currently used antibiotics to treat infections are challenged by antimicrobial resistance. In this study, our goal is to evaluate the efficacy of novel probiotics strains against R. equi in vitro as an antibiotic alternative option. We screened 38 probiotics by Agar well assay against R. equi. To properly assess the inhibitory activity, probiotics and their supernatant were co-cultured with R. equi in co-culture media, and the log reduction was calculated between 6 and 120 hours. The effect of probiotics supernatants on the biofilm was also studied by crystal violet assay. Additionally, probiotics whole culture, supernatant and heat-killed cells were evaluated against the adhesion, invasion and survival of intra-cellular R. equi in J774A.1 cell. Data was analyzed using two-way ANOVA followed by Tukey test. All probiotics exert inhibitory action against R. equi, however, top six probiotics was selected based on their maximum zone of inhibition found in agar-well assay. Selected probiotics significantly inhibited R. equi growth after 12 hours ($p<0.05$) and had complete clearance of the bacteria at 120 hours of incubation together. Additionally, the supernatants of five probiotics possessed than 90% inhibition biofilm and preformed biofilm formation. Intracellular survival of the R. equi was also significantly reduced in cell culture assay after 24 hours. Our future studies will focus on characterization of virulence factors of R. equi. This study will help to find an effective antibiotic alternative option to treat Rhodocossus infections in humans and animals.

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Abstracts

Presentation 40

Abstract Title:	**Evaluate the efficacy of E. coli Nissle 1917 (EcN) supernatants on Campylobacter jejuni infections in vitro.**
Author(s):	B. Lamichhane, Department of Veterinary Science, Martin-Gatton College of Agriculture, Food, and Environment, U of Kentucky, Lexington, KY; Y. A. Helmy, Department of Veterinary Science, Martin-Gatton College of Agriculture, Food, and Environment, U of Kentucky, Lexington, KY

Abstract: Campylobacter jejuni is a major foodborne pathogen causing gastroenteritis worldwide. Poultry and poultry products are the main source of human infections. C. jejuni infections are treated using antibiotics and there is no vaccine to protect humans from infection. The emergence of antibiotic resistance in C. jejuni has necessitated the development of alternative therapeutics. E. coli Nissle 1917 (EcN) is a well-established probiotic with antagonistic effects against different bacterial infections. Here, we aim to evaluate the efficacy of EcN supernatants on C. jejuni infections in vitro. Initially, we evaluated the effect of EcN supernatants on the growth of C. jejuni using an agar-well diffusion assay, which demonstrated a high inhibition zone for Campylobacter's growth. The EcN supernatants significantly inhibited the growth of C. jejuni when cocultured in broth media. Furthermore, EcN supernatants were able to cause up to 82% and 75% reduction in pre-formed biofilms and biofilm formation respectively. Pre-treatment of human intestinal cell (HT-29 MTX) using EcN supernatants demonstrated significant ($p<0.05$) inhibition of adhesion, invasion, and intracellular survivability of C. jejuni in the cells. Similarly, EcN supernatants downregulated the expression of genes associated with virulence factors, biofilm formation, and colonization of C. jejuni using RT-PCR. Our future studies will focus on the characterization of EcN-derived bioactive antimicrobial compounds and test the effect of these compounds against C. jejuni colonization in vivo. Our study will facilitate the development of EcN-derived novel bioactive antimicrobial compounds as antibiotic alternatives for treating Campylobacter infections in humans and animals.
Keywords: E. coli Nissle 1917, antibiotic alternatives, C. jejuni, foodborne

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Abstracts

Presentation 41

Abstract Title:	**Cultural Narratives of Reproduction in Children's Literature: A Health Education Focused Content Analysis**
Author(s):	Krajny, S. Department of Kinesiology and Health Promotion, U of Kentucky; McMullen, J., Department of Kinesiology and Health Promotion, U of Kentucky.

Abstract: Introduction: The purpose of this study was to examine cultural narratives of human reproduction in children's literature. Schreier (2012) defines content analysis as "a method for systematically describing the meaning of qualitative material. It is done by classifying material as instances of the categories of a coding frame" (p.1). Methods: Content analysis was used to investigate cultural narratives regarding reproduction in a sample of 42 children's picture books. Inclusion criteria included: (1) children's picture books published in English; (2) children's picture books that tell the story of reproduction in some capacity; (3) children's picture books that are currently in print available on Amazon.com; and (4) children's picture books written for Pre-k – 2nd grade. Results: Findings indicated that five main reproductive narratives are told within contemporary children's picture books: The Prevailing Narrative, The Traditional Narrative, The Non-Traditional Narrative, The Least Common Narrative, The Absent / Invisible Narrative. 40% of the books examined were identified as being sex-positive and 60% of the books in this study were scored as sex-negative. Discussion: Current reproductive narratives told in children's picture books do not accurately represent the conditions and parameters of reproduction in the United States. Regular exposure to these stories can create unrealistic expectations around parenthood. Conclusion: Efforts should be made to improve the quality of children's books about reproduction. Future research should examine children's responses to books and adult-child interactions during shared book reading.

Supported by: None

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Presentation 42

Abstract Title:	**Unboxing Futures: Transforming Youth Substance Use Narratives through the #NoMoreBoxes Social Norming Campaign**
Author(s):	R. Adesiyan, Department of Kinesiology and Health Promotion, U of Kentucky; G. Cochran, Department of Kinesiology and Health Promotion, U of Kentucky; T. Ruekert, Department for Behavioral Health, Developmental & Intellectual Disabilities, Cabinet for Health and Family Services; M. Ickes PhD, Department of Kinesiology and Health Promotion, U of Kentucky.

Abstract: PURPOSE: The statewide #NoMoreBoxes campaign is a youth-informed substance prevention campaign that uses infographics, radio messages, an interactive website landing page, and social media promotion of a Public Service Announcement (PSA). The PSA uses statistics to emphasize most Kentucky youth are making the healthy choice not to use substances. The purpose of the poster is to discuss how implementing tailored social norms communication can support prevention interventions.
METHODS: High school students from geographically representative areas of Kentucky will participate in a mixed methods study. Focus group discussions with students will be used to synthesize students' perceptions of the campaign. Students will be asked questions on the effectiveness of the video and areas for improvement. Some questions include, What is the overall message you get after watching the video? Are there other messages you think should be shared? Students will also be asked to respond to an online quantitative survey assessing social influence, health behaviors, perceived norms and misperception, susceptibility, and injunctive norms.
RESULTS: The results of this study are forthcoming. Focus groups and surveys are in progress. From these results, we will assess how student receptivity and perception of youth substance use were impacted by tailored social norms communications.
CONCLUSION: This research aims to fill a gap in the research on Kentucky youth, which is an understudied population in substance prevention messaging. Evaluation of social norms campaigns promoted on nontraditional media is also extremely limited. Insights gained could help combat youth substance use in Kentucky and other states.

Supported by: None

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Center for Clinical and Translational Science

Abstracts

Presentation 43

Abstract Title: **Utilizing the NCHA to Inform College Health Programming: A Case Study**

Author(s): J.J. Wallace, Health and Exercise Science Program, Transylvania U; M.A. Miller, Center for the Enhancement of Learning and Teaching, U of Kentucky

Abstract: Background: The American College Health Association (ACHA) offers the National College Health Assessment (NCHA) to colleges and universities to assess multiple student health measures. Health data provide a picture of student needs and alert institutions to improvement opportunities.
Methods: The NCHA was administered at a small liberal arts institution in 2016, 2018, and 2023. Data were anonymously collected for seven categories: general health, academic impact, violence/safety, alcohol, sexual behaviors, nutrition, and sleep.
Results: Comparison of student data from 2016 to 2023 reveals both positive and negative insights. The data indicate that the perceived negative impacts of anxiety, depression, eating disorders, finances, traumatic events, sleep, and stress have increased. Data also indicated positive changes surrounding alcohol.
Discussion: These data will inform future public health programming and initiatives created in partnership with campus organizations dedicated to Student Health, Residence Life, Public Safety, and Religious Life, among others. For example, because students reported increased levels of stress and anxiety impacting academic performance, interventions to ameliorate stress and emphasize healthier coping strategies may be introduced in partnership with Student Health.
Conclusion: The NCHA can be used as part of public health surveillance efforts to monitor changes in student health over time. The comparison of multiple cohorts of survey results will influence programmatic decision-making and indicate areas to be prioritized and addressed with financial support and other resources.

Supported by: Internal funding provided by the Grants Allocation Committee of Transylvania University.

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Abstracts

Presentation 44

Abstract Title:	**Examining Prevalence of Emotional Exhaustion and Coping Strategies among UKCOM Medical Clerkship Students**
Author(s):	Z. Jones, U of Kentucky College of Medicine; S. Ahktar, U of Kentucky College of Medicine; M. Johnson, U of Kentucky College of Medicine; S. Short, U of Kentucky College of Medicine; M. Sturdivant, U of Kentucky College of Medicine; N. Cox, U of Kentucky College of Medicine; L. R. Sims, PhD, Departments of Behavioral Science and Medical Student Research; K. Jones, MD, Departments of Neurology and Medical Education

Abstract: Medical students undergoing clinical rotations may frequently encounter distressing cases, potentially leading to emotional exhaustion. Existing research primarily explores the impact of emotional exhaustion on healthcare providers, leaving a gap in understanding this experience for medical students. This study aims to 1) Investigate the prevalence of emotional exhaustion among third-year medical students on a single clinical rotation at the University of Kentucky, and 2) Suggest how orientation materials for clinical rotations might be altered if needed to incorporate coping skills teaching. A confidential, IRB-approved questionnaire was administered to UKCOM third-year students at the end of the 6-week Emergency Medicine/Neurology block. The survey offers insights into students' encounters with distressing cases and their coping mechanisms. Participants receive a $10 incentive upon survey completion. Initial findings indicate that 30% of participants reported emotional exhaustion post-rotation. Open responses unveiled themes such as 1) helplessness in the limited student role, 2) witnessing patient harm or death, 3) revisiting personal trauma, and 4) empathy burden. Among those experiencing emotional exhaustion, 87.5% "sometimes" felt prepared for distressing cases. Conversely, 33.3% of those without emotional exhaustion "sometimes felt prepared," while 64.3% "frequently or always" felt prepared. This preliminary data suggests that students who felt prepared reported lower rates of emotional exhaustion. We will next advocate for the integration of coping mechanism strategies, including those reported by survey participants, into UKCOM's pre-clerkship orientation curricula to mitigate risk of emotional exhaustion.

Supported by: Survey participation incentives funded by the UK Department of Neurology

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Abstracts

Presentation 45

Abstract Title:	**Investigating Controls of Flash Floods in the Headwaters of the Cumberland Plateau Using 40 Years of Environmental Data**
Author(s):	L. Ott, Department of Civil and Environmental Engineering, U of Louisville; T. Mahoney, Department of Civil and Environmental Engineering, U of Louisville; K. Sena, Lewis Honors College, U of Kentucky; E. Meyers, Department of Computer Science, U of Kentucky; C. Barton, Department of Natural Resources and Environmental Science, U of Kentucky.

Abstract: Climate change is expected alter the frequency and magnitude of extreme precipitation patterns throughout much of the US. This threatens to increase flash flooding in many communities, particularly those located adjacent to streams, as found throughout central Appalachia. Yet, how climate change and flash floods manifest on the Cumberland Plateau in central Appalachia remains uncertain. In particular, little is known regarding the mechanisms controlling flash floods in small headwater streams, which make up over 80% of total stream network length in this part of the US. Our goal is to better understand flood response in headwater catchments and the role of these systems in the generation of floods in downstream water bodies. We investigate flood generation in headwater systems utilizing the ~40-year precipitation and hydrology dataset from UK's Robinson Forest. The synthesis of the data collected allows for the statistical analyses of flash floods occurring in Robinson Forest over the collection period, and the development of event-scale, process-based hydrologic models that estimate the contribution of headwaters to downstream floods and the dynamics of headwater streamflow during flood periods. This study characterizes flooding responses to low, mid, and high-intensity precipitation events in both 1st order headwater streams and larger 3rd and 4th order streams in which those headwaters are nested. Preliminary results indicate that flash flood frequency is increasing, and the variability in flood magnitude is associated with specific geomorphic and antecedent moisture conditions. The approach may have utility in characterizing flash flood response in other physiographic regions throughout the US.

Supported by: CCTS pilot project

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Abstracts

Presentation 46

Abstract Title:	**A Storm Is Brewing: Improving flash flood prediction for the Cumberland Plateau using 40 years of Robinson Forest enviro**
Author(s):	K. L. Sena, Lewis Honors College, U of Kentucky; E Meyers, Department of Computer Science, U of Kentucky; L. Ott, Department of Civil and Environmental Engineering, U of Louisville; T. Mahoney, Department of Civil and Environmental Engineering, U of Louisville; and C. Barton, Department of Forestry and Natural Resources, U of Kentucky.

Abstract: In July 2022, parts of eastern Kentucky were inundated by the most significant rain event for the area in decades (and possibly centuries), causing catastrophic flash flooding and loss of life. Among the many questions prompted by this and other recent flood events, we are curious whether flood risk in eastern Kentucky is shifting over time, and whether that risk is associated with climate change (e.g., shifts in the intensity or frequency of rain events). Here, we report on results of our study analyzing over four decades of precipitation and streamflow data from UK's Robinson Forest in eastern Kentucky, with a focus on analysis of trends in annual and seasonal precipitation, temperature, and streamflow. We found that annual temperature has increased significantly over the period of record (1971 - 2018). Seasonally, temperatures are increasing only in the spring. Precipitation data had too many gaps to permit robust analysis, but generally showed no significant over time in total annual precipitation. Streamflow data demonstrated complex shifts over time, but suggested that high-flow events may be increasing in frequency. This study is ongoing; continued analysis will better elucidate how these trends interrelate, particularly with respect to precipitation and streamflow. Overall, the increase in high-flow results over the period of record suggests an increase over time in flood risk, and merits further research.

Supported by: UK for KY pilot funding from CCTS

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Faculty
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Abstracts

Presentation 47

Abstract Title:	**Role of cholinergic agonists & hyperthermia on regional skin barriers: exposure science implications**
Author(s):	K. A. Bullens, Department of Physiology, College of Medicine, U of Kentucky; N. Empey, Department of Physiology, SURES Program; A. F. McGrath, Department of Physiology, U of Kentucky; T. E. Wilson, Departments of Physiology and Epidemiology & Environmental Health, Saha Cardiovascular Research Center, College of Medicine, U of Kentucky

Abstract: The skin impedes entry to harmful exposures, and neural-induced changes to skin condition or function may impact barrier stability. In this study, we explored how cholinergic neurotransmitters influence skin barriers by assessing epithelial transport.

We hypothesized increasing methylcholine (MCh) or acetylcholine (ACh) would decrease transepithelial resistance across mouse pawpad skin at skin (32°C) or internal (37°C) temperature. We also predicted transepithelial resistance would be higher in tail skin vs pawpads, and subjecting samples to 40°C (heat stress) would lower transepithelial resistance compared to 32°C.

30 C57BL/6 mouse rear pawpads (containing sweat glands) and seven mouse tail skins (no sweat glands) were dissected and mounted into a vertical Ussing chamber filled with Kreb's bicarbonate buffer, gassed with 95% O_2 & 5% CO_2, and encased in a temperature jacket. Transepithelial resistance utilized a current clamp and was measured using Ag–AgCl2 electrodes placed in both epidermal and hypodermal baths with hypodermal-side-only cholinergic dosing.

ACh invoked significant dose-dependent decreases in transepithelial resistance in pawpads at 37°C. Tail skin transepithelial resistance was significantly higher than pawpad skin. However, MCh decreased transepithelial resistance significantly at both sites. Increasing temperature to 40°C did not alter the magnitude of decrease in transepithelial resistance to MCh in pawpads compared to 32°C. Transepithelial resistance observations were similar when data were expressed as absolute or relative changes to baseline.

Increased ion movement (signifying a leakier epithelium) occurred with cholinergic stimulation but not local hyperthermia, suggesting neural influences can sufficiently affect skin function enough to alter regional skin barriers.

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Other
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Center for Clinical and Translational Science

Abstracts

Presentation 48

Abstract Title:	**Butyrate-Induced Mitochondrial Function Improves Barrier Function In Inflammatory Bowel Disease (IBD)**
Author(s):	E. Conder, U of Kentucky College of Medicine; H. Shay, U of Kentucky College of Medicine; H. Vekaria, Neuroscience, U of Kentucky; S. Bhogoju, Internal Medicine-GI, U of Kentucky; T. Goretsky, Internal Medicine-GI, U of Kentucky; N. Kapur, Internal Medicine-GI, U of Kentucky; P. G. Sullivan, Neuroscience, U of Kentucky; T. Barrett, Internal Medicine-GI, University of Kentucky College of Medicine

Abstract: Background: Short-chain fatty acids (SCFAs), end-product of gut microbial metabolism, play important roles in colonic homeostasis. Butyrate is a SCFA that fuels intestinal epithelial cells (IECs), but is deficient in inflammatory bowel disease (IBD) due to dysbiosis. This study posits butyrate supplementation drives mitochondrial respiration induced barrier function in IBD.
Methods: Normal human Colon mucosal (NCM460) epithelial cells treated overnight with sodium butyrate (SB; 0.5-5.0mM) +/- TNF (1ng/ml). Mitochondrial deficiency: TFAM (mitochondrial transcriptional factor A), silenced (shTFAM) in NCM460 cells. Mitochondrial respiration assessment: NCM cells maintained/treated with SB (-/+TNF) under glucose-free medium. Oxygen consumption rate (OCR): Seahorse Analyzer (Agilent Technologies). Gene expression analysis: RT-qPCR from RNA isolated from untreated/treated NCMs and shTFAM NCMs compared to shControl cells.
Results: Seahorse showed significant increase in maximal/spare respiratory capacity and ATP production at sub-optimal (2mM)/optimal (5mM) SB concentrations, suggesting SB-induced mitochondrial respiration. SB significantly increased expression of mitochondrial biogenesis genes and complex I/IV/V at optimal 5mM concentration. The effect of SB was increased under inflammatory conditions (+TNF) with significant decrease in butyrate transporter mRNA compared to TFAM-proficient shControl cells, irrespective of treatment. Similar decreased expression was observed for tight-junction genes in shTFAM versus shControl. However, butyrate transporters and ZO1 mRNA increased significantly in shTFAM and shControl after 2mM suboptimal SB+TNF. Only shTFAM cells showed increase in Occludin transcript level after SB+TNF, with no effect in shControl.
Conclusion: Butyrate metabolism is critical in promoting oxidative health of mitochondria, which further drives transporter-mediated butyrate utilization and promotes barrier integrity under inflammatory conditions as in IBD.

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Presentation 49

Abstract Title: **Repressed Mitochondrial Function Limits Crypt Fissioning in Inflammatory Bowel Disease**

Author(s): J. R. Krauth, Internal Medicine-GI, University of Kentucky College of Medicine; S. A. Hassan, Internal Medicine-GI, University of Kentucky College of Medicine, VA Lexington Medical Center, Lexington, KY; M. A. ElSaadani, Internal Medicine-GI, University of Kentucky College of Medicine; L. A. Wempe, Internal Medicine-GI, University of Kentucky College of Medicine; A. Kasem, Internal Medicine-GI, University of Kentucky College of Medicine; S. Bhogoju, Internal Medicine-GI, University of Kentucky College of Medicine; T. Goretsky, Internal Medicine-GI, University of Kentucky College of Medicine, VA Lexington Medical Center, Lexington, KY; G. Lee, The University of Alabama at Birmingham Heersink School of Medicine, Birmingham, AL; T. Barrett, Internal Medicine-GI, University of Kentucky College of Medicine, VA Lexington Medical Center, Lexington, KY; N. Kapur, Internal Medicine-GI, University of Kentucky College of Medicine, VA Lexington Medical Center, Lexington, KY.

Abstract: Background: Mucosal healing in inflammatory bowel disease (IBD) is a predictor of remission. Unfortunately, many IBD patients remain refractory or lose responsiveness to therapies leading to persistent mucosal ulceration. Prospective pediatric studies suggest that reduced mitochondrial gene expression associates with unfavorable clinical outcomes in ulcerative colitis (UC) and Crohn's disease (CD). In this study, we postulate that in diverticulitis (DvC) patients, moderate-to-severe level of tissue inflammation induces fissioning of crypts with normal level of mitochondria.

Methods: Surgical resections were collected from patients with colonic DvC (n=39), active Crohn's disease (CD; n=27), ulcerative colitis (UC; n=21) and uninvolved areas of colorectal cancer patients (normal control, nc). Formalin-fixed paraffin-embedded tissues were H&E-stained and scored for extent of inflammation by blinded GI-pathologist. Immunohistochemical (IHC) staining was performed for marker of mitochondrial complex-IV (MTCO1).

Results: Histological investigations revealed higher rate of fissioning crypts per 100 crypts in DvC (4.778±2.9) as compared to UC (3.469±1.79) or CD (3.604±1.3) patients. This represents 37.7% and 32.6% higher crypt fissioning in DvC vs UC (**p<0.01) and DvC vs CD (*p<0.05), respectively. Further, IHC showed higher MTCO1 expression (area %) in DvC (14.32±3.3) compared to UC (6.6±4.85) and CD (9.25±5.9). Interestingly, all three inflammatory conditions (DvC, UC, CD) showed reduction in MTCO1 expression compared to normal control (DvC/nc: 27%; p<0.067, UC/nc: 71%; **p<0.01, CD/nc: 60.3%; **p<0.01) Crypt-specific MTCO1 expression revealed 2.16-fold and 1.55-fold higher MTCO1 levels in DvC compared to UC and CD, respectively.

Conclusion: Overall, our findings suggest that lack of of adequate mitochondrial function is associated with perturbed crypt fissioning in IBD patients, in contrast to DvC with comparatively higher mitochondrial complex levels.

Supported by: We acknowledge the support of University of Kentucky (UKY) and Veteran Affairs (VA) animal facilities. Human biopsy collection was approved by the UKY IRB. This work was supported in part by a VA Merit Award [1I01CX001353-01A1], Awuah grant [NIH RO1CA258421-01; NIH COBRE P20 GM130456-01A1] and Barrett RO1 grant [2R01 DK095662-10], and¬†patents [PCT/US21/43774; PCT/US21/52719]. The Professional Student Mentored Research Fellowship (PSMRF) Project is supported by the National Center for Advancing Translational Sciences through Grant UL1TR001998.

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Center for Clinical and Translational Science

Abstracts

Presentation 50

Abstract Title: **Serotype diversity, antimicrobial resistance, and virulence factors of zoonotic Salmonella**

Author(s): A Kabir, Department of Veterinary Science, U of Kentucky; S Locke, U of Kentucky Veterinary Diagnostic Laboratory, Lexington, KY; E Erol, U of Kentucky Veterinary Diagnostic Laboratory, Lexington, KY; Y. A. Helmy, Department of Veterinary Science, U of Kentucky.

Abstract: Salmonella is a prominent foodborne pathogen, and its development of antimicrobial resistance (AMR) further complicates the treatment procedure. This research aimed to investigate the biofilm formation and the phenotypic and genotypic antibiotic-resistant profiles of Salmonella serotypes isolated from cattle and horses. A total of 55 Salmonella spp. were isolated from necropsied cattle (n = 29) and horses (n = 26) using blood agar with 5% sheep blood, Eosin-Methylene Blue Agar and XLT4 agar media. Confirmation of the serotypes was performed followed by biofilm quantification using crystal violet assay. The resistance profile of the isolates was determined by broth microdilution assay using the Sensititre™ EQUIN2F or BOPO7F Vet plates. The genotypic AMR and virulence profiles were detected using polymerase chain reaction (PCR). Several Salmonella serotypes were detected within the collected isolates including S. Dublin, S. Typhimurium, and S. Thompson and all these isolates were likely biofilm producers as evidenced by high prevalence of invasion (invA=100%) and biofilm (spiA=100%) related genes among these isolates. Among cattle isolates, 100% were resistant to gentamicin and neomycin. Whereas horse isolates were 100% resistant to amikacin, cefazolin, and gentamicin. A total of 76.5% and 44.4% of the isolates were multidrug-resistant (MDR) in horses and cattle, respectively. Our investigation identified cattle and horses as possible sources of pathogenic Salmonella transmission to humans. Thus, it is important to perform more monitoring and surveillance studies to track the source of infection of Salmonella and develop preventive measures.

Supported by: None

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Center for Clinical and Translational Science

Abstracts

Presentation 51

Abstract Title:	**Ocular Tuberculosis Presenting as Uveitic Glaucoma without a Lung Primary: A Case Presentation**
Author(s):	A.M. Dupont, College of Medicine, U of Kentucky; P. Ghahari, Tehran University of Medical Sciences; J.A. Grubbs, Department of Infectious Disease, U of Kentucky; M.M. Abou-Jaoude, Department of Ophthalmology, U of Kentucky; E. Ghahari, Department of Ophthalmology, U of Kentucky.

Abstract: Uveitic glaucoma is a rare ocular manifestation of tuberculosis (TB). The patient is a female who recently immigrated from Senegal with a history of glaucoma diagnosed there. She presented to ophthalmology with symptoms of severe blurring of vision. Initial examination revealed no light perception in the right eye (OD) and 20/100 in the left eye (OS). Tonometry measured intraocular pressures (IOP) of 30 and 39 mmHg, OD and OS, respectively. Slit lamp exam was notable for large pigmented keratic precipitates with anterior chamber inflammation in both eyes. In the fundus exam, she had total nerve excavation without posterior inflammation in both eyes. Laboratory examination was notable for a positive QuantiFERON TB Gold test. Further careful history revealed unexpected weight loss without fever, chills, or fatigue; she denied chest tightness, cough, or shortness of breath. Notably, the patient had recently become pregnant. A chest radiograph indicated no pulmonary involvement. Tuberculous uveitis was determined to be the likely cause, and the patient was started on Ethambutol, Isoniazid, and Rifampin, with Pyridoxine. Pyrazinamide was avoided due to the patient‚Äôs pregnancy. Brimonidine and Timolol drops were used to control the IOP. At follow-up, uveitis was no longer active, with stable vision and IOP at 16 mmHg in both eyes. The report highlights the critical importance of considering TB in the differential diagnosis of uveitis, particularly when confronted with atypical clinical presentations.

Supported by: None

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Abstracts

Presentation 52

Abstract Title: **RELA+E Research Study**

Author(s): Jade Forest, Principal Investigator of the University of Kentucky; Shemeka Thorpe, Ph.D., Faculty Advisor of the University of Kentucky

Abstract: More than forty years after the AIDS epidemic, there is still no cure for HIV. The contemporary landscape of HIV. Despite current health messaging stepping away from the problem of HIV, HIV still disproportionally affects Black Women. Black Women make up 91% of new HIV infections attributed to heterosexual contact. This study chose to examine the influence of stigma, romantic relationships, and social support on the disclosure process for Black Women who are HIV positive. This research focuses on Black Women in Wayne County, Michigan, who are HIV positive and have been in a romantic relationship for more than a year. The HIV infection rate among Black Women was the highest compared to women of all other races and ethnicities (CDC, 2022). To better understand the lived experiences of Black Women with HIV, we conducted in-depth qualitative interviews. This approach helped us gather insights into their experiences. Interviews were analyzed using thematic analysis of interviews with 7 participants; we identified four main themes related to their responses upon receiving a diagnosis. These themes include Actions (immediate and later) and Emotions (immediate and later). Each overarching theme comprised various sub-themes, such as Disclosing to Family, Disclosing to Partner, Support Groups, Relationship after Diagnosis, Initial Reactions, View on Self, and Motivation. These sub-themes help make sense of the participants' diverse perspectives and experiences in response to their diagnoses. This study helps foreground an often-overlooked perspective on HIV and offers public health scholars new strategies to help Black Women with a positive diagnosis.

Supported by: SPARK UK Center for Clinical and Translational Science

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Presentation 53

Abstract Title:	**Enhancing Opioid Overdose Surveillance: A Comparative Study of EMS Definitions and Machine Learning NLP Classifiers**
Author(s):	P Rock, Substance Use Priority Research Area, University of Kentucky; S Slavova, Department of Biostatistics, College of Public Health, University of Kentucky; J Talbert, Institute for Biomedical Informatics, University of Kentucky; S Walsh, Center on Drug and Alcohol Research, University of Kentucky; D Harris, Institute for Biomedical Informatics, University of Kentucky

Abstract: The recent surge in opioid-related fatalities has underscored the epidemic's severity, particularly in Kentucky, where it ranks fourth nationally. Kentucky has seen significant rises in opioid deaths, disproportionately affecting marginalized groups. In response, leveraging Emergency Medical Services (EMS) data for overdose surveillance has become pivotal. However, the lack of rigorous evaluation for opioid overdose identification in these datasets presents a challenge, particularly regarding accuracy and fairness across different demographics. This research scrutinizes five opioid overdose detection methods used in EMS data and explores machine learning natural language processing (MLNLP) as a superior alternative. By examining Kentucky's EMS records from 2018 to 2022, involving a review of 2,483 emergency cases, half of which involved Black patients, this study assessed these methods' effectiveness. Ground-truth labels were determined by expert paramedics through a detailed review of patient records, including narratives and medication data, utilizing MLNLP with a Random Forest model to analyze narrative data.

Findings indicate significant disparities in the effectiveness of these definitions, with the most stringent missing many cases and the most lenient generating high false positives. The MLNLP model demonstrated superior performance, with an F-score of 0.891, highlighting the potential of machine learning in improving surveillance precision. Notably, all definitions showed biased performance favoring White patients over Black, pointing to the necessity of ensuring demographic fairness in surveillance models. This study underlines the limitations of current rule-based approaches and the advantages of MLNLP, offering insights for jurisdictions looking to refine overdose surveillance, with a strong emphasis on achieving demographic equity.

Supportedby: This research was supported by the National Institute on Drug Abuse (NIDA) of the National Institutes of Health under award number R01DA057605 Rapid Actionable Data for Opioid Response in Kentucky (RADOR-KY).

Data provided by the Kentucky Board of Emergency Medical Services (KBEMS), Kentucky State Ambulance Reporting system.

The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health or KBEMS

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Abstracts

Presentation 54

Abstract Title:	**Rapid Ideation and Prototyping Pipeline: Effective Transdisciplinary Collaboration in Digital Health**
Author(s):	D. Strakovsky, School of Art and Visual Studies, U of Kentucky; E. Hester, Department of Integrated Strategic Communication, U of Kentucky; A. Montgomery-Yates, Division of Pulmonary, Critical Care and Sleep Medicine, U of Kentucky; A. Glueck, Department of Neurology, U of Kentucky; R. Topp, College of Nursing, U of Kentucky; M. Riggs, Department of Epidemiology and Environmental Health, U of Kentucky; C. Eby, School of Art and Visual Studies, U of Kentucky;

Abstract: Digital health technologies can support care delivery by facilitating better visualization and communication of health information; enabling novel treatments for pain, anxiety, and addiction; and reducing patients' social isolation. Unfortunately, there are a number of design and development points of friction that hamper the effectiveness and usability of digital health solutions. Digital interfaces are often clumsy or inaccessible; solutions are not nimble enough to respond to evolving needs or high volumes of health data; and tools often lack investment in design methods that consider end users. The implications are consequential: studies have linked these barriers to professional burnout among physicians and poor clinical outcomes among care teams and patients. Moreover, the research and development cycles are notoriously slow and expensive. Rapid Ideation and Prototyping Pipeline (RIPP), built upon principles of Human Centered Design (HCD) aims to boost the production capacity of healthcare researchers. We are currently tracking individual projects as they progress along the RIPP as a means of discovering quality improvements (i.e., improving the standardized processes and structures to reduce variation, achieve predictable results, and improve outcomes).
We will present the descriptions of the major stages of RIPP and tracking methodologies along with key time and completion metrics. In addition, qualitative observations by the team and our collaborators will be presented. Through this process, we foster continued connections between experts from the creative disciplines with investigators and providers in the biomedical and health sciences to identify and address gaps in health and healthcare.

Supported by: University of Kentucky Office of Vice President for Research Leadership Academy Emerging Themes Grant

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Abstracts

Presentation 55

Abstract Title: **Colocalization Analysis to explore shared variants for Alzheimer's Disease and Cancer**

Author(s): K.Z.Aung, Department of Biostatistics, University of Kentucky, Sanders-Brown Center on Aging, University of Kentucky, X.Wu, Department of Biostatistics, University of Kentucky, Sanders-Brown Center on Aging, University of Kentucky, E.L. Abner, Sanders-Brown Center on Aging, University of Kentucky, Department of Epidemiology, University of Kentucky, P. T. Nelson, Sanders-Brown Center on Aging, University of Kentucky, Department of Pathology, University of Kentucky, D.W. Fardo, Department of Biostatistics, University of Kentucky, Sanders-Brown Center on Aging, University of Kentucky, S.Karanth, Department of Surgery, College of Medicine, University of Florida, UF Health Cancer Center, University of Florida, Y.Katsumata, Department of Biostatistics, University of Kentucky, Sanders-Brown Center on Aging, University of Kentucky

Abstract: Background: There has been evidence in recent years of a negative relationship between Alzheimer's disease (AD) and cancer, but the precise mechanisms are still unknown. In this study, we will use colocalization analysis to discover overlapping loci that may have high antagonistic pleiotropy and thus may be involved in the inverse relationship of AD and cancer.

Methods: Using Alzheimer's Disease Sequencing Project (ADSP) whole genome sequencing (WGS) data, National Alzheimer's Coordinating Center (NACC) uniform dataset (UDS) and neuropathological (NP) data, we will generate the summary statistics pertaining to AD and AD neuropathologic change (ADNC). Summary statistics for five cancers (liver, lung, prostate, breast, and colon) were obtained from the United Kingdom (UK) Biobank. We will assess colocalizations between AD/ADNC and the five cancer types. As preliminary data, we have used Kunkle et al. (2019) GWAS of clinically diagnosed AD and AD related dementia and five types of cancers and examined the popular hypothesized gens such as APOE, TP53 and GRN.

Results and Conclusion: Our preliminary results showed that there was no colocalization in APOE, TP53 and GRN gene regions. Further studies are needed to explore the underlying causal variants and connecting mechanisms. We hope that our findings can help with precision treatment for AD and other malignancies, as well as early identification and prevention for both diseases.

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Abstracts

Presentation 56

Abstract Title:	**Recovery of astrocyte calcium signaling and cerebrovascular dynamic from general anesthesia**
Author(s):	M. Promkan, R. Kimseng, K. Drummond, B. Weiss, C. J. Gant, C. M. Norris, and P. Sompol; Sanders-Brown Center on Aging, College of Medicine, University of Kentucky

Abstract: The mechanism of astrocyte and its related cerebrovascular function during anesthesia recovery are under studied. Here we investigated the effect of isoflurane on astrocyte calcium signaling in time-dependent series of different consciousness stages. Adeno associated virus was injected into the barrel cortex of wildtype mice to express calcium biosensor, GCaMP, under astrocyte specific promoter, Gfa. Then, the cranial window was prepared for further intravital imaging. The animals were anesthetized with isoflurane and mounted under multiphoton microscopy. We performed simultaneous air-puff stimulation of contralateral whiskers and recording of astrocyte calcium signaling at pre- and during stimulation at each consciousness stage starting from fully unconscious condition where isoflurane levels were maintained at 1.5%. Then, the same measurements were done when levels of isoflurane were at 0.3% for partial unconscious and 0% for fully awake condition. Our results showed that astrocyte calcium signaling was diminished during whisker stimulation under unconscious condition and significantly increased under partial and fully conscious conditions. For cerebrovascular analysis, we found increased basal penetrating arteriole diameter at both at 1.5% and 0.3% condition respectively, compared to fully awake condition. During whisker stimulation, the magnitude of vascular diameter was not changed in the unconscious condition. Vasoconstriction was observed in partial unconscious stage during whisker stimulation. On the other hand, the magnitude of vasodilation was increased in fully awake condition. Our results indicate returning of responsiveness of astrocyte calcium signaling, vascular dynamic and physiology of hyperemic response that may involve in brain function and cognitive reconstitution during anesthesia recovery.

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Abstracts

Presentation 57

Abstract Title: **A brain-localized CD27+CD138+ B cell subset in aged mice**

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Abstract: Subsets of B lymphocytes arise from the skull bone marrow and mature into antibody-producing cells that are distinct from peripheral populations. However, it is unknown if cells from this region contribute to post-stroke neuroinflammation. Therefore, the objective of this study is to identify B cell populations in the brain that are distinct from peripheral populations and that may derive from the skull bone marrow.

Aged C57BL/6 female mice underwent 30-minute transient middle cerebral artery occlusion on the left side and were sacrificed after 3 weeks. Brains and spleens were analyzed using flow cytometry to identify B cell populations. Subset numbers were analyzed in GraphPad Prism with 2-way ANOVA with multiple comparisons (Benjamini; a=0.05).

CD27 and CD23 are markers of mature B cells and CD138 is a marker of plasma cells. Uniform manifold approximation and projection (UMAP) clustering showed a CD19+CD27+CD23+CXCR5+CD138+IgM+ cell population that was significantly higher in the left cortex versus the spleen and other brain regions in uninjured animals (all $p<0.01$). Interestingly, this difference disappeared in injured animals.

A distinct population of CD27+CD138+ activated memory B cells is elevated in the left cerebral cortex at baseline and decreases after ipsilateral tMCAo. It is possible that these cells release antibodies and contribute to neuroinflammation associated with aging. It is unknown if the post-stroke decrease is due to phenotype change or migration out of the brain. Ongoing studies aim to characterize the origins and roles of this unique B cell population.

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Abstracts

Presentation 58

Abstract Title:	**Analyzing the Effect of Nanoparticle Size on Modulation of Circulating Innate Immune Cells Following Spinal Cord Injury**
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Abstract: Spinal cord injury (SCI) causes paralysis below the level of injury and allows for the infiltration of various circulating innate immune cells through the damaged blood-spinal cord barrier. These cells release multiple signaling cytokines to promote inflammation following injury, leading to an inhibition of spinal cord regrowth and recovery. In our previous study, naked poly(lactide-co-glycolide) (PLGA) nanoparticles (NPs) were shown to exhibit immunomodulatory effects following spinal cord injury in mice. To maximize the immune modulation and therapeutic effects of these NPs, multiple physicochemical properties must be optimized. In this study, we investigated the effects of nanoparticle size on immune modulation through an ex vivo study. Initially, PLGA NPs were fabricated with poly(ethylene-alt-maleic anhydride) (PEMA) as a surfactant for negative surface charge at 100 nm and 500 nm sizes. Contusive SCI was induced using an IH impactor (50 kdyn) at the T-10 level. Peripheral blood was collected, and innate immune cells were isolated at 1, 3, and 7 days after SCI. These cells were incubated with each NP formulation for 3 hours. The immune cells' activation, internalization, and polarization by NPs were then characterized. Our data indicates that the size of NP formulations plays a critical role in immune cell internalization, activation, and polarization. In future studies, we will investigate additional physicochemical properties of the NP including surface charge and molecular weight to identify the key physicochemical factors for efficacious NP treatment for SCI.

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Presentation 59

Abstract Title:	**Investigating Cerebral Metabolism following a TBI in an AD-relevant mouse model**
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Abstract: Alzheimer's Disease (AD) is a neurodegenerative condition marked by metabolic dysfunction and amyloid accumulation. Glucose hypometabolism, a critical aspect of AD, manifests early in its progression and aligns with the onset of clinical symptoms. Similarly, metabolic dysfunction is associated with Traumatic Brain Injury (TBI), suggesting an intersection between TBI and AD. Understanding the interplay is essential for unraveling AD's etiology and identifying therapeutic strategies. We hypothesized TBI would exacerbate the long-term outcomes in the APP/PS1 KI model, predisposed to developing amyloid plaques. Utilizing this mouse model of familial AD, we examined mitochondrial bioenergetics and metabolomics following TBI. After oral administration of [U-13C] glucose, higher metabolite abundance and mean enrichment of pyruvate was observed 1-month post-injury in brain tissue of KI mice but resolved by 8 months post-injury, independent of injury status. Other metabolites, such as malate, aspartate, GABA, and glutamate show higher 13C enrichment in the cortex of KI mice, regardless of injury status. APP/PS1 KI mice displayed lower State IV complex I oxygen consumption rates, suggesting differences in metabolite abundance and enrichment disrupt mitochondrial homeostasis. Injury did not lead to an increase in amyloid plaque burden in KI mice. Our findings highlight metabolic differences between KI and WT genotypes, supporting the role of metabolic dysfunction in AD. Surprisingly, TBI showed limited long-term impact on genotype. The study underscores the significance of metabolic health in AD and the potential for early interventions to mitigate metabolic dysfunction. Further research is needed to fully understand the complex interplay between these factors.

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Presentation 60

Abstract Title:	**Mapping Pseudouridine Modifications in the Transcriptome of the Human Brain through Long-Read Direct RNA Sequencing:**
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Abstract: Pseudouridine, among the >170 RNA modifications studied, holds key implications for understanding the intricate epi-transcriptomic landscape and its roles in RNA structure, function, and stability, particularly in the context of human diseases. The challenge lies in deciphering the complexities of RNA modifications, which has become more apparent with advanced detection methods like high-throughput long-read direct RNA sequencing via Oxford Nanopore Technologies. This project aimed to address this challenge by assessing the frequency of pseudouridine sites in the human dorsal lateral prefrontal cortex. By mapping high-probability (>90%) pseudouridine sites at a single-base resolution, particularly within mRNA transcripts, revealed 26 sites of interest. Notably, approximately 55% of these sites were in exonic regions. Many mRNA transcripts of various genes, with a high probability of pseudouridine, demonstrated a tendency for containing > 1 pseudouridine site. Our analysis of genes exhibiting a high likelihood of containing pseudouridine uncovered distinctive profiles within transcripts associated with medically relevant genes. Specifically, the Capicua Transcriptional Repressor gene, belonging to the high mobility group box superfamily of transcriptional repressors, is linked to intellectual development disorders. Additionally, the Solute Carrier Family 29 Member 4 gene encodes a transporter protein facilitating the catalysis of monoamines in presynaptic neurons and is associated with brain compression diseases. Our findings highlight the potential of utilizing long-read direct RNA sequencing for precise pseudouridine detection, offering a valuable approach to profiling pseudouridine sites and further our understanding of their role in human diseases.

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Abstracts

Presentation 61

Abstract Title: **Impact Of Early Mobilization On Length Of Stay In Acute Ischemic Stroke**

Author(s): K. V. Comer, U of Kentucky College of Medicine; K. O'Connor, Department of Neurology, U of Kentucky; J. D. Lee, Department of Neurology, U of Kentucky

Abstract: IV rt-tPA is standard of care in patients presenting within 4.5 hours of acute ischemic stroke (AIS) symptom onset. Despite its short half-life, concerns regarding the safety of early mobilization remain, which may delay patients' time to rehabilitation evaluation. We previously demonstrated the safety of early mobilization, using stratification based on stroke severity. This study aims to compare time from mobility order to PT/OT evaluation and total length of stay between patients whose mobility orders were congruent with institutional guidelines to those with incongruent orders.

This is a retrospective case-cohort study of AIS patients who received IV tPA and/or mechanical thrombectomy (MT), admitted to our center April 2018 to December 2019. Prior to this, a 24 hour bedrest protocol post-rtPA was in place. In April of 2018, a new mobility protocol was established stratifying bedrest time following tPA and/or MT to 1, 6, or 8 hours, based on NIHSS and clinical stability. All patients in this cohort (N=524) should have been assigned the new mobility protocol.

A total of 384 patients received tPA only, with 89% (n=354) receiving congruent orderset. 59 patients received tPA and MT, and 74 received MT only. Mean LOS days for tPA only with congruent orderset was 5.33 + 5.76 (n=350) vs. 6.45 + 6.06 (n=55) with incongruent orders. Mean LOS days for MT only with congruent orders was 10.03 + 6.42 (n=58) vs. 10.28 + 7.64 (n=57) with incongruent orders. Mean time in hours from PT/OT order to evaluation for tPA only with congruent orders was 17.72 + 13.01 (n=341) vs. 32.63 + 29.45 (n=41) with incongruent orders. For MT only patients with a congruent orderset, mean hours from PT/OT order to evaluation was 33.74 + 16.91 (n=54), and 50.7 + 34.12 (n=47) for incongruent orders.

There was an increase in both PT/OT order to evaluation time and total LOS for patients with incorrect orders. Following the early mobilization protocol leads to an earlier evaluation and disposition.

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Abstracts

Presentation 62

Abstract Title:	**Approach of INDICATE: Investigating Neuromarkers for Decline and and Impairment of Cognition after Thrombectomy for ELVO**
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Abstract: Vascular cognitive impairment and dementia (VCID) affects approximately 25-30% of stroke patients, underscoring the critical need for predictive biomarkers to identify individuals susceptible to chronic cognitive impairment. At the University of Kentucky (UK), where 70% of the stroke patient population comes from the Appalachian region within the US Stroke Belt, a unique opportunity exists to conduct the INDICATE study. Enrolling 225 patients prospectively, INDICATE involves the collection of arterial blood during thrombectomy and subsequent venous blood samples for protein expression analysis. Blood samples are obtained at thrombectomy, followed by collections at 90 days, 6 months, 1 year, and 2 years post-thrombectomy. Simultaneously, assessments of cognition, functional status, and social determinants of health (SDoH) are surveyed at these intervals. The focus extends to analyzing plasma for biomarkers associated with Alzheimer Disease and Related Disorders (ADRD) and inflammatory proteomic biomarkers. Leveraging advanced statistical modeling, the objective is to pinpoint biomarkers capable of predicting functional and cognitive impairment post-stroke. This validation will empower clinicians to identify patients suitable for intensive rehabilitation. The translational model for stroke studies has facilitated the design of a large-scale investigation into the relationship between ischemic stroke and cognitive outcomes in human subjects. Incorporating ADRD biomarkers, additional time points, and enhanced cognitive measures will fortify the predictive model for post-stroke function and cognition. Early insights into recruitment, retention, implementation experiences, and future directions will be shared.

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Abstracts

Presentation 63

Abstract Title:	**NeuroBank: A Unique Resource for Translational Neuroscience Research**
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Abstract: The University of Kentucky NeuroBank was established through funding from the University of Kentucky Vice President for Research Office under the Neuroscience Priority Research Initiative in 2019. The purpose of the NeuroBank, is to provide samples to advance translational research in various neurologic disorders and diseases and ultimately advance understanding and discovery of underlying mechanisms, potential biomarkers and new treatments for these conditions. Samples are collected from a variety of inpatient and outpatient settings, including: surgical procedures, interventional radiology, neurologic inpatient wards, and specialty and general outpatient clinics. NeuroBank offers a diverse quantity of specimens for research use. As of this year, 867 participants have donated samples for research. This includes approximately 300 CSF samples, 50 brain tissue samples and 15,000 aliquots of over 800 separate blood samples. Consent rate is 94.8% across all populations. The samples collected include demyelinating conditions, stroke, traumatic brain injury, normal pressure hydrocephalus, motor neuron disease, spinal cord injury, epilepsy and EEG-confirmed seizure, movement disorders and others and range from rare to more commonplace neurologic conditions. Neurobank currently supports a number of ongoing studies in these areas and fosters collaboration across different departments and schools at University of Kentucky and beyond

Supported by: University of Kentucky Vice President for Research Office under the Neuroscience Priority Research Initiative in 2019.

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Presentation 64

Abstract Title:	**Acute hematogenous macrophage depletion improves recovery after spinal cord injury: Independent replication 25 years lat**
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Abstract: Spinal cord injury (SCI) triggers an intraspinal inflammatory response that contributes to secondary injury and neurodegeneration. Here, we attempted to replicate and independently verify the therapeutic potential of hematogenous macrophage (MØ) depletion for SCI. Specifically, we selectively depleted peripheral MØ using clodronate liposomes in a rat model of SCI. 10–12-week-old female Wistar rats received T9 contusion SCI (175 Kdyn) to model clinical SCI. Rats received intravenous injections of vehicle or liposome-encapsulated clodronate (2 mL of 7 mg/mL anionic) at 1, 3- and 6-days post-injury (dpi). We used standardized behavioral (Basso, Beattie, and Bresnahan locomotor test, horizontal ladder walk test, Catwalk XT) and neuropathological analyses for up to 8 weeks post SCI in 4 independent cohorts. Clodronate treatment significantly reduced intraspinal macrophage infiltration at 7dpi. Clodronate treatment significantly improved locomotor function in treated animals. Concordantly, we observed significant increases in tissue sparring through the rostro caudal axis in the spinal cords of clodronate-treated animals. Our observations implicate the crucial role of hematogenous MØ in secondary injury progression post-SCI. Furthermore, our results are consistence with previous observations made by an independent laboratory several decades before. Thus, our independent replication validates macrophage depletion as an adjunct therapy post-SCI.
Key Words: neuroinflammation; macrophages (MØ); regeneration; spinal cord injury (SCI); liposomes; immunosuppression.

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Abstracts

Presentation 65

Abstract Title:	**Breakfast Carbohydrate Consumption and Metabolic Risk in Postmenopausal Women**
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Abstract: Risk for metabolic dysfunction increases in women following menopause. Metabolism is regulated by circadian rhythms-near 24-hour fluctuations in physiology and behavior. Prior clinical studies found that earlier breakfasts and consumption of carbohydrates at breakfast were associated with lower BMI in adults. However, breakfast timing and macronutrients and metabolic risk have not been thoroughly studied for postmenopausal women. In this study, we investigated breakfast composition and metabolic risk in postmenopausal women. Actigraphy and sleep logs were collected during 7 days from 27 overweight, postmenopausal women aged 45-65 years. Waist circumferences and blood pressure were measured. Lipids and HbA1c were measured from blood collected after an overnight fast. Homeostatic Model Assessment of Insulin Resistance (HOMA-IR) was calculated from oral glucose tolerance tests. Two Automated Self-Administered 24-hour dietary recalls were used to assess macronutrients consumed within 2 hours of waking (breakfast) and during the entire day. In prior studies, greater breakfast carbohydrates as a ratio of daily calories predicted lower risk of obesity in adults. In our study of postmenopausal women, breakfast carbohydrate consumption was not significantly associated with waist circumference, HDL, systolic blood pressure, or HOMA-IR. Interestingly, total daily carbohydrate consumption was not associated with triglycerides, but greater consumption of carbohydrates at breakfast was positively associated with fasting triglycerides. These data suggest that carbohydrate consumption within 2 hours of waking, but not overall daily carbohydrate intake, may contribute to dyslipidemia in postmenopausal women. Our results support the growing body of research that meal timing interacts with diet composition to impact metabolism.

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Presentation 66

Abstract Title: **Dietary Intake Patterns and Associations with Metabolic Syndrome in US Latinos/as.**

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Abstract: Introduction: U.S. Latinos/as have among the highest rates of type 2 diabetes (T2D) in the nation and rates of cardiovascular disease (CVD) are rapidly increasing. Diet is known to be associated with metabolic syndrome (MetS), a precursor to T2D and CVD, but which dietary patterns predict MetS in U.S. Latinos/as has not been well-studied.
Objective: The purpose of this study was to examine associations between dietary patterns and MetS.
Methods: For this cross-sectional study, we analyzed baseline data from 242 Latino/a adults in Kentucky (age 41.2 ± 9.6 years; 86.4% female). We measured waist circumference, lipids, blood pressure, and HbA1c using standardized protocols and high-quality point-of-care equipment. MetS was defined as the presence of 3 or more of the following: abdominal obesity, hypertriglyceridemia, low high-density lipoprotein cholesterol (HDL) levels, hypertension and elevated blood glucose. Healthy eating index 2015 (HEI-2015) scores were calculated from self-reported dietary intake assessed using VioScreen; higher score indicated healthier dietary patterns. Logistic regression analyses were conducted to determine associations between dietary patterns and MetS.
Results: 51.5% of the sample was found to have MetS. The odds of having MetS were 3% lower for every 1-point increase in total HEI score, 10.3% lower for every 1-point increase in refined grains HEI score, and 17% lower for every1-point increase in total fruit HEI score. Other dietary components were not associated with MetS.
Conclusions: Healthy dietary patterns for certain HEI components, specifically refined grains and fruits, were associated with lower odds of MetS. Our findings suggest that reducing consumption of refined grains and increasing total fruit intake may reduce Latinos/as risk for MetS and development of T2D and CVD. Integrating dietary assessment and education in clinical practice could provide an approach to reducing risk for T2D and CVD among Latinos/as.

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Abstracts

Presentation 67

Abstract Title: **Assessment of Social Needs Among Older Adults Diagnosed with T2D Kentucky**

Author(s): Ellis Jackson, Zoe M. Taylor, Zach Grissom, Nelson Gonzabato, Brittany L. Smalls, University of Kentucky, Lexington, KY

Abstract: Background: This study delves into the social needs of older adults grappling with Type 2 diabetes (T2D) in Kentucky, offering a nuanced exploration of the challenges they face beyond clinical parameters. Situated within the unique socio-economic landscape of these communities being culturally diverse and part of the Appalachian region. A study conducted by Ryan (2023) shows were financial strain (73.6%), food insecurity (47.5%), and poor housing quality (39.1%) are a few of the biggest beyond clinical strains faced. The research illuminates the social determinants impacting diabetes management and overall well-being. This study seeks to understand social determinates of health in the older adult community with Type 2 diabetes.
Method: Through a survey assessing social determinates of health such as housing, food, transportation, utilities and more we hoped to unravel the nature of social needs. While shedding light on factors such as limited access to healthcare resources, social isolation, and economic disparities.
Results: The sample size of the study was relatively small being only 17 people. The demographics are 15 Caucasian and 2 African Americans and the median age being. Most of the social determinants of health showed that many individuals have spaces where they are comfortable (94%) , have support (94%), have transportation (100%), and clean environments (94%).
Conclusion: The research indicates that there may not be many problems with social determinates of health in the older population of adults who have TD2. The results may not reflect all older adults due to the small sample size. Additional data is needed to accurately reflect the social needs of older adults in Kentucky living with T2D.

Supported by: SPARK

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Presentation 68

Abstract Title:	**Evaluating Hip-Related Structure and Patient Reported Outcomes in Marfan Syndrome**
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Abstract: Objective: People with Marfan Syndrome (MFS) exhibit hip pain yet the role of MFS on the hip structure is not well understood. Therefore, the purpose of this study was to assess hip-related structural abnormalities and patient reported outcomes (PRO) in the MFS population.
Design: 19 individuals with MFS and 19 age, sex, and body mass index (BMI) matched healthy, asymptomatic individuals underwent radiographic imaging and a unilateral hip Magnetic Resonance-exam to assess hip joint health. All participants completed the Hip disability and Osteoarthritis Outcome Score (HOOS) to assess hip-related symptoms, pain, function during activities of daily living (ADL) and quality of life (QOL). The Scoring Osteoarthritis with MRI (SHOMRI) technique was used to assess hip-related morphological abnormalities between the MFS and health control groups.
Results: The MFS group exhibited higher lateral center edge angles ($p<.001$) than the control group. Despite similar severity of femoral cartilage damage ($p=1.0$), the MFS group exhibited a higher severity of acetabular cartilage degeneration ($p=0.046$) compared to the controls. Individuals with MFS also self-reported significantly lower HOOS symptoms ($p=.003$), pain ($p=0.014$), ADL ($p=0.028$) and QOL ($p=0.014$) sub-scores, indicating worse hip-related symptoms, pain, ADL and QOL in MFS.
Conclusion: Overall, our study results suggest that individuals with MFS exhibit early signs of hip joint degeneration as well as poor hip-related clinical outcomes compared to healthy individuals. Future work should investigate the potential underlying biomechanical mechanisms associated with hip joint degeneration in the MFS population to prevent hip joint disease progression.

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Abstracts

Presentation 69

Abstract Title:	**Outcomes for Patients Treated with CaSO4 After Removal of External Fixation and Placement of Nail for Limb Salvage**
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Abstract: Purpose: The purpose of this study was to review patients who received intramedullary antibiotic-impregnated calcium sulfate at the time of treatment for tibial osteomyelitis, nonunion, or deformity to assess outcomes and nonunion rates for these patients.
Methods: A retrospective chart review was conducted at a single Level 1 academic trauma center between 2020 and 2023. Electronic charts were pulled for patients carrying CPT codes 20694 (removal of external fixation), 20702 (insertion of drug-delivery system). Patients were excluded if they were not being treated for tibial osteomyelitis, deformity, nonunion, or if they were not treated with removal of a frame and insertion of intramedullary calcium sulfate loaded with aminoglycoside antibiotics at the time of placement of an intramedullary nail.
Results: Of the 19 patients reviewed in this study, 13 (68%) were male and 6 (32%) were female, with an average age of 50.7 (range 20-76) years. Sixteen patients (84%) were undergoing limb salvage after traumatic fracture, while three (16%) were undergoing deformity correction. Patients underwent an average of 5.4 (range 1-9) surgeries prior to undergoing the study-specific surgery. Only two patients (10.5%) developed subsequent nonunion, both of which united after an additional surgery. Two patients (10.5%) had subsequent infections, requiring one additional surgery each with subsequent resolution of the infection.
Conclusion: In limb salvage surgery, placement of intramedullary antibiotic-impregnated calcium sulfate at the time of switching frame to intramedullary nailing leads to relatively good outcomes with relatively high rates of union and eradication of infection.

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Abstracts

Presentation 70

Abstract Title:	**5-10-year Incidence of Post-Traumatic Osteoarthritis following ACL Reconstruction: A Systematic Review**
Author(s):	K. Javid BA, X. Akins BS, J. Douyere BA; A. V. Stone MD, PhD, Department of Orthopaedic Surgery and Sports Medicine, U of Kentucky

Abstract: Purpose: Post-traumatic osteoarthritis (PTOA) is a common development following Anterior Cruciate Ligament (ACL) reconstruction. In this study we systematically review the literature to determine the 5–10-year incidence of post-traumatic osteoarthritis (PTOA) following ACL reconstruction.
Study Design: Systematic Review Methods Systematic review of the literature between 2006-2023 was performed using PubMed, MEDLINE, CINAHL, Academic Search Complete and SPORTDiscus. Articles reporting the incidence of PTOA within 5-10 years following ACL reconstruction were included, with multi-ligament knee injury, TTO, revision ACLR, pre-operative OA, and animal studies as exclusion criteria.
Results: A total of 21 studies met inclusion criteria, and 1,685 patients were included in our final analysis. The mean age at time of surgery was 29.07 ± 6.60 years with a mean follow-up of 6.88 years. The incidence of post-traumatic osteoarthritis following ACLR was reported in 800/1,685 (47.48%) patients. Of the selected studies, several reported OA incidences by specific compartment. Six studies reported on the medial compartment, finding an incidence rate of 116/327 (35.47%). Five studies reported on the lateral compartment, finding an incidence rate of 42/280 (15%). Eight studies reported on the patellofemoral compartment, finding an incidence rate of 77/283 (27.21%).
Conclusion: Development of PTOA after ACL surgery is commonly described over long-term follow-up. We find that in the intermediate period as well, there exists a similarly high rate of incidence of PTOA following reconstruction. Further, we report that the medial compartment is most at risk of developing PTOA in the intermediate period, followed by the patellofemoral compartment and lateral compartment.

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Abstracts

Presentation 71

Abstract Title:	**Mental Health Patient-Reported Outcomes in Patients Undergoing Articular Cartilage Procedures**
Author(s):	D House, University of Kentucky College of Medicine; X Akins, University of Kentucky College of Medicine; K Javid, University of Kentucky College of Medicine; A Stone, Department of Orthopaedic Surgery and Sports Medicine, University of Kentucky; C Conley, Department of Orthopaedic Surgery and Sports Medicine, University of Kentucky

Abstract: Background: Patients undergoing articular cartilage procedures exhibit preoperative mood disorders. Perioperative psychological characteristics are known to affect neuroendocrine responses to surgical stress. Being cognizant of perioperative mental health is crucial, given its association with surgery outcomes, perioperative opioid use and hospital costs. The purpose of our research was to evaluate the frequency of mental health patient-reported outcome (PRO) reporting in patients undergoing articular cartilage procedures. We hypothesize there will be a low frequency of PROs reported.
Methods: A literature search was conducted using PubMed database to identify articles containing patients who underwent articular cartilage procedures that reported mental health PRO. Non-human research and non-English articles were excluded. Initial search resulted in 120 manuscripts, with 25 satisfying inclusion criteria.
Results: Among the 63 manuscripts reporting PRO data, a minority (25/63 studies) included mental health specific PRO data. 2,537 patients were included in our final analysis, with a mean age of 34.4 +/- 6.82 (49.9% male). Eight PROs used to assess mental health: SF-12, VR-12, TSK-11, PCS, SF-36, PHQ-9, EQ5D, PROMIS. SF-12 was the most frequently administered instrument to assess mental health, comprising 56% of studies (14/25), followed by SF-36 (6/25), TSK-11 (2/25), PCS (2/25), EQ-5D (2/25), VR-12 (1/25), PHQ-9 (1/25), PROMIS (1/25).
Conclusion: Despite growing recognition of mental health's importance in patients undergoing articular cartilage procedures, both data collection and reporting remain limited. These findings highlight need for heightened mental health PRO instrument administration and data reporting in this patient population, urging clinicians and researchers to consider mental health outcomes comprehensively.

Supported by: None

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Abstracts

Presentation 72

Abstract Title:	**An Evaluation of Recurrent Patellar Instability and Preoperative PROMIS Depression Mental Health Scores**
Author(s):	X. Akins BS, C. Conley PhD, K. Javid BA, Department of Orthopaedic Surgery and Sports Medicine, U of Kentucky; C. Dawahare BS, College of Medicine, U of Kentucky; AV. Stone MD PhD, Department of Orthopaedic Surgery and Sports Medicine, U of Kentucky

Abstract: Purpose: To evaluate the influence of recurrent patellar instability events on preoperative Patient-Reported Outcomes Measurement Information System (PROMIS) depression scores. We hypothesize that patients with more instability events will have worse preoperative PROMIS depression scores.
Study Design: Retrospective Chart Review
Methods: Patients undergoing Medial Patellofemoral Ligament (MPFL) Reconstruction by a single orthopaedic surgeon for recurrent patellar instability were identified from a prospective patient registry. The number of dislocation events (0-2, 3 or more) each participant experienced preoperatively was recorded. Preoperative PROMIS depression scores were collected through Research Electronic Data Capture (REDCap) prior to surgery. An independent t-test was conducted to evaluate the influence of the number of patellar dislocations on preoperative PROMIS depression scores, significance set at $p<0.05$. Lastly, a Hedges g effect size was calculated between groups.
Results: A total of 26 patients were included in our analysis (14 males and 12 females) with a mean age of 21.0 +/- 8.93 years. The mean pre-operative PROMIS depression score was not different between groups ($p=0.59$), patients with 0-2 dislocation events 47.1+/- 10.7 and patients with 3 or more patellar dislocations 45.5 +/- 8.15. There was a small effect size g= 0.17.
Conclusion: We did not find a statistically significant difference in the number of patellar dislocation events and preoperative PROMIS depression mental health scores. However, the impact of recurrent patellar instability on mental health scores is underreported. Future research should continue to investigate the relationship between acute injury and mental health outcomes with large sample sizes and different mental health instruments.

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Abstracts

Presentation 73

Abstract Title:	**Is Next-Day Discharge after Posterior Spinal Fusion for Adolescent Idiopathic Scoliosis Safe?**
Author(s):	A.M. Kirk, MD, Department of Orthopaedic Surgery, U of Kentucky; A.M. Barré, MD Department of Orthopaedic Surgery, U of Kentucky; V.W. Prusick, MD, Department of Orthopaedic Surgery, U of Kentucky; C. Conley, PhD, Department of Orthopaedic Surgery, U of Kentucky; R.D. Muchow, MD Department of Orthopaedic Surgery, U of Kentucky

Abstract: Background: Adolescents are typically hospitalized for several days after posterior spinal instrumented fusion (PSIF). The purpose of this study was to determine if next-day discharge after PSIF for adolescent idiopathic scoliosis (AIS) was associated with an increase in emergency department (ED) visits or hospital readmissions. The secondary purpose was to examine peri-operative factors associated with next-day discharge.

Methods: We performed a retrospective study of all patients who underwent PSIF for AIS at a single institution from 2017 to 2022. One hundred eleven patients were included. We compared patients based on post-operative length of stay with an early discharge group consisting of those who discharged on the first post-operative day (POD1) (n = 40) and a late discharge group consisting of those who discharged after POD1 (n = 71). We documented post-operative ED visits within 30 days and hospital readmissions within 90 days, in addition to peri-operative variables.

Results: Forty patients (36%) discharged on POD1. There was one (2.5%) ED visit and two (5%) readmissions in the early discharge group and three (4.2%) ED visits and two (2.8%) readmissions in the late discharge group (p = 0.64 and 0.55, respectively). Patients in whom intravenous methadone was used intra-operatively were more likely to discharge POD1 (p = 0.02). There were no other significant differences in peri-operative variables between the two groups including: BMI, distance from home to hospital, magnitude of main curve, curve flexibility, number of levels fused, estimated blood loss, implant density, operative time, or post-operative pain scores.

Conclusions: Over one-third of patients discharged on POD1 after PSIF for AIS. There was no statistically significant difference in ED visits or hospital readmissions among the early

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Presentation 74

Abstract Title:	**Evaluation of the Knee Total Joint Moment During Walking in Individuals with Marfan syndrome**
Author(s):	A. G. Sharp, Department of Kinesiology Health Promotion, U of Kentucky; M. V. Jacobs, Department of Kinesiology Health Promotion, U of Kentucky; C. McLouth, Department of Biostatistics, U of Kentucky; B. Noehren, Department of Physical Therapy, U of Kentucky; J. L. Clasey, Department of Kinesiology Health Promotion, U of Kentucky; Mary B. Sheppard, Departments Family and Community Medicine, Surgery, and Physiology; M. A. Samaan, Department of Kinesiology Health Promotion, U of Kentucky

Abstract: Marfan syndrome (MFS) is a connective disorder that is associated with quadriceps weakness, knee pain, and knee osteoarthritis (OA). Assessment of knee joint loading patterns in people with MFS may provide an understanding of this population's risk of developing knee OA and pain. Therefore, the purpose of this study was to assess knee joint loading during walking in individuals with MFS.

Eighteen individuals with MFS and eighteen asymptomatic controls were used in this cross-sectional study. Participants underwent 3D gait analysis. A custom written MATLAB script calculated the total joint moment (TJM) of the knee as the square root of the sum of the square of the internal sagittal, frontal, and transverse plane moments for each frame of the stance phase. The corresponding sagittal, frontal and transverse plane moments at the first and second peak TJM were extracted. Between-group differences in the peak TJMs and planar moments at the peak TJMs were assessed using an analysis of covariance, adjusting for age, with $p<0.05$ indicating statistical significance.

Despite a lack of between-group differences in the peak TJMs ($p>0.05$), the MFS group exhibited a 2x greater external rotation moment ($p<0.001$) at the first TJM and a 0.58x greater abduction moment ($p=0.01$) at the second peak TJM. Higher external rotation and abduction moments during walking in the MFS group suggests altered knee joint loading. These altered loading patterns may be associated with the high rate of knee pain and knee OA development in the MFS population.

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Abstracts

Presentation 75

Abstract Title:	**Mesenchymal Stem Cell Interventions Poorly Adhere to the Minimum Information for Studies Evaluating Biologics Guidelines**
Author(s):	V. Abed, BS, Department of Orthopaedic Surgery and Sports Medicine, U of Kentucky; C. Jacobs, PhD, Massachusetts General Brigham Sports Medicine, Brigham and Women's Hospital, Boston, MA; M. Skinner, BS, Department of Orthopaedic Surgery and Sports Medicine, U of Kentucky; M. Owens, PharmD, Department of Orthopaedic Surgery and Sports Medicine, U of Kentucky; D. Keshishi, BS, Skaggs School of Pharmacy and Pharmaceutical Sciences, U of California, San Diego, San Diego, CA; A. Stone, MD, PhD, Department of Orthopaedic Surgery and Sports Medicine, U of Kentucky

Abstract: The Minimum Information for Studies Evaluating Biologics in Orthopaedics (MIBO) guidelines for mesenchymal stem cell (MSC) research contain a suggested checklist for reporting items in manuscripts involving MSCs. We sought to determine how well randomized controlled trials (RCTs) on MSC intervention for knee osteoarthritis (OA) adhered to the MIBO guidelines. A comprehensive literature search was performed in the PubMed/MEDLINE and Web of Science databases. Inclusion criteria included English-only RCTs that assessed MSC intervention for knee OA published between 2018 and 2022. Metrics were extracted, including year of publication, study design, first author name, journal name, patient demographics, and MIBO checklist criteria. In 27 RCTs analyzed, 1006 patients were included, with a weighted male percentage of 41.8% and weighted mean age of 60.5 ± 7.2 years. On average, 70.5% (range, 30.2%–90.6%) of the modified 53-point MIBO checklist elements were reported per article. Seven (25.9%) articles had adherence rates of 80% or more, 13 (48.1%) had rates between 60% and 79.9%, and 7 (25.9%) had rates of 59.9% or less. The MIBO “intervention” category had the greatest adherence (100%), while the other categories had more variability. Six (50.0%) categories had an adherence level of 80% or more, 3 (25.0%) had adherence levels of 60% to 79.9%, and 3 (25.0%) had an adherence level of 59.9% or less. The overall mean adherence to MIBO guidelines of RCTs on MSC intervention for knee OA was 70.5%. Authors should better integrate the MIBO guidelines into their methodology to improve transparency, reproducibility, and reporting.

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Abstracts

Presentation 76

Abstract Title:	**RCTs on Platelet-rich Plasma Intervention for Knee Osteoarthritis Poorly Adhere to the MIBO Guidelines**
Author(s):	A. Stone, MD, PhD, Department of Orthopaedic Surgery and Sports Medicine, U of Kentucky; V. Abed, BS, Department of Orthopaedic Surgery and Sports Medicine, U of Kentucky; M. Owens, PharmD, Department of Orthopaedic Surgery and Sports Medicine, U of Kentucky; N. Brunty, BS, Department of Orthopaedic Surgery and Sports Medicine, U of Kentucky; M. Skinner, BS, Department of Orthopaedic Surgery and Sports Medicine, U of Kentucky; C. Jacobs, PhD, Massachusetts General Brigham Sports Medicine, Brigham and Women's Hospital, Boston, MA

Abstract: Platelet-rich plasma (PRP) treatment of knee osteoarthritis grew exponentially over the past decade. The American Academy of Orthopaedic Surgeons published the Minimum Information for Studies Evaluating Biologics in Orthopaedic (MIBO) guidelines in 2017. The purpose of this systematic review was to analyze how well randomized controlled trials (RCTs) on PRP intervention for knee osteoarthritis adhered to the MIBO guidelines. We hypothesized that the majority to articles would report <80% of MIBO criteria.

PRISMA guidelines were used to perform a systematic review using PubMed/MEDLINE and Web of Science databases. Inclusion criteria included English RCTs that assessed PRP intervention for knee osteoarthritis beginning patient enrollment June 2017 or later. The original 23 MIBO checklist items were modified into a 44-point checklist. Adherence was measured by calculating the total percentage of checklist items each article adequately reported on the 44-point checklist.

A total of 25 RCTs were included. On average, only 53.1% ±10.4% of the 44-point MIBO checklist items were reported per article. No articles had adherence rates >80%, 5 (20.0%) had rates between 60-79.9%, and 20 (80.0%) had rates <59.9%. By year, 2020 had the lowest adherence percentage (47.0%), while 2022 had the highest (55.1%). Four (33.3%) categories had adherence levels of >80%, 0 had adherence levels of 60-79.9%, and 8 (66.7%) had adherence levels of 59.9%.

The overall mean adherence to MIBO guidelines of RCTs on PRP intervention for knee osteoarthritis was 53.1%. To improve the reproducibility of PRP studies in the future, authors must better integrate the MIBO guidelines.

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Presentation 77

Abstract Title:	**YouTube Is a Poor-Quality Source for Patient Information Regarding Patellar Dislocations**
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Abstract: The purpose was to evaluate the content and quality of YouTube videos concerning patellar dislocations. "Patellar dislocation" and "kneecap dislocation" were searched on the YouTube library. The Uniform Resource Locator of the first 25 suggested videos was extracted, for a total of 50 videos. The following variables were collected for each video: number of views, duration in minutes, video source/uploader, content type, days since upload, view ratio (views/day), and number of likes. Video source/uploader was categorized as academic, physician, nonphysician, medical source, patient, commercial, and other. The Journal of the American Medical Association (JAMA), Global Quality Scale (GQS), Patellar Dislocation Specific Score (PDSS), and DISCERN scores were used to assess each video. A series of linear regression models were used to explore relationships between each of these scores and the variables. The median video length was 4.11 minutes (interquartile range 2.07-6.03), the total number of views for all videos was 3,697,587 views. The mean overall JAMA benchmark score ± standard deviation was 2.56±0.64, GQS: 3.54±1.05, total PDSS: 5.76±3.42. Physicians were the most common video source/uploader (42%). Academic sources had the greatest mean JAMA benchmark score (3.20), whereas nonphysician and physician sources had the greatest mean GQS scores (4.09 and 3.95, respectively). Videos uploaded by physicians had the greatest PDSS scores (7.5). The overall transparency, reliability, and content quality of YouTube videos on patellar dislocation measured by the JAMA benchmark score and PDSS was poor. Additionally, the overall educational and video quality, assessed by the GQS, was intermediate.

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Abstracts

Presentation 78

Abstract Title:	**Outcomes Following Distal Femoral Replacement for Distal Femur Fractures: A Multi-Institutional Study**
Author(s):	W. G. S. Southall BS, Department of Orthopaedic Surgery & Sports Medicine, U of Kentucky; J. A. Foster MD, Department of Orthopaedic Surgery, Massachusetts General Hospital; D. C. Landy MD, PhD, OrthoVirginia; J. T. Griffin MD, Maaz Muhammad MD, C. R. Sierra-Arce MS, Department of Orthopaedic Surgery, Massachusetts General Hospital; S. D. Mounce MD, Department of Orthopaedic Surgery & Sports Medicine, U of Kentucky; M. T. Archdeacon MD, S. Kurkowski MD, Department of Orthopaedic Surgery, U of Cincinnati Medical Center; W. T. Obremskey MD, MPH, J. M. Lawrenz MD, K. M. Trochez MA, K. S. Hajdu BS, E. Rodriguez MD, Center; A. Libos MD, VA. F. Moreno-Diaz MD, Department of Orthopaedic Surgery, Vanderbilt University Medical Center; C. Lee MD,A. Aneja MD, PhD, Department of Orthopaedic Surgery, Massachusetts General Hospital; et al.

Abstract: Purpose: Distal femoral replacement (DFR) has become a more common salvage procedure in the management of periprosthetic distal femur fractures (DFFs), especially in cases with limited bone stock or poor bone quality. This author group previously described in a systematic review and meta-analysis that previously reported periprosthetic joint infection (PJI) and 1-year mortality rates may be subject to publication bias, being limited to small case series with prevalent loss to follow-up. Therefore, the objective of this multi-institutional retrospective cohort study was to assess outcomes and complications in patients who underwent DFR for native or periprosthetic DFF.

Methods: A retrospective chart review was performed at 13 trauma centers from January 2010 through January 2023. Adult patients undergoing DFR for native or periprosthetic DFFs indications were included. The primary outcome was PJI. Secondary outcomes included hospital and post-operative complications, all-cause mortality, functional outcomes, and implant characteristics. Post-operative outcomes were reported using proportions with 95% confidence interval.

Results: Data collection began in January 2023 and was completed in February 2024. A total of 174 patients who underwent DFR for distal femur fracture were identified and included. There were 43 patients with native DFF and 131 with periprosthetic DFF. Results will be analyzed and available to present at the 2024 CCTS Spring Conference.

Conclusion: DFR used for the management of native and periprosthetic DFF serves as a high-risk, high-reward salvage option with moderate functional outcomes, yet at the cost of a high complication rate with significant morbidity. This national, multi-institutional effort is the largest series to date evaluating outcomes of patients who underwent DFR for native or periprosthetic DFF. The benefits and risks of DFR should continue to be considered heavily when evaluating treatment options with patients.

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College of Health Sciences Research Day
Poster Presentation Abstracts

Presentation 79

Abstract Title:	**Treatment Of Mild and Advanced Cases of Elbow Osteoarthritis with Arthroscopic Debridement plus Hyaluronic Acid**
Author(s):	A. Yadav, Department of Orthopedic Surgery and Sports Medicine, U of Kentucky; S. Kamineni, Department of Orthopedic Surgery and Sports Medicine, U of Kentucky

Abstract: Objective/Purpose: Middle aged and elderly patients are often affected by elbow primary degenerative and post-traumatic arthritis, primary degenerative or post-traumatic. Hyaluronic acid injections have a documented place in knee arthritis management, but very few reports exist with respect to the elbow. This study investigates the efficacy of combining arthroscopic debridement plus or minus intra-articular hyaluronic acid (HA) injections with respect to pain relief, arc of movement, and functional improvement in 30 elbows with osteoarthritis.

Methods: 30 elbows were treated for posttraumatic (n=12) or primary degenerative (n=18) osteoarthritis of the elbow by arthroscopic debridement. A HA injection protocol was either preoperative (n=7), postoperative (n=7), combined pre- and post-operative (n=7) intraarticular HA (Synvisc) injections, or without additional Synvisc injections (n=9). A clinical examination and Mayo elbow performance score was conducted at an average of 24 months (range 18-30 months) post-surgery.

Results: The treatment resulted in statistically significant pain reduction for both posttraumatic and primary degenerative OA groups. Pain relief was significantly better in the group with exposed bony areas following debridement alone, compared to the group without visible bone. There was a tendency towards better pain scores when milder cartilage changes (no exposed bone) and hyaluronic acid injections, but these results did not reach statistical significance.

Conclusions: Hyaluronic acid (HA) is known to stimulate chondrocyte metabolism and have protective effects on cartilage. We combined this potential beneficial property with arthroscopic elbow debridement, as documented in the literature and corroborated in this study, to treat patients with different stages of elbow osteoarthritis. Our findings reveal a trend toward symptomatic and functional benefit when HA is combined with debridement in osteoarthritic elbow joints.

Supported by: None- Dr. Kamineni is Director of the Shoulder Elbow Research Center in the Department of Orthopedic Surgery which provided the space for this project.

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Abstracts

Presentation 80

Abstract Title:	**The Effects of Femoroacetabular Impingement Syndrome On Hip Joint Cartilage Mechanics and Cartilage Health**
Author(s):	Holly Stanze, Department of Kinesiology and Health Promotion, U of Kentucky; Michael A Samaan, Department of Kinesiology and Health Promotion, U of Kentucky

Abstract: Femoroacetabular impingement syndrome (FAIS) is a pre-arthritic hip disease that causes pain and cartilage degeneration in young individuals. Prior work using finite element analysis (FEA) utilizes CT-imaging to incorporate subject-specific bony geometry. However, only approximated cartilage morphology is included due to limitations in CT-imaging to visualize articular cartilage. Additionally, previous work has not related altered cartilage mechanics to cartilage health, reducing clinical translation. The goal of this study is to analyze the effects of FAIS on cartilage mechanics and health during a deep squat by performing FEA using subject-specific bone and cartilage morphology derived from MR-imaging. Our group has the subject-specific biomechanical data and MR-images needed to perform FEA in pre-operative patients with FAIS (N=5) and age, sex, and BMI-matched, asymptomatic controls (N=5). A 3D model of the femoral and acetabular bone and cartilage will be loaded into the software, FEBio, where FEA will be performed using subject-specific hip joint morphology and biomechanical data to assess cartilage stresses at peak flexion. Our group has also obtained MR-images that will allow for quantification of articular cartilage proteoglycan content and collagen structure that are needed to assess biochemical markers of cartilage degeneration. Group differences in cartilage stresses will be analyzed using independent t-tests while the relationship between cartilage stresses and cartilage health will be determined via Pearson Correlation Coefficients ($p < 0.05$). We hypothesize that the FAIS group will exhibit higher anterior acetabular cartilage stresses compared to controls and higher stresses will be associated with worse cartilage health within the FAIS cohort.

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Abstracts

Presentation 81

Abstract Title: **Analysis of the Lumbopelvic Rhythm in people with hip pain**

Author(s): Authors: L. Machado, Department of Kinesiology and Health Promotion, U of Kentucky; M.A. Samaan, Department of Kinesiology and Health Promotion, U of Kentucky

Abstract: BACKGROUND: Previous research has shown that low back pain (LBP) can be associated with alterations in lumbopelvic rhythm (LPR) and leads to changes in neuromuscular control of the trunk and altered lumbar joint loading. Approximately 60% of individuals with hip pain suffer from concomitant LBP. However, the effects of concomitant LBP and hip pain on LPR are not well understood. The goal of this study is to assess the LPR during a lumbar flexion/extension task in subjects with no hip pain, hip pain, and concomitant LBP and hip pain.

METHOD: The study will include adults with no history of spinal or lower extremity surgery and BMI < 35 kg/m^2, who will be divided into three groups: 1) asymptomatic, healthy controls; 2) hip pain and 3) hip pain and LBP. The severity of hip and lower back pain will be assessed through self-reported surveys. A 3D movement analysis will be performed while participants perform seven continuous repetitions of trunk flexion and extension at a self-selected speed. Biomechanical outcomes will be assessed using a custom-written MATLAB code and compared between the groups using ANOVA with necessary adjustments for covariates.

ANTICIPATED RESULTS: We hypothesize that the individuals with hip pain and concomitant hip pain and LBP would exhibit altered LPR compared to the control group. The results of this study are expected to help clinicians comprehend the potential role of the lumbar spine in the development of LBP in those with hip pain and develop proper interventions for treating people with hip-spine syndrome.

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Abstracts

Presentation 82

Abstract Title:	**Associations of Fatigue with Pain Intensity, Interference, and Perceived Cognition in Young Adults with Overlapping Pain**
Author(s):	Carley A. Conway, University of Kentucky College of Arts and Sciences, Lexington, KY; Christopher D. King, Ph.D., Cincinnati Children's Hospital Medical Center, Department of Pediatrics, Division of Behavioral Medicine and Clinical Psychology, Cincinnati, OH, University of Cincinnati College of Medicine, Department of Pediatrics, Cincinnati, OH; Ian A. Boggero, Ph.D., University of Kentucky College of Dentistry, Department of Oral Health Science, Division of Orofacial Pain, Lexington, KY, University of Kentucky College of Arts and Sciences, Department of Psychology, Lexington, KY, University of Kentucky College of Medicine, Department of Anesthesiology, Lexington, KY

Abstract: Chronic Overlapping Pain Conditions (COPCs) affect the lives and alter the course of adulthood for many young adults. Although long-lasting fatigue is associated with COPCs, no study to our knowledge has shown how fatigue impacts future pain variables or cognitive functioning in young adults with COPCs. The aim of this study was to test cross-sectional and longitudinal relationships of fatigue with COPCs, pain, and perceived cognitive functioning in this population. Fifty-one young adults (ages 18-34, Mean age=27.24, SD=4.43; 92.2% female) with COPCs provided baseline data on fatigue, pain intensity, and number of COPCs and then provided pain intensity, pain interference, and perceived cognitive functioning data for 14 consecutive days. Data from all days were averaged for each person. Univariate analyses revealed that baseline fatigue was associated with greater number of COPCs (r=.60, p<.001) at baseline and greater pain intensity at baseline (r=.42, p=.002). Longitudinally, fatigue predicted average pain intensity (r=.43, p=002) and pain interference (r=.41, p=.003) over 14 days. However, these relationships became nonsignificant when controlling for baseline pain intensity or number of COPCs (all p,<.05). No significant associations were found for perceived cognitive functioning (r=.18, p=.21). Results suggest that fatigue may be associated with pain intensity variables in COPCs. Still, future work is needed to establish causal models of how these factors are connected.

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Abstracts

Presentation 83

Abstract Title:	**Biopsychosocial Correlates of Widespread Pain Symptoms and Overlapping Pain Conditions in Young Adults**
Author(s):	P. Ash, College of Arts and Sciences, U of Kentucky; C. D. King, Department of Pediatrics, Division of Behavioral Medicine and Clinical Psychology, Cincinnati Children's Hospital Medical Center, Department of Pediatrics, U of Cincinnati College of Medicine, Cincinnati, OH; I. A. Boggero, Department of Oral Health Science, Division of Orofacial Pain, U of Kentucky College of Dentistry, Department of Anesthesiology, U of Kentucky College of Medicine

Abstract: While one in nine young adults (ages 18-34) experiences chronic pain, relatively little is known about chronic pain, its impact, and contributing factors in this age group. Young adulthood is a significant developmental period, and it is possible that chronic pain affects young people differently than middle-aged or older adults. Two measures are known to predict pain-related symptoms in adults. The first is the widespread pain index (WPI), which measures the extent of widespread pain based on the number of painful body sites (up to 19). The second is Chronic Overlapping Pain Conditions (COPCs) which measures the coexistence of pain conditions (up to 10). Yet, the associations of these two measures with pain outcomes in young adults remain unknown. The goal of this study is to test if the WPI and COPCs scores significantly predict 15 common pain-related symptoms in young adults (pain intensity, pain interference with enjoyment of life, pain interference with general activity, pain catastrophizing, anxiety, depression, general psychological distress, sleep-related impairment, sleep disturbance, fatigue, somatization, obsessive-compulsive tendencies, stress, social satisfaction, and loneliness). Sixty participants ages 18-34 (AgeMean= 27.20, SD= 4.25, 86.70% female) completed the WPI, COPCs, and self-reports questionnaires. Univariate linear regression models showed that WPI was only associated with stress (β=0.38, p=0.025) and COPCS was associated with average pain in the past week (β=0.208, p=0.032), fatigue (β=0.46, p=0.002), and somatization (β=0.565, p<0.001). Results suggest that WPI and COPCs may have symptom-specific associations in young adults with chronic pain and may have important clinical implications.

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Presentation 84

Abstract Title:	**Quantitative Impact of Moringa oliefera Supplementation on 24-Hour Pumped Human Milk Output in Moms of Preterm Infants**
Author(s):	M. McCormick, U of Kentucky College of Medicine Northern Kentucky Campus; S. J. Robbins, Department of Biostatistics, U of Kentucky; A. S. Zadeh, U of Kentucky College of Medicine; B. Day, U of Kentucky College of Medicine; B. Gagen, U of Kentucky College of Medicine Bowling Green Campus; J. Durbin, U of Kentucky College of Medicine; G.Thomas, U of Kentucky College of Medicine; S. L. Attia, Departments of Pediatric Gastroenterology, Hepatology, and Nutrition, U of Kentucky

Abstract: Breastfeeding preterm infants has nutritional, gastrointestinal, immunological, developmental, and psychological advantages. However, incidence and duration of breastfeeding in preterm infants is overall lower compared to full-term infants, likely due to challenges including establishing and maintaining supply and transitioning from gavage to breastfeeding. Essentially, the need to identify methods to support breastfeeding in preterm infants is highlighted. This sub-analysis of “Investigating the effect of Moringa oleifera leaf powder on breastmilk quantity and quality: a double blinded randomized placebo-controlled trial” analyzes the quantitative effects of Moringa o. leaf powder supplementation on breastmilk for breastfeeding mothers (gestational age of 28 weeks 0 days to 36 weeks 6 days) of preterm, 2-6 week-old infants. Test group receiving 4g of Moringa o. supplementation daily for 7 days is compared to a placebo group. Analyzed data includes 24-hour breastmilk amounts of mother’s pumped milk one day before starting (MV0) and throughout supplementation (MV1-7). Sub-analysis using a Wilcoxon rank sum test shows no significant difference (p-value=0.8) of mother’s 24-hour breastmilk output between MV0 and MV7 of the two study arms (A and B). Study arm A had a 36 mL decrease (LL: -72 mL, UL: +40 mL) compared to study arm B having a 34 mL increase (LL: -52 mL, UL: +106 mL) between MV0 and MV7. Small study population (N=20) at the time of sub-analysis could partially explain the lack of significant difference between arms. Overall, interim analysis of data shows no significant difference in milk output between test and placebo groups.

Supported by: UK CCTS BiostatCIRCL

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Presentation 85

Abstract Title:	**Impact of Moringa Oleifera Leaf Powder on the Proportion of Mother's Own Breast Milk Fed to Preterm Infants**
Author(s):	A. Shamaei Zadeh, U of Kentucky College of Medicine, S. J. Robbins, College of Public Health, D. Ross, Research Development Director, M. McCormick, U of Kentucky College of Medicine, B. Day, U of Kentucky College of Medicine, B. Gagen, U of Kentucky College of Medicine, J. Durbin, U of Kentucky College of Medicine, G. Thomas, U of Kentucky College of Medicine, S. L. Attia, Pediatric Gastroenterology and Assistant Professor of Pediatrics at U of Kentucky

Abstract: Background: Breastmilk improves health outcomes for preterm infants. Declining milk supply often results in cessation of breastmilk provision. Moringa oleifera leaf powder (moringa) is nutrient-dense and may increase milk output. The effect of moringa to increase percent of mother's own milk out of total enteral nutrition (MOM) provided to the baby is unknown.
Methods: This interim study is a double-blinded RCT investigating 4g moringa supplementation vs. placebo daily for seven days taken by lactating mothers of preterm infants in the University of Kentucky NICU. Inclusion: preterm infant gestational age of 28.0 to 36.6, chronological age 2-6 weeks. Exclusion: mothers taking moringa. We collected baseline and daily amount of MOM and compared enrollment and exit. We performed a Wilcoxon rank sum test to evaluate differences between groups of MOM at baseline and exit (the last day the infant received milk pumped while mom ingested intervention or placebo).
Results: The study is ongoing and participants and the study team remain blinded. 21 participants were enrolled, of which 16 had complete data. At baseline, 52.8% MOM consumed by infants in Group A vs 66.6% in group B (p=.665). At end of capsules, 74% MOM consumed by infants in group A vs. 89% in group B (p=.818).
Discussion: This subanalysis is limited by variability in the timing of the exit and clinical decision-making affecting nutritional plans for preterm infants.
Conclusions: Additional participants are required to fully assess the effect of moringa on increasing MOM provided to preterm infants.

Supported by: None

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Abstracts

Presentation 86

Abstract Title:	**Intermittent Hypoxemia in Preterm Infants: Day and Night Variations in Open Bay Unit (OBU) and Single-Family Room (SFR)**
Author(s):	S. M. Bibby, Department of Pediatrics, U of Kentucky; H. Bada, Department of Neonatology, U of Kentucky; A. Patwardhan, Department of Biomedical Engineering, U of Kentucky; M. H. Hanna, Department of Neonatology, U of Kentucky; M. Brasher, Department of Neonatology, U of Texas Southwestern; E. G. Abu Jawdeh, Department of Neonatology, U of Kentucky.

Abstract: A major consequence of prematurity is Intermittent Hypoxemia (IH); episodic drops in oxygen saturation (SpO2). These IH events may have a cumulative impact on neonatal outcomes. Studies show the severity of IH is affected by response time to FiO2 adjustment by nursing staff. However, data on variation of IH by shift and unit type is limited. We assessed the differences in IH between day and night shifts in an OBU versus SFR NICU.

Our NICU transitioned from OBU to SFR which allowed us to perform this comparison. IH outcomes were defined as percent-time and frequency of IH events (SpO2<80%) at three timepoints: 7, 30, and 60days of life (DOL). We compared IH between day and night shifts as well as in OBU versus SFR.

A total of 130 infants were included (OBU 102, SFR 28). At DOL 7, infants spent higher percent-time in hypoxemia (Mean, 2.50±0.48 vs 1.37±0.21, p=0.006) and had increased IH frequency (4.77±0.74 vs 3.37±0.46 p=0.035) in the day compared to night shift, especially in SFR (5.66±1.74 vs 2.56±0.64, p=0.045). There were no differences at DOL 30 and 60. Comparing OBU to SFR, infants had higher IH in SFR.

Our results show increased IH during the day in the acute postnatal period, especially in SFR. Our study suggests an association between SFR and IH. Higher IH in SFR may be related to delayed response to adjust FiO2 after IH. As more hospitals transition to SFR to improve parent engagement/outcomes, our findings suggest different staffing/back-up models may be needed.

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Presentation 87

Abstract Title: **Optimizing Operational Efficiency in a High-Volume Breast Imaging Clinic**

Author(s): J. N. Tinnell, College of Medicine, U of Kentucky; X. J. Wang, Markey Cancer Center, U of Kentucky; W. Li, College of Engineering, U of Kentucky

Abstract: Purpose: This study at the UK Comprehensive Breast Care Center (CBCC) aims to develop an operational model to optimize patient flow and resource utilization in a busy breast imaging clinic. Addressing the diverse needs of patients requiring services from screening to diagnosis, the model seeks to enhance clinic efficiency and reduce bottlenecks in resource utilization. By improving operational processes, we aim to mitigate delays, decrease patient waiting times, and lower healthcare costs, thereby consistently enhancing overall clinical efficiency.

Design: We analyzed historical data from over 30,000 appointments spanning 12 months (1/1/2022 to 12/30/2023) across five procedural types: screening mammography, diagnostic mammography, diagnostic ultrasound, ultrasound-guided procedures, and mammography-guided procedures. Key performance indicators include total turnaround time (TTAT), last turnaround time (LTAT), patient volume, and resource utilization. We employed Lagrange multiplier (LM) models for optimization, addressing inconsistencies not only between patient turnaround times and resource utilization but also among different stages of serial processes. The model aims to minimize weighted sum deviations by adjusting resource allocation at each stage.

Findings: Data collection is complete, and a prototype model has been developed. We will run the data through the model and present the results at the conference. The coefficient of variation will be used to assess variations in processing times and optimize performance indicators.

Conclusion: We anticipate that our LM models will effectively balance inconsistencies in serial processing within this busy outpatient clinic. Our goal is to extend this model to the entire CBCC, encompassing diagnosis, surgical, and oncological treatments. We believe that our optimization approach can be disseminated to other clinics within the UK and beyond, enhancing operational efficiency and overall quality of care.

Supported by: No sources of support

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Abstracts

Presentation 88

Abstract Title:	**Investigating Proteomic Correlations to Age in Stroke and Control Populations Utilizing the BACTRAC Tissue Bank**
Author(s):	H. S. Hazelwood, J. A. Frank, A. L. Trout A. M. Stowe, J. P. Harp, D. L. Dornbos III, J. F. Fraser, K. R. Pennypacker, College of Medicine, University of Kentucky

Abstract: Ischemic stroke is a persistent cause of death and disability, affecting over 795,000 people in the United States annually. Though ischemic stroke can occur at any age, stroke risk is increased in the aging population. The BACTRAC Tissue Bank collects arterial blood from stroke patients undergoing a thrombectomy, and from control patients undergoing a diagnostic or procedural angiogram. Also recorded are demographic and comorbidity data on all patients. This study included blood samples from 108 stroke patients and 46 control patients for proteomic analysis. The aim of this study was to investigate proteomic expression in stroke and control patients correlated with age. Arterial blood plasma from stroke and control patients was sent to Olink proteomics to measure expression of 184 cardiometabolic and inflammatory proteins. Pearson correlations were used to identify relationships between proteomic expression and age as well as between age with stroke severity and outcome metrics. MEGF9 and TNXB were negatively correlated with age, EFEMP1 and CST5 were positively correlated with age with stroke patients. A different set of proteins were positively correlated with age in the control population, which includes CASP-8, CCL25, and CA3. These data indicate many proteins involved in intracellular matrix function and inflammation are associated with aging in the response to stroke. Further investigation will uncover proteomic signaling pathways, which provide insight into potential biomarkers and therapeutic targets associated with aging in response to stroke.

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Abstracts

Presentation 89

Abstract Title:	**Surgical Management of Aortic Root Infection: A Single-Center Experience**
Author(s):	J. Hudnall MS2, BA, University of Kentucky College of Medicine; S. P. Saha MD, MBA, Division of Cardiothoracic Surgery, University of Kentucky

Abstract: Objective: Aortic root infection is a severe disease that carries high morbidity and mortality. In this report, we present 100 patients with aortic root infection to analyze the morbidity and mortality of these cases.
Methods: With Institutional Review Board approval, we analyzed 100 patients with aortic root infection who had surgery at University of Kentucky Healthcare in Lexington, Kentucky.
Results: 78 patients were male and 22 are female. The average age of the patients was 45 years-old and the average hospital stay was 37 days. One striking comorbidity was that 57 patients admitted to IV drug use, or a substance use disorder. The most common symptoms were fever, chills, and shortness of breath at rest. The most common organism was Enterococcus Faecalis. Operation procedures included 17 patients who underwent an aortic root replacement, 43 who underwent aortic valve replacements, and 28 who underwent mitral valve replacements. Of those valve replacements, 13 were homograft replacements, and 10 were mechanical replacements. Finally, numerous postprocedural complications existed. There were 5 GI bleeds, 4 cerebral hemorrhages, 4 cardiac arrests, 3 strokes, 15 acute renal failures, and 51 acute hypoxic respiratory insufficiencies/failures. Also, 11 patients had reinfection with 3 having redo surgery. Operative mortality was 10%.
Conclusion: Aortic root infection is a severe disease that carries high morbidity and mortality. A substantial number of patients require surgical intervention, which carries a high complication rate. Care of these patients requires a multidisciplinary team that follows multiple complications and many resources for the patient and the hospital.

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Abstracts

Presentation 90

Abstract Title:	**Assessing variables contributing to No-Show Rates in Hand Surgery Clinic**
Author(s):	M. R. Ray, College of Medicine, G. Minor, Division of Plastic Surgery, D. Drake, Division of Plastic Surgery, University of Kentucky

Abstract: No-show rates in a primary care setting have been estimated to be between 7-33% and are linked with poor patient outcomes, significant costs, and loss of scheduled time. However, there is minuscule data on this topic for surgical subspecialties and none focusing on Hand Surgery clinic. This study aims to determine factors associated with no-show rates at an academic Hand Surgery clinic. This will be accomplished via a retrospective review to assess data such as: patient demographics, medical history, appointment details, and previously missed appointments. The results of this study will allow the hospital to better understand factors contributing to missed appointments and potentially create a predictive model to mitigate cost, lost scheduled time, and improve patient adherence to scheduled appointments.

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Abstracts

Presentation 91

Abstract Title:	**The Tube Fell Out: Why Technique Matters when Mitigating Accidental Drain Removals**
Author(s):	P. Skaggs, College of Medicine, U of Kentucky; J. Zwischenberger, Department of Surgery, University of Kentucky; M. Jax, Department of Surgery

Abstract: Accidental Catheter Removal (ACR) or drain dislodgment is a common occurrence for hospitalized and ambulatory patients. Catheters for both vascular access and nonvascular drainage require secure placement ranging from a few days to months. ACR is categorized as a major complication with the risk of sepsis, end-organ failure, and death, often necessitating an additional procedure, increased length of stay, and increased cost. The aim of this study was to compare the tensile strength of catheter fixation using a simple interrupted (S), U stitch (U), or two simple interrupted (2S) skin sutures in a standardized skin model. 12F Flexima nephrostomy catheters (Medi-tech) were sutured to the skin, penetrating the collagen layer, with one of the three techniques and varying suture combinations. The mean breakpoint varied significantly between 2S and both 1S and U stitch sutures (ANOVA post-hoc test $p < .001$) with the 2S technique withholding nearly 40% more force. The 1S did not differ significantly from U stitch. The results on a deceased adult sheep using 0 silk suture yielded identical data compared to the standardized skin model. In practice, the suture must penetrate the collagen layer of skin to duplicate our results. Patient ambulation, confusion, combativeness, transport, visitors, nurses, and rehabilitation all contribute to "the tube falling out". Placement of a second suture takes less than 30 seconds. We conclude, two simple interrupted skin sutures to secure a catheter is very low risk with a strongly positive benefit.

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Abstracts

Presentation 92

Abstract Title:	**Comparing Continuous Glucose Monitoring to Standard Fingerstick Glucose Levels**
Author(s):	N. A. Yeh, Department of Anesthesiology, Perioperative, Critical Care, and Pain Medicine, Department of Microbiology, Immunology, and Molecular Genetics, University of Kentucky. S. Ali, Department of Anesthesiology, Perioperative, Critical Care, and Pain Medicine, University of Kentucky. J. L. Sturgill, Department of Microbiology, Immunology, and Molecular Genetics, University of Kentucky.

Abstract: Glucose monitoring is an essential component of the holistic review of a patient and currently tracked with fingersticks, adding a significant burden to both patients and healthcare providers. Continuous glucose monitoring (CGM) is utilized by diabetic patients to closely self-track glucose levels from the comfort of their home without a healthcare professional present consistently. For this quality improvement project, we aim to establish a suitable alternative to measuring glucose perioperatively by finger stick only for type 2 diabetics to improve glucose management and improve patient outcomes postoperatively. Our hypothesis is that CGM correlates well with standard Nova Biomedical StatStrip (TM) fingerstick glucose levels in the perioperative period. In lieu of this information, it can be used to further explore potential changes in care involving diabetic patients in need of consistent glucose monitoring in an inpatient setting.

Supported by: Kentucky Research Alliance for Lung Disease (JLS)

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Abstracts

Presentation 93

Abstract Title:	**Naïve and Injured Human Peripheral Nerve Tissue as Cell-Based Therapies in Patients With Parkinson's Disease**
Author(s):	L. Plum, Department of Neurosurgery, Neurorestoration Center, U of Kentucky; P. V. Monje, Department of Neurosurgery, Neurorestoration Center, U of Kentucky; G. I. Aparicio, Department of Neurosurgery, Neurorestoration Center, U of Kentucky; G. A. Gerhardt, Departments of Neuroscience, Neurology, and Neurosurgery, Neurorestoration Center, U of Kentucky; C. G. van Horne, Department of Neurosurgery, Neurorestoration Center, U of Kentucky; J. E. Quintero, Department of Neurosurgery, Neurorestoration Center, U of Kentucky

Abstract: Parkinson's disease (PD) causes the gradual loss of dopaminergic neurons in the substantia nigra (SN) of the central nervous system (CNS), resulting in rigidity, tremor, and bradykinesia that worsen over time. Clinical trials NCT02369003 and NCT05377281 have focused on implanting injured and naïve autologous peripheral nerve tissue (PNT), respectively, during deep brain stimulation (DBS) surgery to provide restorative support to the dying neurons in the SN and explore disease modification. This approach, termed DBS-Plus, has shown promising results in open-label safety and feasibility studies. In clinical trial NCT02369003 (now complete, 68 participants), the sural nerve was transected two weeks before implantation to allow the peripheral nerve cells to transition into a repair phenotype. Samples were collected from these participants, at the time of transection and then immediately before implantation, for histochemical and immunostaining analysis of cell composition and function. Currently, naïve PNT is being implanted as an alternative to injured PNT to investigate the reparative capabilities of naive nerves. The human peripheral nerve contains cells expressing stem cell markers, such as Twist and CD34, and neurotrophic proteins that may contribute to the neuroprotective and regenerative effects of the implanted PNT. Ultimately, our efforts are geared toward analyzing and characterizing the naïve and injured PNT samples in search of identifying cellular and molecular mechanisms that can be informative in the design of a future, larger Phase II trial that will aim to eventually restore function afflicted cells in PD.

Supported by: Ann Hanley Neuroscience Fund

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Abstracts

Presentation 94

Abstract Title:	**Generational Differences in the Workplace of Transplant Surgeons**
Author(s):	A. Yadav, Department of Transplant Surgery, U of Kentucky; M. Gupta, Department of Transplant Surgery, U of Kentucky

Abstract: Introduction: The field of transplant surgery is a growing, yet still a demanding subspeciality with the rise of millennials and the fall of boomers. Providers often work after “normal” business hours, operate for many hours doing back-to-back cases, and directly care for some of the sickest patients in the hospital. We aim to determine whether generational differences exist in the transplant surgical subspecialty as they relate to perceptions of work ethic, definition of success and work-life balance, and peer relationships/teamwork. Methods: A survey was built on Qualtrics and sent to members of the American Society of Transplant Surgeons focusing on three main themes: work ethic (perceptions of performing various tasks such as being on-call), success/work-life balance (how do they define success professionally), and peer relationships/teamwork (perceptions of their co-workers). Each question started with a framing statement that set up the answer choices. Each statement was characteristic of a specific generation (Traditionalist, Baby Boomer, Gen X, Y or Z). Reponses were offered on a 5-point Likert scale. Results: A total of 409 responses were collected from a variety of age ranges of transplant surgeons from Baby Boomers to Generation Z. Analysis showed that most individuals of a birth generation did not adhere to specific ideals of their generation. Responders valued teamwork and mutual understanding from their work colleagues as keys to success in the workplace. Values of personal awards and promotions were deemed less admirable compared to patient care success for most responders. Conclusions: Despite the unique backgrounds of different birth generations and their expected ideals, today’s transplant workplace is mixed with individuals of multiple ideals that all share a common goal to achieve a collaborative workplace.

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Abstracts

Presentation 95

Abstract Title:	**Fighting the Formidable Pheo: The Historical Evolution of Pheochromocytoma Treatment Transforming Patient Care**
Author(s):	M. G. Donoho, College of Medicine, U of Kentucky; C. Y. Lee, Department of Surgery, U of Kentucky

Abstract: Pheochromocytomas are neuroendocrine tumors of the adrenal medulla. Today they are easily identified through clinical history, biochemical testing, and imaging. However, historically these tumors were immensely challenging to both diagnose and treat, and carried a virtually 100% mortality rate. In 1956, Mayo Clinic surgeon James Priestly reported an outstanding reduction in mortality for his surgical pheochromocytoma patients: 51 patients successfully surgically treated and 0 patient deaths. This breakthrough in patient care came, according to his report, from the improved accuracy of preoperative diagnosis and the use of alpha blockade to manage hypertensive crisis. Dr. Priestly and others at Mayo Clinic discovered that pheochromocytoma could be identified by its induction of paroxysmal and sustained hypertension. This discovery was necessary to diagnose a largely mysterious pathology, and also contributed to the subsequent improvement in surgical management. Dr. Priestly began using Phentolamine perioperatively for critically sustained hypertension. Globally, hospitals implemented new alpha blockers including Phenoxybenzamine in the 1960s, reporting even greater improvements in surgical outcomes. The development of sophisticated imaging techniques in the 1970s meant that extensive abdominal exploration was no longer necessary, and operative mortality was reduced to 5% or less. Introduction of laparoscopic surgery in the 1990s led to further improvements in surgical outcomes in pheochromocytoma patients. Surgical resection is currently highly successful, with benign pheochromocytomas associated with a 96% 5-year survival rate. Modern day guidelines for pheochromocytoma management in endocrine surgery are built on the exceptional work of physicians throughout history. The tireless effort of physicians over decades took pheochromocytoma from a virtually unsurvivable diagnosis to a well-managed, surgically and pharmacologically treatable condition.

Supported by: None

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Abstracts

Presentation 96

Abstract Title:	**Sexual dimorphism in the immunomodulatory outcomes of nanoparticle treatment after spinal cord injury**
Author(s):	J. Kim, Departments of Pharmaceutical Sciences, U of Kentucky; D. Kolpek, Departments of Pharmaceutical Sciences, U of Kentucky; J. Park; Departments of Pharmaceutical Sciences, U of Kentucky; Spinal Cord and Brain Injury Research Center, U of Kentucky

Abstract: As a key secondary event after primary traumatic spinal cord injury (SCI), inflammatory responses play critical roles in various neurological disorders. Particularly, physiological differences between sexes significantly influence inflammatory responses and functional recovery after SCI. Our previous data indicate that intravenous (IV)-administered poly (lactic-co-glycolic acid) (PLGA)-based nanoparticles (NPs) reprogram circulating innate immune cells and promote a more permissive environment after SCI. In this study, we investigate the immunomodulatory effects of NPs on both sexes after SCI. Initially, we fabricated 500 nm of PLGA-based NPs with Poly (ethyl methacrylate) (PEMA) as a surfactant for a negative surface charge and injected the NPs daily for 7 days via tail vein. Spinal cord samples were collected 1, 3, or 7 days after injury from both sexes and the proportion of neutrophils, monocytes, and monocyte-derived macrophages (MDMs) was analyzed using flow cytometry. We also investigated alteration in the gene expression through qRT-PCR and NanoString. Our data indicate that the administration of NPs decreased the proportion of infiltrated neutrophils, Ly6Chigh monocytes, and MDMs in both sexes after SCI but the extent of their effects was sex dependent. Our qRT-PCR and NanoString data demonstrated that the change in gene expression was also sex dependent. These findings indicate that NP treatments are sex-dependent on the immune cell profile and gene expression. Moreover, NP-mediated immunomodulation has the potential to yield sex-specific therapy for inflammation-derived disorders.

Supported by: NIH funding: P20 GM130456 and pilot funding from UK CCTS (UL1 TR001998)

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Abstracts

Presentation 97

Abstract Title:	**Systemic infection following contusion SCI worsen functional recovery and skeletal muscle strength.**
Author(s):	K. Iyer, Spinal Cord and Brain Injury Research Center and Department of Physiology, U of Kentucky; K. E. Zamiar, Spinal Cord and Brain Injury Research Center and Department of Physiology, U of Kentucky; A. M. Galvan Lara, Departments of Surgery and Physiology, U of Kentucky; S. J. Rippy, Departments of Surgery and Physiology, U of Kentucky; A. F. Romano, Spinal Cord and Brain Injury Research Center and Department of Physiology, U of Kentucky; K. J. Amin, Spinal Cord and Brain Injury Research Center and Department of Physiology, U of Kentucky; T. Butterfield, Athletic Training Rehabilitation Sciences, U of Kentucky; H. Saito, Departments of Surgery and Physiology, U of Kentucky; S. P. Patel Spinal Cord and Brain Injury Research Center and Department of Physiology, U of Kentucky.

Abstract: Spinal cord injury (SCI) is a devastating condition leading to motor and sensory paralysis below the level of injury. This progressive injury involves complex pathophysiological events post-injury that cause cascade of secondary complications decreasing the quality of life and lifespan of SCI survivors. Systemic infections/Sepsis induces a hyperinflammatory immune response which can cause multiple-organ damage and death in humans. Long-term follow-up studies found that post-SCI infections were a predominant secondary complication which had lasting effects on functional recovery and mortality in the SCI population. To date, no experimental model is available to study post-SCI sepsis complications. Current study aimed at developing a novel and clinically relevant rodent model that mimics the long-term dysfunction of sepsis survivors following SCI.

Adult female SD rats were divided in 4 experimental groups: Sham, SCI, Sepsis and SCI+Sepsis. Animals in SCI and SCI+Sepsis groups received T10 contusion SCI (200 kDyn) using Infinite Horizon Impactor. Designated animals were injected with 3 ml cecal slurry (i.p.) to induce sepsis. All the animals received antibiotics and fluid resuscitation starting at 8 hrs post-SCI and/or sepsis induction followed by twice daily for 5 days.

Hind-limb locomotor testing show decreased functional recovery in SCI+Sepsis compared to either alone. In vivo muscle strength test also showed significant muscle weakness in SCI+Sepsis versus SCI alone. Ongoing studies are assessing blood cytokines and histomorphological changes.

In summary, this study acts as the first step towards understanding underlying mechanisms of sepsis post-injury and can pave way to elucidate therapeutic strategies for SCI.

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Center for Clinical and Translational Science

Abstracts

Presentation 98

Abstract Title:	**Diverting the bioenergetics of intra-lesion microglia and macrophages after traumatic brain injury to derive reparative**
Author(s):	R. Kumari, D.N. Nthenge, H. J. Vekaria, P. G. Sullivan, Spinal Cord and Brain Injury Research Center and Department of Neuroscience, University of Kentucky, College of Medicine, Lexington, Kentucky, United States; A. J. DeSana, H. C. Downing, K. E. Saatman, S. P Patel, J. C. Gensel, Spinal Cord and Brain Injury Research Center and Department of Physiology, University of Kentucky, College of Medicine, Lexington, Kentucky, United States

Abstract: 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 a 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 and bioenergetic profiles of macrophages can be manipulated to derive reparative phenotypes. We tested this hypothesis by analyzing the bioenergetic profiles of macrophages and investigated the effect of dichloroacetate treatment (DCA)-a pan pyruvate dehydrogenase PDK inhibitor on OXPHOS-ex vivo conditions after traumatic brain injury (TBI).

We utilized 9-12-week-old C57BL/6J mice for controlled cortical impact (CCI) to model TBI. Brains were collected at 7 days post-injury and 4mm diameter cortex regions under the impact were 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 from CNS macrophages in presence and absence of DCA under ex-vivo condition.

Basal and maximal respiration rates of CNS macrophages were significantly lower after TBI. Dichloroacetate treatment (DCA 10mM)- significantly decreased proton leak-linked OCR and showed a nonsignificant increasing trend for ATP linked OCR when applied ex-vivo to CNS macrophages.

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 and develop DCA into a viable in-vivo treatment.

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Abstracts

Presentation 99

Abstract Title:	**Administration of Glatiramer Acetate Following Traumatic Brain Injury Does Not Alter Splenic B or T Cell Numbers in Mice**
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Abstract: Traumatic Brain Injury (TBI) is a leading cause of mortality and morbidity for young adults. Unsuccessful clinical trials targeting neuronal injury have motivated investigations of other cell types. Despite advances in understanding the roles of astrocytes, microglia, and systemic innate immune cells in the secondary injury cascade, the adaptive immune response to TBI, particularly that of B-cells, remains understudied. We previously demonstrated delayed B-cell diapedesis in the contused cortex of mice following cortical impact TBI. Preclinical studies in ischemic stroke and spinal cord injury suggest that modulation of B-cell phenotypes affects tissue damage. Glatiramer Acetate (GA), an FDA-approved drug for multiple sclerosis, shows efficacy by increasing anti-inflammatory, IL-10-producing regulatory B-cells while decreasing pro-inflammatory TNFŒ± levels and numbers of antibody-secreting plasmablasts. We hypothesized that daily systemic administration of GA after TBI in mice would modulate endogenous B-cell populations to promote recovery. Mice received controlled cortical impact (n=8/treatment) or sham (n=4/treatment) injuries and daily intraperitoneal injections of 5 mg/kg GA or vehicle. At day 14, spleens were collected and processed for flow cytometry to identify B- and T-cell numbers and phenotypic subsets. Preliminary analysis suggests that total numbers of T- or B-cells were not altered by TBI or GA treatment. Numbers of activated splenic B-cells were unchanged but GA treatment showed a trend toward reversing an injury-induced decrease in migratory B-cells ($p<0.1$). Analysis of brain tissue from these mice is ongoing. This work aims to identify a therapeutic strategy for B-cell immunomodulation after TBI to attenuate brain damage and functional deficits.

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. The content is solely the responsibility of the authors and does not necessarily represent the official views of the NIH.

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Abstracts

Presentation 100

Abstract Title:	**Emergency Department Utilization Measured Through Bounce Back Rate is Significantly Higher in Homeless Patients**
Author(s):	S. Sairajeev, College of Medicine, U of Kentucky; S. Desai MD, Department of Emergency Medicine, U of Kentucky

Abstract: Background: The rate of readmission after discharge or bounce back rate can act as a proxy for the efficiency of emergency medical care. The ED is often the only source of healthcare for persons experiencing homelessness (PEH). Discharging a PEH with instructions that require stable housing and other resources may result in another visit to the ED. It is important to account for their unique needs in order to provide them with necessary care in the ED.

Objectives: The purpose of this study is to determine whether there is a significant difference between the bounce-back rate of homeless patients in the ED and non-homeless patients.

Methods: To determine how regularly PEH are being readmitted to the ED following discharge, the bounce-back rates of PEH will be compared to non-PEH in this observational retroactive study. Through CCTS, patient data was collected including 100 homeless patients and 100 non-homeless patients. CCTS provided access to every chart that has the word "homeless" in it from 06/05/2021 to 01/01/2023. After confirming which patients were homeless, 100 were randomly selected. If a patient has returned to the ED within 7 or 30 days of another visit, that contributed to the bounce-back rate. The number of patients who have had two ED visits close in time counted towards the bounce-back group in their respective time frame (30-day bounce-back group and 7-day). Using a two-proportion z-test, the bounce-back rates (7-day and 30-day) were compared to determine significance.

Results: The homeless sample had a significantly higher 7-day and 30-day bounce-back rate compared to the non-homeless sample ($z=-4.168$, $p<0.0001$).

Conclusions: In this study, the results suggest homeless patients visit the ED more frequently after their initial visit than non-homeless patients. The result of this study call for further research into the care homeless patients receive in the ED and how their unique needs may be better addressed.

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Presentation 101

Abstract Title:	**Astrocyte Calcium in the Dorsal striatum Suppresses Neuronal Activity to Oppose Cued Reinstatement of Cocaine Seeking**
Author(s):	Navid Tavakoli, Department of Neuroscience, U of Kentucky;Samantha Malone, Department of Psychology, U of Kentucky;Tanner Anderson, Department of Neuroscience, U of Kentucky;Ryson Neeley, Department of Neuroscience, U of Kentucky;Artin Asadipooya, Department of Neuroscience, U of Kentucky;Michael Bardo, Department of Psychology, U of Kentucky; Pavel Ortinski, Department of Neuroscience, U of Kentucky;

Abstract: Recent literature emphasizes the substantial role of astrocytes, particularly in the dorsal striatum, a key player in reward processing where neuronal activity is susceptible to modulation by astrocyte Ca2+. Yet, the specific impact of dorsal striatum astrocyte Ca2+ on neuronal signaling following self-administered cocaine exposure remains unknown. To address this, we manipulated astrocyte Ca2+ by over-expressing the Ca2+ extrusion pump, hPMCA2w/b, in dorsal striatum astrocytes and the Ca2+ indicator, GCaMP6f, in dorsal striatum neurons of cocaine-trained rats. Suppression of astrocyte Ca2+ increased the acquisition of cocaine and cue-induced reinstatement of cocaine seeking. While astrocyte Ca2+ control amplified the amplitude of neuronal Ca2+ transients in brain slices post-cocaine self-administration, it decreased the duration of neuronal Ca2+ events in this context. Acute cocaine application to brain slices uniformly reduced neuronal Ca2+ amplitude, regardless of hPMCA2w/b expression. This revealed that astrocyte Ca2+ influence over neuronal Ca2+ transients were heightened by cocaine self-administration experience, despite similar acute cocaine sensitivity across groups. Further investigation indicated that neither hMPCA2w/b expression nor cocaine self-administration influenced the regulation of neuronal Ca2+ events by NPS-2143, a Ca2+ sensing receptor (CaSR) antagonist. This suggests the plasticity observed after hPMCA2w/b over-expression is unlikely to result from elevated extracellular Ca2+. In conclusion, astrocyte Ca2+ in the dorsal striatum impacts neurons via intrinsic cellular mechanisms, and long-term cellular plasticity post-cocaine self-administration manifests, at least partially, as an elevation of neuronal Ca2+ signals. Thus, astrocyte Ca2+ in the dorsal striatum may serve to suppress neuronal activity, promoting resilience against cue-induced reinstatement of cocaine seeking.

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Presentation 102

Abstract Title:	**Synthetic Contraceptive Hormones Occlude the Ability of Nicotine to Reduce Ethanol Consumption in Female Rats**
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Abstract: Tobacco and alcohol use disorders (TUD, AUD) are tremendous health liabilities, and co-use of these substances is highly prevalent. Women are particularly at risk, as AUD is increasing at alarming rates and long-term smoking cessation is more difficult to achieve in women. Ovarian hormones can affect frequency of binge drinking and cigarette craving, with increases in 17β-estradiol and progesterone being associated with addiction risk. Little research has examined how contraceptive hormones may influence motivation for alcohol and nicotine. We determined the influence of ethinyl estradiol (EE) and levonorgestrel (LEVO) on nicotine and ethanol (EtOH) consumption using a sequential use model in female rats. We hypothesized that rats treated with LEVO alone will consume less nicotine and EtOH, and rats given EE+LEVO will show higher consumption of both drugs.
Long Evans female rats underwent morning drinking sessions, followed by subcutaneous injections of either LEVO, EE+LEVO, or vehicle and afternoon nicotine or saline self-administration sessions. Contrary to our hypothesis, EE+LEVO did not increase nicotine or EtOH consumption above vehicle levels when it was co-used, but EE+LEVO increased EtOH consumed in the single use control condition. However, rats receiving vehicle treatments consumed less EtOH and nicotine when EtOH and nicotine were sequentially self-administered, indicative of economic substitution. This effect was occluded in rats that were exposed to either EE+LEVO or LEVO alone. Water control rats showed high EtOH preference following nicotine SA, and nicotine demand experiments further suggest an economic substitute relationship between nicotine and EtOH which is interrupted by synthetic hormone treatment.

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Presentation 103

Abstract Title:	**Novel Mouse Behavioral Tests to Dissect Visual Impairment in Neurodegenerative Diseases With Cognitive Decline**
Author(s):	K. C. West, Department of Ophthalmology and Visual Sciences, U of Kentucky; K. M. Kane, Department of Ophthalmology and Visual Sciences, U of Kentucky; L. J. Nichols, Department of Ophthalmology and Visual Sciences, U of Kentucky; V. A. Davis, Sanders-Brown Center on Aging, U of Kentucky; R. H. Kline IV, Rodent Behavioral Core, U of Kentucky; C. J. McLouth, Department of Biostatistics, U of Kentucky; Linda J. Van Eldik, Sanders-Brown Center on Aging, U of Kentucky; Q. Wang, Department of Ophthalmology and Visual Sciences, U of Kentucky

Abstract: CLN3 disease (aka., juvenile Batten disease or juvenile neuronal ceroid lipofuscinosis) is a devastating pediatric neurodegenerative disease with progressive visual impairment, cognitive decline, and motor failure prior to premature death. Our published work shows that Cln3-deficient (Cln3KO) mice display late visual impairment with retinal pathologies in both neurons and pigment epithelial cells. Our preliminary data also show that Cln3KO males exhibit a cognitive deficiency in the Morris Water Maze task. However, it is unclear if visual impairment, despite detectable by electroretinography (ERG), prevents Cln3KO mice from fulfilling visual tasks and contributes to reduced performance in cognitive tests. To determine visual behavioral phenotype for Cln3KO, and to untangle the contributions of visual impairment to reduced performance in cognitive tests, we designed several preference tests based on our initial observation of strong preference of wild-type (WT; C57B6/J) mice for light vs. dark blue objects. After initially conducting preference tests with four different colors and four shades of gray, we identified the most sensitive color (purple vs. light blue) and contrast (black vs. white) preference tests. Our results from Cln3KO vs. WT mice show that these color and contrast preference tests, despite simple, recapitulated visual impairment phenotype revealed by a classical opto-response test using an OptoDrum. These novel preference tests are useful for distinguishing visual impairment from cognitive decline in mouse models of neurodegenerative diseases, such as Alzheimer's. We have conducted these tests on Cln3KO, streptozotocin-induced diabetic, and Familial Alzheimer's (5xFAD) mice.

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Presentation 104

Abstract Title:	**Adherence to Oral Treatment in Dermatology**
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Abstract: Poor adherence to medical treatment widely contributes to suboptimal patient outcomes and increases utilization of the healthcare system. Within dermatology, non-adherence occurs across diseases, medication types, and routes of administration. The purpose of this study is to describe what is known about adherence to oral dermatological treatments. A literature review was performed using PubMed and the terms oral or systemic, dermatology, treatment, adherence, and compliance. Additional articles not contained in the PubMed search were identified through citations in review articles. Adherence to oral medications has been measured using subjective methods (questionnaires and patient interviews) and objective methods (pill counts, electronic chips, pharmacy records, and insurance databases). Adherence to oral treatment in dermatology is poor in acne, atopic dermatitis, psoriasis, psoriatic arthritis, infection, systemic lupus erythematosus, and tinea pedis. Factors influencing oral adherence to medication include patients' health literacy and their perception of illness, which can impact their understanding and motivation to adhere to treatment. Additionally, the duration and dosage of therapy, alongside the cost, insurance coverage, and socioeconomic status of patients within the healthcare system, influence oral medication adherence behaviors. Interventions to improve oral adherence range from electronic reminders to patient education and counseling. Improving patients' adherence to oral treatment regimens may be a key factor for improving patients' treatment outcomes.

Supported by: None

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Presentation 105

Abstract Title:	**Analyzing the Relationship between Hearing Loss and Physical Activity: a Scoping Review**
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Abstract: Objective: Systematically review published literature pertaining to the relationship between physical activity and hearing loss.
Study Selection: Peer-reviewed publications written in English during or after the year 1995 were deemed eligible for inclusion. Articles were screened for study design. Randomized control trials, non-randomized control trials, prospective and retrospective cohort/longitudinal studies, observational studies, case control studies, and case series were included for review. Eligible studies contained assessments of hearing loss as well as physical activity in patients 18 and older.
Data Extraction: Initial search query yielded 28,761 articles which were screened for relevance based on the title/abstract. The remaining 83 articles were reformatted into an EndNote library and underwent full text review, after which 44 articles were deemed appropriate for inclusion. Using REDCap, two members of the research team analyzed the articles based on inclusion criteria, study design, definitions, as well as strength of relationship between physical fitness & hearing loss.
Data Synthesis: Qualitative data from each article was coded and compiled into a REDCap database to facilitate review and analysis. While there was considerable heterogeneity between studies in terms of how physical activity and hearing loss were measured, many reported a statistically significant association between the variables.
Conclusions: While measurement of physical activity and hearing loss is inconsistent between studies, qualitative data suggests a relationship between hearing impairment and decreased physical activity. Additional research is warranted to further investigate this relationship and assess the viability of interventions pertaining to physical activity as a means to prevent and treat hearing loss.

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Presentation 106

Abstract Title:	**Gender and perception of body image: men care too**
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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 and females to better understand how gender 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, race, and education.
Results: Overall, 515 females (31 ± 0.79 years old) and 479 males (26 ± 0.78 years old) completed the questionnaire. Impact of BI was significantly higher in females in the dermatology patient group by 1.34 ± 1.01 points ($p = 0.01$), undergraduate student group by 0.91 ± 0.68 points ($p = 0.009$), and medical student group by 0.91 ± 0.87 points ($p = 0.043$). All other groups showed no significant difference, although males scored higher in the general adult group.
Conclusion: There is little published about BI in males. Here we report that daily life impact of BI is significantly higher in females than males in certain groups while not significantly different in others. We also found that males have a mild negative perception about themselves with slight negative daily life impact. It is notable that average scores for males were higher than 1, showing that men care. More studies should be conducted to better examine if other factors, such as environment, affect BI.

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College of Medicine Research Day

Presentation 107

Abstract Title:	**Phase II Randomized Comparison of Flat vs Weight based Mitomycin C Chemotherapy for Patients Undergoing CRS and HIPEC**
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Abstract: Multimodal cancer treatment using cytoreductive surgery (CRS) and heated intraperitoneal chemotherapy (HIPEC) has proven promising in improving outcomes for patients with peritoneal carcinomatosis. MMC is a widely used drug for HIPEC, but there is still lack of standardization in dosing. In this study, we compare two MMC dosing methods, flat dose (FD) and weight-based (WB) dosing, to find an optimal protocol for treatment.

A single institution phase II randomized trial compared FD and WB MMC dosing schedules in patients undergoing CRS+HIPEC for peritoneal cancers. Patients were randomized in MMC FD (40mg) and WB (12.5mg/m2) groups. Plasma and peritoneal fluid samples were collected at various timepoints for analysis including Cmax (ng/mL) and area under the curve (AUC) (hr x ng/mL). Clinicopathologic data from each group were also compared.

Of the 48 patients enrolled, 33 have undergone CRS + HIPEC and data has been analyzed for 31. Dose (mg/m2) was significantly higher in the FD group (21.2 vs 12.2, P<0.00001). Peritoneal sample Cmax and AUC were also significantly higher in the FD group compared to WB patients. Neutropenia requiring filgrastim administration occurred in 3/14 (21.4%, P=0.04) of patients in the FC group and 0/17 patients in the WB group.

Preliminary results demonstrate higher peritoneal and plasma Cmax and AUC in the FD group compared to WB, with 21.4% of the former group requiring filgrastim support. This data suggests that higher dosing is reflected in the pharmacokinetic data and may lead to a higher incidence of neutropenia with no difference in recurrence rate.

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College of Medicine Research Day

Presentation 108

Abstract Title:	**Trends in Contralateral Prophylactic Mastectomy in the Setting of New Society Guidelines**
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Abstract: In 2016, the American Society of Breast Surgeons published a consensus statement discouraging contralateral prophylactic mastectomy (CPM) in average-risk women with unilateral breast cancer, as the majority of women derive no oncologic benefit from this. Evaluation of trends in CPM across two academic institutions before and after the publication of this statement suggested that rates of CPM over this time have remained relatively stable. Factors associated with undergoing CPM in patients with unilateral breast cancer included HER2 positivity, non-ductal histology, and patients of younger age. Further work is needed to continue to understand these trends and identify interventions that may help reduce the rates of CPM and improve adherence to guidelines.

Supported by: None

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Presentation 109

Abstract Title: **Effects of Socioeconomic Deprivation on UTUC Staging, Mortality, and Recurrence**

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Abstract: Purpose: Socioeconomic status (SES) has been attributed to patient outcome disparities in various malignancies. Previous research has highlighted increased urothelial cancer (UTUC) incidence and worse survival outcomes among low SES patients. This study aimed to determine whether the area deprivation index (ADI), a surrogate for SES associated with patient residence, affected UTUC staging, recurrence rates, and mortality.

Materials and Methods: Patients undergoing radical nephroureterectomy or ureterectomy for UTUC at Moffitt Cancer Center between February 2010 to August 2021 were classified by ADI. A 50th percentile cut-off of ADI classified patients as "advantaged" or "disadvantaged". Time to definitive management, pathologic tumor staging, and use of neoadjuvant chemotherapy were compared using descriptive statistics. Urothelial carcinoma recurrence-free (RFS) and overall survival (OS) were compared using Mantel-Cox log-rank testing.

Results: In this cohort, 215 patients had advantaged SES and 217 had disadvantaged SES, with 26 patients excluded. There was a significant difference in utilization of neoadjuvant chemotherapy among patients (20% vs 12%, $p = 0.03$) but no differences among positive resection margins (20% vs 12%, $p = 0.53$). Tumor characteristics, including median tumor size ($p = 0.15$), pathologic tumor stage ($p = 0.83$), pathologic lymph node stage ($p = 0.28$), were similar between advantaged and disadvantaged patients. There were no differences in median RFS or OS between SES groups.

Conclusion: This regional data, considering previous studies suggesting worse outcomes with increased urothelial carcinoma incidence and mortality in those with a lower socioeconomic status, may reflect efforts to improve healthcare access and evidence-based management patterns.

Supported by: N/A

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Presentation 110

Abstract Title:	**African American(AA) & African Born-Black(ABB) Women,Äôs Experiences with a Cervical Health Education & HPV-Self Sampling**
Author(s):	Jones S, Markey Cancer Center, U of Kentucy; Agbozo P, College of Public Health , U of Kentucky; Musasa S, Department of Medical and Agricultural Biotechnology, U of Kentucky; Adegboyega A, College of Nursing, U of Kentucky

Abstract: Introduction: About 99% of cervical cancer cases are linked to Human Papilloma Virus (HPV) a sexually transmitted infection. Approximately 95% of cervical cancers could be prevented by regular screening and HPV vaccination. Despite cervical cancer being preventable, systemized racial and ethnic disparities continue to exist in cervical cancer screening rates among AA and ABB women. A cervical health intervention was developed to promote cervical screening, HPV knowledge, and screening efficacy. This abstract reports the experiences of women who took part in a cervical health education and received HPV-self-sampling kit.
Methods: Twenty AA/ABB women aged 30-65 years who participated in a 1- hour online cervical health education and were provided with HPV self-sampling kits were invited for a one-on-one interview via Zoom. Interviews were guided with semi-structured questions and took 20-30 minutes. Each interview session was recorded, transcribed verbatim, and content analyzed.
Results: Reported data was organized into two major categories: Intervention facilitators and opportunities. Participants reported having positive experiences with the flexibility of the online education session and HPV self-sampling process. Factors facilitating participation included spousal support, length of session, desire for cervical education, and ease of HPV self-screening. Participants suggested more language options, shorter surveys, and hybrid presentation formats to promote engagement.
Conclusion: Overall, interventions such as education and provision of HPV self- sampling kits, can be viable strategies to empower AA and ABB for preventative cervical cancer screening and follow-up care. These findings will be used to further refine the intervention for future implementation.

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Presentation 111

Abstract Title:	**Db/Db and Misty Mice Suffer Torpor Episodes Following Food Restriction at Room Temperature but not Thermoneutrality**
Author(s):	A. Ehlman, Department of Physiology, U of Kentucky; E. Schroder, Department of Physiology, U of Kentucky; B.P. Delisle, Department of Physiology, U of Kentucky; A. Prabhat, Department of Physiology, U of Kentucky

Abstract: Mice, valued for their genetic similarity to humans, short reproductive cycles, and cost-effectiveness, are important models for investigating metabolic pathways and disorders. Energy balance disruption is a common feature of metabolic diseases. Unlike humans, mice conserve energy through torpor- a hibernating-like state characterized by large reductions in core body temperature and heart rate. Our study determined the propensity for db/db and misty mice, commonly used mouse models in metabolic disorder studies, to enter torpor during periods of time-restricted feeding. We used female mice, aged four to six months, implanted with telemetry devices to monitor core body temperature, heart rate, and activity. The mice were housed in 12-hour light-dark cycles at 25°C. The feeding was restricted to the light phase (Zeitgeber time; ZT 2-9, lights on at ZT 0) for five days, after which the environmental temperature was adjusted to thermoneutrality (30°C). Surprisingly, both db/db and misty mice repeatedly entered short bouts of torpor during time-restricted feeding. The bouts of torpor typically occurred when food was unavailable. Elevating the ambient temperature to thermoneutrality prevented the episodes of torpor in both the db/db and misty mouse models. These findings suggest torpor in mice with metabolic disorders depends on the combination of cold exposure and food scarcity, and they underscore the challenge of studying mouse models of metabolic disorders because mice are prone to torpor, especially at room temperature.

Supported by: Pilot funding from UK Center for Clinical and Translational Science to Professor Brian P. Delisle

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Cardiovascular

Presentation 112

Abstract Title:	**Environmental Effects on the Heart Rate and Core Body Temperature in Female db/db Mice**
Author(s):	A. Prabhat, Department of Physiology, U of Kentucky; I. Stumpf, Department of Physiology, U of Kentucky; T. Seward, Department of Physiology, U of Kentucky; E. A. Schroder, Department of Physiology, U of Kentucky; B. P. Delisle, Department of Physiology, U of Kentucky

Abstract: Environmental factors affect the 24-hour regulation of the heart rate (HR) and core body temperature (Tb). Db/db mice have been shown to have irregular thermoregulation. We explored the effect of housing temperature and light conditions on the HR and Tb in db/db mice. Four to six-month-old db/db and control female mice were implanted with telemetry devices to continuously record the electrocardiogram (ECG), core body temperature (Tb), and activity. Mice were housed at room temperature (25 °C) followed by thermoneutrality (30 °C) in 12 h light: 12 h dark cycles (LD, 200 lux: 0 lux) with ad libitum access to food. Mice were then subjected to 12 h light: 12 h dim light cycles (dLAN-ALF; 200 lux: 5 lux) for one week. db/db mice had blunted day/night rhythm in HR and Tb compared to control mice, as 50% of db/db mice did not show 24-hour variation in the HR. Thermoneutrality increased the day/night variation and 24-hour rhythmicity in the HR in db/db mice and control mice. Specifically, thermoneutrality decreased mean HR in both the genotypes and increased amplitude in the HR of db/db mice. Thermoneutrality also increased core body temperature in db/db mice up to the control levels. dLAN decreased the day/night differences between HR, Tb, and activity in db/db and the control mice. dLAN disrupted the 24-hour rhythm in both HR and Tb in db/db and control mice, underscoring the critical role of environmental conditions in 24-hour heart rate and core body temperature regulation.

Supported by: Pilot funding from the UK Center for Clinical and Translational Science to Prof. Brian Delisle

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Presentation 113

Abstract Title:	**N2BA isoform expression, collagen content, and tubulin abundance increased in ischemic heart failure in humans**
Author(s):	A. G. Wellette-Hunsucker, Department of Physiology and Division of Cardiovascular Medicine, Internal Medicine, U of Kentucky; U. Gulbulak, Division of Cardiovascular Medicine, Internal Medicine, U of Kentucky; G. N. Milburn, Department of Physiology and Division of Cardiovascular Medicine, Internal Medicine, U of Kentucky; A. T. Yackzan, Division of Cardiovascular Medicine, Internal Medicine, U of Kentucky; V. A. Gupta, Division of Cardiovascular Medicine, Internal Medicine, U of Kentucky; K. S. Campbell, Department of Physiology and Division of Cardiovascular Medicine, Internal Medicine, U of Kentucky.

Abstract: Myocardial stiffness, crucial for cardiac function, is regulated by titin isoform, phosphorylation, collagen, and tubulin content. This study investigated these factors in >175 organ donors and cardiac patients, encompassing various heart failure cases. Collagen and alpha-tubulin levels were quantified in organ donors, dilated cardiomyopathy, and ischemic heart failure samples. Patient group sizes were as follows: organ donors (21), dilated cardiomyopathy (29), ischemic heart failure (45), cardiac amyloidosis (5), titin truncation mutations (8), end-stage heart failure pre-VAD (35), and transplanted post-VAD (35). Titin isoforms were separated using SDS-agarose gels, and phosphorylation levels were determined. Collagen content was assessed using a hydroxyproline assay, and tubulin abundance was measured through SDS-PAGE/Western blotting. Each data point represents an individual patient. Linear mixed model was utilized with heart failure status as the main effect. In ischemic heart failure, N2BA content increased (p=0.019) compared to non-ischemic heart failure (dilated cardiomyopathy). Titin isoform phosphorylation showed no significant differences between these groups. Collagen content in ischemic heart failure was higher than in organ donors (p=0.0003), and alpha-tubulin abundance was elevated compared to organ donors (p=0.029) and dilated cardiomyopathy (p=0.0318). The findings suggest that ischemic heart failure leads to increased collagen and tubulin abundance, potentially prompting a compensatory shift toward N2BA expression to maintain myocardial passive stiffness.

Supported by: NIH F31 pre-doctoral award, HL149164, and HL163977

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Presentation 114

Abstract Title:	**Measurements of Mouse Cerebrovasculature Using MicroCT Contrast Agents**
Author(s):	M. J. Ma, U of Kentucky College of Medicine; L. Whitnel, Department of Neurosurgery and Center for Advanced Translational Stroke Science, U of Kentucky; J. M. Roberts, Department of Neurosurgery and Center for Advanced Translational Stroke Science, U of Kentucky

Abstract: There have been significant advancements in imaging modalities allowing us to visualize pathologies in animal models. One such modality used for mice is MicroCT, which is similar to a hospital CT scan. MicroCT uses X-rays to create 2D slices that are combined to create a high-resolution 3D image on a smaller scale. It can be used with or without contrast, but with the use of contrast, we are able to visualize the structure, density, and pathology of vasculature. In this study we compared a silicon-based contrast (vascupaint) to a polymer-based contrast (μAngiofil) to visualize the cerebrovasculature in mice. For both contrast agents, we noted differences in ease of perfusion (how well it filled the vessels) and the quality of the images that were created. We used the Bruker Skyscan MicroCT to create 2D slices and subsequently the NRecon software was used to reconstruct the images. We then used 3D Slicer software to render a 3D image that is used to quantify the volume and density of the vessels. We found that both contrast agents were able to fill the major arteries, but we were able to visualize arterioles and capillaries with the μAngiofil. However, this level of detail came at the cost of a more difficult perfusion process and higher expense. This project will allow us to optimize a translational imaging method for measuring vascular pathologies, such as vasospasms, in animals.

Supported by: PSMRF NIH CTSA grant (UL1TR001998) and KL2 grant (TR001996)

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Cardiovascular

Presentation 115

Abstract Title:	**Opportunistic Screening of Abdominal CT: Use of Automated Body Composition Biomarkers For Cardiometabolic Value**
Author(s):	K. Manning, University of Kentucky College of Medicine; J. Lee, Radiology, University of Kentucky College of Medicine

Abstract: Over the last 50 years, Abdominal CT imaging has been used regularly in diagnosis and treatment for a variety of different illnesses. In the United States it is estimated that we perform nearly 100 million body CT scans a year, and this number is only continuing to grow. Although, the current use of CT scans is primarily to identify a singular clinical problem; these scans contain robust information that is found incidentally in these routine scans and is often not used in clinical practice. Growing curiosity for the use of this opportunistic data for assessment of patient risk and prediction of adverse events has led to the use of artificial intelligence algorithms that can automatically assess the additional biometric measures in the CT scans.
Using the incidental data from already performed CT scans, that typically goes unused, has the potential to provide invaluable clinical information for the entire population. The CT imaging algorithms were created based on normative population values and then looked at the ability of the algorithm to predict future adverse events. In further studies the group aims to include a more diverse population so that all individuals benefit from this algorithm.

Supported by: None

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Presentation 116

Abstract Title: **Papilledema a "Misnomer" for Optic disc edema: A Single Center Analysis**

Author(s): R. P. Vasireddy, Departments of Neurology and College of Medicine, U of Kentucky; N. Demas, College of Medicine, U of Kentucky; H. Mair, College of Medicine, U of Kentucky; P. Sudhakar, Department of Neurology and Ophthalmology and Visual Services, U of Kentucky.

Abstract: INTRODUCTION: Papilledema is the term used to describe optic disc swelling secondary to elevated intracranial pressure (ICP), but many providers use papilledema interchangeably with disc swelling for alternate etiologies that are not associated with elevated ICP1. The aim of this study is to assess the knowledge gap across various specialties and evaluate if there is delay in diagnosis due to incorrect labelling.
METHODS: A retrospective chart review of 368 (287 female, 81 male) eligible patient charts over 18 years of age that had a diagnosis of "unspecified papilledema" using EPIC Slicer Dicer between June 2021 and September 2023 was performed at University of Kentucky. Computerized tomography, magnetic resonance imaging, and lumbar puncture were used to confirm raised ICP.
RESULTS: Out of 368 patients 42 patients never had any confirmatory tests for elevated ICP for various reasons and were excluded. 151 (46.3%) out of remaining 326 patients labelled as papilledema did not have elevated ICP. We also analyzed data on inaccurate labelling of optic neuropathy as papilledema during the first encounter by various specialties which is as follows: Emergency physicians 27 (17.88%); neurology 22 (15.89%); ophthalmology 21 (13.91%) and other referring providers including primary care 81 (53.65%). In few cases, it took approximately 307 days to reach a final diagnosis from symptom onset.
CONCLUSIONS: Our results suggest that inaccurate labelling of optic dis edema as papilledema prevails among various specialties including ophthalmology. We believe there is potential knowledge gap that must be addressed to prevent unnecessary testing, associated system wide costs and erroneous diagnosis that leads to distress among patients.

Supported by: None

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Presentation 117

Abstract Title: **Near-Peer Mentorship in Undergraduate Medical Education**

Author(s): H. L. Cleary, University of Kentucky College of Medicine; R. R. Piercey, Department of Behavioral Science, University of Kentucky College of Medicine; L. R. Sims, Department of Behavioral Science, University of Kentucky College of Medicine

Abstract: The ever-changing medical education landscape, including the transition of medical school curriculum to a pass-fail structure, requires students to maximize near-peer connections for strategic mentorship and community-building. As a result, many medical students feel pressure to stand out while lacking the knowledge of how to set themselves apart. In turn, medical educators have recognized the value of near-peer mentorship in bridging gaps between leadership and increasingly diverse student populations. In 2023, the MedMentors initiative began its pilot year on the main campus at the University of Kentucky College of Medicine with 22 second-year medical students from diverse backgrounds each selected to personally mentor a group of six-to-eight first-year medical students (n=137) in a one-on-one near-peer mentorship relationship. This initiative requires mentors to send monthly emails to their mentee group, attend discussion-based or skills training sessions with their mentees, reach out to meet with their mentees individually, and participate in monthly mentor meetings. This pilot year of MedMentors included qualitative data collection for initial program evaluation with plans for a future quantitative survey measuring mentorship connections. MedMentors themselves submit quarterly reflections which capture the scope of the program's growing impact on them personally and on their mentees. MedMentors is a scalable mentorship program with value both for mentored trainees and the mentors who can become the next generation of academic medical leadership. The initiative provides a pathway towards academic medicine for diverse students who may not otherwise be recognized for mentoring roles or given a chance to build medical education experience.

Supported by: None

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Presentation 118

Abstract Title: **Personal Care Product Dye-Induced Chromhidrosis: A Case Report**

Author(s): A. Marcelletti, College of Medicine, U of Kentucky; C. Slone, College of Medicine, U of Kentucky; M. Baker, College of Medicine, U of Kentucky; C. L. Wilson, Dermatology, Elkhorn Dermatology, Georgetown, KY

Abstract: Chromhidrosis (CH) is a rare dermatologic condition defined as having colored sweat. None of the forty-eight documented cases of chromhidrosis in the literature originate from personal care product dyes. We present two cases of chromhidrosis following the use of personal care products. Our first case involves a 26-year-old man who experienced blue-purple discoloration on the left and right great toes after using Old Spice Swagger with cedarwood body wash containing a blue tint. Our second case involves a 31-year-old woman who experienced blue discoloration bilaterally on the forearms and thighs after using a purple shampoo named "Luseta Biotin & Collagen Purple Shampoo/Conditioner for Hair Growth." We instructed both patients to discontinue the specific personal care products, resulting in the resolution of the colored sweat manifestation. These cases are unique because, to our knowledge, they are the first known cases of chromhidrosis following the use of these widely available personal care products. We believe the absorption of Blue 1, Ext. D&C Violet 2 and D&C Red 33 are the presumptive causes of CH development. The presented cases emphasize that the chemicals and dyes in personal care products can lead to various effects, such as CH. This reminder urges the medical community and consumers to delve deeper into the list of ingredients for daily essentials, as being mindful of product ingredients can aid in diagnosing similar presentations and advocating for informed product use.

Supported by: None

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Presentation 119

Abstract Title:	**Inflatable Penile Prosthesis Infections in Diabetic Patients on Sodium-Glucose Transport Protein 2 Inhibitors**
Author(s):	E. R. Wahlstedt, College of Medicine, University of Kentucky; J. Schardein, Department of Urology, University of Utah; M. Jimbo, Department of Urology, University of Utah; J. J. Horns, Surgical Population Analysis Research Core, University of Utah; V. Vichare, Surgical Population Analysis Research Core, University of Utah; R. Das, Surgical Population Analysis Research Core, University of Utah; J. Hotaling, Department of Urology, University of Utah; K. Gross, Department of Urology, University of Utah

Abstract: Introduction: Infections following inflatable penile prosthesis (IPP) placement occur in 1-3% of patients, with increased rates among diabetic patients. Sodium-glucose transport protein 2 inhibitors (SGLT2i) are among the most prescribed medications are associated with possibly increased rates of urinary tract and genital infections. Our objective is to identify if diabetic patients taking SGLT2i are at increased risk of developing an IPP infection.

Methods: We performed a retrospective review of all men with diabetes who underwent IPP placement between 2011-2021 in IBM Marketscan Database. Demographic data, including age, smoking status and obesity were obtained. An IPP infection requiring device removal was identified based on ICD-9/10 and CPT codes. Multivariate model outputs assessed the likelihood of IPP infection in diabetic patients on SGLT2i as well as based on demographics.

Results: A total of 2,383 diabetic patients who underwent IPP placement were identified. The mean age of the cohort was 61 years (55-66 years), with 18.9% identified as smokers and 61.0% of patients classified as obese. Among these patients, 883 (31.1%) were using a SGLT2i or combination medication. Over a mean follow-up period of 25 months (10-49 months), there were 82 (2.9%) documented cases of infections requiring IPP removal, which included 28 (3.2%) patients on SGLT2i and 54 (2.8%) patients on other medications. SGLT2i use was associated with a nonsignificant increase in the HR [1.26 ($p=0.39$)], while smoking and obesity were both associated statistically significant HRs [2.20 ($p<0.01$) and 2.024 ($p=0.02$)].

Conclusion: These results suggest preoperative counseling and lifestyle changes are important to potentially decrease the risk of IPP infections in diabetic patients. SLGT2i may be continued perioperatively to ensure appropriate glycemic control as these medications have not been found to be associated with a significantly increased risk of postoperative infections.

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Infectious Disease

Presentation 120

Abstract Title:	**Cutaneous Acanthamoeba in an Immunosuppressed Patient**
Author(s):	S. R. Winchester, Medical Student, U of Kentucky; F. deCastro, Dermatology Associates of Kentucky, Lexington, KY.

Abstract: Case Presentation: A 78-year-old male gardener with a past medical history of chronic lymphocytic leukemia (CLL) on chronic immunosuppressive therapy, presented to his dermatologist with a 5cm x 5cm erythematous, indurated plaque on his left medial anterior thigh. Due to his immunosuppression and high clinical suspicion for skin cancer, the lesion was biopsied. Histologic examination revealed severe neutrophilic panniculitis with numerous amebic trophozoites. Due to such a devastating mortality rate associated with amoebic infection, an emergent wide local excision of infected tissue was performed with skin graft closure. The patient was started on oral Fluconazole and the tissue specimen was forwarded to the Centers for Disease Control and Prevention (CDC) for further identification of Acanthamoeba spp. Infectious disease was also consulted and subsequently started the patient on multi-drug therapy to prevent systemic infection.
Discussion: There are only 3 published cases of acanthamoebiases in CLL patients on immunosuppressive therapy.2 Acanthamoeba spp. can cause devastating and deadly disseminated disease.2 The mortality rate is approximately 73% without CNS involvement and 100% in those with CNS involvement.1 Misidentification of the organism often occurs and there is no established treatment, but often includes combination antibiotic, antifungal and novel antiprotozoal agents.1,2
Conclusion: Due to the vast environment Acanthamoeba lives, it is suspected the patient became infected secondary to his gardening hobby. Although Acanthamoeba can be difficult to identify histologically, rapid recognition of this fatal organism on biopsy led to immediate excision of the infected tissue which likely prevented disseminating disease and death of the patient.

Supported by: None

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Presentation 121

Abstract Title:	**Establishing Caenorhabditis elegans as a Model for Mitochondrial Dysfunction Following Diffuse Axonal Injury**
Author(s):	S. L. Short, College of Medicine, U of Kentucky; O. J. Kalimon, Department of Neuroscience, U of Kentucky; R. Lamb, Department of Neuroscience, U of Kentucky; S. J. Cherra III, Department of Neuroscience, U of Kentucky; P. G. Sullivan, Spinal Cord and Brain Injury Research Center, U of Kentucky

Abstract: Traumatic brain injury (TBI) affects millions of people annually. Mitochondrial dysfunction is a major driver of secondary injury following TBI, making them important targets to promote neuroprotection and behavioral improvement after injury. Typically, mitochondria must be isolated to measure their function, so no studies have examined the effects of TBI on mitochondria in vivo. The nematode species, Caenorhabditis elegans, has been used to study mitochondrial function in other neurological conditions, including Parkinson's disease. This study aims to determine whether C. elegans can be an effective model of diffuse axonal injury (DAI), a type of TBI where rotational forces cause axonal tearing. In humans, the protein beta-spectrin is critical for normal neuronal morphology. Axonal breakage has been shown to occur in C. elegans lacking the gene that codes for a beta-spectrin homologue: unc-70. We hypothesize that adult unc-70 knockout C. elegans will have reduced respiration after inducing neuronal injury compared to wild type. Wild type and unc-70 mutant C. elegans were injured by mixing them in solution. Control groups were not mixed. After injury, the Seahorse XFe24 Analyzer measured the mitochondrial respiration in the presence of uncouplers and inhibitors of the electron transport chain to monitor mitochondrial function. While studies utilizing the unc-70 mutants are ongoing, wild type worms had significantly reduced respiration after injury compared to the uninjured control. This study demonstrates how C. elegans can be used to measure mitochondrial function and can potentially contribute to further understanding of TBI.

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College of Medicine Research Day

Presentation 122

Abstract Title:	**Exploring the Role of Complementary Component 5a Receptor 1 Dysfunction in the Development of Post-Stroke Depression**
Author(s):	T. Garg, Undergraduate Student of Neurosurgery, U of Kentucky; H. Vekaria, The Spinal Cord and Brain Injury Research Center, U of Kentucky; S. J. Messmer, The Center for Advanced Translational Stroke Science, U of Kentucky; G. V. Velmurugan, The Spinal Cord and Brain Injury Research Center, U of Kentucky; J. A. Frank, The Center of Advanced Translational Stroke Science & Department of Neurosurgery, U of Kentucky; P. G. Sullivan, Department of Neuroscience & The Spinal Cord and Brain Injury Research Center, U of Kentucky; J. F. Fraser, The Center of Advanced Translational Stroke Science & Department of Neurosurgery, U of Kentucky; K. R. Pennypacker, The Center of Advanced Translational Stroke Science & Departments of Neurology and Neuroscience, U of Kentucky; C. D. Pandya, The Center of Advanced Translational Stroke Science & Department of Neurosurgery, U of Kentucky.

Abstract: Approximately 800,000 people with stroke living in the United States. Stroke is often associated with long-term neuropsychological consequences. Approximately 33-50% people with stroke develops post-stroke depression (PSD). The complement system represents one of the major mechanisms of the innate immune system and inflammation. Dysfunction or aberrant activation have been implicated in the pathogenesis of a number of brain disorders. The BACTRAC tissue banking permitted to analyze the inflammatory pathway directly in the vicinity of the infarct from a stroke patients. Our data in humans show that mRNA expression of a key complementary component, terminal effector molecule component 5a (C5a) significantly increases in systemic and intracranial blood collected during thrombectomy of stroke patients compared to the control subjects. Moreover, C5 expression in blood is positively correlated with the severity of depressive outcomes measured by Patient Health Questionnaire-9 (PHQ-9) score in patients 3-days after stroke. We also observe that in an aged rat stroke model demonstrating a significant increase in blood cells (buffy-coat) gene expression of component 5a receptor 1 (C5aR1) after acute (5-hours) and chronic (30-days) stroke. Interestingly, in our preliminary studies, we found that aged rats develop a significant PSD phenotype at 30 days post transient Middle Cerebral Artery Occlusion. The protein levels of C5aR1 are higher in the aged rat brains at both 3-days, and 30-days after stroke. Our current study is impactful because it translates and builds upon a novel clinical and preclinical observation to expand our understanding of PSD pathology and develop new clinical therapeutic targets.

Supported by: Neuroscience Research Priority Area; Neustar Neurosurgery Research Award

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Presentation 123

Abstract Title:	**Implementation of a Wearable Device to Monitor Non-Motor Symptoms of Parkinson's Disease in a Clinical Trial**
Author(s):	Cali Blevins, Department of Neurosurgery, U of Kentucky; Jaimie Hixson, Department of Neurosurgery, U of Kentucky; Lauren Plum, Department of Neurosurgery, U of Kentucky; Greg A. Gerhardt, Department of Neuroscience, U of Kentucky; John T. Slevin, Department of Neurology, U of Kentucky; Craig G. van Horne, Department of Neurosurgery, U of Kentucky; Jorge E. Quintero, Department of Neurosurgery, U of Kentucky

Abstract: Parkinson's Disease (PD) is the second most common neurodegenerative disorder globally, impacting approximately 10 million individuals worldwide. PD often has detrimental effects on sleep, activity levels, and autonomic function, significantly impacting the quality of life for affected individuals. Presently, there are no disease-modifying treatments for PD; however, autologous peripheral nerve tissue (PNT) implants to the substantia nigra have shown promise in our previous research. We are launching the LEAP (A Phase I study of the feasibility and safety of SuraL nervE tissue grafting to the substantia nigrA in Patients with synucleinopathies) clinical trial, and an exploratory outcome of the LEAP trial is to describe the compliance of using wearable devices (Oura ring) and our ability to obtain health-related outcomes from a wearable device. All participants will provide written informed consent for a study approved by the University of Kentucky IRB. Seven participants who have been diagnosed with synucleopathies will be enrolled. The first participant will receive an open-label bilateral implantation to the substantia nigra of PNT obtained from the sural nerve. Subsequently, the double-blind phase of the trial will enroll six participants divided equally into control or treatment groups. Both groups will wear the Oura ring for 14 days before the procedure and 14 days before their 12-month follow up appointment. We will analyze sleep, readiness, and activity data from the Oura ring at baseline and at 12 months post-procedure.
Support provided by UK CCTS High Impact Pilot Award through UL1TR001998 from NCATS, and the Ann Hanley Neuroscience Fund.

Supported by:	UK CCTS High Impact Pilot Award through UL1TR001998 from NCATS, and the Ann Hanley Neuroscience Fund.

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College of Medicine Research Day

Presentation 124

Abstract Title:	**Multi-Participant Research Visit Approach: Alzheimer Biomarkers Consortium for Down Syndrome (ABC-DS)**
Author(s):	Raven McCree, BA Sanders-Brown Center on Aging, University of Kentucky College of Medicine; Amanda C. Glueck, PhD, Department of Neurology, University of Kentucky College of Medicine; Jordan P. Harp, PhD Sanders-Brown Center on Aging, Department of Neurology, University of Kentucky College of Medicine; Frederick A. Schmitt, PhD Sanders-Brown Center on Aging, Department of Neurology, University of Kentucky College of Medicine

Abstract: The Alzheimer Biomarkers Consortium for Down Syndrome (ABC-DS) is a multi-center research study whose goal is to monitor the aging process in adults with trisomy 21 or Down syndrome (DS). Caused by the triplication of chromosome 21, DS is the most common form of genetic intellectual disability in the United States, occurring in 1 in every 700 children each year. In addition to being at risk for developing several health problems throughout their life, individuals with DS are at an increased risk of being diagnosed with Alzheimer's Disease . To monitor the aging process, ABC-DS recruits individuals 25 years of age and older to complete a series of comprehensive assessments every 16-months. Each visit is comprised of cognitive testing, blood biomarker analyses, neurological and physical exam, a study partner interview, and neuroimaging. In total, each visit takes approximately 10 hours to complete. While most sites in ABC-DS divide their visit across multiple days and weeks, the University of Kentucky (UK) has devised a condensed approach. We have found that is less disruptive for participants' and their families' daily lives. Additionally, UK was the first to adopt multi-participant visits. We have found that multi-participant visits provide increased comfort for our participants by allowing them to maintain access to a familiar support structure and provide positive modeling for more timid participants who might be anxious about study procedures. Furthermore, we have found that the multi-participant visit format reduces the demand on study personnel, by requiring a reduced time commitment while maintaining the goal of 2 participant visits per week.

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College of Medicine Research Day

Presentation 125

Abstract Title:	**NeuroBank: Bridging The Gap Between Underserved Populations and Translational Research**
Author(s):	Hopemarie Makumbi MS, U of Kentucky; Tritia Yamasaki MD/PhD, Dept of Neurology, U of Kentucky

Abstract: According to the Stroke Encounter Quality Improvement Project annual report, "Stroke was the 6th highest cause of death in Kentucky, resulting in 2,428 stroke deaths in 2021." This is evident in the number of stroke patients consented at Neurobank. Kentucky is part of the stroke belt which means it has a higher rate of stroke mortality. This drives the point of the need for access to medical care. Research plays a huge role in the medical advances we see today. For this reason, it is crucial that the populations who participate in research are diverse. Neuro Bank is working to remove some of the barriers for underserved populations participating in research. One of the barriers is distance. Patients can receive medical care and also be allowed to participate in research in the same visit. The purpose of Neuro Bank is to collect and bank samples from patients with neurological diseases. The population consists of UKHC patients in neurology. The goal is to gain understanding and discover new therapies for neurologic disease. Samples are collected from patients all over Kentucky who come to UKHC for clinical care. The data represents how far are patients traveling to receive quality medical care.

Supported by: Neuroscience Research Priority Area

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Presentation 126

Abstract Title:	**Identification of macrophage subsets and gene expression under various cytokine exposures in NASH cells: A pilot study**
Author(s):	Alexander Chang, U of Kentucky, College of Medicine

Abstract: As rates of obesity continue to increase the risk of developing nonalcoholic fatty liver disease (NAFLD) rises. NAFLD results from accumulation of excess fat in the liver which can then progress to nonalcoholic steatohepatitis (NASH). The progression from NAFLD to NASH is mediated through inflammatory processes. Hepatocytes become damaged from the excess fat toxicity. The damaged hepatocytes release cytokines to recruit Kupffer cells and monocyte derived macrophages. Hepatic cells defend against this processes by utilizing macrophages. However, macrophages can release inflammatory cytokines that progress NAFLD to NASH. Macrophages can polarize into different subsets including proinflammatory M1 and anti-inflammatory M2. Macrophages were inspected from healthy donor peripheral blood mononuclear cells (PBMC) compared to PBMCs from patients with NASH. The aim of this study was to establish a method for comparing healthy cells and NASH cells to analyze potential differences or similarities among macrophage M1 and M2 gene expression.

Supported by: Diabetes and Obesity Summer Research Fellows Program

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Presentation 127

Abstract Title: **Analyzing the Impact of Maternal Comorbidities on Milk Output for Kentucky Mothers of Premature Infants**

Author(s): G. Thomas; S. J. Robbins, Department of Biostatistics, U of Kentucky; D. Ross, Center for Clinical and Translational Science, U of Kentucky; M. McCormick; B. Day; B. Gagen; J. Durbin; S. L. Attia, Department of Pediatrics and Gastroenterology, U of Kentucky

Abstract: Background: Human milk is the highest quality nutrition for developing infants. Maternal comorbidities can reduce milk volumes. Kentucky has the eighth-highest prevalence of early-onset Hypertensive Disorders of Pregnancy nationally. We evaluated the potential impact of selected comorbidities on maternal milk production for premature Kentucky infants, as there is an information gap.
Methods: This is an interim analysis within the ongoing Moringa for Moms and Babies Study. This double blinded RCT investigates 4g moringa supplementation vs. placebo daily for seven days taken by lactating mothers of preterm infants in the University of Kentucky's Neonatal Intensive Care Unit. Inclusion: preterm infant gestational age of 28-36 weeks 6 days, chronological age 2-6 weeks, and their mothers.
Exclusion: mothers taking moringa. We collected comorbidity information at enrollment and 24-hour pumped output at enrollment and exit (day 7).
Results: We found no significant differences in the change in 24-hour pumped output between enrollment and exit for mothers with or without gestational diabetes ($p>0.9$), diabetes types I or II ($p=0.2$), gestational hypertension ($p=0.5$), chronic hypertension ($p=0.6$), or autoimmune diseases ($p>0.9$). Mothers with mental health disorders had significantly lower changes in 24-hour milk output from enrollment to exit [median (IQR) mL Arm A: -72 (-125, -59) vs. Arm B: 66, (-26, 156), $p=0.019$].
Conclusions: Maternal comorbidities may impact milk quantity made by mothers of premature Kentucky infants and warrants evaluation in a larger cohort.

Supported by: NIH NCATS grant (UL1TR001998)

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Presentation 128

Abstract Title:	**Evaluating the Relationship Between Diabetes Knowledge and Social Support on Glycemic Control Among Older Adults**
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Abstract: Background: Social support and diabetes knowledge have been linked to improved self-care practices in adults with type 2 diabetes (T2D; 1–4). However, the impact of these variables on glycemic control, as well as the interplay between social support and diabetes knowledge, has not been well-established and may vary between populations (5–11). The aim of this study was to assess whether diabetes knowledge mediates the impact of social support on HbA1c values in older adults with T2D.
Methods: This is a preliminary analysis of participants (n=55) recruited from two primary care clinics in Kentucky. The MOS social support survey was used to assess social support and a 24-item diabetes knowledge questionnaire was used to evaluate diabetes knowledge (12–14). Spearman Correlation was used to assess associations between social support, diabetes knowledge, and Hba1c values. A linear regression model was constructed to examine the interactive effect of diabetes knowledge and social support on Hba1c.
Results: Spearman correlation showed a weak negative association between social support and HbA1c values (ρ=-0.19) and a weak positive association between diabetes knowledge and HbA1c (ρ=0.14). The linear regression model did not show statistically significant correlations between social support and HbA1c (p=0.2) or diabetes knowledge and HbA1c (p=0.3). Diabetes knowledge did not have a mediating effect on the relationship between social support and HbA1c (p=0.2).
Conclusion: This study did not demonstrate a statistically significant relationship between diabetes knowledge and social support on glycemic control, despite prior research linking social support and diabetes knowledge to better self-care.

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College of Medicine Research Day

Presentation 129

Abstract Title: **A Novel Approach to Elbow Arthroscopy**

Author(s): L. Kirk, College of Medicine, U of Kentucky; M. Benningfield, College of Medicine, U of Kentucky; Srinath Kamineni M.D., Department of Orthopaedic Surgery, U of Kentucky

Abstract: Introduction: Elbow Arthroscopy is a high-stakes procedure due to the numerous neurovascular structures surrounding the surgical site. Multiple portal locations have been described in the literature, but no single approach has been accepted as the standard. The purpose of this study is to define a novel approach to placement of an anterior portal for elbow arthroscopy that is normalized to each patient. Our proposed location for portal placement is the transepicondylar distance (TED) distal to the midpoint of the transepicondylar line (TEL).
Methods: Using our proposed method of portal placement, portals were placed in 43 cadaver arms. The cadavers were subsequently dissected and the distance of the portal from essential neurovascular structures was measured.
Results: The transepicondylar distances of the cadaver elbows used in this study averaged 63.45 mm with a standard deviation of 5.88 mm. The range of the TEDs was 2.3 cm. The portal placement averaged 2.77 ± 2.79 mm from the lateral cutaneous nerve, 7.17 ± 3.16 mm from the radial nerve (RN), and 14.5 ± 9.00 mm to the radial artery.
Discussion/Conclusion: In conclusion, this novel method for placement of an anterior portal offers access to the radial tuberosity, radial head, coronoid, anterior capsule, and the brachialis insertion while consistently avoiding all neurovascular structures other than the lateral cutaneous nerve. Care should be taken when making the portal due to the locality of the lateral cutaneous nerve branches, with in-line blunt spreading dissections substituted for sharp dissections.

Supported by: None

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Presentation 130

Abstract Title: **Risk of Fracture Associated with Lower Extremity Corticosteroid Large-Joint Injections**

Author(s): J.R. Goetz, U of Kentucky College of Medicine; M. J. Ma, U of Kentucky College of Medicine; C. Malempati, Department of Orthopedic Surgery and Sports Medicine, U of Kentucky; S. Nelson, U of Kentucky College of Medicine; D. McElroy, Department of Biology, Western Kentucky U

Abstract: Large-joint corticosteroid injections are a preferred conservative treatment method for osteoarthritis. While the increased risk of fracture associated with systemic corticosteroids is well known, we looked to determine if corticosteroid joint injections harmed local bone integrity.

Between January 2018 and June 2023, 590 patients met the inclusion criteria. Charts were retrospectively reviewed for the total number of lower extremity large-joint corticosteroid injections and the occurrence of a lower extremity fracture following injection.

Of the 590 patients, 19 lower extremity fractures were identified. No significant association with a fracture was found with age, sex, BMI, smoking status, or location of injection. However, we found a significant association with fractures and an increasing number of injections (P=0.014). Statistical significance of fracture risk was found between patients with 1-3 injections versus 4+ injections (P<0.001), a likelihood ratio of 12.752 (P<0.001), a relative risk of fracture with 4+ injections was calculated at 5.167 (RR=5.167, 95% CI, 2.12 to 12.57), and Number Needed to Treat (Harm) was calculated at 13.978 (NNT=13.978, 95% CI, 9.43 to 26.99).

We found that as the total number of injections increased, the fracture risk increased as well. The largest risk of fracture occurred in patients with 4 or more injections, with a 5x increase in fracture risk compared to patients with only 1-3 injections. These results will allow physicians to determine the best course of treatment that will minimize patient risk.

Supported by: None

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Presentation 131

Abstract Title:	**Interventions for the Treatment of Arthrogenic Muscular Inhibition Following Knee Injury: A Scoping Review**
Author(s):	Xavier Akins BS, University of Kentucky Department of Orthopaedic Surgery and Sports Medicine; Kashif Javid BA, University of Kentucky Department of Orthopaedic Surgery and Sports Medicine; Jason Ferrel MD, University of Kentucky Department of Orthopaedic Surgery and Sports Medicine; Caitlin Conley PhD, University of Kentucky Department of Orthopaedic Surgery and Sports Medicine; Richard Watson PhD PT, University of Kentucky Department of Orthopaedic Surgery and Sports Medicine; Austin V. Stone MD PhD University of Kentucky Department of Orthopaedic Surgery and Sports Medicine

Abstract: Background: Arthrogenic muscle inhibition (AMI) or quadriceps inactivation is common following knee injury or surgery, requiring intentional therapeutic modalities to restore baseline strength and function.
Purpose: To review the efficacy of current therapeutic interventions used in the treatment of arthrogenic muscle inhibition following knee injury or surgery.
Study Design: Scoping Systematic Review
Methods: The literature was systemically reviewed from 1993-2023 using PubMed, Academic Search Complete, CINAHL, Medline, and SportDiscus. Articles reporting AMI treatment outcomes following knee injury or surgery were included. Healthy knees, simulated effusions, animal, and cadaveric studies were excluded. Analysis of injury types, interventions, outcomes, and effect sizes was performed.
Results: 11 studies met inclusion criteria and evaluated therapeutic interventions for AMI following ligamentous injury, meniscal, traumatic, and chronic knee injuries. Statistically significant reduction in AMI was found with cryotherapy and exercise, hamstring fatigue, therapeutic nonthermal ultrasound, novel neuromotor reprogramming (NNR), and transcranial magnetic stimulation (TMS) with rehabilitation. These interventions were found to have large to very large positive effect sizes, except therapeutic nonthermal ultrasound, which was found to have a small effect size.
Conclusion: AMI is a common and underreported entity with inconsistent diagnostic methods and treatment strategies. Across the varying interventions explored in the literature, multimodal approaches consisting of a disinhibitory arm (cryotherapy, hamstring fatigue, TMS, and NNR) and rehabilitation arm were found to have significant reduction of AMI and large effect sizes. In the setting of AMI, a multimodal treatment approach thus should be preferred as it is more effective than isolated treatments alone.

Supported by: None

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Presentation 132

Abstract Title:	**Relationship Between Pediatric Orthopaedic Diagnoses and Positive Suicide Screenings**
Author(s):	A. Barré, Department of Orthopaedic Surgery, U of Kentucky; D. Zhang, Shriners Children's Southern California; V. Holm, Shriners Children's Southern California; D. Lew, Institute for Informatics, Data Science, and Biostatistics at Washington University School of Medicine; H. Iwinski, Shriners Children's Lexington; S. Poon, Shriners Children's Southern California

Abstract: Introduction: Suicide is the second leading cause of death in the United States for adolescents ages 10-24. Children in surgical clinics frequently carry diagnoses and have had traumatic experiences that may predispose them to suicidal thoughts. This study aimed to find an association between specific orthopaedic diagnoses and suicide screens in an outpatient pediatric orthopaedics clinic to better identify at-risk patients.
Methods: A database was compiled consisting of all suicide screenings administered across a nationwide pediatric surgical healthcare system from March 2019-May 2023. Diagnoses were collected and associations with positive screenings were assessed.
Results: 79,384 suicide screenings were collected for 50,796 separate patients. 5.6% (n=4,476) of these screenings were positive for suicidal thoughts, with 2.8% (n=125) of these being positive for acute suicidality. The diagnosis most largely associated with increased risk was mental, behavioral, and neurodevelopmental disorders ($p<.001$). Other diagnoses associated with positive suicide screening (all $p<0.01$) included scoliosis, burns, and pain. Diagnosis of fracture had a decreased likelihood of a positive screen. There was no association with positive screens for cleft lip or palate, nevus, osteogenesis imperfecta, or arthrogryposis.
Conclusion: Patients with diagnosis of mental, behavioral, and neurodevelopmental disorders were most at risk for screening positive for suicidal thoughts, and risk was also increased for diagnoses of scoliosis, burns, or pain. It is important for orthopaedic providers to understand how diagnoses influence mental health and suicidality and be aware of risks factors that may aid in identifying these patients.

Supported by: None

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Presentation 133

Abstract Title:	**Evaluating radiographic outcomes in dorsal bridge plate fixation of high-energy distal radius fractures**
Author(s):	Shawn Dripchak, College of Medicine, U of Kentucky; J. Griffin, College of Medicine, Harvard U; M. O'Shaughnessy, Department of Orthopaedic Surgery, U of Kentucky

Abstract: High energy intraarticular, comminuted distal radius fractures remain difficult injuries for surgeons to manage. The purpose of this retrospective study was to review and report radiographic outcomes of distal radius fractures surgically managed with dorsal bridge plating.

A single institution retrospective review identified 35 cases of distal radius fractures that required dorsal bridge plating at a Level 3 trauma center from 2015-2021. Radiographic parameters such as radial height, inclination, and volar tilt were measured at time of injury, dorsal bridge plating, and final follow-up. Demographic information, AO/OTA fracture classification, radiocarpal alignment, articular step off, presence of malunion, time to removal of hardware, total follow up duration and postoperative complications were other variables measured.

The final cohort included 35 distal radius fractures treated with a dorsal bridge plate, of which 25 were male (71.4%), with mean age of 44 years (33-59 years). The average time of follow-up was 7.2 months (4.1-9.4 months). Injury radiographs were obtained for each patient, demonstrating mean radial height of 9.3 millimeters (mm) (standard error [SE]+ 1.2) at injury, 12.5 mm ([SE]+0.6) at fixation, and 11.9 mm ([SE]+0.8) at final follow-up. Injury radiographs demonstrated a mean radial inclination of 12.4 degrees (standard error [SE]+ 1.6) at injury, 15.4 degrees (standard error [SE]+ 0.9) at fixation, and 15.0 degrees (standard error [SE]+ 0.9) at final follow-up. Injury radiographs demonstrated a mean volar tilt of 1.2 degrees (standard error [SE]+3.0) at injury, 9.8 (standard error [SE]+ 0.6) at fixation, and 8.7 (standard error [SE]+ 0.6) at final follow-up.

Highly comminuted distal radius fractures continue to be a clinical challenge. DBP produced reliable radiographic outcomes in highly comminuted distal radius fractures and produced excellent post-operative measurements and correction with a low rate of complications.

Supported by: None

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Presentation 134

Abstract Title:	**Geriatric Intertrochanteric Femur Fractures: Does Cephalomedullary Nail Length Impact Post-Operative Mortality Rates?**
Author(s):	Griffin Green, MS, Department Orthopaedic Surgery and Sports Medicine, U of Kentucky; Maaz Muhammad, MD, Harvard Medical School Orthopedic Trauma Initiative, Massachusetts General Hospital; Wyatt G.S. Southall, BS, Department Orthopaedic Surgery and Sports Medicine; Jarod T. Griffin, MD, Harvard Medical School Orthopedic Trauma Initiative, Massachusetts General Hospital; Jeffrey A. Foster, MD, Harvard Medical School Orthopedic Trauma Initiative, Massachusetts General Hospital; Carlos R. Sierra-Arce, MS, Harvard Medical School Orthopedic Trauma Initiative, Massachusetts General Hospital; Gregory S. Hawk, PhD, Dr. Bing Zhang Department of Statistics, U of Kentucky; Arun Aneja, MD, PhD, Harvard Medical School Orthopedic Trauma Initiative, Massachusetts General Hospital

Abstract: The optimal cephalomedullary nail (CMN) length for the treatment of geriatric intertrochanteric (IT) femur fractures is debated amongst orthopaedic surgeons. While short/intermediate CMNs (SIN) have shorter operative times, lower estimated blood loss (EBL), and lower transfusion rates compared to long CMNs (LN), the impact of nail length impacts post-operative mortality rates is unknown. Thus, this study compared mortality and complication rates between geriatric patients with IT fractures treated with SINs versus LNs. Patients aged 65 and older with IT fractures (AO/OTA 31 A1.1-A3.3) treated with a CMN at a single academic level I trauma center between 2008 to 2020 were identified retrospectively. The primary outcome was mortality at 30 days, 90 days, and 1-year post-operatively. Secondary outcomes included incidence of post-operative complications. Differences in demographic and outcome variables were analyzed using t-tests, Fisher‚Äôs exact tests, and chi-square tests, as appropriate. In total, 881 patients with IT fractures were treated with a SIN (n=327) or LN (n=554). There was no difference in 30-day (SIN 7% vs LN 8%, p=0.571), 90-day (SIN 13% vs LN 12%, p=0.971), or 1-year mortality rates (SIN 23% vs LN 22%, p=0.63). The SIN group had lower rates of ICU stay (5% vs 9%, p=0.031), transfusion (43% vs 54%, p=0.001), and shorter procedure length (60 vs 87 minutes, p=0.001). There were no significant differences in other post-operative complications including stroke, arrhythmia, myocardial infarction, pulmonary embolus, EBL, post-operative pneumonia, and post-operative anemia (p>0.05). Surgeons should consider these factors when determining appropriate CMN length.

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Presentation 135

Abstract Title: **A Case of Juvenile Elastoma: Clinical and Histological Findings**

Author(s): P. A. ShamaeiZadeh, College of Medicine, U of Kentucky; E. Vaght, College of Medicine, U of Kentucky; C. L. Wilson, Elkhorn Dermatology, Georgetown, Kentucky

Abstract: Background: Elastoma, or elastic nevus, is a benign connective tissue nevus described by changes in elastic fibers. Elastoma can be congenital or acquired and is typically diagnosed in children. [1]
Case: A 7-year-old boy presented to clinic with a skin lesion on his left upper arm that had been present for 10 months. He had no significant past medical history and the lesion had not been previously treated. Physical exam revealed a subtle infiltrative hypopigmented linear plaque on the left upper extremity. Differential diagnoses included smooth muscle hamartoma, mastocytoma, lichen sclerosus et atrophicus, linear morphea, and leiomyoma. A punch biopsy was performed and revealed thickened collagen bundles arranged haphazardly in the dermis. VVG stain showed a decrease and fragmentation of elastic fibers in the dermis. Histological findings were consistent with an elastoma, a subtype of connective tissue nevus. Elastomas can be associated with Buschke-Ollendorff syndrome so the patient was encouraged to have x-rays of his long bones and pelvis and then referred to Genetics and Metabolism Services for genetic work-up.
Discussion: Most elastomas are thought to be caused by genetic defects and can be associated with Buschke-Ollendorf syndrome (BOS), a rare hereditary disorder involving increased accumulation of elastin in the dermis, as well as elastosis perforans serpiginosa (EPS), a perforating disorder where abnormal elastic fibers are extruded through the epidermis. [2]
Conclusion: Elastomas can present subtly in the clinical setting. Correct diagnosis is necessary to ensure a complete workup and reassure families of the lesion's benign etiology. Though further investigation is required, there are minimal treatment options available due to its rare incidence.

Supported by: None

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Presentation 136

Abstract Title:	**Relationships between Prenatal Opioid or Tobacco Exposures and Bronchopulmonary Dysplasia in Preterm Infants**
Author(s):	Lindsay Bryant, University of Kentucky College of Medicine Henrietta Bada, University of Kentucky Department of Neonatology Elie G Abu Jawdeh, University of Kentucky Department of Neonatology

Abstract: Introduction: Preterm infants are at risk to develop Bronchopulmonary Dysplasia (BPD); chronic lung disease defined by the need for respiratory support at 36 weeks corrected age. Infants with BPD on average have longer hospital stays and are at risk for both short- and long-term morbidities. Multiple risk factors are linked to BPD including, early gestational age, low birth weight, and mechanical ventilation. We assessed the relationship between prenatal risk factors, such as tobacco and opioid use, and BPD outcomes in preterm infants.
Methods: Charts for preterm infants less than 32 weeks gestation admitted to the NICU at KCH were reviewed. Variables of interest were collected, including demographics, prenatal exposure to opioids/tobacco, and respiratory support. The BPD status of each infant was assessed using the three widely used definitions: NICHD, Jensen, and VON. A composite outcome of BPD or death before discharge was also assessed, as some infants died before BPD diagnosis. Multinomial logistic regressions were performed, correcting for exposure, sex, age, and birth weight.
Results: A total of 177 infants had data on exposures and BPD. Of those, 23.2% and 23.7% were exposed to opioids and tobacco, respectively. Prenatal opioid exposure was associated with BPD after adjusting for confounders (all $p<0.05$). Opioid exposure was also associated with a composite outcome of BPD or death ($p=0.01$). Tobacco exposure was not associated with BPD (except for VON definition) or BPD/death.
Conclusion: Our results suggest that prenatal opioid exposure increases the risk of BPD in preterm infants. These novel findings warrant prospective studies to better assess these relationships.

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Presentation 137

Abstract Title:	**Comparison of the Oxygenation Index and the Oxygen Saturation Index as Clinical Indicators for Neonatal ECMO**
Author(s):	John C. Slaughter MS2, University of Kentucky College of Medicine; Jeremy Sites MD, University of Kentucky College of Medicine, Kentucky Children's Hospital; Hubie Ballard MD, University of Kentucky College of Medicine, Kentucky Children's Hospital; John Bauer, University of Kentucky College of Medicine, Kentucky Children's Hospital; Aric Schadler PhD, University of Kentucky; Nicholas Severyn DO, University of Kentucky College of Medicine, Kentucky Children's Hospital

Abstract: Objective: In neonatal hypoxic respiratory failure, the Oxygenation Index (OI) is the most common criteria to quantify disease severity and determine the indication for initiating ECMO. Calculating the OI requires arterial blood sampling which may be difficult to obtain. There is limited data on the use of non-invasive parameters such as the Oxygen Saturation Index (OSI) in determining the need for neonatal ECMO. Our goal was to compare the utility of the OI vs. the OSI in a group of neonates that required ECMO.
Methods: We performed a single-institution chart review of all neonatal ECMO recipients at the University of Kentucky, Kentucky Children's Hospital from the years 2012-2022. Data was collected for the 12 hours preceding ECMO cannulation in each patient. Parameters of interest were the fraction of inspired oxygen, partial pressure of oxygen in arterial blood, oxygen saturation via pulse oximetry, and mean airway pressure. Demographic and clinical data were also collected. The subsequent OI and OSI values were then calculated, and the data points were analyzed using a Pearson-correlation and a Spearman's rho analysis.
Results: In the 64 infants requiring ECMO, the average gestational age was 37.9 weeks (SD = 2), average birth weight was 3125.17 grams (SD = 593.1 g) and 46 were male. The most common reason for ECMO was hypoxic respiratory failure. The average OI value 2 hours before ECMO initiation was 31.68 (SD = 16.67) and the average OSI was 17.41 (SD = 5.31). Comparing OI to OSI, Pearson and Spearman's rho analyses resulted in a correlation of 0.643 and 0.625, respectively. Both analyses reported a significance of < 0.001.
Conclusion: We found that at 2 hours before ECMO cannulation, an OSI value above 17.41 was an indication for ECMO. We also found OI and OSI demonstrated moderate correlation in the 12 hours leading up to cannulation in neonates requiring ECMO.

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Presentation 138

Abstract Title:	**Adherence to AUA Guidelines for the Work-up, Medical Management, Surgical Evaluation and Treatment of BPH**
Author(s):	E. R. Wahlstedt, College of Medicine, University of Kentucky; J. L. Graves, Department of Urology, University of Kentucky; J. C. Wahlstedt, College of Medicine, Sidney Kimmel Medical College; A. D'Alessandro, Department of Biostatistics, University of Kentucky; W. Cranford, Department of Biostatistics, University of Kentucky; N. A. Freidberg, Department of Urology, Urology of Austin; A. Bhalodi, Department of Urology, Baptist Health; J. R. Bell, Department of Urology, University of Kentucky; Andrew James, Department of Urology, Texas Urology Group; Jason Bylund, Department of Urology, University of Kentucky; Stephen E. Strup, Department of Urology, University of Kentucky; Andrew Harris, Department of Urology, University of Kentucky and Lexington VA Medical Center

Abstract: Introduction: Previous studies noted varied adherence to clinical practice guidelines (CPGs), but studies have yet to quantify adherence to American Urological Association BPH guidelines. We studied guideline adherence in the context of a new quality improvement collaborative (QIC).
Methods: Data was collected as part of a statewide QIC. Medical records for patients undergoing select CPT codes from January 2020 to May 2022 were retrospectively reviewed for adherence to selected BPH guidelines.
Results: Most men were treated with transurethral resection of the prostate. 53.3% of men completed an IPSS and 52.3% had a urinalysis. 4.7% were counseled on behavioral modifications, 15.0% on medical therapy, and 100% on procedural options. For management, 79.4% were taking alpha blockers and 59.8% were taking a 5-ARI. For evaluation, 57% had a PVR, 63.6% had prostate size measurement, 37.4% had uroflowmetry, and 12.3% were counseled about treatment failure. Postoperatively, 51.6% completed an IPSS, 57% had a PVR, 6.50% had uroflowmetry, 50.6% stopped their alpha blocker, and 75.0% stopped their 5-ARI.
Conclusions: There was adherence to preoperative testing recommendations, but patient counseling was lacking in the initial workup and preoperative evaluation. We will convey the data to key stakeholders, expand data collection to other institutions, and devise an improvement implementation plan.

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Policy

Presentation 139

Abstract Title:	**Estimating the Number of Practicing Ophthalmologists and Satellite Clinics in Each KY County**
Author(s):	A. Bastos de Carvalho, Ophthalmology, U of Kentucky; S. Marsili, Ophthalmology, U of Kentucky; M. Benningfield, Medical Student, U of Kentucky

Abstract: This project was designed to best estimate the current number of ophthalmologists in each county in KY and to create a visual aid in the form of a heat map to identify the least saturated regions.
The AAO Verify a Physician tool was initially used as a primary search tool. Additionally, the Medicare Part D Database was utilized to further identify practicing ophthalmologists as it would include all KY ophthalmologists with patients who are Medicare prescription drug beneficiaries and will not be dependent on subjective responses. The AAO Verify a Physician tool identified 168 ophthalmologists that are either board-certified or board-eligible and practicing in KY. The Medicare Part D database identified 195 KY ophthalmologists that had written a prescription for a Medicare prescription drug beneficiary. Then through using hospital and clinic websites another 13 ophthalmologist were found for a total of 208. However, of these 208, it was determined only 185 were still practicing in the state of Kentucky. Lexington was the most saturated city with 14.9 per 100,000 people while London was the most saturated with satellite clinics with 67.4 per 100,000 people.
The total number of practicing ophthalmologists in KY is likely to be slightly greater than those identified on the AAO website. The study is limited by a lack of data regarding satellite clinic locations and frequency of satellite clinics outside of those provided by the University of KY global ophthalmology program as the databases contain only the registered primary practice location of each ophthalmologist.

Supported by: None

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Presentation 140

Abstract Title: **Rural-Urban Health Disparities within Dermatologic Care in Appalachia**

Author(s): S. Daniel, College of Medicine, U of Kentucky; W. Cranford, Department of Biostatistics, U of Kentucky; P. A. Shamaei Zadeh, College of Medicine, U of Kentucky; N. Patel, College of Medicine, U of Kentucky; E. Slade, Department of Biostatistics, U of Kentucky; J. Talbert, Division of Biomedical Informatics, U of Kentucky; C. L. Wilson, Elkhorn Dermatology, Georgetown, KY

Abstract: Importance: Appalachia is a unique region within the United States that faces distinct health challenges. Despite considerable research focusing on health disparities in Appalachia, there remains a noticeable lack of information regarding the accessibility of dermatologic care within this population.
Objective: To investigate the difference in urban and rural access to both generalized and specialized dermatologic care within the Appalachian region.
Design, Setting, and Participants: A cross-sectional study was performed using data on services and procedures provided to Medicare beneficiaries by physicians and other healthcare professionals in 2019 from the Centers for Medicare and Medicaid Services (CMS). The geographic landscape of Appalachia was determined by counties served by the Appalachian Regional Commission, and counties within Appalachia were designated as urban or rural based on the USDA RUCC classification.
Main Outcomes and Measures: The primary outcome measure was the number of Medicare beneficiaries serviced by dermatology providers.
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. 76 of 154 urban counties (49.4%) and 44 of the 269 rural counties (16.4%) in Appalachia had a dermatology provider offering care in 2019. Urban-rural ratios revealed the number of beneficiaries receiving dermatology billing codes per 100,000 Medicare residents was 3.8 times higher in urban counties.
Conclusion and relevance: Our findings suggest that significant gaps exist in access to dermatology providers between rural and urban counties within Appalachia.

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Presentation 141

Abstract Title:	**D-Dimer Dynamics: Exploring Baseline Thresholds and Vital Sign Correlations Patterns in Pulmonary Embolism Diagnosis**
Author(s):	S. Desai MD, Department of Emergency Medicine, U of Kentucky; R. Mooney, College of Medicine, U of Kentucky; M. Khashimov, College of Medicine, U of Kentucky; K. Fields, College of Medicine, U of Kentucky; P. Panchal, College of Medicine, U of Kentucky, E. Slade Department of Biostatistics, U of Kentucky; W. Cranford, Department of Biostatistics, U of Kentucky

Abstract: Contemporary research on pulmonary embolism (PE) diagnosis using D-dimer levels lacks a definitive baseline for triggering additional testing. Although diagnostic assessments aim to discern patients warranting further interventions and scans (Kearon et al.), it is imperative to curtail unnecessary exposure to radiation and procedures. Previous studies hinted at a correlation between D-dimer levels and PE severity, but Gao et al.'s investigation into computed tomography pulmonary angiography (CPTA) revealed inconclusive results. The absence of a discernible baseline D-dimer level further complicates the diagnostic landscape. This retrospective review endeavors to elucidate a foundational D-dimer threshold necessitating further testing while investigating its correlation with PE severity. The study addresses the critical need to balance diagnostic precision with the judicious use of anti-coagulation medication and resources, particularly in minimizing radiation exposure. Insights gleaned from this research may potentially redefine diagnostic protocols, offering a more streamlined and targeted approach to identifying patients at risk for severe PE. As we navigate the intricate interplay between D-dimer levels, PE severity, and diagnostic interventions, our findings contribute to the ongoing discourse surrounding optimal clinical practices in the realm of pulmonary embolism diagnosis.

Supported by: None

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Presentation 142

Abstract Title:	**Surgical Repair of a Symptomatic Morgagni Hernia in an Adult: A Case Report**
Author(s):	B. DiPaola, College of Medicine, U of Kentucky; C. Campbell, Department of Surgery, U of Kentucky; J.S. Roth, Department of Surgery, U of Kentucky

Abstract: The Morgagni hernia is a rare congenital defect on the anterolateral portion of the diaphragm that results from the failed closure of the pleuroperitoneal membranes with the sternum and coastal cartilages [1,2]. Congenital diaphragmatic defects affect about 1 out of every 2500 births [3]. The Morgagni hernia constitutes only 2% of all congenital diaphragmatic hernias. Furthermore, about 5-10% remained undetected until adulthood [4,5]. We present a case of a 34-year-old male with an incarcerated Morgagni hernia diagnosed by CT scan after presenting with intermittent chest pain, dyspnea, constipation and small bowel obstruction. The mainstay of management is operative repair with reduction and dissection of the hernia sac, closure of the defect with sutures and mesh placement as demonstrated in our operation. Of note, this case was also unique because of the large size of the defect and extent of incarcerated viscera including colon, small intestine and omentum. Once hernia reduction was performed, we proceeded to enter the preperitoneal pocket and dissect the hernia sac from the mediastinum in its entirety. Reconstruction was performed using percutaneous placed sutures circumferentially while evacuating pneumoperitoneum simultaneously to fully close the diaphragm. Mesh was then placed with 5 cm overlap in all directions. Postoperatively our patient recovered well.

Supported by: None

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Presentation 143

Abstract Title: **Median Arcuate Ligament Release Surgery: A Case Report**

Author(s): B. DiPaola, College of Medicine, U of Kentucky; C. Campbell, Department of General Surgery, U of Kentucky; J.S. Roth, Department of General Surgery, U of Kentucky

Abstract: The Median Arcuate Ligament (MAL) is a fascial band, connecting the left and right diaphragmatic crura, that arches over the celiac artery at the site of the aortic hiatus [1]. In about 10-24% of people, the MAL may insert more caudally and thus compress the celiac artery. In rare cases, symptoms may manifest including postprandial abdominal pain, nausea, vomiting and weight loss described as Median Arcuate Ligament Syndrome (MALS) [2,3]. MALS is commonly considered a diagnosis of exclusion [4]. We present a case of a 21-year-old woman with postprandial abdominal pain and weight loss for over 1 year. Among the full workup, a mesenteric duplex found MAL compression of celiac artery. The mainstay of management is operative release of the ligament. In this case, after proper dissection, the celiac artery was found to be above the diaphragm. The diaphragm was opened using hook cautery to expose the aorta. The median arcuate ligament was then divided by teasing apart the transverse fibers. Tremendous care was taken to avoid injury to the celiac artery or aorta. Finally, the ganglion was dissected away from the left gastric artery to eliminate sources of postoperative pain. Postoperatively our patient recovered well.

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Presentation 144

Abstract Title:	**Case and Review: Isolated Duplication of Oral Stoma with Osseous and Odontogenic Components**
Author(s):	M. Henry, MD, Department Surgery Division of Plastic and Reconstructive Surgery, University of Kentucky; S. Palmer, College of Medicine, University of Kentucky; J. Liau, MD, Department Surgery Division of Plastic and Reconstructive Surgery, University of Kentucky

Abstract: Introduction: Duplication of craniofacial structures, known as diprosopus, is a rare congenital anomaly. Etiology may be due to branchial arch duplications or neural crest migration. As of 2020, approximately 36 cases have been reported since 1900. Diprosopus can be an isolated finding or in conjunction with craniofacial syndromes. Here we present our experience with an isolated duplication of oral stoma with underlying odontogenic and osseous elements.

Case: A newborn female was found to have a left lower facial lesion consistent with duplicated oral stoma, underlying bony protrusion, and didn't communicate with oral opening. CT scan showed mandibular ossified mass containing teeth. She continued to grow and feed without difficulty and at 13 months of age the decision was made to excise the mass.She underwent excision of stoma, mucosa glandular tissues, accessory teeth, and bone. The mandibular interruption was then bone grafted. Adjacent tissue transfer was performed, and closure was achieved. Pathology was consistent with benign skin, salivary glands, bone, and odontogenic epithelium. Post operatively she healed without issue. Scar revision with further debulking may be pursued as she matures.

Discussion: Diprosopus is a rare congenital anomaly we observed as an isolated oral duplication. Few reports exist in the literature and treatment varies depending on elements observed and severity of presentation. Excision with reconstruction of defect remains the standard of care. Delaying surgery until further dental maturity to prevent damage to native teeth remains an important consideration.

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Presentation 145

Abstract Title: **Adjacent Segment Pathology After Short-Segment Posterior Lumbar Fusion: Post-Fusion or Pre-Existing Degeneration?**

Author(s): F.L. Horne, M.L. Atherton, R. Motiei-Langroudi, Department of Neurosurgery, U of Kentucky

Abstract: Study Design: Retrospective review of 363 patients who underwent posterior lumbar fusion (PLF). Objective: Adjacent segment pathology (ASP) is a major and common event in patients who have undergone PLF. The objective of this study is to determine if ASP is due to accelerated processes following fusion or to pre-existing degeneration.
Summary of Background Data: ASP is defined as degenerative changes that occur 1-2 levels above or below the site of fusion in patients. The etiology of ASP is a topic of debate.
Methods: Pre-operative MRIs of 363 individuals who underwent PLF within L2-L3, L3-L4, and L4-L5 at the University of Kentucky between 2010 and 2020 were assessed for evidence of pre-existing degeneration. Measures of degeneration included Pfirrmann grade, modified Pfirrmann grade, disc height, and facet hyperintensity width. Demographic measures including age, gender, smoking status, and BMI were also assessed.
Results: Throughout the follow-up period, 30.0% of patients evaluated were found to have ASP. 83.7% of these happened at the level below and 16.3% happened at the level above the fusion. Paired sample t-testing indicated that only disc height was significantly different in the adjacent levels in those who developed ASP. There was no significant difference between the 2 levels for Pfirrmann grade, modified Pfirrmann grade, and facet T2 hyperintensity. Among degenerative measures, only disc height was different (lower) in the level below PLF compared to above, prior to fusion. Age, gender, and smoking status were not significantly different between those who developed ASP and those who did not ($p = 0.68, 0.81, 0.23$, respectively).
Conclusions: Analysis suggests that in patients undergoing PLF, pre-existing degeneration plays an insignificant role in the development of ASP, and that post-operative acceleration of degenerative changes still represents the primary etiology of ASP.

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Presentation 146

Abstract Title:	**Predicting Surgical Trends of Gender-Affirming Facial Surgery Using Social Media Engagement over the Previous Decade**
Author(s):	J. D. Johnson, U of Kentucky College of Medicine; P. ShamaeiZadeh, U of Kentucky College of Medicine; J. Mollakazemi; N. Gupta, Otolaryngology-Head and Neck Surgery, U of Kentucky

Abstract: Introduction: Facial feminization surgery (FFS) and facial masculinizing surgery (FMS) have become more prominent within the medical community and have gained the general population's attention. Our study aims to assess public engagement via social media alongside procedural trends to determine the association between media engagement and gender-affirming facial surgery (GFS) prevalence.
Methods: Records of FFS and FMS procedures received by patients with diagnosed gender dysphoria were retrospectively identified between 2010 and 2021 in the Truven Health Analytics database using CPT codes listed by the Centers for Medicare & Medicaid Services (CMS) as gender reassignment services. Public engagement data was scraped from X (formerly Twitter) to estimate trends related to public engagement of FFS and FMS surgeries. All posts containing the search term "Facial Feminization Surgery" between January 1, 2013, and September 30, 2023 were included.
Results: Preliminary results revealed 2882 procedures billed between 2010 and 2021, with 2021 having the highest amount, 896. The most common procedures included rhytidectomy and rhinoplasty. Social media engagement peaked in 2020 with 44957 total post engagements, suggesting increased public interest proceeding rising procedure totals. 2020 contained the highest single-year increase in posts, 69.3%, and post engagement, 187.4%.
Conclusion: There has been a steady rise in GFS, specifically FFS, procedures over the last decade. This corresponds with increased social media interest in such operations. Our findings suggest that social media engagement can provide insight into procedural trends, but more data is needed to determine this correlation.

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College of Medicine Research Day

Presentation 147

Abstract Title:	**An Investigation of Effective Diagnostic Criteria for Blunt Cardiac Injury**
Author(s):	H. L. Cleary, University of Kentucky College of Medicine; M. D. Bernard, University of Kentucky College of Medicine; A. C. Bernard, Department of Surgery, University of Kentucky College of Medicine

Abstract: Currently, there are no gold standard criteria for diagnosing Blunt Cardiac Injury (BCI). BCI results from severe blunt force trauma to the chest, and an admission electrocardiogram (ECG) is recommended in all patients. There are some physicians who advocate for serum cardiac troponin in addition to an echocardiogram to make the diagnosis of BCI. This study sought to determine the diagnostic value of troponin level as an independent predictor of adverse cardiac events in stable, admitted patients at risk for BCI while also examining the subset of patients who received an echocardiogram, as well. This was a five-year retrospective study using the trauma database at a university Level I Trauma Center. The study population included all adult trauma patients presenting with a physician diagnosis of BCI or a sternal fracture who met prespecified stability criteria (SBP≥90mmHg, HR<110bpm, shock index<1, GCS≥14). A patient was considered to have had an adverse cardiac event if they were diagnosed with a new arrhythmia requiring treatment, had cardiac surgery, or suffered cardiac-related mortality. There were 350 patients who met inclusion criteria. Patients with an abnormal ECG (n=107) were more likely to have an adverse cardiac event (10.25% versus 0.4%; p=1.47E-6). In stable patients in this cohort, troponin level did not independently predict adverse cardiac events. Echocardiogram, among those who received one, did not predict adverse cardiac events. Therefore, admitted patients at risk for BCI who meet stability criteria might be safely observed without measurement of serum troponin.

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Presentation 148

Abstract Title:	**Simultaneous Extraction of Tissue Geometry and Blood Flow Using Innovative scDCT**
Author(s):	F. Akbari, Department of Biomedical Engineering, U of Kentucky; F. Hamedi, Department of Biomedical Engineering, U of Kentucky; S. Rabienia Haratbar, Department of Biomedical Engineering, U of Kentucky, L. Chen, Department Spinal Cord & Brain Injury, U of Kentucky, G. Yu, Department of Biomedical Engineering, U of Kentucky

Abstract: Background: Speckle contrast diffuse correlation tomography (scDCT) is a novel technique for 2D/3D imaging of deep tissue blood flow. scDCT utilizes a scanning point source and a 2D camera to capture images at multiple source positions. Tissue blood flow images are reconstructed by quantifying speckle contrasts in detection areas, defined at certain distances from the sources. For tissues with irregular geometry, a photometric stereo technique (PST) is used to extract tissue surface geometry via shining four LEDs on tissue surface from different angles. However, PST scanning poses challenges to intraoperative operation and prolonged measurement time.
Methods: An innovative approach was developed to extract both tissue surface geometry and deep tissue blood flow using collected scDCT boundary data. This approach was tested for imaging of cerebral blood flow in rodents and tissue blood flow in human hands. Specifically, a height map was created from the integrated multiple intensity images collected at different source positions. The height map was then converted to a 3D map of tissue surface geometry. Subsequently, the reconstructed tissue blood flow image was integrated on top of tissue geometric map.
Results: Results showed accurate reconstruction of tissue surface geometries in both cases. Integrated geometric and blood flow images facilitate easy observation of blood vessels and tissue geometry.
Conclusions: Simultaneous extraction and visualization of tissue surface geometry and blood flow by the scDCT allowed for precise co-registration of structural and functional information, thus enhancing the practicality of scDCT for imaging subjects with irregular geometries.

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College of Engineering-Biomedical Engineering Research Day

Presentation 149

Abstract Title:	**Wireless Wearable DSCFO for Continuous Monitoring of Cerebral Hemodynamics in Freely Behaving Subjects**
Author(s):	C. A.Haque, Department of Biomedical Engineering, U of Kentucky; P. Safavi, Department of Biomedical Engineering, U of Kentucky; L. Chen, Spinal Cord and Brain Injury Research Center, University of Kentucky; G. Yu, Department of Biomedical Engineering, U of Kentucky

Abstract: Background: An innovative wearable fiber-free diffuse speckle contrast flow oximetry (DSCFO) technique has been developed for continuous monitoring of cerebral blood flow and oxygenation variations in freely behaving subjects. DSCFO employs two laser diodes operating at near-infrared wavelengths as light sources for deep tissue penetration and a tiny CMOS camera as a 2D detector to detect spatial diffuse speckle contrast fluctuations, facilitating quantification of cerebral blood flow and oxygenation. Despite its effectiveness, the use of wired connections from a device to power and control the laser diodes and camera in a wearable probe constrains subject's behavior.
Methods: A new wireless DSCFO system was recently developed incorporating a Raspberry Pi board to drive a Raspberry Pi camera and laser diodes for remote operation and data transfer. The Raspberry Pi was configured as a Wi-Fi access point using "hostapd" and "dnsmasq" with IEEE 802.11 and DHCP standards, which enabled a secure network for remote control of DSCFO components and wireless data transfer.
Results: The wireless DSCFO achieved 1080p image/video transfer at 30 FPS with a latency of ~2.2 seconds, which was sufficient for real-time measurements of dynamic changes in cerebral blood flow and oxygenation.
Conclusions: Transition to wireless control and data transfer enhances the wearability and mobility of the DSCFO for continuous monitoring of cerebral hemodynamics in freely behaving subjects. This advance is especially critical for cognitive assessments of brains during behavioral/memory tests. We are currently optimizing and adapting the DSCFO system for a variety of applications in animals and humans.

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19th Annual CCTS Spring Conference
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Presentation 150

Abstract Title:	**Wastewater surveillance of SARS-CoV-2 using an integrated handheld device**
Author(s):	M. Dehghan Banadaki, Department of Mechanical Engineering, U of Kentucky; S. Torabi, Department of Mechanical Engineering, U of Kentucky; A. Sakhaei, Department of Mechanical Engineering, U of Kentucky; William Strike, Department of Biomedical Engineering, U of Kentucky; S. Berry, Departments of Mechanical and Biomedical Engineering, U of Kentucky

Abstract: Wastewater-based epidemiology (WBE) tracks the prevalence of pathogens in a community via wastewater analysis. During the COVID-19 pandemic, WBE has provided valuable information on infection rates and concentration of SARS-CoV-2 and served as an early warning system. Current wastewater surveillance platforms are based on delivering samples to a centralized lab with an extensive infrastructure, which is not available in many parts of the world. Another challenge in WBE is the complexity of sample processing steps, which are time-consuming and expensive. Our vision entails the development of a point-of-use device for WBE, which has the potential to revolutionize WBE in the same way that point-of-care testing has transformed diagnostics. This technology is most impactful in rural and low-resource settings, where environmental surveillance can lead to the democratization of public health tools. In this study, we have developed an integrated easy-to-use and inexpensive concentration-extraction-identification device (CEID) to detect low-prevalence pathogens (e.g., SARS-CoV-2 in wastewater). The CEID functions by employing an extraction process that makes use of the interface between aqueous and organic liquids in microchannels. This approach simplifies the process by replacing multiple washing steps with a single passage of magnetic beads through an immiscible fluid barrier. The CEID is optimized and evaluated using wastewater samples spiked with heat-inactivated SARS-CoV-2 and compared with an established method. Our device is a fast (<35 mins) and inexpensive (~$12/sample) detection method for low-prevalence pathogens in environmental samples. Also, it eliminates the need for complex equipment and specialized personnel and minimizes the liquid handling steps.

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Presentation 151

Abstract Title:	**Depth-sensitive Measurement of Cerebral Blood Flow Using Time-resolved Laser Speckle Contrast Imaging (TR-LSCI)**
Author(s):	F. Fathi, Department of Biomedical Engineering, U of Kentucky; S. Mazdeyasna, Department of Biomedical Engineering, U of Kentucky; D. Singh, Department of Biomedical Engineering, U of Kentucky; C. Hunag, Department of Biomedical Engineering, U of Kentucky; M. Mohtasebi, Department of Biomedical Engineering, U of Kentucky; X. Liu, Department of Biomedical Engineering, U of Kentucky; S. Rabienia Haratbar, Department of Biomedical Engineering, U of Kentucky; Feaezeh Akbari, Department of Biomedical Engineering, U of Kentucky; M. Zhao, Department of Biomedical Engineering, U of Kentucky; L. Chen, Biostatistics and Bioinformatics Shared Resource Facility, Markey Cancer Center, U of Kentucky; A. Can Ulku, School of Engineering, Ecole Polytechnique Federale de Lausanne, Neuchatel 2002, Switzerland; P. Mos, School of Engineering, Ecole Polytechnique Federale de Lausanne, Neuchatel 2002, Switzerland; C. Bruschini, School of Engineering, Ecole Polytechnique Federale de Lausanne, Neuchatel 2002, Switzerland; E. Charbon, School of Engineering, Ecole Polytechnique Federale de Lausanne, Neuchatel 2002, Switzerland; L. Chen, Physiology, Spinal Cord and Brain Injury Research Center, U of Kentucky; G. Yu, Department of Biomedical Engineering, U of Kentucky

Abstract: Background: To address many of the deficiencies in existing neuroimaging technologies for cerebral blood flow (CBF) monitoring, we developed a revolutionary, noncontact, time-resolved laser speckle contrast imaging (TR-LSCI) technique capable of fast and high-resolution 2D mapping of CBF at different depths of the head.

Methods: TR-LSCI illuminates picosecond-pulsed, coherent, widefield near-infrared light onto the head and synchronizes a newly developed, high-resolution, picosecond-gated SwissSPAD2 camera to capture CBF maps at different depths. By selectively collecting diffuse photons with longer pathlengths through the head, TR-LSCI reduces partial volume artifacts from the overlying tissues, thus improving the accuracy of CBF measurement in the deep brain. CBF map reconstruction was expedited dramatically by incorporating the parallel computation and convolution functions in MATLAB. The performance of TR-LSCI was evaluated experimentally using head-simulating phantoms with known properties and in vivo rodents with varied pathophysiological challenges on the brain including CO2 inhalations and transient ligations of common carotid arteries (CCA).

Results: Results from these pilot studies demonstrated that TR-LSCI enabled mapping CBF variations at different depths with a sampling rate of up to 1 Hz and varied spatial resolutions from tens of micrometers on tissue surface to 1-2 millimeters in the deep brain. CBF responses to CO2 inhalations and CCA ligations agreed with previous studies utilizing other cerebral monitoring techniques and similar experimental protocols.

Conclusions: With further improvements and validations in larger populations against established methods, we anticipate offering a noncontact, fast, high-resolution, depth-sensitive, portable, and affordable brain imager for fundamental neuroscience research and translational studies in human neonates.

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College of Engineering-Biomedical Engineering Research Day

Presentation 152

Abstract Title:	**Improved Depth Sensitivity in Tissue Blood Flow Measurements with 1064 nm Laser Using scDCT**
Author(s):	Fatemeh Hamedi, Faezeh Akbari, Samaneh Rabienia Haratbar, Xuhui Liu, Mehrana Mohtasebi, Chong Huang, Department of Biomedical Engineering, University of Kentucky, Lexington, Kentucky, USA; Lei Chen, Department of Physiology, Spinal Cord and Brain Injury Research Center, University of Kentucky, Lexington, Kentucky, USA; Guoqiang Yu, Department of Biomedical Engineering, University of Kentucky, Lexington, Kentucky, USA

Abstract: Background: We have developed an innovative depth-sensitive speckle contrast diffuse correlation tomography (scDCT) for 2D/3D imaging of tissue blood flow distributions. scDCT utilizes a scanning laser point source at 785 nm and a 2D CMOS camera to capture images at multiple source positions. Tissue blood flow images are reconstructed by quantifying laser speckle contrasts in detection areas, defined at certain distances from the sources. This project explores using a laser at the longer wavelength of 1064 nm to further improve the depth sensitivity of scDCT. Previous studies have found that biological tissues exhibit lower attenuation and less heat generation to the longer wavelength of 1064 nm (with lower photon energy) compared to shorter wavelengths (e.g., 785 nm), resulting in more photons being delivered and detected through longer pathlengths inside the tissue.
Methods: A newly launched broad-spectral InGaAs camera (400-1700 nm, G-130, Goldeye) was integrated to the scDCT for dual-wavelength (785 nm and 1064 nm) imaging of blood flow in tissue-simulating phantoms. The signal-to-noise ratios (SNRs) of obtained flow images at the two wavelengths were analyzed for comparisons.
Results: Using the 1064 nm laser significantly improved the SNRs of flow images (>2.5 fold), comparing to using the 785 nm laser.
Conclusions: The enhancement of scDCT SNRs along with depth sensitivity via using 1064 nm laser is particularly useful for clinical applications that require greater penetration through large/thick tissue volumes. Future work will test the scDCT system with 1064 nm illumination in animals and human subjects for deep tissue blood flow imaging.

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College of Engineering-Biomedical Engineering Research Day

Presentation 153

Abstract Title:	**Noninvasive and Continuous Monitoring of Cerebral Blood Flow Responses to Intermittent Hypoxia in Neonatal Rats**
Author(s):	P. Safavi, Department of Biomedical Engineering, U of Kentucky; C. A. Haque, Department of Biomedical Engineering, U of Kentucky; G. Yu, Department of Biomedical Engineering, U of Kentucky; L. Chen; Department of Physiology, Spinal Cord and Brain Injury Research Center, U of Kentucky

Abstract: Intermittent hypoxia (IH) may result in hypoxic/ischemic stresses on the brains of preterm neonates. To address the need of wearable techniques for continuous monitoring of cerebral blood flow (CBF) variations during IH, we developed a novel diffuse speckle contrast flowmetry (DSCF) capable of noninvasive CBF monitoring in neonatal brains of animals and humans. Specifically, a miniaturized DSCF probe was developed consisting of a small laser diode as a focused-point source for deep tissue penetration and a tiny NanEye camera for detecting spatial fluctuations of diffuse laser speckles resulting from red blood cell motions (i.e., CBF). The DSCF probe was attached gently to the scalp of rat pups (3-5 days old) under 1% Isoflurane anesthesia. Rat pups in the IH group (n = 4) received repetitive transient hypoxia-hyperoxia challenges (10 cycles of 2-minute 8% O2 in N2 and 2-minute 100% O2) daily for 3 days, while the sham group (n = 3) underwent a 13-minute normoxic baseline monitoring for 3 days. The sham group showed small CBF variations over 3 days (0.79% ± 0.91%, 3.41% ± 6.20%, 4.52% ± 7.27%). Conversely, the IH group showed large increases in rCBF during hypoxia and small decreases during hyperoxia in each IH cycle. Overal, the IH group showed remarkable CBF increases immediately after the completion of 10 IH cycles compared to the baseline (13.67% ± 7.55%, 24.53% ± 12.42%, 15.14% ± 12.47%). This pilot preclinical study demonstrate the potential of DSCF for continuous monitoring of CBF responses to IH in preterm nenates.

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College of Engineering-Biomedical Engineering Research Day

Presentation 154

Abstract Title:	**Predicting the Unseen: Leveraging Artificial Neural Networks for Forecasting SARS-CoV-2 Spread**
Author(s):	A. Sakhaei, Departments of Mechanical and Aerospace Engineering, U of Kentucky; S. M. Berry, Departments of Mechanical and Aerospace Engineering, U of Kentucky;

Abstract: This study showcases an innovative approach to predicting SARS-CoV-2 spread using Artificial Neural Networks (ANN), with a focus on diverse regions within Kentucky. The model integrates key environmental factors alongside health data to enhance the precision of epidemiological forecasts at a broader scale.

Utilizing the Levenberg-Marquardt backpropagation algorithm, the ANN was trained on a rich dataset reflecting the multifaceted nature of the pandemic's impact. The data spanned from June 2021 to February 2023, comprising variables like average SARS concentration and rainfall, as well as health outcomes such as case counts and mortality rates. This comprehensive approach allowed the model to adeptly predict trends in virus transmission and potential hotspots of increased cases.

The model's ability to generalize across the state, with coefficient of determination values consistently above 90%, and maintain minimal Mean Square Errors, underscores its utility as a significant advancement in the realm of public health intelligence. The robustness of the ANN's predictions, particularly notable prior to April 2022, attests to its suitability for real-time application in public health policy and decision-making.

This research underlines the transformative potential of AI in managing infectious diseases, highlighting the ANN's role as a potent analytical tool in the fight against COVID-19. By providing a reliable method for anticipating disease spread, this work contributes to strategic public health planning and resource optimization, ultimately aiding in the effective containment of the virus across varying landscapes.

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Presentation 155

Abstract Title: **Cardiovascular Disease Burden among Adults with Type 1 Diabetes in the US**

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Abstract: Background: Cardiovascular disease (CVD) is a major cause of morbidity and mortality for people with type 1 diabetes (T1D). However, few studies report the age-specific burden of CVD in this population. This study aims to quantify the age- and sex-specific burden of CVD among adults with T1D in the US using real-world data.
Methods: We used nationwide commercial claims data from Merative MarketScan from 2016 to identify adults aged 20 years and older with T1D. ICD-10 codes from claims for inpatient and outpatient services were used to estimate the age- and sex-specific prevalence of CVD defined as any of the following diseases: ischemic heart disease (IHD), stroke, heart failure (HF), acute myocardial infarction (AMI), atrial fibrillation (AF), and peripheral arterial disease (PAD).
Results: Among 45,877 people with T1D (age 47±16years; 48.2% female), the prevalence of CVD was 15.63%. IHD and PAD were the most prevalent types of CVD (prevalence of 9.66% and 5.48%, respectively). The prevalence of CVD increased with age (from 1.48% in those aged 20-29 years to 54.80% in those aged 70+ years) and was higher in men than in women (16.52% in men vs 14.62% in women; p<;0.0001).
Conclusion: The overall burden of CVD in this population T1D was 15.63%, and this increased with age and was higher in men. This burden is higher than observed by the CDC in the general population (5.5%) and less than in people with type 2 diabetes (45.2%) in another study using insurance claims data.

Supported by: None

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19th Annual CCTS Spring Conference
Tuesday, April 9, 2024 Central Bank Center

College of Public Health Research Day

Presentation 156

Abstract Title: **The Effects of Adverse Childhood Experiences on Cardiovascular Disease**

Author(s): Mariam Alkhairat, Sydney Burdette, Jordan Best, Ajae Petty, Jennifer Daddysman

Abstract: Background: In order to gain a comprehensive understanding of the current findings that link our exposure (adult and childhood disease) and our outcome (cardiovascular disease), we analyzed and summarized three other articles. Felitti et al. utilized cohort studies in order to define the relationship between childhood abuse and household dysfunction. Doug et al. used retrospective cohort studies to define the relationship between adverse childhood experiences and ischemic heart disease. Lastly, researchers in Fuller-Thomson et al. used cross-sectional studies to define the relationship between childhood physical abuse and adult cardiovascular disease.

Methods: The KWHR study design is a cross sectional study. The paper is a secondary data analysis. The study collects its database from a self-select member or by invite to participate. The study participants were women who are over 18 years old. There were 16,093 women originally included, and 2 were excluded due to not having the outcome reported. The primary exposure was child physical violence, and child sexual violence. The primary outcome is cardiovascular disease.

Results: There is a strong association between child abuse, whether physical/sexual/both, to acquiring cardiovascular disease. Demographics such as employment status, marital status, and race have implications on these findings. In terms of employment status, those who are unemployed have a higher risk of developing cardiovascular disease. Looking at marital status, those who are divorced additionally have a higher risk of developing cardiovascular disease. Lastly, non-white populations have a higher risk of developing cardiovascular disease compared to white populations.

Supported by: None

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Basic Research

Presentation 157

Abstract Title:	**Participant engagement in a RCT of a behavioral parent training program for families of deaf or hard of hearing children**
Author(s):	M.E. Fields, Departments of Otolaryngology, U of Kentucky; J. Jacobs, Departments of Otolaryngology, U of Kentucky; C. Studts, Pediatrics, U of Colorado, Boulder, CO

Abstract: With over 40 years of scientific evidence, behavioral parent training (BPT) interventions have demonstrated improvements in children's behaviors and family relationships. However, BPT programs can be hard to access and only reach a small proportion of the families who could benefit from it. BPT programs are not typically in the array of services offered to parents of deaf or hard of hearing (DHH) children. Additionally, DHH children were often not included in the studies that built the evidence base for BPT interventions.

Our team systematically adapted an existing BPT intervention, The Family Check-Up (FCU), with input from parents of DHH children; providers such as audiologists, speech-language pathologists, and teachers of the D/deaf; and a Community Advisory Board. An ongoing randomized controlled trial is testing whether this adapted intervention (the "FCU-DHH") improves parent and child outcomes. We also aim to assess whether it is desirable and feasible for families and the parent coaches who deliver the intervention. Up to 125 families will participate. Study enrollment began in June 2021, with anticipated completion in March 2024.

Enrolled families complete research measures every 6 months for up to 3 years, including standardized measures of parenting and child behaviors, parent depression, parent-child interactions, and child receptive and expressive language skills. After baseline data collection, families are randomized to either the control or intervention (FCU-DHH) arm. Up to 6 FCU-DHH sessions are offered per year to families in the intervention arm. FCU-DHH sessions focus on reinforcing parenting strengths and learning/practicing effective positive parenting strategies.

The aims of this presentation are to: 1) present updated recruitment and retention data for this longitudinal trial, including strategies used, challenges faced, and rates of enrollment and withdrawal; and 2) provide updated demographic and process data for study participants.

Supported by: NIH award

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Community Research

Presentation 158

Abstract Title:	**Scoping Review of Interventions to Reduce Lung Cancer Risk among Appalachian Women**
Author(s):	Hannah N. Hiscox,1,2 Jessica R. Thompson, PhD2 ;1College of Public Health, University of Kentucky; 2Community Impact Office, Markey Cancer Center, University of Kentucky

Abstract: Introduction: Lung cancer is the leading cause of cancer-related death for women in the US, with particularly high rates in Appalachia. Although lung cancer rates have decreased among men, women have not experienced the same declines. We sought to examine and fill-in gaps on evidence-based interventions for lung cancer risk reduction among Appalachian women.
Methods: We conducted a scoping review by developing a search strategy in consultation with a UK librarian. We included five databases: PubMed, CINAHL, PsycINFO, Web of Science, and Cochrane. Two independent reviewers assessed articles for inclusion. Included articles focused on a lung cancer risk reduction intervention with adult women in the Appalachian region. We excluded articles that were not original research or not written in English.
Results: The search identified 11,755 articles. Through de-duplication, 6,751 articles were removed. Abstract screening resulted in 270 for full text review. Included articles largely focused on tobacco cessation with fewer addressing smoke-free laws, radon, and healthcare access. Most interventions took place in healthcare or community settings with lay health advisors, midwives, or nurses, and some utilized phone or internet strategies. The studies particularly focus on current smokers, including during pregnancy, with few on non-smokers or other life course periods.
Discussion: These results highlight the importance of non-physician supports and the potential for internet or phone-based approaches for risk reduction in this population. Further strategies for non-smokers and outside of pregnancy are needed. These findings will inform the development of a novel intervention to reduce lung cancer risk among Appalachian women.

Supported by: K99CA277245

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Presentation 159

Abstract Title:	**The impact of medical and recreational cannabis laws on opioid poisoning in employer-sponsored health insurance**
Author(s):	Jialin Hou, Department of Health Management and Policy, U of Kentucky; Jeffery C. Talbert, Institute of Biomedical Informatics, U of Kentucky; Patricia Freeman, Department of Pharmacy Practice and Science, U of Kentucky; Jayani Jayawardhana, Department of Health Management and Policy, U of Kentucky

Abstract: Background: Cannabis is increasingly considered a safe alternative to opioids in treating pain-related symptoms. Currently, thirty-nine states and the District of Columbia (DC) have legalized medical cannabis by allowing home cultivation or operation of medical cannabis dispensaries, and twenty-four states and the DC have enacted recreational cannabis laws. However, there is little information on the impact of these cannabis laws on non-fatal opioid poisoning. This study examines the impact of cannabis laws on non-fatal opioid poisonings in employer-sponsored health insurance.
Methods: State-level changes in opioid poisoning among adults aged 18-64 from the Merative Marketscan Commercial Claims and Encounters Database from 2010 to 2021 were examined across the 50 states and the DC before and after the implementation of medical cannabis laws (MCLs) and recreational cannabis laws (RCLs) using a difference-in-differences regression approach.
Results: The implementation of medical cannabis dispensaries (MCDs) and RCLs was associated with reduced non-fatal opioid poisonings per 100,000 enrollees per quarter by 16% and 12.7%, respectively. The reductions associated with both MCDs and RCLs were predominant in enrollees aged 18-34. MCDs were associated with reductions of 15.5% in males and 12% in females, whereas the reductions associated with RCLs were similar among males and females at 12%.
Conclusions: While many states have passed some type of cannabis laws, both MCDs and RCLs have the potential to reduce non-fatal opioid poisoning in the employer-sponsored insured population, especially among the younger population.

Supported by: None

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Postdoctoral Scholar/Fellow
Community Research

Presentation 160

Abstract Title:	**Ovarian Cancer Survival in Kentucky: The Impact of Appalachian Residence**
Author(s):	J. Kollitz, University of Kentucky, College of Public Health, Department of Epidemiology and Environmental Health; K. Kuhs, University of Kentucky, Markey Cancer Center; J. McDowell, University of Kentucky, Markey Cancer Center, Kentucky Cancer Registry; T. H. Tucker, University of Kentucky, Markey Cancer Center, Kentucky Cancer Registry

Abstract: Background: Ovarian cancer is associated with the highest mortality and worst prognosis of all gynecological cancers. The aim of this study is to build upon a previous class project and examine if there are differences in overall and cause-specific ovarian cancer survival between Appalachian and non-Appalachian Kentucky. The previous project examined how living in a metropolitan versus non-metropolitan county in Kentucky, as classified by Beale code, impacted ovarian cancer survival. It found that that there was not a significant increased hazard of death living in a rural county, compared to an urban one.
Methods: The current study uses population-based cancer data from the Kentucky Cancer Registry, the statewide surveillance system for the Commonwealth of Kentucky. The study includes women 18 years and older that have been diagnosed with ovarian cancer from 2010-2019. To estimate the association between ovarian cancer survival and Appalachian residence, Cox Proportional-Hazards Models will be used to estimate hazard ratios (adjusted and unadjusted).
Preliminary Results: Women in metropolitan counties were more likely 65+ years old (OR: 1.48 [95% CI: 1.05 to 2.07]; P=0.022), less likely Black (0.23 [95% CI: 0.09 to 0.86]; P=0.026), and less likely Hispanic (OR: 0.32 [95% CI: 0.11 to 0.98]; P=0.045). In unadjusted models, living in a nonmetropolitan county was associated with a 9% increased hazard of death, but it was unsignificant (OR: 1.09 [95% CI: 0.98 to 1.22]; P=0.111). After adjusting for age, race, ethnicity, SEER stage and treatment, this relationship remained unsignificant (OR: 1.11 [95% CI: 0.99 to 1.24]; P=0.064).

Supported by: None

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Basic Research,Community Research,Health Equity Research

Presentation 161

Abstract Title:	**Empowering Harm Reduction: Dynamic Tableau Dashboards Featuring SSP Metrics in Kentucky**
Author(s):	M. Mirzaian, Kentucky Injury Prevention and Research Center, University of Kentucky

Abstract: In an endeavor to enhance harm reduction surveillance in Kentucky, the Kentucky Injury Prevention and Research Center (KIPRC) created two Tableau dashboards for the Kentucky Department for Public Health (DPH). The primary objective of this initiative was to transform Syringe Service Program (SSP) and harm reduction metrics into user-friendly visualizations.

The dashboards prominently feature a layered map visualization, presenting centroids with key program metrics (e.g., Number of Syringes Distributed, Rate of Syringe Exchange, Number of Naloxone Kits Distributed) overlaying a choropleth map illustrating various overdose and comorbidity indicators. Users have the flexibility to choose from a diverse set of indicators, each backed by seven years of data.

Initially tailored for internal use, the dashboard caters to the DPH team, offering a detailed array of SSP and harm reduction metrics. Through an iterative data selection process, a need emerged for an external version - striking a balance between transparency and privacy by displaying a reduced set of metrics to address the politicization of syringe service programs.

Noteworthy features of the internal dashboard include a separate map visualization integrating syringe service program jurisdictional locations with federally qualified health centers, rural health centers, and regional health centers. This geospatial integration enhances understanding by placing harm reduction efforts in the context of the broader healthcare infrastructure within the state.

This initiative serves as a model for innovative harm reduction surveillance, underscoring the importance of tailored dissemination strategies for diverse stakeholders.

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Dissemination & Implementation Research

Presentation 162

Abstract Title: **Enhancing Feedback Opportunities for Students: A Pilot Study**

Author(s): S. Wackerbarth, PhD, College of Public Health, U of Kentucky; M. Aulisio Miller, DrPH, Center for the Enhancement of Learning and Teaching, U of Kentucky

Abstract: Background: Feedback is an important component of the classroom experience. When done well, it is bidirectional with students receiving timely and appropriate feedback from instructors and having the opportunity to provide feedback themselves.
Methods: A new process was developed and piloted in an online course for graduate public health students. Students were asked to complete a quick-poll element after reviewing a content module and before starting the homework. The poll allows students to indicate confidence levels with the module's material. Students are incentivized to complete the poll within three days after the module launches.
Results: The pilot is ongoing, however, preliminary findings from the poll's introduction include the instructor having a greater opportunity to respond to student feedback in a timely manner and revise the content of the next module if needed, thus eliminating a two-module time lag associated with waiting to review homework submissions.
Discussion: Bidirectional feedback loops enable instructors to more accurately assess the progress of a course and respond more quickly to student needs. This not only enables the learners to engage with content tailored to their current level of understanding and individual abilities but also enhances the rapport between instructor and student.
Conclusion: Given the promising preliminary findings of this pilot, the enhanced feedback process facilitated by the introduction of the quick-poll element will be expanded to additional courses in graduate studies and in other formats such as in-person.

Supported by: None

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Scholarship of Teaching & Learning

Presentation 163

Abstract Title:	**Genetic Association Analyses of Longitudinal Cognitive Changes on Diverse Populations**
Author(s):	Xian Wu, Department of Biostatistics, Sanders-Brown Center on Aging, University of Kentucky; Khine Zin Aung, Department of Biostatistics, Sanders-Brown Center on Aging, University of Kentucky; David W. Fardo, Department of Biostatistics, Sanders-Brown Center on Aging, University of Kentucky; Erin L. Abner, Department of Epidemiology, Sanders-Brown Center on Aging, University of Kentucky; Yuriko Katsumata, Department of Biostatistics, Sanders-Brown Center on Aging, University of Kentucky

Abstract: Background: Mini-mental state examination (MMSE; a measure of global cognitive function) has been commonly used to trace AD-related cognitive changes. Previous genetic studies on MMSE scores typically have used linear regression models in which a normal distribution is assumed. However, raw scores of MMSE do not follow a normal distribution. Instead, Tobit model, making best use of ceiling data information for estimation, is the optimal model. In the study, using the Tobit modeling approach, we will test candidate single nucleotide variants (SNVs) related to AD for association with MMSE raw scores across different genetic ancestry groups.
Methods: MMSE scores were drawn from the National Alzheimer's Coordinating Center (NACC) Uniform Data Set (UDS). We have obtained the whole genome sequencing (WGS) data that was generated by Alzheimer's Disease Sequencing Project (ADSP). Based on a recent genome-wide association study (GWAS) by Bellenguez et al. (2022) that identified 83 AD-related variants, we will perform these SNVs association analyses on MMSE raw scores using the Tobit model. We will develop computational pipelines to conduct the analyses using Python and R.
Results and Conclusion: Using uniform manifold approximation and projection (UMAP), we have identified participant's genetic ancestries. The sample size for each group is: Non-Hispanic White (n = 6139), Hispanic (n = 1325), African American (n = 1274), and Asian (n = 91). There are substantial variations in Non-Hispanic White, Hispanic, and African American groups, except for the Asian group. Therefore, we will conduct genetic analyses using the Tobit model across three genetic ancestry groups.

Supported by: NIH CTSA grant (UL1TR001998), KL2 grant (KL2TR001996), TL1 grant (TL1TR001997) and P01AG078116.

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Basic Research

Presentation 164

Abstract Title: **Advancing Salivary Biomarker Development**

Author(s): C.S. Miller, College of Medicine, U of Kentucky; X. D. Zhang, Department of Biostatistics, U of Kentucky; Q.Yan, Department of Biostatistics, U of Kentucky; J.L. Ebersole, School of Dental Medicine, U of Las Vegas

Abstract: Introduction: Periodontitis is a chronic inflammatory disease. Currently, there are no good biomarker(s) for periodontitis as the diagnostic assessment relies on subjective methods such as radiographic examinations.
Objective: To determine the best combination of biomarkers that can be used to create a diagnostic panel and eventually a point-of-care device for detecting periodontal disease.
Methods: In a prospective multicenter cohort study, whole unstimulated saliva was collected from dental patients at 3 research sites. Saliva samples were assayed with 15 known oral biomarkers that reflect key biological pathways of periodontitis. The collected data was analyzed using random forest, and the sensitivity and specificity were calculated to determine the best biomarker combination.
Results: A total of 84 dental patients [mean age 59.75 ± 9.22 yrs old, 40% male] were included in this analysis. A combination of 1 protein (IL1b) and 2 bacteria (Otu146 and Otu156) was determined to be best (specificity of 0.87 and a sensitivity of 0.95 in its decision tree). A combination of 1 bacterium and 2 proteins yielded similar sensitivity but less specificity. Larger combinations involving 2 proteins and 2 bacteria yielded the same results, but the cost of additional assays in a potential device was considered as a factor. In contrast, the decision trees of 1 protein, 1 bacterium, or a combination of 1 protein and 1 bacterium did not yield a sensitivity of greater than 0.9.
Conclusion: The data suggests the combination of 1 protein (IL1b) and 2 bacteria Otu146 and Otu156 is the best at determining periodontitis.

Supported by: None

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College of Public Health Research Day

Presentation 165

Abstract Title:	**Examining the Association of Social Vulnerability with Acute Myocardial Infarction Hospitalizations and Mortality in KY**
Author(s):	H. M. Yusuf, M. E. Lacy, A. Kucharska-Newton, and W. J. Christian, College of Public Health, Department of Epidemiology and Environmental Health, University of Kentucky.

Abstract: Background: Cardiovascular disease (CVD) is the leading cause of mortality in the US, with social vulnerability significantly impacting its outcomes. Limited research regarding the contribution of social vulnerability to cardiovascular health in Kentucky exists. This study aims to examine the association between county-level social vulnerability and acute myocardial infarction (AMI) hospitalization and mortality rates in Kentucky from 2016-2020.

Methods: Annual Kentucky county level rates of AMI hospitalizations and mortality among adults >35 years old were obtained from the Centers for Disease Prevention and Control (CDC) and presented as five-year age-adjusted rates. County-level social vulnerability index (SVI) data were also obtained from the CDC. Percentile ranking scores for SVI overall and by subcategory themes (i.e., socioeconomic status (SES), household characteristics, racial and ethnic minority status, and housing type and transportation) were presented as quartiles, with Q1 representing the least socially vulnerable counties and Q4 the most. Linear regression models were used to examine the association of SVI with study outcomes.

Results: Compared to the least vulnerable counties (Q1), those in the most vulnerable (Q4) had higher age-adjusted AMI hospitalization rates (Q1=389.17 v Q4=519.33; p=0.0002), and higher age-adjusted AMI-related mortality rates (Q1=114.44 v Q4=168.76; p=0.02). In linear regression models simultaneously adjusting for the four subcategory themes, socioeconomic status was associated with increased AMI hospitalization rates (p=0.01), while racial and ethnic minority status was associated with lower AMI hospitalization and AMI-related mortality rates (p=<.0001, p=0.04, respectively).

Conclusion: Findings suggest that interventions addressing overall social vulnerability and socioeconomic disparities may enhance CVD health statewide.

Supported by: None

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Presentation 166

Abstract Title: **Dentist's Assessment and Protocol: Determining the Need for Frenotomy/Frenectomy**

Author(s): Brown MC, Hawk G, Perez C, Scheffel; University of Kentucky, Lexington, KY

Abstract: Purpose: To investigate which tools have driven clinical decision-making by dental practitioners when diagnosing and treating tethered oral tissues (TOTs).
Methods: A questionnaire was sent electronically to members of the American Academy of Pediatric Dentistry and posted online in AAOMSConnect (American Academy of Oral and Maxillofacial Surgeons). The questions addressed practitioner demographic information, education, and diagnosis and indication in treatment of TOTs. Data were analyzed considering providers training (residency, continuing education-CE, both, or none) using chi-squared and Fisher's Exact tests (α=.05).
Results: Two oral surgeons and 519 pediatric dentists (PDs) completed the questionnaire. The following results refer to PDs. Ninety-one% had training in diagnosing/treating TOTs. Thirteen% of those who never learned to treat TOTs offer it as a service to their patients. PDs trained with CE are more likely to provide frenectomies. Forty-four% diagnose problematic TOTs based on anatomic presentation alone. The Kotlow classification was utilized most frequently (38%), by those trained with CE only. If an assessment tool was not utilized, the highest ranked functional issues for infants were: Inability to latch, lactation consultant request, breastfeeding/nipple pain, poor infant weight gain, and clicking. For children greater than one, the highest ranked issues were limited tongue mobility, speech language pathologist request, speech articulation difficulties, potential for maxillary-incisor diastema, and caries on anterior teeth.
Conclusion: Diagnosis and indication for treatment of TOTs remain non-standardized. The provider's training influences the offer of treatment and the assessment of TOTs. There is no consensus among practitioners if anatomy, function, or both, dictate problematic frenula.

Supported by: None

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Clinical Research

Presentation 167

Abstract Title: **Parents' Perception of Antibiotics to Treat Dental Caries in Children**

Author(s): S. Fisher, Division of Pediatric Dentistry, U of Kentucky; G. Hawk, Department of Statistics, U of Kentucky; D. L. S. Scheffel, Division of Pediatric Dentistry, U of Kentucky; C. Perez, Division of Pediatric Dentistry, U of Kentucky

Abstract: Purpose: Overprescribing antibiotics is a long-standing issue in the dental community. One reason for the inappropriate prescribing of antibiotics could be due to patient requests, demands, and satisfaction. No literature supports the routine use of antibiotics for the treatment of dental caries, dental pain, or postoperative healing; however, many parents believe antibiotics help resolve symptoms associated with dental caries. The purpose of this study is to assess parents' knowledge of antibiotic resistance and antibiotic therapy regarding the treatment of dental caries.
Methods: A questionnaire containing two sections will be administered to parents of ASA I, English and Spanish-speaking children aged 2-17 presenting to the Pediatric Dental Clinic. Section I contains nine questions addressing parents' opinions on antibiotic use in the dental setting while Section II assesses parents' knowledge of antibiotic resistance. Data analysis will include the description of the relative and absolute frequencies of the variables. Association tests will be performed for ordinal variables.
Results/Conclusion: Final data pending.

Supported by: None

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Clinical Research

Presentation 168

Abstract Title: **The Effect of Isolation Techniques on Behavior During Dental Treatment**

Author(s): L. Smith Department of Pediatric Dentistry U of Kentucky, D. L. S. Scheffel, Department of Pediatric Dentistry U of Kentucky, C. Perez Department of Pediatric Dentistry U of Kentucky.

Abstract: Purpose: Due to the importance of behavior management during dental treatment and the huge effect that the office environment and armamentarium, continual research is needed to develop better standards of care, materials, and instruments. This randomized controlled trial compares the effect of different isolation systems on the behavior of pediatric dental patients during restorative treatment.
Methods: After sample size calculation, a convenience group of participants from the UK Pediatric Dental Clinic, between the ages of 6 and 12, with similar treatment needs on 2 or more quadrants will be randomized according to the isolation system used. Rubber dam and Isolite systems will be used at each visit and the patient behavior analyzed using the Modified Venham Scale at four points during the treatment. Data analysis will include the description of the relative and absolute frequencies of the variables.
Results/Conclusion: Final data pending

Supported by: None

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Clinical Research

Presentation 169

Abstract Title:	**Stainless Steel Crown Sizing: Finding and Average Crown Size**
Author(s):	Alex Ward, Department of Pediatric Dentistry, U of Kentucky, Cristina Perez, Department of Pediatric Dentistry, U of Kentucky, Debora Scheffel, Department of Pediatric Dentistry, U of Kentucky, Logan Mitchell, U of Kentucky College of Dentistry, Greg Hawk, Department of Statistics, U of Kentucky

Abstract: Purpose: This study aims to analyze stainless steel crown (SSC) sizes on crowns cemented to establish average sizes on different clinical scenarios and help providers have a reliable starting point when fitting SSCs.
Methods: Charts from patients aged 3 to 8 years treated under general anesthesia in UK Chandler Hospital between July 1st 2022 and June 30th 2023 will be reviewed and data regarding SSC size will be collected. The sizes will be obtained considering the restored tooth and two different clinical scenarios: crowns placed on single posterior tooth and crowns placed on multiple adjacent posterior teeth. Data analysis will include the description of the relative and absolute frequencies of the variables. Association tests will be performed for ordinal variables.
Results/Conclusion: Final data pending.

Supported by: None

Primary Presenter / email: **Ward, Alex** / amwa301@uky.edu
Other
Basic Research

Presentation 170

Abstract Title:	**Analysis of gingival antimicrobial proteins expression in transgenic mice overexpressing hPLA2-IIA**
Author(s):	A. Desai, Department of Periodontics, College of Dentistry; V. Tubero Euzebio Alves, Department of Oral Health Research; R. Danaher, Department of Oral Health Research; R. Adatorwovor, Department of Biostatistics; O. A. Gonzalez, Department of Microbiology, Immunology, and Molecular Genetics, College of Medicine

Abstract: Objective: Oral Dysbiosis is a crucial etiological factor for periodontal disease (PD); however, the mechanisms associated with oral dysbiosis remain not fully elucidated. In vitro, pre-clinical (non-human primates), and clinical findings suggest that the antimicrobial protein phospholipase A2 group IIA (PLA2-IIA) could play a role in oral dysbiosis and PD. Accordingly, we recently found that overexpression of human PLA2-IIA is associated with oral dysbiosis in transgenic mice (Tg-hPLA2-IIA). However, whether variation in the gingival expression of classical antimicrobial proteins (AMPs) is affected in Tg-PLA-IIA mice remains unknown.
Methods: Tg-hPLA2-IIA and their wild-type co-caged littermates (WT) were used (n=10/group; 5M-5F) [UK-IACUC #2016-2385]. Gingival tissues were evaluated for expression (mRNA) of: mDefb1/hBD1, mDefb4/hBD2, mDefb14/hBD3, S100A8, S100A9, and CAMP, using qRT-PCR. Protein levels and distribution of S100A8 were assessed in hemimaxillae samples through immunofluorescence and imaging analysis.
Results: There were no significant differences in gene expression of AMPs in Tg vs WT mice. Consistently, S100A8 protein levels were similar in Tg and WT. Sex-related analysis showed decrease in mRNA and increase in protein S100A8 levels in Tg-PLA2-IIA vs. WT females. Tg males exhibited lower S100A8 protein levels compared with WT males. Differences in S100A8 protein expression were associated with cells in the connective tissue.
Conclusion: Gingival expression of AMPs is similar in Tg-hPLA2-IIA and WT littermates. Oral dysbiosis observed in Tg-hPLA2-IIA could be associated mainly with the antimicrobial activity of hPLA2-IIA. Expression of Calprotectin (S100A8/S100A9) in gingival tissues could be affected differently by PLA2-IIA-induced oral dysbiosis in male and female mice.

Supported by: Funding Source: NIH/NIDCR: DE029498

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Translational Research/Science,Basic Research

Presentation 171

Abstract Title: **Radiographic patterns of Grade-C periodontitis in primary dentition.**

Author(s): H. Eltarzy, L. M. Shaddox, Division of periodontics, Department of oral health practice.

Abstract: Objective: The aim of this study was to characterize radiographic patterns of Grade-C periodontitis in primary dentition in young African Americans.
Methods: Thirty three, 12 males and 21 females, African American patients aged 5 to 12 years radiographic images and clinical charts were evaluated for multiple clinical and demographic parameters: Age at evaluation, sex, bone loss pattern, physiological and pathological root resorption, exfoliation patterns, attachment loss, tooth and sites affected by disease. A group of 12 age gender and dentition matched healthy controls were also evaluated for comparison purposes.
Results: The most common tooth affected in this population was the first primary molar (#L, 42.4%), followed by teeth #S (18.2%) and #I (15.2%) ($p<0.05$). The majority of the patients affected teeth were too early to exfoliate (75.8%), and the majority of the affected teeth only showed 1/3 of the root resorption (67%) and only 3 affected patients presented either internal or external pathological root resorption. Bone loss and attachment loss was more commonly found on the distal aspect than the mesial aspect of the affected teeth ($p<0.05$) and averaged 4.88mm, whereas this distance average 1.01mm on the same teeth on healthy participants ($P<0.05$).
Conclusions: Grade C periodontitis in primary dentition presents mostly on first primary molars, where bone loss is apparent before natural exfoliation time. Pediatric patients need to be aware of diagnosis of this disease at this stage to provide early treatment.

Supported by: NIDCR (R01DE019456)

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Clinical Research

Presentation 172

Abstract Title:	**Comparison between two types of collagen matrices to treat single gingival recession: a data reanalysis of two trials**
Author(s):	Bridget Faltas; Luciana M. Shaddox; Dolph Dawson; Mohanad Al-Sabbagh; Manuela Maria Viana Miguel; Lais Ferreira Ferraz; Amanda Rossato; Mauro P. Santamaria

Abstract: Gingival recession (GR) is a prevalent problem that can affect up to 100% of those 50 years old and up. There are several treatment approaches to treat GR. Systematic reviews show that the coronally advanced flap (CAF) associated with a connective tissue graft is the gold standard technique. However, this technique can cause pain and morbidity. In addition, the amount of autogenous tissue that can be collected is limited. Therefore, there are biomaterials available on the market that have been used as a substitute for an autogenous graft. These materials have been manufactured differently, using different processes and materials, and with different origins (human and non-human sources). Therefore, these materials have distinct characteristics which may influence the clinical outcome. Although we have many studies in the literature comparing these materials with either a surgical procedure without a graft (flap alone) or a surgical procedure with an autogenous graft, there is a gap in the literature of studies comparing (head-to-head) different biomaterials on the market. Thus, the aim of this study is to reanalyze data from two previous studies performed by our research group that evaluated the treatment of GR using CAF with either a cross-linked volume-stable collagen matrix (CAF+VSCM) or a non-cross-linked collagen matrix (CAF+CM). Data from two clinical trials will be extracted to compare this. The null-hypothesis is that no difference will be observed between groups. Additionally, we intend to evaluate the possible contributing factors such as local anatomical and patient-related factors on the clinical outcomes.

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Other

Clinical Research

Presentation 173

Abstract Title:	**Dentoalveolar Expansion using Invisalign: Analysis using Cone Beam Computed Tomography**
Author(s):	E. E. Byrd, M. Bazina, J. K. Hartsfield, C. S. Beeman, Department of Oral Heath Science, Division of Orthodontics, U of Kentucky; R. Singer, Department of Public Health Dentistry, U of Kentucky

Abstract: Introduction: Dentoalveolar expansion is used to correct crowding, dental crossbites, and arch coordination discrepancies. Studies have shown that Invisalign can increase maxillary arch width by tipping posterior teeth; however, no studies utilized CBCT images to evaluate mandibular arch expansion. The goals of this study were to compare the efficacy of maxillary and mandibular expansion using Invisalign and determine how the expansion was achieved.
Methods: This is a retrospective study of 36 adult patients treated with maxillary and mandibular expansion using Invisalign. Distances between cusp tips and root apices between paired maxillary and mandibular posterior teeth, along with individual tooth inclination angles, were measured on pre- and post-treatment CBCTs. Arch width changes were compared with ClinCheck predictions.
Results: There was significantly less root apex distance change compared to the cusp tips in both maxillary and mandibular first premolars (p=0.0273, p=0.0016), second premolars (p=1.447E-4, p=0.0016) and first-molars (p=0.0052, p=6.892E-8). All mandibular teeth averaged constriction at the root apices but expansion at the cusp tips. Significant differences were found between the predicted and achieved expansion in maxillary first premolars (p=0.0010), second premolars (p=8.129E-5), and first molars (p=0.0058) but not in the mandibular teeth.
Conclusions: The results suggest that Invisalign can achieve maxillary and mandibular dentoalveolar arch expansion, but it was mainly achieved by crown tipping rather than bodily movement. The data suggested uncontrolled tipping at the mandibular first molars and possibly all mandibular teeth. ClinCheck predictions were more accurate in the mandibular teeth but overestimated expansion in maxillary teeth.

Supported by: Southern Association of Orthodontists

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Other
Clinical Research

Presentation 174

Abstract Title:	**Precision Assessment of Facial Asymmetry Using 3D Imaging and Artificial Intelligence**
Author(s):	Mohamed Adel, Division of Orthodontics, University of Kentucky; Lina Sharab, Division of Orthodontics, University of Kentucky; James K.Hartsfield, Division of Orthodontics, University of Kentucky; Cynthia Beeman, Division of Orthodontics, University of Kentucky; Hugo Reyes-Centeno, Department of Anthropology, University of Kentucky

Abstract: Background: In the last decades, orthodontics has witnessed enormous technological changes. There has been a growing interest among practitioners in employing artificial intelligence and deep learning models to enhance the accuracy and efficiency of diagnostic methods. The objective of this study is to assess the precision of automated facial analysis for detecting facial asymmetry using a deep learning model on 3D facial images.
Materials and methods: A total of 130 patients (84 female, 46 male) were included in the study, ranging in age from 15 to 80 years (mean age: 19.3, standard deviation: 3.7). Manual and automated facial analyses were performed on 3D facial images obtained using the Vectra® M3 imaging system. This involved the identification of seven bilateral facial landmarks, including: Palpebrale superius, Palpebrale inferius, Exocanthion, Endocanthion, Alare, Crista philtra and Cheilion. For the manual analysis, x, y, and z coordinates of each landmark were extracted to calculate the asymmetry index and assess facial symmetry. Subsequently, a deep learning-based program was developed to automatically identify the same seven facial landmarks and calculate the facial index for symmetry evaluation. The accuracy of automated landmark identification was compared with the manual method, and intrarater and interrater reliability were assessed for the manual analysis.
Results: Agreement was observed between the manual and automated methods in calculating the asymmetry index for five landmarks. There was a statistically significant difference between the two methods in determining the asymmetry index for Alare (P=0.0008) and Cheilion (P=0.0023). The manual method exhibited good intrarater reliability and moderate interrater reliability.
Conclusion: Artificial intelligence offers the ability to conduct reliable and reproducible facial analysis on 3D images. This approach opens doors to significant advancements in both research and clinical orthodontics.

Supported by: Research fellowship from the Center for Oral Health Research

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Medical Resident/Fellow
Clinical Research,Translational Research/Science

Presentation 175

Abstract Title:	**Orthodontic Retention Wars: A Comprehensive Review and Comparative Analysis of Essix, Hawley, and Fixed Retainers**
Author(s):	E. Palmer, Department of Orthodontics, U of Kentucky; Z. Smith, Department of Orthodontics, U of Kentucky; A. Shafi, Department of Orthodontics, U of Kentucky; M. Bazina, Department of Orthodontics, U of Kentucky

Abstract: Maintaining teeth in their corrected positions following orthodontic treatment to an ideal outcome is considered one of the most challenging aspects of orthodontics. Orthodontic relapse is complicated and highly variable with changes coming from periodontal and gingival status, soft tissue pressures, occlusal factors, limits of the dentition and changes normal with aging. All elements that could affect retaining teeth should be considered from the start of treatment, as certain movements in orthodontics have proven to be more stable than others. The best information currently available comes from the long-term post-retention registry at the University of Washington. Riedel and Little are credited with the collection of over 800 long-term post-retention cases and discovered that relapse occurred in a high percentage of patients, but in an individual patient, relapse was quite unpredictable. The current dilemma leads to the question," is there a gold standard in orthodontic retention?". Hawley retainers, featuring acrylic and metal components, allow for controlled tooth movement with versatility. Essix retainers, composed of thermoplastic materials, exhibit uniform force distribution and minimal occlusal interference. And lastly, fixed retainers, typically comprised of thin wires bonded to lingual tooth surfaces, provide continuous retention, but are associated with challenges in oral hygiene maintenance and potential occlusal issues. This poster will critically analyze the pros and cons of each retainer type, exploring topics from patient compliance and wear protocol to the success rates and common causes of failure, to see which, if any, stands above the rest.

Supported by: None

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Graduate Student
Basic Research

Presentation 176

Abstract Title:	**3D Analysis of Facial Soft Tissue Changes After Slow Maxillary Expansion**
Author(s):	M. E. Tallman, C. S. Beeman, M. Bazina, Department of Oral Health Science, Division of Orthodontics, U of Kentucky; R. Fuentealba, Department of Oral Health Practice, U of Kentucky; James K. Hartsfield Jr, Department of Oral Health Science, Division of Orthodontics, U of Kentucky

Abstract: Objective: To evaluate the facial soft tissue changes that occur after slow maxillary expansion in growing individuals using the VECTRA M3 3D imaging system and to compare these changes with a matched control group

Materials and Methods: Twenty children (16 females, 4 males, mean age 11.9 years) who required maxillary expansion underwent expansion with a hyrax or Haas type of expander (1.75 mm of expansion or less per week). Twenty children who did not require expansion made up the matched control group (mean age 12.1 years). VECTRA 3-D facial images were obtained before (T1) and after expansion (T2), and nine soft tissue variables around the nose and mouth were measured. Independent t-tests were used to compare the two groups ($P < 0.05$).

Results: As a general observation, the expander group had greater increases in most variables. The expander group's nasal width change was 0.9 mm greater ($p= 0.0011$). The change in mouth width was 1.9 mm greater in the expander group ($p= 0.0061$). The expander group also had a greater increase in volume in the inferior third of the soft tissue nose ($p= 0.0141$). The groups had no significant differences in alar base width, nose length, nose tip protrusion, upper philtrum width, nose prominence, or nasolabial angle.

Conclusions: Slow maxillary expansion produced statistically significant changes in nasal width, mouth width, and soft tissue nose volume compared to a control group. However, these findings are not clinically significant as these changes are very small in the overall evaluation of the face.

Supported by: Southern Association of Orthodontists

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Medical Resident/Fellow
Clinical Research

Presentation 177

Abstract Title:	**Patient Satisfaction with a Telehealth Behavioral Intervention for Chronic Orofacial Pain.**
Author(s):	V. Chetariya, Department of Oral Health Science, U of Kentucky; I.A. Boggero, College of Medicine, Department of Psychology, U of Kentucky College of Arts and Science, Department of Psychology, U of Kentucky Lexington, KY

Abstract: Aim of Investigation: Physical self-regulation (PSR) is a three-session behavioral intervention designed to help people develop clenching awareness, learn relaxation strategies for muscles of the masticatory system, and learn diaphragmatic breathing. Although previous work has established the efficacy of this intervention when delivered in person, little is known about how acceptable patients find the intervention when it is delivered via telehealth. The aim of this study was to describe treatment acceptability, expectancy, credibility, and satisfaction for a telehealth version of PSR.
Methods: Twenty-six patients who completed a telehealth version of PSR as part of their care for chronic myofascial pain at a tertiary, university-affiliated orofacial pain clinic were asked to provide data on the acceptability (Treatment Acceptability and Adherence Scale, 0-56 scale), expectancy (Treatment Credibility-Expectancy Questionnaire, 0-27 scale), credibility (Treatment Credibility-Expectancy Questionnaire, 0-27 scale), and satisfaction (Client Satisfaction Questionnaire, 0-32 scale) immediately after completing the treatment.
Results: Patients reported PSR via telehealth to be moderately acceptable (M=44.81, SD=3.19). Although they found the intervention credible (M=21.46, SD=4.63), they only reported moderate expectancy that the intervention would make a change for their pain (M=16.96, SD=5.53). Yet, satisfaction following the intervention was relatively high (M=28.68, 3.11).
Conclusions: Results reveal promising acceptability, credibility, and satisfaction data for a brief behavioral clenching awareness intervention among patients with confirmed chronic myofascial pain in the face. Future work should test how to best implement such interventions into multidisciplinary orofacial pain treatment settings.

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Graduate Student
Clinical Research

Presentation 178

Abstract Title:	**A Multidimensional Approach for Managing Cancer-Related Neuropathic Pain Incorporating Low-Dose Naltrexone: Case Report**
Author(s):	M. Dowling, Department of Oral Health Science, Division of Orofacial Pain, U of Kentucky College of Dentistry; I. Moreno-Hay, Department of Oral Health Science, Division of Orofacial Pain, U of Kentucky College of Dentistry

Abstract: Background: The effects of oral cancer treatments may impart significant adverse effects, significantly impacting quality-of-life. This case report explores the successful addition of low-dose naltrexone (LDN) in the multidimensional management of PTNP in a remission patient with a history of cancer.
Case Presentation: A 69-year-old female with a history of keratinizing squamous cell carcinoma of the tongue presented with a chief complaint of a two-year history of constant, slowly-worsening "burning, raw, and prickly" pain located in the area of surgical resection. Initial treatment, including increasing gabapentin and introducing cyclobenzaprine, pilocarpine, topical neurogel in Orabase, dry-mouth protocol instructions, and the wearing of a neurostent, yielded a modest 25% reduction in pain intensity after 5 weeks. Duloxetine was then introduced, and after 11 weeks, patient reported continued improvement, including an overall improvement of 50-60%, only intermittent mild pain, and the ability to eat previously aggravating foods. Hypnotherapy was introduced, however it did not help with her pain complaint. The joint decision was made to incorporate LDN into the therapeutic regimen, and after 9 weeks at 3mg, patient reported a 60-70% overall improvement. After slowly increasing LDN to 6mg daily, patient reported at a 6-week follow-up an 85-90% overall improvement with frequency of pain reduced to 5-7 days per month. In addition, patient's PHQ-4 reduced from 9 to 3 and ISI reduced from 20 to 13.
Conclusions: This case underscores the potential efficacy of LDN as a valuable addition to the armamentarium for managing PTNP, providing new insights into comprehensive approaches for patients with similar clinical profiles.

Supported by: None

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Clinical Research

Presentation 179

Abstract Title:	**Low Dose Naltrexone as a Novel Therapeutic Agent for Post-Traumatic Trigeminal Neuropathic Pain: A Case Series**
Author(s):	S. Guthrie, Department of Oral Health Sciences, Division of Orofacial Pain, U of Kentucky; M. Dowling, Department of Oral Health Sciences, Division of Orofacial Pain, U of Kentucky; I. Boggero, Departments of Psychology and Anesthesia, U of Kentucky; I. Moreno, Department of Oral Health Sciences, Division of Orofacial Pain, U of Kentucky

Abstract: Background: Post-traumatic trigeminal neuropathic pain (PTNP) is an uncommon, painful neuropathic condition that affects a distribution of the trigeminal nerve that has been previously traumatized. Current pharmacological interventions are often ineffective for the management of neuropathic pain. Low Dose Naltrexone (LDN) is a relatively novel therapeutic agent that has been employed successfully in the treatment of other chronic pain conditions. To our knowledge, no prior report has been published on its use in the management of PTNP.

Case Presentation: Four patients (2 males, 2 females; age range 43-73) were previously diagnosed with PTNP according to the ICOP diagnostic criteria. Patients reported an average baseline pain of 6.25/10 managed with oxycodone, pregabalin, trazodone, duloxetine, gabapentin, and/or nortriptyline. Patients were administered LDN increasing from 1.5 to 4.5mg over the course of one week and maintained at 4.5mg thereafter. Patient's existing medications were not altered. At follow up appointments ranging between 1-7 months, patient reported numeric pain scores and subjective improvement of symptoms on a 0-100% scale. Three out of four patients reported an improvement in symptoms, average pain score for treatment responders was 3/10, the average pain change score for treatment responders was -2.57 ± 0.65, and average subjective percent of improvement was 63.33% ± 18.85.

Conclusion: The outcomes of these cases support the use of LDN as a possible therapeutic agent in the management of PTNP. More rigorous investigation will be required to determine the extent of therapeutic benefit.

Supported by: This project utilized no funding or grant support.

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Graduate Student
Clinical Research

Presentation 180

Abstract Title:	**Effect of Phospholipase A2 group IIA (PLA2-IIA) on Ligature-Induced Bone Loss**
Author(s):	Danielle Bellamy, Center for Oral Health Research, College of Dentistry, U of Kentucky; Vanessa Tubero Euzebio Alves, Center for Oral Health Research, College of Dentistry, U of Kentucky; Robert Danaher, Center for Oral Health Research, College of Dentistry, U of Kentucky; Roger Arce, Department of Periodontics and Oral Hygiene, School of Dentistry, The University of Texas Health Science Center at Houston; Octavio A. Gonzalez, Center for Oral Health Research, College of Dentistry, U of Kentucky

Abstract: Objective: Periodontitis is a prevalent oral inflammatory disease that leads to alveolar bone loss (ABL) and may exert an adverse impact on systemic health. PLA2-IIA is an antimicrobial protein that has been associated with microbial dysbiosis and is elevated in periodontitis; however, the role of PLA2-IIA in ABL remains unknown. The goal of this study was to evaluate the effect of PLA2-IIA in ABL using the ligature-induced periodontitis mice model.
Methods: Transgenic mice overexpressing the human PLA2-IIA [Tg-hPLA2-IIA] (10 mice; 5M/5F) and wildtype [WT] (10 mice; 5M/5F) co-caged littermates (C57BL/6) were ligated in the second maxillary right molar for 10 days. The contralateral side was used as control. Maxilla 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 ABL using Autodesk Meshmixer software. ABL levels were determined using ImageJ. IACUC approval #2016-2385, University of Kentucky.
Results: Greater ABL was observed in unligated/control sites in Tg-hPLA2-IIA when compared with their corresponding WT littermates ($p=0.036$). Ligature induced significant ABL in Tg-hPLA2-IIA and WT groups after 10 days ($p < 0.0001$). There was no difference in ligature induced-bone loss in Tg-hPLA2-IIA compared to WT mice.
Conclusion: These findings suggest that chronic elevations in hPLA2-IIA levels are associated with ABL; however, acute local inflammatory responses (i.e., 10 days) appear not to increase ABL associated with hPLA2-IIA. Future studies evaluating the kinetics of ABL in this mice model would be needed to determine potential differences at earlier time points.

Supported by: NIH/NIDCR DE029498

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Undergraduate Student
Basic Research

Presentation 181

Abstract Title:	**Appraisal of Oral Microbiome in Oral Cancer: A Literature Review**
Author(s):	M. Najarzadegan, High School Student, Lafayette High School; F. Najarzadegan, College of Dentistry, University of California, Los Angeles

Abstract: Objective: A complex balanced equilibrium of the bacterial ecosystems exists in the oral cavity that can be changed by tobacco smoking, psychological stressors, poor dietary habits, and chronic periodontitis. Based on previous studies, the members of the oral microbiome may serve as potential biomarkers for oral cancer. The objective of this review is to evaluate potential members of the oral microbiome that are associated with OSCC and oral potentially malignant disorders (OPMD) and highlight potential biomarkers for the disease. Methods: A literature search was carried on different databases, including PubMed, Embase, Cochrane, and Google Scholar for current literature (2016-2023) using different MeSH terminologies for microbial association with OSCC/OPMD progression.
Results: A total of 5 systematic reviews and 19 research articles was found. The literature reveals that during the process of carcinogenesis, the oral microbiome community changes qualitatively and quantitatively. Bacterial profiles have been characterized majorly by 16S sequencing from saliva, oral swabs, oral rinse and tissues samples from patients with OPMD and OSCC. The majority of these studies indicated a significant increase in Fusobacteria, especially Fusobacterium nucleatum species, and Porphyromonas gingivalis abundance in OSCC, with 2 studies indicating that larger tumors and larger numbers of lesions were found in mice infected with F. nucleatum, P gingivalis and Treponema denticola compared to controls. Moreover, there is a considerable overlap between bacteriome of OPMD and OSCC cases, with a clearer separation between both disorders and controls .
Conclusion: Our study indicates that a significant increase in Fusobacteria, especially F. nucleatum, and P gingivalis levels is correlated to OSCC, which can be used as biomarkers for the disease.

Supported by: None

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High School Student
Health Equity Research

Presentation 182

Abstract Title: **Periodontal Disease and Treatment and the Influence on Diabetes**

Author(s): A. Postula, U of Kentucky; L. Shaddox, Periodontology, U of Kentucky

Abstract: There is a great importance in the association between diabetes and periodontal disease (Preshaw). However, there is very little evidence supporting or continuing research that diabetics responds poorly to periodontic treatment. One study describes the association between increasing A1C and periodontal disease progression, concluding that there is a positive correlation between the two. (Demmer, et. al). However, the study fails to mention the role of treatment in disease progression. In addition, a systematic review studied the effect of periodontal treatment on diabetics, finding a reduction in A1C for only 3-4 months, however, beyond this, they did not have enough support to provide an association in follow-up treatment and the disease - a majority of their results concluding with low-quality evidence and insufficient support (Simpson, et. al). Finally, a third study demonstrated that uncontrolled diabetes influences the progression and recurrence of periodontal disease. They explained that treatments have the ability to stabilize metabolic control, nevertheless, longer-term studies are needed to confirm (Nibali, et. al). Therefore, due to these contradictory articles, as well as needing to further understand the association between the two diseases, we will research the comparison of diabetics and nondiabetics in response to periodontal disease as well as the influence of maintenance in disease treatment. Looking at the population at the University of Kentucky from 2010 to 2017, we will demonstrate that if diabetics do not come to follow-up visits for periodontic treatment, they will show worsening periodontic disease than if they do follow-up for regular treatments and maintenance.

Supported by: Office of Undergraduate Research - Research Award Scholarship

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Undergraduate Student
Clinical Research

Presentation 183

Abstract Title: **Dental Health Accessibility in Kentucky: An 18-year Comparison**

Author(s): M.V. Rojas Ramirez, Department of Oral Health Practice, College of Dentistry, U of Kentucky; D. White, Undergraduate, Human Health Sciences, U of Kentucky, Lexington, KY

Abstract: Background and aim: Access to dental care in Kentucky is a significant issue that affects many individuals, especially those who live in a more rural area or have a low income. Kentucky is composed of 120 counties of which 54 correspond to counties in Eastern Kentucky within the Appalachian region, a well-known area of significantly reduced access to dental care.
Methods: Data from all licensed dentists in KY during 2022 was used to conduct the analyses. The results were compared to a comprehensive report which analyzed these same outcomes back in 2006. Descriptive statistics are presented to define the sample.
Results: We identified 2,369 dentists practicing in KY during 2022 compared to 2,351 identified back in 2006, indicating a net gain of 18 dentists over 18 years (less than 1% increase). However, the population in KY exhibited an increase of 6.9% between the same years. The sample of dentists was predominantly male (65%), with a mean age of 50.7 (13.9). General dentists involved 75% of the sample, with 25% being specialists, and only 4.6% of them having a master's degree or higher. Orthodontists had the highest distribution with 8.3%, followed by oral surgeons with 5.8%, and pediatric dentists with 5.1%. In terms of distribution, 25.7% of the providers were in Jefferson County, and 15.5% in Fayette County, which means that over 40% of the dentists are in 2% of the KY counties. Further analysis of the dentist to population ratio will be provided at the poster presentation.
Conclusions: Identifying changes in the oral health workforce over 18 years would allow assessment of whether accessibility to services is keeping up with population increase. It will identify the changing regions and provide insights on dental deserts and areas that should be considered for future public health planning.

Supported by: None

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Undergraduate Student
Community Research,Health Equity Research,Scholarship of Teaching & Learning

Presentation 184

Abstract Title: **Diet-Related Chronic Health Conditions and Oral Health Status in Kentuckians**

Author(s): Sophia Wildermuth, Marcia Rojas Ramirez, DDS, MS, MPH and Angela Grubbs, DNP, APRN

Abstract: Background and Aims: The consumption of an unhealthy diet increases the risk of serious health issues like hypertension (HTN), diabetes mellitus (DM), hyperlipidemia (HLD), and dental caries. There is also evidence that suggests that nutrition-related conditions are linked to socioeconomic status (SES). This study aims to test the association between HTN, DM, and HLD with SES and the prevalence of dental caries among patients who visited the College of Dentistry.
Methods: A retrospective chart review was conducted on X patients from visits to the College of Dentistry between June 2021 and September 2022 to identify the prevalence of dental caries with HTN, DM, and/or HLD. Sex, age, race, ethnicity, medical conditions, and area deprivation index (ADI) were also considered.
Results: Data analysis is ongoing, and results will be available at the time of presentation, including the association between nutrition-related conditions and ADI, and the association between nutrition-related conditions and prevalence of dental caries.
Conclusions: Conclusions will be drawn from the results once available.

Supported by: This work is supported by the United States Department of Agriculture National Institute of Food and Agriculture, grant no. 2020-67037-30669/project accession no. 1021699.

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Basic Research,Community Research

Presentation 185

Abstract Title:	**Effect of Sef-Etching Adhesives on Caries-Affected Primary Dentin Treated With Glutaraldehyde or Silver Diamine Fluoride**
Author(s):	M. T. C. Wolowski, Department of Dentistry, State University of Maringá - Paraná, Brazil; N. N. O. Rodrigues, State University of Maringá - Paraná, Brazil; C. A. de Oliveira, UNESP - Araraquara, São Paulo, Brazil; M. S. Gibin, Departament of Physics of State University of Maringá - Paraná, Brazil; L. V. C. Hoshino, Departament of Physics of State University of Maringá - Paraná, Brazil; J. H. Costa, UNESP - Araraquara, São Paulo, Brazil; M. L. Baesso, Departament of Physics of State University of Maringá - Paraná, Brazil; D. L. S. Scheffel, Department of Oral Health Science, U of Kentucky.

Abstract: The performance of adhesive systems and the overall quality and durability of adhesive restorations can be directly influenced by modifications resulting from dentin surface treatments. This study assessed the quality and stability of adhesive bonds established using self-etching adhesives on caries-affected primary dentin (CAD) treated with glutaraldehyde (GA) or silver diamine fluoride (SDF). Forty-two primary molars underwent a microbiological caries-inducing protocol and divided into 6 groups based on the adhesive system (Clearfil SE - CL or FL Bond II - FL) and pretreatment (water, GA or SDF) applied on CAD. Infrared spectroscopy was employed to analyze surface modifications in one tooth from each group. Subsequently, the crowns were restored with resin composite (n = 36) and then sectioned into beams and slices. Microtensile testing, Raman spectroscopy, and scanning electron microscopy (SEM) were conducted on the beams after 24 hours and 6 months of storage. Micro-Raman spectroscopy was used to determine the diffusion zone thickness (DZ) in the slices during each period. Data analysis involved ANOVA and Tukey or Kruskal-Wallis and Dunn tests ($\alpha = 0.05\%$). Results indicate that SDF led to an immediate reduction in bond strength for both adhesives. Control groups exhibited a decrease in bond strength after 6 months in artificial saliva. GA increased the immediate DZ for FL, while SDF had the opposite effect on CL. Additionally, GA decreased the DZ for FL at 6 months. Adhesive failures with cohesive dentin fractures were predominantly observed within control groups.

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Other

Basic Research

Presentation 186

Abstract Title:	**Remineralization of MIH-affected teeth treated with glutaraldehyde and a biphasic calcium phosphate solution**
Author(s):	N.N. Rodrigues, Department of Oral Health Science, Division of Pediatric Dentistry, University of Kentucky/ department of dentist, State University of Maringá; M. T. C. Wolowski, Department of dentist, State University of Maringá. M. Restrepo, J.D. Mejía, Departament of Pediatric Dentistry. CES University. Medellin, Colombia; M.L. Baesso, M. Souza, Department of Physics, State University of Maringá; R. H. Scheffel, Department of Oral Health Practice, Division of Prosthodontics, University of Kentucky; D. S. Scheffel, Department of Oral Health Science, Division of Pediatric Dentistry, University of Kentucky

Abstract: This study aimed to evaluate the effect of glutaraldehyde and a biphasic calcium phosphate ceramic solution on the mineral content of enamel and dentin of permanent molars affected by Molar Incisor Hypomineralization (MIH). Specimens of MIH-affected enamel and dentin were obtained from permanent molars using a metallographic cutter. The specimens were divided into 4 groups based on the treatment applied (n=3): Deionized water (control), 5% Glutaraldehyde (GA), Biphasic Calcium Phosphate (BCP) solution, and GA+ BCP. Each specimen was treated for 1 min and then rinsed for 10 seconds with water. Physicochemical changes on the specimens surfaces were assessed by Raman spectroscopy before (baseline), immediately after the treatments, and after 20 days in artificial saliva. Data were analyzed by ANOVA and Tukey tests (α=0.05%). The enamel and dentin specimens treated with GA+HAp showed significant higher mineral content after 20 days compared to baseline data. The treatment with GA followed by the application of BCP was able to remineralize MIH-affected teeth.

Supported by: None

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Other

Basic Research

19th Annual CCTS Spring Conference
Tuesday, April 9, 2024 Central Bank Center

College of Dentistry Research Day

Presentation 187

Abstract Title:	**Interdisciplinary Approach to Treat a Partially Edentulous Patient**
Author(s):	Caitlin Beach (D3), Collage of Dentistry, Student Clinic, University of Kentucky; Mohamed Adel (MS PhD), Collage of Dentistry, Division of Orthodontics, University of Kentucky; G. Thomas Kluemper (DMD MS), Ashely Mencarelli (DMD MS), Collage of Dentistry, Division of Orthodontics, University of Kentucky; Sierra Nunn, (DMD), Collage of Dentistry, Comprehensive care University of Kentucky

Abstract: Adult patients may present with a complex dental history that might compromise the esthetics and the function of the dentition. Comprehensive treatment planning by a interdisciplinary approach is a prerequisite for a successful treatment outcome. In this poster, we are going to review the role of the orthodontist, general dentist and prosthodontist in the restoration of partially edentulous patients. Furthermore, we will illustrate a case to show the value of collaborative efforts in a multidisciplinary team approach. Although there may be initial reluctance by some patients to seek multiple specialty consultations, the rewards are great for the patient and the dentists who subscribe to this treatment philosophy.

Supported by: None

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Clinical Research

Presentation 188

Abstract Title:	**Guideline of techniques for the reduction of scattering using CBCT treatment in dental implant surgery.**
Author(s):	A. M. Kutkut, Department of Oral Health Practices, University of Kentucky

Abstract: The success of implant treatment is dependent on the accuracy of the diagnosis and planning. The variation in CBCT (Cone beam computed tomography) performances related to radiation doses and image quality emphasizes the need for more research to establish proper solutions for three-dimensional imaging while focusing on artifact reduction caused by motion and metal. This poster will lay out techniques and solutions for the reduction of scattering in CBCT in a concise guideline. Some of the techniques include using trays with radiopaque markers, a chairside segmented occlusal wing-like radiographic guide, and empirical scatter correction.

Supported by: None

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Graduate Student
Translational Research/Science

College of Dentistry Research Day

Presentation 189

Abstract Title:	**Interdisciplinary Care Model for Dental Patients**
Author(s):	S. Beiring, College of Social Work, U of Kentucky; A. Grubbs, College of Nursing, U of Kentucky; C. Brown, College of Dentistry, U of Kentucky; D. DeVito, College of Dentistry, U of Kentucky.

Abstract: Background: To address the health and unmet social needs of patients, multiple colleges have partnered together to provide care at the Diagnosis, Wellness, and Prevention Clinic in the College of Dentistry. A dentist, nurse practitioner, registered dietician, and social worker collaborate to provide holistic care to patients within an appointment.
Methods: The clinic provides an assessment of dental patients' overall and oral health needs from a multidisciplinary perspective, including nursing, dentistry, dietetics, and social work at one visit. Students from multiple disciplines are involved in the care of the patient and interprofessional education.
Results: Data collection is ongoing, and results will be available at the time of presentation, including an evaluation of clinic processes and systems as well as data on patient demographics and health conditions to inform the implementation of interventions aimed at addressing adverse social determinants of health (SDOH) and facilitating the integration of care.
Implications: The model can be used in multiple settings to improve access to care and address the health and social needs of an individual. There is the potential to add other professionals to enhance and improve interprofessional education and collaborative practice.

Supported by: None

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Presentation 190

Abstract Title: **Characterizing Oral Health Status of Individuals Taking Buprenorphine**

Author(s): Robert Payne, Craig S. Miller, DMD, MS, Marcia V. Rojas-Ramirez, DDS, MS, MPH

Abstract: Introduction: Opioid use disorder (OUD) is associated with chronic use of opioids, significant distress and diminished quality of life impairment. Buprenorphine (BUP), taken sublingually, is a FDA-approved treatment for OUD. Approximately 1.7 million Americans reported using BUP in 2021. However, in 2022, the FDA released a warning indicating that adults using this medication may experience significant deterioration of oral health. Aims: This ongoing research project aims to: 1) evaluate the oral health status (carious, missing, filled teeth) of 25 individuals (12 recruited currently) taking BUP and 2) obtain saliva samples to measure salivary flow, pH, and buffer capacity.

Methods: Patients ages 18-65 currently taking BUP for management of OUD were recruited and enrolled from academic dental clinics in Lexington, KY starting January 2023. Participants underwent an oral examination where teeth were categorized as healthy, decayed (D), filled (F), or missing (M). Unstimulated saliva samples were then collected for one minute to quantify flow rate and used to measure the saliva pH/buffer capacity using the GC Saliva-Check Buffer Kit. Salivary pH is defined as normal= 6.7+, moderately acidic= 6.0-6.6, very acidic= 5.0-5.8; and saliva buffer capacity as: normal= 10-12, low= 6-9, very low= 0-5. Demographic information and medical history were also collected.

Results: The mean age of the 12 patients was 36.5 of which 41.7% were female. The mean DMF-T index was 27.8. Mean unstimulated saliva flow was 0.78 mL/min (standard deviation=0.48 mL/min). Salivary pH was moderately acidic or very acidic for 75% of the sample. Salivary buffer capacity was low or very low for 58% of the sample.

Conclusions: These findings indicate that individuals taking BUP for OUD have a high caries prevalence and experience significant biologic risk factors for the development and progression of oral disease.

Supported by: Funding from the Alvin Morris Endowment Professorship awarded to Dr. Craig Miller and the 2022 University of Kentucky College of Dentistry DMD Student Fellowship awarded to Robert Payne. Funding from the Office of Academic & Student Affairs was also provided to support presentation costs.

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Presentation 191

Abstract Title:	**CBCT Metal Artifact Effect on Using Guided Dental Implant Surgery, a Case Report.**
Author(s):	Samuel R Conti III, College of Dentistry, U of Kentucky; Ahmad Kutkut, DDS, MS, PhD, Department of Oral Health Practice, College of Dentistry, U of Kentucky

Abstract: There are a variety of metallic restorative materials used in dentistry. However, the scatters from the X-ray radiation create artifacts and distortion of the radiographic images. Therefore, cone-beam computed tomography (CBCT) is becoming increasingly popular in the dental field for providing high-resolution 3D images. There is a multitude of benefits to using CBCT over traditional 2D radiology. For one, the radiation dose is significantly lower in CBCT scans than in radiology. Furthermore, the resulting CBCT images are ideal for lesion or fracture detection in the tooth. This correlates to improved accuracy in surgeries like guided implant placement. Unfortunately, CBCT scans often result in artifacts or visual inaccuracies in the 3D images caused by dental materials like metallic crowns, posts, or fillings in the oral cavity.
This case report aims to present a fully digital workflow to overcome the effect of metallic scatters on CBCT for accurate guided implant placement surgery.

Supported by: None

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Presentation 192

Abstract Title:	**Evaluation of reproducibility and reliability of 3D soft tissue analysis using 3D stereophotogrammetry**
Author(s):	Jooyong Cho, Victoria Crane, College of Dentistry, University of Kentucky; Linzie Goble, University of Kentucky; Mohamed Adel, Katie Jo Hunt, James K.Hartsfield, Cynthia Beeman, Department of Orthodontics, College of Dentistry, University of Kentucky; Hugo Reyes-Centeno Department of Anthropology, University of Kentucky; Lina Sharab, Department of Orthodontics, College of Dentistry, University of Kentucky

Abstract: In 3D facial images the bony structures are neither available nor palpable, therefore, the bone-related landmarks, need to be redefined. The purpose of this study was to determine the reproducibility and reliability of 7 bilateral facial soft tissue landmarks used in asymmetry evaluation, with the use of 3D stereophotogrammetric images. To assess intra-rater reliability, Observer 1 re-identified landmarks and calculated the asymmetry indices for 20 images at 2-week intervals. To evaluate the inter-rater reliability between the two observers, landmarks were identified by each observer independently for all the subjects, and asymmetry indices derived from the x,y, and z coordinates of the 7 bilateral facial landmarks were calculated. Using the intraclass correlation coefficient (ICC) statistics, the degree of agreement between asymmetry indices was assessed for both intra and inter-rater reliability and reproducibility. For intrarater reliability, ICC values ranged from moderate to excellent. Regarding interrater reliability, the ICC ranged from moderate to excellent as well. In conclusion, the method used to derive asymmetry indices from the 3D coordinates demonstrated reliability not only within the same rater but also when assessed by different raters.

Supported by: None

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Presentation 193

Abstract Title: **Early and Late Effects of P. gingivalis on Microbial Overturn**

Author(s): V. Tubero Euzebio Alves, Center for Oral Health Research, College of Dentistry, U of Kentucky, Lexington, KY; R. Danaher, Center for Oral Health Research, College of Dentistry, U of Kentucky, Lexington, KY; S. Kirakodu, Center for Oral Health Research, College of Dentistry, U of Kentucky, Lexington, KY; O. A. Gonzalez, Center for Oral Health Research, College of Dentistry, U of Kentucky, Lexington, KY; Jorge Fr√≠as, College of Dentistry, U of Florida, Gainesville, FL

Abstract: Objective: A shift from a symbiotic to a dysbiotic microbial community characterizes the initiation of periodontal disease. P. gingivalis (Pg) is a periodontopathogen with the ability to induce oral dysbiosis through cooperation with other bacteria and subverting host responses. Nevertheless, the mechanisms involved in Pg-induced oral dysbiosis and whether it occurs early or late after infection remain unclear. The goal of this study was to evaluate in vivo the early and late effects of Pg in oral dysbiosis and its impact on antimicrobial responses. Methods: 48 C57BL/6 mice were split into 4 groups (12 mice, 6 male/6 female each). The Early-effect group was infected with Pg 4x/1week, and the Late-effect group was infected with Pg 4x/every other week/6weeks. Early and late control groups received Sham (CMC) treatment. Plaque samples were taken for oral microbiome analysis (16S sequencing). Gingival expression of antimicrobial protein/peptides (AMPs) evaluated by qRT-PCR. All procedures were approved by the IACUC (#2016-2385) at the University of Kentucky. Results: Significant differences in β- (P≤0.0003) and α-diversity (P=0.0006) were found early but not late after Pg infection. Early Pg infection decreased Firmicutes (Streptococcus, Staphylococcus) and enriched Proteobacteria, Fusobacteria, and Veillonella species (Aggregatibacter, Actinomyces). Significant downregulation of AMPs was observed early and late after Pg infection. Conclusion: The main effect of Pg in oral dysbiosis seems to be fast and early after infection without significant further effect on this key aspect in the pathogenesis of periodontitis. Rapid downregulation of classical innate epithelial AMPs could be associated with early Pg-induced oral dysbiosis.

Supported by: NICDR - R01 DE029498

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Staff
Basic Research

Presentation 194

Abstract Title:	**Phospholipase A2-IIA is associated with oral dysbiosis and bone loss**
Author(s):	R. Danaher, Center for Oral Health Research, U of Kentucky; V. Tubero Euzebio Alves, Center for Oral Health Research, U of Kentucky; S. Kirakodu, Center for Oral Health Research, U of Kentucky; A. Desai, Division of Periodontics, U of Kentucky; D. Bellamy, Center for Oral Health Research, U of Kentucky; R. Arce, Department of Periodontics and Oral Hygiene, The University of Texas Health Science Center at Houston, Houston, TX; J. Frias, U of Florida, Gainesville, FL; O. A. Gonzalez, Center for Oral Health Research, U of Kentucky

Abstract: Objective: Antimicrobial proteins (AMPs) are endogenous innate components that play an important role in shaping and maintaining homeostatic interactions between the microbiome and host mucosal surfaces. Phospholipase A2 group IIA (PLA2-IIA) is an AMP with bactericidal activity. P. gingivalis enhances bactericidal activity of human oral epithelial cells through upregulation of PLA2-IIA and gingival PLA2-IIA expression was elevated during initiation and progression of periodontitis in non-human primates. Whether expression of PLA2-IIA could lead to oral dysbiosis and periodontitis remain unknown.

Methods: Transgenic mice overexpressing human PLA2-IIA (Tg-hPLA2-IIA) and wild-type (WT) littermates were co-caged. Gingival expression of hPLA2-IIA was determined by ELISA and immunofluorescence. Oral swabs, gingival tissues, and hemimaxillae were evaluated using 16s sequencing, RT-PCR, Luminex, and micro-CT to determine oral microbiome, gene expression changes, cytokine/chemokine levels, and alveolar bone loss (ABL). Bactericidal properties of gingival lysates were evaluated through their effect on susceptible bacteria.

Results: Gingival hPLA2-IIA levels were between 2,000-2500 pg/µg total protein. Beta diversity was significantly decreased in the oral microbiome ($p=0.0011$). Overexpression of hPLA2-IIA was associated with decrease in firmicutes and fusobacteria species and increase in proteobacteria species. Gingival tissues from Tg-hPLA2-IIA showed increased bactericidal activity. Expression of classical AMPs and cytokines/chemokines was similar in Tg-hPLA2-IIA and WT gingival tissues. ABL was greater in Tg-hPLA2-IIA compared to WT mice ($p \leq 0.01$).

Conclusion: Increased hPLA2-IIA expression is associated with oral dysbiosis and periodontal disease. hPLA2-IIA could have a direct and indirect antimicrobial effect on specific oral microbiome species and direct effect in alveolar bone loss regardless of inflammation.

Supported by: NIH/NIDCR award: DE029498

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Basic Research

Presentation 195

Abstract Title:	**The role of microbiome and inflammatory markers profiles on palatal wound healing**
Author(s):	M. P. Santamaria, Department of Oral Health Practice, U of Kentucky; I.F.M. Santamaria, Department of Oral Health Practice, U of Kentucky; O Gonzalez, Department of Oral Health Practice, U of Kentucky; R.C.V. Casarin, Department of Periodontics, U of Campinas, Brazil; L. M. Shaddox, Department of Oral Health Practice, U of Kentucky; M. M. V. Miguel, Department of Oral Health Practice, U of Kentucky;

Abstract: The clinical outcome of surgical procedures depends on tissue repair. Many factors can influence the healing process. More recently, host inflammatory response, the microbiome, and the interplay between them have been investigated. This study aimed to evaluate the microbiome and biomarkers profiles in patients who had either desired or undesired healing of wounds in the palatal mucosa.
Seventeen patients who underwent a free gingival graft procedure were included. The palatal wounds were evaluated. Wound closure and epithelization were assessed clinically. Palatal wound biofilm was collected before the surgical procedure and 3, 7, and, 30 days postoperatively. The wound inflammatory exudate was sampled at days 3 and 7. Fourteen days after treatment, patients were classified into two groups according to epithelization rate assessment: (1) Undesired Healing (UH) and (2) Desired Healing (DH).
The DH group displayed higher alpha diversity in the early days when compared to the baseline. In addition, bacterium composition in DH showed a better balance between health and pathogens over time. The UH microbiome was characterized by microorganisms correlated with epithelium invasion/cytotoxicity, virulence factor upregulation, and oral diseases such as aphthous stomatitis. Rothia aeria and Fretibacterium fastidiosum could be predictors for the UH. IL-6, MCP-1, and MIP-1 presented an increase in UH over time while TIMP-1, IL-1β, and MIP-1a decreased in DH. At day 3, MMP-2 and MIP-1α showed greater concentration on DH whilst MCP-1 decreased at 7 days.
Distinguished microbiome/inflammatory profiles were observed in DH and UH, which can be key factors during palatal mucosa healing.

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Presentation 196

Abstract Title: **Clinical Recommendations for Dental Implant Rehabilitation for Bruxers**

Author(s): A. Kutkut, Division of Prosthodontics, Department of OHP, UKCD, Lexington KY

Abstract: This presentation will translate evidence-based data on using dental implants for treating bruxers to clinical recommendations for treatment planning. Utilizing advanced digital technology in the treatment course of the full mouth implant rehabilitation of a 65-year-old female with a history of Bruxism. The patient's oral condition showed dentition with severe occlusal wear, extensive dental work, and missing teeth replaced with bridges and implants. The existing dental work was failing due to recurrent caries and mechanical failure of long-span bridges. The unique aspect of the treatment presented in this report is utilizing advanced digital technology to manage existing osseointegrated implants of different systems with different platform designs, which adds to the treatment's complexity. The existing implants were incorporated into the planned treatment, and other implants were added to support maxillary zirconia and mandibular hybrid full-arch prostheses. After two years of function, extensive wear was evident on the milled acrylic, even though an occlusal guard was used. New acrylic teeth were processed using the same milled titanium bar of the mandibular hybrid prosthesis, and the occlusal surfaces of acrylic teeth were protected with gold onlays. The patient is seen regularly for maintenance every 6 months with no further complications. Careful evaluation, planning and treatment execution are paramount in managing patients with a history of Bruxism. Patients should be prepared and informed about possible mechanical failure and seen regularly for maintenance.

Supported by: None

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College of Nursing Scholarship Showcase

Presentation 197

Abstract Title:	**Nutritional Aid and Resource Mapping: Using GIS to Assess and Catalog Charitable Food Programs in Lexington, Kentucky**
Author(s):	O. Brown, College of Nursing, U of Kentucky

Abstract: Kentucky has a higher percentage of food insecure households holds (14.7%) when compared to the national average (12.3%). In up to 17 of the state's counties, it is estimated that 1 in 5 people reside in food insecure households. (KACo, 2020) Charitable Food Programs (CFPs) provide supplemental nutritional assistance to the many populations in Kentucky and across the country. Program information is often disseminated through community organizations/stakeholders. A challenge faced by CFPs is the management and dissemination of program information to stakeholders and community members. Methods for collection and distribution were segmented into four phases: Assessment, Analysis, Categorization, and Construction. Using GIS, eligible Charitable Food Programs were plotted to the Lexington-Fayette County Nutritional Aid and Resource Map (N.A.R.M). A Desktop Application with mobile compatibility and a series of static resource guides structured in the form of pamphlets, resource cards, and maps were also developed using the NARM. The Lexington-Fayette County NARM provides an opportunity to manage and diffuse up-to-date Charitable Food Program information. With the implementation of GIS, data can be stored, managed, and released all through a handful of cross-platform applications that coalesce into a tool for the community and organizations. This work also has the potential to aid in further research to better understand food insecure populations, additional social determinants of health, and also evaluate the means of assistance that currently takes place in the communities around us.

Supported by: None

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College of Nursing Scholarship Showcase

Presentation 198

Abstract Title:	**Charting with Inclusivity: Anatomical Inventories and SOGI Data in the Electronic Health Record**
Author(s):	A.J. Kissinger, College of Nursing, U of Kentucky: A.C. Carney, College of Nursing, U of Kentucky

Abstract: Background: The current landscape of electronic health records (EHRs) reveals a gap in the consistent utilization of anatomical inventories, particularly in the context of gender-affirming care. This poses a barrier to providing optimal care for gender diverse patients in a wide-range of health settings. Anatomical inventories, when integrated into EHRs, have the potential to revolutionize healthcare delivery by fostering more inclusive and patient-centered practices.
Purpose: This study aims to address the lack of consistent usage of anatomical inventories in EHRs by enhancing the knowledge and confidence of nursing professionals (RNs, APRNs). The primary purpose is to empower healthcare providers with the skills to effectively utilize anatomical inventories as a screening tool for gender-affirming care. By doing so, the study aims to improve communication within EHRs, ultimately leading to better health outcomes for gender diverse patients.
Methods: The study employs a retrospective post-survey design, utilizing an online interactive educational module as the intervention. The module focuses on the importance and methods of taking an anatomical inventory, providing participants with the practical skill of integrating this screening tool into practice. Participants are practicing nurses, APRNs, and nurses enrolled in in APRN training programs.
Results: While the investigation is ongoing, the anticipation is that the educational intervention will result in improved knowledge and confidence among health professionals in utilizing anatomical inventories within EHRs. The study's ultimate goal is to enhance communication in EHRs for gender diverse patients, creating a more inclusive healthcare environment and improving screening opportunities, consequently contributing to better health outcomes.

Supported by: None

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College of Nursing Scholarship Showcase

Presentation 199

Abstract Title:	**The Role of Nurses in Addressing the Financial Toxicity of Cancer Patients and Caregivers: A Literature Review**
Author(s):	S. Bonilla; M. Caldwell; H. Fariduddin; E. Ruschman; K. Brown; J. Edward, PhD, RN, CHPE, College of Nursing, U of Kentucky

Abstract: Growing trends in cancer costs present barriers to obtaining high-quality care, leaving patients and survivors vulnerable to the physical and psychological toll of financial toxicity (FT). This often leads to unfavorable healthcare outcomes that need to be addressed at the bedside, requiring nurses to be involved. However, not much is known about the role of nurses in identifying and addressing FT of cancer patients and caregivers. The objective of this study was to conduct a systematic review of literature to help identify the role of nurses in addressing FT in cancer patients and caregivers with a specific focus on evidence-based interventions. It was hypothesized that programs directly involving nurses in FT interventions would be sparse. Databases PubMed, CINAHL, PsychINFO, and Embase and keywords nurse, nursing, financial toxicity, financial hardship, financial distress, cancer, oncology, neoplasm were used in the initial literature search, which yielded 1825 articles. After applying inclusion and exclusion criteria, the total number of articles used in this systematic literature review was 29. These articles are analyzed using line-by-line and thematic analysis. Major themes that arose were the development of nursing roles (n=9), financial education training for nurses and patient/caregiver resource availability (n=17), proactively screening using standardized tools and initiating financial discussions early (n=24), providers' confidence engaging in cost of care conversations (n=14), financial health literacy and the importance of strategic questioning (n=16), continuation of care throughout cancer treatment (n=12), and multidisciplinary interventions (n=27). As the majority of the articles address the themes of collaboration and screening, it's imperative to create a new standard of care in which financial concerns are prioritized in the screening process and nurses are trained to use financial screening tools to initiate conversations with patients.

Supported by:	Markey STRONG Scholars Program through the ACS IRG Supplement (IRG-22-152-34), United in True Racial Equity Research Priority Area (UNITE)- Markey Cancer Center (MCC) Pilot Funding Mechanism, University of Kentucky College of Nursing

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College of Nursing Scholarship Showcase

Presentation 200

Abstract Title: **A Visual Tool to Improve Nursing Burnout by Improving Sleep.**

Author(s): Jeremy Davis; Mentor Elizabeth Salt

Abstract: Introduction: Nursing burnout has been associated with poor sleep. Sleep was a targeted unaddressed area identified in interviews with key UK Healthcare stakeholders.
Purpose: To develop an infographic to educate nurses on the role of sleep in nursing burnout and on best practices to improve sleep.
Methods: The content included in the newly-develop infographic was identified from a review of the literature (Database: CINAHL and PubMed; Terms: 2019-2023) to identify relevant articles published in the past 5 years. I included information that can realistically be incorporated into anyone's daily routine that will benefit their sleeping patterns. The infographic design was selected to quickly and accurately relay the content that could influence a nurses' sleep practices.
Results: The infographic provided information on the effects of lack of sleep and mechanisms to improve one's circadian rhythm, bedtime routine and the benefits of a sleep-conducive environment and healthy diet and exercise habits. The goal number of hours for ideal sleep was also communicated. This infographic will be presented to the UK Healthcare key stakeholders who identified this gap in their approach to address burnout for qualitative feedback and potential revisions.
Discussion: This visual tool provides nurses with the information to change sleep habits. As part of a multipronged approach, this tool could impact nursing burnout.

Supported by: Nursing Practice Internship

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College of Nursing Scholarship Showcase

Presentation 201

Abstract Title:	**Exploring Facilitators and Barriers of Telehealth Utilization in Community Centers among Rural Older Adults**
Author(s):	B. Fischer, U of Kentucky College of Nursing; E. Salt, PhD, U of Kentucky College of Nursing; Y. Jackson, MS, RD, LD, Sanders Brown Center on Aging; Celeste Roberts, MS, OTR/L, Sanders Brown Center on Aging; R. Early, U of Kentucky Healthcare; R. Sprang, MBA, U of Kentucky Healthcare; E. Rhodus, PhD, MS, OTR/L, Sanders Brown Center on Aging

Abstract: Background: Healthcare access is a substantial shortcoming in rural communities across Kentucky. Transportation and geographic isolation contribute to challenges in accessing healthcare among these communities. Telehealth stations in community centers increases opportunity to expand healthcare access to remote patient populations. The objective of this project was to assess facilitators, barriers, and perceptions of telehealth use for older adults attending rural community centers.
Methods: Following an implementation-based clinical trial (NCT05552638) which employed the Exploration, Preparation, Implementation, Sustainment (EPIS) model, this study conducted interviews with multi-level stakeholders, including rural, community-residing seniors, senior center administrators, and telehealth administrators to assess factors that contributed to or deterred use of telehealth for healthcare access when provided in community centers. Data were analyzed using descriptive thematic analysis. Coding was conducted using HyperResearch Software.
Results: Multi-level stakeholders of three rural centers participated as representatives of a combine population of >2000 older adults residing in rural communities. In-depth interviews allowed for rich data collection. Emergent themes demonstrate preference for in-person care, concerns for safety and/or trust in online healthcare use, and identification of outreach for mechanisms for telehealth education.
Discussion: Exploration of facilitators, barriers, and perceptions of telehealth use among older adults in rural communities provides key considerations when developing approaches to increase healthcare access across Kentucky. Findings of this study provide a road map for future implementation strategies to improve acceptance and utilization of telehealth services. Continued research is needed to explore health beliefs of healthcare access mechanisms, as well as innovations to address this critical issue.

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

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College of Nursing Scholarship Showcase

Presentation 202

Abstract Title:	**Title: The Impact of Familism and Other Social Determinants of Health on Intention to Breastfeed in Latinx Mothers**
Author(s):	J. Knight, College of Nursing, U of Kentucky; A. K. Chamberlain, BSN, RN, IBCLC, CCCE, Department of OBGYN, College of Medicine, U of Kentucky; A. M. Linares, DNS, RN, IBCLC, FAAN, FILCA, Associate Professor of Nursing, U of Kentucky

Abstract: Background: Children who exclusively breastfeed (EBF) for up to 6 months after birth have a decreased risk for diseases common in infants. Latinx children have an increased risk of contracting diseases attributable to deficient breastfeeding. Breastfeeding intention is one of the strongest modifiable factors associated with optimal breastfeeding. The stronger the intention to breastfeed during gestation, the more likely the mother is to EBF for a longer duration.
Aims: This study aimed to measure intention to breastfeed among immigrant, first-generation Latinx mothers in Kentucky, and to explore its association with Familism and some social determinants of health (SDOH).
Results: A sample of N=60 pregnant women self-identified Latinx were recruited in an outpatient clinic in Central KY. Infant Feeding Intentions Scale, Spanish version (IFI), was used to assess women's desired infant feeding options and applied after 30 weeks of gestational age (GA). The mean IFI score was 10.17 (range 0-16). Intention to breastfeed was negatively associated with Familism ($p<0.05$). Familism was also negatively associated with acculturation and level of education ($p<0.05$). Women who recently immigrated to the US report higher food insecurity ($p=0.01$).
Discussion: Familismo, a Latinx value associated with familial well-being that affects acculturation and health, was associated with reduced intention to EBF. An increased access to formula, which is not common in Latin American countries as in the United States, was identified by Latinx mothers as a desired way to feed their babies. The data from this study could be incorporated into interventions to promote EBF among Latinx women.

Supported by: UNITED RPA

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19th Annual CCTS Spring Conference
Tuesday, April 9, 2024 Central Bank Center

College of Nursing Scholarship Showcase

Presentation 203

Abstract Title: **A Healthcare Provider Educational Module on Enhanced Recovery After Surgery Protocols**

Author(s): J. Pearson, Student Nurse; E. Salt, College of Nursing, U of Kentucky

Abstract: Introduction: Aortic valve replacement surgery is a common procedure used to treat aortic stenosis. Approximately 85,000 aortic valve replacements are conducted yearly in the US. Enhanced Recovery After Surgery (ERAS) Protocols have evidence to support their effectiveness at improving important post-surgical health outcomes such as hospitalized days. Yet, the policies to support consistent and effective implementation of ERAS are lacking likely as a result of lack of healthcare provider education.
Purpose: To develop an educational module for healthcare providers on the implementation of ERAS in the healthcare setting.
Methods: Following a review of the literature using the Cumulated Index to Nursing and Allied Health Literature (CINAHL) database and terms "transcatheter aortic valve replacement", "length of stay", and "aortic valve replacement" where the importance of ERAS during the postoperative period was identified. Key stakeholders at regional hospitals were contacted to solicit feedback on current policies. With the identified knowledge gap, the results from the review of the literature were used to develop the educational module.
Results: The education module includes information on the pathology of aortic valve stenosis, and the surgical treatment option of aortic valve replacement. The module then defines ERAS and describes the required components. The best practices for implementation of ERAS is provided.
Discussion: ERAS are an evidence-based approach to improve health outcomes for persons who have undergone an aortic valve replacement. This educational module has the potential to improve EARS implementation and in turn, reduce the hospitalized days of patients.

Supported by: None

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Clinical Research

College of Nursing Scholarship Showcase

Presentation 204

Abstract Title:	**Intersectional Pain: A Retrospective Chart Review of Bilateral Mastectomy in Cisgender and Gender Diverse Patients**
Author(s):	N. Reynolds, College of Nursing, U of Kentucky; A. Carney, College of Nursing, U of Kentucky; J. Higgins, College of Nursing, U of Kentucky

Abstract: Background: Within the existing literature, there is a gap in understanding how intersectional gender diverse (transgender, non-binary) patients navigate pain post-bilateral mastectomy surgery in comparison to cisgender patients. The purpose of this chart review was to compare post-operative pain management practices in patients undergoing bilateral mastectomy with different gender identities.
Methods: This study was a retrospective chart review conducted with the assistance of CCTS comparing pain assessment and opioid medications received in gender diverse and cisgender patients who underwent a bilateral mastectomy in the last five years. Demographic and clinical variables were collected from the medical record to analyze the patients' postoperative status. Descriptive statistics, Chi-square tests and binary logistic regressions were calculated for the full sample to determine the relationship between demographics, pain assessment, and opioids received.
Results: This study found that gender diverse patients were predicted to have 32% fewer documented pain assessments than cis-gender female patients. Patients who were 25-34 years old and 55-64 years old were predicted to have fewer documented pain assessments overall. Additionally, non-white patients were predicted to have 1.17 more pain assessments than white patients.
Discussion: This study adds to the currently limited literature regarding gender diverse and cisgender patients in the post-op period. In addition to offering a perspective of the current treatment of non-cisgender patients in healthcare, this study also unintentionally sheds light on health disparities that exist across age and race.

Supported by:	The project described was supported by the NIH National Center for Advancing Translational Sciences through grant number UL1TR001998. The content is solely the responsibility of the authors and does not necessarily represent the official views of the NIH.

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College of Nursing Scholarship Showcase

Presentation 205

Abstract Title:	**Mandatory Reporting of Child Abuse and Neglect: Bridging the Gap Between Knowledge and Practice**
Author(s):	S. Patel, College of Nursing, U of Kentucky; E. Schwartz, College of Nursing, U of Kentucky; M. Taylor, College of Nursing, U of Kentucky; A. Winger, College of Nursing, U of Kentucky

Abstract: Introduction: Kentucky is currently ranked 5th in the nation for child abuse and neglect cases. Incomplete medical record documentation is a significant issue, with at least one-third of medical records for suspected child abuse deemed incomplete. The education provided to health care providers is lacking. Specifically, there is an identified knowledge gap in how or what to report for a case to become "substantiated" by child protective services; this is necessary for a case to be open and investigated.
Purpose: Develop a tool to improve healthcare providers' awareness of state mandatory reporting statutes and facilitate complete reporting of medical injuries sustained and healthcare services received in cases where child maltreatment is suspected using an easily accessible educational tool.
Methods: We will develop an education tool in the form of a badge buddy that is an accessory to UK Healthcare faculty and staff's identification badges. Badge buddies will provide a quick reference for child abuse reporting information. They will display a quick-response (QR) code that includes information on the documentation needed when reporting child abuse cases. A panel of experts has provided feedback on the resources used when developing the badge-buddy.
Results: The preliminary findings of this on- going project will be reported at the April 9th CON showcase. Conclusion: The newly- developed badge buddy has the potential to improve access to the required information needed to report and accurately medically document suspected maltreatment, in turn enhancing the number of cases investigated by CPS to improve child well-being.

Supported by: None

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College of Nursing Scholarship Showcase

Presentation 206

Abstract Title:	**Advantages and Disadvantages of Trial of Labor After Cesarean: Making an Informed Decision**
Author(s):	P. Sutton, College of Nursing, U of Kentucky; O. Donhoff, College of Nursing, U of Kentucky; M. Hand, College of Nursing, U of Kentucky; A. Mahon, College of Nursing, U of Kentucky; A. Scherr, College of Nursing; U of Kentucky

Abstract: Introduction: For expectant mothers, a Trial of Labor After Cesarean (TOLAC) is an available treatment option. A TOLAC is when a mother attempts to deliver her baby vaginally after previously having a C-section. When successful, the procedure is referenced as a Vaginal Birth After Cesarean (VBAC). It is critically important that expectant mothers are educated on this delivery option to facilitate safe and patient-centered deliveries.
Purpose: To develop an infographic to educate patients on the advantages and disadvantages of TOLAC and the criteria which qualifies them to have this kind of delivery.
Methods: We completed a comprehensive review of the literature searching the CINAHL database using the terms TOLAC, VBAC and benefits to identify relevant articles published in the past 10 years. The American College of Gynecology (ACOG) guidelines were a primary source. Content was presented at a 6th grade or below reading level and visually appealing while efficiently relaying information. We plan to evaluate the effectiveness of the infographic by soliciting qualitative feedback from 10 people who recently delivered and/or pregnant persons on readability, ease of comprehension, topic relevance and areas for improvement.
Results: The content on the infographic includes: benefits of TOLAC/VBAC, risks associated with TOLAC/VBAC, criteria that one must meet for TOLAC/VBAC, potential complications of multiple cesarean sections, and a QR code for a tool that can predict the likelihood of a specific person to have a successful TOLAC/VBAC.
Discussion: Our newly developed infographic provides patients with education to inform mothers regarding an important healthcare decision.

Supported by: None

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College of Nursing Scholarship Showcase

Presentation 207

Abstract Title: **Pride in Practice: BSN Students' Commitment to LGBTQ+ Safety**

Author(s): D.P. Widney, College of Nursing, U of Kentucky; A.E. Miller, College of Nursing, U of Kentucky; A.C. Carney, College of Nursing, U of Kentucky

Abstract: Background: The current landscape of Bachelor of Science in Nursing (BSN) programs reveals a gap in the consistent inclusion of LGBTQ+ healthcare education. With limited attention to the unique needs of this patient population, nursing students graduate with insufficient knowledge and confidence in providing culturally sensitive care.
Purpose: This study aims to fill the void in LGBTQ+ healthcare education within BSN programs by implementing a peer-led educational intervention. The primary purpose is to improve the knowledge and confidence of nursing students in delivering care to LGBTQ+ individuals. Recognizing the significance of cultural sensitivity in healthcare, the study seeks to empower students to provide inclusive and competent nursing care to a diverse patient population.
Methods: The study will employ a retrospective pre/post survey design following a seminar-style educational intervention focused on LGBTQ+ health basics. The intervention includes an information session and an opportunity for students to express their commitment to LGBTQ+ patient safety by taking the UKHC "Safe Pledge." The survey captures data on students' baseline and post-intervention knowledge, attitudes, and confidence levels, utilizing a Likert scale for assessment.
Results: While the investigation is ongoing, preliminary expectations suggest a positive impact on students' knowledge, attitudes, and confidence in providing nursing care for LGBTQ+ patients. Anticipated results will be analyzed quantitatively, providing valuable insights into the effectiveness of the intervention and its potential to bridge the educational gap in LGBTQ+ healthcare within BSN nursing programs.

Supported by: None

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College of Nursing Scholarship Showcase

Presentation 208

Abstract Title: **Healthcare Workers and the use of Language Access Services**

Author(s): R. J. Archibald, College of Nursing, U of Kentucky, Lexington, KY

Abstract: Background: Patients with low English proficiency are at an increased risk of poor health outcomes. Language-based inequities in healthcare exist due to lack of interpretation services available, lack of healthcare workers' knowledge of resources, and/or perceptions that these services require too much time or effort. Failing to address barriers with this population leaves them vulnerable in the healthcare setting.
Purpose: The purpose of this project was to educate nurses, providers, and staff on an inpatient unit at a rural hospital of the language interpretation resources available, best practices for implementation, and the importance of their proper use.
Methods: This project used a quasi-experimental pretest-posttest design. The pretest, educational intervention, and posttest were distributed through the employee email listserv. Participants were gathered via a convenience sample. Retrospective and prospective chart reviews were completed to identify non-English speaking patients presenting to the unit and the documentation of interpreter use pre- and post-education.
Results: Pending
Conclusion: TBD

Supported by: None

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College of Nursing Scholarship Showcase

Presentation 209

Abstract Title:	**Evaluating the Effect of Sleep Hygiene Education on Sleep Quality Among First-Year College Students**
Author(s):	C. L. Cunningham, Nursing, U of Kentucky

Abstract: Background: The American Academy of Sleep Medicine recommends college students should get seven to nine hours of sleep each night. Only one-third currently meet this recommendation. Poor sleep negatively affects academic performance, mood, and interpersonal relationships. Sleep hygiene is recommended to improve sleep quality and quantity.
Purpose: The purpose of this DNP project was to determine the effect of implementing a sleep hygiene education intervention in classes intended for first-year college students at the University of Kentucky (UK).
Methods: This quasi-experimental project utilized the Pittsburg Sleep Quality Index (PSQI) to assess participants' sleep before an in-person sleep hygiene education and after implementing an individualized sleep hygiene tip. Follow-up surveys were sent to participants at four and eight weeks.
Results: A total of 51 participants completed the pre-test, and two participants completed the post-test. A majority were 18 years old, female, living on campus, and unemployed. On average, participants took 28 minutes to fall asleep and got 6-7 hours of sleep each night. Ninety-two percent of pre-test scores indicate poor sleep quality.
Conclusions: An overwhelming majority of participants do not get adequate, quality sleep each night, and compared to the national average, first-year UK students experience a higher prevalence of short sleep duration. Sleep hygiene can help improve sleep quality and quantity for this population, but timeliness of implementation and follow-up is essential for better data collection and statistical analysis.

Supported by: None

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College of Nursing Scholarship Showcase

Presentation 210

Abstract Title:	**The Impact of Lung Cancer Screening Education on Knowledge and Screening Rates in a Kentucky Cancer Survivorship Clinic**
Author(s):	A. Isler, College of Nursing, U of Kentucky

Abstract: Background: Lung cancer is a significant problem in Kentucky ranking fourth in the nation in the percentage of adults who currently smoke. Early detection, through lung cancer screening, can prevent untimely deaths. Several barriers exist including lack of awareness and education regarding lung cancer screening. By increasing knowledge, at risk patients can take the necessary steps to decrease incidence of late-stage diagnoses.
Purpose: The purpose of this project was to evaluate knowledge of patients regarding lung cancer screening and referral and screening rates before and after an individual patient educational session.
Methods: This was a quasi-experimental project with a one group pre-test, post-test design. A pre-chart review determined project eligibility. Baseline data was obtained through a pre-survey. After appointment, cancer survivors participated in an individual lung cancer screening educational intervention. Post intervention, change in knowledge, willingness to be screened, referral rates, and screening rates were measured. A retrospective chart review examined rates of screening and chest CT results.
Results: Will be available at time of conference.
Conclusions: Will be available at time of conference.

Supported by: None

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College of Nursing Scholarship Showcase

Presentation 211

Abstract Title: **Empowering Caregivers in the Prevention of Clinical Delirium for Older Adults Boarding in the Emergency Department**

Author(s): D. A. Brewer, College of Nursing, U of Kentucky.

Abstract: Background: Emergency Department (ED) overcrowding is a global healthcare crisis, impacting patient outcomes and resource availability. Older adults held in the ED remain vulnerable to developing acute delirium. Boarding potentiates the risk for worsening health outcomes, which are further compounded by delirium. Scarcity of resources and time constraints delay delirium detection and increase risk for down-stream hospital-acquired complications, higher cost, and prolonged length of stay. Current ED models do not prioritize caregiver partnership or involvement in delirium care.
Purpose: The purpose of this study is to assess the effect of an educational session provided to caregivers present at the bedside pertaining to caregiver knowledge, confidence, and behavior change related to delirium.
Methods: This is a single-center quasi-experimental study with a pretest-posttest design. A nonrandom sample (N=15) of caregivers for older adults (65y+) in the UK HealthCare ED, were provided a 26-question pre and post-intervention survey. Descriptive statistics were used to analyze three outcome variables: knowledge, confidence, and likeliness of behavior change.
Results: Following the educational intervention, a statistically significant change in knowledge, confidence, and likeliness to implement reality orientation and environment familiarity was revealed. Likeliness of implementing sleep-wake cycles was not statistically significant.
Discussion: Delirium education tailored to the caregiver through video format is an effective intervention. It has the potential to improve the caregiver's knowledge and experience, as well as strengthen partnership with healthcare providers. Caregiver interest and participation was a significant barrier. Further studies are needed to understand the impact of caregiver education on patient outcomes.

Supported by: None

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College of Nursing Scholarship Showcase

Presentation 212

Abstract Title: **Reducing Nursing Documentation Burden: Evaluation of an Electronic Health Record Optimization Plan**

Author(s): J.F. Collins, College of Nursing, U of Kentucky

Abstract: Background: University of Kentucky HealthCare implemented a new electronic health record, Epic, in June, 2021 and approximately 2,000 inpatient nurses use this system in the 965 licensed bed facility. Compared to other academic medical centers, UK HealthCare nurses spend more time documenting in the Basic Assessment Flowsheet. Additionally, more time is spent in minutes between observation and documentation leading to nursing dissatisfaction with using Epic.
Purpose: The purpose of this project was to examine the impact of an EHR optimization plan which involved revisions to the Basic Assessment Flowsheet (BAF) on nursing time spent documenting in the EHR and time from observation to documentation.
Methods: Data were collected from the Nursing Efficiency Assessment Tool on documentation time spent in the BAF and time from task completion to documentation in the EHR in August/September 2023 (before BAF revisions) and January/February 2024 (after BAF revisions). Data were also collected using pre and post surveys to assess the perception of nursing surrounding EHR documentation. Revisions were made to the BAF based on staff feedback prior to the post-assessment.
Results: Following BAF revisions, results showed a decrease of 1.6 minutes and a decrease of 27 mouse clicks for each patient assessment documented. More in depth results as well as post survey results are pending.
Discussion: Flowsheet revisions resulted in a decrease in documentation time for nursing staff.
Conclusions: Based on the initial results, moving forward with the next phases of this optimization plan is warranted.

Supported by: None

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19th Annual CCTS Spring Conference
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College of Nursing Scholarship Showcase

Presentation 213

Abstract Title: **Enhancing Communication Among Care Teams Utilizing a Secure Chat Algorithm**

Author(s): K. Hilt, College of Nursing

Abstract: BACKGROUND: Healthcare requires quality multidisciplinary communication for patient care. Secure Chat is a feature within the Epic electronic health record to facilitate communication without violating Health Insurance Portability and Accountability Act (HIPPA). An algorithm to streamline communication utilizing this feature is needed to improve patient care.
PURPOSE: The purpose was to determine, develop, implement, and evaluate a communication protocol between nurses and first call providers to improve the knowledge, attitudes, efficacy, and barriers with communication of nursing staff and providers with efficient messaging through EPIC.
METHODS: A quality improvement Secure Chat algorithm was developed to establish shared goals and outcome measures for communication. An educational session was held, a pre and post survey was conducted to determine knowledge and attitudes of appropriate use of secure chat, and a chart audit of secure chats 1 month before, and after implementation was completed to assess compliance by analyzing specific metrics from secure chat communication.
RESULTS: The pre and post survey demonstrated compliance with the algorithm but none of the results were significant. The attitudes pre and post secure chat algorithm did display registered nurses (RNs) using urgent chat appropriately significantly improved pre (mean=3.3, SD=1.0) and post (mean=4.2, SD=0.4) secure chat algorithm, with a p-value of 0.01.
CONCLUSION: A limitation of the study was that participants did not complete the linked pre and post survey as directed, which caused an inability to evaluate for an individualized comparison. However, the use of a communication algorithm did display improved communication measures.

Supported by: None

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College of Nursing Scholarship Showcase

Presentation 214

Abstract Title: **An Educational Intervention on Provider Knowledge of Hypertension Guidelines**

Author(s): A. C. Oesterritter, College of Nursing, U of Kentucky.

Abstract: Background: While hypertension is the leading preventable risk factor for cardiovascular disease, disease control remains suboptimal. In the U.S., 47% of adults have hypertension, but only 25% are controlled. Despite having quality evidence-based guidelines, many recommendations are not implemented due to clinical inertia, or the tendency to not change therapy when targets aren't met. Research has shown that this can be overcome with educational programs.

Purpose: To provide training on hypertension guidelines and home blood pressure monitoring (HBPM) to overcome clinical inertia and improve patient outcomes related to hypertension. Methods: The study was a quasi-experimental, pre- and post- survey design combined with a quality improvement process. A chart review was performed to determine hypertension control in 2022. A pre-survey of knowledge of latest guidelines and HBPM was given, followed by education and a post-survey. An HBPM handout was then implemented in practice. Finally, two Plan-Do-Study-Act (PDSA) cycles were conducted to seek APRN feedback on the guideline and handout, and tools were provided to help improve utilization.

Results: The number of adults with controlled HTN was previously suboptimal at 15.38%. There was an increase in knowledge scores from pre- to post-survey, although not statistically significant. A chart review performed 60 days post intervention showed _% BP control, showing an improvement post intervention.

Conclusions: While the increase in knowledge scores was not statistically significant, BP control improved post intervention. Implementing the HBPM handout was both simple and cost-effective, highlighting its effectiveness and value in sustaining practice change and improving patient outcomes.

Supported by: The project described was supported by the NIH National Center for Advancing Translational Sciences through grant number UL1TR001998. The content is solely the responsibility of the authors and does not necessarily represent the official views of the NIH.

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19th Annual CCTS Spring Conference
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College of Nursing Scholarship Showcase

Presentation 215

Abstract Title: **An Evaluation of Primary Care Providers' Management for Overweight and Obese Adult Patients with an Elevated BMI**

Author(s): H.L. Olivera, College of Nursing, U of Kentucky

Abstract: BACKGROUND: Obesity is a serious health concern with many consequences. People who struggle with obesity are at greater risk of developing heart disease, type 2 diabetes, some cancers, stroke, and poorer mental health. In 2012, the US Preventative Services Task Force (USPSTF) recommended that clinicians screen all adult patients for obesity and offer intensive counseling and behavioral interventions to promote sustained weight loss for obese adults. Despite this recommendation, many patients do not receive weight-loss counseling from their providers.
PURPOSE: This study aimed to evaluate how providers manage adult patient care when a BMI exceeds 24.9 kg/m2.
OBJECTIVES: The objectives of this study are 1. Collect data for adult patients with a BMI above > 25 kg/m2, evaluate if the provider documented an overweight or obese diagnosis, and make an overweight or obese-related referral or follow-up plan. 2. Identify barriers preventing providers from documenting an overweight or obese diagnosis, providing counseling, and making a referral or follow-up plan. 3. Deliver educational instruction to providers to improve management and documentation of adult patients exceeding > 25 kg/m2 BMI in the primary care setting. 4. Evaluate the provider compliance rate for overweight and obesity management post-educational instruction.
METHODS: The proposed study will use a quasi-experimental design.
Results: To be determined
Conclusion: To be determined

Supported by: UL1TR001998

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College of Nursing Scholarship Showcase

Presentation 216

Abstract Title:	**Evaluation of Nutritional Guidance from Providers for Patients with Diabetes in a Primary Care Setting**
Author(s):	W. S. Rice, College of Nursing, U of Kentucky

Abstract: Background: Adherence to diet is a challenging part of managing type 2 diabetes mellitus (T2DM). Guidelines recommend including a registered dietician and/or a diabetes educator. While this is the gold standard, there are barriers to implementation in primary care. The Starting the Conversation (STC) diet recall tool can aid primary care providers (PCPs) in providing brief nutrition counseling for patients with T2DM.
Purpose: To evaluate the perceptions and practices of PCPs regarding dietary education and documentation for patients with T2DM after provider education and initiation of the STC tool.
Methods: This was a non-randomized, quasi-experimental pretest post-test design, with a sample of three PCPs in one primary care clinic. Provider perceptions and subjective current practices were measured. Chart reviews provided patient A1C and provider utilization data. STC and smart phrase training was provided. The STC tool with printed dietary education was available for use in the clinic for four weeks.
Results: 100% participated (3 providers). Survey results revealed a positive increase in use of the STC tool, smart phrases, and time available to provide counseling. Barriers identified were time, inadequate teaching materials, and inadequate reimbursement. There was a significant increase in dietary counseling documentation (pre=17.3% vs. post=35.4%, p=0.004) and smart phrase usage (pre=2.7% vs post=18.5%, p=<0.001), and a non-significant increase in billing for preventive services (pre=0% vs. Post=3.1%, p=0.090).
Conclusion: When a registered dietician isn't available, the STC tool and smart phrase helps PCPs provide and document quick nutritional counseling. This practice has potential anywhere PCPs treat those with T2DM.

Supported by: None

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College of Nursing Scholarship Showcase

Presentation 217

Abstract Title:	**Evaluating the Outcomes of Two-Week Home Blood Pressure Monitoring in Adults**
Author(s):	M. S. Schuler, Department of Nursing, U of Kentucky; J. Ossege, Department of Nursing, U of Kentucky

Abstract: Background: Approximately 1.28 billion adults worldwide have hypertension (HTN), which greatly increases the risk of disease morbidity and premature death. Home blood pressure monitoring (HBPM) has been shown to increase efficacy of treatment decisions and treatment but is underused in primary care.
Purpose: The purpose of this project is to institute a process of HBPM for hypertensive patients who have an in-office BP >120/80 and to ultimately achieve BP control for those who need it.
Methods: This project utilized a descriptive study design. The setting was CHI Saint Joseph Health Primary Care Clinic. A survey about HBPM was given to three APRNs in the clinic. The PI piloted the HBPM process by identifying adults with a blood pressure >120/80 and providing a HBPM handout that included directions on taking a home BP and a BP log to be completed and returned in two weeks. Demographic data and the BP from the clinic visit were recorded. Statistical significance between BP in clinic and the mean BP from the handout was measured by a t-test. Following BP handout analysis, the PI disseminated findings to the other APRNs in the clinic and taught them the process. Every thirty days for ninety days, a chart review was performed to identify patients with elevated BP and data was collected on whether HBPM education was completed. The PI then refined the process with the APRNs after each thirty-day cycle.
Results: A significant correlation is expected between blood pressure control and HBPM.
Conclusion: TBD.

Supported by: None

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College of Nursing Scholarship Showcase

Presentation 218

Abstract Title:	**Effect of a Community Resiliency Model on Resiliency, Psychological Empowerment, and Well-being on Behavioral Nurses**
Author(s):	L. Smith-Esterle, College of Nursing, U of Kentucky; A. Makowski, College of Nursing, U of Kentucky; D. Hampton, College of Nursing, U of Kentucky, J. Perry, College of Nursing, U of Kentucky; A. Thaxton-Wiggins, College of Nursing, U of Kentucky

Abstract: Background: Resiliency, well-being, and psychological empowerment are associated with improvement in job satisfaction and nurse retention rates. Resiliency is complementary to psychological empowerment and well-being in that it minimizes maladaptive stress reactions using effective coping skills. This results in a healthy adaptation to stress and improves the ability to recover and remain focused under intense circumstances. The Community Resiliency Model (CRM) is a model that can promote emotional regulation, well-being, and create an internal state of balance in response to work-related stressors. Using CRM enables the recognition of changes in thoughts, emotions, sensations, and internal or external stimuli, which can promote resiliency, well-being, and psychological empowerment.
Purpose: This DNP project aimed to evaluate the effect of a CRM workshop on resiliency, psychological empowerment, and well-being of behavioral health nurses.
Methodology: The study design for this DNP project was a quasi-experimental one-group pretest/post-test design. Behavioral health nurses from Eastern State Hospital (ESH), Good Samaritan Hospital (GSH), and Kentucky Children's Hospital (KCH) were invited to participate in the 6-week project. This intervention had three components: 1) a pretest survey sent to participants by email with a link to the pre-recorded educational and training module, 2) a 20-minute CRM training video including instructions for iChill application use, and 3) a post-test survey sent to participants by email during the last week of the project. Pretest and post-test surveys using the Spreitzer Psychological Empowerment Scale, CD-RISC-10, and WHO-5 results were used to assess changes after the intervention.
Results: pending
Conclusion: TBD

Supported by: None

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College of Nursing Scholarship Showcase

Presentation 219

Abstract Title:	**Provider Education Surrounding Universal HCV Screening and Linkage to Care in an Ambulatory Care Setting**
Author(s):	Lauren Guilfoil Clifford RN, BSN, DNP Student, Department of Nursing

Abstract: Background: In the United States, more than 5 million people live with Hepatitis C (HCV). However, 1.8 million go undiagnosed. In 2018, The University of Kentucky implemented a universal screening method using a Best Practice Alert (BPA) in their Emergency Department. This screening and linkage to care method is now being expanded into ambulatory care clinics. Despite the rapid changes, providers and staff in ambulatory clinics were unaware of the HCV BPA, its use, and the impact it can have on HCV rates.
Purpose: The purpose of this project is to expand and evaluate provider and clinical staff knowledge and screening practices surrounding universal opt-out HCV testing and linkage to care in two ambulatory clinics of UK Healthcare.
Methods: A combined pretest, educational video and posttest created on Qualtrics was sent out to UK HealthCare's Turfland and Georgetown clinics.
Results: Results will be provided at time of conference.
Conclusion: Conclusion will be provided at time of conference.

Supported by: None

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College of Nursing Scholarship Showcase

Presentation 220

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

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 is 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: The sampled population consists of 26 participants: 13 males and 13 females who aged between 40 and 65 years old and have not engaged in blood glucose screening for diabetes.
Data Analysis: Analyzing data involved a process of identifying themes. Manual data analysis process was 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 221

Abstract Title:	**Analyzing the effect of nocturnal snacking on sleep quality in adults with metabolic syndrome**
Author(s):	R. Gambill, College of Nursing, U of Kentucky; M. J. Biddle, College of Nursing, U of Kentucky; J. Kang, College of Nursing, U of Kentucky

Abstract: Background: Individuals with metabolic syndrome (MTS) are at risk for developing chronic cardiovascular disease. Nocturnal snacking and poor sleep quality promote metabolic dysregulation, enhancing chronic disease development. The aim of this study was to evaluate the effect of nocturnal snacking on sleep quality in adults with MTS.
Methods: A randomized controlled trial involving a 30-day vegetable consumption intervention in adults with MTS was conducted in central Kentucky. Participants completed the Pittsburgh Sleep Quality Index (PSQI) to evaluate sleep quality and reported dietary patterns in a questionnaire. Independent t-test was performed to compare sleep quality between nocturnal snackers and non-snackers. Pearson's Correlation was conducted to evaluate the relationship between late-night snacking frequency and sleep quality. Linear regression analysis was conducted to predict the effect of late-night snacking frequency on sleep quality.
Results: Ninety-three adults were included in the analysis. Fifty-five percent (51/93) reported nocturnal snacking and 20% (19/51) reported nocturnal snacking 4 to 5 times per week. higher scores indicate worse quality of sleep). Sleep quality and nocturnal snacking had a weak association with a Pearson's correlation of .174 (p=0.112). Independent t-test revealed a significant difference (p=.033) in sleep quality between nocturnal snackers (13.42 ± 3.3) and non-snackers (12 ± 2.8). Linear regression revealed a nonsignificant statistical model (p= .223) with an adjusted R2 of 0.10.
Conclusion: In patients with MTS, nocturnal snacking was associated with lower sleep quality. Frequency of nocturnal snacking did not predict quality of sleep. Additional research exploring relationships between diet and sleep is warranted.

Supported by: None

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College of Nursing Scholarship Showcase

Presentation 222

Abstract Title: **Nutrition in Pediatric Oncology Patients: Protocol for a Mixed Methods Study**

Author(s): N.J. Hawes, College of Nursing, U of Kentucky; G. Mudd-Martin, College of Nursing, U of Kentucky; T. Lennie, College of Nursing, U of Kentucky; L. Williams, College of Nursing, U of Kentucky; C. Sorge, College of Medicine, U of Kentucky

Abstract: Background: Pediatric oncology survivors experience significantly higher rates of obesity than their peers, resulting in secondary comorbidities and decreased quality of life. Unhealthy nutrition habits during pediatric cancer treatment contribute to obesity but there is limited knowledge about factors that influence these nutrition habits.
Purpose: To describe a protocol for a dyadic study to elucidate children's nutritional behaviors and factors that influence nutritional habits during cancer treatment.
Methods: A convergent mixed-methods design will be used. Thirty dyads will be enrolled, that includes children 10-17 years who are currently receiving or have received cancer treatment within 5 years and their primary caregivers. Qualitative interviews to explore influences on nutritional habits developed during treatment will be conducted with each child and caregiver separately, then with the dyad. Quantitative data will be collected using a sociodemographic questionnaire completed by the caregiver and the electronic health record of the child. Data will include caregiver characteristics, household characteristics, the child's cancer history, and the child's body mass index at diagnosis and present. Qualitative data will be analyzed using descriptive content analysis to identify emerging themes. Individual level data will be analyzed to identify themes from children and caregivers. Dyadic interview data will be analyzed to compare the dyadic experiences with each individual. Quantitative data will be integrated to enrich interpretation of themes.
Discussion: This study will provide insight into factors influencing children's nutritional habits that develop during cancer treatment for future nutritional interventions that reduce the risk of developing obesity.

Supported by: None

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College of Nursing Scholarship Showcase

Presentation 223

Abstract Title:	**Satisfaction with #HPVaxTalks Intervention Among Young African American (AA) and Sub-Saharan African Immigrant (SAI)**
Author(s):	A. Wuni, College of Nursing, U of Kentucky; P. Agbozo, College of Nursing, U of Kentucky; A. Adegboyega, College of Nursing, U of Kentucky

Abstract: Background: Human Papillomavirus (HPV) vaccination rates in the United States are suboptimal and remain below the Healthy People 2030 goal of 80%. Barries to HPV vaccine uptake include lack of awareness of HPV vaccine importance, cultural beliefs, and distrust for the healthcare system. Young black adults engage with social media to receive information, making it a tool that can be utilized to disseminate HPV-related education and promotion. We report on participants' satisfaction of a Facebook HPV Vaccination intervention "#HPVvaxTalks" for African American (AA) and Sub-Saharan African Immigrant (SAI) young adults.

Methods: Thirty-five AA and SAI young adults joined #HPVvaxTalks and received 5 posts weekly for 8 weeks. The posts consisted of information about HPV in the form of memes, videos, polls, and infographics. Participants were encouraged to ask questions and to engage with other participants. Participants completed a Likert-type scale (1 [strongly disagree] to 5 [strongly agree]) satisfaction survey including open ended questions to rate satisfaction, acceptability, relevance, and useability of #HPVvaxTalks.

Results: Satisfaction and acceptability were high with mean scores of 4.09 and 4.01 respectively. Posts relevance and useability were high with mean scores of 4.08 and 4.12 respectively. Open ended assessments showed #HPVvaxTalks provided participants with new information about HPV and HPV risk factors and emphasized HPV vaccine safety.

Discussion & Conclusions: Findings confirmed participants' confidence in #HPVvaxTalks format, relevance, and content to engage black young adults in HPV vaccination promotion. We will continue to explore novel social media avenues to deliver interventions to young black adults.

Supported by: Grant #IRG 19-140-31-IRG from the American Cancer Society.

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College of Nursing Scholarship Showcase

Presentation 224

Abstract Title:	**Diet Quality Mediates the Relationship Between Chronic Stress and Inflammation in Patients with Metabolic Syndrome**
Author(s):	J. Kang, College of Nursing, U of Kentucky; D. K. Moser, College of Nursing, U of Kentucky; T. A. Lennie, College of Nursing, U of Kentucky; M. L. Chung, College of Nursing, U of Kentucky; D. T. Thomas, Department of Athletic Training and Clinical Nutrition, U of Kentucky; M. J. Biddle, College of Nursing, U of Kentucky, Lexington, KY

Abstract: Background: Chronic stress is associated with promotion of inflammation and development of metabolic syndrome, as well as with deterioration of diet quality. Inflammation can be modified by changes in dietary intake.
Objective: To test the hypothesis that diet quality mediates the relationship of chronic stress with inflammation in patients with metabolic syndrome.
Methods: Participants with metabolic syndrome (n=73, 62±12 years old, 71% female) completed questionnaires on chronic stress (Perceived Stress Scale-10 [PSS-10]) and diet quality (Healthy Eating Index [HEI-2020]). The PSS-10 was dichotomized. The HEI-2020 score was used as a continuous variable and higher scores indicate better diet quality. Inflammation was assessed using plasma high-sensitivity C-reactive protein (hs-CRP; log-transformed). We used PROCESS in SPSS to test the hypothesis.
Results: Patients in the higher stress group had lower HEI-2020 scores (worse diet quality) than those in the lower stress group (57±13 vs. 64±10, P=.01). Diet quality mediated the relationship between chronic stress and inflammation (indirect effect = .211, 95% bootstrap confidence interval [CI] = .006 to .496). Higher stress was associated with lower diet quality (effect = - 7.152, 95%CI = - 13.168 to - 1.137) that was associated with increased inflammation (effect = - .030, 95%CI = - .052 to - .007).
Conclusions: Our findings show the important role of diet quality in the relationship of chronic stress with inflammation in patients with metabolic syndrome. Healthcare providers should encourage patients with higher stress to improve diet quality, which can decrease inflammation.

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College of Nursing Scholarship Showcase

Presentation 225

Abstract Title: **Use of Thiamine Supplementation in Pregnant Women Diagnosed with Hyperemesis Gravidarum and Wernicke's Encephalopathy**

Author(s): A.F. Clark, College of Nursing, U of Kentucky

Abstract: Nausea/Vomiting affects 80% of pregnant women and develops into Hyperemesis Gravidarum (HG) in up to 3% of pregnancies. This condition may lead to dehydration, malnutrition, and vitamin deficiencies due to frequent vomiting and poor oral intake. Depletion of vitamins like thiamine may result in development of Wernicke's Encephalopathy (WE), a severe neurologic disorder that impacts mortality and morbidity for both mother and fetus. A lack of awareness regarding the relationship of HG and WE may result in delayed treatment/disease management. Supplemental dextrose stimulates increased thiamine use and insulin production, possibly triggering WE when glucose is given without thiamine.

Although thiamine supplementation is recommended prior to dextrose infusions and as a prophylactic treatment of HG/prevention of WE, there is inconsistent thiamine use. Protocols are needed to ensure dextrose is used with prolonged vomiting and poor oral intake only after administering thiamine. Early identification of WE and thiamine supplementation may help women recover from neurologic complications. This study examined hospital-based clinical practices for women diagnosed with HG or WE, with particular focus on thiamine supplementation. Mid-point data reveals inconsistency in thiamine supplementation. This identified the need to establish clinical practice HG and WE guidelines for providers. The Plan-Do-Study-Act framework began with a chart review of women diagnosed with either HG or WE at two tertiary hospitals in Central Kentucky. Data will be used to support creation of a standardized HG protocol with provider education. Finding included: N=167 clients diagnosed with HG or WE; Thiamine prescribed after HG diagnosis- 19.76%/n=33, after WE diagnosis- 100%/n=2; Thiamine dosing- 6 to 500mg (19.76%/n=35); Thiamine supplementation prior to glucose supplementation- 18.5%/n=31; visit to emergency room related to HG- 82.4%/n=137; abnormal electrolytes- 74.85%/n=125.

Supported by: NIH CTSA grant UL1TR001998

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Presentation 226

Abstract Title:	**Influential Factors of UKPA Postgraduate Employment: Primary Care vs. non-Primary Care Specialties**
Author(s):	B. Acosta PA-S, A. Bianchi PA-S, M. Eades PA-S, A. Perry PA-S, M. Wright PA-S, H. Anderson PA-C, L. Woltenberg PhD; Department of Physician Assistant Studies, U of Kentucky, Lexington, KY

Abstract: The physician assistant (PA) profession, originally designed to close the gaps of need for healthcare, in Primary Care specifically, has evolved substantially. Recent data indicates a growing trend among PAs to specialize post-graduation. Proposed factors contributing to this shift include pay differentials, work life balance considerations, and workload variations. By closely examining these factors, our research aims to uncover actionable insights that can address existing gaps in healthcare delivery and enhance the University of Kentucky's program objectives. Conducted through a qualitative design via survey, this study engaged participants meeting inclusion criteria. Recruitment took place through email and a QR code on the UKPA Facebook page, targeting graduates from the University of Kentucky PA program between 2018 and 2022. PA graduates who chose to participate were guided through a short survey with a series of questions addressing their employment decisions since completion of the program, as well as various questions investigating any secondary factors which have influenced their decisions, such as location of origin and employment prior to entering the program. This is a topic that commands exploration; there is minimal existing research on the factors that influence practice decisions of Physician Assistants. By surveying graduates of the UKPA program, this study will help to provide understanding of the patterns of Physician Assistant employment today, and provide focus areas to encourage recruitment and retention in Primary Care. In the future, educational programs and health systems will benefit from the findings of this study to advance the mission of PAs from the beginning: to transform health and wellness by providing accessible, quality, patient-centered healthcare.

Supported by: None

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Presentation 227

Abstract Title:	**Exploring Diversity in UK Healthcare: An In-Depth Analysis of the Impact of Patient-Provider Racial Concordance**
Author(s):	A. Adaniel PA-S, E. Botsford PA-S, P. Chirico PA-S, E. Matthews PA-S, A. Thompson PA-S, A. Trusty PA-S, J Burkhart PA-C; Department of Physician Assistant Studies, U of Kentucky, Morehead, KY

Abstract: Purpose: This investigation of UK Healthcare data aims to evaluate the prevalence of provider diversity by determining the three most diversdepartments/specialties. We will examine the frequency of patient visits in racially concordant relationships and evaluate the diversity of the medical providers with a race-matched patient population. Our goal is to gain a deeper understanding of the impact a diverseprovider population has on patient population in three of UK's disciplines.
Study Design/Data Collection Method: Working with the UK Center for Clinical and Translational Science (CCTS) to identify diverse providers per specialty at UKHealthCare. Patient and provider demographics will be provided by HR to the CCTSdata analysts who are our honest brokers. Specialties are the most diverse by race and ethnicity. We will select diverse disciplines and determine concordance within these specialties. We will create a descriptive profile of the diversity among UK Healthcare clinicians by department. We will examine patient-provider racial concordance in a specific timeframe and frequency of patient appointments racially/ethnicallymatched.
Rationale: Diversity in medical specialties is integral to promote equitable, culturallycompetent, and high-quality healthcare. We are interested in the reduction of healthcare disparities and ensuring that healthcare services are accommodating to diverse populations. This topic is important as current literature is sparse regarding the topic of provider diversity in healthcare and how its patients impact. Increased diversity amongst healthcare providers has the potential to improve patient satisfaction and encourage patient adherence, promote trust and confidence, and lead to better health outcomes for individuals seeking care.

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College of Health Sciences Research Day

Presentation 228

Abstract Title:	**Healthcare Provider Qualities and Behaviors Related to an Inclusive Experiences Among Diverse Patient Populations**
Author(s):	T. Arms PA-S, L. Damron PA-S, D. Eloraby PA-S, K. Chheang PA-S, A. Miles PA-S, T. Gilbert PA-S, V. Valentin DrPH PA-C; Department of Physician Assistant Studies, U of Kentucky, Lexington KY

Abstract: The purpose of this research is to distinguish the characteristics of healthcare providers that contribute to fostering an inclusive environment for their patients. Existing studies indicate that providers' attributes and behaviors play a crucial role in promoting inclusivity, yet there is a lack of research on specific attributes or behaviors that lead to this outcome. Our study's goal is to address these gaps by engaging in interviews with healthcare providers. Through these interviews, specific characteristics and behaviors will be examined that may contribute to creating an inclusive atmosphere in patient care settings. This qualitative research study involves participant recruitment and the execution of semi-structured interviews. PAs, NPs, and MDs/DOs will be recruited to be participants for these interviews. Throughout the interviews, participants are presented with a series of questions designed to bring about detailed responses regarding their specific behaviors in the context of patient inclusion. The focus on healthcare professionals from diverse backgrounds, including PAs, NPs, and MDs/DOs, brings a varied and comprehensive exploration of practices within the healthcare field. The semi-structured approach is for a flexible exploration of participants' perspectives, ensuring a thorough comprehension of their behaviors regarding patient inclusion. The responses from interviewed healthcare professionals will be recorded and input into an Excel sheet for the purpose of comparing their answers and identifying recurring themes in the behaviors they adopt to promote an inclusive environment. The ultimate goal of this research is to extract tangible results that can be applied to patient care, thereby enhancing outcomes, especially for underrepresented populations. By identifying and understanding the key characteristics and behaviors that contribute to inclusivity, we aim to provide insights that can be implemented to improve the overall patient experience.

Supported by: None

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Health Equity Research

Presentation 229

Abstract Title: **Impact of Social Determinants of Health on Pediatric Solid Tumors in KY**

Author(s): A. Ayers PA-S, K. Davis PA-S, K. Edwards PA-S, C. Fishman PA-S, M. Klein PA-S, L. Woltenberg PhD; Department of Physician Assistant Studies, U of Kentucky, Lexington KY

Abstract: This study explores the impacts of Social Determinants of Health (SDOH) on different outcomes including age of diagnosis, stage of cancer, and mortality in pediatric patients diagnosed with solid malignant tumors. The solid tumors explored include brain, CNS, lymphoma, melanoma, and epithelial tumors. This retrospective cohort study of de-identified data collected from the Kentucky Cancer Registry investigates relationships between first primary cases of solid tumor cancers diagnosed in Kentucky with available SDOH data. Participants include those younger than 19 years old between 2015 and 2019. The SDOH data includes sex, race, ethnicity, county poverty level, insurance status, family behavior and history, and rural vs urban region. Multivariable logistic regression was performed to determine the influence of SDOH factors on the outcomes discussed above. Few sources address the relationship at hand, even with sufficient evidence that pediatric cancer in Kentucky is on the rise. Malignant neoplasms are the third leading cause of death in children and adolescents in the United States behind only motor vehicle accidents and firearm accidents (Tran et al, 2022). According to the CDC, cancer death rates between the years 2011 and 2015 were substantially higher in non-metropolitan-rural counties than those in metropolitan counties proving there is merit in correlating pediatric cancer with SDOH. Through partnering with the DanceBlue clinic at The University of Kentucky (a leader in pediatric oncology nationwide) and the de-identified data collected, an invaluable relationship will be fostered providing key insights into the relationship between the complexity of pediatric solid tumor diagnoses and SDOH.

Supported by: This project was completed with in collaboration with our esteemed colleagues at the Kentucky Cancer Registry (KCR).

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Presentation 230

Abstract Title:	**Patient Factors Associated with Bounce-Backs to the University of Kentucky Emergency Department**
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Abstract: Background: Emergency department (ED) bounce-backs, defined as a patient returning to the ED within 72 hours of their initial visit, remain a burden to the healthcare system. They affect the efficiency of patient care, contribute to the unnecessary use of medical resources, and increase overall healthcare costs. The purpose of this study was to find associations that may increase a patient's likelihood of bouncing back to the ED.
Methods: A retrospective cohort study using a de-identified limited dataset was collected from the University of Kentucky Center for Clinical and Translational Sciences database. Data was collected on adult patients over a year-long period (November 1, 2022-October 31, 2023) who had an ED visit with a subsequent return within 72 hours of the initial visit. Data collection included patient demographics, insurance provider, and whether or not the patient had a primary care provider, comorbidities, all prior visits to the ED within the year, and the number of visits within 72 hours. For the initial and return visits, data also included type of disposition, disposition date, length of stay, and International Classification of Diseases 10th Revision (ICD-10) diagnosis.
Topic Rationale: Higher ED bounce-backs are associated with higher morbidity and mortality rates. Multiple studies have demonstrated various factors that influence bounce-back rates. Gathering data on this topic is the first step for outlining a plan of action to lower bounce-back rates and address underlying causes. Extracting the patient factors with the highest correlation to ED bounce-backs creates a target for healthcare professionals to focus their efforts toward a high-yield improvement in overall patient outcomes.

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Presentation 231

Abstract Title: **Psychosocial Factors and Pain in Patients with Lower Extremity Traction Pins**

Author(s): L. Bowers PA-S, A. Shand PA-S, L. Baechtold PA-S, A. Bearnson PA-S, L. Greco PA-S, T. Fields PA-S, A. Williford PA-C; Department of Physician Assistant Studies, U of Kentucky, Lexington, KY

Abstract: Purpose/Aim: Skeletal traction is a critical treatment option for orthopedic patients. It is used to stabilize a variety of injuries as a first line resource, before definitive fixation. Techniques have changed throughout the years, but the basic mechanism of applying gradual pulling force through a pulley system has remained unchanged. It allows for proper anatomical alignment while awaiting surgical correction. This study aims to compare the Steinman 4mm threaded pins and the TRAKPAK 2mm skeletal traction sets through measurements of patient satisfaction, pain, and procedure sterility.
Study Design: Data was collected from the University of Kentucky's Emergency Department via a survey administered by the research team from patients meeting the inclusion/exclusion criteria, including fracture location and characteristics. The survey includes information about the patient's psychosocial experience, satisfaction with treatment, pain, and perception of receiving traction. The survey also considers past medical history, nature of the injury, and comorbid injuries to be accounted for when analyzing the data. Data collected was recorded in RedCap.
Rationale: If patients choose to participate in the study, the data collected may benefit traction methods performed at the University of Kentucky and possibly other Level 1 trauma centers. The aim is to conclude the study with a better understanding of the benefits that patient experiences may have on development of quality traction methods by taking patient experience and opinion into consideration. The findings of this study may be used to assess psychosocial factors of patients that will undergo skeletal traction and improve their overall experience.

Supported by: None

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College of Health Sciences Research Day

Presentation 232

Abstract Title:	**The Prevalence of Breast Cancer in Kentucky: A Quantitative Analysis**
Author(s):	A. Kimmel PA-S, E. Goodman PA-S, L. Evans PA-S, H. Hill PA-S, A. Marrocco PA-S, A. McCarty PA-C, S. Irving PA-C; Department of Physician Assistant Studies, U of Kentucky, Morehead, KY

Abstract: According to the State Cancer Profile, the Kentucky rate of cancer was the highest at 126.7 for the site of breasts in females between the years of 2016-2020(2). A literature review revealed a study performed a data search on the incidence of breast cancer in the United States; they found that there has been an increase in incidence rates of women over 20 years old during 2004-2018(3). A focused study on Kentucky will allow for evaluation of the factors affecting breast cancer occurrence in recent years. According to the United States Preventive Screening Task Force (USPSTF) biennial screening mammography for women ages 40 to 74 years(1). An aim of this study is to evaluate if guidelines should be more specific to regions in states instead of nationally based. Contributing factors being analyzed include race and tobacco use. This study was conducted to evaluate prevalence and regional variance of breast cancer along with average age of onset (& possibly vs stage) across AHEC regions in Kentucky. AHEC regions were chosen to broadly evaluate the variations in social determinants of health across the state. Data was collected utilizing the Kentucky Cancer Records (KCR) database, a correlative study will be conducted with the aid of a KCR statistician. Limitations of this study may include underrepresentation of Kentucky residents that are affected by social determinants of health such as access, education, preventative medicine, built environment, and economic stability. Future implications involve extracting results from this study and investigating what specific social determinants of health may be contributing to the findings of this study.

Supported by: This project was completed with in collaboration with our esteemed colleagues at the Kentucky Cancer Registry (KCR).

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Presentation 233

Abstract Title:	**Comparison of English and Non-English Speaking Patients,Äô Length of Stay & Readmissions at a Large Hospital System in KY**
Author(s):	A. Stephenson PA-S, E. Gruper PA-S, S. Ingram PA-S, C. Dupin PA-S, H. Leathers PA-S, A. Sparks PA-C; Department of Physician Assistant Studies, U of Kentucky, Lexington, KY

Abstract: Purpose/Aim: The purpose of the study is to investigate the relationship between length of stay and the readmission of patients with stroke, sepsis, acute myocardial infarction (MI), and pneumonia among English and non-English speaking populations. The aim is to identify any disparities in care among patients who are not primary English speakers, recognizing the potential impact of language barriers on health outcomes. These disparities can provide insight into healthcare system issues that need to be addressed to provide more equitable health outcomes.

Study Design: Retrospective observational study: using the CCTS database at the University of Kentucky, we were able to pull data from the timeline of 2018-2023. The data was depersonalized and included information on the patient's language proficiency (English or non-English), which of the four disease options they presented with to the hospital, the duration of their stay, and any instances of readmission within a month of treatment and discharge. By utilizing these parameters, our comparative analysis aims to further investigate the differences from a multifocal vantage point to reduce the chance of inaccurate results.

Rationale: We believe all patients, regardless of their primary language, deserve to have the highest quality care. Prior to our entry into PA school, we have all encountered situations in which a language barrier has impacted the course of treatment. These encounters led us to wonder about the incidence and prevalence of this issue on a larger scale. In initial research, a lack of data was identified on this topic and there is a need to examine to this vital area of healthcare. Through this research, we hope to identify the disparities in access to care to improve health for all, regardless of language barriers, highlighting the importance of equitable healthcare practices.

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Presentation 234

Abstract Title:	**Missing Links to a Successful Smoking Rate Reduction in Rural Appalachia: A Contemporary Literature Review**
Author(s):	C. Wolford PA-S, M. Noble PA-S, K. Barker PA-S, L. Haskins PA-S, C. McMillen PA-S, S. Irving PA-C; Department of Physician Assistant Studies, U of Kentucky, Morehead, KY

Abstract: The aim of this study is to investigate potential reasons for high smoking rates in the Appalachian Region and to identify gaps between high smoking rates and successful smoking cessation programs via literature review.

The data collection included a PubMed search "smoking cessation and Appalachia" with a year limit of 2020-2023 and yielded 53 articles. Abstracts were analyzed with the following inclusion criteria; research being of Appalachian origin or occurring in the Appalachian region; defined by 423 counties of the Appalachian Regional commission, and if the article contained data that revolved around tobacco/ smoking cessation and/or regulation of tobacco tied to the effectiveness of cessation. This reduced the number of articles from 53 to 11. Those 11 articles were then read entirely and analyzed based on criteria that the study took place or involved the population of rural Appalachia, and contained information regarding tobacco cessation. With these standards the 11 articles were reduced to 6 that are included in this literature review. These 6 studies were then compared and contrasted to find similarities and differences in smoking cessation interventions and their effectiveness with the hopes of finding a common conclusion of what could be a linchpin course of action that would reduce the overall tobacco usage rate in the Appalachian region.

The topic of smoking cessation in the Appalachian region is worthy of exploration because 19.8 percent of adults that reside in this region smoke which is above the national average of 16.3 percent. Through medical advancements we have collected informed data that shows a direct correlation between smoking being linked to an increase in comorbidities that result in mortality. This knowledge has heightened our awareness on the smoking epidemic occurring in this region along with the fatal results that have followed. This research will identify influential factors and interventions for cessation promotion.

Supported by: None

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Presentation 235

Abstract Title:	**Prevalence of Eating Disorders in Adolescents Aged 12-22 in Accordance of Zip Code and Food Insecurity in Central KY**
Author(s):	D. Zhang PA-S, S. Romney PA-S, A. Mitchell PA-S, B. Barnhill PA-S, K. Heichelbech PA-S, C. Scheitzach PA-S, C. Vanderford PA-C; Department of Physician Assistant Studies, U of Kentucky, Lexington KY

Abstract: The aim of this study is to seek out the prevalence of eating disorders amongst adolescents, within the age range of 12-22, in accordance with their zip code and food insecurity. Recent data has published an increasing relationship between adolescents and eating disorders. Our search pertains to the first encounter/diagnosis of an eating disorder, between the years of 2017-2023, relative to all zip codes. In hopes of determining a relationship between the two, we can acknowledge the need for intervention among this population of adolescents. Our retrospective cross-sectional study is examining diagnosed eating disorders in the specified age range, exploring the prevalence amongst this age group and potential correlations to zip code and food insecurity. Utilizing UK CCTS data from 2017-2023, we will take information such as diagnostic codes, age, zip code, and food insecurity status. Data collection will be obtained with CCTS IRB for confidentiality, with inclusion criteria for all genders and zip codes in Kentucky. Our selection for data will involve looking at the patients' initial diagnosis and follow-up appointments. While conducting research prior to our study, it was found that discussing the relationship of background and demographics to food insecurity and eating disorder prevalence is often neglected. The dynamic relationship that some of these demographics may be further contributing to eating disorder presentation as well as food insecurity status is one that should be further explored. While our research does not establish causation between food insecurity or the other demographics identified, we seek to establish a relationship of higher prevalence between these factors with the goal of setting the stage for future exploration on causation. Additionally, as a provider, we could prevent some of our patients falling into disordered eating patterns by providing healthy resources in the community for food, as well as removing the negative stigma behind.

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19th Annual CCTS Spring Conference
Tuesday, April 9, 2024 Central Bank Center

College of Health Sciences Research Day

Presentation 236

Abstract Title: **Validation of a new portable metabolic unit while riding a mechanical galloping simulator**

Author(s): Keener, M. MS, Vice, G., Tumlin, K., PhD, MS, MPH, and Heebner, N., PhD, ATC
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Abstract: Introduction: Measuring energy expenditure through oxygen consumption(VO2) while equestrian athletes(EqA) ride horses has previously been difficult due to cost, noise, and wires associated with other portable metabolic units(METUnit). The release of a new portable METUnit that addressed all of these concerns provides potential for capturing VO2 data in the field.
Purpose: To validate a new portable METUnit(U1) to a non-portable gold standard MetUnit(U2) while EqA ride a mechanical galloping simulator. We hypothesized that 1) VO2 data between U1 and U2 would not be significantly different, and 2) the correlation between the units would be strong.
Methods: Resting metabolic data was collected for 5 minutes. EqA then rode for two minutes at three remote controlled speeds (1:20-25mph; 2:28-32mph; 3:36-40mph) with 15 minutes of rest between each speed. They then sat for 20 minutes and repeated the same protocol with the other METUnit. Speed and METUnit order were randomized. Paired T-tests and Pearson Correlations were used to analyze the data.
Results: Twelve EqA(11 females) completed the study. VO2 measurements at rest and all speeds between the METUnits was not significant ($p>0.05$). Resting and the lowest speed 1 had strong positive correlations, $r2=0.709$ and 0.770, respectively. The two higher speeds had moderate correlations, $r2=0.426$ and 0.594, respectively.
Conclusions: The new portable METUnit provides valid and comparable VO2 data to the standard lab-based method at lower speeds, but its reliability diminishes with increasing speed. This suggests the unit's utility in field settings, albeit with some limitations at higher speeds.

Supported by: None

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19th Annual CCTS Spring Conference
Tuesday, April 9, 2024 Central Bank Center
College of Health Sciences Research Day

Presentation 237

Abstract Title: **Exploring Occupational Therapists' Experiences with Multiple Sclerosis Rehabilitation**

Author(s): D.A. AlGhadban, Department of Rehabilitation Sciences and Health, U of Kentucky;
D. Howell, Department of Occupational Science and Occupational Therapy, Eastern Kentucky University.

Abstract: Occupational therapists (OTs) play a role in the rehabilitation process for people with multiple sclerosis (MS) by providing occupation-focused interventions that may have a significant and positive impact on health and well-being. The unpredictability of symptoms experienced by this population requires an individualized approach to improve occupational performance. Currently, there is limited evidence about the experience of OTs working with individuals with MS. This descriptive qualitative study aimed to explore OTs' experiences with MS rehabilitation, including the assessments and interventions used for symptom management in their clinical practices. Five OTs (n=5) representative of five states (California, Connecticut, Kentucky, Nevada and Washington) participated in semi-structured virtual interviews. Participants included OTs practicing in acute care, inpatient rehabilitation, outpatient rehabilitation, private practice, community-based practice, and home health. Data was analyzed manually using thematic analysis to form codes, then collapse them into categories, and assign themes. Three themes emerged: Client-centered and Occupation-based Care, OT Interventions and Treatment Approaches to MS Care, and Knowledge Development and MS. The findings support current literature that highlight how OTs working with people with MS are driven to provide individualized and occupation-based care to address the various dimensions of physical, mental, and emotional changes their clients face. However, practice settings can impact OT's ability to focus on client needs and occupations. Improving knowledge and expertise in MS management, staying current with evidence specific to MS, and utilizing effective OT interventions are crucial for this population.

Supported by: None

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Presentation 238

Abstract Title:	**The Inter-rater Reliability of a Novel Portable Three-Dimensional Scapular Kinematics Assessment System**
Author(s):	Z. Alkhamis, Department of Rehabilitation Sciences, U of Kentucky; J. Boggs, Department of Physical Therapy, U of Kentucky; C. Smith, Department of Physical Therapy, U of Kentucky; N. Tuft, Department of Physical Therapy, U of Kentucky; W, Lockhart, Lexington Clinic, Lexington, KY; N. Heebner, Department of Athletic Training, U of Kentucky; W. Kibler, Lexington Clinic, Lexington, KY; A. Sciascia, Lexington Clinic, Lexington, KY; T. Uhl, Department of Rehabilitation Sciences, U of Kentucky

Abstract: Purpose/Hypothesis: To establish the inter-rater reliability of a novel inertia measurement units (IMU) system for detecting scapular 3D kinematics. Establishment of measurement error is necessary to identify if true or apparent change in motion is occurring.
Methods: 11 males and 9 females (28 ± 8 years) volunteered to participate in this study. Scapular 3D data was captured using five sensors placed over the skin in the sternum, inferior to the middle point of scapular spine and on the deltoid tuberosity bilaterally. Data collected was bilateral scapular posterior/anterior tilt, upward/downward rotation, internal/external rotation and humeral elevation. Participants completed 7 repetitions of bilateral flexion and abduction through a full range of motion. Sensors were removed between testing sessions and no location markings were used by either examiner. The Root Mean Square Error Estimation (RMSE) was used as the entire arc of motion was of interest, not just particular portions of data.
Results: The mean RMSE values ± standard deviation for both arms combined were: upward/downward rotation (5.3 ± 4.5°), anterior/posterior tilt (4.3 ± 2.5°), internal/external rotation (5.1 ± 2.5°).
Conclusion: This study suggests that inter-rater reliability for assessing scapular motion using this new IMU system is reasonable to use between examiners in flexion and abduction in a clinical setting. Changes of at least 5 degrees would be necessary to see clinically meaningful changes in scapular motion. The study was conducted on healthy subjects limiting the generalizability to patients with shoulder pathology. Future research needs to include patients with scapular dysfunction.

Supported by: None

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Presentation 239

Abstract Title:	**A Framework for Research in Massage Therapy in Patients with Cancer**
Author(s):	J.S. Cole, Departments of Integrative Medicine and Health and Rehabilitation and Health Sciences Ph. D Program, U of Kentucky; E. E .Dupont-Versteegden, Department of Rehabilitation and Health Sciences, U of Kentucky; C. G. Page, Department of Communication Sciences and Disorders; U of Kentucky

Abstract: Pain and anxiety in patients with cancer is a verified symptom that affects nearly half of this population. Interventions such as massage therapy and tools that increase resilience have been shown to reduce high symptom burden of pain and anxiety, increase quality of life and mental health. Resilience theory focuses on the patient's ability to navigate through a stressful event and reestablish health. Further, family and health system resilience, along with personal resilience, are factors that affect the patient's ability to cope, heal, and rehabilitate from illness. Massage therapy has similar outcomes as building resilience in patients with cancer. Massage therapy may not only improve resilience, but also support the same outcomes experienced by people shown to have good resilience. This combination may reduce high symptom burdens such as stress, pain and anxiety in patients with cancer. The purpose of this paper is to propose a research model for measuring improved outcomes of stress, pain and anxiety, quality of life and response to treatment in patients with cancer, by combining the influence of massage therapy to increase resilience. Key words: resilience theory, massage therapy, cancer, pain, anxiety

Supported by: None

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College of Health Sciences Research Day

Presentation 240

Abstract Title: **Validation of AI-driven Analytical Support for Musculoskeletal Ultrasound Analysis**

Author(s): F. Gonz'lez-Seguel, Department of Physical Therapy, University of Kentucky; A. Horikawa-Strakovsky, Institute for Biomedical Informatics, University of Kentucky and MSTC, Paul Laurence Dunbar High School; Z. Calulo-Rivera, Division of Physiotherapy, the University of Melbourne; Sanjay Dhar, Division of Pulmonary and Critical Care Medicine, Department of Medicine, University of Kentucky; S. M. Parry, Division of Physiotherapy, the University of Melbourne; Y. Wen, Department of Physiology and Department of Internal Medicine, Institute for Biomedical Informatics, and Center for Muscle Biology, University of Kentucky; K. P. Mayer, Department of Physical Therapy, University of Kentucky.

Abstract: Background: Musculoskeletal ultrasound has relevant utility in clinical practice and research; however, the main challenge is the training and time required for manual analysis in the objective quantification of muscle size and quality.
Objective: To evaluate the agreement between an AI model measuring muscle parameters and manual analysis of ultrasound images.
Methods: Ninety quadriceps (QC) and 88 tibialis anterior (TA) images of critically ill, lung cancer, and healthy subjects acquired with portable ultrasound devices in previously published studies were randomly selected. Using NIH-Image J software, three experts manually analyzed muscle thickness, cross-sectional area, and echointensity of QC and TA muscles. Automated analyses of the same parameters were performed using a newly developed deep-learning AI model (MyoVision-MKUS). The agreement was determined using intraclass correlation coefficients (2-way mixed ICC for consistency) and MyoVision-MKUS predictability of manual analysis using linear regression (adjusted R2).
Results: While manual analysis took approximately 30 hours, MyoVision-MKUS took 255 seconds to analyze all 178 images. The agreement was excellent for all QC (ICC=0.97–0.99) and TA (ICC=0.91–0.99) parameters. Values were not attenuated when examining each group separately, showing excellent ICC values for ICU (ICC=0.91–0.99) and lung cancer (ICC=0.95–0.99) images. Predictability of MyoVision-MKUS was strong for all QC (R2=0.87–0.94) and TA parameters (R2=0.71–0.95). Regardless of muscle and group, the highest and lowest predictability was for echointensity (R2=0.94–0.95) and cross-sectional area (R2=0.71–0.87), respectively.
Conclusions: Application of AI automating muscle ultrasound analyses showed improvements in speed and excellent agreement compared with manual analysis.

Supported by: AIM Alliance and CCTS, AI in Medicine Pilot Award

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Clinical Research

Presentation 241

Abstract Title:	**Genetic Predictors of Bone Mineral Density Changes in Patients Undergoing Anterior Cruciate Ligament Reconstruction**
Author(s):	Sciascia, AN, Department of Athletic Training and Clinical Nutrition, U of Kentucky; Fry JL, Department of Athletic Training and Clinical Nutrition, U of Kentucky

Abstract: Adolescence and early adulthood are crucial for achieving peak bone mineral density (BMD) and minimizing later-life fracture risk. Youths undergoing anterior cruciate ligament reconstruction (ACLR) can experience BMD reductions in the femur of the operative limb of 10-50% six months post-ACLR. Given that certain single nucleotide polymorphisms (SNPs) are linked to lower bone mineral and vitamin D deficiencies, this study investigates if 11 SNPs related to vitamin D metabolism could predict BMD changes in ACLR patients. Identifying those at risk may warrant preventive interventions for these patients, e.g., nutrition interventions. Sixteen participants were evaluated at the University of Kentucky, with femur BMD measured via DXA before and six months after ACLR. Our analysis focused on BMD percentage loss, using stepwise regression to identify predictive SNPs while accounting for race and sex. Principal component analysis (PCA) further categorized SNPs into principal components (PCs) based solely on genotype data. T-tests comparing the top two PCs revealed significant BMD loss distinctions between participants high and low on PC2 (-31% for PC2 >0 and -20% for PC2<0; p=0.026), with significant contributions from rs10741657, rs2060793, rs731236, and rs1544410. The regression model highlighted female sex and the rs731236 G allele as significant predictors of reduction in BMD, achieving an adjusted R ≤ of 0.520 (p=0.008). This study underscores the potential genetic influences on BMD resilience or vulnerability post-ACLR, which should be studied further.

Supported by: RO1 AR072061

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Presentation 242

Abstract Title: **The efficacy of occupation-based interventions in comparison to preparatory interventions for the individual with ABI**

Author(s): J. Neikirk, Department of Rehabilitation Sciences

Abstract: BACKGROUND: Occupational therapy as a profession is focused on improving independence through focusing on occupational performance. This can through direct practice of a self-care task (occupation-based interventions) or activities designed to prepare for functional engagement (interventions to support occupations). To date, it has not been examined, which is a more effective intervention strategy, especially for individuals diagnosed with acquired brain injury (ABI).
OBJECTIVE: To conduct a review of the literature to compare occupation-based practice (OBP) to interventions to support occupations (ISO) in individuals with ABI to determine most effective treatments within occupational therapy practice.
DATA EXTRACTION: The following four databases were searched: Academic Search Complete, CINAHL, EBSCOhost, and PubMed. Randomized control trials were chosen to strengthen a more seamless comparison between the OBP and ISO.
RESULTS: Based on search terms, a total of 2450 articles (n= 433 from OBP, n= 2017 from ISO) were discovered. Abstract review included n=131 OBP and n=509 ISO which was narrowed to n=16 using inclusion and exclusion criteria. Themes discovered from article review included the importance of establishing client-centered goals, mental imagery role in enhancing interventions, and repetitive task practice. Larger effect sizes were gleaned from occupation-based articles (0.40, 1.36, 1.0, 0.94) in comparison to exercise-based articles (0.02, 1.06, -0.61, 0.18, 0.07).
CONCLUSIONS: Positive impact of intervention was discovered across OBP and EBP, however, OBP demonstrates more efficiency within individuals diagnosed with ABI. This solidifies the notion that occupational therapists should focus on direct functional practice during intervention to optimize improvements.

Supported by: None

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Clinical Research

19th Annual CCTS Spring Conference
Tuesday, April 9, 2024 Central Bank Center

College of Health Sciences Research Day

Presentation 243

Abstract Title: **Interventions Used to Increase Physical Activity Participation During Pregnancy: A Systematic Review**

Author(s): Kallie Nowell MS, ATC and Johanna M. Hoch PhD, ATC
University of Kentucky, College of Health Sciences, Rehabilitation and Health Sciences

Abstract: Background: Despite the many known benefits to participating in the recommended 150 minutes of moderate aerobic physical activity per week while pregnant, it is estimated only 52% of pregnant women achieve the recommended amount of physical activity throughout their pregnancy. While many studies have aimed to improve health-related outcomes by introducing physical activity interventions during pregnancy, there does not currently exist a systematic search of the literature to summarize the current evidence and recommend the most effective interventions strategies.Therefore, the purpose of this systematic review is to synthesize, critically appraise and determine the effectiveness of interventions to improve physical activity in pregnant women.
Methods: Two researchers will independently search the literature using EBSCO and PUBMed from inception through February 2024. An additional hand search of the literature will be performed. Studies will be included if they were randomized controlled trials that included at least one intervention designed to increase physical activity during pregnancy and healthy pregnant women. Studies that include pregnant women with comorbidities (e.g. diabetes), only one specific trimester of pregnancy, or physical activity as a secondary outcome will be excluded. Two reviewers will independently critically appraise each article to determine study quality utilizing the PEDRo scale. An overall strength of recommendation based on the quality of the included studies and consistency of the study results will be made utilizing the Oxford Center for Evidence Based Guidelines.
Results: We will report the systematic search results, the critical appraisal results, and the individual study results. A strength of recommendation will also be provided.
Conclusions: The results of this systematic review will be used to promote effective intervention strategies to improve physical activity participation in pregnant women.

Supported by: None

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19th Annual CCTS Spring Conference
Tuesday, April 9, 2024 Central Bank Center

College of Health Sciences Research Day

Presentation 244

Abstract Title: **The effect of an added reaction time challenge on vertical jump and ballistic push-up performance**

Author(s): K. H. Porter, Department of Athletic Training and Clinical Nutrition, U of Kentucky; L. Ochoa, Sports Medicine Research Institute, U of Kentucky; B. M. Walsh, Department of Athletic Training and Clinical Nutrition, U of Kentucky; N. R. Heebner, Department of Athletic Training and Clinical Nutrition, U of Kentucky; M. C. Hoch, Department of Athletic Training and Clinical Nutrition, U of Kentucky

Abstract: CONTEXT: The rapidly changing, chaotic nature of the athletic environment does not always permit individuals to coordinate an ideal movement strategy. However, current assessments that evaluate upper and lower extremity power do not typically have any constraints to assess performance under this unavoidable pressure, limiting the ecological validity. Therefore, the purpose of this study was to determine the effect of a reaction time task on max vertical jump and ballistic push-up performance.
METHODS: 35 physically active adults completed max vertical jumps (MVJ) and ballistic push-ups (BPU) for this cross-sectional study. Participants completed five MVJs and three PBUs on force plates. Participants also completed a reactive condition of each test in which they completed the task in response to a light sensor. For the MVJ, average peak power normalized to body weight was recorded (Watts per kilogram; W/kg). For the BPU, peak force was recorded and averaged across trials (Newtons; N). The standard and reactive conditions were analyzed using paired t-tests with corresponding Cohen's d effect sizes.
RESULTS: The normalized MVJ peak power (43.31+/-8.58 W/kg) was significantly greater than the reactive MVJ (42.046+/-8.32 W/kg; p=0.006; d= 0.50). The BPU peak force (809.88+/-327.75 N) was not significantly different than the reactive BPU (809.79+/-327.12 N; p=0.997; d=0.001).
CONCLUSION: The reaction time component of the vertical jump diminished the achieved power. This may be ability to plan and select optimal movement strategies, resulting in decreased lower body power. However, the reaction time challenge did not impact performance on the ballistic push-up.

Supported by: University of Kentucky CCTS NIH CTSA grant (UL1TR001998)

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Presentation 245

Abstract Title:	**Drums Alive® Golden Beats Improves Brake Onset Time in Older Adults**
Author(s):	A. S. Robinson, College of Health Sciences, U of Kentucky; A. E. Reschke-Hernandez, School of Music, U of Kentucky; B. Moshos, Department of Physical Therapy, U of Kentucky; P. Wright, Department of Sport Health Sciences and Social Work, Oxford Brookes University, Oxford, England; G. Walsh, Department of Sport Health Sciences and Social Work, Oxford Brookes University, Oxford, England; A. Graff, Lexington, KY; C. Ekins, Augsburg, Germany; S. Davey, Department of Sport Health Sciences and Social Work, Oxford Brookes University, Oxford, England; K. Wilkinson, Department of Sport Health Sciences and Social Work, Oxford Brookes University, Oxford, England; Nathan Johnson, Department of Physical Therapy, U of Kentucky

Abstract: Driving is often the preferred mode of mobility for older adults in the United States. Driving safety is 16 a primary concern and is negatively affected by age-related functional declines. Driver reaction time 17 is one of the most important factors related to accident avoidance, yet age-related increases in 18 reaction time are pervasive. Maintaining a physically active, cognitively engaging lifestyle can help 19 attenuate age-related declines in reaction time. Drums Alive® is a drumming-based aerobic exercise 20 program that uses choreographed rhythmic movements to improve health. This pilot study aimed to 21 determine if a 10-week Drums Alive® intervention improves brake onset reaction time in community 22 dwelling older adults. Twelve participants completed the Drums Alive® intervention (mean age = 23 69.67 years, SD = 5.86), and twelve age- and sex-matched controls completed a stretching 24 comparison condition (mean age = 69.35 years, SD = 5.07). Simple reaction time (releasing 25 accelerator), movement time (moving foot to brake), and total reaction time were recorded during a 26 simulated brake onset task pre- and post-intervention. There was a statistically significant 27 intervention by time interaction for movement time, with Drums Alive® participants showing a 28 greater improvement (M = -0.054, SD = 0.061) compared to the stretching group (M = 0.019, SD = 29 0.056). No significant group differences were observed for simple or total reaction time. The aerobic 30 and musical components of the Drums Alive® intervention yielded a significant improvement in 31 brake-onset movement time compared to a stretching intervention. Our findings suggest carefully 32 designed music interventions that engage older adults in exercise may help maintain independence by 33 improving driving-related reaction time.

Supported by: NIH CTSA UL1TR000117

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Presentation 246

Abstract Title:	**An Emotional Intelligence Educational Intervention to Reduce Burnout in Healthcare Profession Students**
Author(s):	M. Taylor*, Rehabilitation and Health Sciences PhD Program, 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: Significance: Graduate Healthcare Profession (HCP) students suffer higher rates of perceived stress and burnout than age matched peers. Emotional Intelligence (EI), a learnable skillset demonstrated to protect against burnout in medical residents, is associated with improved stress management, increased happiness, and reduced burnout. Little is known about the potential impact of EI education embedded within HCP program curricula on student burnout and limited research exists evaluating strategies designed to enhance clinical translation of emotional or social skills.
Purpose: The purpose of this study is to develop and implement a novel educational intervention and reflection practice designed to promote EI, mitigate burnout, and improve well-being, determine its effectiveness in HCP students, and explore student experiences through qualitative descriptive analysis.
Methods: Data were collected and managed at three timepoints using REDCap. Participants were graduate HCP students at the University of Kentucky (n=28, age 23.9 ± 3.1 yrs.). Participants engaged in a 3-hr in-person workshop intervention developed by the PI. Content was tailored for HCP students and highlighted underlying physiology supporting the recommended EI-enhancing practices. Affect labeling and other evidence-based practices promoting self-awareness, social connectivity, and mindfulness were emphasized. Participants engaged in 4-weeks of post-workshop reflection via guided prompts to enhance learning and application. Responses were reviewed, coded, and themed by the PI and two other researchers for interrater reliability.
Results: Preliminary themes include student reports of improved self-awareness, strategy adaptations, emotional re-evaluation, and emotion management and recognition of the impact of empathy, quality of social support, and perceived isolation.
Conclusion: Findings can guide further intervention development/implementation and research in HCP curricular modifications.

Supported by:	NATA Research & Education Foundation Doctoral Student Grant: 2223DGP04 and pilot funding from the Endowed University Professor in Health Sciences Fund

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Clinical Research

Presentation 247

Abstract Title:	**Relationship between Self-Efficacy and Patient-Reported Outcomes in Individuals with Chronic Ankle Instability**
Author(s):	B. M. Walsh, Department of Athletic Training and Clinical Nutrition, U of Kentucky; K.B. Kosik, Department of Athletic Training and Clinical Nutrition, U of Kentucky; D. M. Torp, Department of Athletic Training and Clinical Nutrition, U of Kentucky; J.M. Hoch, Department of Athletic Training and Clinical Nutrition, U of Kentucky; M.C. Hoch, Department of Athletic Training and Clinical Nutrition, U of Kentucky, Lexington, KY

Abstract: Context: Self-efficacy is a modifiable factor that has been correlated with psychosocial and HRQL outcomes in patients with various musculoskeletal injuries. The relationship between self-efficacy, self-reported ankle function, and injury-related fear has not been evaluated in individuals with chronic ankle instability (CAI). Therefore, the purpose of this study was to compare levels of general and ankle-specific self-efficacy with self-reported ankle function and injury-related fear in individuals with CAI.
Methods: Fifty-nine adults (37 Female, Age: 31.6+/-8.0, Episodes of Giving Way: 2.4+/-1.7, Cumberland Ankle Instability Tool: 13.5+/-5.7) with CAI volunteered to participate. Participants completed a series of patient-reported outcomes (PROs), including the Ankle Self-Efficacy Questionnaire (ASEQ), General Self-Efficacy Scale (GSE), Foot and Ankle Disability Index Activities of Daily Living (FADI-ADL) and Sport (FADI-Sport), and Fear-Avoidance Beliefs Questionnaire-Physical Activity Subscale (FABQ-PA). The relationship between scores on the GSE and ASEQ and PROs were examined through Spearman's rho correlations.
Results: There were significant moderate-to-strong correlations between the ASEQ and FADI-ADL, FADI-Sport, and FABQ-PA. Correlations between the GSE and all PROs were weak-to-mild and the only significant correlation was with the FADI-Sport. The correlation between the ASEQ and GSE was insignificant and weak.
Conclusions: Individuals with CAI with higher ankle-specific self-efficacy, also reported greater ankle function in ADLs and sport, as well as decreased injury-related fear. Similar relationships were not identified when examining relationships between general self-efficacy and PROs. The lack of correlation between the GSE and ASEQ suggests that the GSE is not specific enough to assess self-efficacy variations present in individuals with CAI.

Supported by: None

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Clinical Research

Presentation 248

Abstract Title: **Return to duty and attrition in the military following low or high-risk bone stress injuries: A systematic review**

Author(s): G. Dredge, Rehabilitation and Health Sciences PhD Program, U of Kentucky, Lexington, KY

Abstract: Background: Bone stress injuries (BSIs), are a common and potentially debilitating overuse injury that occur at rates of 6.9 per 1000 male and 26.1 per 1000 female recruits.1 These injuries result in the removal of about 60% of affected trainees from training,2 imposing an annual financial burden on the Army of approximately $100 million. High-risk BSIs at certain anatomical sites are more prone to complications such as nonunion, resulting in prolonged return-to-duty (RTD) times and medical discharge.3 Conversely, low-risk sites generally lead to shorter recovery periods due to low complication rates.4
Study Aim: This review aims to investigate the impact of BSI anatomical sites on military personnel, specifically focusing on RTD times and attrition rates from military service.
Methods: This Study will use a systematic literature review design. The systematic review will be conducted using Pubmed, Web of Science, and CINAHL databases following the Reporting of Systematic Reviews and Meta-Analyses guidelines. Methodological quality of observational studies will be evaluated using the Newcastle-Ottawa Scale, while RCTs will be evaluated utilizing the Cochrane Collaboration's Risk of Bias tool.
Results: The initial search returned 763 identified articles. Review and extraction based upon inclusion/exclusion criteria pending.
Conclusion: The pending review is expected to demonstrate that among military personnel the location of the BSI influences RTD timelines and attrition rates. This study's findings will provide the DOD with recovery timelines for different types of bone stress injuries, thereby facilitating the development of comprehensive guidelines for appropriate treatment durations and recovery strategies following BSIs.

Supported by: None

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Clinical Research,Other

Presentation 249

Abstract Title:	**Occupational Stress and Injury History in Career Firefighters**
Author(s):	J. E. Tinsley Kubala, Department of Athletic Training and Clinical Nutrition, U of Kentucky; T. L. Uhl, Department of Physical Therapy, U of Kentucky; N. R. Heebner, Department of Athletic Training and Clinical Nutrition, U of Kentucky; M. G. Abel, Department of Kinesiology and Health Promotion, U of Kentucky; J. M. Hoch, Department of Athletic Training and Clinical Nutrition, U of Kentucky

Abstract: Introduction: Firefighters encounter severe and inevitable stressors associated with their job responsibilities. Increased occupational stress has previously been associated with firefighter musculoskeletal disorder (MSD) reports. However, these investigations employed measures of occupational stress not designed for tactical athletes. Therefore, the purpose of this study was to examine differences in occupational stress scores, as measured with a population relevant questionnaire, between firefighters who reported an MSD and those that did not.
Methods: This cross-sectional analysis is part of a larger prospective cohort study. A total of 93 (89 male-sex) career firefighters (Age: 36.1±6.3 yr.) completed demographic and MSD history questionnaires, and the Sources of Occupational Stress 14 item (SOOS-14). MSD was defined as experiencing musculoskeletal pain, injury, damage, or dysfunction involving joints, bones, ligaments, tendons, nerves, and/or soft tissues in the last 5 years. SOOS-14 scores range from 14-70, with greater scores indicating greater occupational stress experience. Independent samples t-tests were used to examine between-group differences ($p,<0.05$).
Results: There was no significant difference in SOOS-14 scores between those that reported an MSD history (n=59, 26.54±8.03) and those that did not (n=34, 26.44±7.14, p=0.952).
Conclusions: Our results contradict previous findings as we found no differences in occupational stress between firefighters that did and did not report an MSD history. Our investigation differs from previous studies as we employed a population-relevant occupational stress measure. Modifiable factors influencing occupational stress may be more pertinent to examine than overall occupational stress. Future research should prospectively examine this relationship through a relevant, biopsychosocial approach and include covariates of occupational stress.

Supported by: CARERC Pilot Grant Funds 2023
Endowed University Professor in Health Sciences

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Clinical Research,Translational Research/Science

Presentation 250

Abstract Title:	**Make or Break: Examining the Impact of Support Personnel in School-Based Speech-Language Telepractice**
Author(s):	H. Douglass, Department of Communication Sciences and Disorders, U of Kentucky; J.J. Lowman, Department of Communication Sciences and Disorders, U of Kentucky; Z. Mirakhur, Department of Educational Policy Studies and Evaluation, U of Kentucky; R. Causey-Upton, Department of Occupational Science and Occupational Therapy, Eastern Kentucky U

Abstract: Background: Support personnel have anecdotally been shown to be critical components of successful telepractice programs. Despite this, there is little guidance on the appropriate use of support personnel (AKA "telefacilitators"). Though the American Speech-Language-Hearing Association recommends using telefacilitators, we have minimal research that explains the necessity of using telefacilitators, minimum training standards, or suggested scope of responsibilities. The purpose of this study was to investigate the impact of telefacilitators on telepractice programs in school settings as experienced by speech-language pathologists (SLPs), as well as investigate barriers and facilitators to implementation.
Methods: This convergent mixed-methods study used a survey and interviews to gather data from 136 SLPs (128 surveys, 8 interviews). We used purposive methods to recruit both interview and survey respondents. Survey data were analyzed using descriptive statistics, while interviews were analyzed using thematic analysis.
Results: The majority of SLPs reported having a telefacilitator available over 50% of the time, however, consistency of the telefacilitator provider(s) emerged as a salient point. Staffing shortages and cost/funding were the top barriers preventing the use of telefacilitators, while the support of school staff and allocation of staff were the top facilitators. There was considerable disagreement about the roles and responsibilities of telefacilitators. It was generally recommended to have a consistent telefacilitator.
Discussion: Current practice patterns reveal there is a gap between what may be best practice and what is realistic for many clinicians and school systems. Disagreement among SLPs indicates more guidance and research is needed in this area.

Supported by:	Department of Rehabilitation Sciences Pilot Funding; Department of Communication Sciences and Disorders Student Research Funding; Center for Telehealth Education, Research, and Outreach Funding

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Dissemination & Implementation Research

Presentation 251

Abstract Title:	**Using the Behavior Change Wheel for Intervention Development for Chronic Ankle Instability**
Author(s):	E. A. Ohrnberger, Department of Athletic Training and Clinical Nutrition, U of Kentucky; P. A. Gribble, Department of Athletic Training and Clinical Nutrition, U of Kentucky; K. B. Kosik, Department of Clinical Athletic Training and Clinical Nutrition, U of Kentucky; M. L. Cormier, Department of Kinesiology and Health Promotion, U of Kentucky; R. D. Andreatta, Department of Communication Sciences and Disorders, U of Kentucky; C. E. Conley, Department of Orthopaedic Surgery and Sports Medicine, U of Kentucky

Abstract: Introduction: Long-term consequences of chronic ankle instability (CAI) are not mitigated by the sole use of standard of care (SOC) measures. As such, complementary treatments may enable development of novel methods to improve SOC. Our study aim was to develop a performative developmental evaluation survey to assess patient-perceived determinants of non-traditional, psychologically-based interventions for future applications in CAI patients.
Methodology: The Behavior Change Wheel (BCW) was used for survey construction by mapping BCW components to potential barriers/enablers. Specific interventions of interest were: Mindfulness-Based Stress Reduction (MBSR), Acceptance and Commitment Therapy (ACT), Traumatic/Tension Releasing Exercises (TRE), Diaphragmatic Breathing Exercises (DBE), and Stress Inoculation Training (SIT). The survey was reviewed by the authors and revised until a consensus was reached on component representation. Data collection of in-person surveys was performed using REDCap. Data means and standard deviations or prevalence (sample total, percentages) are shown.
Results: 14 participants [M:8 (57%), 24.5¬±6.9 years] volunteered. Most participants were interested in trying MSBR (10, 72%) and least interested in ACT (5, 36%) and TRE (5, 36%). Almost all participants (12, 86%) were open to reminders to complete an intervention, with 72% (n=10) preferring text reminders. Additionally, most participants (10, 72%) perceived having visual reminders at home or workplace as beneficial. A third of participants reported perceived barriers to the interventions (n=4, 29%) including: being busy, motivation, adequate space, or comfortable environment.
Conclusion: Exploring MSBR with visual and electronic reminders for patients with CAI is warranted. Behavioral change techniques to address the reported barriers should be investigated.

Supported by: Endowed University Professor in Health Sciences Fund

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Dissemination & Implementation Research

College of Health Sciences Research Day

Presentation 252

Abstract Title:	**Social Determinants of Health of Critical Illness Survivors: A Systematic Review**
Author(s):	L. E. Fresenko, PT, DPT, Department of Physical Therapy, U of Kentucky; C. Rutherford PT, DPT, U of Boston; C. M. Robinson, MSLS; Libraries, U of Kentucky; L. E. Robinson, MSLS; Libraries, U of Kentucky; A. Montgomery- Yates, MD, College of Medicine, U of Kentucky R. Hogg- Graham, DrPH, MA, Department of Health Management and Promotion, U of Kentucky; K. P. Mayer, DPT, PhD, Department of Physical Therapy, U of Kentucky

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. [1] SDOH are defined as the environments in which we live, work, and play and are known to impact health outcomes.[2] 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 with updated search in May 2023. 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. Sixty-four articles were included representing 846,741 patients. The majority of the patients were diagnosed with acute respiratory illness (20 articles) upon admission. The SDOH most often reported was race (45.3%) followed by insurance status (15,6%).

Conclusion: The frequency of reporting SDOH suggests collecting and reporting of SDOH is limited in critical care literature but may play a vital in the recovery and outcomes of survivors of critical illness.

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Health Equity Research

Presentation 253

Abstract Title:	**Nutritional Care for Adult Burn Survivors during the Rehabilitation Phase: A Qualitative Exploratory Study**
Author(s):	A. M. Zagzoog, Rehabilitation and Health Sciences PhD Program, N. D. Pope, College of Social Work; D. T. Thomas, Department of Athletic Training and Clinical Nutrition; D. G. Kelly, Department of Physical Therapy; K. Badger, College of Health Sciences, University of Kentucky, Lexington, KY

Abstract: With medical innovation, the rate of burn injury survival has increased to 97% in the United States. The consequences of a severe burn injury, however, can still affect different aspects of burn survivors' lives. Thus, burn survivors require comprehensive burn rehabilitation care, including maintaining good nutritional status to promote their health after the injury. Nutritional education for burn survivors is limited, however, which can negatively impact their physical and mental wellness. This qualitative study explored the experience of burn survivors with nutritional care during the rehabilitation phase. Thirteen burn survivors were included in this study who met the following eligibility criteria: adults, had a burn injury within the last five years with at least 20% burn of their total body surface area (TBSA), and received their initial burn care in the United States. An in-depth semi-structured interview (45-60 minutes) was used to collect data. Overall, burn survivors experienced confusion about the prescribed diet, apathy towards eating during hospitalization, and severity of hunger and excess eating post hospitalization. Moreover, their relationships with food and nutrition changed following a burn injury as they ate to support their physical and mental wellness and they developed new dietary habits. They also thought that receiving individualized nutrition education by a registered dietitian nutritionist (RDN) and seeing an RDN for nutrition education along the continuum of care would strengthen their nutrition-related care. This study concluded that incorporating proper nutrition education into burn rehabilitation care is vital to improving the wellness of burn survivors.

Supported by: Phoenix Society for Burn Survivors; Endowed University Professor in Health Sciences

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Other

Presentation 254

Abstract Title:	**THE ROLE OF CERVICAL STRENGTH AND STABILIZATION TREATMENT IN ADULTS WITH MIGRAINE: A SYSTEMATIC REVIEW**
Author(s):	J.D. Burus, PT, NCS, Department of Rehabilitation Sciences Student

Abstract: Introduction: This systematic review aimed to evaluate the current evidence regarding strength and stabilization training of the cervical spine, and the potential clinical application of these interventions to address headache intensity and frequency, disability, and quality of life in adults with episodic or chronic migraine.
Methods: A systematic view was completed searching the PubMed, CINAHL, and Web of Science databases. Articles were screened based on inclusions/exclusion criteria including participants of adult age, use of muscle strength intervention for cervical spine and shoulders, and groups of migraine only and not mixed headache pathology.
Results: Review is on-going, results will be available at time of poster presentation.
Conclusion: The results of the systematic review will be reported including critical appraisal, individual study results with the effect size and the strength of recommendation.
Keywords: Cervical; neck; strength; resistance; stabilization; training; exercise; migraine.

Supported by: Completed a part of RHB 714 class, no support/funding to report.

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Translational Research/Science

Presentation 255

Abstract Title:	**HDAC4 genomic methylation and DNA binding after joint injury confers an epigenetic memory of disrupted muscle plasticity**
Author(s):	N.T. Thomas, Department of Athletic Training and Clinical Nutrition, U of Kentucky; A. R. Keeble, Department of Physiology, U of Kentucky; A. M. Owen, Department of Athletic Training and Clinical Nutrition, U of Kentucky; C. R. Brightwell, Department of Athletic Training and Clinical Nutrition, U of Kentucky; B. Noehren, Department of Physical Therapy, U of Kentucky; Y. Wen, Department of Physiology, U of Kentucky; C. S. Fry, Department of Athletic Training and Clinical Nutrition, U of Kentucky

Abstract: Joint injury is associated with protracted atrophy and weakness that poorly recovers; we aimed to define molecular effectors of lost muscle function and plasticity following joint injury. We hypothesized that an altered epigenetic landscape in muscle contributes to poor functional recovery following surgical repair. Sixteen ACL-injured participants were recruited and we obtained quadriceps muscle biopsies Pre-, 7-days post-, and 4-months post- reconstruction surgery (Sx) and strength measures up to 6-months post-Sx. We performed immunohistochemistry, RNA-seq, reduced representation bisulfite sequencing, and HDAC4 chromatin immunoprecipitation sequencing. Binding and Expression Target Analysis of DNA methylation revealed a conserved 985bp regulatory genomic region that was differentially methylated upstream of the HDAC4 promoter. We observed 95 promoter-proximal sites that were differentially methylated following injury and conserved across all timepoints. Altered HDAC4 methylation was associated with a 2.2 and 4.3 fold change in HDAC4 transcript abundance Pre-Sx and 7d post-Sx, respectively (FDR<0.05). Notably, HDAC4 binding to critical contractile genes including ACTA1, CKM, and ATP2A1 coincided with their downregulation 7d post-Sx. Altered transcript abundance of these genes coincided with sustained atrophy in the injured limb compared to Healthy (Healthy: 4845±213.4µm2; pre-Sx: 4313±190.6µm2, 7d post-Sx: 3685±228.1µm2, 4-months post-Sx: 3422±142.8µm2; all p<0.05) and lower peak torque compared to Healthy (Healthy: 174.8±10.72nm; pre-Sx: 135.2±10.19nm,; 4-months post-Sx: 82.64±6.80nm,; 6-months post-Sx: 105.9±8.26nm, all p<0.05). Our results show joint injury confers HDAC4 promoter-proximal epigenetic imprinting increases HDAC4 expression and HDAC4-DNA binding represses expression of critical contractile genes. This HDAC4 gene regulatory program contributes to sustained muscle weakness and atrophy following joint injury.

Supported by: NIH award: AR072061

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19th Annual CCTS Spring Conference
Tuesday, April 9, 2024 Central Bank Center
College of Health Sciences Research Day

Presentation 256

Abstract Title: **Males and Females Respond Differently to Changes in Mechanical Load During and Following Muscle Disuse Atrophy**

Author(s): A.B. Sklivas, College of Health Sciences, Center for Muscle Biology, University of Kentucky, Lexington, KY, USA; S. Rose, College of Health Sciences, Center for Muscle Biology, University of Kentucky, Lexington, KY, USA; A. Mantuano, College of Health Sciences, Center for Muscle Biology, University of Kentucky, Lexington, KY, USA; A. Confides, College of Health Sciences, Center for Muscle Biology, University of Kentucky, Lexington, KY, USA; S. Rigsby, Aging and Metabolism Research Program, Oklahoma Medical Research Foundation, Oklahoma City, OK, USA; R. Peelor, Aging and Metabolism Research Program, Oklahoma Medical Research Foundation, Oklahoma City, OK, USA; B.F. Miller, Aging and Metabolism Research Program, Oklahoma Medical Research Foundation, Oklahoma City, OK, Oklahoma City VA, Oklahoma City, OK, USA; T.A. Butterfield, Center for Muscle Biology, Department Athletic Training and Clinical Nutrition, College Health Sciences, University of Kentucky, Lexington, KY, USA; E.E. Dupont-Versteegden, College of Health Sciences, Center for Muscle Biology, University of Kentucky, Lexington, KY, USA

Abstract: The effect of mechanical loading on skeletal muscle of males and females has been extensively studied, though information regarding the differences in disuse atrophy is lacking. This study was to determine if male and female rats atrophy similarly to disuse by hindlimb suspension and subsequent recovery. Adult F344/BN male and female rats were randomly assigned: weightbearing (WB; N=8(F), N=8(M)), hindlimb suspension for 7d (HS7; N=7(F), N=8(M)) or 14d (HS14; N=9(F), N=9(M)) or reambulation for seven days after 14d HS (RA; N=9(F), N=8(M)). Rats received deuterium oxide to determine the rate of myofibrillar protein synthesis (Ksyn) and degradation (Kdeg). Two-way ANOVA determined statistical significance ($p<0.05$). To account for size differences when directly comparing male and female values, data were represented as percent difference from respective mean WB values. Males and females both lost a similar percentage of mean fiber cross-sectional area (CSA) after 7d of disuse relative to their WB counterparts, but males continued to lose significantly more CSA than females after 14d ($p=0.0006$). Ksyn was also significantly lower in males than females at both 7d ($p<0.05$) and 14d ($p<0.0001$) of disuse. However, females experienced a greater increase in Kdeg than males at 7d ($p<0.05$), though it is significantly lower after 14d in females ($p=0.0002$) and males ($p=0.02$) compared to their respective 7d groups. Females were able to recover significantly more CSA ($p<0.0001$), demonstrated higher Ksyn ($p<0.0001$) and Kdeg ($p<0.05$). These data demonstrate male and female rats respond differently during disuse atrophy, and the recovery of disuse atrophy.

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Presentation 257

Abstract Title:	**The Impact of Visual Information on Evaluating Dysphonia Severity**
Author(s):	R. de los Reyes, L. Carpenter, Department of Communication Sciences and Disorders, U of Kentucky; D. Orbelo, Ph. D., CCC-SLP Department of Otolaryngology. Mayo Clinic, Rochester, MN; K. Ishikawa, Ph. D., CCC-SLP, Department of Communication of Sciences and Disorders, U of Kentucky

Abstract: It is well-known that visual information significantly affects speech perception, but its impact on speech-language pathologists' judgments of voice quality is not well understood. This study aimed to evaluate how visual information influences the audio-perceptual judgment of voice quality. Audiovisual recordings of Consensus Auditory-Perceptual Analysis of Voice (CAPE-V) sentences were obtained from twelve individuals with laryngeal dystonia, and audio samples were extracted from these recordings. Thirty-six graduate speech-language pathology students were randomly assigned to two experimental groups. The first group rated overall voice severity using the audiovisual recordings first and audio-only recordings next. The second group rated severity with the audio-only recordings first and then the audiovisual recordings. Ratings were conducted using the CAPE-V form. In addition, students provided three words describing the voice quality. At the end of the rating session, students responded to survey questions about how visual information may have influenced their judgment. The results indicated that visual information reduces raters' perception of vocal severity; however, there was a significant effect associated with the order of stimuli presentation (audio-only first vs. audiovisual first). Survey results suggested that visual cues, such as facial movements, breathing patterns, and muscle tension, provided valuable insights into the level of strain, tension, or effort exerted during speech. Together, these results illustrate the contribution of extrinsic visual signals to clinical judgments; however, further study is needed to address the order effect.

Supported by: Dr. Ishikawa's researches funded by the start-up funds given to her from the University of Kentucky Research Foundation

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Presentation 258

Abstract Title:	**Co-Designing the Families Moving Together Intervention with Community Stakeholders for Low-Income Families and Children**
Author(s):	Abby Cecil, BPH, U of Kentucky; Johanna M. Hoch, PhD, MPH, ATC, U of Kentucky; Brandi White, PhD, MPH, U of Kentucky; Randi Osborne, U of Kentucky; Elisabeth Ohrnberger, MS, LAT, ATC, CSCS, U of Kentucky; Rebecca Mabson, U of Kentucky; Deirdre Dlugonski, PhD, U of Kentucky

Abstract: A child's readiness to learn in kindergarten is a significant predictor of future academic and health outcomes. Physical health is important for school readiness. Children in low-income families experience disparities in health and kindergarten readiness. These disparities could be reduced by engaging families in physical activity together and fostering communication and connection. This paper describes the process of developing the Families Moving Together intervention in collaboration with community partners. Community partners with expertise in movement and early learning were invited to join the research team for five action planning meetings to design the community-based intervention. The PRACTtical planning for Implementation and Scale-up (PRACTIS) guide was used to structure these sessions. Action planning meetings were recorded, transcribed, and analyzed using the Framework Analysis Method. The sample included 19 individuals from local organizations. Participants were mostly Black/African American (68%), female (89%), with ages ranging from 24 to 77. The Families Moving Together study was created in partnership with community members as a result of the action planning meetings. Participants identified common barriers and facilitators experienced by the target population, shared lessons learned from previous efforts, and provided insight into existing provisions. Participants valued community representation, equity, and sustainability in planning the intervention. The research team and community partners successfully created the Families Moving Together intervention to improve kindergarten readiness and health outcomes using the PRACTIS guide. Participants provided extensive and unique perspectives for designing an intervention that fit in the local context and had the potential to be sustained.

Supported by: UK UNITE Community Engagement Pilot

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College of Health Sciences Research Day

Presentation 259

Abstract Title:	**Developing a Consensus on an AAC Minimum Data Set**
Author(s):	K. Kielman, Department of Communication Sciences and Disorders, U of Kentucky; I. Grebe, Department of Communication Sciences and Disorders, U of Kentucky; B. Loyd, Department of Communication Sciences and Disorders, U of Kentucky; J. Page, PhD, CCC-SLP. F-ASHA, FNAP, Department of Communication Sciences and Disorders, U of Kentucky; M. Cooley Hidecker, PhD, CCC-A/SLP, Department of Communication Sciences and Disorders, U of Kentucky

Abstract: Background: Minimum data sets include consensus variables. There are no minimum data sets for augmentative and alternative communication (AAC) research. An AAC system combines symbols, aids, access techniques, and strategies. The goal of this research is to conduct a Delphi survey to develop an AAC minimum data set.
Procedures: First, AAC experts were selected by the co-authors. Then, a Qualtrics web survey link was emailed to the experts, asking them to complete the consent form and eight questions about what to include in an AAC minimum data set. Once results were received, responses were reviewed to see if each question received 80% agreement. If a question did not receive 80%, it will be included in future research.
Results: Eight AAC experts responded to the Delphi survey. All but two questions received at least 80% agreement. Questions that needed further research included whether or not it should use the names of current commercially available symbol sets and if there should be an AAC minimum data set to use within research articles.
Discussion: In the future, the research team will investigate why some professionals reported no need for an AAC consensus. The use of an AAC minimum data set should make AAC research comparisons standardized.

Supported by: Funding from UK College of Health Sciences Undergraduate Summer Research Fellowship

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College of Health Sciences Research Day

Presentation 260

Abstract Title:	**UK Rehab Makerspace: Printing Inclusive Play**
Author(s):	M. Alexander, College of Health Science, U of Kentucky; O. Meadows, College of Health Science, U of Kentucky; M. J. Cooley-Hidecker, Department of Communication Science and Disorders, U of Kentucky; J. Page, Department of Communication Science and Disorders, U of Kentucky; H. Smith, School of Art and Visual Studies, U of Kentucky.

Abstract: Introduction: Children with motor disabilities may need adaptations for inclusive play. These children may also have a speech and language disorder that requires use of a communication board. Our goal was to create a doll stand and a communication board to support their play. Can using 3D printing and communication board software support inclusive play?

Methods: This project utilized the software program Tinkercad to design and print the 3D doll stands. Various designs were experimented with to ensure the best support for the dolls' weight and easier manipulation. Board Maker was used to design activity-based communication boards that followed the semantic-syntactic organization for board layout. Doll play scripts provided the communication board word list to allow communication partners to model desired dialogue and use of AAC devices when playing.

Results: Doll stands were 3D printed to allow the Barbie to be played with by children with a variety of motor abilities. The communication boards were used to allow communication partners to model making requests, comments, rejections, and sharing information during play.

Future directions: Future research should compare play by children with different motor and communication profiles, collect communication partners satisfactions, and increase the number of toy adaptations and accompanying communication boards. Affordability will be considered in future projects.

Supported by: None

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Presentation 261

Abstract Title:	**Location of Maximum Patellofemoral Joint Stress During Stance in Individuals With Patellar Instability**
Author(s):	D. McNeese, Department of Biomedical Engineering, U of Kentucky; C. Conley, Department of Orthopaedic Surgery and Sports Medicine, U of Kentucky; B. Noehren, Department of Physical Therapy, U of Kentucky; M.K. Owen, Department of Physical Therapy, U of Kentucky

Abstract: Individuals with patellar instability often offload their knee to compensate after injury, resulting in altered mechanics. Prior research has quantified the impact of patellar instability on gait compensations. However, the effect of these compensations on patellofemoral joint stress (PFJS) is still unknown. This study's purpose is to classify PFJS for individuals with patellar instability according to the location of maximum PFJS.

Fourteen individuals, each experiencing patellar instability, participated in an instrumented gait analysis while walking at 1.2 m/s. Knee moment and knee angle served as inputs for a mathematical model designed to estimate PFJS throughout the stance phase of gait.

Six individuals exhibited peak PFJS (56.0 ± 15.6 KPa/Kg) during a knee extensor moment, resembling that of healthy populations. Peak PFJS occurred at an average knee flexion angle of 19.9° (range: 12.0°-27.2°) and, on average, at 19.3% stance phase. In contrast, eight individuals experienced peak PFJS (57.4 ± 13.32 KPa/Kg) during a knee flexion moment at an average knee flexion angle of 8.2° (range: 4.3°-13.7°) and, on average, at 66.8% of the stance phase.

Patients with PFJS present with differing locations of maximum PFJS. Over half of the patients reach peak PFJS during a knee flexion moment and at a smaller knee angle. Long-term, these compensations, labeled as quadricep avoidant gait strategies, can lead to peak stresses applied at the patellar cartilage in regions that are not accustomed to higher magnitude loading and may contribute to the development of post traumatic osteoarthritis.

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Presentation 262

Abstract Title:	**Dynamic Evolution of Gait Mechanics: Longitudinal Changes in Knee Joint Kinetics After ACL Reconstruction**
Author(s):	G. Brooks, College of Health Sciences, U of Kentucky; B. Noehren, College of Health Sciences, U of Kentucky. M. Graham, Department of Physical Therapy, U of Kentucky;

Abstract: Introduction: Alterations in gait mechanics are common after anterior cruciate ligament reconstruction (ACLR) and can persist after clearance for full return to sport. Persistent alterations in knee kinetics may have negative consequences on knee joint health and increase the risk of reinjury. To date, there are few studies investigating longitudinal changes in running and walking mechanics after ACLR and it remains unclear whether long-term alterations in knee mechanics resolve with time.
Purpose: To determine the magnitude of between-limb differences in peak knee extension moments during walking and running at 6-months and 2-5 years after ACLR.
Methods: 11 participants (21.5 ± 2.5 years) performed walking and running at 6 months post-ACLR and at a long-term follow-up (3.7 ± 1 years). Peak internal knee extension moments were calculated using Visual 3D software and compared between limbs using paired t-tests.
Results: We found significantly lower peak knee extension moments in the ACL-involved limb at 6-months post-ACLR for walking ($p = .026$, ES = -0.91 [-1.61, -0.11]) and running ($p < .001$, ES = -2.80 [-4.28, -1.29]). We found no significant between-limb differences long-term, but effect sizes indicated moderate reductions in knee extension moments persist in the ACL-involved limb across tasks (ES = -0.43 to -0.50).
Conclusion: Differences in knee extension moments during walking and running post-ACLR improve over time, but do not fully resolve. These findings suggest that factors other than time alone contribute to altered knee kinetics. Future work should investigate other potential contributors to long-term alterations in knee joint mechanics.

Supported by: None

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College of Health Sciences Research Day

Presentation 263

Abstract Title:	**UK REHAB MAKERSPACE: TOYS WITH A PURPOSE**
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Abstract: Manufacturing of children's toys may make playtime difficult for children with complex physical needs because the toys can have a button, flip switch, lever, or other access methods that require fine motor skills. To overcome this barrier, one can switch-adapt these toys to make them easier to use. There are switch-adapted toys on the market, but they are not easily accessible due to limited inventory and financial burdens. This project focused on creating switch-accessible, battery-operated toys for children and clinicians.

Supported by: None

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Presentation 264

Abstract Title: **Speech Modification and Mental Effort in Informational-Masking Noise**

Author(s): A. Colleran, Department of Communication Sciences and Disorders, U of Kentucky; L. Cross, Department of Communication Sciences and Disorders, U of Kentucky; R. Welch, Department of Communication Sciences and Disorders, U of Kentucky; K. Ishikawa, PhD, Department of Communication Sciences and Disorders, U of Kentucky, Lexington, KY

Abstract: This study assessed the impact of informational-masking noise, which contains linguistic information, on talkers' ability to generate and modify speech and their associated mental effort. Focusing on clear speech, a style known to enhance intelligibility, we investigated whether the effects observed in prior research on reading tasks - where informational-masking noise impeded the initiation and maintenance of clear speech - would also apply to spontaneous speech. Ten native American English speakers without speech disorders described pictures from the Diapix corpus in habitual and clear speech styles for 90 seconds, both in silence and while exposed to informational- and energetic-masking noises. Following the experiment, participants rated the mental effort for each condition on a 20-point scale. Speech was recorded via a headset microphone, with noise delivered through open-back headphones. Performance was evaluated based on speech rate and word count. Results revealed a significant difference in word count between habitual and clear speech in silence and energetic-masking noise, but not with informational-masking noise. In contrast, the difference in speech rate was significant in silence and informational-masking noise, but not in energetic-masking noise. Neither speech production style nor noise condition significantly influenced mental effort ratings. While limited by the small sample size, these findings suggest that informational-masking noise affects speech production, but not language generation. Furthermore, talkers may not be sensitive to the effect of noise on cognitive load during speech production.

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Tuesday, April 9, 2024 Central Bank Center

College of Health Sciences Research Day

Presentation 265

Abstract Title: **Aspartame Intake Associates with Bone Mineral Density in Youth**

Author(s): C. Mitchell, Department of Athletic Training and Clinical Nutrition, U of Kentucky; D.E. Long, Office of Research and Scholarship, College of Health Sciences, U of Kentucky; J.L. Fry, Department of Athletic Training and Clinical Nutrition, U of Kentucky

Abstract: Adolescence to early adulthood represents the most critical window for establishing peak BMD, with a lower peak BMD raising the risk of osteoporosis and fractures in later life. Female athletes, particularly those with signs of Relative Energy Deficiency in Sport (RED-S; previously female athlete triad) and high drive for thinness, are susceptible to lower BMD. While factors like sex, low BMI, and certain ethnic backgrounds are established risk factors for osteoporosis, the impact of diet on bone density in youth remains ambiguous. Here, we conducted an exploratory analysis to identify nutrients and food groups significantly correlated with lower BMD in the distal femur among adolescents and young adults. Dietary factors showing correlations with BMI, sex, or having a p-value greater than 0.01, were omitted from subsequent analyses. Through stepwise regression, we evaluated the persistence of these associations with BMD, adjusting for sex and weight. Our findings reveal a negative association between aspartame consumption and BMD (Pearson $R = -0.718$, $p = 0.006$). Further, the regression model identified sex, weight, and aspartame intake as significant predictors of BMD, achieving an overall model adjusted $R \leq$ of 0.854 ($p<0.001$). Given the ability of aspartame to sequester calcium and enhance its excretion, these results underscore the importance of further research into aspartame's impact on bone health during critical developmental phases.

Supported by: R01AR072061

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Presentation 266

Abstract Title:	**The Relationship Between Self-Reported Physical Activity and VO2 Estimates Among Firefighters.**
Author(s):	E. A. Oyler, U of Kentucky; J. M. Hoch, Departments of Athletic Training and Clinical Nutrition, U of Kentucky; T. L. Uhl, Department of Physical Therapy, U of Kentucky; N. R. Heebner, Departments of Athletic Training and Clinical Nutrition, U of Kentucky; M. G. Abel, Department of Education, U of Kentucky; J. E. Tinsley Kubala, Departments of Athletic Training and Clinical Nutrition, U of Kentucky

Abstract: Introduction: Physical performance is critical for firefighters as they perform high-intensity occupational tasks. Research into firefighter physical fitness has therefore grown. Differences are commonly observed between self-reported physical activity (PA) and objective fitness measures. This study examined the relationship between firefighter Concise Physical Activity Questionnaire (CPAQ) scores and Chester step test (CST) VO2 estimates.
Methods: A total of 128 (123 male-sex) firefighters (Age: 36.9±6.9 yr.) completed a demographic questionnaire, the CPAQ, and performed the CST. The CPAQ measures self-reported PA engagement over 1 month. Sum scores are generated, with higher scores representing greater PA engagement. The CST is a reliable submaximal estimate of VO2 utilized by the fire service. Participant heart rate (HR) and perceived exertion are measured over 5 progressive stages. The CST is complete when 80% of max HR, an exertion threshold, or 10 minutes have been reached. Greater VO2 indicates greater aerobic capacity. Pearson's correlations were utilized as data presented normally.
Results: CPAQ (11.97±4.44) and VO2 estimates (40.32 mlsO2/kg/min ± 7.20) were significantly, but weakly, related ($r=0.238$, $p\leq0.007$).
Conclusions: Our investigation was unique as it used population-relevant measures of PA and aerobic capacity. These results suggest the CPAQ may be appropriate when collecting firefighter PA behaviors, but like previous findings, it likely cannot represent objective fitness measurements. We suggest using CPAQ in further investigations of firefighter PA and performance to inform policies surrounding fitness and performance recommendations.

Supported by: None

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Clinical Research

Presentation 267

Abstract Title:	**Spreading Aphasia Awareness through Academic-Based Service Learning**
Author(s):	C. Page, Department of Communications Sciences and Disorders, U of Kentucky; H. Russell, Communications Sciences and Disorders, U of Kentucky; R. Boyd, Communications Sciences and Disorders, U of Kentucky; K. Rapson, Communications Sciences and Disorders, U of Kentucky; L. Mantle, Communications Sciences and Disorders. U of Kentucky

Abstract: Aphasia is an acquired neurogenic communication disorder that significantly impacts quality of life (Mayo et al., 2014; Simmons et al., 2010). Currently, about 2 million people in the United States have aphasia. However, 84.5% of people in the United States are unfamiliar with the term "Aphasia" and are unsure how to communicate with individuals with aphasia (National Aphasia Association, 2016). Reduced understanding of aphasia within the community limits communication access for persons with aphasia. More information is needed to train community members about aphasia and communication strategies which may enhance communication access for PWA. This study paired graduate students with persons with aphasia to develop an educational training to share with community members. The aim was to increase students' application of aphasia course content as well as communication access for persons with aphasia. Students completed a survey and wrote three reflective essays. Findings revealed that this collaboration impacted students' community, academic, and interpersonal engagement. Students increased their awareness of PWAs' holistic needs and desire to advocate for communication access and enhanced life participation within their communities. Future studies will investigate outcomes for PWA related to life participation as well as community members. Additional healthcare disciplines will be involved in the collaborative ABSL experience as well.

Supported by: None

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Presentation 268

Abstract Title: **UK Rehab Makerspace: Making Weighted Stuffed Animals**

Author(s): M. Simmons, Department of Communication Sciences and Disorders, U of Kentucky; C. Davies, Department of Communication Sciences and Disorders, U of Kentucky; K. Schneider, Department of Communication Sciences and Disorders, U of Kentucky; K. Fitzgibbons, Department of Communication Sciences and Disorders, U of Kentucky; G. Huber, Department of Communication Sciences and Disorders, U of Kentucky; E. Baumrucker, Department of Communication Sciences and Disorders, U of Kentucky; L. Cahill, Department of Communication Sciences and Disorders, U of Kentucky; P. Kitzman, Department of Physical Therapy, U of Kentucky, M. J. C. Hidecker, Department of Communication Sciences and Disorders, U of Kentucky

Abstract: Assistive technology is any rehabilitative device for individuals with disabilities. Finding affordable and accessible assistive technology is a challenge faced by many individuals with disabilities and their families. This project is making cost-effective assistive technology for the Toys with a Purpose Lending Library (Kitzman). This project focused on creating weighted stuffed animals for use with individuals needing sensory input. Safety will be discussed (Seeberger, 2020).

The goal is to determine the feasibility of altering the weight of pre-existing stuffed animals.

Tools Needed: weighted poly pellets, mesh bags to hold poly pellets (4 inches or 6 inches), seam ripper, sewing needle, thread (invisible nylon or polyester), stuffed animal, scissors, and a scale.

1. Mesh bags were filled with poly pellets and sewn shut.
2. Each mesh bag was weighed before being placed inside a donated stuffed animal.
3. For each stuffed animal, the bottom or rear seam was seam ripped and stuffing removed to create an opening to insert one or more mesh bags.
4. Once the weighted bag was placed into the stuffed animal, the seam of the stuffed animal was sewn shut with an invisible sewing stitch.
5. Each weighted stuffed animal was weighed to ensure weight limit between one pound to four pounds.
6. The completed stuffed animal was placed into the Toys with a Purpose Lending Library (Kitzman).

This project has created 12 weighted stuffed animals. The stuffed animals can be used by individuals with sensory processing needs. This project has successfully created affordable and accessible weighted stuffed animals for individuals with disabilities.

Supported by: None

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Presentation 269

Abstract Title:	**The Impact of Noise Type on Maintenance of Speech Style in Spontaneous Speech**
Author(s):	Olivia Stevens, Department of Communication Sciences and Disorders, U of Kentucky; Annie Moffitt, Department of Communication Sciences and Disorders, U of Kentucky; Corinne Wing, Department of Communication Sciences and Disorders, U of Kentucky; Keiko Ishikawa, Department of Communication Sciences and Disorders, U of Kentucky.

Abstract: Individuals with voice and speech disorders often learn new techniques in therapy, but many find it challenging to apply these in real-world communication, possibly due to environmental noise. This study investigates the impact of different noise types, specifically informational- and energetic-masking noises, on maintaining specific speech production styles. Ten healthy native speakers of American English participated in the study. They described a series of pictures from the DIAPIX corpus in both habitual and clear speech styles, in silence and while listening to two-talker noise (i.e., informational-masking noise) and reversed two-talker noise (i.e., energetic-masking noise). Their performance was acoustically assessed based on speech rate and the number of pauses in the first and last 10 seconds of their discourse. The results showed no significant changes in these parameters across the time points, indicating that the noise did not affect the talkers' ability to maintain their speech styles. However, when combining the samples from these time points, there was a significant difference in these acoustic measures between habitual and clear speech, but only for the informational-masking noise. These findings suggest that informational-masking noise uniquely affects speech production, which has clinically significant implications for skill transfer in voice and speech therapy.

Supported by: The University of Kentucky start-up funds awarded to Dr. Ishikawa.

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Clinical Research

Presentation 270

Abstract Title:	**Evaluating Communication Decision Resources for Parents of Children Who Are Deaf or Hard of Hearing**
Author(s):	S. R. Ogburn, Department of Communication Sciences and Disorders, U of Kentucky

Abstract: Parents of children who are deaf or hard of hearing (DHH) are faced with making the critical decision of communication modality-often categorized into spoken or signed language. Various organizations have developed materials to guide parents through this decision-making process by providing comprehensive information regarding all options to mitigate cognitive biases. This study evaluates the information currently available online for parental decision-making and identifies the limitations of these resources with respect to communication modality choice for DHH children. A comprehensive public domain internet search was conducted from January 17, 2023 to February 3, 2024 using Google, Firefox, and Safari browsers. Search terms included communication options, deafness, speech, sign language, and decision making, using the Boolean terms of "and" along with "or" as appropriate. Ultimately, six resources were identified and evaluated using the International Patient Decision Aid Standards (IPDAS) checklist. Findings indicated that there are a variety of documents available to parents, ranging in quality from fair to excellent. While these resources presented a number of strengths, considerable limitations were identified in their ability to help parents make confident, unbiased choices to achieve positive outcomes for their child who is deaf or hard of hearing.

Supported by: None

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Other

Presentation 271

Abstract Title:	**Strength in The Saddle: How is Stability Affected by Strength in Collegiate Equestrian Athletes?**
Author(s):	Anna Kidney, Georgia Murray, Michaela Keener, MS, Gavin Vice, Neyati Patel, Kimberly Tumlin, PhD, MS

Abstract: Introduction: The Intercollegiate Horse Show Association (IHSA) enables collegiate equestrian athletes(CEAs) to participate in equestrian competitions regardless of experience and socioeconomic status. Positional stability and abdominal strength(AbS) are essential to maintaining balance while riding.
Purpose: This study aimed to analyze the relationship of CEA 1) riding experience and AbS; 2) AbS and positional stability; and 3) AbS and self-reported injury rates. We hypothesized that CEA with greater AbS will have more riding experience, improved control on positional stability, and less self-reported injury rates.
Methods: 17 CEA participated in strength testing in fall of 2023. They performed the Bunkie AbS-test, abductor/adductor strength test, and a 2-minute stability hold in their riding position on an unstable surface. Spearman and Kendal Tau Correlations tests were conducted to evaluate relationships with CEA experience as the independent variable.
Results: There were significant positive correlations between experience and AbS for right and left posterior ($p<0.05$) and left anterior ($p<0.05$) strengths. There was a significant negative correlation between rate of rotation during the stability test in the posterior/anterior direction with right adductor strength, and right and left medial strengths ($p<0.05$). A significant negative correlation was found between the injury rate and right and left posterior stabilizing line ($p<0.05$). CEAs without injury had stronger AbS.
Conclusion: CEA with more experience exhibited stronger AbS and greater control in a positional stability test. These results suggest that more experienced equestrians tend to maintain steadier positions, potentially enhancing their safety while riding.

Supported by: None

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Community Research

Presentation 272

Abstract Title:	**Whose Reflexes Reign Supreme? Unveiling Visuomotor Reaction Times in Jockeys compared to Collegiate Equestrian**
Author(s):	Mazie Knight, Neyati Patel, Michaela Keener, MS, Anna Kidney, Georgia Murray, Gavin Vice, Kimberly Tumlin, PhD, MS, MPH

Abstract: Introduction: Visuomotor reaction time(RT) is important for equestrians as they make instantaneous decisions to respond to their horse. Determining differences of RT among equestrians based on their riding position(RPos) is imperative for ensuring safe sport practices.
Purpose: The purpose is to compare RT of professional jockeys and collegiate equestrians(CEq), with the hypothesis that jockeys, as elite athletes, will have faster RT. Secondly, to analyze variations in RT accuracy and RPos between jockeys and CEq with the hypothesis that CEq will have higher accuracy on the upper half of the board.
Methods: The Dynavision 2 is a RT board with 64 lights. One light turned on at a time, and participants were told to hit each light as fast as possible before it shut off after 0.75s. Participants did a 30s familiarization trial followed by two 60-second sessions: one upright, on the floor(stable surface), and one in RPos on a BOSU ball(unstable surface). Independent t-test analyses were conducted.
Results: Thirty-eight jockeys(36 males) and 26 female CEq completed the testing. The stable RT of CEq(0.59 s) was significantly ($p<0.05$) faster than jockeys (0.61 s). CEq hit significantly ($p<0.01$) more lights (62.7%) compared to jockeys (47.5%) on the upper half of the board in their RPos.
Conclusion: Jockeys slower RT could be due to their necessary weight-making habits such as reduced nutritional intake. Jockeys also have a distinct "martini glass" RPos compared to that of CEq's upright one. This position may prevent jockeys from looking upward and therefore limiting ability to view the blinking lights.

Supported by: None

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College of Health Sciences Research Day

Presentation 273

Abstract Title:	**Evaluating the Difference in Perception of Patient Education Materials Between Providers and Patients**
Author(s):	P. McCowan, Department of Health and Clinical Sciences, U of Kentucky; G. Carlsen, Department of Biology, U of Kentucky; M. Chih, Department of Health and Clinical Sciences, U of Kentucky.

Abstract: Background: In underserved populations, particularly among Appalachian patients with low health literacy, patients' understanding of patient educational materials (PEM) is crucial. Currently, many PEMs are rated on the Patient Educational Material Assessment form (PEMAT), only used by providers, which does not include the perception and understanding by the patients themselves.
Methods: To understand the difference in PEM perception between providers and non-providers in the Appalachian Region, PEMs from the Markey Cancer Center were adapted by lowering grade reading level according to the Flesh-Kincaid readability score. The study consisted of 10 providers and 10 non-providers. Each provider used the PEMAT survey tool to rate the original and revised PEM. Both the provider and non-provider groups used a Likert-scale customized education materials assessment survey to rate the same PEM, both original and revised.
Results: Using the customized PEM survey, providers viewed the original material as easier to understand than non-providers, with a difference of 1.765 (p=.00001). However, for the revised material, the difference was 0.0025 (p=.88), showing that non providers and providers viewed the material similarly. The average PEMAT scores for providers were similar between PEMS, 79.808% (original) and 80.47% (revised).
Conclusion: Providers consistently rated the original and revised material highly on both the survey and the PEMAT tool, while patients showed a significant difference in their perception of the materials in favor of the revised and simpler material. This shows a discrepancy in how patients perceive material, and therefore, that the PEMAT tool does not replicate this discrepancy.

Supported by: Under Graduate Research Summer Fellowship Award College of Health Sciences.

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Community Research,Health Equity Research

College of Health Sciences Research Day

Presentation 274

Abstract Title:	**Implementation of the Communication Function Classification System (CFCS) by Professionals**
Author(s):	M. Mavigliano, Department of Communication Sciences and Disorders, U of Kentucky; M. Ritchie, Department of Communication Sciences and Disorders, U of Kentucky; M.J.C. Hidecker, PhD, CCC-A/SLP, Department of Communication Sciences and Disorders, U of Kentucky; J. Page, PhD, CCC-SLP, FNAP, FASHA, Department of Communication Sciences and Disorders, U of Kentucky

Abstract: Background: The Communication Function Classification System (CFCS) describes everyday communication using one of five levels (Hidecker et al., 2011). The CFCS also provides a section where all communication methods used by the individual can be selected. Originally developed for individuals with cerebral palsy, the CFCS is now used to describe communication performance for individuals with any communication disability. This implementation research surveyed professionals who are familiar with the CFCS and identified any concerns and/or suggestions they had about the utilization of the CFCS.
Goal of research: Discover which sections of the CFCS are used by professionals when determining a CFCS level, any areas of concern, as well as suggestions to improve the CFCS.
Procedures: Participants included any adult who was aware of the CFCS and was willing to anonymously complete the survey. A web-based implementation survey was created in Qualtrics survey software with 12 multiple choice questions and 6 optional text boxes to add suggestions and comments. The questions asked about how the CFCS was used in the professional's research and/or clinical treatment.
Results: The survey produced 40 respondents with backgrounds in education (n=4), occupational therapy (n=4), physical therapy (n=11), psychology (n=3), research (n=5), and speech-language pathology (n=12). Of the 40 participants, 39 collect the CFCS level and 29 collect the individual's communication methods when using the CFCS. One of the most prominent concerns mentioned by the participants included the distinction between sender and receiver roles when using the CFCS.
Future Directions: These results of this study provided valuable information on what improvements should be made to the CFCS and what clarifications need to be made about the CFCS. With these additions, the CFCS can be made more usable by professionals.

Supported by: Madalyn Mavigliano received funding through the University of Kentucky College of Health Sciences: Undergraduate Summer Research Fellowship

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Dissemination & Implementation Research

Presentation 275

Abstract Title: **Using Churn to Analyze PA Student Clinical Rotation Sites**

Author(s): S. Irving, Department of Physician Assistant Studies, U of Kentucky; I. Joyner, Department of Physician Assistant Studies, U of Kentucky; V. S. Xenos, College of Nursing, U of Kentucky

Abstract: Background: The surge in students enrolling in PA schools has posed a significant challenge for universities: securing adequate clinical rotation sites. The current approach of allocating resources to find new sites to accommodate the growing student population is proving to be inefficient and ineffective. This project aims to leverage churn analysis to comprehensively understand placement site trends, turnover rates, and site retention thereby identifying methods to enhance retention by examining the causes of clinical site losses.
Methods: We applied churn analysis to data from clinical placements from 2017 to 2024. The presentation will detail the data manipulation used to compile data for calculating churn metrics. The annual turnover rates were utilized to assess site patterns and behaviors.
Results: Our findings will guide decisions on characteristics of sites that are likely to provide ongoing slots and which sites are likely to churn. This will help establish criteria for selecting new sites and assist in identifying sites that should be prioritized for retention.
Discussion: The issue at hand is multifaceted, with contributing factors including a shortage of healthcare providers and an increase in student numbers. Finding a solution is crucial to maximize clinical rotation sites utilization and reduce the efforts currently used to secure new placement sites, such as paying for slots. Further analysis of individual site tendencies is warranted to gain a comprehensive understanding of the high turnover rates. This will ultimately aid in the development of effective strategies for site retention and student placement.

Supported by: None

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Dissemination & Implementation Research

Presentation 276

Abstract Title:	**Gargle Phonation & Water Swallow Treatments for Muscle Tension Dysphonia**
Author(s):	L. McAllister, Department of Communication Sciences and Disorders, U of Kentucky; Z. Amatullah, Department of Human Health Sciences, U of Kentucky; D. Orbelo, Department of Otolaryngology, Mayo Clinic School of Medicine; K. Ishikawa Department of Communication Sciences and Disorders, U of Kentucky, Lexington, KY

Abstract: The Muscle Tension Dysphonia (MTD) Gargle Phonation Study investigates the effects of gargle phonation (GP) and water swallow (WS) on moderate to mild MTD cases, highlighting acoustic analysis and vowel formants. It was hypothesized that GP would have a significant effect on the formant values F1, F2, and F3. Participant samples were recorded in a clinical office setting using the TASCAM-DR-40X with AKG C555L headset microphone. For GP, participants gargled 5 cc of water while sustaining a neutral vowel (i.e., /ə/) on varying pitch glides. For WS, participants were asked to hold 5cc of water for 5 seconds and then swallow it. After treatment, participants rated voice quality and perceived improvement. Using PRAAT, two researchers measured F1, F2, and F3 values from the obtained recordings.

Supported by: This study was funded by start-up funds provided to the PI (Ishikawa)

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Translational Research/Science

Presentation 277

Abstract Title: **Factors Influencing Bone Microarchitecture: A Scoping Review**

Author(s): D.M. Bush, Department of Health and Clinical Sciences, U of Kentucky; J. Picha, Department of Kinesiology and Health Promotion, U of Kentucky; K.B. Kosik, Sports Medicine Research Institute, Department of Athletic Training and Clinical Nutrition, U of Kentucky; D.M. Torp, Sports Medicine Research Institute, Department of Athletic Training and Clinical Nutrition, U of Kentucky

Abstract: Stress injuries are the result of extensive loading and can lead to pain or lessened mobility for otherwise active individuals. Many internal and external factors play a role on bone health and can influence the risk level of stress injuries; however, it is unknown which factors specifically contribute to bone health (i.e., bone microarchitecture). Exposing which factors influence bone health will promote a better comprehension of stress injuries, leading to more effective, individualistic medical treatment. Therefore, we will conduct a scoping review to determine the breadth of research on factors influencing bone microarchitecture from High-Resolution peripheral Quantitative Computed Tomography (HR-pQCT). This emerging technology provides granularity to identify factors that could increase the risk of bone stress injuries. We aim to understand the span of research utilizing HR-pQCT to analyze bone microarchitecture of the lower extremity in a non-aging, active adult population. Examination of these variables will provide information on factors that relate to overall bone health. Two reviewers will independently search and appraise the literature. The primary variables of interest include sex, race, physical activity, comorbidities (e.g., diabetes, smoking history, alcohol history), and HR-pQCT variables (e.g., bone mineral density, thickness, volume). This review will not include geriatric populations or people with bone disorders (e.g., osteoporosis, bone cancer). Focusing on the analysis of a healthy, active adult population will provide more sustainable information for injury risk. Understanding the common areas studied on bone microarchitecture will provide an overview of factors influencing bone health.

Supported by: None

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Presentation 278

Abstract Title: **Assessment of Gait and Muscle Strength After ACL Injury in Mice**

Author(s): M. O'Daniel, College of Health Sciences, U of Kentucky; A.R. Keeble, College of Health Sciences, U of Kentucky; N.T. Thomas, College of Health Sciences, U of Kentucky; A.M. Owen, College of Health Sciences, U of Kentucky; C.S Fry, College of Health Sciences, U of Kentucky

Abstract: Skeletal muscle function is compromised following acute injury to the anterior cruciate ligament (ACL). Deficits in quadriceps strength and gait biomechanics represent important clinical outcomes to guide treatment strategies. The development of translationally relevant pre-clinical ACL injury models is necessary to advance therapies and translate findings to patients. In the current study, a cohort of mice were subjected to ACL injury via direct surgical transection and measures of quadriceps strength, muscle size and gait were assessed at several time points post-injury. Briefly, in vivo assessment of gait and knee extensor strength (isometric peak tetanic torque) were performed using a DigiGait and Aurora 1300A in mice across time (pre-ACL injury, and 7, 14, and 28d post-injury). Mice experienced a 42% deficit in isometric torque (Pre-ACL: 38.3±3.2mN/m; 7d ACLT: 22.2±2.5mN/m; $p<0.01$) that did not recover through 28d of follow-up. Similarly, indices of gait, such as percent of time spent in propel and stance, saw similar declines at 7d post-ACLT (Propel: Pre-ACLT: 57.7±4.4%; 7d ACLT: 51.2±3.2%; $p<0.01$. Stance: Pre-ACLT: 74.2±3.0%; 7d ACLT: 66.72±2.3%; $p<0.01$). These deficits corresponded to quadriceps atrophy that was apparent at 7d post-ACLT (Uninjured: 2498±293µm2; 7d ACLT: 1973±342µm2, $p<0.01$) that did not recover through 28 after injury. The results of these experiments highlight the development of functional and phenotypic deficits in mouse muscle strength, size and gait that occur after ACL injury. These deficits are similar in scope to those observed in patients, supportive of this pre-clinical research tool to translate findings to patients after a common lower limb injury.

Supported by: NIH award: R01AR072061

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College of Health Sciences Research Day

Presentation 279

Abstract Title:	**ACL-injury Causes Quadriceps Transcriptional Deficits and Myonuclear Dysfunction that are Unresponsive to Rehabilitation**
Author(s):	H.C. Weiss, College of Health Sciences, U of Kentucky; N.T. Thomas, College of Health Sciences, U of Kentucky; L.K. Eastwood, College of Health Sciences, U of Kentucky; M.L. Wagers, College of Health Sciences, U of Kentucky; D.L. Johnson, College of Medicine, U of Kentucky; B. Noehren, College of Health Sciences, U of Kentucky; C.S. Fry, College of Health Sciences, U of Kentucky

Abstract: Anterior cruciate ligament (ACL) tears are common sport-related injuries that lead to protracted quadriceps atrophy and weakness that does not recover despite rehabilitative efforts. Myonuclear abundance is critical for homeostatic maintenance of muscle and myonuclear dysfunction is a key feature of muscle atrophy. Satellite cells are required for myonuclear accrual, and may be implicated in recovery of myonuclear dysfunction observed during atrophy. We aimed to define putative molecular effectors of atrophy and weakness following ACL-injury by longitudinally defining the quadriceps transcriptome via RNA-seq. Satellite cell and myonuclear abundance, and muscle fiber cross-sectional area were measured via immunohistochemistry. Quadriceps muscle biopsies and strength measurements were collected from ACL-injured and Healthy limbs (n=26) prior to-, and multiple timepoints post-reconstruction surgery (ACLR). Isolated muscle fibers were assayed for 3-dimensional fiber volume and myonuclear abundance. Neither quadriceps atrophy (ACL-injured: -630.66±171.31µm2, 1-week post-ACLR: -1185.63±244.38µm2, 4-months post-ACLR: -1335.48±197.63µm2, all $p<0.05$ vs Healthy) nor isometric strength (ACL-injured: -39.645±8.51Nm, 4-months post-ACLR: -86.94±12.91Nm, 6-months post-ACLR -64.34±12.30Nm; all $p<0.05$ vs Healthy) recovered following ACLR and physical therapy. Myonuclear domain also declined (ACL-injured: -31081±10194µm3/myonucleus, 4-months post-ACLR -52894±13709µm3/myonucleus; all $p<0.05$ vs Healthy) along with satellite cell abundance (ACL-injured: -13.20±14.77% $p=0.71$, 1-week post-ACLR: -47.13±9.28%, $p<0.05$, 4-months post-ACLR -49.54±17.47%, $p<0.05$ vs Healthy). Transcriptome analysis showed 3441 genes were differentially expressed 1-week post-ACLR (FDR<0.05). Notably downregulated pathways included muscle contraction, muscle cell differentiation, and muscle structure development. The observed deficits likely contribute to poor functional recovery following ACL-injury.

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Translational Research/Science

Presentation 280

Abstract Title:	**Addressing the Mental Health of Cancer Patient Families: A Study on the Efficacy of FamCare to Reduce Anxiety/Depression**
Author(s):	A Faiola, Dept. of Health and Clinical Sciences, U of Kentucky; Z. Hao, Markey Cancer Center, College of Medicine, Division of Medical Oncology, U of Kentucky; R. Munker, Markey Cancer Center, College of Medicine, Division of Medical Oncology, U of Kentucky; S. Schrader, Dept. of Health and Clinical Sciences, U of Kentucky; M. Burch, Dept. of Health and Clinical Sciences, U of Kentucky; K. Youngen, College of Nursing, U of Kentucky

Abstract: Families/caregivers with loved ones receiving inpatient cancer treatment require regular medical updates. When the needs of families are met, there are desirable positive consequences for both the patient and families. Unfortunately, these needs are often challenged in the patient's care plan. Decades of compelling research have demonstrated that patient families are at high risk for developing PTSD, anxiety, and depression due to the lack of communication from the bedside. Although a majority of rural families use smartphones, socioeconomic disparities still exist due to their geographic location and inability to travel long-distances to an inpatient facility to know what is happening at the bedside. To support families with access to cancer patient health updates, we developed a mHealth intervention app (FamCare+) that provides communication between remote families and caregivers at point-of-care. A two-arm pilot study uses a convenience sample and the HADS (Hospital Anxiety/Depression scale) to demonstrate efficacy in improving mental health after using FamCare+ for three-weeks. Early clinical data from the intervention pilot study is suggesting a trend towards a positive impact on families, which should become clearer by late Spring-2024. (Note: FamCare+ provides families with vitals and wellness updates, FaceTime, and texting with the bedside. The FamCare+ study with families is currently in the pilot testing stage at the Markey Cancer Center, Chandler Inpatient, 11th floor, and is funded by a MCC Community Grant.)

Supported by: Markey Cancer Center Community Impact Grant.

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Faculty
Clinical Research

Presentation 281

Abstract Title:	**VR Gaming as Neurostimulation: Therapy for Brain Cancer and Delirium Survivors Suffering from Cognitive Impairment**
Author(s):	A. Faiola, Dept. of Health and Clinical Sciences, U of Kentucky; J. Villano, Markey Cancer Center, Division of Medical Oncology, U of Kentucky; S. Khan, Center for Aging Research, Critical Care Recovery Center, Eskenazi Health, Indiana University; B. Khan, Center for Aging Research, Critical Care Recovery Center, Eskenazi Health, Indiana University; S. Soroya, College of Information Science, Southern Connecticut State University; S. Schrader, Dept. of Health and Clinical Sciences, U of Kentucky; M. Burch, Dept. of Health and Clinical Sciences, U of Kentucky;

Abstract: Two populations suffering from acute cognitive impairment include brain cancer and ICU delirium patients. While patient survival from chemotherapy and sedation pharmaceuticals extend life, there are considerable adverse cytotoxic effects that extend to the central nervous system, resulting in severe neurotoxicity—affecting concentration and executive function: working memory, cognitive flexibility, etc. Besides the persistent effects of brain fog, these patients find it difficult to execute simple tasks without extra concentration. Early studies have demonstrated that video games have improved cognition and attention/working memory for patients suffering from stroke and dementia. We posit that enhancing neuroplasticity through a non-invasive game substrate can offer a new form of neurostimulation therapy. Through our newly developed virtual reality game, patient/players move through 3D space as a first-person avatar, interacting with cityscapes and embedded selective attention (SA) exercises. Our gaming environment manages SA stimuli by directing the patient to focus and filter visual/auditory information through looking/listening and shadow tasking. By recruiting executive function, this non-invasive intervention promotes the ability of neurons to alter the functional properties of the brain thereby stimulating plastic changes. A two-arm pilot study uses a convenience sample and four cognitive tests (HVST-R/COWA/TMTa-b/FrSBe) to demonstrate efficacy in improving cognitive function after using the game every-day for four-weeks. Early clinical data from the study may demonstrate considerable improvement, becoming clearer by late Spring-2024. (Note—the VR game, HomeTown-Bound, includes three environments, 84 exercises within 14 modules. Patients are being recruited from UK-MCC Outpatient Neuro-Oncology (Funded by CCTS) and the IU Eskenazi Health Inpatient-ICU.)

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

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Clinical Research

Presentation 282

Abstract Title:	**Family Experiences with an Interdisciplinary Neurodevelopmental Clinic: A Qualitative Study of Caregiver Perspectives**
Author(s):	M.Haydon-Dones, Department of Physical Therapy, U of Kentucky; B.J. Miller, Department of Physical Therapy, U of Kentucky; K. McNamara-Kays, Norton Children's Research Institute, U of Louisville; K. Goldey, Department of Health and Clinical Sciences, U Kentucky; C.L. Gohrband, Department of Physical Therapy, U of Kentucky

Abstract: Background: Children with complex neurodevelopmental diagnoses require a multitude of services in order to maintain their quality of life. Finding and attending a variety of these services can place a heavy burden on the caregiver and family. In situations where their care is uncoordinated, there is a higher incidence of unmet goals due to miscommunications between providers and lack of education to family members. Recent literature has demonstrated improvements in familial burden through integrated care systems and how caregiver perspective can be an important consideration for additional research.
Purpose: The purpose of this study is to gain a greater understanding of the experiences families have in working with an interdisciplinary healthcare delivery model for children with complex neurological disabilities
Methods: Interviews conducted using an interview guide to provide a loose structure to the conversation and audio-recorded on a password protected device to be transcribed by a secure source. Following, the transcript was coded and memoed by two researchers followed by a triangulation meeting to discuss agreement of codes.
Results: Preliminary results indicate a decrease in familial and caregiver burden through integrated care for children with neurodevelopmental diagnoses. This includes increased consistency in plan of care, improved education follow through, reduced parent anxiety and stress, and improved child comfort and engagement in therapy session.

Supported by: None

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Other
Clinical Research,Community Research

Presentation 283

Abstract Title:	**ImPActing Kentucky: Exploring Physician Assistant Outcomes of Medication for Opioid Use Disorder Training in Kentucky**
Author(s):	C. Vanderford, Department of Physician Assistant Studies, U of Kentucky; J. Burkhart, Department of Physician Assistant Studies, U of Kentucky; A. Sparks, Department of Physician Assistant Studies, U of Kentucky; P. Williford, Department of Physician Assistant Studies, U of Kentucky

Abstract: Background: Kentucky Physician Assistants (KY PAs) are in a distinctive position to provide access to lifesaving Medication for Opioid Use Disorder (MOUD) treatment as Kentucky is 4th in the nation for overdose deaths and the 50th state to grant prescriptive authority to PAs for schedule III-IV medications1.
Methods: This study utilized an anonymous, voluntary, non-funded qualtrics survey to collect data related to KY PAs' demographics, experiences related to MOUD waiver training, obtaining DEA to prescribe buprenorphine, and implementation of prescribing MOUD.
Results: Of the 36 respondents to this survey, 16.7% have completed MOUD waiver training. Several challenges to training completion were identified including time to completion (2.8%), lack of required equipment (5.6%), and lack of knowledge of where to complete training (2.8%). Factors contributing to respondents not pursuing training were the perception that this training does not pertain to their current role (38.9%), and not feeling comfortable with prescribing MOUDs (11.1%). 13.9% of respondents do not plan on pursuing a DEA license. Only 8% of the respondents have implemented MOUD training into their practice within 3 months of receiving training.
Discussion: The findings suggest that completion of MOUD training is inhibited by several factors including the current role of PAs in MOUD and the challenge of locating a supervising physician able to prescribe buprenorphine. This indicates a need for further exploration into the factors limiting PAs in performing MOUD such as legislative barriers, limited MOUD programs, and access to training.

Supported by: None

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Faculty
Community Research

Presentation 284

Abstract Title: **University of Kentucky Physician Assistants: Where do they work?**

Author(s): V. Valentin, Department of Physician Assistant Studies, U of Kentucky;
D. Potter, Departments of Physician Assistant Studies and Physical Therapy, U of Kentucky

Abstract: Background: The mission of the University of Kentucky PA (UKPA) program is to improve the health and well-being of the people of the Commonwealth through training Physician Assistants (PAs). To understand if the UKPA program is meeting this mission and building the Kentucky health workforce, the employment setting of our alumni is of great significance.
Methods: Location in Kentucky of UKPA graduates from 2016 to 2022 was collected from the address information listed from the Kentucky Board of Medical Licensure (KBML) database of licensed PAs and physicians. The supervising physician for each PA was used to match practice information. PAs were assigned to HPSA and MUA/P shapefiles using ggmap geocoding.
Results: The most frequent PA supervising physician area of practice were emergency medicine and family medicine. 86.3% of UKPA alumni listed Kentucky as their state of residence on their application. 80.2% of UKPA alumni are licensed as PAs in Kentucky. 36.8% are in a primary care Health Professional Shortage Area (HPSA). 24.4% are in a Medically Underserved Area/Population (MUA/P). 31.5% are in rural areas. UKPA graduates are licensed as physician assistants working in 49 counties across Kentucky. 46.4% of licensed UKPA graduates work in Fayette and Jefferson counties.
Conclusion: The UKPA program is meeting its proposed mission with 80% of graduates employed in the state of Kentucky upon graduation. As the legislature and the University of Kentucky invest in building the Kentucky health workforce the UKPA program should be used as a model.

Supported by: None

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Faculty
Community Research,Health Equity Research,Other

Presentation 285

Abstract Title: **Patient Reports of Pain and Pain Management in Adults with Cerebral Palsy**

Author(s): C. Gohrband, Department of Physical Therapy, U of Kentucky; M. Chapuran, Department of Physical Therapy, U of Kentucky; L. Harshbarger, Department of Physical Therapy, U of Kentucky; S. Rudd, Department of Physical Therapy, U of Kentucky

Abstract: Background: Cerebral palsy (CP) is a non-progressive group of disorders that affects brain and motor development. Due to the increase in energy required and the stress on the body during movement, many adult patients with CP report having chronic pain, particularly within the low back. This study will provide a better understanding of the pain experience and pain management in adults with CP who experience low back pain.
Purpose: To identify various pain management strategies used for treating low back pain by adults with cerebral palsy and evaluate the perceived effectiveness of identified pain management strategies used by adults with cerebral palsy.
Methods: In this qualitative study, 7 adults with cerebral palsy and low back pain were interviewed via Zoom consisting of 12 questions relating to demographics, their condition and pain management in a semi-structured manner. Hypertranscribe software was used to analyze data and Redcap was used for transcription storage.
Results: The overall results of this study found that most individuals with CP use a combination of medications and exercise to manage their back pain. However, common themes related to these strategies include: (1) insurance complications; (2) the transition of care into adulthood; (3) limited knowledge of low back pain and CP among healthcare providers; (4) the benefits of physical therapy against pharmaceutical medicine.
Conclusions: Physical therapy as an active member of the interdisciplinary team would have a positive impact on patient management in adults with CP.

Supported by: None

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19th Annual CCTS Spring Conference
Tuesday, April 9, 2024 Central Bank Center
College of Health Sciences Research Day

Presentation 286

Abstract Title: **Kentucky Physician Assistants: Where do they work?**

Author(s): D. Potter, Departments of Physician Assistant Studies and Physical Therapy, U of Kentucky;
V. Valentin, Department of Physician Assistant Studies, U of Kentucky

Abstract: Background: Physician assistants (PAs) play an important role in the healthcare system. Despite this, the number of employed PA's and their roles have not been documented thoroughly. This project seeks to understand the distribution of PA workforce in Kentucky. Rural areas, primary care health professional shortage areas (HPSA), and medically underserved areas/populations (MUA/P) have a higher need for health professionals. The healthcare needs of these areas are supported by the PAs serving these communities.
Methods: Location of PAs in Kentucky was collected in October 2023 from the address information listed from the Kentucky Board of Medical Licensure (KBML) database of licensed PAs and physicians. The supervising physician for each PA was used to estimate practice distribution. PAs were assigned to HPSA and MUA/P shapefiles using ggmap geocoding.
Results: At time of data collection, there were currently 1649 active licensed PAs in Kentucky. The number of PAs in rural areas was 33.9%, in HPSA was 42.5%, in MUA/P was 20.0%. The two most populous counties in Kentucky, Jefferson and Fayette counties, held the addresses of 44.6% of Kentucky PAs. The most common areas of practice for PAs supervising physicians were emergency medicine (14.5%) and internal medicine (14.5%).
Conclusion: While Kentucky has a high number of counties designated as HPSA or MUA/Ps the distribution of the PA workforce addresses many, but not all, of the health professional needs of these communities. Future research and policy decisions should center around understanding effective measures to recruit PAs to areas with healthcare workforce needs.

Supported by: None

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Staff
Health Equity Research,Other

Presentation 287

Abstract Title: **A Model for Teaching Professionalism in Communication Sciences and Disorders**

Author(s): C. Page, Communication Sciences and Disorders

Abstract: Professionalism continues to be a hot and muddy topic among clinical educators and academic faculty in Communication Sciences and Disorders (CSD) programs. Clinical educators often report that students demonstrate adequate knowledge but lack professionalism. Academic faculty often share that students' oral and written communication is informal. This is concerning because professionalism is linked to workplace sustainability as well as establishing the client-clinician relationship. CSD students may learn professionalism through coursework or practicum assignments. However, to our knowledge, no outcomes are available to determine which form of training is most advantageous in students' acquisition of professionalism. This lack of universal training in professional issues may limit the ability of our future speech-language pathologists and audiologists to sufficiently develop and apply professional skills in clinical workplace settings (McCarthy et al., 2010). A consistent model of professionalism in CSD curriculum may facilitate attainment and application of professional skills. This scholarship of teaching and learning project investigated the impact of a medical model of professionalism (Stern, 2006) on students' self-perceptions of professionalism using a pre-post survey across two student cohorts (2022 and 2023). Results showed a statistically significant difference between pre and post scores ($p < .001$) for both student cohorts. Differences were noted between individual survey responses. For 2022, knowledge and skills changed the most, followed by communication, self-reflection, accountability, and humanism. For 2023, honor and integrity had the most change followed by non-verbal communication, self-reflection, and knowledge. These preliminary findings support a model of professionalism to enhance CSD students' academic and future clinical performance.

Supported by: None

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19th Annual CCTS Spring Conference
Tuesday, April 9, 2024 Central Bank Center

College of Health Sciences Research Day

Presentation 288

Abstract Title:	**Lessons Learned: Workforce Employability Models, Curriculum Mapping and Assessment**
Author(s):	K. F. Clancy, Department of Health and Clinical Sciences, U of Kentucky; A. M. Zagzoog, Rehabilitation and Health Sciences PhD Program, U of Kentucky

Abstract: In 2020, the Program adopted an employability curriculum model by becoming Essential Employability Qualities (EEQ) certified through QA Commons (Commons, 2021) and the Kentucky Council of Postsecondary Education. The EEQ certification requires the integration of eight employability qualities into the curriculum, including communicator, thinker and problem solver, inquirer, collaborator, adaptable, principled and ethical, responsible and professional, and learner. The integration of employability concepts and skills into a curriculum helps lead to job readiness for its graduates. (Lumina Foundation, 2017)

This poster offers a case study on how employability pedagogy has been mapped to assignments in the curriculum, how student work is assessed, and how the data may be used to evaluate the effectiveness of instruction. The assessment cycle, timeline, mapping of the EEQs to formative and summative assignments, an example of a rubric, and some of the early data will be provided. The project is ongoing. Lessons Learned to date, including successes and challenges, will also be presented.

This model of curriculum mapping and assessment can be applied to many different disciplines and content areas of study. Discussion and feedback from the Scholarship of Teaching and Learning and Research communities is encouraged.

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Presentation 289

Abstract Title: **The Path to Diagnostic Excellence: Operationalizing Differential Diagnosis Mastery**

Author(s): R. Hunton, Department of Physician Assistant Studies, U of Kentucky; D. Potter, Department of Physician Assistant Studies, U of Kentucky; K. Schuer, Department of Physician Assistant Studies, U of Kentucky

Abstract: Background: Diagnostic error is among the most studied and common errors in medicine. The ability to formulate a differential diagnosis is central in clinical reasoning and helps avoid cognitive bias and missed diagnoses. Mastery in this skill requires a fund of medical and experiential knowledge applied to ill-defined clinical problems. Traditional pedagogies and assessment measures do not address this skill well. This study aims to establish an operational definition for differential diagnosis.
Methods: To understand how differential diagnosis has been defined in the past, both conceptually and operationally, a literature review was conducted. To better understand mastery in this skill, six sample vignettes of 50 words or less were validated through agreement among experienced clinicians regarding top diagnostic considerations.
Results: Differential diagnosis is defined as a list of plausible diagnostic hypotheses for a particular case scenario. It is part of a larger clinical reasoning process, influenced by and influencing other components in this process. Literature is scant regarding an operational definition for mastery in this skill. Differential diagnosis has several potential sub-components including quality diagnostic considerations, prioritization and accuracy, use of professional language, broad range of organ systems, complexity, and prevalence considerations. A Qualtrics survey has been established to pilot a better understanding of mastery in this skill among expert clinicians.
Conclusion: By sharpening the definition of mastery in differential diagnosis, health professions programs and students can better engage in practices that improve this skill. Further work is needed to establish an operational definition for differential diagnosis ability. Once this work is completed, this project can proceed in measuring longitudinal growth of this skill in physician associate students.

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Presentation 290

Abstract Title:	**They Said What?! Difficult Conversations through an Interprofessional Lens**
Author(s):	K. L. Lee, Department of Physical Therapy, U of Kentucky; S. E. Kercsmar, Department of Health & Clinical Sciences, U of Kentucky; H. L. Witt, Department of Physical Therapy, U of Kentucky

Abstract: Health care providers engage in difficult conversations frequently, often in the context of interprofessional practice. Along the course of the COVID-19 pandemic, students faced challenges with communication in their education as courses pivoted to online from more traditional measures. The combination of cognitive development in young adults as they are forming professional identities provides challenges for healthcare educators.

Combining professional communication simulation of holding difficult conversations with an interprofessional experience allowed two levels of learning for physical therapist professionals graduate students and clinical leadership and management (healthcare administration) undergraduate students.

Given that CLM students will hold leadership positions across healthcare and PT students will be providing frontline care, this simulation allowed future leaders and providers contextualize an interprofessional interaction while learning how to hold difficult conversations for more productive and effective healthcare delivery.

Both groups of students were provided instruction on having difficult conversations and then, the CLM students were provided real-life scenarios to prepare for the simulation. The CLM students played the "difficult patient" and the PT students negotiated the situation. We learned that more instruction is necessary to help them prepare and it would be helpful to allow both parties to be the difficult factor. The next steps for this project are to increase preparation and utilize pre-post measures.

Supported by: None

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Presentation 291

Abstract Title:	**A Delphi Study to Guide the Development of a Telehealth Evaluation Tool for Use in Training Allied Health Students**
Author(s):	J. J. Lowman, Department of Communication Sciences and Disorders, U of Kentucky; A. Sayer, Department of Communication Sciences and Disorders, U of Kentucky; S. R. Irving, Department of Physician Assistant Studies, U of Kentucky; R. A. Carper, Department of Physical Therapy, U of Kentucky; L.N. Woltenberg, Department of Physician Assistant Studies, U of Kentucky; M. B. Allen, Department of Communication Sciences and Disorders, U of Kentucky

Abstract: The pandemic exposed the training to practice gap in telehealth preparation that has existed for decades. National telehealth recommendations for physician assistants (PA) and rehabilitation providers (RP) lack the specificity necessary to guide the clinical training and assessment of students. As a result, a need exists to develop a tool for monitoring the development of AHP students' telehealth skills.

A modified eDelphi method was used to reach expert consensus on observable, essential telehealth behaviors across PA and RP groups during a real-time audio-video telehealth visit. We preselected items for inclusion in the survey through a literature review (Round 1), disseminated the survey electronically, and pre-determined to terminate the study after two rounds of expert review (Rounds 2 and 3). Consensus was defined a priori as a median of 4 and interquartile range (IQR) of 0 on both the attributes of "essential" and "observable".

A heterogeneous pool of 32 PA and RP experts completed the Round 2 survey; of these, 25 completed Round 3. Sixteen of the 27 statements reached consensus by the end of Round 3. That is, the experts agreed that 16 behaviors were essential (Median of 4, IQR of 0) and observable (Median of 1 and IQR 0). Based on regulations, published literature, and expert ratings, we believe the remaining 11 behaviors would also be important to include in a performance evaluation tool. The list of behaviors serves as a guide to training programs seeking to add telehealth-specific performance indicators to their clinical performance tools.

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Presentation 292

Abstract Title:	**Incorporation of DEI topics into the MLS curriculum: Syphilis Testing and the Tuskegee Syphilis Study**
Author(s):	C. Swartz, Department of Health and Clinical Sciences, U of Kentucky; I. Simon-Okube, Department of Health and Clinical Sciences, U of Kentucky

Abstract: The population of the United States is steadily increasing, and is becoming more diverse over time. In order to meet the healthcare demands and needs reflective of this burgeoning patient population, it is imperative that current and future healthcare providers, nurses, and other healthcare professionals gain a degree of proficiency and training in topics related to cultural competency, and diversity, equity, and inclusion (DEI), as related to a large and diverse patient population. A culturally competent healthcare workforce will become a cornerstone of breaking down and breaking through barriers in the form of historical racial and ethnic disparities related to healthcare in the United States.

While cultural competency training continues to gain traction in education programs for healthcare professions such as medicine and nursing, there are no current requirements from accrediting bodies to incorporate topics related to diversity, equity, and inclusion (DEI) into the undergraduate medical laboratory science curriculum. In order to bridge this gap in MLS education, we developed a hybrid lecture and laboratory module targeted towards the nexus of laboratory testing, and how it relates to historically underrepresented patient populations in the United States, specifically African-American research subjects who participated in the Tuskegee Syphilis Study. Upon completion of the laboratory activity, anonymous survey results were collected from MLS student study participants, and analyzed in order to evaluate the effectiveness of the educational activity as a potential vehicle for integration of DEI-related topics into the MLS curriculum.

Supported by: None

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Presentation 293

Abstract Title:	**Self and Team Communication Assessment through Problem-Based Learning: A Study in Health Professions Education**
Author(s):	P.A. Williford, Department of Physician Assistant Studies, College of Health Sciences, U of Kentucky; R.W. Hunton, Department of Physician Assistant Studies, College of Health Sciences, U of Kentucky; KM. Schuer, Department of Physician Assistant Studies, College of Health Sciences, U of Kentucky; L.N. Woltenberg, Department of Physician Assistant Studies, College of Health Sciences, U of Kentucky

Abstract: BACKGROUND: The study examined communication skills among Physician Assistant (PA) graduate students in the context of problem-based learning (PBL) activities. PBL is a contemporary teaching method, frequently used in health science professions education, that aligns with adult learning theory. It presents learners with complex real-world problems, requiring both collaborative and analytic problem-solving skills. PBL pedagogy enables learners to develop essential critical thinking, clinical reasoning skills, and problem-solving abilities and has been shown to improve many aspects of medical education
METHODS: Didactic PA students completed weekly PBL activities during class time and engaged in a debrief session facilitated by program faculty. Upon completion of activities, students were directed to the PBL Communication Survey to provide perception data regarding self and team members' communication skills as displayed during the learning activity. Survey items were evaluated on a 6-point Likert-type rating scale (6 strongly agree, 1 strongly disagree) with optional text box to add qualitative context. Results were evaluated via descriptive statistics and comments examined via thematic analysis.
RESULTS: Preliminary results demonstrate consistently high-ratings for "Demonstrated respect toward team members" and "Demonstrated active listening"; whereas, consistently lower-rated items included "Overall, communicated effectively during the PBL activity" and "Clearly articulated thoughts and ideas". Initial analysis demonstrated a rating skew toward positive end of evaluation scale and minimal respondents provided (optional) qualitative insights. Initial analysis did not reveal statistically significant difference in team nor self ratings across PBL sessions to-date. PBL activities demonstrate promise toward cultivation of essential communication skills among health professions learners.

Supported by: None

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Faculty
Scholarship of Teaching & Learning

College of Health Sciences Research Day

Presentation 294

Abstract Title:	**Scholarship is Teaching and Learning: Perceptions and Experiences of a SoTL Faculty Learning Community**
Author(s):	M.A. Miller, Center for the Enhancement of Learning and Teaching, U of Kentucky; T. Conatser, Center for the Enhancement of Learning and Teaching, U of Kentucky; J.M. Abney, Center for the Enhancement of Learning and Teaching, U of Kentucky; J Schmedding-Bartley, Department of Communication Sciences and Disorders, College of Health Sciences, U of Kentucky, L.N. Woltenberg, Department of Physician Assistant Studies, College of Health Sciences, U of Kentucky

Abstract: BACKGROUND: The Scholarship of Teaching and Learning (SoTL) is a rapidly growing and diverse area of study in higher education. Given the evolving landscape of higher education, it is imperative to examine the perspectives and practices of faculty engaged in SoTL via the framework of faculty learning communities (FLCs). In response to the interest in SoTL and as an opportunity to inform further training among faculty in health sciences, the UK Center for the Enhancement of Learning and Teaching (CELT) and College of Health Science (CHS) established the SoTL Faculty Learning Community in 2022. This study examined the perceptions and experiences among faculty participants in a structured SoTL FLC.
METHODS: This two-year program included five workshops followed by structured support for participants' projects. Two cohorts of twenty-two total faculty across eight academic departments in CHS participated. This mixed-method cohort study employed an anonymous electronic survey to gather perceptions on knowledge and practice of SoTL after each workshop. Survey items included a combination of quantitative (5-point Likert-type agreement scale) and qualitative items.
RESULTS: 100.0% (N=64) of unique participant responses rated SoTL workshops above the benchmark value 3.5. No significant between-group differences were found across cohorts. Qualitative themes included increased knowledge of SoTL practices, valued resources, and positive regard for the community/support. Preliminary findings suggest the SoTL FLC fostered SoTL knowledge, research practices, and cultivated collaboration and community among faculty. Further research exploring the impact of SoTL practice on self-efficacy in the classroom and SoTL research/scholarship productivity is warranted.

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Presentation 295

Abstract Title:	**Applying the Many-Facet Rasch Model to Enhance Fairness and Accuracy in Physical Therapy Admission Decision**
Author(s):	P. Pabian, Departments of Physical Therapy, U of Kentucky; Y.Xia,Departments of Physical Therapy, U of Kentucky

Abstract: In the highly competitive realm of health care profession admissions, the selection of candidates with the greatest potential for success is critical. The limited availability of seats amplifies the importance of effective and reliable admissions processes. Specifically, within numerous health professions programs, the assessment of applicants' performance during interviews is pivotal to the decision-making process. This study employs the Many-Facet Rasch Measurement (MFRM) to analyze the alignment of examinees, items, and raters, focusing particularly on the evaluation of the severity and consistency of ratings by 19 interviewers of 149 applicants to a physical therapy program. Our analysis uncovers a wide variation in raters' severity, with a notable proportion showing a strong congruence with the MFRM model. Despite the considerable differences in raters' scores, the implementation of fair scores, as derived from the model, demonstrates the approach's ability to provide more accurate and consistent evaluations of applicants' competencies. These adjustments take into account both the complexity of interview tasks and the distinct characteristics of each rater. Such findings are crucial for high-stakes testing environments, like the Physical Therapy Admission Process, highlighting the model's effectiveness in improving the fairness and precision of admissions decisions.

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Presentation 296

Abstract Title:	**Effects of a Group-Based Functional HIIT Class on Physical Performance in Women Aged 55 and Older**
Author(s):	K. L. Lee, Department of Physical Therapy, U of Kentucky; K. Castle, Department of Physical Therapy, U of Kentucky; N. Kleier, Department of Physical Therapy, U of Kentucky; A. Thomason; Department of Physical Therapy, U of Kentucky

Abstract: Adults 65 and older are reported to have the least adherence to the Physical Activity Guidelines of all age groups. Risk of injury, lack of motivation, lack of guidance, and environmental limitations have been cited as barriers to exercise for older adults.

StrongerLife, a gym for people aged 55 and older located in Lexington, KY, employs facilitators of adherence to HIIT exercise: coach-led, high-intensity classes. HIIT, periods of high intensity physical activity with short periods of rest or low-intensity activities, has been shown to be beneficial and safe for older adults. HIIT has been shown to improve this population's body composition, mental health, and functional capacity. However, a limited number of studies have examined specific effects of functional HIIT on physical function in older adults. Participants included community-dwelling females between age 55 and 89 who attended fitness classes at StrongerLife.

In December 2022, participants completed pre-testing for 4 different measures: 30 second sit to stand, grip strength, 500m row, and mid-thigh pull. For 6 months, participants attended functional HIIT classes with no requirements for the number of sessions they attended. After 6-7 months of training, participants completed post-testing.

After 6 months of functional HIIT classes, there was a statistically significant improvement in participants' 30 second sit to stand and mid-thigh pull scores. The results demonstrate effectiveness of HIIT programs for physical function and fitness in women over 55.

Future research needs to establish normative values considering age for tests such as the mid-thigh pull and 500m row.

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College of Health Sciences Research Day

Presentation 297

Abstract Title:	**Using Electronic Monitoring to Improve Adherence to Daily Yoga Practice as a Model to Understand Medication Adherence**
Author(s):	G. Nemeth, College of Sciences, U of Kentucky; D. Yokel, Department of Integrative Medicine and Health, U of Kentucky; M. Chih, Department of Health and Clinical Sciences, U of Kentucky

Abstract: Background: Inadequate medication adherence is partly due to the lack of a reliable patient monitoring method. This study used participants' adherence to daily yoga as a model to assess the underlying factors of adherence and to determine whether implementing electronic adherence monitoring (EAM), including a daily reminder, will improve participation rates compared to the absence of EAM.
Methods: This analysis is based on 7 participants' responses to a one-group, pretest-posttest design. Participants completed a 10-minute, video-guided yoga session daily for four weeks. Survey results were analyzed using a paired-sample t-test to determine whether EAM (weeks 3-4) improves participant adherence rates compared to a control period (weeks 1-2). Qualitative analysis identified factors which may have influenced quantitative results.
Results: The mean adherence rate for the control period was 8.7 of 14 days (62%). That of the interventional (EAM) period was 11 of 14 days (78%). However, this difference is not statistically significant (p=0.112), likely due to a small sample size. Factors which may have influenced an individual's adherence to the yoga regimen were identified, including belief in the benefits of yoga practice, history of adherence to medication use, and hours spent working per week.
Conclusion: Despite a small sample size, these data suggest that electronic adherence monitoring with a daily reminder is an effective method of increasing participant adherence to a prescribed, daily yoga regimen, which may extend to medication adherence under similar conditions. These findings reinforce those of existing studies suggesting EAM for standardized use in clinical practice.

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Presentation 298

Abstract Title: **The Importance of Performing Vestibular Assessments on Patients Following TBI: A Retrospective Study**

Author(s): J. B. Cline, Department of Physical Therapy, College of Health Sciences, U of Kentucky; M. E. Hancock, Department of Physical Therapy, College of Health Sciences, U of Kentucky; K. E. Mullaney, Department of Physical Therapy, College of Health Sciences, U of Kentucky; L. R. Noe, Department of Physical Therapy, College of Health Sciences, U of Kentucky; S. Porter, Department of Physical Medicine and Rehabilitation, College of Medicine, U of Kentucky; N. Johnson, Department of Physical Therapy, College of Health Sciences, U of Kentucky; H. Witt, Department of Physical Therapy, College of Health Sciences, U of Kentucky

Abstract: Purpose/Hypothesis: The objective of this study was to determine the incidence of vestibular dysfunction following a traumatic brain injury (TBI) for individuals in an inpatient rehabilitation setting with a standardized vestibular assessment.
Number of Subjects: 285
Materials and Methods: A retrospective review was conducted following the implementation of a standardized vestibular assessment protocol for individuals following TBI in an inpatient rehabilitation facility. Aim 1 was to determine if a vestibular assessment was completed. Aim 2 was to determine the incidence rate of vestibular dysfunction, regardless of if the assessment was completed within the first four days following admission. Individuals admitted to the brain injury unit with TBI following this implementation were included in the review. Individuals with this standardized protocol would receive a vestibular screen within the first four days of admission.
Results: The completion rate for vestibular assessments during the first four days of admission was 8%. Of the patients with vestibular assessments performed, 22 tested positive for Benign Paroxysmal Positional Vertigo (BPPV), 9 had a CNS dysfunction, 6 tested positive for both, and 7 tested negative for all tests.
Conclusions: Findings suggest a potential need for more vestibular assessments in individuals in an inpatient rehabilitation facility following TBI. Future research should focus on elucidating why only certain patients are screened following TBI, including identification of potential barriers.
Clinical Relevance: Physical therapists treating individuals following a TBI should consider screening for vestibular dysfunction given the overlap of symptomology and high prevalence rate of positive assessments.

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Presentation 299

Abstract Title:	**Preliminary Findings In Vestibular Experiences During Clinical Education for UKPT Students**
Author(s):	V. A. Ortiz Guerrero, Department of Physical Therapy, U of Kentucky; K. L. Hunter, Department of Physical Therapy, U of Kentucky; E. L. Daugherty, Department of Physical Therapy, U of Kentucky; E. V. Tweel, Department of Physical Therapy, U of Kentucky; N. F. Johnson, Department of Physical Therapy, U of Kentucky; H. L. Witt, Department of Physical Therapy, U of Kentucky

Abstract: Introduction: Ninety percent of physical therapy programs maintain that vestibular therapist is an important part of the curriculum for students to be considered entry-level, but there is a lack of standardization for what content should be included or understanding of student perception of readiness.
Purpose: This study's purpose was to determine student perceptions of readiness in vestibular dysfunction in the University of Kentucky Doctor of Physical Therapy program.
Methods: Data were collected through a 38-item survey of third year doctoral students at the University of Kentucky. Survey responses were anonymously collected using Qualtrics. A total of 37 student responses were included in this report.
Results: All clinical experiences had a combination of students who were exposed to vestibular therapy and those who were not. Students most frequently had experiences with vestibular therapy during their fourth full-time clinical rotation. Outpatient orthopedic settings were the most likely to involve exposure to vestibular rehabilitation. Student interest in vestibular rehabilitation increased after completing clinical rotations.
Conclusion: Exposure to vestibular rehabilitation is present in the DPT curriculum with varying levels of involvement along the clinical experiences. Future studies are warranted to determine the impact of vestibular experiences in student readiness upon graduation.

Supported by: None

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Presentation 300

Abstract Title:	**Goal Attainment Theory Expanded, an Interprofessional Approach to Reducing Hierarchy in the Hospital Setting**
Author(s):	W. M. Lacefield, Rehabilitation and Health Sciences PhD Program, U of Kentucky

Abstract: This paper proposes a model to enhance interprofessional collaborative practice in hospital settings based on King's goal attainment theoretical framework. The aim is to empower non-physician providers, improve patient care, and promote innovative ideas. The paper demonstrates the need to eliminate hierarchical structures in hospitals, promoting collaborative approaches to patient care in effort to provide better outcomes.

The expanding complexity of healthcare has led to the need for interprofessional collaborative practice in order to address challenges contributing to medical errors.1 The World Health Organization advocates for interprofessional collaborative practice, emphasizing teamwork among healthcare workers to deliver high-quality care.2 However, barriers such as hierarchy, gender roles, and competing priorities hinder effective collaboration, leading to adverse events.3-6

A hierarchical structure in hospitals limits communication and devalues non-physician perspectives. This affects teamwork, contributes to burnout, and impacts patient care.4-6The paper advocates for a cultural shift towards equity, empowering all team members to enhance collaboration and patient-centered care.

Highlighting the importance of interdisciplinary collaboration and embracing King's theory, the proposed model emphasizes open communication, respect, and coordinated patient care. It encourages restructuring teams into a collaborative approach, with physicians serving as leaders, fostering an environment conducive to improved outcomes.

Healthcare's primary goal is quality patient care. The current climate of healthcare demonstrates the necessity for a shift in the culture and structure to enhance care through interprofessional teamwork. The proposed changes require time, buy-in, and champions at various levels to facilitate adaptation. The paper concludes by proposing a mixed-methods study to assess the impact of the proposed changes on patient and employee satisfaction.

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Presentation 301

Abstract Title: **Utilizing Rasch Model to Validate the ICCAS Scale for Interprofessional Education**

Author(s): Y. Xia, Departments of Physical Therapy, U of Kentucky;
P. Pabian, Departments of Physical Therapy, U of Kentucky

Abstract: The Interprofessional Collaborative Competency Attainment Survey (ICCAS) serves as a critical tool for gauging the success of Interprofessional Education (IPE) programs, with a focus on the collaborative practices and teamwork skills essential for healthcare students and professionals. Leveraging the Rasch model, this comprehensive study engages 820 participants from 14 distinct healthcare fields across three campuses to validate the quality of the ICCAS scale.

In assessing the ICCAS scale, the study meticulously examines various elements, including the Wright Map, model fit statistics, the principle of unidimensionality, and Differential Item Functioning (DIF) analysis. The Wright Map offers a graphical comparison of individual abilities against item difficulties, identifying areas where the questionnaire performs best. Although model fit statistics validate the questionnaire's capability in accurately measuring IPE knowledge, the presence of structural issues at the lower end of the scale highlights an opportunity for further improvement.

Minor inconsistencies indicated by unidimensionality and slight variations in the first contrast ratio, along with potential biases revealed through DIF analysis, call for adjustments to achieve fairness across diverse demographic groups. These insights stress the necessity for thoughtful recalibration to maintain the survey's fairness and applicability.

In conclusion, the study underscores the importance of using the Rasch model to scrutinize the efficacy and integrity of the ICCAS scale. Despite the identified challenges, such as scale structure disorder and DIF, this tool remains crucial for enhancing the understanding and assessment of interprofessional collaborative competencies, contributing to the development of a more coordinated and patient-centered healthcare workforce.

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