

early, with written materials used for post-discharge referral. Patients prefer in-person treatment but would appreciate a virtual option. The initial session should occur in-person to build trust and facilitate virtual session engagement. **DISCUSSION/SIGNIFICANCE:** Patients are willing to engage in nonpharmacological pain treatment, however the unpredictable ED environment, uncertainty of their medical status, and financial and time constraints are significant barriers.

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### Preschooler Hemoglobin and Ferritin Concentrations Were Not Affected by Parenting and Multiple Micronutrient Supplementation Interventions in Southwest Guatemala

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**OBJECTIVES/GOALS:** Micronutrient deficiencies contribute to poor health and childhood development outcomes. The objective of this study was to examine the independent and combined effects of responsive parenting and multiple micronutrient supplementation interventions on preschooler hemoglobin and ferritin concentrations in southwestern Guatemala. **METHODS/STUDY POPULATION:** We enrolled 387 preschoolers (36-52 months) at nutritional risk (height-for-age z-score < -1) (51% male; 17% indigenous ethnicity) in a double blind, 2 x 2, cluster randomized controlled trial. Participants in the parenting intervention received culturally tailored responsive parenting or nutrition education (control) curriculum, delivered over 6 home visits. Participants in the nutrition supplementation group received daily supplementation with a maize-soy product fortified with 21 micronutrients for 6 months or a control product fortified with vitamin B2 only. Linear mixed models were used to estimate changes in hemoglobin and ferritin from baseline (2015) to endline (2017) in a subsample with blood specimens (n = 218). **RESULTS/ANTICIPATED RESULTS:** At baseline, 14% of preschoolers were iron deficient and 11% were anemic. Preschooler ferritin significantly increased over time in most arms, with the largest increase in the combined responsive parenting + multiple micronutrient supplementation arm (ferritin = 95.6 (95% CI 46.4, 144.74)); rates of change did not differ between study arms (p = 0.16). Preschooler hemoglobin did not change over time. Further analysis will examine the moderation of intervention effects by pre-specified child and household factors. **DISCUSSION/SIGNIFICANCE:** Increases in preschooler ferritin did not differ between intervention and control arms. There was no effect of the intervention on hemoglobin. Future analyses will examine intervention effects on pre-specified subgroups including baseline micronutrient deficiencies.

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### Reducing Physical Therapy Consults for Patients with High Functional Mobility in the Acute Medical Inpatient Setting: A Difference-in-Differences Analysis

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**OBJECTIVES/GOALS:** Physical therapy (PT) is key for treating functional decline that inpatients experience but is a constrained resource in hospital settings. The Activity Measure Post-Acute

Care (AM-PAC) score is a mobility measurement tool that has been used to define misallocation of PT. We aim to optimize PT referrals using AM-PAC-based clinical decision support. **METHODS/STUDY POPULATION:** We conducted a prospective study of patients admitted to University of Chicago Medical Center. AM-PAC scores were assessed by nursing staff every 12 hours. Clinical decision support was designed using validated AM-PAC cutoffs (> 18, a predictor of discharge to home). The tool was embedded in hospital medicine note templates, requiring providers to indicate PT referral status based on current AM-PAC scores. The primary outcome, unskilled consult, was defined as PT referral for patients with AM-PAC > 18. Data were collected for one year prior to implementation and one year after implementation for intervention (hospital medicine) and control (general internal medicine) services. Difference in differences analysis was used to assess the association between the intervention and unskilled consults. **RESULTS/ANTICIPATED RESULTS:** Between October 2018 and March 2021, 18,241 admissions were eligible for the study. Compared to preintervention, there was a lower rate of referral to PT for patients with high AM-PAC mobility scores in the post-intervention period [18.5% vs 16.6%;  $X^2(1) = 7.02$ ;  $p < 0.01$ ]. In the postintervention time period, the control group experienced a 2.6% increase in unskilled consults while the intervention group experienced a 2.3% decrease, a difference in differences of 4.9% (95% CI -0.07--0.03 for difference in differences) controlling for age sex, race, LOS, and change in mobility. Compared to preintervention, there was no statistically significant difference in mean change in mobility score post-intervention for either group. **DISCUSSION/SIGNIFICANCE:** Our results suggest that clinical decision support can decrease unskilled PT consults. Many functionally independent patients can mobilize with nursing or other mobilization staff. Hospitals should consider mobility score-based decision support to prioritize PT for impaired and at-risk patients.

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### Scoping Review of the Health Effects of Youth Due to the September 11, 2001 Terrorist Attacks

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**OBJECTIVES/GOALS:** Use the World Trade Center (WTC) Health Program Health Effects Library to identify the breadth and depth of research on the health effects of youth due to exposures from the events of September 11, 2001, to track the research trajectories by study population, and to identify gaps and define needs for future research. **METHODS/STUDY POPULATION:** We selected references from the WTC Health Effects Library. This curated library includes research publications that measure, report, or discuss health effects of 9/11 at the three disaster sites. Articles included had to evaluate people under 18 years old on 9/11/2001, including those in-utero. Of the 1,813 references considered, 195 were included in our study. Data from each reference was extracted using DistillerSR software and organized in four topics: overview, methods, conditions, and results. Each publication was abstracted independently by a team of two health scientists and conflicts were resolved by the four-person team. All data was then exported from DistillerSR into Microsoft Excel for analysis. **RESULTS/ANTICIPATED RESULTS:** The 195 articles included were published between 2002 through 2021, of which 29 were funded by the WTC Health Program. The study population represented ranged from in-utero

to 18 years old. Research trajectories will be developed by assessing chronological research by outcome groups (physical, mental and behavioral, interventions, and biomarkers), study population categories, as well as exposure location and mechanism. Demographic data extracted will be used to assess whether there are disparities in the research conducted to date for this population and if so, in what areas. Research recommendations and clinical implication extracted from references will be used to assess whether more recent research has addressed research from the early post 9/11 years. DISCUSSION/SIGNIFICANCE: WTC research strengthens our understanding of 9/11 health effects and provides a way to improve healthcare for the people afflicted from 9/11 exposures. The anticipated results from this scoping review can lead us to identify past research challenges and current knowledge gaps that the Program can address in future research grants.

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### Translational Barriers, Facilitators, and Benefits of Impactful Research on Health Inequities in the Criminal Justice System

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OBJECTIVES/GOALS: - Illuminate processes and findings of a translational science case study of impactful research with incarcerated pregnant women and mothers; - Improve our understanding of the translational mechanisms by sharing translational challenges, facilitators, and METHODS/STUDY POPULATION: Utilized the following evaluation methods and tools: - The Retrospective Translational Science Case Study protocol to examine translational path from innovation to policy and practice, barriers and facilitators for that translational movement. - Translational Science Benefits Model (TSBM) Checklist for translational/research impact analysis Triangulated diverse data sources: - Primary data: semi-structured interviews with research partners - Secondary data: researchers' grant applications, reports, and publications; public stories/news related to their research; scientific publications; organizational/policy documents; and over 50 interviews with 30 stakeholders featured in published sources. RESULTS/ANTICIPATED RESULTS: The research contributed to community and public health, policy/legislative, clinical/medical, and economic benefits, social/institutional change, health equity advocacy, catalyzing research (consequent research studies) and public awareness. Translational research challenges: cultural differences between research and prison system; politics of translating research to policy change; issues of capacity, power, privilege, and opportunity when doing community-engaged research; and science vs. social justice criticism. Facilitators of translation: CTSA support; stakeholder engagement; authentic collaboration; researchers as translation catalysts; and engagement in legislative activities. DISCUSSION/SIGNIFICANCE: The evaluation case study provides useful knowledge about translational impact, challenges, and facilitators of community-based research that moved along the translational continuum and contributed to transformational, systemic changes on the legal, clinical, organizational, and interpersonal levels.

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### Using evaluation methods to improve evaluation processes: Creation and implementation of a new continuous improvement process at Duke Univ. Clinical and Translational Science Institute (CTSI)

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OBJECTIVES/GOALS: (1) Assess challenges with our current continuous improvement processes via stakeholders. (2) Implement a revised continuous improvement process. (3) Evaluate the revised processes to assess implementation and use for strategic improvement. (4) Implement analysis mechanisms for new process to assess trends across the CTSI. METHODS/STUDY POPULATION: We used a mixed-methods, multi-phased, stakeholder-engaged approach with different processes per objective. Obj. 1: We implemented focus groups, surveys, and listening sessions incorporating two populations: both teams required to participate in reporting process, and CTSI leadership. Obj. 2: We utilized data from Obj. 1 processes to develop a revised continuous improvement process. Obj. 3: We integrated qualitative feedback processes onto the structure of continuous improvement processes, and we implemented a survey to assess use and value for the new process. Obj. 4: We developed a qualitative coding schema to assess key trends across teams and over time. RESULTS/ANTICIPATED RESULTS: Obj. 1: Numerous challenges in metrics format and process, including significant limitations in data use to inform decision-making and appropriately assess impact. Obj. 2: Resultant changes to continuous improvement processes, including a restructured reporting format and use-oriented approach that enhanced organizational integration; changes included added focus on facilitators of success, challenge, and key opportunities to better inform decision-making. Obj. 3: The majority of teams experienced the new quarterly process as a better tool for program monitoring and communicating program needs to leadership, but that fuller integration into vertical communication is needed. Obj. 4: Implementation of new analysis process enabling examination of trends and themes across diverse teams within the CTSI. DISCUSSION/SIGNIFICANCE: This work has particular relevance within ACTS given our focus on a clinical and translational research enterprise, the complexity in evaluating the diverse work of translation research entities, and limitations in a commonly-used metrics-monitoring approach. Our focus on improving translational processes advances translational science.

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### Wouldn't you like to know what your research study participants are thinking? A collaboration for Empowering the Participant Voice

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OBJECTIVES/GOALS: Empowering the Participant Voice (EPV) is a Rockefeller-led 6-CTSA consortium that aims to collect research participant feedback through new Research Participant Perception Survey (RPPS)/REDCap infrastructure and data aggregation to a national database. Here we describe diverse Use Cases and launch