

## CCTS ORAL PRESENTATION ABSTRACTS

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**Abstract Title:** Cholesterol Alters the Osteoblast Mechanosensitivity to Hydrodynamic Pressure Stimulation

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**Author(s):** K. Lough, Department of Biomedical Engineering, U of Kentucky  
H. Shin, Department of Biomedical Engineering, U of Kentucky

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**Abstract:** Hypercholesterolemia has been identified as a risk factor for osteoporosis, a bone disease that afflicts millions of people. Unfortunately, a mechanistic link remains to be elucidated. Notably, some have proposed osteoporosis to involve impaired regulation of osteoblasts by fluid pressure fluctuations generated in the bone matrix during loading. Recently, our lab showed that hypercholesterolemia alters the mechanosensitivity of leukocytes by enhancing the cholesterol abundance in the cell membrane. For this study, we hypothesized that the bone cell responsiveness to pressure also depends on membrane cholesterol levels. We exposed MC3T3 osteoblastic cells to various pressure regimes having mean values of 40 mmHg, amplitudes of 0 - 20 mmHg, and frequencies up to 1 Hz for 1-12 hours. To explore the effects of membrane cholesterol enrichment, cells were pretreated with 0-50 µg/mL cyclodextran:cholesterol conjugates for 24 hours prior to pressure stimulation. Controls were cells cultured under atmospheric pressure conditions. For our outcome measures, we examined the effects of pressure on cell cycle progression and on F-actin stress fiber formation. Exposure of MC3T3 to 50/30 mmHg pressure at 1 Hz increased the numbers of MC3T3 cells in the S-phase of the mitotic cycle after 6 hours and in the G2M-phases after 12 hours independent of cell density. Notably, the degree of stress fiber formation depended on the amplitude of the applied pressure. This pressure-sensitive cytoskeletal response was attenuated in a dose-dependent fashion by pretreating cells with exogenous cholesterol. Collectively, our results indicate that the osteoblast sensitivity to pressure is subject to modification by extracellular cholesterol levels. They also lay the foundation for an explanation related to the negative impacts of hypercholesterolemia on osteoporosis.

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**Supported by:** National Science Foundation-Kentucky EPSCoR Program-Bioengineering initiative and the Kentucky EPSCoR Research Scholars Program

**Classification / Health Topic Area:** Basic Science / Other

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Thursday, March 27, 2014

Lexington Convention Center

## CCTS ORAL PRESENTATION ABSTRACTS

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**Abstract Title:** 3-D Blood Flow Contrast Imaging Case Study on Small Animal Mammary Tumors Using Noncontact Diffuse Correlation Tomography (ncDCT)

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**Abstract:** Introduction: Breast cancer detection and monitoring is an important application of medical imaging modalities for improving prognosis. A particular interest is in utilizing functional physiological progression as a biomarker. Our lab recently developed a novel noncontact diffuse correlation tomography (ncDCT) imaging device employing near-infrared light to noninvasively procure 3-D blood flow contrast distributions. Incorporation of a small animal tumor model should facilitate quick and efficient early phase testing. Methods: Breast cancer cells were dorsally inoculated onto a nude mouse followed by tumor growth until the larger tumor reached a 5 mm diameter. Next, two measurements were obtained using ncDCT with four days separation (Day 1 and Day 4). The ncDCT operation briefly consisted of mechanically scanning a projected linear photodetector/laser array across the mammary tumors. This boundary data was coupled with source-detector locations and a mesh for subsequent image reconstruction. Results: Tumor volumes (VT) for Day 1/Day 4 were VT, Large = 160/280 mm<sup>3</sup> and VT, Small = 10/40 mm<sup>3</sup>. Similarly, average relative blood flow (rBFT) were rBFT, Large = 17.0/13.5 ± 7.4/5.9 and rBFT, Small = 11.1/12.2 ± 0.8/3.4. Rapid tumor growth was evidenced by increased tumor volumes between days. Average tumor rBF increased for the small tumor, but decreased for the large tumor. Segmented tumor regions were found to coincide with the visible palpable tumor regions. Conclusion: The application of the ncDCT technique to imaging mouse mammary tumor blood flow contrasts was supported by this case study. Further optimizations and mouse measurements will be evaluated to fully characterize this capability.

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## CCTS ORAL PRESENTATION ABSTRACTS

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**Abstract Title:** Development of Translational Contrast Agent Free Cardiac Fibrosis Imaging

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**Author(s):** SW Leung, Dept of Internal Medicine, U of Kentucky  
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**Abstract:** Objective: Cardiac fibrosis greatly heightens the risk of deadly arrhythmias, particularly in patients with diabetes. Standard of care diagnosis is performed using gadolinium enhanced cardiac magnetic resonance imaging (CMR), however, gadolinium contrast agents are contraindicated in patients with reduced renal function including diabetics. Recently, we developed and validated a non-invasive and contrast agent free CMR technique for measurement of cardiac fibrosis in mice. In this study, we report on the initial clinical translation and validation against gadolinium CMR. Methods: Fibrotic collagen transfers magnetization (MT) to surrounding bulk water. We exploited this mechanism through acquisition of pairs of MT-weighted CMR images in (n = 35) patients referred for standard of care gadolinium enhanced CMR at our institution. MT-weighted data was acquired prior to infusion of gadolinium and validated against gadolinium enhancement. MT contrast was quantified as the change in signal normalized for no MT-weighting. Results: Patterns of fibrosis were present in 37% of patients when assessed with gadolinium enhanced CMR. MT-weighted CMR revealed significantly elevated MT contrast in densely fibrotic tissue as defined by gadolinium enhancement compared to healthy tissue ( $213 \pm 22\%$  vs.  $142 \pm 16\%$ ,  $P < 0.05$ ). In addition, MT contrast demonstrated correlation ( $R = 0.72$ ) with the density of fibrosis determined using a T1-mapping MRI approach in identical imaging planes. Finally, patterns of elevated MT contrast were spatially similar to patterns of enhancement at gadolinium CMR. Discussion/Significance: This work demonstrates the ability to probe for cardiac fibrosis in an entirely non-invasive manner without nephrotoxic contrast agents. Earlier diagnosis in patients currently excluded will help to direct treatment and reduce mortality from adverse cardiac events. Additionally, the translational imaging approach will expedite development, testing, and application of novel anti-fibrotic therapies.

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## CCTS ORAL PRESENTATION ABSTRACTS

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**Abstract Title:** Using Magnetic Resonance Imaging to Study the Effects of Pediatric Obesity on Cardiovascular Function

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**Abstract:** Background: Obesity affects one in five children in the United States and two of three adults. Recent evidence suggests that children with obesity develop multiple cardiovascular risk factors in childhood and have increased mortality later in life. We hypothesized that children with obesity have cardiac dysfunction compared to healthy weight peers. Methods: Healthy weight (5th-85th percentile for age and height) and obese ( $\geq 95$ th percentile) children between the ages of 8 and 18 were recruited. All subjects underwent MRI to quantify cardiac function (strains and diastolic function), body composition (visceral and subcutaneous fat), and aortic stiffness. Results: Our preliminary results are reported for 3 obese subjects (Age:  $14 \pm 4.6$ , 66% female) and 3 healthy controls (Age:  $14 \pm 3.7$ , 33% female). We observed a trend towards an absolute decrease of 9 percent in average peak radial strain in children with obesity, suggesting impairment in the thickening of the left ventricle during systole. Two age-matched obese subjects had increased visceral (80%) and subcutaneous (90%) adiposity compared to healthy weight peers,  $p = 0.076$  and  $p = 0.012$ , respectively. A reduced ratio of early/late (E/A) trans-valvular ventricular filling velocities, representative of impaired diastolic function, was also observed in one of the three obese subjects. There were no differences in aortic stiffness. Conclusions: This preliminary study suggests that systolic and diastolic cardiac dysfunction may be present in children with obesity. Future research on more subjects is necessary in order to verify and further define the cardiovascular effects of obesity in children.

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Thursday, March 27, 2014

Lexington Convention Center

## CCTS ORAL PRESENTATION ABSTRACTS

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**Abstract Title:** Temperature and Seasonal Changes in Human Subcutaneous (SC) White Adipose Tissue (WAT): Evidence for Browning and Inhibition by Inflammation

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**Author(s):** P.A. Kern, Dept of Internal Medicine, U of Kentucky  
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**Abstract:** Although humans can generate heat through brown adipose tissue, little attention has been paid to the potential browning/beiging of WAT, which clearly occurs in many rodent WAT depots but has not been studied in humans. We examined both abdominal and thigh SC WAT from 71 subjects who were biopsied in the summer (June-Aug) or winter (Jan-Mar). In WAT of subjects biopsied in winter (versus summer), UCP1 RNA was 4-10 fold higher ( $p < 0.05$ ), and PGC1 $\alpha$  RNA was 1.5-2-fold higher ( $p < 0.05$ ); Western blotting showed a 3-fold increase in UCP1 protein in winter. To demonstrate the acute effects of cold, an ice pack was applied to the thigh of lean subjects ( $n=16$ ) for 30 min, followed by a fat biopsy 4 hr later. The acute cold stimulated a 2.7 fold increase in PGC1 $\alpha$  RNA ( $p < 0.05$ ) and a 1.9 fold increase in UCP1 ( $p=0.07$ ). The effects of winter to increase abdominal SC WAT UCP1 was considerably diminished in subjects with a BMI  $> 30$  kg/m $^2$ , and winter WAT UCP1 RNA was inversely associated with adipose macrophage number ( $r=-0.53$ ,  $p < 0.05$ ) and positively associated with capillary number ( $r=0.65$ ,  $p=0.05$ ), suggesting that adipose beiging occurs less in dysfunctional adipose of obesity. Human adipocytes (from stem cells) were exposed to cold (16C) in culture for 30 min, followed by 4 hr at 37C, and this resulted in a 2-3 fold increase in PGC1 $\alpha$  and UCP1 RNA. These cold-mediated changes in vitro were blocked by propranolol and H-89 (a PKA inhibitor) and were inhibited by the addition of macrophage-conditioned medium or TNF $\alpha$  (1-100 nM) to the culture. These data demonstrate the ability of human SC WAT to increase mitochondrial genes involved with thermogenesis (beiging properties) under normal physiologic (seasonal) conditions. The cold mediated changes were inhibited by inflammation. Because SC WAT represents an enormous depot in humans, the upregulation of thermogenic capacity may be important in overall energy regulation, and may become dysfunctional with obesity.

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Thursday, March 27, 2014

Lexington Convention Center

## CCTS ORAL PRESENTATION ABSTRACTS

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**Abstract Title:** Functional Validation of Polymorphisms in PPAP2B that Associate with Coronary Artery Disease

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**Author(s):** P. Mueller, Depts of Physiology and the Div of Cardiovascular Research, U of Kentucky and The Gill Heart Institute  
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**Abstract:** Coronary artery disease (CAD) is the leading cause of death worldwide and greatly increases an individual's risk of myocardial infarction (MI). CAD is a multi-faceted disease that begins with the deposition of cholesterol within the intimal layer of the vasculature driving the development of atherosclerotic plaques due to dysfunction and interactions of immune and vascular tissues. Investigation of human atheromas indicates an abundance of the bioactive lipid lysophosphatidic acid (LPA) compared to levels in healthy tissue. LPA is a ubiquitous lysophospholipid that has been demonstrated to play a crucial functional role in many of the processes implicated in CAD. LPA can be degraded into its inactive product monoacylglycerol by a membrane protein lipid phosphate phosphatase 3 (LPP3). LPP3 is encoded by the gene PPAP2B which was implicated in the development of CAD. A meta-analysis of several genome wide association studies of roughly ~90,000 individuals identified polymorphisms in PPAP2B that associate with CAD. It is of interest to investigate whether alterations in LPP3 levels due to presence of these SNPs increase susceptibility to the development of CAD. ApoE<sup>-/-</sup> mice display an upregulation of LPP3 in the aortic vasculature compared to controls suggesting a role for LPP3 in murine atherosclerosis. Additionally, treatment of human monocytes to ox-LDL results in increased LPP3 expression. Identifying LPP3's role in the development of CAD can lead to a more accurate assessment of an individual's risk of disease through utilization of SNPs as a biomarker, as well as lead to potential drug therapy targets aimed at the LPA axis.

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Thursday, March 27, 2014

Lexington Convention Center

## CCTS ORAL PRESENTATION ABSTRACTS

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**Abstract Title:** A Longitudinal Analysis of African American Mothers Who Experienced Child Custody Loss: Does This Lead to Increased Substance Use?

**Author(s):** K.L.H. Harp, Dept of Behavioral Science, Center on Drug and Alcohol Research, U of Kentucky  
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**Abstract:** African American women are disproportionately involved in the child welfare system, and substance use (SU) often precedes custody loss; however, few studies have evaluated the effect of losing custody on a mother's future substance-using behavior. This study seeks to fill this gap using data from a sample of 339 African American mothers. Three custody issues are examined: official custody loss, unofficial custody loss (child living apart from mother but courts not involved), and having an open Child Protective Services case. Longitudinal random coefficient models estimated the effects of experiencing a custody issue on mothers' alcohol, marijuana, and other SU in the following six months. Results showed that experiencing any of the three custody issues predicts increased other SU in the six months after the event ( $p < .001$ ), but does not affect alcohol or marijuana use. When analyzing each custody issue separately, official loss predicted increased alcohol use ( $p < .001$ ), and both official and unofficial loss predicted an increase in other SU ( $p < .01$ ,  $p < .05$ ) at follow-up. These findings demonstrate that in some cases, custody issues precipitate increased substance use, potentially reducing a mother's chances of regaining or retaining custody. This study highlights the need to integrate substance abuse treatment into family case plans to improve reunification rates. Additionally, the finding that unofficial custody loss predicts increased other SU suggests that community-based prevention efforts could be designed and implemented to intervene before child welfare system involvement becomes necessary. The potential benefits of these improvements for both mothers and children are discussed.

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## CCTS ORAL PRESENTATION ABSTRACTS

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**Abstract Title:** Outcomes Following Anterior Cruciate Ligament Reconstruction: A Comparison of Those Returning-to-Sport and Those Not.

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**Abstract:** Context: Anterior cruciate ligament reconstruction (ACLR) is thought to be the most relied upon method for regaining function and returning athletes to pre-injury activity levels following ACL injury. However, a recent meta-analysis reported pooled return-to-sport rates of only 44%. The purpose of this study was to compare patient-reported-outcomes (PROs) and physical performance values between ACLR patients who returned-to-sport (RTS) compared to those who did not (NRTS). Hypothesis: The NRTS group would demonstrate and report lower function compared to the RTS group. Subjects: Two groups of participants with primary, unilateral ACLR: 17 individuals RTS (age=26±11 years, years-from-surgery=4±3) and 10 individuals NRTS (age=22±5 years, years-from-surgery=4±3). Procedures: PROs included the Knee Injury and Osteoarthritis Outcomes Score (KOOS) which consists of subscores for pain, symptoms, activities of daily living (ADL), sport and recreation, and quality of life. Each subscale is scored 0-100, 100 being ideal. Functional-performance was evaluated via hop, balance, endurance, and isokinetic strength testing. Statistical Analyses: Independent t-tests were used to compare PRO and performance values between groups ( $P \leq .05$ ). Results: The NRTS group reported statistically lower scores on the KOOS Symptoms (RTS=82±16, NRTS=68±10), KOOS ADL (RTS=99±2, NRTS=97±6), and KOOS Sport (RTS=90±7, NRTS=86±14) compared to the RTS group. No statistical differences were observed for any functional performance measures. Conclusion: Those that did not RTS reported significantly lower PROs, despite demonstrating similar function on a variety of physical performance measures. These results further support existing evidence that physical performance alone, may not be the ideal postoperative outcome measure. Measures of patients' symptoms and self-perceived physical function may also greatly influence postoperative activity choices.

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**Classification / Health Topic Area:** Clinical Science / Trauma/Injury/Rehabilitation

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Thursday, March 27, 2014

Lexington Convention Center

## ATRN ORAL PRESENTATION ABSTRACTS

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<b>Abstract Title:</b>	<b>Targeting Knowledge-Attitude-Practice Gaps in Parental Acceptance of Adolescent Vaccinations in Appalachian Kentucky</b>
<b>Author(s):</b>	E. L. Cohen, Dept of Communication, U of Kentucky K. J. Head, Dept of Communication, U of Kentucky

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**Abstract:** Rural Appalachian Kentucky adolescents are disproportionately less likely to receive age-appropriate vaccinations compared with other populations, and low vaccination rates in any population presents a major public health risk. As the primary decision-makers for their children, this study sought to understand parental acceptance of adolescent vaccinations by examining their knowledge, attitudes, and normative influences related to vaccinating their adolescents with both state required and recommended vaccines. This study utilized the integrated behavior model (IBM) as a guiding framework to identify knowledge-attitude-practice gaps (KAP-gaps) that may exist for this parent population related to adolescent vaccination. The researchers conducted 21 in-depth interviews with parents of 11 to 18 year old children in Appalachia. Three salient findings emerged: a) knowledge was mixed for both vaccinating and non-vaccinating parents, b) positive parental attitudes toward preventive health was a motivator for vaccination, and c) opinion leaders in the community served to influence vaccination behaviors. In light of these KAP-gap findings, the authors discuss appropriate communication strategies to use with parents of adolescents and local healthcare providers in order to improve both state required and recommended vaccination rates in Appalachian Kentucky, including one intervention currently under development. The implications from this study could provide insights for designing similar interventions in other underserved, rural areas.

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Thursday, March 27, 2014

Lexington Convention Center

## ATRN ORAL PRESENTATION ABSTRACTS

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<b>Abstract Title:</b>	<b>Free Care is Not Enough: Barriers to Attending Free Clinic Visits in a Sample of for Poor Uninsured Individuals with Diabetes</b>
<b>Author(s):</b>	J.A. Mallow, School of Nursing, West Virginia U L.A. Theeke, School of Nursing, West Virginia U B.K. Mallow, Sovern Run LLC.

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**Abstract:** Introduction: Healthcare reform promises to insure over 3.6 million people. However, even free care does not always lead to improved outcomes. Attendance is unpredictable, and cancellation rates are high. Understanding barriers could identify targets for innovative interventions. The purpose of this study was to examine characteristics and healthcare utilization in uninsured persons with diabetes at a free clinic. Methods: Persons with diabetes who received care from May 2008 until May 2012 were included. Data was extracted from the electronic health records. Independent comparisons were made between two groups, those who attended scheduled appointments and those who did not. Results: The sample included 3,139 patients. Geographic distance to clinic and complex chronic illness were identified as barriers to attendance. Patients who traveled 30 miles or more [ $X^2(3, n=367)=9.230, p=.02$ ], and those with more than one chronic illness were more likely to miss appointments [ $F(3, 3131)=430.9, p<.01$ ]. After one year, missing more than one visit had a positive correlation with increased weight ( $r=.1, n=2476, p<.01$ ), A1C ( $r=.1, n=911, p=.04$ ) and lipids ( $r=.1, n=659, p=.003$ ). Patients who missed visits had higher blood pressure [ $F(3, 2493)=1.2, p<.01$ ], depression scores [ $F(3, 3131)=67.4, p<.01$ ] and numbers of medications [ $F(3, 3131)=752.4, p<.01$ ]. Conclusion: This evidence supports the need for enhanced access to healthcare for rural persons who experience complex chronic illness. Innovative methods to deliver more frequent and intensive interventions have the potential to impact biophysical measures of chronic illness control yet, will not be successful if they are not accessible to patients.

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Thursday, March 27, 2014

Lexington Convention Center

## ATR N ORAL PRESENTATION ABSTRACTS

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**Abstract Title:** **The Bridge Program: Using a Community Health Worker Model to Connect Rural Appalachian Residents to Healthcare**

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**Author(s):** J. Chamness, Montgomery County Health Department  
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**Abstract:** Community Health Workers (CHWs) are paraprofessionals who work almost exclusively in community settings and who serve as connectors between healthcare consumers and providers to promote healthy lifestyles and proper utilization of healthcare services. These trained individuals are from the community, making them more accessible, approachable, and trusted by other community members. It is hypothesized that by using CHWs to provide health education, navigation, and care coordination, the clients of the Bridge (or El Puente) program will experience improved health outcomes and improved self-efficacy as it relates to the management of their chronic disease(s). Thus far, 134 residents of this rural Western Appalachian area have been enrolled in the program. A majority of these clients are female and between the ages of 19 to 39. Using a case-only, longitudinal study design with repeated measures over the course of the clients' participation in the program, quantitative and qualitative data are collected at baseline, at every 3 months, and intermittently throughout the program. These measures include self-efficacy, self-rated health status, and utilization of health care services. Paired-samples t-tests and a comparison of means were used to evaluate the impact of the program on these measures. Thus far in the program, clients are reporting an increase in self-efficacy and health status as it relates to their chronic disease(s). The clients are also reporting less emergency room visits and more visits to a primary care provider, and many clients are beginning to overcome their barriers to appropriate healthcare utilization.

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**Classification / Health Topic Area:** Community Science / Behavior

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Thursday, March 27, 2014

Lexington Convention Center

## ATR N ORAL PRESENTATION ABSTRACTS

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<b>Abstract Title:</b>	<b>Acceptability and Feasibility of an Opioid Overdose Prevention Program (OOPP) with Peer-Distributed Naloxone in Rural West Virginia: A Community-Based Pilot Study</b>
<b>Author(s):</b>	K. K. Gurka, Dept of Epidemiology and Injury Control Research Center, West Virginia U H. Linn, Injury Control Research Center, West Virginia U T. White, Presteria, Inc. J. Farley, Extension Service, West Virginia U J. Murphy, STOP Coalition of Mingo County, West Virginia J. H. Coben, Dept of Emergency Medicine and Injury Control Research Center, West Virginia U

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**Abstract:** Unintentional drug overdose is a leading cause of death among West Virginians. Though traditionally concentrated in urban areas, death due to drug overdose has rapidly increased in rural areas, and prescription drugs play an important role, replacing heroin and cocaine as the leading drugs involved in overdoses nationwide. To our knowledge, no opioid overdose prevention programs (OOPPs) presently exist in several high-risk Appalachian states including West Virginia (WV). There remains a critical need for OOPPs to be translated for use in rural settings, including WV. Thus, we formed a partnership between members of the substance abuse prevention and treatment community in southern WV and the Injury Control Research Center at West Virginia University. Utilizing principles of community-based participatory research, our newly formed academic-community research team developed a research proposal and successfully competed for pilot funding. Together we are assessing the acceptability and feasibility of adapting and implementing an OOPP with peer-distributed naloxone in WV. Based on models that have been effectively implemented in urban settings among heroin users, we are targeting West Virginians in three southern counties who misuse and abuse opioids. This presentation will detail the formation of the research team, collaborative efforts to develop the study proposal, and implementation of the study to date. This study will have a positive impact on our ability to realize our long-term goal: to successfully develop, implement, and evaluate an OOPP for WV, thereby saving West Virginians from preventable fatal opioid overdose.

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# UK College of Public Health Research Day

## ORAL and POSTER ABSTRACTS

Thursday, March 27, 2014

Lexington Convention Center

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### ORAL PRESENTATION

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**Abstract Title:** **Combination of Nonparametric Regression Based Classifiers for Breast Tissue Diagnosis from Raman Spectra**

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**Abstract:** Breast cancer is the most commonly diagnosed cancer among females in the United States. About one in eight U.S. women will develop invasive breast cancer over the course of her lifetime. Mammography serves only as a screening tool and cannot distinguish between malignant and benign lesions. Thus biopsies are usually performed on patients with breast abnormalities found through screening. However, due to current limitations, the entire diagnostic process may take months and sometimes requires repeat, even surgical biopsies. Raman spectroscopy can provide timely feedback on quantitative chemical information about breast tissue, and is a less invasive technique than current diagnostic procedures. A previous study (Haka et al, 2005) showed promising results (sensitivity of 94% and specificity of 96%) by classifying pathologies with the aid of basis Raman spectra acquired from the individual chemical constituents of breast tissue. In this present study, we propose an innovative sequential stacking-type method to combine different nonparametric regression based classifiers that rely on basis spectra, derivatives of basis spectra, and the classifier proposed in the previous study (Haka et al, 2005), with the aim to improve the sensitivity and specificity for breast tissue diagnosis.

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**Supported by:** This present work does not have any source of support.

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# UK College of Public Health Research Day

## ORAL and POSTER ABSTRACTS

Thursday, March 27, 2014

Lexington Convention Center

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### ORAL PRESENTATION

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**Abstract Title:** **Factors associated with HIV transmission knowledge among youth in Tbilisi, Georgia: Results of youth behavioral surveillance survey**

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**Author(s):** R. Choate, College of Public Health, U of Kentucky  
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S. R. Browning, Dept of Epidemiology, College of Public Health, U of Kentucky  
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**Abstract:** **BACKGROUND:** Georgia, a relatively small, post-Soviet country in the region of Southern Caucasus, has a concentrated HIV epidemic. Despite low prevalence (0.05%) in the general adult population, there is a high risk of developing widespread epidemic due to engagement in high-risk behavior, such as drug use and sexual activity among. **PURPOSE:** To advance understanding about the factors contributing to HIV transmission knowledge among youth in Tbilisi, Georgia. **METHODS:** Secondary analysis was conducted on data from the Youth Bio-Behavioral Survey that was administered to school pupils (age 15-17 years) and university students (age 18-24 years) in Tbilisi, Georgia. Respondents (N=1879) answered questions pertaining to demographics; attitudes, and practices, drug use, HIV stigma /discriminatory attitudes (summative scale score). These were assessed for their correlation with Knowledge of HIV transmission which was computed as a summative score (i.e. total number correct) for 11 questions pertaining to the knowledge of HIV transmission. **RESULTS:** The survey revealed that 18.6% of the respondents had not heard of HIV infection. Of the remaining respondents, the average knowledge score was 6.4 (SD=2.62). Preliminary analyses reveal a positive association between knowledge of HIV transmission and age ( $\beta=0.15$ ,  $p<0.0001$ ) and negative association between knowledge and HIV stigma / discriminatory attitudes ( $\beta= -0.35$ ,  $p<0.0001$ ). **CONCLUSION:** Preliminary findings of the study indicate the need for improved HIV transmission knowledge among adolescents in Tbilisi, Georgia. The findings also reveal the need for a more thorough investigation of factors possibly associated with HIV knowledge, such as household income, religious affiliations, and parents' education levels.

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# UK College of Public Health Research Day

## ORAL and POSTER ABSTRACTS

Thursday, March 27, 2014

Lexington Convention Center

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### ORAL PRESENTATION

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**Abstract Title:** **Understanding TB Patients Health Seeking Behavior: Results of a TB Knowledge, Attitudes and Practices Survey in Swaziland**

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**Author(s):** S. Ginindza, Dept of Health Services Management, U of Kentucky  
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**Abstract:** Background The aim of the survey was to assess the knowledge, attitudes and practices regarding tuberculosis (TB) among patients and communities to find out possible barriers to desirable health seeking behavior in relations to TB. The intent was to gather information on suggested appropriate approaches to increase community involvement and awareness about TB as well as provide baseline data on knowledge levels about TB that would enable follow-up and basis for monitoring and evaluation of the Advocacy, Communication and Social Mobilization strategy of the national TB program. Methods Using a quantitative design, knowledge on TB, attitudes and practices were analyzed. This was triangulated with a highly participatory qualitative design to allow for the purposive selection of special target groups in the public and voluntary service sectors. Eight hundred and fifty (850) households and two thousand two hundred and twenty six (2226) adults were interviewed from all four regions of Swaziland including 400 patients interviewed from 15 TB treatment initiation facilities countrywide. Focus Group Discussions (FGDs) were also held with selected groups of community health workers, community leaders and elders. Results Knowledge on Causes: 45% of the population had adequate knowledge about causes of TB. Patients were found to have more knowledge on causes than general public. Knowledge on Modes: 86% of the household study respondents' responses reflecting adequate knowledge compared to 13% that reflected no knowledge on TB transmission. Similarly, about 80% of the responses from the patient respondents were found to be of adequate knowledge on modes of transmission.

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**Supported by:** Global Fund R8 TB Grant for Swaziland and the Government of Swaziland

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# UK College of Public Health Research Day

## ORAL and POSTER ABSTRACTS

Thursday, March 27, 2014

Lexington Convention Center

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### ORAL PRESENTATION

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**Abstract Title:** **Individual and Network Correlates of Antisocial Personality Disorder among Rural Nonmedical Prescription Opioid Users**

**Author(s):** R. V. Smith, Center on Drug and Alcohol Research, Dept of Behavioral Science, Depts of Epidemiology and Biostatistics, U of Kentucky  
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N. G. Glover, Dept of Psychology, U of Kentucky  
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**Abstract:** Purpose: This study examines the association of antisocial personality disorder (ASPD) with substance use and HIV risk behaviors within rural drug users' social networks. Methods: Interviewer-administered questionnaires were used to assess substance use, HIV risk behavior, and social network characteristics of drug users (n=503) living in rural Appalachia. The MINI International Psychiatric Interview was used to determine whether participants met DSM-IV criteria for ASPD and Axis-I psychological comorbidities (e.g., major depressive disorder, post-traumatic stress disorder, generalized anxiety disorder). Participants were also tested for antibodies to herpes simplex 2 (HSV-2), hepatitis C (HCV), and HIV. Multivariate generalized linear mixed modeling was used to determine the association between ASPD and risk behaviors, substance use, and social network characteristics. Results: After adjustment for demographic variables and Axis-I disorders, past 30-day use of heroin and crack were independently associated with meeting diagnostic criteria for ASPD. Those meeting criteria for ASPD also reported less trust and shorter relationship duration with social network members than participants not meeting diagnostic criteria for ASPD. Conclusions: Participants meeting DSM-IV criteria for ASPD were more likely to report recent heroin and crack use, which is far less common in this population of rural prescription opioid users. Given the elevated risk for blood-borne infection, drug overdose, and other negative health consequences conferred by these both heroin and crack use, this study suggests that those meeting diagnostic criteria for ASPD may be in need of targeted interventions.

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**Supported by:** NIH award: R01DA024598

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# UK College of Health Sciences Research Day

## ORAL and POSTER ABSTRACTS

Thursday, March 27, 2014

Lexington Convention Center

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### ORAL PRESENTATION

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**Abstract Title:** Experiences of Individuals in Upper Extremity Rehabilitation with Incongruence between their QuickDASH and GROC Scores: A Phenomenological Study

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**Author(s):** E. Smith-Forbes, Dept of Rehabilitation Sciences, U of Kentucky  
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**Abstract:** Study design: Qualitative phenomenological Background: Patient's perception of treatment success in acute hand therapy has been found to be multifactorial. Two subjective forms often used in hand therapy to capture these factors are the Quick Disabilities of the Arm Shoulder and Hand (QuickDASH) and the Global Rate of Change scale (GROC). However, it is not uncommon for there to be directionality incongruence between the two forms, which may indicate patient dissatisfaction with care or a lack of progress. Purpose: To describe the experiences and expectations of rehabilitation of patients who demonstrated incongruence between their QuickDASH and GROC forms, in addition to their decisions to adhere and comply with their treatment plan. Method: Participants were patients in an outpatient hand therapy clinic who demonstrated incongruence between their QuickDASH and GROC forms beyond measurement error. Semi-structured interviews were recorded and transcribed, and analyzed using Colaizzi's phenomenological method until attaining saturation. Results: From 10 participants, 151 significant statements were extracted yielding five themes: 1) Desire to return to normal, 2) Anticipation of a brief recovery, 3) Trust or mistrust of therapist impacts recovery, 4) Can't stop living because of injury or rehabilitation, 5) Feelings of ambivalence towards the recovery process. Conclusion: Interventions where patients viewed therapists as dedicated tended to improve patient adherence. Early therapist and patient agreement of what was minimally clinically important may improve patient adherence. Teamwork at three levels was essential, between: therapist and patient, therapist and staff, and therapist liaising with the healthcare system.

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# UK College of Health Sciences Research Day

## ORAL and POSTER ABSTRACTS

Thursday, March 27, 2014

Lexington Convention Center

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### ORAL PRESENTATION

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**Abstract Title:** Fiber type-specific satellite cell response to aerobic training in sedentary adults

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**Author(s):** C. S. Fry, College of Health Sciences, U of Kentucky  
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**Abstract:** In the current study, we sought to determine the effect of a traditional, 12-week aerobic training protocol on skeletal muscle fiber type distribution and satellite cell content in sedentary subjects. Muscle biopsies were obtained from the vastus lateralis (n=23 [6M; 17F]; BMI: 30.7±1.2 kg/m<sup>2</sup>) before and after 12 weeks of aerobic training performed on a cycle ergometer. Immunohistochemical analyses were used to quantify myosin heavy chain (MyHC) isoform expression, cross-sectional area (CSA) and satellite cell and myonuclear content. Following training, a decrease in MyHC hybrid type IIa/IIx fiber frequency occurred, with a concomitant increase in pure MyHC type IIa fibers. Pre-training fiber type correlated with BMI, and the change in fiber type following training was associated with improvements in maximal oxygen consumption. Twelve weeks of aerobic training also induced increases in mean CSA in both MyHC type I and IIa fibers. Satellite cell content was also increased following training, specifically in MyHC type I fibers, with no change in the number of satellite cells associated with MyHC type II fibers. With the increased satellite cell content following training, an increase in myonuclear number per fiber also occurred in MyHC type I fibers. Hypertrophy of MyHC type II fibers occurred without detectable myonuclear addition, suggesting that mechanisms underlying growth in fast and slow fibers differ. These data provide intriguing evidence for a fiber type-specific role of satellite cells in muscle adaptation following aerobic training.

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