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

Oral Presentations Abstract Book

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Center for Clinical and Translational Science

Oral Abstracts

Session CCTS - AM

Abstract Title:	**Trauma Exposure, PTSD Symptoms, and Treatment Barriers among Women on Probation and Parole with Histories of Opioid Use**
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Abstract: Justice-involved women in Kentucky are at disproportionate risk for opioid use following periods of incarceration. Both trauma exposure and posttraumatic stress disorder (PTSD) symptoms can hinder women's recovery from opioid use. This mixed methods study aimed to (1) evaluate trauma exposure and PTSD symptoms and (2) explore barriers to trauma-focused treatment among Kentucky women on probation and parole (P&P) with histories of opioid use (N=122; white [99.2%]; straight [77.0%]). Women on P&P first completed an online survey. Women's cumulative number of lifetime traumatic experiences was nearly five times the national average (M=13.5 vs M=2.9) and past-month PTSD diagnoses were six times the national prevalence rate (73% vs 11%). The most commonly experienced traumatic events included unwanted sexual contact (27%), death or serious injury of a loved one (29%), accident or disaster (13%), and physical abuse (13%). Despite the high rates of trauma exposure and PTSD, only 8% of women were ever offered an evidence-based psychotherapy for PTSD and 6% of women participated. Fifteen women completed the qualitative interview and four themes emerged: (1) Women's experiences of trauma, mental health, and addiction are connected; (2) Trauma-related symptoms are not often addressed in substance use treatment or while on P&P; (3) Barriers to treatment are material (e.g., lack of insurance, transportation, childcare); and (4) Women's hesitations to participating in psychotherapy for PTSD include confidentiality, readiness, and timing. Our findings suggest that women on P&P with opioid use histories should be targeted when implementing and disseminating evidence-based trauma-focused treatments.

Supported by: This project was supported by the Center for Clinical and Translational Science and the Center for Research on Violence Against Women (UL1TR001998).

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Center for Clinical and Translational Science

Oral Abstracts

Session CCTS - AM

Abstract Title:	**People with Marfan Syndrome Ambulate with Altered Joint Mechanics Associated with Hip Pain**
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Abstract: Marfan syndrome (MFS) is caused by mutations in the FBN1 gene, which encodes the protein fibrillin. MFS is associated with muscle dysfunction and a high incidence (46%) of hip pain. The impact of MFS on hip joint mechanics and its relationship with hip-related patient reported outcomes (PRO) requires investigation. The purposes of this study were to: 1) assess differences in hip joint mechanics during walking in people with MFS and asymptomatic controls; and 2) determine the association between hip joint mechanics and hip-related PRO in people with MFS. 18 people with MFS and 18 sex- and BMI-matched, asymptomatic controls underwent 3D gait analysis at a fixed speed of 1.35m/s. All participants completed the Hip disability and Osteoarthritis Outcome (HOOS) questionnaire to assess hip-related pain, symptoms, quality of life (QOL) and function during activities of daily living (ADL). Between-group differences in hip mechanics were assessed using an ANCOVA (adjusted for age). Spearman's rho correlation (rho) was conducted between statistically significant hip mechanics and hip related PRO. Statistical significance was set at $p<0.05$. The MFS group ambulated with higher peak hip flexion angles ($p=0.02$) and trends of higher hip extensor moment impulse ($p=0.06$). Within the MFS group, higher hip flexion angle was associated with worse hip pain (rho =-0.64, $p=0.004$), QOL (rho=-0.62, $p=0.006$) and ADL (rho =-0.58, $p=0.01$). Similar to people with hip osteoarthritis, people with MFS ambulate with a more flexed hip joint. Our work suggests that MFS-related gait interventions should target and optimize peak hip flexion in order to improve hip-related PRO.

Supported by: Research support: The Marfan Foundation, NIH (KL2-TR001996, K01-AG073698, & K01-HL149984)

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Oral Abstracts

Session CCTS - AM

Abstract Title:	**Sciodemographic Factors and Tuberculosis Among Migrants and Ethnic Minorities: A Kentucky Experience**
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Abstract: Tuberculosis (TB) is more common among migrants and ethnic minorities in the United States compared with the general population. Socio-economic disparities and cultural and structural barriers to accessing healthcare are considered contributory to increased vulnerability to infection and the development of active disease. Herein, we sought to investigate the socio-demographic factors influencing TB in a single-center retrospective cohort.

METHODS: We conducted a retrospective review among patients diagnosed at The Medical Center of Bowling Green, Kentucky from January 2018 to December 2022. We identified (n=28) patients diagnosed with active Tuberculosis infection. Clinical and epidemiologic data were obtained by reviewing electronic medical records. Additional data especially of epidemiological interest was further obtained by performing a post-discharge questionnaire-based telephone survey.

RESULTS: The mean age of the population studied was (Mean ± SD 59.0 ± 22.2) years. 78.6% (22) patients were male, and 21.4% (6) patients were female. 44% (11) patients were residents of KY, while 56% (17) patients had recently migrated to the United States) within the last 10 years. Among the migrant patient population, 32% (8) were from Myanmar, 8% (2) Guatemala, 8% (2) Mexico, and 4% (1) were from India, and El Salvador. 82% (23). All the patients were referred to the local health department to complete anti-tubercular treatment. We conducted a post-discharge survey based on a telephone questionnaire.32% (9) of patients participated in the survey. All the participants had below elementary-level proficiency in the English language. All the participants were below the poverty line with an annual reported household income of 20,000 dollars or less. The level of education in all the survey participants was less than a high school diploma. None of the survey participants had health insurance or an established care with a primary care provider.

Supported by: None

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Center for Clinical and Translational Science

Oral Abstracts

Session CCTS - AM

Abstract Title: **Community Pharmacy based Surveillance of SARS-Cov-2: A Pilot Collaborative Study**

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Abstract: During the COVID-19 pandemic, community pharmacies assumed a significant role in providing healthcare services in the community setting. In this pilot study, we utilized community pharmacies as a platform to recruit subjects for longitudinal collection of blood and nasal swabs. Serology was performed to detect IgG antibodies against SARS-CoV-2 proteins (N and RBD). Positive samples were assessed for endpoint titers against both SARS CoV-2 proteins. Among 39 participants, 56% reported a prior SARS-CoV-2 infection, while 87% received at least one dose of SARS-CoV-2 vaccine. Repeated longitudinal sampling of subjects resulted in 89 blood samples with anti-N IgG detected in 75% of samples while anti-RBD IgG detected in 94.3% of samples. Notably, elevated titers remained high over the course of the study while those with low titers remained low. Two subjects had an increase in titers which corresponded with a positive SARS-CoV-2 test during the study. In conclusion, community pharmacies are ideal locations for local surveillance of infectious agents. This ongoing study continues to recruit participants to improve our understanding of community level infection and disease prevalence.

Supported by: University of Kentucky, College of Pharmacy.

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Oral Abstracts

Session CCTS - AM

Abstract Title:	**Can Virtual Reality Exergaming Reduce Neuroinflammation and Improve Recovery in Stroke Patients?**
Author(s):	A. Schifano, College of Medicine, U of Kentucky; M. Webster, College of Medicine, U of Kentucky; A. C. Glueck, PhD, Department of Neurology, U of Kentucky

Abstract: There are many benefits physical activity provides to health and patient recovery but, it is difficult to get patients to complete exercises to improve their health conditions and overall wellbeing. Exercise gaming or exergaming incorporates technology-driven activities, such as video game play, with exercise, which can be beneficial for patient rehabilitation. Several studies have demonstrated that exergaming using traditional gaming platforms for rehabilitation leads to improvements in compliance, motivation, mobility, balance, overall functional outcomes, and reduces inflammatory markers. The current study focuses on patients aged 18-65 who have suffered a stroke at least 4 months prior and have been cleared to participate in moderate-intensity exercise. Patients will be randomly assigned to one of three categories: exercise, virtual reality (VR) gaming, or VR exergaming. Participants will be asked to complete 20, one hour of exercise, gaming, or exergaming sessions over 7 weeks limiting the intervention to one hour per day. Prior to beginning their assigned intervention, participants will undergo baseline neuropsychological, motor function, and balance assessments, and complete a symptom inventory. Additionally, participants will provide a blood sample to measure inflammatory levels before the intervention. These tests will be repeated 12-36 hours following their final training session. The recruitment for this study is currently ongoing. We hypothesize that participants assigned to the exergaming condition will demonstrate a cumulative effect of exergaming and thus will demonstrate significantly greater benefits on the neuropsychological measures, motor function and balance, as well as significantly lowered inflammation compared to the exercise and VR conditions.

Supported by:	This study is part of the Center of Advanced Translational Stroke Science (CATSS) Alliance which is supported by the College of Medicine Alliance Initiative; The Professional Student Mentored Research Fellowship (PSMRF) Project is supported by the National Center for Advancing Translational Sciences through Grant UL1TR001998, UK HealthCare and the University of Kentucky College of Medicine. The content is solely the responsibility of the authors and does not necessarily represent the official views of the NIH.

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Center for Clinical and Translational Science

Oral Abstracts

Session CCTS-PM

Abstract Title:	**Using deep long-read RNAseq in Alzheimer's disease brain to assess medical relevance of RNA isoform diversity**
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Abstract: Due to alternative splicing, human protein-coding genes average over eight RNA isoforms, resulting in nearly four distinct protein coding sequences per gene. Long-read RNAseq (IsoSeq) enables more accurate quantification of isoforms, shedding light on their specific roles. To assess the medical relevance of measuring RNA isoform expression, we sequenced 12 aged human frontal cortices (6 Alzheimer's disease cases and 6 controls; 50% female) using one Oxford Nanopore PromethION flow cell per sample. Our study uncovered 53 new high-confidence RNA isoforms in medically relevant genes, including several where the new isoform was one of the most highly expressed for that gene. Specific examples include WDR4 (61%; microcephaly), MYL3 (44%; hypertrophic cardiomyopathy), and MTHFS (25%; major depression, schizophrenia, bipolar disorder). Other notable genes with new high-confidence isoforms include CPLX2 (10%; schizophrenia, epilepsy) and MAOB (9%; targeted for Parkinson's disease treatment). We identified 1,917 medically relevant genes expressing multiple isoforms in human frontal cortex, where 1,018 had multiple isoforms with different protein coding sequences, demonstrating the need to better understand how individual isoforms from a single gene body are involved in human health and disease, if at all. Exactly 98 of the 1,917 genes are implicated in brain-related diseases, including Alzheimer's disease genes such as APP (Aβ precursor protein; five), MAPT (tau protein; four), and BIN1 (eight). As proof of concept, we also found 99 differentially expressed RNA isoforms between Alzheimer's cases and controls, despite the genes themselves not exhibiting differential expression. Our findings highlight the significant knowledge gaps in RNA isoform diversity and their medical relevance. Deep long-read RNA sequencing will be necessary going forward to fully comprehend the medical relevance of individual isoforms for a "single" gene.

Supported by:	This work was supported by the National Institutes of Health [R35GM138636, R01AG068331, 5R50CA243890], the BrightFocus Foundation [A2020161S], Alzheimer's Association [2019-AARG- 644082], PhRMA Foundation [RSGTMT17]; Ed and Ethel Moore Alzheimer's Disease Research Program of Florida Department of Health [8AZ10, 9AZ08 6AZ06]; and the Muscular Dystrophy Association.

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Oral Abstracts

Session CCTS-PM

Abstract Title:	**Integration of Gene and Lipid Profiles in Metabolically-driven Human Hepatocellular Carcinoma Tumor and Adjacent Tissue**
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Abstract: Background: Hepatocellular carcinoma (HCC) is the most common form of liver cancer worldwide. Metabolic dysfunction-associated steatohepatitis (MASH) is the fastest growing etiology of HCC, which is largely attributed to the parallel rise in obesity and diabetes mellitus. Thus, it is imperative we understand how fatty acid metabolism contributes to the development of HCC for translatable disease prevention and therapeutic development.

Methods: Human HCC tumor (n=8) and adjacent non-tumor samples (n=8) were obtained from the Biospecimen Procurement and Translational Pathology Shared Resource Facility at the UK Markey Cancer Center. All individuals were negative for viral hepatitis while 87.5% (7/8) had confirmed hypertension, diabetes, or were hyperlipidemic. RNA and protein were isolated and used for bulk RNA-sequencing and immunoblotting, respectively. Lipids were extracted using a methyl-tert-butyl ether extraction method for high-throughput lipidomics. Data were analyzed using paired nonparametric analyses via a Wilcoxon or Mann-Whitney test, where appropriate.

Results: Lipid profiling of human tumors revealed significant increases in long chain nonesterified monounsaturated fatty acids (MUFAs; C16:1, C18:1, C19:1, and C20:1) and MUFA-enriched phospholipids (PC30:1, PC32:1, PE32:1, PC34:1, PC36:1) relative to nontumor tissue. Further, there was trend to increase in total triglycerides (P=0.0645) while total cholesterol levels were reduced in tumor tissue. Consistent with lipid profiles, the expression of genes regulating fatty acid oxidation (CPT1A, CPT2, ACADL, ACADM, and HADHA) were significantly lower in tumor versus nontumor tissue.

Conclusions: These results suggest HCC tumors exhibit reduced fatty acid oxidation resulting in an accumulation of MUFAs and triglycerides, as compared to adjacent non-tumor tissue.

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Oral Abstracts

Session CCTS-PM

Abstract Title:	**Short term Unilateral Lower Limb Suspension Reduces Motor Unit Firing Frequency during Isometric Knee Extension**
Author(s):	L.M. Bollinger, Dept. of Kinesiology and Health Promotion, U Kentucky; E. Elmore, Dept. of Kinesiology and Health Promotion, U Kentucky; J. McArdle, Dept. of Kinesiology and Health Promotion, U Kentucky; N. Navarrete, Dept. of Kinesiology and Health Promotion, U Kentucky; M. Uchiumi, Dept. of Kinesiology and Health Promotion, U Kentucky; S.A. Best, Dept. of Kinesiology and Health Promotion, U Kentucky; J. Caruso, Dept. of Health & Sport Sciences, U Louisville

Abstract: Muscle disuse, as seen in Unilateral Lower Limb Suspension (ULLS), rapidly reduces muscle strength which is largely attributed to impaired muscle recruitment yet data from individual motor unit action potential trains (MUAPTs) are lacking. Objective: To determine the effects of ULLS on MUAPTs firing rate during isometric knee extension. Methods: Healthy subjects (1F, 2M, age: 18-36y) underwent 13d ULLS using forearm crutches and shoes modified with a 5cm rocker-style stack. Bilateral isometric knee extensor (KE) ramp was performed on an isokinetic dynamometer after ULLS. Using visual torque biofeedback, subjects increased torque at a rate of 22.5% MVIC/s-1 over 4s, maintained torque at 90% MVIC for 10s, then decreased torque at a rate of 22.5% MVIC/s-1 over 4s. Four-pin electromyography array sensor (Delsys Galileo) and proprietary software (Delsys Neuromap) were used to determine MUAPTs. MUAPTs with accuracy <80% were excluded from analyses. Individual regression lines were created between peak MUAPT amplitude and firing rate with the y-intercept representing maximal firing rate. Results: Voluntary isometric KE strength was 5% lesser in the unloaded leg but 10% greater in the loaded leg following ULLS. Regression analysis revealed a strong inverse relationship (R2>0.97) between peak MUAPT Amplitude and Firing Rate in both the loaded and unloaded limbs for all subjects. Maximal MUAPT firing rates was lesser in the unloaded (27.85±2.41 pps) than the loaded (30.01±1.76 pps) limb for all subjects (p=0.05). Conclusion: Reduced voluntary strength following disuse may be due to impaired maximal motor unit depolarization rate.

Supported by: Kentucky Space Grant Consortium (RIA-22-043)

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Oral Abstracts

Session CCTS-PM

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.

Supported by: UK- COM PSMRF; NIH P01AG078116-01; NIH P30 AG028383

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Center for Clinical and Translational Science

Oral Abstracts

Session CCTS-PM

Abstract Title:	**Single nuclear analyses reveal compromised integrity of neuromuscular junction myonuclei following joint injury**
Author(s):	Alexander R. Keeble; Department of Physiology; University of Kentucky; Nicholas T. Thomas; Department of Rehabilitation Sciences; University of Kentucky; Camille R. Brightwell; Department of Athletic Training and Clinical Nutrition; University of Kentucky; Allison M. Owen; Department of Athletic Training and Clinical Nutrition; University of Kentucky; Yuan Wen; Department of Physiology; University of Kentucky; Darren L. Johnson; Department of Orthopedic Surgery and Sports Medicine; University of Kentucky; Brian Noehren; Department of Physical Therapy; University of Kentucky; Christopher S. Fry; Department of Athletic Training and Clinical Nutrition; University of Kentucky

Abstract: The neuromuscular junction is an essential structure that links electrical signals from the nervous system to contraction of skeletal muscle. Specialized myonuclei maintain the motor end-plate region, crucial for clustering post-synaptic machinery and acetylcholine receptors. Disruptions in the transcriptional program of these myonuclei may result in ineffective myofiber recruitment, slowed force generation, and muscle weakness. Phenotypically, muscle pathology occurring after traumatic joint injury resembles that of neuromuscular destabilization, yet molecularly, this remains uninvestigated. Therefore, we hypothesize that disruption of neuromuscular regulatory gene programs and destabilization of the neuromuscular junction underscores the rapid decline in muscle functionality following joint injury. Human muscle biopsies were obtained from the vastus lateralis of ACL injured and healthy limbs of 26 participants. RNA-seq and single-nucleus RNAseq were performed on injured and healthy biopsies taken before and 7 days following reconstruction surgery. Biopsy sections were processed for histochemistry to analyze motor end plate innervation. Peak quadriceps torque and rate of torque development was assessed on all participants. RNA-seq demonstrated large-scale significant upregulation of CHRNA1 after injury, peaking 7 days post-surgery. Single nucleus sequencing revealed a complete disappearance of neuromuscular junction regulatory myonuclei and acetylcholine receptor mRNA dispersion following reconstruction surgery. Functionally, CHRNA1 RNA expression strongly correlates with deficits in rate of torque development following injury ($R^2 = .85$, $P < .001$). Our results display degeneration of the motor end-plate following joint injury that underscores sustained deficits in strength and power. Interventions targeting the preservation of peripheral innervation may be warranted to enhance outcomes following joint injury.

Supported by: R01 AR072061; R01 AR071398; R01 AR078316

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Center for Clinical and Translational Science

Oral Abstracts

Session CCTS-PM

Abstract Title: **Estrogen receptor alpha regulates the sex difference in jet lag in mice**

Author(s): M. Venegas, N. Westray, J.S. Pendergast, Department of Biology, University of Kentucky, Lexington, KY

Abstract: Abrupt shifts in the timing of the light-dark cycle misalign internal circadian clocks with the environment and cause jet lag until resynchronization occurs. Female mice resynchronize to shifted light-dark cycles faster than males. The objective of this study was to investigate the estrogen signaling mechanisms underlying this sex difference in jet lag. We measured wheel-running activity rhythms in C57BL/6J male and female wild-type (WT) and ERα± knockout (ERα±KO) mice. We observed a sex difference in wheel running activity in WT animals that was ablated in ERα±KO mice. Next, we advanced the timing of the light-dark cycle by 6 hours. WT animals displayed a sex difference in resynchronization and disabling ERα± abolished this difference. Female ERα±KO resynchronized slower than WT females and were indistinguishable from males. We next investigated 2 mechanisms underlying the accelerated rate of resynchronization in WT females. We released mice into constant darkness and found that the period of the activity rhythm, which is the velocity of the endogenous clock, did not differ between WT and ERα±KO male and female mice. To determine the magnitude of phase advances, mice housed in constant darkness were exposed to a 15-minute light pulse during the late subjective night. We found no differences in the magnitudes of phase shifts between any of the mice. Together these studies show that ERα± regulates the rate of resynchronization to shifted light-dark cycles in female mice but does not do so by altering conventional circadian rhythm parameters.

Supported by: NIH R01DK124774, and NSF Career Award IOS-2045267

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Oral Abstracts

Session CLIK

Abstract Title: **Instituting a clinical research program in a rural hospital**

Author(s): M. Brunet, Director of Clinical Research, St. Claire HealthCare, Morehead, KY

Abstract: This presentation will discuss the unique opportunity rural hospitals have to serve their communities by developing a clinical research program. Some commonly known health facts related to rural populations are higher mortality rates with indications such as heart disease, cancer, stroke, diabetes, kidney disease, suicide, unintentional injuries, influenza and pneumonia, higher uninsured rates, increased transportation limitations, and less access to health care. All of these factors make access to clinical trials immensely important. Unfortunately, resources to implement a research program at rural hospitals are also limited due to factors such as lack of expertise, staffing, financial constraints, and lower patient volume. These limitations often prohibit these types of programs from ever starting. This presentation will outline how a rural hospital in eastern Kentucky began a new research initiative. Discussion will include the importance of a feasibility review, physician and administrative buy-in, resources, legal and regulatory implications, reporting structure, staffing, and department accreditation. Of special note will be the selection of the types of trials and projects that are initiated to best reflect the needs of the institution and the community it serves. With more 40% of Kentuckians living in rural populations, equal access to health care, specialty clinics, and cutting-edge clinical trials remains vital to our future.

Supported by: None

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Oral Abstracts

Session COM

Abstract Title:	**Could Sex Differences Affect the Correlations Between Fluid Biomarkers and White Matter Hyperintensities?**
Author(s):	A. A. Bahrani, Department of Neurology; Y. Jiang, Department of Behavioral Science; D. K. Powell, Department of Neuroscience; Y. Katsumata, Department of Biostatistics; A. Nahvi, Department of Neurology; T. Lee, Sanders-Brown Center on Aging; B. T. Gold, Department of Neuroscience; L. Goldstein, Department of Neurology; D. M. Wilcock, Indiana University; G. A. Jicha, Department of Neurology; Peter Nelson, Sanders-Brown Center on Aging; and Christopher Norris, Sanders-Brown Center on Aging.

Abstract: Background: White matter hyperintensity (WMH) on MRI brain can reflect vascular injury and are associated with neurodegenerative processes that can lead to vascular contribution to cognitive impairment. Astrocytes play a crucial role in WM integrity. Poorly reactive astrocytes could lead to several implications, including WMH or vascular damage. This study aims to explore the effect of sex differences on the correlation between WMH and biofluid biomarkers, which may arise, in part, from reactive astrocytes, commonly found near many brain lesions.

Method: Preliminary data from twenty-seven participants (mean age 76.8±6.4 years, Female=15) were collected from the UK-ADRC and MARKVCID cohorts. Sex differences were examined based on the correlation between biofluid biomarkers: inflammatory (GFAP, IL6, IL8, IL10), angiogenic (TDP-43, and PlGF), in addition to Aβ40-42, and WMH volumes.

Results: The correlations between WMH (occipital lobe) and IL6, IL10, and GFAP were significant in the female group (P-values, 0.031, 0.036, and 0.037, respectively), and between WMH (occipital lobe) and Aβ42 was significant in the male group (P-value = 0.039). Biofluid biomarkers showed significant sex differences between groups at GFAP and TDP43. Generally, the mean values of biofluid biomarkers in the female group were dominant (except for IL10 and PIGF). The correlation test adjusted for age and sex between TDP-43 and WMH volumes in the temporal, occipital, and parietal lobes was significant (P-values, 0.041, 0.024, and 0.024, respectively), and between GFAP and WMH at the frontal lobe (P-value = 0.013).

Conclusions: Despite the small sample size, which warrants expansion in future studies, we observed interesting findings of sex differences in specific regions of the brain in relation to fluid biomarkers. Accordingly, further studies with larger sample sizes and more brain regions are needed to gain deeper insight into astrocyte activities in diseases associated with WMH burden.

Supported by: NIH 1P01AG078116

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Oral Abstracts

Session COM

Abstract Title:	**Two-Years After Lower Extremity Fracture, Early Psychosocial Factors Predict Physical Function and Return to Work Status**
Author(s):	W. Charlton, Department of Orthopaedics and Sports Medicine, U of Kentucky; L. Bowers, Department of Orthopaedics and Sports Medicine, U of Kentucky; J. Van Wyngaarden Department of Physical Therapy, Army-Baylor University; B. Noehren, College of Health Sciences, U of Kentucky; P. Matuszewski, Department of Orthopaedics and Sports Medicine, U of Kentucky

Abstract: Purpose: We sought to determine if early psychosocial screening predicted the ability to return to work (RTW) and self-reported physical function 24-months after lower extremity fracture (LEF) requiring surgical fixation. We hypothesized that pain-self efficacy at six-weeks and three-months would have the greatest association with physical function and RTW activity.
Methods: 177 patients (41.9±14.5 years) with LEF requiring surgical fixation were recruited from a Level I Trauma Center in an observational cohort. Six-weeks and three-months after surgical fixation, patients completed the Pain Catastrophizing Scale (PCS), Pain Self-Efficacy (PSE) questionnaire, and Patient Reported Outcome Measurement Information System (PROMIS). At 24-months, participants completed the Cincinnati Occupational Rating Scale (CORS) and PROMIS Physical Function. Linear regression analyses were completed for each outcome, with each model including baseline characteristics, pain self-efficacy, and pain catastrophizing.
Results: 138 (78%) subjects completed this study. PSE and BMI at six-weeks (PSE: b=0.357, p=0.001; BMI: b=-0.683, p<0.001) and three-months (PSE: b=0.355, p=0.002; BMI: b=-0.732, p<0.001) predicted CORS scores at 24-months. PSE and BMI at six-weeks (PSE: b=0.243, p<0.001; BMI: b=-0.336, p<0.001) and three-months (PSE b=0.354, p<0.001; BMI: b=-0.318, p<0.001) predicted physical function at 24-months.
Conclusion: PSE and BMI at six-weeks and three-months were predictive of occupational rating and physical function 24-months after LEF. These results provide an opportunity for early identification of patients most at risk of not being able to return to their prior level of physical labor and function. Earlier identification may allow clinicians to intervene during the critical early phase of recovery to improve patient outcomes.

Supported by: Grant Title: Predictors of Persistent Pain and Performance in Patients with Fractures
Supporting Agency: Orthopaedic Research and Education Foundation

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Oral Abstracts

Session COM

Abstract Title:	**Exploring Isoform Signatures Across Human Brain Regions and Stimulated CD8+ T-Cells with Long-Read Single Cell RNA-seq**
Author(s):	P. H. Doyle, [Sanders-Brown Center on Aging, U of Kentucky; Department of Neuroscience, U of Kentucky]; B. J. White, [Sanders-Brown Center on Aging, U of Kentucky; Department of Neuroscience, U of Kentucky]; S. Hart, Department of Biochemistry, U of Kentucky; M Page, [Sanders-Brown Center on Aging, U of Kentucky; Department of Neuroscience, U of Kentucky]; J. Brandon, [Sanders-Brown Center on Aging, U of Kentucky; Department of Neuroscience, U of Kentucky; Division of Biomedical Informatics, Department of Internal Medicine, University of Kentucky]; B. Nikolajczyk [Department of Biochemistry, U of Kentucky; Department of Pharmacology and Nutritional Sciences, University of Kentucky]; M. T. Ebbert [Sanders-Brown Center on Aging, U of Kentucky; Department of Neuroscience, U of Kentucky; Division of Biomedical Informatics, Department of Internal Medicine, University of Kentucky]

Abstract: Single-cell RNA sequencing (scRNA-seq) provides insight into cellular diversity and mechanisms underlying disease, offering novel therapeutic targets obscured by bulk sequencing. Although single-nucleus RNA sequencing (snRNA-seq) is used as an alternative to scRNA-seq for frozen tissue, some cell types do not survive freeze-thaw cycles. Additionally, cytoplasmic signatures that provide crucial information about cell state may be lost in snRNA-seq. scRNA-seq typically uses short-read sequencing, which collapses all measures of single-gene isoform variants into a single gene expression measurement and, due to insufficient depth and/or mapping quality, cannot truly detect isoform-level expression. Long reads provide broad coverage of isoforms that may provide insight into functional variations in the resultant protein. Our understanding of isoform-level expression in cellular populations is limited, partially due to the absence of single-cell approaches for long-read sequencing until recently. Recent studies using long-read scRNA-seq to find isoform-level changes in bacteria, humans, and mice reveal a new technology that will inform novel disease mechanisms and drug targets. Expanding on these studies, we adapted Particle-templated Instant Partition Sequencing (PIP-seq) for long-read sequencing. PIP-seq offers fast, instrument-free cell preparation, a critical advantage over standard 10X Genomics approaches for collecting fresh clinical samples that become available unpredictably. Our pilot's objective is to demonstrate effective use of our novel long-read scRNA-seq preparation with human brain tissue and stimulated CD8+ T-Cells. Overall, we establish innovative utilization of the PIP-seq protocol for long-read single-cell sequencing. Our objective for future studies is to inform novel gene and isoform markers for disease-associated and region-specific cellular phenotypes.

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Oral Abstracts

Session COM

Abstract Title:	**Mapping Pseudouridine Modifications in the Transcriptome of the Human Brain through Long-Read Direct RNA Sequencing:**
Author(s):	Grant A. Fox, Sanders-Brown Center on Aging & Department of Neuroscience, College of Medicine, University of Kentucky, Lexington, KY; Bernardo Aguzzoli Heberle, Sanders-Brown Center on Aging & Department of Neuroscience, College of Medicine, University of Kentucky, Lexington, KY; J. Anthony Brandon, Sanders-Brown Center on Aging, University of Kentucky, Lexington, KY; Lacey A. Gordon, Sanders-Brown Center on Aging, University of Kentucky, Lexington, KY; Madeline L. Page, Sanders-Brown Center on Aging, University of Kentucky, Lexington, KY; Kayla A. Nations, Sanders-Brown Center on Aging, University of Kentucky, Lexington, KY; Mark T. W. Ebbert, Sanders-Brown Center on Aging, Department of Neuroscience, College of Medicine, and Division of Biomedical Informatics, Internal Medicine, College of Medicine, University of Kentucky, Lexington, KY

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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Center for Clinical and Translational Science

Oral Abstracts

Session COM

Abstract Title:	**Enhancing Immunotherapy by Modulating MLH1 Phosphorylation with ABL Kinase Inhibitors**
Author(s):	Breanna Knicely, Department of Toxicology and Cancer Biology, University of Kentucky; Hannah Daniels, Department of Toxicology and Cancer Biology, University of Kentucky; Ana Thompson, Berea College, Berea, KY; Rina Plattner, Department of Pharmacology and Nutritional Sciences, Markey Cancer Center, University of Kentucky; Eva M. Goellner, Department of Toxicology and Cancer Biology, Markey Cancer Center, University of Kentucky

Abstract: The DNA mismatch repair (MMR) pathway identifies and corrects misincorporations that arise during DNA replication. Mutations within the MMR pathway, both germline or somatic, lead to development of cancer. Microsatellite instability (MSI) is a hallmark of MMR deficient tumors. Microsatellites are short, repeated sequences prone to slippage during DNA replication. MSI is routinely measured clinically in multiple tumor types and used to determine treatment. MSI-high/MMR defective tumors are ideal candidates for immunotherapy as they have increased mutational load and a higher number of neoantigens. Our work shows that ABL1 kinase directly phosphorylates critical MMR protein, MLH1. In the absence of ABL1 activity, MLH1 binds to chaperone HSP70 and undergoes lysosomal degradation. We propose that treatment with FDA-approved ABL kinase inhibitor, Nilotinib, will decrease MLH1 protein over time and convert an MSI-low tumor to an MSI-high tumor that can be targeted with immunotherapy checkpoint inhibitors. We show that ABL1 phosphorylates MLH1 at tyrosine 646. Mutation of this residue leads to loss of MMR and reduced MLH1 stability that can be partially reversed with HSP70 inhibition. Chronic treatment with Nilotinib over three months was tolerated by cancer cells, resulted in the loss of MLH1 protein, and began to convert the cells to an MSI-high phenotype as measured by digital droplet PCR. Understanding MLH1 regulation by ABL1 will allow us to predict the effects of long-term tyrosine kinase inhibitor use on genomic stability both in immunotherapy and in chronic myelogenous leukemia patients on long-term ABL kinase treatment therapy.

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Oral Abstracts

Session COM

Abstract Title: **Pre-existing hypertension amplifies cerebrovascular pathology after traumatic brain injury**

Author(s): Dominic N Nthenge-Ngumbau, Hannah C Downing, Zach DeGraff, Lei Chen, Kathryn E Saatman, Spinal Cord and Brain Injury Research center, College of Medicine, U of Kentucky

Abstract: The extent of brain damage accompanying traumatic brain injury (TBI) depends on the type and severity of insult and is modulated by age, sex, and comorbidities. Nearly half of all US adults suffer from hypertension. Not surprisingly, hypertension is the most common premorbid condition in people aged 50 or above hospitalized with a TBI. Hypertension has been linked to cerebrovascular damage, neuroinflammation and cognitive decline. Neurogenic hypertension is elevated blood pressure initiated by the local renin angiotensin system within the brain; often times involved in resistant hypertension (high blood pressure poorly responsive to common antihypertensives). Despite an overlap in several aspects of brain pathology induced by hypertension and triggered by TBI, little is understood about the impact of premorbid hypertension on outcomes following TBI. We hypothesize that hypertension induces mild blood-brain barrier leakiness and neuroinflammation, priming the brain for greater cerebrovascular damage after TBI. To test this hypothesis, mice were rendered hypertensive via subcutaneous infusion of 1000 ng/kg/min angiotensin-II (Ang-II) two weeks prior to and one week following induction of a moderate severity controlled cortical impact or sham (anesthesia, no impact) injury. Compared to normotensive (vehicle infused) mice, hypertensive mice exhibited significantly more microhemorrhages and more IgG extravasation denoting blood-brain barrier damage. This study contributes to laying the groundwork of identifying and characterizing hypertension as a significant premorbid risk factor for poor outcome after TBI and provides a logical basis for incorporation of pre-existing hypertension in preclinical models of TBI, increasing their clinical relevance and predictive validity.

Supported by: None

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Basic Research

Oral Abstracts

Session CON

Abstract Title:	**Effects of Antioxidants on Oxidative Stress Among Adult Patients with Coronary Artery Disease: A Systematic Review.**
Author(s):	I. M. Alhusban, MSN, RN; M. L. Chung, PhD, RN, FAAN, FAHA; M. Biddle, PhD, APRN, FAHA

Abstract: Background: Oxidative stress (OS) accelerates the pathogenesis of coronary artery disease (CAD), which is a highly prevalent disease. Antioxidants (dietary and supplemental) are advisable to ameliorate OS by reducing free radicals' production; however, there is a lack of consensus about the best antioxidant to lower OS in patients with CAD.
Objective: The purpose of this systematic review was to identify the efficacy of antioxidants in lowering OS among adult patients with CAD.
Method: PubMed, Medline, and CINAHL were searched for RCTs using antioxidants to lower OS that were published in English from the past 10 years. Studies were excluded if participants had inflammatory disease or inflammation.
Results: Among 2278 studies reviewed, 15 RCTs met the inclusion criteria. Of the 15 RCTs, 10 found oral supplemental antioxidants (ex; L-carnitine and melatonin) and two found oral dietary antioxidants (Khorasan wheat diet and wine) were effective in lowering OS ($P<0.05$), whereas one study using Brazil nuts was not effective. Two remaining studies reported on intravenously administered antioxidants: vitamin C and N-acetylcysteine which both lowered OS biomarkers ($P<0.05$). L-carnitine was the only antioxidant administered in two different studies of the included studies. OS was measured by a variety of biomarkers in the 15 studies. Conclusions: There is limited evidence that suggests antioxidants can lower OS in people with CAD due to various antioxidant interventions and measures of oxidative stress. Further research is needed to evaluate the impact of these antioxidants using consistent biomarkers, facilitating comparisons among different studies.

Supported by: None

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Dissemination & Implementation Research

Oral Abstracts

Session CON

Abstract Title: **Improving Dental Students' Knowledge and Confidence in Treating Tobacco Use**

Author(s): V. Pierce, Doctor of Nursing Practice student, U of Kentucky

Abstract: Background: Tobacco use can lead to numerous chronic health conditions. Healthcare professionals in the dental field are in a unique position to broach this issue with patients. Research shows that dental students do not feel equipped to provide tobacco cessation care, citing lack of education on the subject.
Purpose: The purpose of this study was to implement and evaluate an educational intervention for dental students rotating through a primary care clinic within a dental school clinic and evaluate changes in knowledge and confidence related to treating tobacco use after participation.
Methods: This quality improvement initiative utilized a pre, post, and follow-up survey design and took place at the UK Dental Clinic in fall of 2023. Students ranked their knowledge and confidence in providing tobacco cessation care before, after, and at 90-days following an educational intervention that included an in-person presentation and a laminated sheet with the 5As, behavioral counseling resources, and first-line cessation medications. Results were analyzed using SPSS.Results: The sample size was 30 dental students. Knowledge, confidence, and application to practice scores had a potential range from 5-15 with higher scores indicating more agreement. These increased from 10.5, 9.1, and 7.7 (n=29) pre-education to 13.5, 13, and 13.2 (n=30) post-education, respectively ($p<.001$).
Conclusions: The educational intervention was effective in improving dental students' knowledge and confidence in treating tobacco use. This is vital in ensuring that patients who use tobacco receive evidence-based care in the dental setting with the potential to improve population health on a wider scale.

Supported by: None

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DNP Nursing Student
Basic Research,Scholarship of Teaching & Learning

Oral Abstracts

Session CON

Abstract Title: **A Description of Intimate Partner Violence Encounters**

Author(s): E. Seng, University of Kentucky, College of Nursing; A.T. Wiggins, University of Kentucky, College of Nursing; E. Salt, University of Kentucky, College of Nursing

Abstract: Introduction: Kentucky is the second leading state in the United States for the number of persons affected by intimate partner violence (IPV) with 45.3% of women and 35.5% of men affected in their lifetime. Certain demographic groups are disproportionately affected by IPV and additional differences in those that seek care have been reported.
Purpose: Provide a demographic description of encounters associated with IPV at UK Healthcare.
Methods: Using deidentified healthcare claims data, we extracted all encounters among those 18 years of age or older with the ICD-10-CM associated with IPV. Extracted data included gender, age, sex, race, ethnicity, and zip code from 11/2018 to 11/2023. Descriptive statistics were used during data analysis.
Results: The sample included 3,681 encounters. The mean age was 35.5 years (range: 18-97 years). The sample was predominantly female (88.1%; n=3,243) and White (80%; n=2,943). Approximately 14.8% of the sample was Black/African American (AA) and the remaining 5.2% was accounted for by "other" racial groups. 5% of the sample were identified as Hispanic. The highest insurance payment category was Medicaid accounting for 42.2% of the sample. Self-pay accounted for 22.5% of the sample followed by Blue Cross at 9.8%, "Commercial" at 8.9% and then Medicare at 11.8%.
Conclusion: A disparity based on race/ethnicity (Black/AA 14.8% vs. KY 8.7%; Hispanic 5% vs. 4.3%), gender, age, and healthcare payment type were identified in this study. The high prevalence of self-pay encounters could have long-term financial implications for those affected by IPV which could deter them from seeking healthcare.

Supported by: UL1TR001998

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Health Equity Research

Oral Abstracts

Session CON

Abstract Title:	**The Interaction of Self-Care and Psychosocial Factors in Predicting Quality of Life in Patients with Heart Failure**
Author(s):	A. Thapa, College of Nursing, U of Kentucky; J. Kang, College of Nursing, U of Kentucky; M.L. Chung, College of Nursing, U of Kentucky; JR. Wu, College of Nursing, U of Kentucky; MJ. Biddle, College of Nursing, U of Kentucky; D.K. Moser, College of Nursing, U of Kentucky

Abstract: Introduction: Depressive symptoms, anxiety, and inadequate social support are predictors of quality of life (QOL) in patients with heart failure (HF), but the prediction of QOL is multifaceted and mechanisms underlying association are unknown. Self-care maintenance (SCM) may moderate associations among HF outcomes and predictors. The interplay among depressive symptoms, anxiety, social support, and SCM and their influence on QOL remains uncertain.

Purpose: To determine whether (1) depressive symptoms and anxiety mediate the association of social support with QOL, and (2) SCM moderates the relationship of social support with depressive symptoms, anxiety, and QOL.

Methods: We included 167 patients (61 ± 12 years, 65% male) with HF, who completed the following questionnaires: Patient Health Questionnaire-9 to measure depressive symptoms, Brief Symptom Inventory for anxiety, Multidimensional Scale of Perceived Social Support, Self-Care of Heart Failure Index, and Minnesota Living with Heart Failure Questionnaire for QOL. A moderated mediation model was performed using PROCESS macro.

Results: An indirect association of social support with QOL was mediated by depressive symptoms and anxiety. The impact of social support on depressive symptoms and anxiety varied with SCM, suggesting a dose-response moderation effect, which is attenuated at lower SCM scores. The indices of moderated mediation via depressive symptoms and anxiety were -.007 (95%CI: -.150, -.002) and -.005 (95%CI: -.010, -.002), respectively. There was no direct nor moderated direct effect.

Conclusions: Improvement in depressive symptoms and anxiety may improve QOL, and good SCM may enhance the positive effect of social support on QOL in patients with HF.

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Clinical Research

Oral Abstracts

Session CON

Abstract Title:	**Improving education on routine echocardiograms in reducing right sided heart failure when managing VV- ECMO patients**
Author(s):	Ashley Williams, Department of Nursing, University of Kentucky

Abstract: Background: Right ventricular (RV) dysfunction is a common complication associated with patients who experience acute respiratory distress syndrome (ARDS). In hemodynamically unstable patients, pulmonary hypertension develops increasing the afterload in the right ventricle. Patients who develop RV dysfunction have a longer hospital stay and mortality rate of up to 68%. This review investigates the use of echocardiograms in identifying right ventricular dysfunction and comparing length of time on ECMO and discharge disposition in VV-ECMO patients.
Methods: In this single center retrospective chart review, we analyzed the outcomes of 125 adult VV- ECMO patients from June 2021- December 2022.
Results: Out of the 125 patients, 65% developed RV dysfunction. When comparing length of time on ECMO and the number of echocardiograms performed, there was a correlation (>.001). The more ECHOs the patient received, the less time they were on ECMO. When comparing the number of echocardiograms performed to discharge disposition, this showed no correlation (.743).
Conclusion: Patients who were placed on VV- ECMO were twice as likely to develop RV dysfunction and had a longer ECMO run when an echocardiogram was not performed. The data revealed there was no correlation in the number of echocardiograms performed and discharge disposition. Echocardiograms have the potential to play a fundamental role in the management of VV- ECMO patients with RV dysfunction, but published literature remains scarce. There is a need for further evaluation of echocardiograms in VV- ECMO patients to reduce length of time on ECMO and increase outcomes.

Supported by: None

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DNP Nursing Student
Clinical Research

Oral Abstracts

Session CON

Abstract Title: **Impact of Sleep Quality and Heart Failure: A Dyadic Qualitative Study**

Author(s): V. R. Yates, College of Nursing Student, U of Kentucky; J. R. Wu, College of Nursing Associate Professor, U of Kentucky

Abstract: BACKGROUND: Patients with heart failure commonly have sleep problems, such as difficulty in falling asleep and poor sleep quality. However, in patients of this population, coping strategies and the impacts of sleep problems have not been investigated.
OBJECTIVE: The overall purpose of this study was to explore patients' coping strategies to enhance/improve sleep and the impacts of their sleep among patients with heart failure.
METHODS: A purposive sample of 4 dyads (patients: xx men, xx women; care partners: xx men, xx women) participated in an in-depth qualitative interview. Interviews are recorded, transcribed, and validated for accuracy. Content analysis strategies analyze the data.
RESULTS: Four themes emerged from the data, offering comprehensive insights: 1) coping strategies, revealing strategies employed by patients to improve/enhance sleep; 2) perceived impact on sleep quality, exploring how heart failure symptoms affect sleep and vice versa; 3) influence on emotional well-being, uncovering the toll of the challenges; and 4) lifestyle adjustments, showcasing how patients adapt daily routines to navigate health challenges.
CONCLUSION: Participants shared nuanced experiences, emphasizing the dynamic interplay among sleep problems, coping strategies, and impacts. This study underlines the need for a holistic understanding of the complicated nature of sleep problems in patients with heart failure. The findings advocate for tailored interventions that consider the complicated nature of these health domains within the context of dyadic relationships. The impacts of poor sleep provide evidence for healthcare providers to develop effective and personalized strategies to address sleep problems and enhance well-being in patients with heart failure.

Supported by: None

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Oral Abstracts

Session D&I Cancer

Abstract Title: **Measuring the Impact of an Open Source Data Tool for Cancer Centers**

Author(s): J. T. Burus, Markey Cancer Center, U of Kentucky; C. R. McAfee, Markey Cancer Center, U of Kentucky; N. P. Wilhite, Markey Cancer Center, U of Kentucky; P. C. Hull, Markey Cancer Center, U of Kentucky

Abstract: The purpose of this study is to assess the impact to date of Cancer InFocus (CIF),Äîa collection of open source data tools we created for cancer centers to improve the process of gathering and disseminating data on cancer burden and disparities for their catchment areas.

The CIF collection of tools includes a website called CIF: Catchment Areas for downloading curated catchment area datasets, along with three applications any cancer center can adopt for visualizing this data on their catchment area. We measured the impact of CIF across three dimensions: product engagement (PE), idea dissemination (ID), and adopter satisfaction (AS). PE was measured through usage of the CIF: Catchment Areas application and completion of no-cost licensing agreements for cancer centers to adopt CIF. ID was measured in terms of presentations to national audiences. AS was measured using a survey and qualitative interviews with staff at CIF-adopting centers.

We released CIF in July 2022, with CIF: Catchment Areas launching in February 2023. To date, the website has 3062 views (mean 8.4/day) and 1098 dataset downloads (mean 3.0 /day). Twenty-two cancer centers have completed agreements to adopt the CIF visualization applications. CIF has been presented at seven national conferences, in one NCI-sponsored webinar, and in one peer-reviewed publication. Analysis of adopter impact surveys indicates over two-thirds are gathering and disseminating more data with less effort since beginning to use CIF.

CIF has demonstrated impact across multiple dimensions of assessment, representing a step forward in streamlining catchment area data gathering and dissemination efforts.

Supported by: NIH Grant P30CA177558

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Oral Abstracts

Session D&I Cancer

Abstract Title:	**Accelerating Colorectal Cancer Screenings Through Implementation Science in Appalachia Improves Screening Compliance**
Author(s):	M. M. Harper, MS, MD, PhD, Preventive Medicine, Department of Family and Community Medicine, U of Kentucky; B. Huang, DPH, Department of Internal Medicine, Markey Cancer Center, U of Kentucky; J. Stephens, MS, Center for Biostatistics, Ohio State U, Columbus, OH; A. J. Kruse-Diehr, PhD, Department of Family and Community Medicine, Markey Cancer Center, Cancer Prevention and Control Research Program, U of Kentucky; M. Dignan, PhD, MPH, Department of Internal Medicine, Division of Medical Oncology, Markey Cancer Center, Cancer Prevention and Control Research Program, U of Kentucky

Abstract: Background: Screening mitigates colorectal cancer (CRC)-associated mortality, yet medically underserved regions, including Appalachia, consistently exhibit lower screening rates and worse survival. Here we describe changes in CRC screening compliance 5 years after initiation of "Accelerating Colorectal Cancer Screening through Implementation Science" (ACCSIS) in Appalachia.
Methods: Telephone survey data from respondents aged 50-74 in 12 Kentucky and Ohio Appalachian counties during 2018-2023 were evaluated. Variables included ever having CRC screening, screening compliance, non-screening reasons, medical behaviors, screening information obtained, personal/family history, and sociodemographics. Chi-squared tests followed by multinomial logistic regression were used to evaluate screening associations. Y1,ÄìY5 comparisons were performed using Chi-squared tests.
Results: Between Y1-Y5, screening compliance increased. Ever screening associations included having a PCP, last PCP visit timing, smoking frequency, any cancer history, age, employment, and insurance; obtaining screening info, where/what info was obtained, marriage status, and education were associated for Y5 only. Y1 compliance showed similar associations. Y5 compliance was only associated with multiple cancer history. On multinomial regression, Y1 ever screening and compliance remained associated with having a PCP, last PCP visit, any cancer history, age, and insurance; Y5 ever screening remained associated with last PCP visit, what screening info was obtained, and age (all $p < 0.05$).
Conclusions: Following ACCSIS implementation CRC screening compliance increased. At Y5, screening compliance was not associated with behavioral, medical, or sociodemographic factors, suggesting this multilevel intervention was effective to overcome barriers present at Y1. Randomized, delayed interventions like ACCSIS may decrease disparities in medically underserved populations.

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Oral Abstracts

Session D&I Cancer

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 & Conclusion: 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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Oral Abstracts

Session D&I Clinical

Abstract Title:	**Results of a Mixed-Methods Study to Inform a Patient Navigation Program for Hearing Healthcare in Rural Kentucky**
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Abstract: Hearing loss affects over 40 million adults in the United States and negatively impact many areas of life including cognition and emotional wellbeing. The lack of access to diagnostic hearing tests prevents timely diagnosis and treatment of hearing loss, especially among rural adults. This study's objective is to evaluate the experiences and challenges in obtaining hearing tests among adults living in rural Kentucky, and to develop a patient navigation program to help them access hearing tests. This study utilized mixed methods to understand the experiences and challenges of hearing healthcare for patients and staff from 10 Rural Health Clinics (RHCs) across Kentucky. Patients (n=388) completed surveys about their general health and hearing and received a pure tone hearing test to measure hearing loss. A subset of patients (n=21) were later interviewed to gather their perspectives on hearing loss, hearing healthcare, and acceptability of a patient navigation program. Clinical providers and administrators from RHCs (n=11) completed surveys to evaluate their view on implementing a patient navigation program. RHC staff also participated in qualitative interviews to assess the resources available in their communities and challenges their clinics & patients face in accessing hearing healthcare. Results illustrate a high prevalence of hearing loss, multifaceted barriers to accessing hearing healthcare, and high acceptability of a patient navigation program among rural patients and RHC staff. This analysis will inform development of the intervention and training protocols for a novel hearing healthcare patient navigation program that will be launched in 2024.

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Oral Abstracts

Session D&I Clinical

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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Oral Abstracts

Session D&I Clinical

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.

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Oral Abstracts

Session D&I Clinical

Abstract Title:	**Ask-Advise-Connect in Family Medicine: Promising Outcomes for Patients and Clinic Staff in Diverse Primary Care Settings**
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Abstract: Background: Ask-Advise-Connect (AAC) links patients who smoke with tobacco treatment by training healthcare staff to systematically ask patients about smoking status, offer brief advice to quit, and connect patients with state Quitlines using the electronic health record. This talk presents data from AAC implementations in two safety-net health systems which serve primarily Hispanic/Latino populations.
Results (1): The smoking status of 218,915 patients was assessed and recorded in the EHR. Smoking prevalence was 8.4% among Spanish- and 29.4% among English-preferring patients. Spanish-preferring patients were less likely to enroll in treatment (p = 0.001) yet completed more counseling calls once enrolled (median=2 vs. 1; p <.0001). Patients who received treatment in Spanish (vs. English) were twice as likely to be abstinent at 6 months (OR: 1.98, CI: 1.62, 2.40; biochemically confirmed: OR = 2.13, CI: 1.52, 2.97).
Results (2): In post-implementation interviews assessing RE-AIM dimensions, clinic staff and leadership identified facilitators and advantages of AAC and reported that AAC was easy to learn and implement, streamlined existing procedures, and had a positive impact on patients. Staff and leadership reported enthusiasm about AAC implementation and believed AAC fit well in the clinic. Staff were interested in AAC becoming the standard of care and made suggestions for future implementation.
Conclusions: Automated point-of-care approaches such as AAC have great potential to reach Hispanic/Latino adults who smoke. Clinic staff viewed the ACC implementation process positively. Findings have implications for streamlining clinical smoking cessation procedures and the potential to reduce tobacco-related disparities.

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Oral Abstracts

Session D&I Community

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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Oral Abstracts

Session D&I Community

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.

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Oral Abstracts

Session D&I Community

Abstract Title:	**Comparing Bingocize Engagement in Kentucky's Rural and Urban Nursing Home Sites**
Author(s):	J. L. Michalik, Department of Kinesiology and Health Promotion, U of Kentucky; K. Pipgrass, College of Education, U of Kentucky; M. J. Ickes, Department of Kinesiology and Health Promotion, U of Kentucky

Abstract: Bingocize is a program that combines the game of bingo with physical exercises to enhance senior health. The UKY Bingocize project aims to expand the reach of Bingocize to certified nursing facilities (CNF) across Kentucky to engage CNF residents. Attendance data was collected monthly from 17 CNF implementing Bingocize within the UKY Bingocize project to identify variations in total and unique participation trends across rural and urban settings. Attendance data analysis shows distinct patterns: urban areas experienced a dramatic initial increase in total participation, with growth rates peaking at 122.89% in the second month and tapering to 12.04% by the tenth month. Rural areas had a 85.49% start growth in the second month, leveling off to 12% by the seventh month. Despite differences, both urban and rural settings exhibit a similar trend: a large spike in participation from the first to second month, a dramatic decrease from the second to third month, and stabilization for the remaining months. Unique participants varied between rural and urban areas and showed no pattern, with urban areas showing a 54.83% growth early on but declining to 4.76% by the ninth month, while rural settings began with an 11.30% growth rate, indicating less volatility but also less data in later months. Preliminary analysis across Kentucky sites reveals consistent total participation and varying unique participant growth in the Bingocize program, emphasizing Bingocize's widespread impact and potential to sustain older adult engagement in urban and rural settings.

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Oral Abstracts

Session D&I Community

Abstract Title:	**Health Programming for Skilled Nursing Residents Provides Preliminary Evidence for Improving Aging Attitudes in Staff**
Author(s):	K. Pipgrass, Department of Kinesiology and Health Promotion, U of Kentucky; J. Michalik, Department of Kinesiology and Health Promotion, U of Kentucky; M. Ickes, Department of Kinesiology and Health Promotion, U of Kentucky

Abstract: There are significant declines in the eldercare workforce with the deficiency growing each year. These declines are of great concern, as the proportion of the United States population over the age of 65 is increasing and expected to continue to rise. This leaves a disproportion in healthcare needs and the ability to provide healthcare for the aging population. There is a need to improve the satisfaction of nursing facility staff to promote retention. Bingocize is a health promotion program that combines the familiar game of bingo with exercise therapy to improve quality of life and physical outcomes within the aging population. It follows a train-the-trainer model to prepare staff for implementing Bingocize in their facility. The UKY Bingocize Project has seen improvements in staff partners in regards to their attitudes and awareness of aging. Using a paired sample t-test from twelve staff (representing nine skilled nursing facilities) that completed the six-month follow up survey, the improved score for the attitudes scale was found to be significant (p-value<0.005). Staff acceptance of the program and attitudes towards aging outcomes impact the dissemination of the program by promoting staff retention. Therefore, the effects of the program are mutually beneficial with staff satisfaction in programming resulting from Bingocize participation and improved attitudes enhancing implementation of Bingocize.

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Oral Abstracts

Session D&I Community

Abstract Title:	**Leveraging the EPIS Framework to Describe Implementation of a Pre-release Telehealth Intervention for Incarcerated Women**
Author(s):	Martha Tillson, Center on Drug and Alcohol Research, U of Kentucky; Erin Winston, Center on Drug and Alcohol Research, U of Kentucky; Carrie B. Oser, Department of Sociology, College of Arts & Sciences, Center on Drug and Alcohol Research, U of Kentucky; Carl Leukefeld, Center on Drug and Alcohol Research, U of Kentucky; Laura Fanucchi, Division of Infectious Diseases, Department of Internal Medicine, Center on Drug and Alcohol Research, College of Medicine, U of Kentucky; Kathryn McCollister, Soffer Clinical Research Center, Department of Public Health Sciences, Miller School of Medicine, U of Miami; Matt Webster, Department of Behavioral Science, Center on Drug and Alcohol Research, College of Medicine, U of Kentucky; Megan F. Dickson, Department of Behavioral Science, Center on Drug and Alcohol Research, College of Medicine, U of Kentucky; Jaxin Annett, Center on Drug and Alcohol Research, U of Kentucky; Mary Levi, Department of Psychology, College of Arts & Sciences, U of Kentucky; Amanda Fallin-Bennett, College of Nursing, U of Kentucky; Bryan Garner, College of Medicine, The Ohio State University; Michele Staton, Department of Behavioral Science, Center on Drug and Alcohol Research, College of Medicine, U of Kentucky

Abstract: Over the past 30 years, women have experienced substantial increases in opioid-related hospitalizations, fatalities, and incarcerations. These trends signal a need for implementation science focused on improving services for women with opioid use disorder (OUD; e.g., medications for OUD [MOUD]) in criminal-legal contexts to enhance knowledge of organizational and systemic factors that may impact intervention success. The Kentucky hub of the NIH/NIDA Justice Community Opioid Innovation Network (JCOIN) works with women with OUD incarcerated in Kentucky jails to test the effectiveness of a Pre-Treatment Telehealth MOUD treatment linkage intervention with and without Peer Navigation. Additionally, this type 1 effectiveness-implementation hybrid trial seeks to identify factors associated with implementation of the interventions along the Exploration, Preparation, Implementation, and Sustainment (EPIS) continuum. Within each EPIS phase, the Kentucky JCOIN study has examined discrete implementation activities across three stakeholder systems: 1) jail staff and leadership for each of the five experimental jail sites where the intervention is delivered (n=17); 2) counselors and administrators from four community-based MOUD providers who are responsible for conducting the Pre-Treatment Telehealth sessions (n=16); and 3) staff from one centrally-located recovery community organization providing remote Peer Navigation services (n=8) for participants randomized to the Peer Navigation group. This presentation will describe strategies used within each EPIS phase, examine quantitative and qualitative implementation measures over time (including web-based surveys and in-depth qualitative interviews), and discuss ongoing efforts to measure implementation success in the context of this unique jail-based intervention for women with OUD.

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Oral Abstracts

Session Health Equity

Abstract Title:	**Implementing an RCT with Spanish-Speaking Latinx Families in Lexington Kentucky: Recognizing and Aligning with Diversity**
Author(s):	S. Barnhart, PhD, MSW, UK College of Social Work, J. Plasencia, PhD, RDN, UK Department of Dietetics and Human Nutrition, D. Cartegena, PhD, RN, CPNP, Old Dominion University College of Health Sciences, and A. M. Linares, DNS, RN, IBCLC, FAAN, FILCA, UK College of Nursing

Abstract: Childhood obesity disproportionately affects Latinx children (25.8%) at higher rates than Black (22.0%) and non-Hispanic White children (14.1%). Kentucky's Latinx population has nearly quadrupled over the past decade, underscoring the need to develop culturally driven, innovative interventions that disrupt trajectories of obesity. Early childhood is an opportune time to influence long-lasting health and lifestyle habits. The "AyUDA" (Aprender y Utilizar Decisiones Apreciables,ÄîLearning and Utilizing Significant Choices) study tests the efficacy of a virtual, family-centered intervention that delivers 5 modules containing culturally tailored messaging sensitive to food and health beliefs and practices aimed at preventing obesogenic behaviors among Spanish-speaking Latinx families with preschool-aged children in Kentucky. Baseline results from the first half of participants (n=30) demonstrate the diversity of these families with respect to national origin (5 Latin American countries reported), US and KY residency (mean years 13.52 (SD= 8.33) and 11.66 (SD= 7.73 respectively), family structure (46.4% married, n=13), educational attainment (51.9% completed secondary school) emphasizing the need to recognize the diversity of central Kentucky Latinx families. Nearly 7 in 10 participants report experiencing economic hardships, and less than 1/3 (26.9%) of parents reported having insurance, (96.2% of the focal children receive Medicaid). The all-Latina study team, with diverse ethnicities and training, used their expertise in aligning the AyUDA intervention with Latinx families from diverse educational, economic, and cultural backgrounds. Additionally, we present lessons learned from launching the study that supports the need to incorporate personalismo into recruitment and retention practices with Latinx families.

Supported by:	University of Kentucky College of Social Work and UNited In True racial Equity (UNITE) Research Priority Area

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Oral Abstracts

Session Health Equity

Abstract Title: **Chronic Conditions with Hearts and Ears in Appalachia Research Study (CCHEARS)**

Author(s): M. P. Duff, College of Arts and Sciences and Lewis Honors College, U of Kentucky; M. L. Bush, Department of Otolaryngology, U of Kentucky College of Medicine; L. Bellnier, Department of Otolaryngology, U of Kentucky College of Medicine

Abstract: A growing problem in our nation is having to deal with two or more chronic conditions at the same time, a situation known as "multiple morbidity" or MM. The number of people with MM is expected to grow globally. People living in rural areas, who often have less access to socioeconomic and healthcare resources, are more likely to face MM. This study explored MM through the focal condition of hearing loss. To better understand how vulnerable, rural, and Appalachian Americans handle MM, this study interviewed 15 individuals from rural Appalachia who are living with chronic hearing loss and another morbidity such as diabetes or heart disease. Qualitative interviews were analyzed thematically using ATLAS.ti. Findings show that physical health, social interactions, nutrition, and financial situation were all prominent themes that affected the lives of participants with MM. Participants reported that there are many obstacles to managing MM effectively that are unique to those in rural Appalachia. Our participants shared stories of how they handle living with multiple chronic conditions, how they have to forgo hearing healthcare to prioritize care for other conditions, and what it would be like if care was available closer to them. Taking a deeper look into the lives of these patients, CCHEARS helps us better understand what issues Appalachian Americans with MM face and identifies paths forward to help improve health equity for those living with MM across the commonwealth.

Supported by: SPARK Program

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Oral Abstracts

Session Health Equity

Abstract Title: **Uterine Fibroids: Understanding the illness condition**

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Abstract: Although uterine fibroids are common across various racial and ethnic groups, there is a disproportionate burden of this condition among women of color, particularly among black women. One way to understand the racial disparities in uterine fibroid prevalence, prognosis and management is to understand the risk factors unique to Black women, and the adverse conditions experienced disproportionately by this group. Some of these exposures may include stress, racism, discrimination, adverse childhood experiences, poor diet, inadequate physical activity, vitamin D deficiency, increased exposure to toxins, and other environmental factors. There remains limited research that has simultaneously accounted for experiences with some of these exposures, time since diagnosis and how these influence illness experience and quality of life. This study employs data from an online survey of 72 African-American women to explore how some of these factors (diet, vitamin D deficiency, experience of racism and social determinants of health) interact with time since diagnosis to shape the illness experience and quality of life measures for Black women diagnosed with uterine fibroid. Preliminary results indicate that majority of respondents report acquiring necessary dietary requirements, receiving diagnosis between 2 and 5 years ago, and a little more than half reporting that their quality of life either declined or remained unchanged after diagnosis. Implications for designing interventions for early detection, addressing of unmet disease management needs, and the monitoring of quality of life of Black and African American women are discussed.

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Oral Abstracts

Session Health Equity

Abstract Title:	**Health Care for Incarcerated Individuals: Teaching medical students about rights, challenges, and avenues of advocacy.**
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Abstract: Introduction: Patients in the carceral system constitute a vulnerable population of individuals with a high disease burden. It is important that clinicians understand how to meet their unique needs, but unfortunately medical schools provide insufficient curriculum to prepare physicians regarding proper care for incarcerated people.

Methods: We developed an interactive workshop for third-year medical students at the University of Kentucky that involves a thirty-minute interactive didactic session, followed by a thirty-minute, small-group, faculty-led discussion about the lecture and relevant journal article. Topics discussed included health care background, education, and advocacy tools necessary to equitably treat incarcerated individuals. The lecture began and ended with a self-assessment to track student knowledge growth. Data was analyzed utilizing an asymptotic McNemar Test.

Results: Of the 189 lecture attendees in 2023, 105 completed both self-assessments. Prior to our intervention, 11.43% of students reported sufficient knowledge about providing care to incarcerated patients. Following the intervention, findings showed a significant increase in student knowledge ($p \leq 0.05$), as 98.09% agreed this intervention was a successful learning experience. Further, 100% of respondents felt it was important for physicians to advocate for adequate medical care for their incarcerated patients ($p < 0.001$).

Discussion: Our workshop is an effective educational modality to teach third-year medical students about the unique healthcare needs and advocacy tools necessary to equitably treat patients in the carceral system.vocacy tools necessary to equitably treat patients in the carceral system.

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Oral Abstracts

Session Health Equity

Abstract Title:	**Culturally Tailored Messaging for Alzheimer's Screening: Insights from Rural Black Adults in Kentucky**
Author(s):	Y.L. Jackson, College of Communication and Information, Center for Health Equity Transformation, Center for Clinical and Translational Science, U of Kentucky; E. K. Rhodus, Department of Behavioral Science, Sanders-Brown Center on Aging, Center for Health Equity Transformation, U of Kentucky; N. G. Harrington, College of Communication and Information, U of Kentucky

Abstract: As the prevalence of Alzheimer's disease and related dementias (ADRD) rises, particularly among the aging Baby Boomer generation, effective health messages become crucial in addressing modifiable risk factors for ADRD to reduce the incidence. This study explores behavioral determinants for Alzheimer's disease (AD) screening in Black adults and investigates the key elements for designing a pertinent health message encouraging AD screening. In a rural area of Kentucky, Black female adults (N=18), ages 50+ (mean age 62 years) participated in two focus groups. The first group examined behavioral determinants and provided feedback on an Alzheimer's Association handout encouraging screening. Based on this feedback, the handout was redesigned, and the second group provided further input on the design of the health message. Thematic analyses were conducted on audio-recorded and transcribed focus group sessions. Quantitative analysis was conducted on the demographic survey. Results indicated that limited AD knowledge led to feelings of helplessness, while awareness and education instilled hope. Past healthcare experiences influenced beliefs, and cultural norms, such as "what happens in our house, stays in our house," played a significant role in the decision to seek health care. Regionally specific messaging for AD emerged as crucial, with generic statements lacking appeal. Key considerations for audience impact included message delivery, layout, and format tailored for low literacy individuals. Barriers like past experiences, knowledge gaps, and cultural norms hinder AD screening among Black adults, leading to delayed healthcare. The study highlights the potential impact of regionally specific health messaging in modifying health-related behaviors.

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Oral Abstracts

Session Informatics - AM

Abstract Title: **Fourier Feature Contrastive Learning for Enhanced IHC Image Translation**

Author(s): C. G. Archbold, Department of Computer Science, U of Kentucky; A. Imran Department of Computer Science, U of Kentucky

Abstract: Immunohistochemical (IHC) staining is a chemical process that indicates visual molecular information critical to diagnostics in tissue samples. IHC staining tests for antigen presence in tissue samples, crucial for the diagnosis of cancers. However, compared to common Hematoxylin and Eosin (HE) staining, IHC staining can be much more costly and lacking in availability. This incentivizes a computational method for correlating information between various tissue stain imagery. Traditional image-to-image translation often relies on pixel-wise losses, but issues can arise when dealing with paired imagery that may have registration errors or alignment issues. This problem is particularly prevalent in medical imaging, where images from the same patient may exhibit discrepancies or shifts in sample location. To address this challenge, we extend Adaptive Supervised PatchNCE (ASP) to use the Fourier Transform to disentangle high and low frequency information in image patches. We formulate a patch wise contrastive loss to compare the relative Fourier features extracted using a deep neural network. We compare our learning criterion with ASP and PyramidPix2Pix for image translation of IHC imagery, benchmarking them against two datasets, BCI and MIST, featuring IHC stain imagery for various antigens. We evaluate the robustness of our method to registration errors and demonstrate its effectiveness in generating high quality IHC staining images for improved diagnostics. We find that through leveraging Fourier features, we out-perform existing state-of-the-art methods on IHC image translation. Our findings suggest that the use of Fourier feature contrastive learning can be a promising approach for improving image-to-image translation with limited registration.

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Oral Abstracts

Session Informatics - AM

Abstract Title: **AI-Powered Segmentation of Muscle Tissue using Bedside Ultrasound**

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Abstract: Background: Artificial intelligence has proven utility in medical image segmentation, including the evaluation of skeletal muscles in ultrasound images. Musculoskeletal ultrasound can be used to quickly evaluate skeletal muscle size, quality, and architecture at the bedside, which in the ICU, can represent a powerful tool to predict and prevent risks for unanticipated adverse events. Training qualified technicians is a limiting factor for the utility of bedside ultrasounds.
Objective: Train an AI model to accurately segment and perform automated analysis of target skeletal muscles in musculoskeletal ultrasound images from both healthy and ICU patients.
Methods: We collected 473 B-mode ultrasound images of the quadriceps and tibialis anterior muscles from healthy and ICU patients. Out of these images, we labeled 94 for vastus intermedius (VI) and femur, 136 for rectus femoris (RF), and 243 for tibialis anterior (TA) muscles. A DeepLabV3 model with ResNet-50 backbone was trained for each muscle. Post-processing was also used to reduce noise and remove artifacts from the predictions. Dice coefficient and 5-fold cross validation was chosen to evaluate the model's accuracy. Values useful for analysis such as muscle thickness, cross-sectional area, and echogenicity were calculated after post-processing with morphological operations.
Results: The Dice scores for the VI, RF, and TA models were 0.8559, 0.7960, and 0.9330, plus or minus 0.0358, 0.0407, and 0.00872 respectively (95 percent CI).
Conclusion: DeepLabV3 was able to successfully segment ultrasound images from both healthy and ICU patients with high accuracy.

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Oral Abstracts

Session Informatics - AM

Abstract Title:	**Generative Diffusion Model for Mitigating Racial Biases in Dermatology Diagnosis**
Author(s):	N. Munia, Department of Computer Science, U of Kentucky; A. Imran, Department of Computer Science, U of Kentucky;

Abstract: Skin diseases are one of the most common health concerns in the USA, it is mandatory to use precise computer-aided techniques for the diagnosis of skin disease. With the advancement of machine learning models, the performance of medical image classification has improved significantly. However, recent research indicates that these models show biased performance toward some subgroup populations with sensitive attributes. For example, models perform badly on images of skin lesions with darker skin tones compared to those with lighter skin tones. The primary reason behind this can be attributed to training on imbalanced datasets where images of certain racial groups have minority representations. Moreover, images of common skin cancers of darker skin tones are rarely depicted. To address these issues, we propose a novel generative AI method, namely, Dermatology Diffusion Model (DermDiff). Unlike existing generative models, DermDiff can generate new dermoscopic images not only for certain disease types but also for minority skin tones. Leveraging text prompts and multimodal text-image learning in our DermDiff, we generate synthetic images to improve representation of minority groups (patient, disease, etc.) in datasets for clinical diagnoses. We evaluated the generative model performance in terms of high-fidelity——by calculating Frechet Inception Distance (FID) scores and diversity——by calculating inverse Multi-Scale Structural Similarity Index Measure (MS-SSIM). Furthermore, we trained a downstream skin disease classification model to predict benign or malignant cases from dermoscopy (synthetic and real) images. Our preliminary findings suggest the proposed generative model (DermDiff) can be of great potential for mitigating racial biases in dermatology diagnosis.

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