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**CONNECTING ACADEMIA, COMMUNITIES, AND HEALTH
SYSTEMS: INCLUSIVE ENGAGEMENT ACROSS APPALACHIA**

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Thank you.

Development of a Health Information Technology Assessment to Enhance Use of Electronic Health Records in Colorectal Cancer Screening and Follow-Up

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Historic challenges in patient self-care and cancer prevention have been exacerbated given the COVID-19 pandemic. This is true for overall cancer screenings, including that of colorectal cancer. While more effective use of electronic health records can aid in increasing colorectal cancer screening rates and enhancing care, determining how to best leverage the data and clinical decision support tools in these systems remains difficult. This study addressed barriers to electronic health records-based colorectal cancer screening and follow-up through the development and implementation of a health information technology protocol. This protocol, based on implementation science-based partnership with three health systems, includes tools and an assessment designed to pinpoint and address practice workflow and systems use challenges hindering colorectal cancer screening quality improvement. Participating health systems, each using different electronic health records, represent a free and charitable clinic, a larger more urban federally qualified health system, and a smaller more rural federally qualified health center. The electronic health record protocol design centered on engaging our primary care partners and learning directly from them the important details on long-standing challenges in using electronic health records for colorectal cancer quality of care improvement, then building and reviewing tools with them for appropriateness and feasibility through an iterative participatory development process. The results of our study suggest that the protocol could be feasible, appropriate, and acceptable within primary care and transferrable across electronic health records systems.

The Experiences of Reproductive Choices by Women with Terminal Degrees in Roanoke, Virginia: A Qualitative Study

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Purpose statement: Women with terminal degrees are an understudied population in the extant literature on reproductive choices. With more women pursuing terminal degrees than at any other time in history, understanding the influence of educational attainment is of particular interest when studying reproductive choices for women. This qualitative study addresses the gap in the literature by specifically investigating the lived experience of women of reproductive age who hold terminal degrees, specifically those who are employed by Virginia Tech and Radford University at medical campuses. The central research question asks how women with terminal degrees describe their beliefs, experiences, and choices regarding reproductive choices.

Methods: Based on the theoretical model of the Theory of Reasoned Action, the researcher obtained qualitative data through an electronic survey instrument created in Qualtrics and via one-on-one, semi-structured interviews conducted by Zoom audio call. The research team then transcribed interviews using Rev Transcription service and identified common themes using Dedoose qualitative software.

Results: Of the 20 women interviewed, most were between the ages of 32–38 years (13), married (15), identified as White/Caucasian (16), held a Ph.D. (nine), had children (14), their first child between the ages of 25-31 years (9), currently has two children (6), and do not want more children (13). The overall themes that emerged were: balancing career and motherhood (N=68), effects of a terminal degree on reproductive choices (N=55), marital status (N=51), finances (N=50), challenges and barriers (N=36), and suggestions (N=48). These major themes aligned with the Theory of Reasoned Action's constructs of behavioral beliefs, outcomes evaluation, normative beliefs, and motivation to comply.

Conclusions: This study produced novel findings that examine the lived experiences of women with terminal degrees which may be extrapolated and applied to other institutions or groups with similar populations to better understand the specific health needs and experiences.

Reducing Penicillin Allergy in Rural American Children: A Patient-Initiated Delabeling Program

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Introduction: 10% of U.S. patients report penicillin (PCN) allergy, though 90% of these patients tolerate drug challenge to PCN.

Purpose Statement: Multidisciplinary, resource-intensive PCN allergy delabeling initiatives are difficult to implement in decentralized ambulatory settings. Through the usage of a novel technology earmarked for rural dissemination, we aim to empower caregivers of PCN allergic children to pursue delabeling by leveraging community partners, telehealth, and a streamlined risk stratification process.

Methods: Investigators developed an innovative, *patient-initiated* QR-enabled central online platform to risk stratify PCN allergic children, educate caregivers on the importance and long-term health benefits of PCN allergy delabeling, then facilitate connection with telehealth-enabled delabeling providers. The following accessibility-focused principles were prioritized during design and user testing to widely engage prospective rural participants, particularly those with lower health literacy and limited access to subspecialist care: Bilingual QR placards and brochures, simplistic homepage with visual infographic, hyperlinked FAQs, explanatory modal windows, portable risk certificate generation, and direct telehealth-enabled provider connection.

Results: Penicillin Allergy Decision and Mobile Empowerment (PADME) is a pediatric PCN allergy delabeling algorithm housed within a *patient-initiated* central online platform. Intake survey completion by caregivers generates a PCN allergy risk certificate for the majority of participants, intended for presentation to the primary care or allergy provider for definitive action upon the child's PCN allergy label, and generates a 'not allergic' certificate for a minority of participants, *without* necessitating provider involvement. Delabeling initiatives are underway at partnering institutions.

Conclusions: PADME has the potential for portability and rapid deployment to rural health systems and provides caregivers with 1) a deliverable risk certificate for future use and 2) a connection with a telehealth or in-person delabeling provider. Increasing partnerships between PADME and rural health systems or community practice providers is likely to promote PCN allergy delabeling in pediatrics.

Developing Team Up: A Public Health Academic Practice Collaborative (Team Up)

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Introduction: The first Kentucky Public Health Practice-Based Research Network was established in 2008 with a goal of improving health in KY and building evidence-based public health systems and services through collaborative research. Network activity was last documented in 2012. The dormancy of this network leaves a significant gap and missed opportunities specifically in the 54 Appalachian counties in Kentucky. Many of these counties are not only designated as economically depressed, experiencing declining life expectancy, and rising chronic disease but are also suffering the environmental devastation of recent floods.

Purpose statement: Team Up's purpose is to create a sustainable infrastructure for community-engaged partnerships that leans into community needs through the provision of technical assistance and evaluation services, student practical multidisciplinary experiential learning, and strengthening of the practice-to-research relationship.

Methods: Launched in June 2023, Team Up created three core areas: Technical Assistance and Evaluation, Community-Engaged Capacity Building, and Applied Scholarship and Methodologies. Each core is led by an experienced CPH faculty-member with relationships with the Appalachian practice community. Four MPH students were recruited and trained in community health assessments, strategic planning, data collection and leading focus groups. Students and faculty met with practice partners at local health departments, the Center for Excellence in Rural Health, and service providers such as The Hub, a multidisciplinary center for those suffering from substance use disorder.

Results: Team Up has created tailored data sets for partners with secondary disease-burden data, county-specific social determinants of health data, strategic planning and focus group assistance, and several applications related to both applied research and capacity building.

Conclusions: Team Up has provided a unique opportunity to bring together CPH students and faculty experts with local public health and community leaders to address priorities, evaluate options and build an effective and resilient public health system. Creating and sustaining the infrastructure for community-engaged partnerships is critical to strengthening public health systems and positioning them for future challenges. Building a strong public health research and practice infrastructure has the potential to strengthen multisectoral trust, advance multidisciplinary learning, and support translational action.

Pediatric Cancer Symptoms Reported by Child-Caregiver Dyads and Associations with Rural and Appalachian Residency

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Introduction: Symptoms experienced by children with cancer may be affected by socioenvironmental factors. Little work has examined the role of regional factors, specifically rural and Appalachian residency, on the symptom experience of children with cancer.

Purpose statement: To examine differences in pediatric cancer symptom reporting between rural/Appalachian and non-rural/non-Appalachian children and their caregivers.

Methods: Fifty-five caregiver-child dyads were recruited within one year of pediatric cancer diagnosis. Children were 6-17 years old ($M=12.02$; $SD=3.5$), mostly White (85.5%) and male (50.9%). Participant addresses were coded for rural/Appalachian residency using Rural-Urban Commuting Codes. Dyads reported symptoms using the Memorial Symptom Assessment Scale. Descriptive statistics, correlations, and independent samples t-tests examined associations and differences in symptoms by rural and Appalachian residence.

Results: Thirty-one percent ($n=17$) of dyads were rural and 21.8% ($n=12$) were Appalachian. On average, rural children ($M=10.85$; $SD=9.66$) and caregivers ($M=8.50$; $SD=6.67$) reported more overall symptoms than non-rural children ($M=7.62$; $SD=6.54$) and caregivers ($M=6.53$; $SD=6.49$). Appalachian children ($M=11.56$; $SD=7.75$) and caregivers ($M=9.55$; $SD=7.37$) reported more overall symptoms than non-Appalachian children ($M=7.73$; $SD=7.54$) and caregivers ($M=6.47$; $SD=6.22$). Differences in rural and Appalachian symptoms were not significant ($p>.05$). Rural children reported significantly more symptoms of drowsiness ($t(51) = -2.44, p = .023$) and hair loss ($t(50) = -2.45, p = .046$) than non-rural children. Appalachian caregivers reported children experienced significantly more fatigue ($t(51) = -2.18, p = .019$) and shortness of breath ($t(52) = -3.19, p = .044$) than non-Appalachian caregivers. Appalachian children also reported significantly more fatigue ($t(51) = -2.03, p = .028$) and vomiting ($t(52) = -3.10, p = .020$) symptoms than non-Appalachian children.

Conclusions: Residing in rural and Appalachian areas may be associated with higher symptom burden, as well as symptoms regarding fatigue and appearance. Identification of symptom profiles related to rural/Appalachian residence will aid in the development of targeted interventions to decrease symptom burden and improve quality of life in this vulnerable population.

Teen Physical Activity predicted by Parental Behavioral Control and Solicitation and not by Helicopter Parenting

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Parents' involvement in their children's lives is important and can impact many aspects of development, including healthy behaviors such as physical activity. The goal of the current study is to explore how three different parenting practices (Behavioral Control, Parental Solicitation, and Helicopter Parenting) uniquely predict adolescents' engagement in physical activity both concurrently (wave 1) and longitudinally (wave 2). It was expected that behavioral control and parental solicitation would predict higher levels of physical activity concurrently and longitudinally, but prior findings on helicopter parenting were mixed.

The sample included 292 teens (14-16 years of age) and at least one parent who were a part of a larger study recruited from the Appalachian region (mostly WV). Parents or teens completed surveys that included the Helicopter Parenting Scale, Parental Solicitation Scale, Parental Control Scale and the Physical Activity Scale.

We conducted hierarchical linear regression models predicting teens' physical activity from each parenting practice, while covarying for parents' own physical activity and COVID-19 timing (some Wave 2 assessments were completed during the pandemic). Helicopter parenting (mothers or fathers) was not associated with adolescent concurrent (Wave 1) physical activity, but parental behavioral control (mothers and fathers) and solicitation (only fathers) were associated, in that higher parental behavioral control and solicitation related to higher levels of teen physical activity. For the longitudinal analysis (Wave 2), both helicopter parenting and parental solicitation were not significant predictors of teen physical activity. However, mothers' behavioral control significantly predicted teens' physical activity a year later, suggesting mothers' use of age-appropriate monitoring and guidance of teens may be useful to promote teen exercise and activity. This study emphasizes the relevance of different parenting practices along with the role of both fathers and mothers in teen engagement in physical activity.

Emergency Department Management of Tobacco Use Disorder

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Introduction: Tobacco use is the leading cause of preventable death in the United States, accounting for nearly 500,000 deaths per year. 16 million additional Americans are afflicted with a disease caused by smoking. Recent estimates suggest 22.6% of West Virginians are current cigarette smokers. WV also leads the nation in rates of youth smoking, smoking during pregnancy and rates of smokeless tobacco use

Methods: We will be conducting a stratified sampling of patients presenting to the Emergency Department with current tobacco use to quantify and qualify use in addition to determining patient perceptions regarding Emergency Department based interventions. Concominantly, a survey of Emergency Department providers will be conducted to determine comfort with tobacco cessation interventions and to elicit underlying bias towards tobacco users.

Expected Results: It is anticipated that providers will indicate bias towards tobacco users and a lack of comfort with pharmacotherapy treatment options for patients with tobacco use disorder. In addition, providers will express concerns over scope of practice and time constraints in initiating treatment for tobacco use disorder from the Emergency Department. It is anticipated that patients will express concern for provider bias in the emergency vs primary care setting, will report lack of previous Emergency Department attempts at tobacco cessation counseling and will indicate willingness to receive treatment for tobacco use disorder from the Emergency Department

(Surveys to patients and providers will be released on August 1st with an anticipated closure date of September 15th pending adequate sample sizes.)

Training Youth to Deliver a Brief COVID-19 Educational Intervention in Rural West Virginia Communities: Lessons Learned from an Innovative Partnership

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Introduction: West Virginia (WV) is a rural Appalachian state with high rates of chronic disease (e.g., diabetes, hypertension, COPD, etc.), many of which are associated with greater severe COVID-19 and post-COVID condition risks.

Purpose Statement: The purpose of this project was to increase COVID-19 knowledge and vaccine acceptance among rural West Virginians living with chronic conditions using a brief educational intervention led by student Health Navigators.

Methods: The Health Sciences & Technology Academy (HSTA) is a mentoring program in 27 WV counties that encourages high school students, many from underrepresented backgrounds, to pursue STEM-based higher education. The West Virginia University (WVU) School of Public Health partnered with HSTA to train students as Health Navigators. The trainings consisted of didactic and hands-on learning regarding COVID-19 epidemiology, risks, prevention, health communication strategies, and community asset mapping. Students were also trained to deliver the intervention using an adaptable script and flow chart to guide participants in watching brief videos of trusted WV healthcare providers addressing their selected COVID-19 questions and vaccine concerns using a tablet.

Results: Eighty-five students were trained as Health Navigators by an interdisciplinary team of experts in-person and virtually between July-October 2022. Health Navigators began delivering the intervention in their local communities in November 2022; project implementation is still ongoing. These students are supported by HSTA teachers and project staff to develop recruitment strategies in collaboration with local community agencies, schools, and clinics and meet virtually bi-weekly to discuss implementation progress/challenges. Additionally, students were guided in developing relevant research questions, conducting simple analyses using the data collected, and presenting their findings in a poster presentation style at their annual HSTA Research Symposium.

Conclusion: The current project demonstrates a useful partnership providing experiential learning opportunities and training the next generation of public health workers to be prepared to address emerging health issues.

Leveraging a State-University Partnership to Meet Training Needs for Implementing the West Virginia Statewide Transition Plan

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Background: West Virginia (WV) Department of Health and Human Resources (DHHR) receives funding from the Centers for Medicare & Medicaid Services (CMS) for services to various waiver programs. A new CMS regulation resulted in the Statewide Transition Plan (STP) that will ensure individuals who receive Medicaid Home and Community-Based Services (HCBS) are in settings that are integrated and support full access to the greater community.

Purpose: DHHR partnered with the West Virginia University Health Affairs Institute (Health Affairs) to develop training for HCBS providers on STP implementation.

Methods: Health Affairs and DHHR collaboratively developed training materials to educate HCBS case managers about the CMS final ruling, the corresponding changes to WV HCBS, and the case managers' role in completing annual assessments and achieving state compliance.

Results: The WV Statewide Transition Plan Implementation Training for HCBS Settings is an interactive, asynchronous, online training that was created and housed on the DHHR learning management system to allow case managers to access and complete the training in accordance with compliance requirements. Members of all waiver programs will receive annual CMS assessments to determine if their site complies. An STP brochure for waiver members and caregivers was also developed.

Conclusions: The state-university partnership engaged with a variety of subject matter experts, including curriculum specialists and instructional designers, who utilized methods and software that culminated in accessible and interactive training to support STP implementation and compliance with CMS requirements.

Improving Food Access and Reducing Health Disparities Through a Co-Op Grocery Store Food Pharmacy

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Introduction: SHARE Cooperative (a community co-op and grocery store) established a food pharmacy to reduce food insecurity. SHARE partnered with a Federally Qualified Health Center (FQHC) providing healthcare for primarily uninsured and Medicaid-insured patients.

Objective: Together with an academic health system, we aimed to assess the acceptability of a food pharmacy for FQHC patients/providers and to collect pilot data on participant's baseline demographics, vitals, labs, and medical history.

Methods: All patients attending a visit at our FQHC were given a "prescription" for a food box by their provider (standard, hypertension-friendly, or diabetes-friendly). Patients redeemed the box from the nearby SHARE office. The package contained dry goods, fresh fruit and vegetables, and culturally sensitive recipes. Participants provided their name, date of birth, and demographics, including food insecurity. We extracted participant health record data from the FQHC. Semi-structured interviews were performed with providers and participants.

Results: Of the 4,846 patients seen, about 750 prescriptions were written, 350 boxes distributed, and 331 surveys completed. Providers noted that writing prescriptions was easy, and they appreciated an intervention for food insecure patients. Participants appreciated receiving a prescription, but many had difficulty with transportation to pick up their box. Of survey participants, 13% were Black, 27% white, and 72% Hispanic; 70% had household income <\$20,000 and 89% had food insecurity. We successfully matched 198/ 331 participants to FQHC medical records; 34% had diabetes and 25% had hypertension. Many were not matched due to illegible name/birth date on survey.

Conclusions: A community cooperative, FQHC, and academic health system established a food pharmacy that was acceptable to patients and providers and were able to link most participants to their health records. The current/ongoing version of the program includes food delivery options, longitudinal enrollment in the program, and direct referral from the FQHC to ensure linkage with health records.

Obstacles and Opportunities in the Conduction of Neuroscience Research in Rural Appalachia

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Introduction: Neurocognitive disorders in rural Appalachian communities have received limited attention in the current literature. To address this gap, Dance for Parkinson's Disease® classes (DfPD®) were conducted in two senior centers in Claiborne County, Tennessee, during the Spring and Fall of 2022. Data collection utilized surveys to gauge the feasibility of community classes such as DfPD®, with a follow-up study to ascertain the effectiveness of a twelve-week DfPD® class intervention. For the duration of the research process, obstacles were encountered when trying to implement brain health programs in rural Appalachian communities.

Methods: A follow-up study was conducted in Spring 2023 to investigate the impact of class modality on participation rates. Many of the participants experienced all three modalities: a live Zoom class in Spring 2022, prerecorded dance classes from the DfPD® website in Fall 2022, and a live instructor class in Spring 2023. A short five-question survey was administered to gather feedback on class preferences.

Results: Fifteen seniors (over 65 years old), filled out the survey. The preference for the modality of the class demonstrated a varied response, with no single modality being preferred. Of note, when asked whether participants would want to have a dance class over other forms of exercise such as walking, biking, yoga, and swimming, 93.30% (n=15) of participants preferred the dance class.

Conclusions: The data collected over the two-year period highlights the need for brain health research and programs for rural Appalachian populations, such as that of the senior population in Claiborne County. Overcoming obstacles, such as initial community pushback, lack of awareness regarding research benefits, and funding shortages for community health programs, is crucial. Collaborative practices involving outreach offices, senior centers, and county extension offices can aid in implementing effective public health programs and improve health and research outcomes in this community.

Association Between Acetaminophen Use During Pregnancy and Ductus Arteriosus Constriction: A Case Series Study

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Background: Acetaminophen, an over-the-counter medication commonly used for pain relief and fever reduction during pregnancy, has raised concerns regarding its potential impact on fetal development, specifically the constriction of the ductus arteriosus. This case series aims to investigate the relationship between acetaminophen use during pregnancy and ductus arteriosus constriction by analyzing a small group of pregnant patients.

Methods: In this case series, we present the data of five pregnant patients who used acetaminophen at different stages of their pregnancies and subsequently experienced ductus arteriosus constriction in their newborns. The cases were identified from medical records at our institution, and relevant information such as maternal acetaminophen use, gestational age, diagnosis of ductus arteriosus constriction, and clinical outcomes was collected and analyzed.

Results: All five cases involved pregnant patients who used acetaminophen at various times during pregnancy. Fetal echocardiography examinations confirmed ductus arteriosus constriction in all newborns. Maternal acetaminophen use occurred during different trimesters, ranging from early to late gestation. Notably, these cases resulted in significant clinical implications for the infants, necessitating medical intervention and close monitoring.

Conclusions: This case series suggests a potential association between acetaminophen use during pregnancy and ductus arteriosus constriction. While the findings are based on a small number of cases, they raise concerns about the safety of acetaminophen during pregnancy and its impact on fetal cardiovascular development. Further research, including larger studies, is necessary to validate these findings and establish a causal relationship. Healthcare providers should approach the recommendation or administration of acetaminophen to pregnant women with caution, particularly during crucial stages of fetal cardiovascular development. Continued vigilance and investigation are required to determine the precise risks associated with acetaminophen use during pregnancy and guide appropriate clinical guidelines.

Indirect Effects of COVID-19 on Health Services for the Medicaid COPD Population: West Virginia, 2018-2021

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Introduction: According to the U.S. Census Bureau (2018), the prevalence of chronic obstructive pulmonary disease (COPD) in the Appalachian state of West Virginia has been reported as the highest in the U.S. This study examines the indirect effects that COVID-19 may have had on utilization of healthcare in a vulnerable COPD population.

Methods: All West Virginia Medicaid enrollees aged > 40, 2018-2021 were included in this longitudinal retrospective cohort. Medicaid claims data were utilized with linear regression and mixed models to examine the change in the prevalence of COPD and average hospital length of stay (LOS) for COPD among patients pre- and post-COVID-19, respectively. Cox model was used to assess the time from the first COPD diagnosis to the first inpatient stay for COPD.

Results: The COPD group had greater than expected outpatient service utilization when compared with the non-COPD group post-COVID-19 (IRR 1.06; 95% CI 1.04-1.08). The monthly number of new COPD diagnoses significantly decreased by 604 per 100,000 enrollees after January 2020 ($p < 0.001$). Patients who had an inpatient admission for COPD were 38% less likely to be re-admitted for COPD in the hospital within 30 days after the pandemic (HR 0.62; 95% CI 0.53-0.73).

Conclusion: While non-COVID healthcare utilization in WV decreased during the pandemic, the WV COPD population experienced higher service utilization. These results suggest that measures of healthcare utilization and health system changes might be of greater public health relevance when focused on specific diagnostic groups.

The Effect of Elevated Blood Pressure and Stage One Hypertension on Perinatal Outcomes in Appalachian Gravidas

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Introduction: There is literature in the obstetric population that suggests any degree of hypertension can lead to adverse maternal and fetal outcomes. We sought to determine if pregnant patients in our Appalachian population with elevated blood pressure or stage 1 hypertension have an increased risk of gestational hypertension and preeclampsia.

Methods: A retrospective chart review was performed on patients who received obstetric care with the Marshall University OB/GYN department and delivered at Cabell Huntington Hospital. Delivery outcomes were obtained for 233 deliveries from March 30, 2020 to September 30, 2020 in patients who did not meet obstetric criteria for chronic hypertension at the initial prenatal visit in the first trimester. Patients were divided into three groups: normotensive with blood pressure <120 systolic or <80 diastolic, elevated blood pressure of 120-129 systolic and <80 diastolic, or stage 1 hypertension of 130-139 systolic or 80-89 diastolic. Maternal demographics and pregnancy outcomes were compared.

Results: There were 75 normotensive patients (group 1), 61 patients with elevated blood pressure (group 2), and 94 patients with stage 1 hypertension (group 3). Birth weight ($p < .01$) and gestational age at delivery ($p < .01$) were significantly lower with increasing blood pressure. Elevated blood pressures associated with higher Body Mass Index (BMI) ($p < .01$). The incidence of gestational hypertension and preeclampsia was correlated with hypertensive category ($p = .02$ and $< .01$, respectively).

Conclusion: Elevated blood pressure in the first trimester increases the risk of gestational hypertension, preeclampsia, and early delivery in Appalachian gravidas. Pregnant patients who do not meet obstetric criteria for chronic hypertension but have elevated blood pressure are at risk for adverse outcomes. Strategies directed at individuals with elevated blood pressures are needed to improve both maternal and fetal outcomes.

Key words: pregnancy, hypertension, elevated blood pressure, stage 1 hypertension, Appalachia, low dose aspirin

Implementation of Multifaceted Evidence-Based Interventions Increases FIT Colorectal Cancer Test Return Rate at a WV Safety Net Clinic Serving Underrepresented Groups: A Case Study

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Safety net clinics serve patients with health equity barriers including poverty, lack of insurance, minority and immigration status, transportation challenges, housing insecurity and mental health/substance use disorders. These vulnerable populations experience poorer health outcomes suggesting a need for greater emphasis on preventive services. Despite limited resources to fill care gaps, safety net clinics often serve as the only point of care offering preventive services to these patient populations. Milan Puskar Health Right (MPHR), a free safety-net clinic in Morgantown, WV offers comprehensive health services to 1,500 patients annually with ~98% uninsured or on Medicaid. About 28.1% are aged 50-75. This case study will detail the development of a team-based workflow in collaboration with the WV Program to Increase Colorectal Cancer Screening; incorporating CRC standing orders, patient and provider reminders, the use of a CRC screening tracking registry along with the launch of a free point-of-care Fecal Immunochemical Test (FIT) initiative supplemented with a manual tickler and bilingual FIT return reminder system. Between 9/1/21 and 1/31/23, 75 patients received FIT tests with 38 returned and 8 with positive results. The interventions raised the FIT return rate from 10% to 50.7%. Individuals with positive FIT results were referred for follow-up colonoscopies with 3 completed. Though the clinic experienced significant staff turnover, the initiative was sustained through the established standing orders and the detailed workflow. Multifaceted health system interventions have the potential to reach vulnerable populations with preventive services, improving overall health outcomes.

The Impact of COVID-19 Infection on Concurrent Traumatic Injuries - An Analysis from The West Virginia Trauma System

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Introduction: With the onset of the COVID-19 pandemic, elective surgeries were decreased and associated with worsened outcomes. Trauma outcomes have been varied, and rural traumas have not been solely analyzed. This study investigated outcomes related to COVID-19 infection at a rural Level 1 trauma center in West Virginia (WV).

Methods: A retrospective analysis of trauma outcomes of patients aged 18 years and older from March 30, 2020 until December 21, 2021 presenting to a Level-I Trauma Center in WV was conducted. Data was collected from the John Michael Moore Trauma Center (JMMTC) trauma registry. Mortality, complications, injury characteristics, comorbidities and demographics were examined.

Results: Out of 2,118 patients tested for the novel coronavirus, 61 (1.7%) were positive (COV+). There was no significant increase in mortality regarding COVID-19 infection. COV+ patients had increased length of stay (median 5.2 vs 3.6, $p = 0.015$), intubation rates (21.3 % vs 12.5%, $p = 0.070$), but fewer days on the ventilator (median, 2 vs 3, $p = 0.012$). COV+ patients were more likely to be discharged to rehabilitation centers, skilled nursing facilities or long-term acute care hospitals (44.3% vs. 34.5%), and less often routine or home measures (42.6% vs. 58.7%) ($p = 0.015$).

Conclusion: This single study retrospective study found increased rates of length of stay and intubation rates with no increased rates of mortality or complications in COV+ trauma patients compared to non-COV+ trauma patients. Further research is needed to validate and characterize the impact of COVID-19 for the entirety of the state.

Communicating with Strategy: Using Behavioral Insights to Tailor Effective Colorectal and Lung Cancer Screening Messages for Appalachians

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Introduction: Appalachians are 10% more likely to die from cancer and early detection through screenings is critical to improving these mortality rates. Tailored messaging can increase cancer screening receptivity in the region. Linking messages with behavioral change frameworks can encourage action.

Purpose: The purpose of this study was to gain behavioral insights from Appalachians related to lung and colorectal cancer screenings to develop strategic communication approaches using the Health Belief Model (HBM) as the conceptual framework. Priority populations for each cancer type were identified. The priority population for the lung cancer screening survey were Appalachians with a tobacco use history as they are at an increased risk. The priority population for the colorectal cancer screening survey were Appalachians aged 45-49 years as they are newly eligible for screening.

Methods: Two cross-sectional surveys, lung cancer ($n=110$) and colorectal cancer ($n=345$), were administered to West Virginians using convenience, snowball, and purposeful sampling strategies. Instrumentation included an adaptation of Champion's HBM scale to explore specific between-group construct differences. Descriptive statistics, one-way ANOVA, independent t -tests, and Mann-Whitney U tests were run.

Results: Appalachians at-risk for lung cancer had an increased perception of threat, $t(110)=4.15$, $p<.001$, $d=.79$. These high-risk participants suggested that messages focused on the tests itself (barrier-mitigation), not threat, would spur action, $F(2, 110)=3.071$, $p=.050$. Newly eligible colorectal cancer screening participants had less screening self-efficacy ($U= 10002.500$, $z=3.625$, $p<.001$) and reported more barriers to screening ($U= 6286.000$, $z=-3.093$, $p=.002$).

Conclusions: Behavioral insights make messaging tailored and strategic which can better spur action in different audiences. Lung cancer screening communication strategies for high-risk Appalachians should include a focus on the test itself, including barrier-mitigation, to reduce psychological reactance related to tobacco use. Colorectal cancer screening communication strategies for those newly eligible should focus on raising self-efficacy, increasing threat, and reducing barriers.

Deciphering Statin Bioaccumulation and Fate in Aquatic Habitats: An Advanced Analytical Framework

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Introduction: The extensive use of statin drugs for cholesterol management has resulted in their introduction into aquatic systems through wastewater effluents. The consequential ecological implications of this pharmaceutical class remain largely unexplored, establishing the need for a comprehensive investigation.

Purpose statement: This research endeavors to bridge this knowledge gap by proposing a novel, precise, and selective procedure for detecting and measuring five widely prescribed statins—**simvastatin** (Zocor®), **atorvastatin** (Lipitor®), **pravastatin** (Pravachol®), **lovastatin** (Mevacor®), and **rosuvastatin** (Crestor®)—within the tissues of indigenous fish species residing near effluent discharges along the Tygart Valley River near Elkins, WV.

Methods: To overcome the complexities posed by the lipophilic and hydrophilic nature of different statins, the semi-volatility of several compounds, and the intricate fish tissue matrix, our analytical methodology employs a series of solid-liquid and solid-phase extractions culminating in online solid phase extraction (online-SPE) coupled with liquid chromatography-tandem mass spectrometry. This allows for the accurate quantification and detection of statins in aquatic lifeforms.

Results: The proposed approach was implemented to gauge statin prevalence in five fish species sourced from the Tygart Valley River, West Virginia, proximate to a wastewater effluent discharge. Detected statin concentrations ranged between 0.5 and 4 ng/g for simvastatin, atorvastatin, pravastatin, and lovastatin, and 35 to 100 ng/g for rosuvastatin. Differences across fish species and types of statin drugs highlighted variances in bioaccumulation, underscoring the ability of statins to accumulate in aquatic wildlife exposed to wastewater effluents.

Conclusions: Future research plans involve expanding sample sizes for each species and diversifying sampling locations to include areas upstream and downstream of effluent discharge points. Our ultimate goal is to provide a holistic understanding of statins' impact on aquatic organisms, thus informing and guiding environmental and public health policymaking.

Federal Policies that Affected Broadband Expansion and Telehealth in Appalachia during the Pandemic

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Background: There have been 188 rural hospital closures in the United States since 2010 with approximately 20% of these in Appalachia. Appalachia is a 13-state area that extends from New York to Mississippi and is characterized by extreme poverty and poor health outcomes. Telehealth has become a way that nurses can reach rural patients who might not otherwise receive health care. Telehealth has been extended through laws and policies that have been passed in response to the COVID-19 pandemic.

Objectives: The purpose of this research is to 1) outline the federal policies enacted during COVID-19 for broadband expansion; and 2) discuss the expected impact these policies will have on delivering telehealth in rural Appalachia.

Methods: For this Discussion paper, a search of PubMed was conducted in January 2023, using the search words, “policy”, “telehealth”, “broadband”, and “Appalachia.” The search was limited to titles from 2020 – 2023 to represent the pandemic years, the time-period of interest for this discussion. In addition, governmental websites, and highly reliable sites (e.g., Appalachian Regional Commission) were searched.

Findings: Several new laws appropriated funds to expand broadband infrastructure that made it possible for telehealth to be used by nurses to deliver health care to rural patients.

Conclusion: Nursing has changed during the pandemic years, and nurses have the expertise necessary to provide innovative healthcare practices to rural populations. There is a great need for broadband to continue to expand and for nurses to grow in their expertise with these innovative services.

"Fresh Air, Sunshine, Walking": A Mixed-Methods Analysis of Space and Health in Rural, Appalachian Pennsylvania

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Introduction: Rural-urban health disparities have been well documented, but these vary by geographic region, level of rurality, and health outcome of interest. Local analyses of space can yield insights into health behaviors and outcomes among residents. Tioga County is an Appalachian county in Pennsylvania. It is ranked in the topmost quartile of healthy counties in the state, despite markedly lower access to healthcare resources when compared to the state average.

Purpose statement: To evaluate how space in Tioga County, Pennsylvania, is attributed to and associated with the health of its residents, which can provide insights into interventions to improve health outcomes in the context of poor access to healthcare resources.

Methods: Data were collected through an exploratory mixed-methods study (surveys and in-depth interviews) following a convergent design. Participants were 69 adult Tioga County residents. Attributional coding was applied to in-depth participant interviews. Extracted items were coded in MAXQDA by the feature of space and the health outcome or behavior. Codes were then sorted into "themes." When possible, these relationships were also assessed with quantitative regression analyses. Findings were integrated across data types, and convergence/divergence of findings was evaluated.

Results: Research in progress. Attributions have been extracted from the interviews in preparation for coding. Some preliminary results include the association between natural features of the environment (e.g., scenery) and physical features of Tioga County (e.g., lack of traffic) with stress. Geographic features are attributed to diet and healthcare access. Social features of space are related to physical activity and social connection.

Conclusions: This study could challenge preconceived notions of causality – which are largely informed by research on urban communities – when thinking about space and health. These findings may highlight the importance of collaboration between communities, academia, and health systems in increasing engagement in health behaviors in rural Appalachia.

Who Needs a Plan? The "Whys" and "Hows" of Planning to Promote Physical Activity

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Introduction: Planning is a critical step toward advancing public health. Using the US National Physical Activity Plan (NPAP) as a detailed roadmap for state, regional, and community planning, strategic plans will involve an interactive process that is designed to develop goals and objectives that can be met across multiple societal sectors to promote physical activity to improve the health of a population.

Methods: West Virginia (WV) is one of only two states to have a state-level physical activity plan modeled after the NPAP. For the first iteration of the WV Physical Activity Plan (WVPAP) released in 2015, a strategic method that included concept mapping, interviews, meetings with sector teams, and a statewide PA symposium was employed. In the development phase, priority areas were identified that met the context of our state, with strategies and tactics for each sector identified with input from many state and local leaders. The release of the Plan was well-publicized with statewide recognition.

Results: We are now near the final revisions of the ActiveWV 2030 updated Plan, using many of the same processes as before, with a lens toward new national recommendations and evidence-based practices, with the importance of community engagement at the forefront. Our plan release includes more marketing strategies and publicity, and an evaluation plan to track the successes of meeting our Plan strategies. We have sought funding support from various sources to allow for a coordinator, increased marketing efforts, and more robust dissemination.

Conclusions: Lessons learned from this presentation can be used for the development and implementation of state and physical activity plans throughout Appalachia.

Addressing Community Priorities Using Effective Prevention Strategies: Buen Provecho! A Virtual Family-Based Intervention to Promote Health

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Introduction: Obesity rates are significantly higher among Latino youth in the US, placing them at increased risk for poor health outcomes. Despite this widening disparity, successful obesity prevention interventions for Latino children at risk for overweight and obesity remain limited.

Purpose: The purpose of this pilot study was to examine the effectiveness of a family-based, virtual educational program at modifying knowledge, self-efficacy, and behaviors when compared to traditional in-office counseling for guardians of Latino children who are obese or overweight.

Methods: This study utilized a quasi-experimental behavioral intervention with convenience sampling. Both groups received standard in-office counseling and delivery of food boxes containing vegetables, but the intervention group also received a 12-week intervention that included cooking classes, family activities, and healthy eating education. A key strategy of this study design was utilizing Community Health Workers and a Community Advisory Board to guide study design and implementation.

Results: Twenty-seven families participated in the study (intervention group = 11, comparison group n = 16). Participants in the intervention group felt significantly more confident that they can increase the number of vegetables their child eats each week ($p < 0.058$), and more confident that they could obtain fresh fruits or vegetables for their family. Mothers in the intervention group reported feeling 7 times more likely that they could obtain fresh fruits and vegetables for their families during the week (OR = 7.16), and more confident about cooking healthy meals.

Conclusion: This pilot study demonstrated that a virtual family-based culturally adapted healthy eating intervention improved knowledge and confidence about healthy eating behaviors. By developing and implementing community-based interventions that consider the unique needs and contexts of families, we can make significant strides in addressing childhood obesity and promoting healthier eating behaviors. Community collaboration is critical to successful programming.

Student-Led Mobile Health Clinic: Impact on Health Education and Behaviors in a Rural Community

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Introduction: In rural America, shortage of healthcare workers and scarcity of resources give rise to health literacy challenges, hindering individuals from receiving timely and effective preventative care. To improve the health outcomes in Northern Dauphin County, an underserved region of rural Pennsylvania, the Penn State College of Medicine's Student-Run and Collaborative Outreach Program for Health Equity (SCOPE) organized a day-long health education event in the community.

Purpose statement: The purpose of this study was to analyze the impact and effectiveness of educational strategies employed by a student-led mobile clinic on health literacy in rural Pennsylvania.

Methods: This was a cross-sectional, population-based study. Educational intervention in the community was carried out by trained medical students and health professional volunteers who distributed educational materials. Participants completed de-identified pre- and post-clinic surveys that gathered demographic data, and used likert-style questions to assess understanding of topics including diabetes, blood pressure control, addiction, mental health, childhood vaccination schedules, cancer screening, skin self-exam, and nutrition. Nonparametric variables were tested for normality, and a Wilcoxon signed-rank test was used to determine statistically significant differences in topic awareness following educational intervention.

Results: A total of 55 participants (81.3% female) completed the survey, of which 100% reported having health insurance coverage, 98% had a primary care provider, and 32% had previously used mental health services. A statistically significant increase in knowledge of diabetes ($p=0.014$) and blood pressure control ($p=0.023$), likelihood of receiving cancer screenings ($p=0.038$), and confidence in recognizing abnormal moles ($p<0.001$) was observed for participants following intervention.

Conclusions: Our community intervention increased participants' knowledge of several preventative health topics. This was likely influenced by the clinic's preparedness to meet community needs, state-funded resources to distribute educational materials on site, and volunteer training to promote health literacy through direct engagement with community members.

Engaging Rural Community Gatekeepers in Lethal Means Counseling

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Introduction: Adams County (AC), Ohio is a Health Resources and Services Administration (HRSA)-designated rural area in south-central Ohio Appalachia that has a shortage of health professionals. Adolescents with mental health concerns in AC and other rural counties are less likely to receive mental health care compared to urban youth (Howell & McFeeters, 2008), putting them at increased risk of untreated depression and suicidality.

Purpose statement: This study evaluates the effectiveness of the training workshop Counseling on Access to Lethal Means (CALM) when administered to rural community gatekeepers (e.g., school-based counselors, resource officers) in AC.

Methods: The CALM training was provided to community gatekeepers who frequently interact with youth in AC to raise suicide prevention awareness, especially regarding firearms. The training was approximately three hours and included lecture-based instruction and active learning strategies. All participants (N = 31) completed pre- and post-surveys, with a 3-month follow-up survey yet to come, which measured attitudes, beliefs, knowledge, and behavior of suicide prevention. Assessments included the Gatekeeper Behavior Scale and Suicide Assessment Behavior (Wyman et al., 2008, $\alpha=.80$), Knowledge and Attitudes of Firearm Assessment and Safety Counseling (Slovak et al., 2016, $\alpha=.80$), and Knowledge of Suicide Assessment (Wyman et al., 2008, $\alpha=.97$).

Results: While the research is still in progress, the current results of the first group (n =19) community gatekeepers are promising. The results indicate a significant difference between pre- and post-training Gatekeeper Behavior Scale (M=37.39; SD=4.54) and (M=43.67; SD=4.19); [t(17)= -4.01, p<.001]. The results indicate a significant difference between pre-training knowledge (M=40.47; SD=9.28), as measured by the Knowledge of Suicide Assessment, and post-training (M=53.67; SD=7.86); [t(17)= -4.30, p<.001].

Conclusions: This research presents a novel way to apply the CALM training program with community gatekeepers, and to educate community members on suicide prevention in rural areas with limited mental health care access.

A Land Trust for the People, By the People: Uplifting East Knoxville, Tennessee

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Nestled in the Tennessee Appalachian region is the community of East Knoxville, which has been impacted by discriminatory practices such as redlining and urban renewal, resulting in structural inequities and disinvestment. One result is the limited access to healthy food options, which disproportionately affects Black families and other marginalized groups, leading to food insecurity and related health issues.

To address this issue, the community has implemented efforts such as urban farming and community gardens. These efforts have progressed to a proposed community land trust, specifically an agrarian trust. This land trust will focus on addressing the needs of the community and increasing local food production, providing secure land for community gardens, urban farms, and various community facilities.

East Knoxville community partners and stakeholders are currently in the organizing stages of the community land trust. Secondary data has been gathered to build a narrative of the community and conduct a rapid community needs assessment.

This project has the potential to be transformative. By supporting urban agriculture and increasing local food production, it can create a brighter future for East Knoxville and its residents. The community-led nature of the project will promote a sense of ownership and belonging, bringing people together.

The community land trust and food hub in East Knoxville is a community-led effort to address food insecurity and promote urban agriculture. Providing secure land for community gardens and urban farms, and offering diverse services such as a community kitchen, educational space, farmers market, and food pantry, this project has the potential to create a more resilient and self-sufficient community. A community land trust can ensure that the land is used for the benefit of the community which can help to address the food insecurity and related health issues that disproportionately affect Black families and other marginalized groups.

Characteristics of Low Acuity Emergency Department Visits for a Healthcare System in Southwest Virginia

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Introduction: For some patients, the ED is their primary access point for healthcare services. Use of the emergency department (ED) for low acuity conditions and primary care places additional strain on ED staff and resources while increasing waiting and treatment times for high acuity patients. Factors such as race, ethnicity, and insurance status have a strong connection to the likelihood of a patient visiting the ED for care. For example, in national samples, Black and Hispanic patients are more likely to seek care in the ED for non-emergent conditions than their peers.

Purpose Statement: We hypothesize that Medicaid, uninsured, rural, and Black patients will be more likely to have a low acuity ED visit than their peers.

Methods: Electronic health records from female-identifying patients at any of the hospital's EDs between January 1, 2021 and September 30, 2022 were used for this study. Variables related to demographic, socioeconomic, and geographic information were used to explore the relationship between with acuity classification using prevalence ratios for each variable of interest.

Results: Our sample included 29,317 female patients who visited the ED between January 1, 2021 and September 30, 2022. Of these unique individuals, 83% (n=24,376) were white and 10% (n=3,017) were Black. The mean (IQR) age for all visits was 48 (30,65). Preliminary results show that there is approximately a 10% increase in the likelihood of having a low acuity visit with a 10-year increase in age. Research investigating the remaining variables is still in progress.

Conclusions: This study aims to provide a comprehensive view for a large, regional health system throughout the pandemic and identify demographic, socioeconomic, and geographic factors influencing low acuity ED visits. Findings from this study will be used to inform interventions to improve primary care access for groups with higher likelihoods of having low acuity visits.

The Role of WVCTSI Project ECHO in Improving Access to Care in Rural WV

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Introduction: Limited specialty care access is a major contributor to rural health disparities. Extensions for Community Healthcare Outcomes (ECHO) is an innovative training and education model to address the need for trained specialty care in rural areas like West Virginia (WV). By bridging the gap between experts and practitioners, Project ECHO® is revolutionizing medical education and fostering equitable access to quality healthcare.

Purpose Statement: At the core of the ECHO model™ lies its hub-and-spoke networks, where expert teams lead knowledge-sharing initiatives through multi-point video conferencing, conducting virtual sessions with community providers. This innovative approach empowers primary care doctors, nurses, and other clinicians to acquire the skills and knowledge necessary to provide exceptional specialty care in their communities.

Methods: Since its launch in 2016, the ECHO program has expanded to cover ten different clinical areas such as Hepatitis C. The program has successfully trained and mentored over 1,500 individual providers who serve rural populations not only in West Virginia but also in 20 other states. During this time, more than 600 de-identified cases have been presented by primary care providers. The WVCTSI ECHO team developed and launched a participant survey for the ECHO program to gain insights into the program and potential future directions. Results were shared with participants and other stakeholders via social media, infographics, and email summaries.

Results: Key lessons learned include leveraging existing partnerships and implementing projects based on provider needs. A multi-partnered community approach facilitated by the widespread use of a technology-based provider education and mentoring platform has facilitated the availability of specialty care in rural areas such as WV.

Conclusion: These numbers strongly indicate the program's value to rural providers, as it establishes collaborative learning networks between academic medical experts and community clinicians, ensuring the implementation of evidence-based practices throughout the state and beyond.

Conducting a Community Scientist Academy to Prepare Stakeholders for Engagement in Research

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The Community Scientist Academy (CSA) is an educational program that teaches community stakeholders about the importance of engaging in clinical and translational research and shares opportunities for involvement in research with stakeholders. This program addresses a critical need to ensure stakeholders' voices are included in the design, implementation, evaluation, and dissemination of translational research projects, allowing stakeholders to impact the health of their communities through their engagement.

The CSA teaches stakeholders about each stage of the translational research process and explains how getting involved and sharing the voice of the community can impact research and improve health outcomes. There are five weekly 90-minute sessions that begin with a presentation of the day's topic, followed by a discussion with an experienced researcher that emphasizes how engaging stakeholders has strengthened their research related to the day's topic.

We have hosted four CSA programs, including three in Central Ohio and one in Southeast Ohio's Appalachian Region (Meigs County). The CSA program has graduated 37 participants and placed stakeholders in various roles to bring community voices to translational research, including a community reviewer for The Ohio State University Comprehensive Cancer Center's Institutional Review Board (IRB), several community pilot grant reviewers for CCTS Pilot Awards, and Community Advisory Board (CAB) members. The CSA is growing with another Southeast Ohio program scheduled in Pike County in August 2023 and a couple programs in the planning stages for Central Ohio's underserved communities.

The CSA connects stakeholders in Ohio's communities with research teams at The Ohio State University and Nationwide Children's Hospital. Providing opportunities for stakeholders and research teams to work together helps ensure the voices of stakeholders are heard and the research conducted is relevant and in line with the health priorities of Ohio's communities.

Regional Differences in the Delivery of Mental and Behavioral Health Services to West Virginia Youth

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Introduction: The mental and behavioral health system helps empower West Virginia youth and families to reach their full potential.

Purpose statement: Policy recommendations for changes to the mental and behavioral health system might need to account for regional variation in factors that can make it challenging to develop statewide “one size fits all” approach for system improvements, such as availability of mental/behavioral health services and workforce capacity.

Methods: As part of a statewide evaluation by West Virginia University Health Affairs Institute in partnership with the Department of Health and Human Resources, 1,400 surveys, 46 interviews, and 39 focus groups captured perspectives on the West Virginia mental and behavioral health system from system administrators, stakeholders associated with juvenile justice, and mental/behavioral health and healthcare providers between fall 2021 and spring 2022. Sampling methods for system administrators focused on maximum variation and statewide representation, and a census approach was used for providers.

Results: Increased use of telehealth in rural counties, especially in the northern part of West Virginia, helped offset challenges related to service accessibility due to COVID-19. Increased salaries and sign-on bonuses are helping attract and retain employees across the state and youth mental and behavioral health system, but the greatest need exists in boarder counties with other states that can provide higher wages. Waitlists for services tended to be longer in the mid- and southern parts of the state, which were more likely to report staffing shortages and high turnover among system staff, administrators, and providers. Training in preparation for supporting youth with mental/behavioral health needs was needed throughout the state, particularly in central West Virginia.

Conclusion: Slightly different factors influenced the delivery of youth mental/behavioral health services across WV, demonstrating the importance of nuanced policies and procedures for system improvements that can account for these differences.

Lessons from a COVID-19 Medicaid Policy Evaluation of Emergency Medical Services

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Introduction: The COVID-19 pandemic was a unique experience for everyone, especially the healthcare delivery system. Working with the West Virginia Department of Health and Human Resources, Bureau for Medical Services, West Virginia University Health Affairs Institute conducted an evaluation of 26 Medicaid policies implemented by West Virginia Medicaid.

Purpose: The purpose of the evaluation was to provide data to help inform decision-making regarding the usefulness of policies post-pandemic and for future public health emergency planning and preparedness.

Methods: Policy changes that impacted retention of health providers, efficiency of healthcare delivery, beneficiary service utilization, Medicaid spending, and health outcomes during the COVID-19 pandemic were evaluated using a combination of Medicaid claims data analysis and information from focus groups, interviews, surveys, and document review. This presentation will share analysis of emergency medical transportation and primary care visit claims, plus feedback from discussions with emergency medical service providers.

Results: One finding from the evaluation was that processes and tools that enhanced and/or enabled communication between patients, providers, and emergency responders, were critical to maintaining continuity and quality of care. An aspect of the evaluation that highlighted this was a policy that allowed for emergency medical services to triage patients in their homes and coordinate follow-up care with their healthcare providers when patients met certain criteria instead of transporting them to emergency departments.

Conclusions: We found that when the emergency policy and viral syndrome pandemic triage protocol was successfully utilized there were key aspects to its planning and execution. This presentation will share examples of healthcare and emergency medical services collaborations that worked well, communication successes and challenges that were realized along the way, and suggestions for improvement in the event of another disaster. Lessons from this Medicaid policy evaluation are valuable for future preparedness planning whenever the healthcare delivery system may be disrupted.

Agreement between Environmental Checklists Performed In-Person and via Google Maps in Appalachia

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Introduction: Environmental checklists can objectively quantify the accessibility, condition, and perceived safety within a community. Although environmental checklists can provide an immense amount of information, completing these checklists in-person requires a great deal of human and time resources. It is especially difficult to conduct in-person environmental checklists in communities that are very rural, such as Appalachia.

Purpose Statement: To evaluate the agreement between scores on the Irvine Minnesota Inventory, an environmental checklist, completed in-person and via Google Maps.

Methods: N=6 environmental checklists were completed in-person and repeated using Google maps across 4 counties in Appalachia. The checklist used was the Irvine Minnesota Inventory to measure the built environment. This measure contains 161 items divided into 3 categories: accessibility, pleasurability, and perceived safety from crime. The checklists were completed along a route from a randomly selected elementary school to the nearest pediatrician. Cohen's kappa was used to determine the level of agreement.

Results: We found a moderate agreement between the checklists completed in person and via Google maps (76.6% agreement, Cohens $k=0.51$). The in-person rater was 35% more likely to mark an item as present than the Google maps rater. The in-person checklists took 185.0 ± 62.8 minutes to complete; barriers included time, car use/gas, weather, and a need for two raters in the car. The Google maps checklists took $98.2.0 \pm 40.3$ minutes to complete; barriers included technology limitations, such as blurry pictures and the inability to access street view.

Conclusions: Environmental checklists provide researchers with robust information about built environments, however, barriers exist to completing these checklists in Appalachia. Completing these checklists via Google Maps may reduce human and time resources, but the accuracy of this method needs to be carefully considered. Checklists completed via Google maps may not identify important features of the community.

Neurorehabilitation Research at a Clinic Near You: Making a Case (Series) for Computer Vision

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Neurorehabilitation research has seen exceptional growth in recent decades. However, a persistent and major barrier to this research is the predominance of low-powered, single site investigations. While data collection through outpatient rehabilitation sites has gained increasing interest, the demand for a clinician's time often limits data collection at these sites. This predicament is magnified in regions like Appalachia with already disparate access to neurologic care. A potential solution to this issue is sensor-based measurement combined with artificial intelligence, which is the basis of computer vision technology. By combining light sensors (cameras) and artificial intelligence, computer vision allows measurement of biomechanical data—data historically considered time-consuming and impractical for neurorehabilitation research. Through a case series set in various outpatient clinics, we investigate the feasibility of computer vision to acquire biomechanical metrics recommended in rehabilitation research.

Adams County, Ohio, a rural area with high poverty rates and limited access to healthcare, faces significant mental health challenges. The *Together We Care* initiative was established to address the unmet need for mental health services in the county. The program, a consortium involving various community organizations and the University of Cincinnati Department of Psychiatry, aims to provide evidence-based mental health care to youth through telehealth. Children in the county experience considerable stress, particularly those from low socioeconomic backgrounds. Anxiety and depression are prevalent among youth, with long-term consequences if left untreated. The program's purpose is to improve health equity by increasing access to mental healthcare through telehealth services, including psychotherapy and medication management.

The program utilizes a multidisciplinary team to offer comprehensive care management, psychology, and psychiatry services. These services are delivered securely via telehealth, enabling remote access for the county's population. Evaluation data is being collected through tools like the PHQ-9 and GAD-7 to assess the program's effectiveness.

While the program is still evolving, valuable lessons have surfaced. Challenges and barriers to program initiation, gaining community support, managing referrals, and establishing operating procedures have been encountered. The program was initially established to provide short-term crisis intervention for youth; however, it became abundantly clear youth are struggling with significant untreated trauma, depression, and anxiety and require much longer treatment.

The impact of the program is significant, addressing the lack of timely and appropriate mental healthcare in Adams County and reducing inequities in access to care. The success of this program also paves the way for its scalability to other communities across the U.S. Telehealth offers a low-cost and accessible solution, particularly for underserved areas. By demonstrating the program's efficacy and feasibility, it has the potential to positively impact the mental health of children and families in need nationwide.

Together We Care: Advancing Health Equity for Juvenile Populations in Rural Ohio through Community-Academic Telehealth Partnership

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The Utilization of Micro-Funding to Implement Equity-Integrated Policy, Systems, and Environmental Approaches in West Virginia

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Introduction: Policy, systems, and environmental approaches (PSEs) have been supported as scientific and practice-based public health strategies. However, issues persist with understanding what PSEs are and how best to implement and evaluate them. Further, although PSEs are purported to promote health equity, little is known about how organizations implementing PSEs prioritize populations experiencing disparities and evidence suggests limited understanding in how to approach equity needs. PSEs are crucial in WV as 50% of residents have access to physical activity opportunities, 12% are food insecure, and 10.2% have limited access to health care.

Purpose: Insights regarding the outcomes from an ongoing micro-funding initiative in West Virginia (WV), a rural Appalachian state with substantial health disparities, will be provided.

Methods: This multi-year initiative was spearheaded by a state health agency and used intermediary organizations and year-long micro-funding to encourage the implementation of equity-integrated PSEs statewide. Each grant year concluded with a process and outcome evaluation survey which collected information on PSE implementation and which priority populations were reached. Descriptive statistics were supplemented by qualitative data to understand PSE implementation, health disparate populations reached, and challenges faced by grantees during the grant year.

Results: Across two years, 79 grantees implemented a total of 206 PSEs (11 policy, 79 systems, and 116 environment). The average cost of each activity was \$941.79. Grantees included schools (K-12 and institutions of higher learning) as well as health care, disability-focused, and recreation organizations. Populations experiencing disparities that were reached most often included women, children, older adults, people with low income, and people with disabilities.

Conclusions: Identified barriers included grantees' lack of understanding of PSEs and how to intentionally include populations experiencing health disparities. More training and TA are needed to provide practitioners with a firmer and better understanding of PSE changes and health equity.

Results of a Mindfulness-Based Resilience Training (MBRT) Intervention among West Virginia Rural Healthcare and Public Safety Workers

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Introduction: Rural healthcare and public safety workers have faced unprecedented challenges due to COVID-19, the opioid crisis, and limited access to behavioral health resources. Given evidence suggesting MBRT positively impacts rural first responder resilience, such training may have implications for other workers in high stress occupations.

Purpose: To present data from an MBRT intervention among West Virginia rural healthcare and public safety workers.

Methods: A total of 214 participants (Mean age=42, $SD=13.2$; 71% female) were recruited into 10 cohorts for MBRT two-day didactic and experiential trainings from February-June 2022 followed by four weekly online synchronous training sessions. Pretest, posttest, 30-day, and 180-day post-intervention data was collected. Repeated measures linear mixed models (LMM) analyzed differences on key health outcome variables across time points.

Results: LMM results suggest mindfulness [Est. = 5.54, $t(266) = 6.88$, $p < 0.0001$], emotional intelligence [Est. = 6.50, $t(269) = 5.24$, $p < 0.0001$], perceptions of health [Est. = 2.92, $t(227) = 6.80$, $p < 0.0001$], and life satisfaction [Est. = 2.02, $t(264) = 3.76$, $p < 0.001$] improved significantly from baseline to the 180-day post-intervention assessment. Further, participants reported stress [Est. = -2.01, $t(278) = -5.99$, $p < 0.0001$], difficulties regulating emotions [Est. = -14.54, $t(265) = -6.40$, $p < 0.0001$], emotional distress [Est. = -5.95, $t(284) = -6.79$, $p < 0.0001$], fatigue [Est. = -1.56, $t(276) = -3.75$, $p < 0.001$], and sleep disturbance [Est. = -4.61, $t(278) = -4.84$, $p < 0.001$] decreased significantly from baseline to the 180-day post-intervention assessment.

Conclusions: Preliminary results suggest MBRT enhanced participants' key health outcomes. Given the unique challenges faced by rural healthcare and public safety workers, MBRT shows promise in reducing the potential negative occupational effects associated with these professions.

The Proteomic Response to Stroke Differs in Patients from Appalachia

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The objective of this study was to identify proteomic biomarkers predictive of stroke outcome specific to subjects residing in Appalachian counties. Eighty-one subjects underwent mechanical thrombectomy (MT) for emergent large vessel occlusion (ELVO), and systemic blood samples acquired at time of intervention were sent for proteomic analysis. Statistical analyses were employed to examine whether the relationship between protein expression and outcomes differed by Appalachian status for functional outcomes (NIH Stroke Scale; NIHSS and Modified Rankin Score; mRS), cognitive outcomes (Montreal Cognitive Assessment; MoCA) and mortality.

No significant differences were found in demographic data nor co-morbidities when comparing Appalachia to non-Appalachia subjects. Time from stroke onset to treatment (last known normal) was significantly longer in patients from Appalachia. Comparison of Appalachia to non-Appalachian subjects revealed significant differences in functional/cognitive outcomes including NIHSS, MoCA, mRS, as well as neuroradiographic outcomes including infarct volume and edema volume. Analysis of 184 cardiometabolic and inflammatory proteins revealed seven proteins that differed on NIHSS, fourteen associated MoCA, six related mRS, and seven proteins related to mortality that were significantly different based on the residency of the patient. All these proteins were differentially correlated with these functions dependent on whether the patient was from Appalachia or non-Appalachian county using last known normal as co-variate.

Our study utilizes an ELVO tissue bank and registry to investigate proteomic expression occurring at time of MT. We found that patients presenting from Appalachian areas have a different proteomic response when compared to patients presenting from non-Appalachian areas. These differentially expressed proteins relate to stroke outcome and are potential prognostic biomarkers, or targets for novel therapies. The identification of a disparate proteomic response in Appalachian patients suggests a connection with environmental exposures. Further investigations through community-based studies are imperative to elucidate the underlying causes of this differential response.

Expansion, Implementation, and Baseline Assessments of the Campus Kitchen at the University of Kentucky's Meals on Wings Program for Older Adults in Subsidized Housing

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Introduction: Over 7 million older Americans are projected to be food insecure by 2050. In 2021, older Kentuckians had the seventh greatest very low food security prevalence. Despite numerous meal assistance efforts, the need for meal assistance among marginalized older adults is concerningly growing.

Methods To address food insecurity, the Campus Kitchen at the University of Kentucky (CKUK), a student-led food insecurity relief organization, is currently funded to expand the evidence-based, dietitian-led Meals on Wings (MoW) model from the University of North Florida. In Summer 2023, a dozen of college students has been recruited, trained and engaged in CKUK-MoW expansion efforts with oversight by registered dietitians and nutrition advisors. A new partnership with the university's hospital network has been established to recover a surplus of prepared dishes and supplement with produce and animal proteins recovered from three grocery stores during four weekly meal preparation and delivery shifts. To assess baseline sarcopenia, malnutrition risk, blood pressure, and body mass index (BMI) using surveys and anthropometric measures, low-income seniors were recruited and incentivized with \$10 Kroger gift cards.

Results: In May and June 2023, 284 seniors from two partnering subsidized residence received weekly meals and 52 seniors chose to participate in survey and anthropometric measures. Approximately 1,067 lbs. of recovered foods were utilized in hand-delivering 1,167 hot and cold nutritious meals appropriate for seniors. Survey and anthropometric findings reported over 50% of participants were overweight or obese and at risk for malnutrition or malnourished with elevated blood pressure. Seniors' sarcopenia risk scores and BMI were significantly different among males and females and there were significant age-related differences in food security status.

Conclusions: Preliminary findings indicate that this dietitian-led, student-powered CKUK-MoW program is feasible logistically in producing and delivering over 200 weekly senior-appropriate nutritious meals using recovered foods for senior health and nutrition.

The Relationship between Self-Reported Sleep Disruption and Combined Endpoint Heart Failure Outcomes in a Rural Adult Population

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Introduction: Heart disease is the leading cause of death in the United States, claiming approximately 650,000 lives annually. The CDC reports nearly 70 million individuals suffer from inadequate sleep. The high prevalence of heart failure (HF) outcomes along with self-reported poor sleep quality among rural Appalachian adults is of particular public health concern. Few studies have examined the sleep-HF relationship in a rural population.

Purpose: This study sought to investigate the relationship between self-reported sleep behaviors and combined endpoint heart failure (ceHF) in a population of rural Appalachian adults.

Methods: Data from the Rural Education to Improve Outcomes in Heart Failure (REMOTE) trial was comprised of 614 adults with ceHF outcomes, which included rehospitalization, emergency room visit, or death. Log-binomial regression was used to estimate prevalence ratios (PR) and 95% confidence intervals (CI) of ceHF outcomes among REMOTE participants who reported poor sleep behaviors versus those who did not, adjusting for sociodemographic and clinical characteristics.

Results: In unadjusted models, there was an increased prevalence of ceHF among participants who reported difficulties sleeping well at night (PR=1.11, [95%CI:0.92-1.36]), being tired or having low energy (MLHF Survey:PR=1.68, 95%CI:1.18-2.39; PHQ:PR=1.39, 95%CI:1.08-1.81), and having trouble falling or staying asleep or sleeping too much (PR=1.22,95%CI:1.01-1.49) compared to those who reported no poor sleep behaviors. In models accounting for BMI, depression, and other comorbidities, there was a suggestive increased prevalence of ceHF among those who reported feeling tired or low on energy (MLHF Survey) compared to those who did not (PR:1.30, [95%CI:0.96-1.76]).

Conclusions: Differences between the MLHF Survey versus PHQ in the prevalence of “feeling tired or having low energy” reveal the challenge in determining the role of sleep in subsequent health among HF patients. Therefore, further studies utilizing objective sleep measures are needed to address the sleep-ceHF relationship and their disparities in this rural population.

Moments of Clarity: From Diseases of Despair to Lives of Hope in Persons Recovering from Addiction

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Background: Since being coined by two Princeton economists, Anne Case and Angus Deaton, in 2015, “Diseases of Despair” (i.e., deaths and comorbidities due to alcohol use, overdose, and suicide) has become an established public health phenomenon. Since the 1990s, mortality from these conditions has increased across demographic groups in association with vanishing jobs, increased social stressors, and disintegrating family structures, with the primary risk factors being low educational attainment and middle age status. In 2021, over 209,000 Americans died from documented despair-related deaths. Yet despair lacks a precise medical definition, leaving healthcare professionals unable to distinguish despair from depression, and unable to provide appropriate treatment.

Purpose: To identify themes in the stories of people aged 55-plus in an inpatient recovery program for alcohol and substance use to better understand the experience of despair, develop better comprehension of the “moment of clarity” that prompted choosing sobriety, and highlight appropriate identification and intervention measures.

Methods: A qualitative descriptive design was used, involving semi-structured, individual interviews with 17 individuals who were identified in active recovery from alcohol and substance use by a partnering local recovery program. Data analysis involved using inductive thematic analysis.

Results: The themes identified barriers to sobriety and ways that people remained sober. Barriers included: (1) exposure to alcohol and substances at an early age, (2) occurrence of a trauma/stressor leading to escalation of use, and (3) lack of motivation/desire to change as the cause of the relapses and continued use. Positive reinforcements of sobriety included: 1) a strong support system, and (2) completing the phases of the recovery path i.e., support groups and recovery houses.

Conclusion and Implications: Results from our study can better prepare local communities to provide support to their residents at risk for despair-related illness by identifying risk factors for substance use and barriers to sobriety.

Patient and Provider Experience with Telehealth Visits in a Family Medicine Center

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Introduction: COVID-19 created many challenges for healthcare providers including the increased use of telemedicine. Telehealth allowed safe care through social distancing but created questions regarding overall quality of care patients received.

Purpose: Investigators studied the patient and provider perception of telehealth visits' quality and efficacy.

Methods: A mail survey was completed by 56 patients and a REDCap (Research Electronic Data Capture) survey was completed by 16 providers who participated in a telehealth visit between January 1, 2020 and December 1, 2020. Chart review was completed for consenting patients for a subset of variables.

Results: A Fisher's exact test of independence showed that there was no significant association in patient preference for in-person vs telemedicine and the acute need for their visit ($p=0.83$). There was no statistical difference in patients' perception of communication with their provider based on the use of video with their call ($p=0.30$), insurance type ($p=0.56$), or gender ($p=1.00$). There was no association between visit satisfaction and telemedicine training received ($p=1.00$) or level of employment: faculty physician vs resident physician ($p=0.06$).

When responses for the question "What was your satisfaction compared to in-person visits" were collapsed into a dichotomous response option and coded (Worse=0 and Better or Same=1), there was a statistically significant difference in satisfaction based on staff position, with residents' satisfaction higher than faculty satisfaction ($p=0.0337$). A two-sample t-test as performed to compare difference in patient age and video usage during visit. There was a significant difference between those who did use video ($M=53.36$, $SD=16.0$) and those who did not use video ($M=66.0$, $SD=15.2$); $t(43)= 2.54, p=0.0146$.

Conclusions: While patients may not have a preference to in-person vs. virtual visits, providers' opinions on the appropriateness of telehealth usage may vary. Further investigation is needed to determine which populations could best be served with expanded use of telemedicine.

How to Effectively Utilize Undergraduate Interns in Recruitment and Enrollment

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Introduction and Purpose Statement: The Center for Evaluating the Research Pipeline's 2017 Data Buddies Survey highlighted that 9,610 students participate in undergraduate research each year. Graduate schools encourage their applicants to be involved in research, and more students are seeking these opportunities. Our 5,000 Baby Project provides undergraduate students with hands-on research experience through The Ohio State University. However, as these experiences are linked with semester schedules, there is significant turnover; thus, we sought to build a structured, and effective training program for students to enable success in enrolling subjects and building clinical skills. This program is designed to build their confidence in patient-facing activities and teach them to properly recruit and enroll subjects utilizing good clinical practices.

Methods: Our program has been adapted to require a rigorous application process including obtaining a letter of recommendation and completing an interview. Once selected, the students undergo an onboarding process with orientation, consisting of shadowing peers, role-playing, and completion of written assignments on the research protocol. In Fall 2022 we implemented stricter training guidelines with expectations to be enrolling patients independently by the end of their first month. Then in Spring 2023 we added an enrollment goal for the semester and expected students to reach or exceed that goal.

Results and Conclusions: Between Spring 2022 and Spring 2023 semesters enrollment numbers increased by 51%. Spring 2023 was our highest enrollment semester with 73% of students coming within 1 subject of meeting their enrollment goal and 47% exceeding the goal. In progress. The program encouraged students to get more involved in patient-facing research and gave them an advantage in graduate school applications. To date 75 students have participated in our program, with 36 of them for at least two semesters. Many of our students have gone on to be accepted to medical school, physical or occupational therapy school, and other programs.

A Systematic Review of Common Health Outcomes and Leading Determinants of Health in Appalachia

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Introduction: The Appalachian region has historically been noted to have significant health disparities compared to the rest of the United States, which is exacerbated by low provider: patient ratios, geographical obstacles preventing access to healthcare facilities, and a lack of reliable internet access.

Purpose Statement: The goal of this study was to understand the recent extent of health inequalities and their contributing factors among Appalachian individuals to develop a health blueprint for Central and South-central Appalachian region in Virginia.

Methods: Utilizing the Web of Science database, we conducted a systematic literature review of the top 10 leading causes of morbidity and mortality in the Appalachian region over the past 5 years. Each study was evaluated for one or more determinants of health based on iterative review of previous blueprints, including access to care, substance use disorder, diet/exercise/nutrition, education, income/poverty, rurality, environment, occupation, and trauma. Data extraction included study type, if it tested an intervention, effectiveness of the intervention, states included and primary author institution.

Results: 212 articles were included. Cancer (31.6%), diseases of despair (chronic liver disease and cirrhosis, intentional self-harm/suicide, and poisoning/drug overdose) (22.6%), and diabetes (10.9%) were the most prevalent diseases investigated within this sample of studies. Studies were categorized by determinants of health, of which access to care (74.5%), rurality (53.3%), and substance abuse (34.3%) were the leading addressed determinants. Only 16.4% of studies tested an intervention, and telehealth was used in 13 out of those 39 studies (33.3%).

Conclusion: Our group is meeting with local stakeholders in Virginia's Appalachian region, and utilizing the results of this systematic review we will identify, implement, and evaluate sustainable interventions that can address some of these regional health disparities. We will also use the results to draft an updated Blueprint for Southwest Virginia Health Improvement and Health-Enabled Prosperity.

Laurel HARVEST Multi-Level Intervention Planning with a Community Advisory Board

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Introduction: Rural Appalachian communities experience disproportionately high food insecurity, which has been exacerbated by the COVID-19 pandemic and its lasting effects. There is a need for multilevel interventions and a community-engaged approach to assure feasibility and acceptability of interventions to address challenges associated with achieving food security. Along with community member partnerships, Cooperative Extension Service is an important asset in rural Kentucky to leverage.

Purpose Statement: Report collaborative outcomes from intervention planning with a Community Advisory Board (CAB) to design a healthy eating project in a rural Kentucky community.

Methods: To inform the development of multi-level interventions, we used a community-engaged approach, driven by a CAB and anchored by the Family and Consumer Sciences Extension agent in the county. Data on barriers and facilitating factors for healthy eating among adults were shared with the CAB, as were potential intervention strategies. Feedback from CAB members was used to plan year 1 intervention programming.

Results: Consistent with the vibrant culture of Appalachian families, the CAB prioritized a multigenerational approach to enhancing self-efficacy for cooking healthy meals. An evidence-based Extension program, *Cook Together Eat Together*, was tailored for the community and implemented for 6 weeks in summer 2023. A second priority the CAB identified was increasing WIC farmer's market voucher redemption to increase fruit and vegetable consumption, additionally implemented in summer 2023.

Discussion: In this Appalachian community, CAB members contributed both practical information and broader guidance in developing interventions to address food insecurity. The existing relationship between Extension and the community greatly facilitates the functioning of this CAB. These findings help inform potential community-engaged approaches to mitigating food insecurity in rural populations.

The Correlations Between Adult Illiteracy and Public Health Outcomes in Appalachia

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The 13 states, 423 counties, and 8 independent Virginia cities that comprise the Appalachian Region have some of the highest rates of adult illiteracy in the United States. The region also has some of the worst health outcomes across a variety of conditions, including the incidence, prevalence, and mortality rates of infectious and non-infectious diseases and behavioral health outcomes. Because “Education” is one of the Social Determinants of Health (SDOH), it is vital to examine the correlation between adult literacy—particularly those adults who read at or below an 8th Grade level—and public health outcomes in order to identify areas of interest where both educational and public health interventions should be targeted.

This research has been designed to determine where the prevalence of low adult literacy skills and high incidence, prevalence, and mortality rates across various public health measures are moderately to highly correlated. This will allow for Community-Based Organizations (CBOs), academic institutions, and healthcare entities to identify counties to deploy targeted educational and public health interventions to address both an SDOH and health issues.

Adult literacy data have been collected from the findings of the 2018 round of testing by the Programme for the International Assessment of Adult Competencies. Public health data have been collected from a variety of agencies and offices within the United States Department of Health and Human Services.

In progress: The Appalachian Learning Initiative has found that the outcomes of nine public health measures are moderately to highly correlated with the prevalence of low literacy among adults.

In progress: Counties located in Central Appalachia and in the extreme Appalachian South are disproportionately impacted by both low adult literacy rates. Both educational and public health interventions are needed to improve outcomes in both areas.

Improving Health In Appalachia

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Introduction: Partners in Health Network, Inc. (PINH), served as the Bridge organization, for Accountable Health Communities (AHC). AHC was funded through a cooperative agreement with the Center for Medicare & Medicaid Services (CMS). The goal to “bridge the divide” between clinical healthcare delivery systems and community service providers to understand how health-related social needs (HRSN) affect beneficiaries’ healthcare usage.

Methods:

Participants: Patients whose payer source was either Medicare, Medicaid, or both, and had two or more Emergency Room visits over the past 12 months. Patients self-selected any of the social determinants of health that they encountered. Living Situation at the time of the screening; including any problems; food Insecurity; transportation; utilities; safety, and disabilities.

Patients were navigated to receive either education about how their needs could be met and or provided a resource person to assist them with obtaining assistance. Seventy percent (70%) were randomized to a provider and 30% to receiving information.

Results: During its five-year history, nine different sites participated with 89,260 screens completed, and 7,299 persons navigated. Unique persons who completed the screening were 61,587.

Navigations

Of the 58,204 screened, 7,299 were randomized. There were 5,142 persons in the intervention group and 2,157 in the control group. No demographic differences were found between the persons in the intervention group and those in the control group.

Referrals

Referrals were highest for food, living situation, and transportation. There were no statistical differences between the intervention and control group. The high percentage of unresolved needs related to safety, living situation, and transportation.

Conclusion: Screening patients for healthcare utilization and social needs was successful in identifying individuals who required other resources to maintain their health. Qualitative interviews identified many opportunities for improving the process of connecting patients with needs to navigators and navigators to patients.

Leveraging School-based Healthcare as a Health Equity Strategy in Appalachia

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Physically and emotionally healthy children are more likely to achieve academic success as they experience fewer school absences and are better able to focus and learn while in school. Students who regularly attend school earn higher grades, score higher on standardized tests, and are more likely to graduate high school. Given this inextricable link between health and education, school-based health initiatives can be leveraged to ensure students are in school, healthy, and ready to learn. Additionally, in rural communities, schools are frequently used as community centers providing needed resources, beyond traditional educational services, for vulnerable populations. Delivering high-quality health care in a school setting provides a unique access point for children and adults in a location where they spend a significant amount of time.

School Health programs vary in scope and can be operationalized in several different service delivery models. Many school-based providers offer comprehensive primary care and behavioral health and some even provide dentistry, vision, and specialty care services. While school health collaborations aim to reach students, most school health programs also serve teachers and families in the surrounding community. School Health services successfully eliminate many barriers to care and should be considered as a health equity strategy in rural communities.

Promising outcomes associated with robust school health partnerships have garnered support from federal and state organizations, funders and other stakeholders interested in leveraging integrated systems of school-based care to address critical disparities among youth and in communities with limited access to high-quality care. In this session, attendees will learn how school health momentum is expanding healthcare access in the Appalachian counties in Ohio. Participants will also learn how to position school-based healthcare services as a strategy, in their respective communities, to address significant unmet needs identified in community health assessments.

Black By God: Strengthening Health Communication in Black/African American communities

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Introduction: Founded in 2021, *Black by God: The West Virginian (BBG)* is a community-led news organization, aiming to provide a more nuanced portrayal of the Black experience in Appalachia, through the publication of a multi-genre weekly online newsletter and quarterly print newspaper and website. Community Education Group (CEG) is a non-profit organization working to eliminate disparities in health outcomes and improve public health in disadvantaged populations and worked with BBG to develop a health insert to address the gap in content and circulation related to health communication.

Purpose: The purpose of this abstract is to describe grassroots health communication distribution efforts targeting Black communities in West Virginia and develop an evaluation framework. Through both digital and traditional outreach, BBG reached tens of thousands of WV residents with public health messaging on HIV, COVID, and other topics.

Methods: A summative content analysis was completed on the 20-page printed newspaper, to identify themes presented and relation to social determinants of health. BBG also received anecdotal feedback from community members about the positive impact of this edition.

Results: A total of 20 unique themes were identified related to; behavioral health, Black infant and maternal mortality rates, doulas, faith organizations, grief counseling, health care delivery infrastructure, HIV AIDS and testing, LGBTQ legislative challenges, nursing and health profession education, physical activity, social determinants of health, sobriety, substance use disorder and recovery, training and vaccination schedules. Information was coupled with QR codes to access additional resources.

Conclusions : Harnessing the power of grassroots organizations to facilitate dissemination of public health info can lead to transformative, sustainable impacts. The BBG health insert identified opportunities to strengthen targeted communication and access to health experts in West Virginia to build capacity for BBG to be a source for consistent health information.

Per Capita Density of Tobacco Retailers in Rural Ohio

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Introduction: A strong body of research indicates that living where there is a high density of tobacco retailers (i.e., any type of store that sells tobacco, including convenience stores, pharmacies, and tobacco shops) is associated with a higher likelihood of tobacco use. Moreover, differences across communities in tobacco retailer density is associated with place-based disparities in tobacco use. Emergent policy interventions targeting the tobacco retail environment may promote equity across rural communities.

Purpose: This project aimed to assess rural disparities in tobacco retailer density in Ohio. In addition, we explored the potential for different policy-based approaches to reduce tobacco retailer density and promote rural equity.

Methods: We geocoded over ten thousand tobacco retailers in Ohio and used Census-derived information to categorize neighborhoods based on their demographic characteristics. With these data, we then calculated current disparities in tobacco retailer density. We next simulated and evaluated various tobacco retailer licensing policies and used spatial statistical methods to determine how they would impact density disparities.

Results: Compared to suburban areas of the state, rural areas of Ohio showed significantly greater tobacco retailer density. Density was particularly high for rural areas that also had both a high prevalence of poverty and a low youth population. Policy strategies that would cap tobacco retailer numbers (e.g., “only 1 tobacco retailer per 1,000 people”) had an equitable impact on reducing retailer density for rural neighborhoods.

Conclusions: These results have important implications for those working in Appalachian tobacco control. Our findings indicate that, compared to those living in suburban areas, those living in rural areas are exposed to a greater per capita density of tobacco retailers. There is a need for state and local-level tobacco control policies that will improve equity and reduce health disparities.

Appalachian Community Health Days: Going to the People

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The University of Kentucky Center of Excellence in Rural Health (UK CERH), Kentucky Homeplace (KHP) Community Health Worker (CHW) program, and a network of community partners from 32 rural Appalachian counties in Kentucky and West Virginia collaborated to host Appalachian Community Health Days (ACHD) events. These Appalachian counties, have high poverty, high rates of comorbidities, more health risk behaviors, and lower educational attainment than other parts of the Commonwealth and the nation. These factors impact a community's ability to prepare for and respond to hazardous events and made it imperative that these rural counties were provided education and access to COVID-19 vaccination.

The goal was to **Vaccinate Appalachian Communities** by providing **Community outreach, Increased access, conducting Needs assessment of individuals, and providing Education and positive messaging (VACCINE)**. The ACHD events focused on removing as many barriers as possible and providing accurate COVID-19 education, along with access to vaccines.

The events allowed us to work with a multitude of agency partners- faith based, community centers, homeless shelters, health departments, schools, recovery centers, clinics, and others. In West Virginia UK CERH partnered with William Health and Wellness Center (WHWC) to support a CHW position in their clinic for COVID outreach.

The 99 ACHD events provided COVID-19 education to over 10,000 individuals, assisted 1394 to be vaccinated and completed 2,368 health screenings. Three primary lessons learned are that to be successful you must find the right community partners, services need to be taken to the people and that you must be flexible when doing community work.

ACHD became recognized events in the communities and our community partnerships increased dramatically. Partners saw this as a way to bring resources to more individuals and recognized that they could reach an often underserved population by partnering with us on these events.

Opioid use disorder (OUD) among West Virginia Medicaid enrollees: A quantitative study

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Introduction: According to the CDC, approximately 85% of 2021 drug overdose fatalities in West Virginia (WV) were attributed to opioids. The West Virginia University Health Affairs Institute, in partnership with the WV Department of Health and Human Resources, is conducting an ongoing evaluation of WV Medicaid enrollees with OUD to evaluate costs, outcomes, and predictors of treatment success. **Purpose statement:** To identify opportunities to better serve this high mortality risk population.

Methods: The current study examined cross-sectional survey data collected using multiple modalities between April 2022 and March 2023 from a randomized sample of Medicaid enrollees with a diagnosis of OUD. Individuals were stratified and randomly sampled based on the most recent treatment provided: buprenorphine, methadone, naltrexone, and abstinence based. Descriptive statistics were used to identify current facilitators, barriers, and opportunities to improve services.

Results: The analytic sample included 860 participants: 30.6% using Buprenorphine, 30.9% Methadone, 19.2% Naltrexone, and 19.3% no-MOUD. About one-fifth reported using Methamphetamine other than opioids followed by marijuana, benzos, and cocaine. Approximately 44% stopped treatment in the past 12 months. Of those, nearly half relapsed (47.5%). Additionally, respondents reported no transportation (30.4%), dislike of provider (26.9%), and cost (18.8%) as reasons for treatment discontinuation. However, 86.8% reported receiving excellent treatment. Participants also reported family support (75.5%), MOUD (73.7%), therapy/counseling (65.3%), and peer support (65.5%) were helpful in treatment and support. In addition, 68.5% mentioned that COVID-19 pandemic did not change their recovery maintenance.

Conclusions: Based on the results, there are a number of opportunities for improving services to this population, such as identifying resources for transportation and encouraging social support. Results can be used by DHHR to consider improvements in OUD treatment and to target interventions to specific Medicaid beneficiaries in West Virginia and beyond.

Social Determinants of Health, Racioethnicity, and Severe Maternal Mortality Comorbidity Risk and Emergency Department Visits during Pregnancy.

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Introduction: The relationship between emergency department (ED) use and social determinants of health (SDoH) factors is complex, and critical factors such as racioethnicity and obstetric comorbidities may moderate this relationship among pregnant individuals. This complex relationship has important public health implications.

Purpose statement: We conducted a retrospective analysis of electronic health record (EHR) data on about pregnant individuals from a Tertiary Medical Center between 2017 and 2020 to quantify the intersectional relationship between SDoH, race/ethnicity, and obstetric comorbidity risk.

Methods: A composite measure of SDoH was linked to patient EHR data. Race/ethnicity and obstetric comorbidity were extracted from the EHR. Other sociodemographic and clinical variables were extracted for model adjustment. A negative binomial regression was used to fit the data (n=13,357) to examine the frequency of ED and preventable ED visits based on the exposure and interaction variables.

Results: Adjusted model estimates indicated that Black individuals experienced higher frequency of ED use across all levels of neighborhood deprivation, and the ED use among Black individuals in least deprived neighborhoods were higher than or similar to individuals who identified with other racioethnic groups who lived in the most deprived neighborhoods. Black individuals had the highest frequencies of ED use compared to individuals who identified with other racioethnic groups whether comorbidities were present or not, and the frequencies of these ED use among Black individuals with an absence of obstetric comorbidity was higher than individuals who identified with other racioethnic groups with a comorbidity. Individuals with obstetric comorbidities had much higher rates of preventable ED visit compared to those not at risk of SMM regardless of different levels of SDoH opportunity.

Conclusions: An intersectional perspective on ED use can provide a more nuanced lens to investigate ED utilization among pregnant individuals and other vulnerable groups.

Metals Exposure Associated with Smoking Among Pregnant Women in Southwestern Pennsylvania

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Tobacco products contain metals and nicotine, which are associated with adverse health outcomes. Prenatal exposure to tobacco smoke can adversely affect child growth and development. In this pilot study we examined associations between urinary cotinine, a metabolite of nicotine, and 4-(methylnitrosamino)-1-(3-pyridyl)-1-butanol (NNAL), a metabolite of nicotine combustion products, with urinary metals in pregnant women.

We measured 27 metals and metalloids, NNAL, and cotinine in the urine of 46 smoking and non-smoking pregnant women participating in a nested pilot study of the Magee Obstetric Maternal and Infant (MOMI) cohort located in southwestern Pennsylvania. We performed linear regression to examine relationships between tobacco smoke biomarkers (cotinine and NNAL) with concentrations of metals that were highly detected (>40%) in urine samples. Models were adjusted for age, race, county of residence, pre-pregnancy BMI, insurance status, and urinary creatinine to account for hydration status.

Urinary NNAL concentrations ranged between 0.00041 and .3056 $\mu\text{g/L}$, and cotinine values ranged between 0.37 and 14,132.4 $\mu\text{g/L}$. After adjustment for covariates, urinary cotinine was associated with higher levels of cadmium and rubidium, while NNAL was associated with higher levels of cadmium, rubidium, and thallium. For every interquartile range increase in cotinine (1,803.5 $\mu\text{g/L}$), cadmium increased by 15.5% [95% CI: 1.2 - 31.9%, $p < 0.05$], and rubidium increased by 14.2% [95% CI: 1.8 – 28.1%, $p < 0.05$]. For every interquartile range increase in NNAL (.0698 $\mu\text{g/L}$), cadmium increased by 20.5% [95% CI: 0.6 – 44.3%, $p < 0.05$], rubidium increased by 24.3% [95% CI: 6.9 – 44.4%, $p < 0.01$], and thallium increased by 31.0% [95% CI: 8.9 – 57.5%, $p < 0.01$].

In pregnant individuals, we identified three metals associated with exposure to tobacco products, as characterized by urinary cotinine and NNAL. More research is needed to understand the sources of metals and the associated reproductive and developmental health effects to mothers and children.

Evaluation of Pilot Program Designed to Increase Reproductive Health Literacy in Adolescent Females in West Virginia

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The state of West Virginia is consistently in the bottom four states for health literacy rates. Per the ACOG, women are at the greatest risk for poor health literacy, especially surrounding reproductive health topics. However, little research has been done into where the gaps in understanding begin for women. Therefore, the group decided to create an educational program for adolescent females to try to improve their early understanding of reproductive health to improve health outcomes as they grow older.

Based on the group's experiences as patients, students, providers, and educators in the health care world, they were able to identify the following as areas of low literacy: the basics of the menstrual cycle; types of feminine hygiene products and how to use them; and normal vs abnormal changes to the menstrual cycle. The presentation involved written slides, handouts, demonstrations, and Q&A time. The group was able to give this presentation to 50 5th and 6th graders in a local school system as a pilot run for this project. Afterwards, the students were given a post-survey to assess the presentation.

Based on students' responses, the group felt that the students had a better understanding on the above topics than before. Their comfort ratings suggest however that more work needs to be done to help make the students more comfortable with reproductive health topics. The hope is that continuing these presentations throughout the state will, with time, achieve this goal by decreasing the stigma around these topics. The group plans to continue giving yearly presentations to 5th-7th grade aged females to increase reproductive health literacy in the state of West Virginia. Ideally, the group would start expanding into areas with the lowest health literacy in the state and continue expanding to cover the majority of West Virginian schools.

Unlocking the Secret Connection: Appalachian and Medically Underserved Pediatric Stem Cell Transplant Patients Experience Higher Rates of Disease Relapse

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Introduction: Hematopoietic stem cell transplant (HCT) treats several malignant and non-malignant conditions in pediatric patients. Survival and outcome disparities among adult HCT patients are associated with socioenvironmental factors. The impact of rurality, Appalachian residence, and medically underserved area (MUA) residence have not been examined in pediatric populations.

Purpose Statement: To assess rural, Appalachian, and MUA regional residency associations on post-HCT outcomes.

Methods: A retrospective chart review of patients age ≤ 21 years receiving allogenic or autologous HCT between January 2017 and May 2022 at Nationwide Children's Hospital was conducted. Overall survival, relapses, admission length, appointment adherence, infections, and Graft-versus-host-disease (GVHD; a serious complication) were compared. Rural/nonrural and Appalachian residence was coded using Rural Urban Commuting Areas (RUCA) (Scale: 1-10; ≥ 4 was considered rural) and the Appalachian Regional Commission database, respectively. MUAs were designated based on the Health Resources and Services Administration's Office of Shortage Designation.

Results: Of the 156 patients investigated, 25.6% ($n=40$) were rural, 20.5% ($n=32$) were Appalachian, 21.8% ($n=34$) resided in a MUA, 65.4% ($n=102$) underwent allogenic transplant, and 34.6% ($n=54$) underwent autologous transplants. Appalachian children were significantly more likely to experience relapse ($\chi^2=5.343$, $p=.02$) compared to non-Appalachian, yet were admitted for fewer days for HCT ($t(149.19)=3.142$, $p=.002$). MUA residents also were significantly more likely to experience relapse ($\chi^2=7.248$, $p=.007$), and missed more appointments ($t(43.175)=5.660$, $p=.073$). Rural residents developed GVHD ≤ 100 days post-HCT ($\chi^2=6.634$, $p=.01$) more often than non-rural. Allogenic patients had higher rates of infection ($\chi^2=4.089$, $p=.04$) and GVHD ($\chi^2=19.664$, $p=.001$) than autologous patients ≤ 1 -year post-HCT.

Conclusion: Appalachian and medically underserved residency may be associated with increased rates of relapse post-HCT, while rural residency may be associated with increased rates of GVHD. Although both conditions' etiologies are multifactorial, this may indicate opportunities for intervention during post-HCT care to anticipate or prevent potential risk factors within these vulnerable populations.

Evaluating Infant MRI Study Recruitment Efforts: A Thematic Analysis of Mothers' Feedback to Improve Study, Recruitment, and Retention Strategies

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birthing individuals are underrepresented in research and for many years have been excluded from clinical research. The purpose of this investigation was to identify the perspective of mothers in an infant clinical observational study to aid the improvement of recruitment efforts within this vulnerable population. A mixed-method study approach was taken that utilized questionnaires and demographic interviews. Questionnaires were completed by 43 out of 44 participating mother-infant dyads residing in Southwest Virginia at various time points; prenatal (n=13), up to 3 months (n=19), 4 months (n=18), 12 months (n=21), and 24 months (n=6). A thematic analysis was conducted where responses were encoded using inductive coding in an iterative process to find themes and subthemes. The analysis provided four main domain themes: recruitment, the study, personal, and others. The results in the recruitment domain suggested various improvements such as engaging community organizations and utilizing peer-to-peer referral. In the study domain, mothers provided perceptions of study expectations. The domain allowed mothers to discuss others' perceptions of them participating in the research study and the effects of mothers' perceptions. Lastly, mothers reflected on personal participation and voiced barriers that could arise with participation and perceived benefits of the study while primarily emphasizing how stress impacted the experience. Overall, the results suggest that continual feedback surveys and analysis throughout the study can help with recruitment and retention by implementing the suggestions by the parents during the study instead of after. Without analysis of the feedback data, clinical projects will continue to ineffectively recruit and retain participants. However, there is a need for more research that aids clinical researchers in understanding how to recruit vulnerable populations and systems to implement recruitment and retention strategies. This project will inform current research projects in progress with catchment areas including the rural and Appalachian areas of Virginia.

Accessibility, Condition, and Safety of Appalachian Communities where Children Play, Learn, and Grow

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Introduction: The accessibility, condition, and safety of a community is important for child growth and development. Environmental checklists can provide robust information about the built environment of a community and provide insight on where children play, learn, and receive healthcare.

Purpose Statement: The purpose of this study is to describe (1) the built environment, and (2) access to primary medical care and public areas for play/leisure for children living in Southeastern Ohio (Appalachia).

Methods: N=6 environmental checklists were completed in-person across 4 counties in Appalachia. Checklists were completed using the Irvine Minnesota Inventory (IMI) to measure the built environment. This measure contains 161 items divided into 3 categories: accessibility, pleasurability/condition of the environment, and perceived safety from crime. The checklists were completed along a route from a randomly selected elementary school to the nearest pediatrician. Descriptive statistics are used to report the findings.

Results: The average scores on the IMI across checklists were 46.4±7.5% for accessibility, 43.2±9.8% for pleasureability, and 28.2±12.9% for perceived safety from crime. The average driving time from the elementary school to the nearest pediatrician was 20.0±13.9 minutes and 15.7±14.3 miles. Four of the six routes included a park, a playing or sports field, or a community center for recreation.

Conclusion: Access to primary healthcare and safe public areas to play and learn are important for child development. Our study found that the Southeastern Ohio routes from elementary schools to the nearest pediatrician scored less than 50% on accessibility, condition, and perceived safety of the environment using the IMI. Pediatricians are also only accessible by car, and only 66.7% of the routes had public spaces for child play. Additional research is needed to understand how the built environment may impact child development in Appalachia.

Implementing the Person-Centered Trauma-Informed Care provider training in West Virginia: Leveraging a state-university Partnership

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Background: Person-Centered Trauma-Informed Care (PCTIC) training in West Virginia (WV) was implemented to strengthen workforce training of direct service professionals (DSPs) to better serve Medicaid-eligible beneficiaries who may have experienced traumatic events. The PCTIC training supported a statewide train-the-trainer delivery model of Home and Community-Based Services (HCBS) waiver personnel. A needs assessment provided the foundation to identify training needs among the target audience. The multidisciplinary team partnered with Origins Training and Consulting to develop a culturally appropriate training and facilitation guide for PCTIC Certified Trainers.

Methods: The training included important concepts and skills to understand PCTIC, build resiliency, and support individuals who may have experienced trauma. The training included Basic Training (three hours, virtual synchronous) followed by a Certified Trainers session (in-person training, two days). Participants were recruited from various WV Department of Health and Human Resources HCBS waiver programs with recruitment materials sent by the program managers to boost participation. **Results:** Forty-five Certified Trainers completed the PCTIC training. Participants' feedback was positive: 86 percent perceived the training would help HCBS DSPs and 79 percent felt prepared to train others. In-person training was preferred over the virtual option. Participants suggested they might adjust the training to fit different audiences, time available, and activities.

Conclusions: This state-university partnership pilot-tested the culturally tailored PCTIC training to support the needs of WV DSPs. However, the vision of improving the practice of PCTIC will depend on Certified Trainers offering the training to DSPs and linking PCTIC methods to their service provision.

Stakeholder Views of Self-management, Self-advocacy, and Community Inclusion of Adolescents and Adults with Spina Bifida

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Background: Most children with spina bifida (SB) in the US (>85%) survive to adulthood. However, they can experience significant challenges in developing independence with self-management and self-advocacy skills, desired community participation, and supportive relationships.

Objective: To understand the barriers and facilitators to achieving self-management, self-advocacy, and community inclusion for adolescents and young adults (AYA) with SB as they transition to adulthood.

Methods: An academic-community research partnership conducted focus groups with AYA with SB and their parents, and informant interviews with healthcare/community providers. Open-ended questions were asked to understand stakeholders' experiences with self-management, self-advocacy, and inclusive communities/relationships. Interviews were recorded and transcribed. An iterative coding process identified themes.

Findings: Six themes identified: 1) Attaining autonomy is complex- The expectation of independence and inclusion in the community and developmentally appropriate life experiences are important to attain maximum independence. 2) Planning is necessary for autonomy and inclusion-Continual planning as well as long-term goal setting were considered essential for successful transition. Implementing routines was a strategy suggested. 3) Self-knowledge is critical to autonomy- Understanding the personal impact of spina bifida and related strengths/weaknesses is required for self-determination. 4) A network of support facilitates independence- Peer and mentor/coach relationships are desired by AYA and provide natural supports. 5) Exhaustion impacts progress- Living with SB may be exhausting to individuals and caregivers. Excessive time spent on SB care can lead to feeling overwhelmed. 6) Self-advocacy requires confidence and motivation. Lower self-esteem may inhibit speaking up for one's needs and desires.

Conclusions: Acquiring the skills necessary for a successful transition to adulthood in AYA with SB is complex and requires individualized support. Setting expectations for independence, targeted goal setting, access to mentorship, and opportunities for learning from life experiences may be effective strategies to improve the self-management, self-advocacy, and community inclusion of individuals with SB.

Barriers and Facilitators in a Fentanyl Test Strip (FTS) Utilization Study in Appalachia

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A longitudinal study was conducted to evaluate how the availability of fentanyl test strips (FTS) at syringe service programs (SSPs) in Appalachia affects the drug using behaviors of people who inject drugs (PWID). Appalachia has been the epicenter of the opioid injection epidemic, with high rates of misuse and overdose fatalities. Fentanyl, a potent synthetic opioid, has emerged as a major contributor to the overdose crisis, leading to a pressing need for lifesaving interventions. FTS detect the presence of fentanyl in illicit drugs, allowing users to make informed decisions on how (and if) they will use the drug prior to consumption.

The Dogwood Study involved collaboration with community-based organizations and individuals with lived substance use experience in rural West Virginia and North Carolina. Despite conducting the study at SSPs and the potential benefits of FTS, we encountered several barriers. Limited awareness of FTS, correct FTS usage, and skepticism among PWID regarding the accuracy and reliability of FTS results posed challenges in gaining participants' trust and acceptance. Access to transportation, maintaining contact with participants, and incarceration were also significant obstacles.

Key factors that facilitated this research included: 1) engaging key stakeholders through education and awareness proved instrumental in addressing misconceptions and building trust, 2) community organizations and peer support network involvement, 3) inclusion of peer recovery coaches as study staff who played a vital role in locating homeless or unstably housed participants, and 4) going out into the community to meet participants instead of relying on them to get to the study site.

Our experience of the barriers and facilitators in studying the impact of FTS on the drug-using behaviors of PWID in Appalachia underscores the importance of multi-level engagement, collaboration, and flexibility in the successful conduct of research in this population, can inform the management of future studies in this population.

Keywords: research barriers and facilitators, PWID, fentanyl test strips, Appalachia

Engaging Rural Practice-Based Research Networks in Research Methods to Increase Research Capacity

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Background: In 2013, the West Virginia Practice-Based Research Network (WVPBRN) was established as part of the West Virginia Clinical and Translational Science Institute to support and deliver clinically relevant research in West Virginia. Many of the non-academic, rural-based clinics and community partners faced many barriers in participating in research, including having limited time, experience, and support to engage in research endeavors. The WVPBRN addressed these needs by providing access to a quarterly opportunity for direct project design support and research knowledge in a group-learning format. These sessions, or Design Studio, were created to enhance primary care research and improve care. After the first year, it was evident that an educational component was needed to make progress on research ideas.

Methods: The WVPBRN partnered with our fellow Biostatistics, Epidemiology, and Research Design (BERD) core to offer Design Studio to WVPBRN members seeking guidance and support to move their clinical research ideas into actionable projects and initiatives. Project ideas are submitted prior to the in-person meeting. WVPBRN providers and/or practice administrators join a teleconference platform to discuss clinical research project ideas with the team over the lunch hour.

Results: Participation of providers has grown over the years and has expanded to include community partnerships that offer additional experiences into the design. 67 unique providers and community members and 72 researchers from institutions across WV have participated in Design Studio. Twelve research tutorials were presented and 20 projects have been discussed, resulting in two grants and three manuscript submissions.

Conclusions: This quarterly learning model has provided non-academic, rural-based clinical providers with an opportunity to explore basic research skills generate and refine potential project ideas. The desire to participate and engage in research discussion has increased the capacity for project partnerships utilizing implementation sciences in primary care.

Unique Associations Between Insular Alcohol Cue Reactivity and Naturalistic Drinking Outcomes Among Individuals with Alcohol Use Disorder

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Introduction: Alcohol cue reactivity assessed through functional magnetic resonance imaging (fMRI) is strongly associated with measurements of alcohol use. Prior cue reactivity studies of individuals with alcohol use disorder (AUD) have identified neural substrates associated with AUD maintenance factors (e.g., craving; insula) and relapse (e.g. ventral striatum).

Purpose: This study aimed to identify potentially unique relations between cue reactivity and alcohol use outcomes associated with AUD.

Methods: 28 individuals (mean age: 34; 42.9% female) were recruited to form AUD (n=14; means of 7.09 drinks/drinking day, 50.84% heavy drinking days [HDD], and 3.38 drinks/day over past 30) and healthy control groups (HC; n=14; means of 1.79 drinks/drinking day, 0.84% HDD, and 0.81 drinks/day over past 30). Participants underwent clinical interviews and a scanning protocol recording blood-oxygen-level-dependent activation to visual alcohol cues using a well-validated paradigm. Regions-of-interest included the left insula, left ventral striatum (LVS), and right medial prefrontal cortex (RmPFC). Bivariate associations between key variables (i.e., craving, obsessive-compulsive features, and naturalistic drinking over the previous 90 days) were analyzed (at a nominal $p < 0.05$) to inform selection of exploratory moderation models.

Results: Using full sample data, correlations showed significant strong positive associations between insular activation to alcohol cues and heavy drinking. AUD showed a significant positive moderating effect on this relationship with respect to %HDD along with a significant negative moderating effect with respect to %days abstinent. Associations between cue reactivity in the LVS and RmPFC and key variables were not differentially influenced by AUD.

Conclusions: The findings suggest a unique association between insular alcohol cue reactivity and drinking habits among AUD individuals, reinforcing the insula's role in the salience network. Insignificant correlations between insular cue reactivity and craving per OCDS were unexpected but may be due to limited statistical power.

Impact of CATCH My Breath vaping prevention program on vaping usage and education in West Virginia schools

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Student vaping is a major health and discipline issue in middle schools and high schools worldwide. In West Virginia in 2019, 35.7% of high school students and 15.3% of middle school students reported current vaping (YRBS). In 2019, the Partners in Health Network (PIHN) and the Pallottine Foundation of Huntington partnered with southern WV schools to provide an evidence-based curriculum called CATCH My Breath (CMB). The curriculum informs students of the dangers of vaping and teaches refusal skills to avoid starting vaping use. The purpose of this study is to determine the efficacy of the CATCH My Breath vaping prevention program at reducing vaping usage and increasing vaping education among middle and high school students in West Virginia. Surveys were provided to students across over 30 West Virginia middle schools and high schools prior to receiving the CMB curriculum to gauge current knowledge of vaping dangers, pressures, and usage rates. This survey was then retaken following completion of the CMB curriculum to assess program success. Knowledge of vaping pressures and dangers increased significantly following the curriculum and the reported usage decreased statewide. The CATCH My Breath curriculum using the APHP Pallottine program model is an effective way to arm students with accurate information, reduce first use of tobacco products, and potentially reduce disciplinary issues.

Understanding Risks of Oral Health Problems among Adults Treated with Sublingual Buprenorphine for Opioid Use Disorder

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Introduction: In early 2021, based on limited case-report evidence, the US Food and Drug Administration warned about possible oral health problems associated with buprenorphine formulations used to treat opioid use disorder (OUD).

Purpose: To assess the risk of adverse oral health outcomes among adults prescribed sublingual buprenorphine (monotherapy or with naloxone) for OUD.

Methods: A retrospective cohort study utilizing the TriNetX claims data. The study population consisted of adults (age \geq 18) diagnosed with OUD between January 1, 2002 and December 31, 2019, and who either had at least 3 prescriptions for sublingual buprenorphine within any 6-month period (buprenorphine cohort) or did not receive any buprenorphine prescriptions (control cohort) during the study period. Multivariate Cox proportional hazards regression assessed the risk of adverse oral health outcomes (e.g., tooth decay, cavity, or loss; oral infection) in buprenorphine versus control cohorts during the assessment period, which spanned 5 years after the index date (first buprenorphine prescription versus first diagnosis of OUD date, respectively), and controlled for demographic, comorbidity (including prior oral health diagnoses), and healthcare utilization characteristics. Both of the adjusted hazard ratio (aHR) and 95% confidence intervals (CI) were computed for the 1-year and 5-year follow-up periods.

Result: The study consisted of 727,538 adults with OUD, including 162,254 (28.7%) in the treatment cohort. Individuals whose OUD was treated with sublingual buprenorphine were found 1.2-1.3 times more likely to develop adverse oral health outcomes (aHR =1.27, 95% CI: 1.23-1.31 for 1 year; aHR =1.22, 95% CI: 1.20-1.25 for 5 years), compared to those not prescribed buprenorphine.

Conclusions: Our claims data-based results suggest associations between sublingual buprenorphine treatment and oral health problems among adults with OUD, underscoring the importance of prospective research and counseling patients about this potential risk and ways to mitigate it, without unnecessarily deterring patients from this live-saving treatment.

Establishing research Infrastructure at Regional Medical School Campus

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Introduction: Regional medical school campuses are used across the U.S. by medical schools to expand clinical opportunities for their learners. The Eastern Division of West Virginia University School of Medicine (WVU-E) is a regional campus that started taking the first medical students 20 years ago. From that time, it has grown to provide training to medical students from multiple schools, as well as physician associate and nurse practitioner students. There is an established Family Medicine residency program at WVU-E, and an internal medicine residency is soon to be launched. As WVU-E expands and hosts a growing number of future clinicians, many lessons have been learned about strategic planning, opportunity development, and technical support in order to maximize faculty and student engagement in research and scholarly activities.

Purpose statement: To demonstrate how a regional campus can foster research engagement through relationship-building and infrastructure development.

Methods: WVU-E developed an annual poster session to create a local opportunity for students and residents to present their activities and receive faculty feedback. There are now ongoing educational sessions for students and residents to hone their research interests and approaches. Two staff positions were created for technical research support across students, residents and faculty. Faculty efforts have been directed locally toward community-based projects and an ever-expanding partnership with the West Virginia Clinical and Translational Science Institute.

Results: The poster session has been ongoing for 13 years with 30-35 posters annually. Our faculty has had 73 publications and 10 book chapters in the past six years, as well as 113 presentations. This growth has extended to 43 grant awards as well.

Conclusions: Through establishing local resources and partnerships WVU-E has built a productive environment for learners and faculty. We plan to expand our initiatives to include a faculty scholarship group and enhanced clinical trials capabilities.

Poster Presentations

Growing Hope: How West Virginia's State Cancer Coalition is Increasing Food Access for People Diagnosed with Cancer

Authors: Mountains of Hope: West Virginia's Comprehensive Cancer Coalition Morgantown, WV

Presenting Author: Abby Starkey, abby.starkey@hsc.wvu.edu

In West Virginia, only 7.6% of cancer survivors consume the daily recommended servings of fruits and vegetables. The percentage of households unable to provide adequate food for one or more household members due to lack of resources is 15.1% in West Virginia, compared to 10.7% nationwide. For cancer patients the continual decline of grocery stores increases access barriers to healthy food options and becomes just another hurdle in navigating a cancer diagnosis.

Growing Hope, a pilot project developed by West Virginia's state cancer coalition, Mountains of Hope is bringing together community organizations and cancer centers to reduce food inequity among cancer patients and their families.

In Morgantown, the Mary Babb Randolph Cancer Center (MBRCC) and Homestead Farm Center (HFC) partnered to grow, develop, and distribute meal baskets that were distributed to patients. All meals were developed in collaboration with a dietitian at MBRCC to ensure nutritional value for people receiving cancer treatment. HFC provides education and a safe working environment to individuals with disabilities. The partnership with Homestead Farm Center provided a reciprocal benefit because Growing Hope is not only providing a need to cancer patients but also providing gainful employment, training, and purpose to people with disabilities.

In Charleston, the Charleston Area Medical Center (CAMC) Cancer Center utilized an existing relationship with Gritt's Farm and provided boxes of fresh produce weekly to patients. Gritt's Farm delivered the packages to the cancer center and patients were able to receive the boxes at an appointment during the week, removing the transportation barrier often experienced by people receiving cancer treatment.

Growing Hope provided fresh produce and healthy meals to 206 patients and their families in 33 of West Virginia's 55 counties. The program has become sustainable at both facilities and is now expanding across West Virginia.

Patterns of Cannabis and Concomitant Substance Use Among Adolescents in the USA - A Cross-Sectional Survey Study

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Presenter: Arjola Agolli, aagolli@pennstatehealth.psu.edu

Background: In 2022, an estimated 8.3% of 8th graders, 19.5% of 10th graders, and 30.7% of 12th graders reported using cannabis during the last year. [1] Individuals who initiate cannabis use earlier than 18 years old are associated with an increased risk for mental health disorders, impaired driving, and developing cannabis disorder. [2,3] Cannabis may permanently affect the developing brain, especially in regular or heavy users. [4,5]

Objectives: To assess the prevalence of cannabis use, substance concomitant use, as well as reasons for initiating use and continued use among adolescents.

Methods: A cross-sectional, web-based, anonymous survey study was conducted among middle and high-school students across the Midwest from 2014-2020. Information on cannabis and concomitant substance use, demographics, reasons for use, and continuity was collected. Survey data were analyzed using SPSS.

Results: Out of 10,438 students, 1,195 (55.6% female vs 40.16% male) endorsed cannabis use (64.2% rural vs. 35.7% urban). Alcohol was the most frequently reported substance used among cannabis users' individuals (93.6%), followed by tobacco (61.6%) and prescription drugs (30.7%). The main reasons to initiate cannabis use were curiosity (60.92%), use by friends (50.37%), and stress management (35.98%). They continued use because they liked the way it made them feel (37.65%), and to decrease emotional (31.29%) or physical (14.3%) pain. Among the cannabis users, 88% reported having asked for help to stop using cannabis. Non-using friends (20.08%), less stress (37.15%), and emotional pain (27.28%) were believed to help them stop using cannabis. The majority of students reported initiating cannabis use in high school (65%).

Conclusion: Results suggest that cannabis use during adolescence is associated with other illicit substance concomitant use. Close to one in ten adolescents self-report using cannabis. Friends and family members that use cannabis can be a trigger to start and continue cannabis use during adolescence.

Underweight and Obesity: Predict Depression Across Rural and Urban Areas

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Presenter: Ayah Aldebyan, aga0001@mix.wvu.edu

Introduction: Obesity and depression are public health issues that significantly decrease the quantity and quality of life (Callahan, 2020; Cesare et al., 2016; Jantaratnotai et al., 2016). Some empirical work (Wong et al., 2019) suggests that depression rates may be higher in urban areas relative to rural areas.

Purpose: We sought to examine whether BMI was differentially associated with depression in rural settings relative to urban areas.

Methods: Data from 352,276 adults (M age = 54.6 yrs, SD = 17.7) who completed the 2020 Behavioral Risk Factor Surveillance System were used. Approximately 52.2% were female, 15.2% resided in rural areas, and most were white non-Hispanic (75.9%). Nearly 6000 (1.7%) were underweight, 30.5% were normal BMI, 35.8% were overweight, and 32% reported a BMI in the obese range. Of note, 19.3% reported having a diagnosis of depression or anxiety.

Results: Using a moderated regression, the direct effects of BMI and the moderating influence of rurality on depression were examined, χ^2 (DF = 3) = 1782.36, $p < .001$. BMI and rurality uniquely contributed to the variance accounted for in depression, although the interaction did not reach significance. Follow-up ANOVAs revealed that depression differed by BMI. Obese adults (24.4%) reported higher depression than underweight adults (23%) who reported higher depression than normal BMI (16.8%) and overweight (16.7%) adults, who were equal to each other.

Conclusion: The current results replicate the finding that differences in depression exist across different levels of BMI, with underweight and obese adults reporting particularly high rates of depression. Although urban residents reported higher depression than rural residents, the lack of interaction suggests that the relations between BMI and depression are consistent across settings. Thus, effective treatment and intervention options may translate to both areas. Future research may examine the relationship between BMI and depression among different cultures or ethnicities across urban/rural settings.

Community Advisory Board of Southeast Ohio: Collaboration Between Community and Researchers

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The Southeast Ohio Community Advisory Board was established to give the community a voice and have an avenue for researchers to collaborate with and through community groups. Inclusion of the community is crucial to help define their needs. They are experts in what will or will not work in their community. The CAB helps expand research into the Appalachia region of Ohio. Our goal is to help improve the health of communities in southeast Ohio. The CAB members were recruited due to their leadership and work to see positive changes in their neighborhood and are supportive of research.

Our purpose is to help improve the health of communities in southeast Ohio, especially where health disparities are pronounced, by collaboration between the community and researchers. CAB members are experts of the community because they work, play and live there.

The CAB gives opportunity to the research community to ask for feedback on their project and gives an opportunity to the community members to interact. These individuals have the opportunity to share what they know about their community to better benefit research.

The southeast Ohio CAB members have valuable skills and knowledge, they include non-profits, schools, churches, rehabilitation/counseling, health care, and community members at large. The CAB started with involvement of three counties and over time has expanded to include 14 counties. Meetings were originally quarterly and in-person. When COVID hit we moved to virtual meetings. We are evolving to a hybrid format to meet the needs of the members and researchers.

There have been 35 researchers/teams that have presented/consulted with the CAB, 13 have received funding and 14 presentations were for informational/education purposes. Eight teams are currently in the consulting process.

The relationships built over the years with the community and researchers helps sustain interest in future research in southeast Ohio.

Attitudes, Perceptions, and Readiness to Treat Substance Use Disorder amongst West Virginia Healthcare Students

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Introduction: WV is at the forefront of both the opioid epidemic and substance abuse—a cycle only broken with adequate education and training. Studies have shown that stigma towards patients suffering from substance abuse impacts quality of treatment. Training duration is minimal with respect to addiction medicine, and students often enter clinical years with this stigma, further leading to ineffective care.

Purpose: This project investigates WV healthcare programs' approach to education regarding substance use disorder (SUD) via surveys assessing attitudes, perceptions, and readiness of students with intent to improve curriculum for future providers.

Methods: Qualitative data was gathered from West Virginia Healthcare students currently enrolled in nursing, medical, physician assistant, and nurse practitioner programs. Communication was sent via email to a central contact from each program to be distributed to their students. There were no incentives, and all responses were anonymous with no collected protected health information. Subjects were asked to state their enrolled program, current year within the program, and the amount of healthcare work experience. They were not asked to specify which institution they attended. Additional questions were answered on a 4-point scale regarding attitudes, awareness, and preparedness concerning the management of patients with substance use disorder. Data was collected and analyzed using *Qualtrics* software.

Results: At the time of data analysis, 185 responses were collected. 94.5% and 93.0% of respondents feel that SUD is a treatable and an important component of patient care, respectively. However, 34.5% both feel underprepared to manage patients with SUD and that their curriculum is insufficient regarding the issue. Ongoing research is in progress, with greater than 270 responses.

Conclusions: The majority of WV healthcare students feel that the management of SUD is both treatable and integral to patient care, but paradoxically feel underprepared to provide care for this patient population.

Stroke Disparities by Community Level Socioeconomic Distress Among Heart Failure Patients in West Virginia

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Introduction: Heart failure is a complex clinical syndrome that is associated with an increased risk of adverse outcomes, including ischemic stroke. Community-level socioeconomic distress has been associated with increased morbidity, but little is known about the relationship between neighborhood level socioeconomic distress and stroke within a population of heart failure patients.

Purpose: We investigated the association between stroke and neighborhood level distress among heart failure patients in West Virginia.

Methods: We conducted a nested case-control study using data from two separate cohorts of heart failure patients from the West Virginia University Hospital Systems (WVU Medicine) and the Charleston Area Medical Center (CAMC) between 2017 and 2020. Cases were heart failure patients with a diagnosis of ischemic stroke. Controls were heart failure patients without a diagnosis of stroke and were matched to cases 4:1 on five-year age grouping and sex at birth. Distressed communities index (DCI) was linked by patient zip code of residence and scaled to assess a 20-point change. Multivariable conditional logistic regression was used to identify significant associations within each cohort separately.

Results: We identified 26,016 unique heart failure patients in the WVU Medicine cohort and 20,070 in the CAMC cohort. Of these, 8.76% (n=2,280) of the WVU Medicine cohort and 4.5% (n=900) of the CAMC cohort had a diagnosis of an ischemic stroke. After controlling for demographics and clinical comorbidities, conditional logistic regression analyses identified a statistically significant association between neighborhood-level socioeconomic distress in the WVU Medicine cohort (OR = 1.05; 95% CI = 1.01 - 1.09) but not the CAMC cohort (OR = 1.12; 95% CI = 0.91 - 1.39).

Conclusion: Neighborhood-level socioeconomic distress was associated with ischemic stroke among WVU heart failure patients. This finding can help address inequities in care for patients living in medically underserved communities by informing placement of new healthcare facilities.

Knowledge and Treatment of Sickle Cell Disease in Appalachia: A Survey

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Introduction: Sickle cell disease (SCD) is the most common inherited blood disorder in the United States. It impacts nearly 100,000 Americans, occurring in approximately 1 of every 365 births in those of African heritage and 1 of every 16,300 births in those of Hispanic heritage. Providers often lack experience managing SCD and comprehensive care may not be accessible to all with the condition.

Purpose: To evaluate the experiences of people with SCD as they interact with the U.S. healthcare system and to compare reported experiences to the null hypothesis that best practices in the management of patients with SCD do not differ significantly between Appalachian and non-Appalachian regions.

Methods: A Qualtrics-based survey was designed to capture responses. Zip codes were evaluated through the federal information processing system (FIPS) code, using the Appalachian Regional Commission database to identify Appalachian status. Respondents were queried about their medical history as it pertained to selected best practices for SCD under the 2020 American Hematology Society guidelines. The anonymous survey was launched through social media, at continuing medical education events, flyer distribution at SCD treatment centers, and through a pool of compensated respondents. The survey instrument and protocol were reviewed as exempt by the Lincoln Memorial University Institutional Review Board.

Results: Research in progress. Data collection is expected to be completed by July 31, 2023. A Chi-square test and/or Fisher's exact test will be used to compare reported adherence to selected best practices for routine screenings and management, comparing Appalachian versus non-Appalachian respondents.

Conclusions: Evaluating the reported experiences of people with SCD provides a framework for improving adherence to clinical guidelines. This study may impact public health policy to improve patient outcomes. This study will also help determine strategies for effective population-specific outreach to advance recruitment and retention into research studies.

Place-based health disparities add to the burdens of family caregivers

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Introduction: Families provide the majority of assistance to older adults, providing about 36 billion hours of care annually. Although family care reduces the financial burdens on the health care system, it does so at the expense of caregivers' well-being. This burden may be exacerbated in Appalachia.

Purpose: The current research examined contributors to depression among caregivers in the USA and whether West Virginia caregivers are at a disproportionate risk of depression relative to those in other areas.

Methods: We used data from 32982 family caregivers who completed the 2021 Behavioral Risk Factor Surveillance System (BRFSS) interviews through the CDC. Caregivers from WV (n = 1195), 29 other states and Puerto Rico provided data regarding their age (M = 56.3 yrs), sex (62% female), care to a person with dementia (14.5%), frequency of providing help with instrumental activities of daily living and with activities of daily living. Approximately 26% reported having a diagnosis of depression or a depressive disorder.

Results: A 3-step hierarchical binary regression was used to predict depression among the caregivers. Step 3 examined whether WV residence would add to the variance accounted for in depression after caregiver demographics (Step 1: age, sex) and caregiving factors (Step 2: dementia, IADL and ADL care) were allowed to account for their unique and shared variance. Step 3 was significant, X^2 step (DF = 1) = 16.84, $p < .001$ and the model retained its significance, X^2 (DF = 6) = 1503.7, $p < .001$. Of note, females (OR = 1.8 times higher) and WV residents (OR = 1.3 times higher) were more likely to report depression than other caregivers.

Conclusions: Relative to others, caregivers in Appalachia may face additional, compounding stressors. Interventions to support Appalachian caregivers may need to consider ways to reduce the effects of place-based health effects as well as caregiving stressors.

Assessing Psychosocial Experiences of People in Addiction Recovery Using the CHES Connections App

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Introduction: CHES Connections is an evidence-based app that assists individuals in recovery from substance use disorder (SUD) including opioid use disorder (OUD) and stimulant use disorder (StUD). The West Virginia (WV) Department of Health and Human Resources, Bureau for Behavioral Health utilizes the Connections app with support from the State Opioid Response (SOR) grant through the Substance Abuse and Mental Health Services Administration, with the goal of increasing access to OUD and StUD prevention, treatment, and recovery services. Progress toward recovery among this population has been demonstrated quantitatively, but little is known about the qualitative experiences of individuals.

Purpose statement: To assess how people in recovery from SUD experienced psychosocial changes or events while engaged with CHES Connections.

Methods: Sentiment analysis and content analysis were utilized to examine de-identified qualitative comments posted in the Connections app by users from January until March 2023. First, the team conducted a sentiment analysis using ATLAS.ti software. This automated procedure scanned data and coded excerpts as “positive,” “negative,” or “neutral.” Second, team members manually reviewed excerpts and codes to (a) confirm the accuracy of codes (and recode as needed) and (b) apply one or more specific codes to elaborate upon positive and negative phenomena. Quantitative counts of the qualitative data resulted.

Results: A total of 1,991 excerpts were analyzed over three months, with analysis ongoing. This included 1,147 neutral, 778 positive, and 66 negative excerpts. Positive categories included: constructive life activities (92), mental health or well-being (47), physical health (2), sobriety (270), sobriety tools, strategies, confidence (199), supportive relationships (112), and enhanced engagement with the app (193).

Conclusions: CHES Connections users in WV expressed many positive psychosocial changes or events, most notably sobriety and the espousal of tools, strategies, or confidence to support sobriety. The Connections app provides a platform for sharing these accomplishments with peers.

Virtual Reality Module Fosters Empathy and Reduces Stigma in Opioid Use Disorder Among Medical Students

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Background: Opioid Use Disorder (OUD) is a significant public health issue in the US, with significant morbidity and mortality rates. However, negative attitudes towards individuals with substance use disorders often hinder effective care. To address this, we developed an virtual reality (VR) module to educate health professional students about OUD and its social determinants, aiming to enhance empathy and attitudes.

Methods: Osteopathic medical students at OUHCOM participated in the VR training, engaging with 12 cinematic simulations following the life of a 23-year-old pregnant woman with OUD. Pre- and post-training surveys, including the Jefferson Scale of Empathy and adapted Opening Minds Survey, were administered to assess changes in empathy and stigma.

Results: Among the 38 participants (mean age=23.8 \pm 1.4, 78.9% women, 21.1% men), findings revealed significant improvements in empathy following the VR training (mean change = -3.4, Z= -2.020, p=0.043). Additionally, OUD-related stigma decreased post-training among the participants (mean change= 11.3, Z= -3.467, p=<0.001). Findings suggest the VR training improves empathy while decreasing stigma towards people with OUD.

Conclusion: The VR approach offers a novel opportunity for experience-based learning in medical education, enabling students to gain a comprehensive understanding of the patient experiences beyond the clinic. By addressing the knowledge gap for the use of VR for non-psychomotor skills training in medical education, we pioneer a novel and effective approach to cultivate empathy among future healthcare professionals. In conclusion, our study demonstrates the potential of VR education in improving empathy and reducing stigma associated with OUD among medical students. Integrating active learning methods like VR into medical curriculums may help produce more empathetic and compassionate healthcare providers.

A Cartographic Exploration: Healthcare Accessibility in Appalachia

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Healthcare disparities have been reported throughout the United States; however, the Appalachian Region seems to be more adversely affected than other parts of the US. Previous studies show that access to primary care physicians and mental health providers are over 10% lower than the national average. This research plans to incorporate data related to individual provider and hospitals. Data from 2019-2021 community health ranking and other sources have been collected to provide a snapshot of the 2018 Appalachian healthcare system. Information is being aggregated and mapped (ESRI, ArcMap 10.8.2) at the county level. Statistical analysis (SPSS 29.0) will be performed to determine differences in Appalachia versus US data. Analysis is still pending, but researchers expect to identify significant differences in some of these key healthcare indicators between Appalachia and the US. The goal is for the results of this research can be used to guide policy and obtain resources to overcome some of the disparities identified in this study. A major shortcoming of this study is the research gathered is from 2018 which does not consider changes due to COVID-19, but this is primarily due to availability of datasets.

Coping Styles Moderate the Relationship between Diabetes Distress and Self-Care Behaviors in Adults with Type 1 and Type 2 Diabetes

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Background: The prevalence of Diabetes in rural southern Ohio is nearly twice the national average. The daily stress of living with this condition can lead to coping strategies that are counterproductive to long-term stability and hinder optimization of risk factors. To address this, we developed this study to identify different coping mechanisms and their impact on diabetes distress, quality of life, and hemoglobin A1C.

Methods: Participants included adults aged 18 years and older, diagnosed with T1D and T2D, who were able to read and speak English, and living in southeastern Ohio were invited to participate. Participants completed the Coping Styles Questionnaire, Diabetes Distress Scale for T2D or T1D, the Patient Health Questionnaire-9, the Self-Care Inventory-Revised, and the DQOL Scale. Participants completed the survey via an online questionnaire service or mailed packets. We conducted hierarchical multiple regression models using SPSS version 28.0.

Results: In the regression model, the two-way interaction between self-controlled coping and diabetes distress was significant ($b=0.180$, $p=0.006$), and the two-way interaction between emotional coping and diabetes distress was significant ($b=0.105$, $p=0.019$). This finding showed participants with higher self-controlled coping were able to buffer the negative effect of diabetes distress on diabetes self-care; however, those with higher emotional coping worsened the negative effect of diabetes distress on self-care. The coping style interactions were not statistically significant with HbA1c values or quality of life.

Conclusion: Diabetes distress is a prevalent obstacle in the diabetes community and may lead to rapid disease progression and decreased quality of life. Through identification and application of productive coping strategies we may be able to mitigate the impacts of the emotional response, supporting long-term management of the disease. By appropriately identifying how a person responds to stress better equips them to allocate attention to the myriad of influences that contributes to their individuality.

Walking a Mile in Their Shoes: Examining the Social Determinants of Health in Rural Appalachia

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Aim: Research studies show that unconscious biases affect equitable, compassionate care. Unintended biases can lower quality of care experiences for minoritized patients, especially those in rural areas.

This instructional scenario simulation was developed to assist medical students gain a better understanding of the SDOH in rural areas and their potential impacts on health outcomes. By giving an insight into lived experiences, the project aims were to influence future patient care equity and quality by providing awareness of situational barriers. Scenarios developed allowed students to experience a week in the life of one of seven characters from rural areas that also faced challenges due to being un-housed, unemployed, having a SUD, raising grandchildren, pregnant, LGBTQ+, and a coal miner. Learning was assessed through scoring calculated throughout the scenario, pre and post-tests, a post-event forum and surveys.

Methods: Pre and post-tests, a post-event forum, and surveys provided quantitative and qualitative data to assess the effectiveness of the project.

Discussion: Health equity can be increased by eliminating cultural biases that affect marginalized communities. Increasing cultural competence and cultural humility skills during medical school can impact future practices in a positive manner through scenario-based learning experiences.

Conclusions: Scenario-based learning can help future physicians uncover hidden biases and acquire skills in cultural competence and cultural humility to become more effective in their practices.

iTHRIV Public Research Data Commons: Facilitating Open Science and Dissemination

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Introduction: The integrated Translational Health Research Institute of Virginia (iTHRIV), a collaboration of academic institutions and hospitals across the Commonwealth of Virginia, broadened the scope of available research resources while highlighting challenges related to compliant sharing of health data and research results. iTHRIV's Portal and Private Commons provided efficient solutions for resource sharing and private data management. However, there remained a missing element of seamless dissemination of information to not only other institutional users but also the general public.

Purpose Statement: Provide iTHRIV researchers with tools to disseminate their own research and support public discovery of these assets.

Methods: The iTHRIV Public Commons allows anyone who visits the <https://portal.ithriv.org> web application to view project details, dataset details, and even dataset files that meet appropriate regulatory requirements and are electively published by the research teams who own and manage the content in the Private Commons, given the proper data security and privacy criteria are met. While users maintain responsibility for their own data management actions as trained by their local institutions, the system provides support for researcher compliance through prompts and automated checks on project and dataset metadata prior to allowing publication and assignment of a doi (digital object identifier). The Public Commons also interacts with public health databases and surfaces dataset metadata for discovery.

Results: Through this single interface, research teams can manage their data from collection, through analysis, to dissemination all while collaborating with others across the state without the disconnect of divergent systems. The Public Commons went live on June 12, 2023 with 842 public datasets indexed.

Conclusions: The Public Commons will increase data sharing efficiency and lower barriers to discovering private datasets available under contract and public datasets that may be relevant to translational health in our communities.

A Scoping Review of Personalized Care for Irritable Bowel Syndrome

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Irritable Bowel Syndrome (IBS) is a gastrointestinal condition that is characterized by symptoms such as abdominal pain, cramping, bloating, diarrhea, and constipation that can range from mild to debilitating and can have a significant, negative impact on patients' quality of life. Clinically, IBS manifests in a highly individualized manner, with patients experiencing a high degree of variability in symptom presentation, severity, and therapeutic response. The difficulty in diagnosing and clinically managing these varied experiences of IBS are compounded by the unclear etiology of the condition. Care for IBS may be personalized to better support patients of different contexts; however, within the current literature, there are no explicit guidelines for personalized care for IBS.

This scoping review seeks to identify and define the facets of personalized IBS care. Articles were located through Pubmed and Cochrane. Any papers discussing IBS and personalized care published after the year 2000 were reviewed. Findings were qualitatively synthesized. A total of thirty-nine papers were included in the review. Fourteen articles discussed the importance of personalizing diet. Seven studies centered around social support. Twenty-four papers considered personalized mental health to be critical for patients with IBS. Five articles reviewed the effect of social context on IBS, with all five of the articles identifying gender's importance in contributing to a differing patient experience with IBS. Overall, the literature suggests that a customized low-FODMAP diet, supportive family environment, individualized mental health interventions, and culturally-competent care are key factors for personalized care for IBS.

Research into IBS continues to improve patients' quality of life, but there remain gaps in knowledge of how to best address the variability in patients' experiences with the condition. Further studies investigating health outcomes in patients with IBS from different backgrounds may provide more insight into how to more precisely and effectively address patients' unique needs.

Addressing Disparities in Skin Cancer Mortality Using Educational Interventions

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Introduction: Melanoma mortality rates are 31.8% higher in West Virginia, as well as being higher in Appalachia overall in comparison to the rest of the United States. A well-known risk factor for the development of melanoma is cumulative sun exposure over time.

Purpose Statement: The aim of this project was to determine the feasibility and effectiveness of an educational intervention to increase sun safety knowledge in children living in a region with elevated melanoma mortality rates.

Methods: A group of 31 students in the fourth grade in Charleston, West Virginia participated in an in-person educational intervention modeled after the *Sun Safety for Everyone Campaign*, by the American Academy of Dermatology (AAD). Students received pre- and post-intervention tests measuring sun-protective behavior knowledge. Changes in the frequency of responses were compared using Fisher's exact tests to determine statistically significant differences ($p < 0.05$). Of the students participating in the intervention, 55% were male and 45% female and had a median age of 10 years.

Results: Results showed an increase in response rates identifying the need for sunscreen during winter months (13% to 90% post-test, $p < 0.001$). Post-intervention, an increased number of students correctly identified the need for daily sunscreen ($p < 0.001$) and vitamin D as the vitamin provided by sun exposure ($p = 0.01$).

Conclusions: Our results show that a brief educational intervention can increase short-term knowledge of sun protective behaviors. This intervention could be implemented at elementary schools to further improve knowledge of skin protection to prevent skin malignancies. Further studies are needed to examine the effectiveness of this intervention long-term.

Results of a Mixed-Methods Study to Inform the Development of a Patient Navigation Program for Hearing Healthcare in Rural Kentucky

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Hearing loss affects over 40 million adults in the United States and can 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 adults who live in rural areas. The objective of this study is: to evaluate the experiences and challenges in obtaining hearing tests among adults who live in rural areas of Kentucky and to develop a patient navigation program that can help rural adults access hearing tests. This study utilized a mixed-methods approach to understand the experiences and challenges of hearing healthcare for both patients and staff from 10 participating Rural Health Clinics (RHCs). Patients and staff were recruited in person from 10 participating primary care practices across the state. Patients (n=388) completed a series of surveys including standardized measures of general health and hearing health. They also received a Pure Tone Hearing Test as an objective measure of hearing loss. A subset of patients (n=21) later participated in qualitative interviews to provide additional details about 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.

Impact of Vaccination on Risk of COVID19 Related Mortality in West VirginiaMaryam Khodaverdi¹, Brad Price^{1,2}, Wes Kimble¹, Sally Hodder¹

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Introduction: COVID19 vaccination and mortality studies have shown that unvaccinated individuals have greater risk of dying from COVID-19 than individuals who were vaccinated with at least a primary series, however due to health disparities and elderly population, there is a need to investigate the outcomes for West Virginia (WV).

Purpose statement: We examine the relationship between COVID19 vaccination status and mortality accounting for other factors such as age, race, and variant era.

Methods: All data from this study was provided in partnership with WV Department of Health and Human Resources. We study a combination of all WV infected cases from March 2020 until July 2022 (1,985,704 cases) while knowing individual level vaccination status, race, and age. The final data for analysis included removing any patients testing positive within 90 days during the Alpha variant era and 60 days during the Delta and Omicron variant era. Binomial logistic regression was used to determine the adjusted odds ratio of mortality associated with each series of vaccination given the variant era, after adjusting for age and race.

Results: Regardless of variant era, infected individuals in WV with at least a second dose of vaccine have lower adjusted odds ratios of mortality than unvaccinated counterparts (Table 1). In the Omicron era, this result extended to West Virginians with at least one dose of vaccine as well.

Table 1- Adjusted odd ratios of mortality for different variant era.

Variant	Unvaccinated	First dose	Second dose	Third dose
Alpha	Base	1.65 (1.23,2.17)*	0.75(0.66,0.97)*	0.96(0.23,2.67)
Delta	Base	1.27(0.98,1.6)	0.45(0.40,0.49)*	0.39(0.27,0.54)*
Omicron	Base	0.71(0.51,0.96)*	0.55(0.48,0.62)*	0.34(0.300.39)*

Conclusions: West Virginians receiving COVID19 vaccination had lower adjusted odd ratios of mortality when adjusting age, race, and vaccination than unvaccinated counter parts.

Lack of Social Support and Unemployment Contribute to Diabetes Disparities in Southeastern Ohio

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Background: Diabetes is one of the most significant health problems in the United States, affecting approximately 11.3% of the national population and 19.9% of the people in rural southeastern Ohio. Here, people are more likely to live below the federal poverty threshold, be unemployed, have lower educational achievement, and limited access to transportation. These barriers contribute to delayed diabetes diagnoses, limited access to healthcare, lower health literacy, and lower empowerment. Complications contribute to a diabetes mortality rate that is 28.4% higher than the national average.

Methods: We conducted a descriptive, cross-sectional survey study with adults with type 1 and 2 diabetes in southeastern Ohio. Participants completed surveys, including a sociodemographic form, the Patient Health Questionnaire-9, via an electronic survey or mailed packets. Surveys were distributed to adults with T1D or T2D, aged 18 years and older who were able to read and speak English. We conducted multiple linear regression models to examine the relationship among social drivers of health and diabetes self-care.

Results: A total of 325 participants (age=41.6±19.2 years, 62.2% female, 86.5% White; 59.7% type 2 diabetes, A1C=7.5±1.6%; duration=12.4±9.6 years, BMI=31.4±8.9) completed the surveys. In the final model, unemployment status ($b=1.800$, $p<.001$) and low social support ($b=0.186$, $p<.001$) were independent predictors of fewer diabetes self-care behaviors. Age, gender, race, type of diabetes, income, smoking status, educational achievement, insurance coverage, and depressive symptoms were not associated with self-care behaviors. Interestingly, adults who reported being unemployed were less likely to have high levels of social support ($F_{3,3034}$, $p=0.004$).

Conclusion: Our findings show the negative relationship among unemployment, low social support, and diabetes self-care behaviors. Both unemployment and low social support have negative health consequences. Behavioral interventions with high-quality social connections are needed to promote diabetes self-care behaviors. Particular attention should be paid to adults who are unemployed in southeastern Ohio.

Place-based Oral Health Disparities: Differential Associations Between Age and Memory Loss Within West Virginia

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Introduction: Appalachia is a region marked by place-based health disparities relative to the rest of the United States. Differences exist within Appalachia and for different domains of health. Within Appalachia, older age is a primary predictor of memory loss.

Purpose: We sought to examine differential associations among age, oral health, and rurality with memory loss among adults living in WV, the only state contained entirely within Appalachia.

Methods: We used data from 1443 WV adults who completed the 2020 Behavioral Risk Factor Surveillance System (BRFSS) interview with the CDC. Data were limited due to the Memory Loss module only being asked with adults over the age of 44 years. The mean age in the current sample was 64.7 years; 63.1% were female.

Results: We used a moderated regression equation to test whether oral health and rurality would alter the association between age and memory loss. The overall equation was significant, $F(7, 1435) = 4.22, p < 001; R^2 = .02$. Main effects for age, oral health, and rurality were modified by a significant 3-way interaction among those predictors [$F(1, 1435) = 4.33, p < .04$]. Post hoc tests revealed that those in their 60s living in urban counties with few missing teeth and rural-county adults ages 71+ with minor tooth loss reported the highest levels of memory loss.

Discussion: Like other diagnoses, we think that poor oral health may be a gateway to medical services which may, in turn, support overall well-being, including cognitive health. Future research needs larger samples of adults residing in Appalachia to clarify this association further.

Accelerating Institutional Investment in West Virginia: The West Virginia Anchors in Resilient Communities (ARC) project

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Introduction: In 2021 a cross-sectional team of West Virginia (WV) food systems leaders were selected for the Institutional Investment Accelerator, receiving mentorship from the Director of Regional Innovation and Community Resilience at Health Care Without Harm (HCWH). The team worked to build capacity for integrating agriculture and health, to develop and sustain an Anchors in Resilient Communities (ARC) initiative in WV.

ARC is a multi-stakeholder initiative that leverages the assets and capacities of large place-based anchor institutions such as hospitals, universities, and local governments to improve health, economies, and climate resilience of low-income communities of color.

Co-convened by the HCWH and the Emerald Cities Collaborative, ARC facilitates resources and training to support initiatives across the county to strengthen community-based partnerships that leverage the purchasing and investment power of anchor institutions to bolster the communities they serve.

Methods: Using a policy, systems, environment approach, the team focused on the provisions in the Affordable Care Act, which require nonprofit hospitals to complete Community Health Needs Assessments (CHNA) and Community Health Implementation Plans (CHIP) every three years.

Over 18-months, the team 1) conducted a power map of the food system, 2) applied the HCWH resource *Delivering Community Benefit: Healthy Food Playbook* to the WV CHNA and CHIP reports, 3) applied ARC theory of change, 4) developed a strategic goals and objectives, 5) reviewed goals and objectives with equity consultants, and 6) hosted a community conversation to discuss goals and objectives with a graphic illustrator.

Results: A total of 16 scalable agriculture and health activities were identified, and a collective vision was captured with graphic illustration.

Conclusion: The WV ARC group will survey state producers, aggregators, and distributors to understand challenges and opportunities for conducting agricultural activities at the community level to further develop a community-led food is medicine plan.

Women's Perceptions of Prenatal Care Access in West Virginia, including Economic Challenges, Life Stressors, and Transportation Obstacles

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Introduction: Prenatal care is an essential component to promote good health throughout pregnancy, during delivery, and for the remainder of life. There is a growing concern for general access to prenatal care. Specifically, rural areas like West Virginia have high numbers of maternity care deserts. Serious complications can occur from poor prenatal health, including increased mortality and morbidity of both the parent and child. In this project we analyzed women's perceptions of prenatal care access and identified barriers to receiving that care.

Objectives: To understand differences in prenatal care access experienced by women in rural populations of West Virginia. This includes barriers that would affect willingness and ability to seek prenatal care which can subsequently affect the health outcomes of a pregnancy.

Study Design: Qualitative analysis from 120 survey data. Sample population included patients aged 18-50 years old born with a uterus and ovaries. IRB protocol number: 2205577815.

Results: The primary outcome measure is perceived access to prenatal care among female patients in West Virginia. Secondary outcomes are grouped into direct barriers, life stressors, economic barriers, and transportation barriers, which will be analyzed for how they contribute to the primary outcome.

Conclusions: Data analysis is in-progress and will continue to be studied for potential barriers to prenatal care access faced by women in rural areas of West Virginia before conclusions are drawn. This information is important to further promote quality prenatal care in women and increase their access to providers through policy change.

Impact of the Opioid Crisis on Pregnancy and Opioid Use Disorder in Rural Pennsylvania: Rates of Neonatal Abstinence Syndrome

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It has long been understood that the national opioid epidemic has disproportionately affected vulnerable populations, including in pregnant women. Rates of opioid use disorder in this population have quadrupled in the last two decades. In addition to disparities based on individual characteristics, it has been shown that rural communities, such as those throughout Appalachia, have historically higher rates of opioid use. This study seeks to understand the pattern of distribution of Neonatal Abstinence Syndrome (NAS) as a marker of tracking the prevalence of pregnant women with opioid use disorder within Pennsylvania. Information on incidence rate and birthing facility counts of NAS were obtained from the NAS Report released by the Pennsylvania Department of Health in 2018, 2019, and 2020. Population density in each county was assigned an “urban” or “rural” designation as outlined by the Center for Rural Pennsylvania, where any county with less than 291 people per sq. mile is rural. Population data was obtained from the U.S. Census. Rates of NAS were organized based on population density in each county. The analysis showed that rural counties had higher rates of NAS by maternal residence when compared to their urban counterparts, but rates of NAS by birthing facility were higher in urban counties as compared to rural counties. Of the rural counties in Pennsylvania, there was an increased prevalence among counties that reside within the Appalachian region. This distinction indicates that pregnant women with opioid use disorder may face an increased burden of disease within the state due to a lack of birthing facilities available to care for high-risk pregnancies in these regions. With a better understanding of the burden of opioid use disorder among pregnant women in rural communities, better policies and resources can be implemented to meet the needs of this growing patient population.

A Qualitative Analysis of Residential Care Providers' Experiences Under West Virginia's Section 1115 Medicaid Substance Use Disorder Waiver Demonstration

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Introduction: In 2018, the West Virginia Department of Health and Human Resources (WV DHHR) implemented a Section 1115 Substance Use Disorder (SUD) Medicaid waiver to promote access to and use of SUD treatment among Medicaid enrollees. Under this Waiver, WV Medicaid reimburses short-term residential adult services (RAS), which previously were not covered.

Purpose: There is a need to evaluate the implementation of Medicaid-reimbursable RAS to understand its impact and address care gaps. A qualitative approach was used to identify facilitators and barriers to providing RAS via the demonstration, from providers' perspectives.

Methods: Four semi-structured focus groups across four purposively sampled RAS facilities (14 participants, including clinicians and administrators) were conducted in Summer 2022 and collected information on Waiver knowledge, communication, patient transitions among providers, and the impact of COVID-19 and rural hospital closures on treatment. Participants were recruited from a list of RAS facilities provided by WV DHHR.

A phenomenological descriptive approach was used to analyze qualitative data and identify emerging themes. Findings were compared to focus groups from previous years of data collection to detect themes that iteratively emerged over time.

Results: Participants reported that Waiver expanded services and expedited connections to care for enrollees with SUD. However, an increase in available beds did not always mean that patients were being connected to the right type of care. Providers felt pressure to transition patients down to lower levels of care too early, a theme that emerged in all years of data collection. Additionally, peer recovery support services in the RAS setting were beneficial to residential treatment, and COVID-19 continued to impact treatment and operations through 2022.

Conclusions: These findings highlight the importance of continuous evaluation of the demonstration to identify and address ongoing barriers and facilitators to this relatively new Medicaid-reimbursable service.

Results of the First Response to Opioids Survey Tool (FROST): A Novel Brief Screening Tool to Assess Opioid Use Disorder (OUD) Risk

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Introduction: Opioid-related harms and deaths continue to increase, particularly within the Appalachian states, demanding better detection of OUD risk. Limited research suggests that first-time opioid use associated with unique positive responses (e.g., “euphoria”), may predict the development of OUD. This study developed and pilot-tested a brief survey to evaluate ‘first response’ to opioids.

Purpose statement: The objective was to develop a brief assessment tool to evaluate individual ‘first response’ to opioids, and pilot-test the survey with adults with OUD. We hypothesized that this patient population would endorse euphoria and drug-liking more frequently than other types of responses upon their first exposure to opioids.

Methods: A 7-item survey, the FROST, was developed to inquire about first opioid use experiences. The survey consisted of quantitative and qualitative questions, and was administered to a convenience sample of adults treated for OUD.

Results: The survey was completed by 157 individuals (79.6% Caucasian, 56.7% male, mean age 36.8 (SD=9.4) years); 31 completed it twice to assess test-retest reliability. Average age of opioid initiation was 20.6 (SD=8.8) years; the majority started with an illicitly procured (51.0%), orally administered (66.2%) prescription-based (78.3%) opioid. Upon opioid initiation, positive-valence, euphoria-like subjective experiences of “comfortable” (65.0%), “happy” (61.1%), “euphoria” (58.6%), and “energized” (44.6%) were common, and distinctly different ($p < 0.05$) from other types of experiences. Among 64 individuals who answered a question about drug-liking, most liked the drug very much or a little (50/64). The test-retest consistency was 78.2% for subjective experience characteristics and 72% for drug-liking responses. Qualitative results corroborated quantitative findings.

Conclusion: These results suggest that euphoria-type experience and drug-liking upon opioid initiation are common among adults with OUD, and good psychometric properties of the brief FROST survey, which may help identify those at risk for OUD and guide safer opioid prescribing and reduce opioid-related harm.

Improving Access to Diagnostic and Support Resources for Rural Populations Impacted by Multiple Sclerosis in Maryland, North Carolina, Virginia, and West Virginia

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Introduction: People living with MS report a higher satisfaction of care when treated by an MS specialty neurologist. Unfortunately, many people with MS living in rural areas find themselves acting in the role of educator for healthcare providers with little to no understanding of MS risk factors, symptoms, or treatments. Additionally, patients and MS care partners report significant challenges accessing the range of health and social services necessary to manage living with MS.

Purpose Statement: This is a three-year effort by the Institute for Public Health Innovation (IPHI) to improve access, delivery, and utilization of MS specialty health care and related community support services for people living with MS in rural areas. Project activities focus on promoting health equity and improving the health outcomes of populations disproportionately affected by serious disease.

Methods: This program is engaging people most impacted by MS through program design, implementation and evaluation as well as establishing essential partnerships to develop:

- an educational MS curriculum for non-specialty providers
- an improved telehealth experience and accessibility to specialty care providers
- public awareness about MS to reach the undiagnosed
- a digital navigation tool and navigator centers within community-based organizations (CBOs) to connect people most impacted by MS with health and social support resources

Results in progress: This program aims to remove barriers to access by integrating medical care and community-based supportive services. This program's outreach, convenings, and interviews have identified challenges as well as solutions to rural health access. These include tools for improving the telehealth experience with specialty providers and developing the MS curriculum essentials for frontline healthcare providers.

Conclusions in progress: IPHI expects to improve awareness of MS among frontline healthcare providers, CBOs, and community members. IPHI expects to implement navigation services to improve access to specialty providers and support services for people living with MS.

The Influence of Spirituality on Caregiver Burden and Quality of Life in Older Adult Informal Caregivers

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Background: Caregiver burden is associated with reduced quality of life (QOL) and poorer health outcomes. Spirituality has been shown to reduce caregiver burden and improve QOL.

Purpose: To evaluate the influence of spirituality on caregiver burden and QOL in older adult caregivers. Aims: to determine the prevalence of caregiver burden in older adult informal caregivers and to investigate relationships among caregiver burden, spirituality, and QOL in this population.

Methods: This was a cross-sectional, descriptive secondary analysis of data from the 2020 Health and Retirement Study. Participants who regularly provided care to another adult were included (n = 591). GLM and SEM were conducted to explore relationships among caregiver burden, spirituality, QOL, and demographics.

Results: Caregiver mean age was 66.32 (7.84). Most caregivers were female (n = 368, 53.1%), White (n = 399, 81.5%), married (n = 378, 68.7%) and had a high school diploma or GED (n = 290, 47.1%). More than half of the caregivers had moderate (n = 289, 48%) or high (n = 18, 3.5%) caregiver burden. Among all caregivers, 22.5% (n = 126) provided care >1 year and found caregiving to be *somewhat upsetting*. 9.6% (n = 51) provided care >1 year and found it to be *very upsetting*. GLM showed highly spiritual caregivers had lower caregiver burden ($p = .023$). Lower burden was correlated with higher QOL ($p < .001$). Spirituality did not moderate the effect of caregiver burden on QOL, but SEM depicting an influencing effect of spirituality revealed good model fit (NFI = .902; IFI = .928; TLI = .862; CFI = .927; PCFI = .494, RMSEA = .065; $\chi^2 = 27.902$, $p = .000$, DF = 8, PCMIN/DF = 3.488)

Conclusions: Spirituality influenced QOL through caregiver burden. Spirituality could be fostered in older adult caregivers to reduce burden and improve QOL.

I Vaccinate, a Multi-Level, Four-State Initiative to Improve Uptake of HPV Vaccination in Appalachia: Description and Lessons Learned

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Background: Appalachian regions of Kentucky, Ohio, Virginia, and West Virginia suffer a greater burden of cervical cancer compared to non-Appalachian regions. Human papillomavirus (HPV) vaccination prevents 90% of cervical cancers, yet these regions have low rates of HPV vaccination completion.

Purpose: To improve HPV vaccination initiation and series completion rates in participating health systems in rural, Appalachian populations in these four states.

Methods: I Vaccinate is a multi-level, multi-site intervention initiative using Implementation Science framework as part of the *Take CARE* Program, a research collaborative that addresses cervical cancer risk factors at patient, provider and system levels, including tobacco use, and HPV vaccination, and screening to reduce the cervical cancer burden. Thirty-nine health centers from 10 health systems are participating. Facilities receive educational materials, training, and structured technical assistance from trained coordinators. In return, systems provide HPV vaccine initiation and completion data and use of initiative materials. Process data were collected through regular meetings between research coordinators and health system staff.

Results: Since October 2020, 372 health center champions and support team members were trained. Pre/post knowledge scores will be explored at the system and state level. Communication challenges due to COVID, staff turnover, and champion changes were most frequently reported issues. Additional health system experiences and activities to-date will be summarized and reported.

Conclusions: Implementing an initiative of this scale during the pandemic was very challenging. Staff illnesses and turnover led to temporary closures and delays and necessitated retraining and adaptation of practices due to social distancing such as offering recordings of trainings and meeting virtually rather than in-person. If results are effective and sustainable, this initiative could be implemented in other health systems throughout Appalachia and potentially other rural regions of the United States to improve the uptake of the HPV vaccine.

Integrating a Gamified Digital Application in Nature-Based Settings to Improve Physical Activity and Health Outcomes among Central Pennsylvanians: Using a Socioecological, Cross-Disciplinary Guiding Framework

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The psychophysiological benefits of nature-based physical activity (PA) have been richly elucidated. The emergence of the COVID-19 pandemic has changed the ways people engage in PA. These shifting dynamics have also called into question the effectiveness of individualized or community-engaged behavioral interventions. We employed a game-based digital application within partnership-oriented, nature-based programming to encourage PA. Partnerships with local healthcare and park/recreation entities were established to facilitate recruitment and intervention sustenance. Funding was received through a CDC Racial and Ethnic Approaches to Community Health grant; as such, the intervention was targeted towards Hispanic/Latino, Black, and/or socioeconomically disadvantaged families of the catchment area. Self-reported health and psychological changes were evaluated in a repeated-measures fashion using paired t-tests or Wilcoxon signed-rank tests when appropriate. Quantitative findings were contextualized by thematic coding of qualitative responses and interpreted via the Park Prescription Theory of Change framework. Improvements were observed in daily duration of physical activity ($\mu = +14.1$ minutes; $t = 0.009$; $df = 64.28$; $p = 0.9921$; CI: [-5001.435, 5051.150]) and time spent outdoors ($\mu = +20.3$ minutes; $t = -0.5955$; $df = 47.626$; $p = 0.5543$; CI: [-5988.681, 3252.126]). Highly positive trends were observed in perceptions of healthful behaviors and quality of life; satisfaction with health and physical activity; perceived accessibility and barriers; and there were low rates of allergies (7.5-10%) or wheezing (5.6-7.5%). The game-based application improved sentiments of belongingness and familial engagement per qualitative excerpts. This novel intervention suggests an innovative, cross-disciplinary means to improve physical activity at the population level, undergirded by ecological theories of healthful behaviors. There was a particular emphasis on socioeconomically or ethnically marginalized groups by triangulating accessible technology and existing community partnerships. These findings can inform interventions at the regional or national level, as well as guide respective legislative changes in public health, environmental policy, and urban planning.

A Study Protocol and Feasibility Report: A Visiting Neighbors Program in Rural West Virginia

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Introduction. Rural West Virginia (WV) has the third largest population of adults 65 years and older in the United States. Thirty percent of the WV senior population lives alone, and 70% of them are women. Older adults living alone in rural areas frequently experience health challenges, social isolation, and limited access to services. Our Visiting Neighbors intervention program trains local volunteers to visit and guide rural older adults in healthy activities. These age-appropriate activities (Mingle, Manage, and Move – 3M's) were designed to improve the functional health of older adults. The program includes four home visits and four phone calls across three months.

Purpose Statement. The purpose of this paper is to describe the 3M's Visiting Neighbors intervention program and this study protocol. The procedures, feasibility, process evaluation plan, and preliminary results of the program are described.

Methods. The protocol to test the program is a single group pre-post mixed methods design. This study collects quantitative questionnaires, qualitative interviews, and focus group discussion information. Baseline and program completion data at three months will be compared.

Results. Older adults living alone (N=30) and the volunteer visitors (N=10) completed their first home visits and baseline data collection. Older adults were predominantly female (79%) with mean age of 82.96 (SD=7.87) years. Volunteer visitors are also older adults. Visitors reported that the 3M's visit implementation manual was easily followed, visiting was enjoyable, and the older adults were engaged in the 3M's activities. All participants' visits have been scheduled.

Conclusion. The program is in progress. Final data analysis is underway. A complete evaluation and the study protocol of this program will be used to test the Visiting Neighbors Program's impact. The expected impact of the program is to engage older adults living alone, as shown in the visitors' reports and to improve their functional health.

Key words: visiting neighbors, older adults, healthy living, rural Appalachia

Family Caregiving of Patients with Heart Failure and Vascular Dementia in Rural Appalachia: A Mixed-Methods Study

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Introduction: Vascular dementia and heart failure (HF) are common co-existing conditions among older adult populations. Each condition requires extensive home caregiving from family caregivers, especially those in rural Appalachia. Gaps in the current literature include the home caregiving needs of patients with both HF and vascular dementia as well as the personal stories of caregivers' needs. An increased understanding of how family members experience the demands of these multiple chronic conditions is needed to develop and prioritize effective supportive interventions to minimize negative outcomes.

Purpose Statement: The purposes of this study were to assess the caregiving burden, physical, and mental health status of these caregivers and explore their experiences and needs.

Methods: This study used an explanatory mixed methods design, a combination of quantitative and qualitative research (N=20 caregivers). This mixed methods study design provided summaries of these caregivers' questionnaires, short-answered interviews, and focus group discussion. The multivariable generalized linear model (GLiM) was used to analyze quantitative data, and content analysis was used for qualitative data.

Results: The average age of family caregivers was 64.95 years. GLiM showed that the caregiving burden was associated with caregivers' depression/anxiety and the number of dementia caregiving years ($p < .001$). Caregivers' poor physical health status was associated with better preparedness for HF and dementia home caregiving and male gender ($p < .01$). Caregivers' mental health status was associated with depression /anxiety. The qualitative data identified key caregiving themes: emotional impact and physical demands of caregiving, lack of help in rural areas, dealing with multiple disease progression, and relationship changes with their loved ones.

Conclusion: The caregiving burden was associated with caregivers' home care responsibilities and need for support. Nurse-led home caregiving preparedness interventions tailored for family caregivers of patients with HF and dementia in rural areas are recommended.

Effects of a Tele-health Intervention on Physical Activity and Physical Activity Self-efficacy: Results of the Home-based Exercise in Rural Ohio (HERO) Trial

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Relative to urban areas, rural Appalachian communities report lower levels of physical activity (PA) and are disproportionately affected by lifestyle-related disease. Although traditional PA interventions yield improvements in short-term behavior change, most have been conducted in clinical settings among urban participants. Consequently, there is a need to develop innovative, accessible, and scalable PA interventions for adults in rural areas.

Purpose: The randomized controlled Home-based Exercise in Rural Ohio (HERO) trial evaluated a tele-health exercise and diet intervention, versus a healthy lifestyle education control arm on change in health behavior and markers of cancer risk. Change in PA and self-efficacy (SE) beliefs is reported here.

Methods: 40 residents of rural non-Appalachian and rural Appalachian counties in Ohio (M age = 49, $BMI \geq 25$ kg/m²) received tele-health intervention ($n = 27$) or control ($n = 13$). Assessments were obtained at baseline and 15-week visits to Pike, Jackson, and Hardin counties. PA and SE were measured via activPAL monitor, IPAQ, and the multidimensional SE scale. Comparisons were made using intention-to-treat ANCOVA models of baseline-adjusted change scores.

Results: Analyses yielded non-significant treatment effects ($p > .05$). However, effect size estimates of mean change favored the tele-health arm across all measures including steps ($g = 0.86$), walking minutes ($g = 1.78$), task SE ($g = 0.19$), coping SE ($g = 0.50$), and scheduling SE ($g = 0.73$). Sub-group analyses showed group differences were maximized in the poorest county.

Conclusions: The tele-health intervention produced meaningful change in measures of PA and SE. Effect size estimates suggest that results favored the tele-health arm. Findings from the HERO trial support the feasibility and preliminary efficacy of delivering tele-health lifestyle behavioral interventions in rural populations. Supported by an NCI and AICR grant (F99CA253745 to XZ), the OSU Wexner Medical Center, and College of Medicine.