life cycle, sometimes fatal but often address able once identified, include a lack of buy-in from potential product users, a lack of planningabout integration into clinical workflow, inadequately labeled data, and attempting to use machine learning when what is desired is really a causal model for intervening. Recommendations for projects later in the AI life cycle include details of a testing plan (silent evaluation, pragmatic clinical trials), advice about clinical integration, both post-hoc and on going auditing for performance disparities, and planning for regulatory clearance. DISCUSSION/SIGNIFICANCE: Advising is more valuable for projects at the ideation phase, when multi disciplinary interrogation can identify weaknesses. But at all phases, projects have gaps related to a lack of specific disciplinary expertise. A multi disciplinary cluster like the AI Translation Advisory Board seeks to address these gaps.

563

Team Science to Assess Effectiveness and Impact in Public Healthcare Delivery System Contracting

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OBJECTIVES/GOALS: Healthcare organizations and payers are moving from accountability to effectiveness frameworks. Static vendor contracts for full-scale implementation limit organizations' ability to evaluate impact before scale-up, or to iteratively improve. Our team science innovation employs science and learning methods as systems engage vendors. METHODS/STUDY POPULATION: Our team science innovation is a method to assess and model impact of interventions at scale in healthcare delivery systems. We are integrating expertise in learning processes of an academic medical center (UCLA CTSI) with the organizational knowledge and methodological expertise of the nation's largest Medicaid managed care plan (LA Care Health Plan), which has over 2 million members. The LA Care Advanced Analytics Lab has unique capability in machine learning, while enables deep learning of variation. Our innovative product is a template to quickly mobilize evaluation and learning for a diverse population in a varied and distributed delivery system. The template design enables rapid learning for the full-scale policy implementation often imposed by government, and in the short timeframes involved. RESULTS/ANTICIPATED RESULTS: LA Care and the UCLA CTSI partnered to provide subject matter expertise and design effective pilots for interventions such as transitional care services, complex care management, and physician home visit strategies, accounting for confounding factors affecting the intervention and outcome. So far, collaborative modeling and design has produced a successful pilot of a physician home visit program intended to reduce avoidable emergency department visits. This pilot quickly revealed several major changes that would need to be incorporated for the contracted vendor to produce results if operated at scale, further informed by machine learning, in sufficient time to inform the contracting process. There are multiple evolving applications, including housing/homelessness. DISCUSSION/SIGNIFICANCE: Integrating the large data and analytics of a large healthcare organization with learning methods from the CTSI – including learning from variation and designs for studying impact during scale-up – fosters academic-community team science that could significantly improve the value of our largest delivery systems, public and commercial.

564

Platelets and Leukocytes Interact to Modulate Inflammation in Patients with CKD

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OBJECTIVES/GOALS: Platelets interact with leukocytes in the circulation to modulate inflammation in chronic diseases. In previous clinical study, we showed that platelet leukocyte interaction is reduced in the circulation of patients with CKD. Preclinical studies are needed to show whether these findings are a precursor to or a result of CKD. METHODS/STUDY POPULATION: We used mouse models (wild type and platelet-defect) and induced CKD with intraperitoneal cisplatin injections. We measured platelet leukocyte interactions before and after CKD induction in the two models. RESULTS/ANTICIPATED RESULTS: We found platelet-leukocyte interaction to reduce after CKD induction in both wild type and platelet-defect mice. This coincided with a pro-inflammatory state in these mice, as measured by serum TNFalpha levels. Specifically, pro-inflammatory state was exacerbated in CKD of mice with platelet-defects compared to the wild type. DISCUSSION/SIGNIFICANCE: These findings recapitulate translational findings in human CKD samples and confirm that CKD state results in reduced platelet-leukocyte interactions in the circulation, and this change imparts a pro-inflammatory state in the CKD state.

565

Empowering Community Organizations with the Team Science Community Toolkit

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OBJECTIVES/GOALS: To introduce the new Team Science Community Toolkit, co-created by community and academic partners, and showcase its potential to empower Community Organizations (COs) in achieving equity in community-engaged research (CER). METHODS/STUDY POPULATION: In response to the challenges faced by COs in CER collaborations, qualitative interviews were conducted with CO staff from historically marginalized communities. These interviews informed the development of the Team Science Community Toolkit, a collaborative effort involving a Community Advisory Board (CAB) and Team Science experts from Northwestern University. The toolkit, designed using a community-based participatory research approach, incorporates the Science of Team Science and User-Centered Design principles. Integrated into the NIH-sponsored COALESCE website, it includes

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templates, checklists, and interactive tools, along with a real-world simulation, to support COs in all stages of the research process. RESULTS/ANTICIPATED RESULTS: Focus groups and usability testing involving external community experts validated the toolkit's content and usability. Participants expressed enthusiasm and a sense of empowerment, indicating that the toolkit allows them to actively shape research processes and infuse their specific voices and needs into their partnerships. The toolkit is designed to support breaking down barriers like jargon and cultural adaptability to improve accessibility and open conversation. The impact of this Team Science focused toolkit is under evaluation. This presentation will showcase the toolkit, detail its collaborative development, and explore potential applications, ultimately offering a path to more equitable and valuable community-based research. DISCUSSION/SIGNIFICANCE: By providing COs with the resources and knowledge to participate as equal partners in research collaborations, it enhances self-advocacy, transparency, and equity. The toolkit has the potential to utilize Team Science to foster productive communication in community-academic research partnerships.

566

Formative Findings from a Dissemination and Implementation (D&I) Study of TeamMAPPS, an Evidence-Based Team Science Curriculum Designed for CTSA Hubs

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OBJECTIVES/GOALS: We are using ethnographic methods and Dissemination and Implementation (D&I) frameworks to study barriers and facilitators to implementing 'TeamMAPPS: Team Methods to Advance Processes and Performance in Science.' TeamMAPPS is an evidence-based Team Science curriculum deployed as five online modules and being implemented across CTSA hubs. METHODS/STUDY POPULATION: For this pre-implementation study, we used the Implementation Mapping framework to understand likely barriers and facilitators, with the aim of designing implementation strategies and long-term outcome measures. Data included field notes from a two-day train-the-trainer, one visit to a key implementing site, and 27 interviews. Participants were four TeamMAPPS conceptualizers, four module designers, and 15 implementers from seven implementing sites, each with a CTSA hub (four were interviewed twice). We coded transcripts using the Consolidated Framework for Implementation Research (CFIR) to identify contextual barriers and facilitators to D&I, the Reach, Effectiveness, Adoption, Implementation, and Maintenance (RE-AIM) D&I outcomes framework, and target competencies of TeamMAPPS. RESULTS/ANTICIPATED RESULTS: Priority D&I outcomes that emerged were adoption, reach, and effectiveness. Potential barriers/facilitators to "adoption" included institutional willingness to incentivize scientists to utilize TeamMAPPS, support for Team Science at CTSAs, and systems of rewards for scientists to undergo trainings. Anticipated barriers/facilitators for "reach" were closely tied to adoption, such as institutions' ability to persuade or require scientists to take trainings. Other issues relevant to reach included the time it takes to time to complete TeamMAPPS and potentially fraught intra-team dynamics arising if modules are implemented as a whole-team intervention. Anticipated barriers/facilitators for "effectiveness" included having adequate tools to assess actual impact. DISCUSSION/SIGNIFICANCE: TeamMAPPS has the potential to accelerate advances in translational sciences across the CTSA consortium. As this D&I study proceeds we will continue Implementation Mapping and use the Expert Recommendations for Implementing Change (ERIC) to develop bundles of implementer-informed strategies to the effectively deliver TeamMAPPS among CTSAs.

567

Multigenerational impacts on DNA methylation signatures in autism spectrum disorder

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OBJECTIVES/GOALS: to investigate the potential impact of grandparental factors and multigenerational epigenetic inheritance on the development of ASD METHODS/STUDY POPULATION: Our study recruited participants from the CHARGE (Child Autism Risks from Genetics and the Environment) study, including grandparents, parents, and children. A questionnaire was used to gather information about the participants' exposure to environmental factors. Saliva samples werecollected from 349 participants. Newborn dried blood spotsfrom probands and parents are still being collected from the California New born Registry. DNA was extracted from 349 saliva samples from 85 families and subjected to whole genome bisulfite sequencing (WGBS) to analyze DNA methylation. Sequence alignments and bioinformatic analyses will be performed using R packages called DMRichR and Comethyl. RESULTS/ANTICIPATED RESULTS: Sequence alignments and bioinformatic analyses are ongoing, utilizing DMRichR to identify individual genomic loci associated with ASD in each of the three generations and Comethyl to compare correlation patterns between methylation marks and selected variables, including grand parental exposures. New born blood spot collections of parents and probands are ongoing and will be used to identify potential ASD epigenomic signatures that are tissue and life-stage independent. DISCUSSION/SIGNIFICANCE: This research will provide new insights into the increased prevalence and underlying etiology of ASD that should pave the way for future research in the field. DNA Methylation signatures can help create molecular biomarkers which can be used together with behavioral clinical tests for diagnosis of ASD.

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