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Rigor and reproducibility activities across the CTSA consortium: A retrospective review of accomplishments

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OBJECTIVES/GOALS: To assess how rigor and reproducibility activities across the Clinical and Translational Science Awards (CTSA) consortium are aligned with NCATS Translational Science Principles (TSPs) and the NIH's new plan to promote gold standard science. **METHODS/STUDY POPULATION:** We conducted a retrospective, descriptive review of all CTSA hub Research Performance Progress Reports (RPPRs) submitted for the most recent reporting year, focusing on the Accomplishments section. Reports were systematically searched using predefined rigor and reproducibility-related keywords. Relevant content was abstracted using a structured framework to categorize activities across domains, including education and training, institutional support, and data management and sharing. Results were summarized quantitatively by award mechanism. **RESULTS/ANTICIPATED RESULTS:** Sixty-two of 66 CTSA institutions reported activities related to scientific rigor and reproducibility in the RPPR Accomplishments section. Among these hubs, rigor and reproducibility activities were most frequently reported under K awards (48 hubs), followed by UL2 or UM1 awards (43 hubs) and T awards (38 hubs). These findings indicate broad engagement across the CTSA consortium, with variation in how rigor and reproducibility activities are reported across award mechanisms. **DISCUSSION/SIGNIFICANCE OF IMPACT:** Most CTSA hubs document multiple rigor and reproducibility activities as their accomplishments, reflecting alignment with NCATS TSPs. Characterizing these efforts across award mechanisms can inform strategies to strengthen translational science research that meets the NIH's gold standard science.

Team Science

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The role of information management in translational teams

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OBJECTIVES/GOALS: Translational research teams span varied roles, disciplines, and institutions. They rely on information to collaborate, communicate, and coordinate. Information should flow seamlessly for collaborative success, yet we know little about the collective information needs and challenges of such teams, representing a translational science problem. **METHODS/STUDY POPULATION:** We report on the Information Management Prototype for Clinical and Translational Research (IMPACT-CTR) study which explored how clinical and translational research teams (CTRTs) manage their information while conducting collaborative research. Participants across 11 US-based CTRTs

(n=52) participated in brief surveys and interviews about their collaborative processes. We are following the Translational Team Science Hierarchy of Needs (Kelly et al., 2023) framework in our thematic analyses, where we are sequentially examining: (1) the foundation of information infrastructure (tools and resources), (2) teams' information management practices, and (3) how these practices affect psychological safety of team members, which then impact "translational nirvana" or the research synergy of CTRTs. **RESULTS/ANTICIPATED RESULTS:** Preliminary analysis revealed that information was crucial to CTRTs' functionality but often overlooked. Team members moved through the research lifecycle by juggling numerous types of information spread across multiple tools, while balancing their personal information styles with those of the collective. Subsequent analyses will investigate the challenges, workarounds, and lessons CTRT members have learned while managing their information and relying on each other as information resources, and the extent to which these factors impact their scientific and operational work, as well as their team culture. We will thus develop and present a conceptual framework of how CTRTs' information behaviors can facilitate or impede high-impact collaborative research. **DISCUSSION/SIGNIFICANCE OF IMPACT:** We will present reproducible team science practices that can enhance the process of scientific research through evidence-based information management practices that are both effective and feasible for CTRTs. In doing so, we will identify information-related barriers that hinder the efficiency of the translational research continuum.

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Agile project management in clinical and translational research: How lightweight, accessible PM strategies can improve collaborative research

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OBJECTIVES/GOALS: The use of evidence-informed project management (PM) frameworks such as Agile has the potential to increase the productivity, rigor, and reproducibility of collaborative team science. This poster explores our work with Clinical and Translational Research teams to evaluate and disseminate lightweight, flexible PM tools. **METHODS/STUDY POPULATION:** Training research teams in the development of systematic approaches to PM has the potential to increase teams' ability to conduct high-impact Clinical and Translational Research. Here, we report on two research activities at the Michigan Institute for Clinical and Translational Research (MICHHR). First, we share data from the NIH-funded IMPACT-CTR study that demonstrate the impact PM systems have on how teams collaborate. Second, we share results of ongoing User Experience (UX) testing of Notion-based PM templates specifically designed to facilitate Team Science. We engaged postdoctoral fellows, early-career researchers, and project managers to assess the acceptability, usability, and feasibility of implementing these templates. **RESULTS/ANTICIPATED RESULTS:** Results from the IMPACT-CTR study demonstrate the importance of lightweight, accessible PM systems that facilitate robust teamwork. Teams with

defined, well-documented PM approaches reported lower levels of conflict, as well as higher levels of research productivity and team satisfaction. Further, PM systems depend on and influence teams' information and data management approaches, also key contributors to a team's ability to achieve their scientific objectives and conduct rigorous, reproducible research. We anticipate that results from UX testing of PM templates will demonstrate high levels of interest in implementing these tools to support collaborative research, providing an accessible entry point to proven PM strategies standard adapted from other fields. **DISCUSSION/SIGNIFICANCE OF IMPACT:** Providing context-appropriate, flexible, and adaptable PM tools as well as training in PM best practices to science teams has the potential to streamline team communication and collaboration, improve efficient use of funding, and enhance research productivity. Studying such implementations will yield additional insights for Team Science.

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Rethinking Team Science metrics through collaborative guideposts

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OBJECTIVES/GOALS: Interdisciplinary teams are central to modern science, but measuring their success remains difficult. Traditional metrics like publications or citations often miss key contributions, such as community engagement, mentorship, and lasting collaboration. New approaches are needed to capture these goals. **METHODS/STUDY POPULATION:** We introduce a framework aligning success metrics with a team's organizing priorities, illustrated through two contrasting models: Team A, a time-bound, community-focused group emphasizing rapid deliverables and public health partnerships, and Team B, a mentorship-driven, development-focused group prioritizing capacity building and long-term growth. These teams share a commitment to advancing translational research but differ in how they pursue these goals. Team A emphasized centralized coordination, shared ownership of goals, yielding timely scholarly outputs, and setting the stage for future collaborations. Team B prioritizes long-term development, sustained collaboration, and the mentorship of early-career faculty, even if traditional academic productivity metrics accrue more gradually. **RESULTS/ANTICIPATED RESULTS:** These contrasting approaches raise an important question: how should success be defined and measured for teams with very different goals, structures, and outputs? From these cases, we derive four Collaborative Guideposts: Time Perspective, Unit of Assessment, Desired Outcomes, and Sustainability, which provide a systematic way to identify and select metrics that meaningfully capture a team's contributions and impact. By offering a structured yet adaptable framework, these guideposts enable teams to track progress, monitor outcomes, and ensure

alignment with their unique goals, operating environments, and stages of development. This approach contributes to advancing validated models of team science by providing a practical method for tailoring evaluation criteria to diverse collaborative contexts. **DISCUSSION/SIGNIFICANCE OF IMPACT:** By grounding evaluation in team-specific goals, this framework supports more accurate assessments of collaborative impact. Guideposts provide a flexible structure to align metrics with context, guide discussions of outcomes, and evaluate teams on productivity, collaboration, mentorship, and long-term scientific progress.

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Equipping leaders to foster psychological safety on interdisciplinary translational teams

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OBJECTIVES/GOALS: Interdisciplinary collaboration drives innovation by uniting diverse knowledge and perspectives. Leaders play a crucial role in establishing psychological safety, upon which effective collaboration relies. This study developed a workshop to support leaders in fostering psychological safety on interdisciplinary translational teams. **METHODS/STUDY POPULATION:** Purposive sampling was used to recruit senior faculty members at a large Midwestern University from biomedical, clinical, and behavioral/social science fields. Eight senior faculty members were invited via email and all consented to participate (N=8). Our sample included associate professors (n=3) and professors (n=5), from pharmacy (n=5) and medicine and public health (n=3), with one jointly affiliated with Veterans Affairs. Semi-structured interviews were conducted via Zoom. Interviews explored the challenges and facilitators to creating psychologically safe environments. Thematic analysis was used to analyze the data. Coders utilized a combination of deductive and inductive coding to conceptualize, define, and name emergent themes. **RESULTS/ANTICIPATED RESULTS:** Through our analysis we identified a framework that included three layers: leader mindset, leader behavior, and team culture. The leader mindset describes the mindset leaders hold to create psychologically safe environments, including values of openness to feedback and commitment to trust-building. Leader behavior describes the observable actions leaders adopt to translate their mindset into everyday practice, including empowering team members and modeling effective behavior. Finally, team culture describes the shared values, expectations, and mannerisms that enable team members to build and sustain psychologically safe teams. **DISCUSSION/SIGNIFICANCE OF IMPACT:** This study highlights how leaders approach building and sustaining psychologically safe teams. Findings can inform leadership development efforts and practical strategies for leaders to adopt. Optimizing psychological safety on interdisciplinary translational teams may promote innovation, team performance, and resilient team cultures.