

compiled on the social determinants of health revealed ($n = 35$): 1) 60.0% of patients had incomes below \$30,000 per year, 60.0% of patients had not gone past high school for education, and 8.6% had full time employment, 2) the average BREIF score was 10.3 (range 3-15)(4-12 indicate limited literacy). The average REALM-R score was 5.5 (range 0-8) (<6 indicate at risk for poor literacy), 3) patients had strong instrumental (T score 61.4 ± 7.1) and information social support (T score 64.6 ± 4.7) (mean T scores calibrated to a general population mean of 50), 4) patients had poor mental (T score 43.7 ± 6.5) and physical quality of life (T score 46.6 ± 9.9), 5) 25.7% of patients reported alcohol use in the past 90 days 6) 80.0% of patients reported that their doctor had spoken to them about liver transplantation. **DISCUSSION/SIGNIFICANCE OF IMPACT:** This patient population was well linked to care with good social support. However their literacy, socioeconomic status, mental and global health was poor and substance use history complex. Continued follow up of this cohort is planned to determine how these factors might impact their ability to navigate through the care cascade as well as survival.

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The Prevalence of Food Insecurity Among University of Utah Medical Students: Documenting the Need for Supportive Programs

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OBJECTIVES/GOALS: Undergraduates experience food insecurity at rates 21% higher than the general population. Because professional students have been omitted from these studies, the goal of this project is to determine the prevalence of food insecurity among medical students at one academic institution. **METHODS/STUDY POPULATION:** A cross-sectional research design was used to quantify the food insecurity status of medical students at the University of Utah. The USDA's validated 6-item Food Security Survey Module was distributed via email to all currently matriculated medical students. Student's responses were anonymous but questions about gender and age were included. Respondents ($N = 200$) were scored per the module as food secure, food insecure, or very low food security. **RESULTS/ANTICIPATED RESULTS:** Statistical analysis included frequencies and chi-square tests. Medical students ($N = 166$) showed 50.6% of respondents experienced food insecurity in the past 12 months, 16.3% experienced very low food security. While there were no significant relationships between food security status and gender or age, general trends did show divorced and separated students had higher food insecurity risk 82%. A similar study in 2014 surveyed undergraduates at the same location; 51% of respondents ($N = 221$) experienced food insecurity. While medical students experience food insecurity at rates much higher than the national average, prevalence is lower than undergraduates at the same institution. **DISCUSSION/SIGNIFICANCE OF IMPACT:** Burnout and suicide in medical training are at an all-time high; professional and academic pursuits are limited when physiological needs of food security are not being met. Study results suggest, 50% of respondents are food insecure. This should inform the development of supportive programs.

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The relationship between family structure and quality of life among children with asthma

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OBJECTIVES/GOALS: Asthma is a life-long, chronic lung disease that inflames and narrows the airways. Its effects on quality of life in children can be exacerbated. The goal of this study was to investigate the link between asthma, family structure and demographics and how it impacts quality of life in children. **METHODS/STUDY POPULATION:** We analyzed data from a cross sectional study of the 2016-2017 National Survey of Children's Health, NSCH, to assess the relationship between determinants of health variables and the outcome variable of parent's report of child's perceived health status (quality of life). The study population was children under the age of 18. Data were analyzed using descriptive, bivariate analysis using Chi square, and multiple logistic regression of quality of life and family structure adjusting for confounding variables. **RESULTS/ANTICIPATED RESULTS:** The study included 5,687 children. Significant predictors of asthmatic children's quality of life were severity of asthma, self-perceived mental/physical health status of adults, neighborhood safety for children ($p < 0.05$). The interaction between family structure and asthma severity was significant indicating that asthma severity was an effect modifier. Among children with mild asthma, predictors of quality of life were self-perceived mental/physical health status of adults in the household, neighborhood safety of children, physical activity status of children ($p < 0.05$). Among children with severe asthma, predictors were family structure and physical/mental health of adults ($p < 0.05$). **DISCUSSION/SIGNIFICANCE OF IMPACT:** This study suggests children with severe asthma who are born to single mothers with lower parental reporting of physical/mental health status had a lower quality of life. A longitudinal study could be implemented to target these three measures to improve quality of life among these children. Also, a culturally adapted intervention involving community, parents, and providers is needed to improve the quality of life of the children with asthma.

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Using a human-centered design process to address challenges of engaging pregnant & parenting women with opioid use disorder

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OBJECTIVES/GOALS: Using a human-centered approach, IDEO, a nationally-renown human-centered design team, and Research Jam, Indiana CTSI's patient engagement core, integrated and tailored complimentary programs to address the challenges of engaging mothers with opioid misuse around the time of birth. **METHODS/STUDY POPULATION:** Gathered data through focus groups, site visits, and one-on-one interviews with key stakeholders: mothers in opioid use recovery, peer recovery coaches, and other

people living with or directly affected by opioid use disorder (OUD). RESULTS/ANTICIPATED RESULTS: Themes emerged around stigma (e.g., constant judgment, majority of interactions focused on addiction, addiction comes from bad choices), the healthcare system (e.g., healthcare system bias and stigma, misalignment of services and timing of need, no support for support network), and relating to recovery (very variable but generally ambiguous and uncertain process and outcomes, importance of peer recovery coaches, importance of community resources). Identified themes were used to create insights that informed the underlying concepts of an engagement strategy including support and resources for recovery coaches, and education materials for mothers with OUD. One of human-centered design's strengths is iteration, and the materials created for this have yet to be tested and refined thoroughly to be meaningful and lasting interventions. DISCUSSION/SIGNIFICANCE OF IMPACT: Considerable insights into the lived experience of those experiencing OUD and those who support these individuals yielded tangible ways to test improved engagement and recruitment of women with OUD at the time of birth.

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Utilization of quantitative and qualitative methodology to characterize patient-level factors associated with sustained data transmission and clinical benefit from remote patient monitoring over 12 months

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OBJECTIVES/GOALS:

1. Identify patient-level factors associated with hemoglobin A1c reduction and sustained device use after 12 months of participation in a diabetes and hypertension remote monitoring program
2. Utilize qualitative methodology to characterize key barriers and facilitators to remote monitoring engagement

METHODS/STUDY POPULATION: All participants in statewide quality improvement initiative utilizing a cellular-enabled device with glucose and blood pressure monitoring capability will be included in quantitative analysis (N = 302 at baseline and N = 125 at 6 months at the time of analysis). We developed multi-level regression analyses to model factors associated with clinical outcome (hemoglobin A1c change) and transmission frequency over time. Focus groups and surveys will be conducted to identify barriers and facilitators to continued data transmission and hemoglobin A1c change over 12 months. Semi-structured interview guides are mapped to Wagner's Chronic Care Model. RESULTS/ANTICIPATED RESULTS: Overall, program participation was associated with 1.8% and 1.3% A1c reduction at 6 (n = 302) and 12 months (n = 125). Regression models showed no association of age, gender, race, income, or insurance with hemoglobin A1c change. Modeling of patient factors associated with sustained transmission frequency or device use is ongoing. Patient focus groups and surveys are currently being scheduled and qualitative data will be analyzed using content analysis. After completing qualitative and quantitative data analyses independently, we will use graphical matrix configurations ("joint displays") to synthesize findings. DISCUSSION/SIGNIFICANCE OF IMPACT: Our goal is to identify variables associated with the likelihood of

patients to engage in and benefit from sustained remote monitoring. Results may inform health policy and guide recruitment approaches, implementation strategies, and methodologic design for future trials. CONFLICT OF INTEREST DESCRIPTION: The authors have no conflicts of interest or disclosures to report

Mechanistic Basic to Clinical

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A TL1 Team Approach to Personalization of Donor Human Milk for Preterm Infants

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OBJECTIVES/GOALS: Feeding preterm infants with mother's own milk (MOM) lowers rates of sepsis, decreases necrotizing enterocolitis, and shortens hospital stay. Our objective is to determine whether a similar microbial diversity to MOM can be obtained when fresh or frozen MOM is inoculated in donor human milk (DHM). METHODS/STUDY POPULATION: Subjects included 12 mothers of infants born 100ml of MOM per day and were excluded if they had taken antibiotics within 3 days of the 1-time pumped MOM sample collection. MOM sample was divided into fresh (processed immediately) and frozen (-20°C) for 24h fractions. MOM was inoculated in DHM [referred to as refaunated milk (RM)] at 10% (RM10) and 30% (RM30) dilutions, then incubated at timepoints: 0h, 2h, 4h at 37°C. At each timepoint, total viable microbial cell counts were performed in differential or selective media along with future 16S rRNA sequencing. RESULTS/ANTICIPATED RESULTS: Microbiota expansion was detected in MOM, RM10 and RM30 over time whether fresh or frozen milk was used as the inoculum. Incubated fresh and frozen MOM had similar bacterial loads when tested on nutrient agar (10⁵-10⁶ CFU/mL), mannitol salt (10⁶ CFU/mL), MacConkey (10²-10⁵ CFU/mL), blood agar (10⁶ CFU/mL) and MRS (10⁴ CFU/mL) plates. Based on these CFU counts, RM30 incubated for 2h and RM10 at 4h showed similar counts to that of MOM at 0h. DISCUSSION/SIGNIFICANCE OF IMPACT: RM, inoculated with fresh or frozen MOM, obtained a similar microbial count compared to MOM at 0h indicates that fresh or frozen MOM can inoculate DHM. 16s rRNA sequencing is ongoing. Future studies are needed to support an inoculation protocol to be used in clinical practice and human milk banking.

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Acoustic screening for the "wet voice" in a canine laryngeal model

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OBJECTIVES/GOALS: Early dysphagia detection reduces risk of pulmonary complications, length of hospital stay, and overall health-care costs. The biggest limitation for early detection has been the lack of a sensitive, reliable, and noninvasive screening tool. The bedside swallow examination may miss silent aspiration in up to 40% of patients. The objective of this study is to evaluate if acoustic parameters can distinguish normal and wet voice in a canine laryngeal