The Clinical and Translational Science Awards (CTSA) Program Meeting
Selected Abstracts

October 25, 2016 • Chicago, Illinois
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Development of Clinician Scientists at Affiliated Campuses through an Interdisciplinary KL2 Program

KL2 Lead Presenter: Thomas A. Pearson (tapearson@ufl.edu)
KL2 Scholar Presenter: Faheem Guirgis (faheem.guirgis@jax.ufl.edu)
CTSA Program Hub: University of Florida
CTSA Program PI: David Nelson (nelsodr@ufl.edu)

Many Academic Health Systems have affiliated hospitals on campuses distant from the primary Academic Health Center. These affiliated hospitals often provide excellent clinical career training opportunities for clinicians, but may not have the infrastructure and personnel to support research career development for clinicians interested in a translational research career. The KL2 Program of the Florida CTSA seeks to provide the infrastructure and personnel to oversee this problem. The Florida CTSA has its hub on the main UF campus in Gainesville but supports research and training at three other campuses. Here we describe the successful development of a clinician science career on a satellite campus at the UF College of Medicine in Jacksonville, which provides care for a large, urban, underserved population. A primary emergency medicine attending physician (FG) had faced several challenges to his development as a clinician scientist prior to the KL2 Program, namely lack of a developed infrastructure of translational science laboratories, lack of formal research education programs on campus, little study participant sample storage, processing, and shipping facilities, expenses and time associated with travel between the CTSA hub and clinical campus, and lack of access to experienced mentors with NIH-funded research programs and facilities. Contact and collaboration between the early career scientist and the KL2 Director (TP) identified a strong interest and commitment to the study of the pathophysiology of septic shock in general, the potential role of dysfunctional high density lipoproteins in sepsis, and its predictive ability for sepsis/septic shock to result in chronic critical illness (e.g. intensive care unit stays > 14 days due to organ dysfunction) and morbid/mortal outcomes. The KL2 Director introduced the clinician to several mentors (CL) from the UF Sepsis and Critical Illness Center funded by an NIH P50 Award (Departments of Surgery and of Aging). Regular participation in the research team led to improved research design, methods development, and access to samples, which supported a successful application to the KL2 Program. This in turn provided access to online and face-to-face coursework in research methods, improved proficiency in laboratory techniques, mentored research in oxidative stress and inflammation biology, and availability of standardized, longitudinal testing of physical and cognitive function. His mentor mosaic included the disciplines of emergency medicine, surgery, cardiology, geriatrics/aging, behavioral science, inflammation and oxidative stress, and lipidology. KL2 Programs supporting his research career development included a “K College” with monthly lectures on research design, grant application, scientific writing, and biostatistical methods. A K23 application has received a fundable score and initial development of a satellite laboratory at the UF College of Medicine in Jacksonville has begun. This case-study illustrates the opportunities for interested clinicians at satellite campuses to partake in the infrastructure, mentoring, and career development of the CTSA for both their individual benefit but also the fostering of research capacity at clinical sites with large and underserved patient populations.

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Community-Engagement Opportunities for Early-Stage Clinical and Translational Scientists (CTS) to Facilitate Research Translation

Kl2 Lead Presenter: Cecilia Patino-Sutton (patinosu@usc.edu)
Kl2 Scholar: Lilyana Amezcua (lamezcua@usc.edu)
CTSA Program hub: University of Southern California
CTSA Program PI: Thomas Buchanan (buchanan@med.usc.edu)

Background: Providing opportunities for early-stage CTS to incorporate the community perspective at all stages of their research to accelerate research translation into is a key recommendation and goal from various national stakeholders including the NIH CTSA Program; and of utmost priority for the SC CTSI KL2 program since its inception in 2010.

Collaboration Description: The SC CTSI KL2 Training Program and Community Engagement (CE) Cores developed a strong collaborative, early on, to develop innovative efforts to connect the community with training program participants. An early initiative was developed and pilot tested in 2013-2015 called the Community Mentorship Program. KL2 Scholars were identified and CE matched them with a mentor from the community, who could identify opportunities for the Scholar to present their research to community-audiences with expertise and interest in the same research area. During one year, the mentor worked with the Scholar to prepare the presentations, evaluate them, and identify opportunities to incorporate the community feedback to the KL2’s research. The SC CTSI KL2-CE team monitored the mentor-mentee interactions throughout the year to assure goals were met, help overcome productivity barriers, provide additional resources when indicated, and evaluate overall program success.

Results of the Collaboration: Four KL2 Scholars were successfully aligned with a community member and completed the one-year program. They all met the overall goal of incorporating the community perspective to their CTS research proposal. Additionally, they continue to work together with their community mentors and have developed strong partnerships with high productivity yield, Table 1.

Lessons Learned: This program needs a strong collaborative effort between the KL2 Training program and Community Engagement to efficiently and effectively implement and evaluate the program. Mentors from the community would benefit from mentor training to enhance their mentoring skills. Scholar participation needs to be planned with time and needs formal recognition from the program to get buy in from their respective Clinical Departments.

KL2 PI-KL Scholar Dyad: Cecilia M Patino-Sutton, MD Med PhD will briefly present the Community Mentorship Program and Lilyana Amezcua, MD MS will present her experience in the program and provide examples of how it impacted her research career development process, specifically related to research translation.

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Accelerating the Achievement of Translational Milestones within the KL2 Scholar Program at NC TraCS

**KL2 Lead Presenter:** Kim Boggess ([kim_boggess@med.unc.edu](mailto:kim_boggess@med.unc.edu))  
**KL2 Scholar:** Shawn Hingtgen ([hingtgen@email.unc.edu](mailto:hingtgen@email.unc.edu))  
**CTSA Program hub:** University of North Carolina  
**CTSA Program PIs:** John Buse ([jbuse@med.unc.edu](mailto:jbuse@med.unc.edu)) and Tim Carey ([timothy_carey@unc.edu](mailto:timothy_carey@unc.edu))

The KL2 Program at the North Carolina Translational and Clinical Sciences (NC TraCS) Institute is focused on optimizing the interaction between KL2 Scholars and NC TraCS resources and services to achieve two objectives: (1) identify and utilize relevant resources of NC TraCS to maximize the opportunities to translate each Scholar’s research and (2) to guide the Scholars in developing a flexible training plan that prepares them for leadership in team-oriented science. Shawn Hingtgen, PhD is an Assistant Professor at the UNC Eshelman School of Pharmacy who was funded through the NC TraCS KL2 Program from 2013-2015. Working with a mentoring team consisting of Dr. Matthew Ewend, Chair of Neurosurgery at UNC Hospitals, and Dr. Kam Leong, world-renowned expert in drug delivery systems for the brain, Dr. Hingtgen’s KL2 project harnessed the latest advances in stem cell technology to convert a patient’s skin cells into their own personalized tumor-homing drug carriers for treatment of the aggressive brain cancer glioblastoma multiforme. Dr. Hingtgen accessed the 4D (Drugs, Devices and Diagnostics Development) Program of NC TraCS for consultation with experts in pharmaceutical product development, the joint NC TraCS-Research Triangle International Regulatory Service to obtain advice on preclinical regulatory requirements, IRB guidance to gain approval for collection of human cancer tissue, and the pilot award program to provide foundational data that was vital for both further research funding and defining a path towards clinical implementation. The multi-faceted support of NC TraCS has enabled Dr. Hingtgen to identify a unique potential lead-candidate product that links the fields of personalized medicine, stem cell therapeutics, biomedical engineering, and drug delivery. In the clinical setting, the final product would be the first of its kind, comprised of personalized tumor-homing stem cells carrying anti-cancer agents and seeded onto custom implantable bandages that enable easy, efficient delivery into the tumor resection cavity of brain cancer patients. Once in patients, the therapeutic stem cells would seek out residual tumor foci that can’t be treated with standard surgery and chemotherapy. As a KL2 Scholar, Dr. Hingtgen learned that efficiently achieving meaningful translational milestones requires training in collaboration, team-building, stakeholder engagement, entrepreneurship, and scientific communication to a broad variety of audiences. Through the KL2 Program Dr. Hingtgen engaged with patient and clinical stakeholders, business experts, and established investigators to hone the description of his science into a 5-minute pitch to venture capitalists. This pitch resulted in a $750,000 award from the Eshelman Innovation Fund, a $300,000 grant from the state of North Carolina, and a newly funded R01 from the NIH, as well as the filing of 2 provisional patent applications and the launch of a new start-up company. Dr. Hingtgen and Dr. Boggess will describe how NC TraCS KL2 Scholars learn and practice interdisciplinary team-building and leadership skills to mobilize CTSA Program resources toward achievement of translational milestones.

Use of Media for Community-engaged Collaborations: CTSI Discovery Radio

Presenters: Doriel Ward (dward@mcw.edu) and Bryan Belmar (dward@mcw.edu)
CTSA Program hub: Medical College of Wisconsin
CTSA Program PI: Reza Shaker (rshaker@mcw.edu)

The purpose of Community Engagement within the CTSI is to develop novel methods that ensure meaningful and productive engagement and training in clinical and translational research for both researchers and community partners. Our overarching goal is to move from the current unidirectional approach of engagement and translational research that often stops at the bedside, to an engaged partnership approach that moves from bench and bedside to the community and back, while engaging community members at every point on the continuum.

CTSI Discovery Radio is a unique facet of CTSI. Each 30-minute edition informs and educates community members about translational research relative to current health topics, clinical studies and successful outcomes. In 2013, we aired our first “CTSI Discovery Radio” program, with the aim to reach out to the southeast Wisconsin community and extend an “invitation” to community members to become personally involved with their health, the health of the community, and science and discovery. The program also engages national, regional and local leaders in translational science. Since the beginning of our CTSA hub, CTSI Communications has produced and aired 28 radio broadcasts, with topics including but not limited to: ‘Biomedical Research and the Community’, ‘Type 2 Diabetes and Eating Well’, ‘Alzheimer’s Disease in our Community’, ‘PTSD’, ‘National Immunization Awareness Month’, ‘Caring for Children through Translational Science’, ‘The Precision Medicine Initiative’, ‘Breast Cancer Awareness’, ‘Probiotics for Heart Health’—featuring Dr. Chris Austin, Director, NCATS, and, ‘Discovery to Community: Translational Science in Action’. The show is produced and hosted by radio veteran Bryan Belmer, whose experience and personality provide an excellent balance of credibility and relatability for community members.

CTSI Discovery Radio is broadcast on WMSE (91.7 FM) the broadcast radio station of the Milwaukee School of Engineering (MSOE) and a partner institution of CTSI. The show is simultaneously available as a live stream via the radio station’s website (www.wmse.org). Following its over-the-air broadcast, each CTSI Discovery Radio program edition is available online and on demand as a podcast via the CTSI website (www.ctsi.mcw.edu) and SoundCloud (www.soundcloud.com). Additional channels for distributing the show are in development.

Future Opportunities:
Exploration of additional channels/radio station options for increasing the reach, impact, and influence of CTSI Discovery Radio is ongoing. These would include the local National Public Radio and/or Wisconsin Public Radio affiliate(s). Furthermore, in working collaboratively with The Medical College of Wisconsin’s Office of Communications, future opportunities include (but are not limited to) expanding the distribution of the show via social media channels (Facebook, Twitter, YouTube, et al.) and additional website(s)/online news site(s). Also, based on the considerable growth of podcasting, additional podcast opportunities are being explored to support and supplement/complement CTSI Discovery Radio. It is anticipated that such growth will facilitate syndication opportunities for the show.

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Helping Basic Scientists Engage with Community Partners to Enrich and Accelerate Research

Presenters: Rhonda G. Kost (kostr@rockefeller.edu), Jonathan N. Tobin (jntobin@cdnetwork.org) and William Pagano (wpagano@nyc.rr.com)
CTSA Program hub: Rockefeller University
CTSA Program PI: Barry Coller (collerb@rockefeller.edu)

Bringing together community members, clinicians, clinical investigators and basic scientists to jointly design and conduct translational research can enhance its relevance to the community. In 2009, The Rockefeller University Center for Clinical and Translational Science (CCTS) partnered with Clinical Directors Network (CDN), a practice-based research network (PBRN) serving low income and minority populations that works with Federally Qualified Health Centers (FQHCs), to create a community-engaged research navigation (CEnR-Nav) program to foster research that pairs basic science and community-driven scientific aims.

The CEnR-Nav program is led by one academic Navigator and one PBRN Navigator with support of CCTS leadership and infrastructure. Through a series of collaborative meetings and joint activities, the program facilitates the development of Community-Academic partnerships and jointly authored research protocols. Under the guidance of the Navigators, the academic and community stakeholders move sequentially through the stages of building a partnership, aligning aims, generating testable hypotheses, jointly developing protocols and funding applications, conducting the study, analyzing and disseminating the results, and preparing applications for additional funding to sustain the partnership through subsequent projects.

Since inception in 2009, approximately 44 projects have been initiated by the community partners and clinicians, students/trainees, academic investigators, or the Navigators/CTSA PI, with 25 being successfully translated into clinical translational protocols. Through 2014, 76% of these protocols included community partners and of those, 47% named the community partners as co-investigators; 36% of protocols included a T3 or T4 translational aim; 28% secured external funding; 44% disseminated results through presentations or publications. 71% of project publications (5/7) included one or more community partners as a co-author.

The Symposium Panel speakers will include three speakers to discuss various perspectives of the collaborations fostered by this program:

1) The Academic Navigator (RGK) will describe the infrastructure, overall process, and evaluation of the CEnR Navigation process as well as the challenges in building research partnerships among basic scientists and community partners.

2) The Community Navigator (JNT), who is the President/CEO of a national PBRN, and will discuss the operationalization of two major CEnR-navigated partnerships, one starting as a pilot study of the molecular footprint of community acquired MRSA infections and culminating in a PCORI-funded Comparative Effectiveness Research (CER) study of prevention of MRSA recurrence, and a second building on the observations and electronic health records of primary care clinicians caring for pregnant teens and culminating in a study addressing the social, behavioral and nutritional determinants of pregnancy outcomes in teens affected by health disparities. The second speaker will also highlight the broadly interdisciplinary collaborative nature of these two projects and how the partnerships are sustained.

3) The third speaker, a primary care clinician and the recently retired chief medical officer of a community based practice that joined the MRSA project (WP), will share his experience and insight in bridging the translational divide of designing and conducting research in busy, urban FQHCs, and will address the challenge of conducting relevant research, deploying existing workforce and mitigating workflow issues.

In closing, the Navigators will provide institutional perspective with regard to aligning incentives and leading initiatives to bring basic investigators, community investigators, and community clinicians and patients together in sustainable productive collaboration.

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Optimizing Translational Veterinary Trials to Advance Human Outcomes

Presenter: Cheryl London (london.20@osu.edu)
CTSA Program hub: Ohio State University
CTSA Program PI: Rebecca Jackson (rebecca.jackson@osumc.edu)

The movement of novel discoveries into clinical practice follows a relatively long and inefficient path. Greater than 50% of human clinical trials fail to meet critical endpoints, often late in the course of development, resulting in both financial loss and the lack of additional treatment options for affected patients. Although there are several reasons for these failures, the primary driver is typically lack of efficacy. It is now evident that while induced animal models provide substantial data regarding disease mechanisms, they likely do not completely recapitulate the biology of a variety of spontaneous conditions that occur in people and as such, the impact of therapeutic intervention in many models overestimates potential clinical value in human patients. In contrast, there is increasing evidence that spontaneous diseases in veterinary patients represent unique models that more closely parallel the biology of comparable human diseases including heterogeneity of clinical presentation and response and ensuing resistance to therapy. Importantly, spontaneous diseases in veterinary patients are an inherently less biased setting for therapeutic evaluation than those involving induced disease in which all affected animals are free of variables and co-morbidities that may substantially influence treatment outcome. As such, studies incorporating veterinary patients represent a unique opportunity to generate critical data regarding the safety and efficacy of novel drugs and devices that can serve to de-risk subsequent human clinical trials. To this end, the CTSA One Health Alliance (COHA), an affiliation of 11 veterinary academic centers, is working to facilitate therapeutic success in humans through the incorporation of large animal models of spontaneous disease into the pre- and post-IND process. COHA has established a primary mission of creating an organized network of veterinary academic centers that will conduct translational clinical trials in veterinary patients with spontaneous disease.

To accomplish this goal, a set of standard operating practices and procedures for veterinary trials initially developed at The Ohio State University will be optimized and implemented across the network of 11 COHA institutions ultimately creating a highly trained veterinary clinical trials consortium that operates under a single set of guidelines. This will be accomplished by 1) optimizing a set of operating practices for the performance of veterinary trials; 2) generating a standard veterinary GCP training module for certification of trials staff; 3) establishing REDCap as the primary mechanism for clinical trial management and reporting across the COHA consortium; 4) forming a data safety management board to oversee trials and facilitate institutional approval; and 5) developing a coordinated outreach effort to ensure adequate enrollment in studies. Successful completion of these goals will enable seamless initiation of veterinary trials over multiple sites, ensure a high level of training of all involved partners and provide a single platform for data reporting, thereby establishing a well-organized, proficient nationwide network that will generate critical information to accurately inform human translational efforts.

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Building a Drug Repurposing Network for the CTSA Consortium

Presenter: Larry Sklar (lsklar@salud.unm.edu)
CTSA Program hub: University of New Mexico
CTSA Program PI: Richard Larson (rlarson@salud.unm.edu)

Presentation Theme: A Drug Rescue, Repurposing, and Repositioning Network (DR3N) has been established to accelerate and facilitate advancement of new treatments to clinical proof of concept studies. The participating CTSA hubs have complementary expertise in repurposing including screening, drug assessment, pharmaceutics, and trials.

Description of the collaboration: The Clinical and Translational Science Awards (CTSA) of the University of New Mexico Health Sciences Center (UNM HSC) in partnership with University of Kansas Medical Center (KUMC) and University of North Carolina (UNC) has established DR3N to accelerate and facilitate advancement of new treatments to clinical proof of concept studies. Created in partnership with the National Center for Advancing Translational Sciences (NCATS), the CTSA hubs at UNM, KUMC, and UNC will facilitate collaborative investigations and team science throughout the CTSA network. DR3N will provide resources to translate knowledge of new therapeutic concepts for existing drugs to new clinical research collaboration and trials. Specific project paths include entry of drugs via rescue, repurposing, or repositioning approaches with a common endpoint to clinical proof of concept trials. The purpose of this network is to promote inter-institutional collaboration across the CTSA network by funding innovative, translational research projects that involve two or more of these CTSA hubs.

Results: Pilot projects have been developed and initiated with several CTSA hubs with the goal of identifying drugs for repurposing into clinical trials. These proposals identify the screening procedures to identify potential drugs for repurposing, and the clinical trial to be performed to test the efficacy of the identified compounds. Proposals have well-developed scientific plans as well as well-conceived clinical trials. The DR3N assists in identification of compounds that will then be tested in clinical trials at one or more CTSAAs. The pilot funds may focus on the drug screening and/or clinical trial component. An MOU with Cures Within Reach has been developed for philanthropic matching support of clinical trials.

Lessons learned: Building multi-institutions pilot projects in the CTSA consortium involves the coordination of review processes at the individual institutions and can require the direct participations of CTSA directors. Because each institution participating in this program decides how much funding will be devoted to the DR3N program, the amount of funding available will vary depending on the policies at each CTSA hub.

Implications: Collaborative DR3N projects will leverage resources at CTSA hubs to support rapid translation of new therapeutic concepts.

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The Strategic Pharma-Academic Research Consortium (SPARC), an organization to spark innovative collaborations in discovery and 'pre-competitive', disease target discovery stage between academic research institutions who are members of the NIH CTSA network and the biopharmaceutical industry. The consortium was established by 4 Midwestern CTSA Hubs as founding partners in 2014, along with two large Pharma companies located in the Midwest, Eli Lilly & Co and Takeda Pharmaceuticals. The consortium is housed in the Indiana Clinical and Translational Sciences Institute. SPARC is a platform for research that utilizes the unique strengths of academic and industry for basic discovery, target identification and testing tool molecule chemical biology and translational research. The vision is to establish public-private partnership for patient focused discoveries that generate greater knowledge and better approaches to next generation and targeted therapies. The intent is also to conduct patient data and samples towards understanding of human physiological traits of different diseases of interest. The current members include Indiana University, The Ohio State University, Northwestern University, University of Chicago and Washington University in Saint Louis, along with the two major pharmaceutical companies, Eli Lilly and Co. and Takeda Pharmaceuticals. In the first round of funding, the consortium focused on autoimmune diseases as the major theme for selecting projects. To date, the consortium has funded five projects involving multiple institutions and 12 faculty investigators and several industry scientists.
Regulatory Guidance for Academic Research of Drugs and Devices (ReGARDD)

Presenter: John Buse (jbuse@med.unc.edu)
CTSA Program hub: University of North Carolina
CTSA Program PIs: John Buse (jbuse@med.unc.edu) and Tim Carey (timothy_carey@unc.edu)

To improve health and healthcare through innovative therapies and drugs, one must find the successful pathway from discovery to clinical implementation. This pathway is driven, in part, by the regulatory scientific expertise needed to navigate the complex and often unique regulatory issues arising from the growing discipline of translational science. In many institutions, this expertise is not available for investigators to engage or might be limited to specific subject areas thus creating a barrier to the translation of scientific findings. To address this barrier, the three North Carolina CTSAs (UNC with Partner RTI, Duke University, and Wake Forest University) developed, ReGARDD (Regulatory Guidance for Academic Research of Drugs and Devices), an innovative platform to share expertise and methodologies across institutions and centers. ReGARDD provides academic scientists and physicians with tools and resources necessary to find the successful pathway from discovery to clinical implementation of new and innovative drugs, biologics, medical devices, and/or therapies. The unique feature of ReGARDD is that it does not build the regulatory expertise at each individual institution as a silo, instead, it brings the regulatory talents from the three North Carolina CTSAs and across the research triangle area together to share ideas, successful strategies, and lessons learned, creating a robust regional outreach program that facilitates meaningful and fruitful collaborations among multiple stakeholders. The ReGARDD platform consists of 1) a collaborative shared best practices website (www.regardd.org) that contains regulatory tools, resources and educational materials, such as, drug and device pathways, templates, educational presentations and FAQs, and 2) a regional forum comprised of regulatory experts at the NC CTSA institutions with additional representation by regulatory experts across the Research Triangle (CROs, Industry). The forum is a place for regulatory personnel to share best practices, discuss complex regulatory issues and learn from one another, thereby enhancing the expertise at each of the CTSAs.

The sharing of expertise between the CTSAs reduces duplication, increases efficiencies, and allows expertise to grow at each site by learning from one another. Additionally, the collective expertise provided through this collaboration has the potential to reduce time to market for new drugs, devices, and biologics, thus reducing the time to actual patient benefit.
Improving Patient-Reported Outcome Data for Research through Seamless Integration of the PROMIS Toolkit and Computer-Adaptive Testing Modules into EHR Workflow

Presenter: Justin Starren (justin.starren@northwestern.edu)
CTSA Program hub: Northwestern University
CTSA Program PI: Donald Lloyd-Jones (dlj@northwestern.edu)

In September 2016, NCATS awarded a U01 to a consortium of 9 CTSA hubs to expand the integration and feasibility of acquiring patient-reported outcomes for clinical care and research. This talk will discuss the project, the software being developed, and the opportunities for the entire CTSA consortium.

Patient-reported outcomes (PROs) reflect the experience of health and healthcare as reported directly by the patient. There is increasing evidence that capturing PROs is an essential component of quality measurement, quality improvement, and patient engagement in care and research. The Patient-Reported Outcomes Measurement Information System (PROMIS) toolset is a PRO survey system that utilizes computer adaptive testing (CAT) to provide precise measurements with a minimum number of questions, often shortening conventional PRO surveys by 10-fold or more. Unfortunately, previous attempts to integrate PROMIS into Electronic Health Records (EHR) have not integrated optimally into EHR workflows. Working with the PROMIS software team, NUCATS has developed a seamless integration of the PROMIS toolset into our local Epic EHR installation. This experience has convinced us that tight workflow integration brings many benefits and greatly facilitates incorporation of PROs into both quality and clinical research projects, while minimizing burden on patients and research participants. The response to our presentation of this work has also demonstrated that there is a need for similar integration at many CTSA sites. This project represents a collaboration of nine CTSA sites, including: Northwestern, University of Chicago, University of Illinois at Chicago, University of Alabama at Birmingham, University of Kentucky, University of Florida, University of Utah, Harvard Catalyst CTS, and Southern California CTSI. These sites utilize a variety of different EHR platforms. The team includes the developers of the PROMIS toolkit software, experts in EHR integration, and experts at SMART and FHIR.

The goal of this project is to develop and evaluate a suite of software tools that will allow all CTSA sites to integrate PROMIS tools directly into their EHRs. To achieve this, we will develop software to support tight integration into the two most common academic medical center EHRs--Epic and Cerner. We will develop a generalized integration of the PROMIS toolset, utilizing the SMART-on-FHIR standard, that can be implemented in multiple EHR platforms. Finally, we will implement and evaluate these software solutions across a number of diverse CTSA sites both within and outside of the project team CTSA sites.
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