

Among 6,039 vaccinated autoimmune patients, 1,350 had a breakthrough infection during follow-up. Breakthrough risk did not increase significantly within the first 6 months (aHR ~1.17 at 91–180 days vs 0–90 days), but was about twofold higher by 6–12 months (aHR 2.03) and remained elevated beyond one year (aHR 1.78). Male sex was protective, associated with ~30% lower risk than female sex (aHR 0.70), with an even larger advantage at >360 days (interaction $p < 0.05$). Rheumatoid arthritis was associated with lower breakthrough risk than Hashimoto's (aHR 0.69), and systemic lupus erythematosus had slightly lower risk (aHR 0.86). Prior SARS-CoV-2 infection also conferred additional protection (aHR 0.68). DISCUSSION/SIGNIFICANCE OF IMPACT: COVID-19 vaccine protection in autoimmune patients wanes by six months. Male sex and prior infection conferred protection against breakthrough infection. RA and SLE did not show a higher risk than Hashimoto's. These findings support booster doses around six months and highlight the need for tailored preventive strategies.

Science Policy and Advocacy

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Why is the concept of translational science so hard to define and apply?

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OBJECTIVES/GOALS: In CTSA funding calls issued since 2021, the NCATS has differentiated the terms “translational research” and “translational science” which has resulted in confusion between the terms. We explore why this distinction has become challenging for CTSA hubs to implement as a requirement of pilot and UM1 awards and reflect on ways to reduce confusion. METHODS/STUDY POPULATION: We conducted a historically informed critical analysis of data collected from three sources. First, we looked at the scholarly literature on definitions of translational science and translational research since 2006. Second, we analyzed NCATS funding calls from 2006–2024 to identify if and how translational science and translational research were defined and utilized. Lastly, we used our professional experience over the last five years working at a CTSA hub and developing trainings to differentiate translational research and translational science for pilot awards. RESULTS/ANTICIPATED RESULTS: Results suggest three reasons why challenges are commonplace. First, we demonstrate that NCATS has not consistently communicated this distinction, resulting in different interpretations of the concept of translational science. Second, we argue that the systems-level conceptualization of translational science is uncommon in biomedical science training, potentially contributing to gaps in understanding. Third, we show that the academic performance measures, funding, and infrastructures for biomedical research in the United States are not designed to support translational science projects, systems, and careers. Most notably, there are no NIH R01 mechanisms dedicated to translational science that provide standard NIH career pathways. DISCUSSION/

SIGNIFICANCE OF IMPACT: We propose education and peer-to-peer brainstorming sessions to improve the ability of CTSA investigators to understand the scope of translational science and translational research. However, to truly support long-term work in translational science, NCATS would need to develop a clear career path that includes R01s in translational science.

Team Science

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Virtual expansion and impact of team science training: A mixed methods evaluation across the Washington, Wyoming, Alaska, Montana, Idaho (WWAMI) Region

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OBJECTIVES/GOALS: Effective collaboration is needed to respond to the scientific challenges of our times. A related challenge is how to support individual and team learning for such collaborations. Our project goal is to describe and evaluate team training approaches and lessons learned at one CTSA since the inception of #_msocom_1 its Team Science Core in 2017. METHODS/STUDY POPULATION: The Institute of Translational Science (ITHS) Team Science Core has offered team science-focused training and education for nearly eight years. During this time, our approach has evolved to meet changing needs and contexts. Initially, most of our offerings were in person, including an annual multi-day in-person workshop for interdisciplinary research teams (3 or more individuals from 2 or more disciplines). During and since the COVID-19 pandemic, the majority of our offerings have shifted to online trainings which has helped expand regional access. Throughout this period, qualitative and quantitative data have been collected about and from participants. We have carried out mixed methods analyses to describe and evaluate these team training approaches and lessons learned. RESULTS/ANTICIPATED RESULTS: Since 2017, the ITHS Team Science Core has offered ~250 trainings for more than 6000 individual participants (and >500 interdisciplinary research teams). Participants included students (undergraduate and graduate), trainees, faculty, clinicians, and research professionals from the WWAMI (Washington, Wyoming, Alaska, Montana, Idaho) Region and beyond. Feedback from participants in workshops, seminars, classes, and other activities has been overwhelmingly positive; 80–95% of respondents agreed or strongly agreed with the statement that “participation will improve my team's collaboration.” Qualitative responses (short answers and interviews) illustrate ways that individuals and teams applied their learning to improve communication, clarify roles, and increase confidence in using team tools. DISCUSSION/SIGNIFICANCE OF IMPACT: Clear benefits of participating in team science education and training were reported. A shift to virtual formats increased accessibility and regional representation. Qualitative interviews and short answer responses offered an enriched understanding of how team training influenced collaboration and implementation of team science practices.