

CTSC CONNECTIONS

BUILDING RESEARCH TEAMS OF THE FUTURE TO IMPROVE HUMAN HEALTH

Fostering Clinical Research: A Job Well Done

AT THE FOREFRONT OF CLINICAL AND TRANSLATIONAL SCIENCE, the CTSC provides considerable expertise to the research enterprise at UC Davis and offers a wide array of services and resources to research teams. The CTSC is one of more than 50 research “hubs” supported by the National Center for Advancing Translational Sciences (NCATS) Clinical and Translational Science Awards Program at the National Institutes of Health. Each of these institutions functions as a local nexus, and also works in partnership to speed the translation of research discovery into improved patient care. Established in 2006, the CTSC is entering its 15th year as a flagship resource at UC Davis, and partners with the community, region, and national network to advance human health.

Participant Recruitment

Subject recruitment is a challenge to research teams. Finding the needle in the proverbial haystack of potential participants can be quite daunting. Determining if potential participants meet inclusion and exclusion criteria is often laborious and expensive. Searching medical records requires IRB approval and does not guarantee that a patient will be a match. Gone are the days of snail mail and cold calls – this, after all, is a digital world. Recruiting study subjects from dynamic social media outlets where people engage and search for information has proven to be effective. Facebook, Instagram, Craigslist, and even Pinterest are powerful places to search for research subjects.



EMR Research Functionalities and CTO Participant Recruitment Teams. Pictured, from left: Andre Milner, Matt Wolfe, Kate Marusina, Fred Stevenson, Alyssa Davis, and Hassan Baxi.

In October 2017, the CTSC adopted a cutting-edge, third-party recruitment and engagement platform for clinical research called StudyPages. This platform brings research at UC Davis online in a modern and striking way. StudyPages provides the public with an easy to read, searchable, and attractive list of active studies to peruse and tools to help research study teams engage, connect, and manage people interested in participating. Content is adapted to an 8th-grade reading level through an IRB-approved process and through a workflow that does not require additional review by the IRB.

StudyPages delivers a system-wide approach for sharing study opportunities and engaging with potential participants through mobile-friendly web pages and a public

gallery of studies. The study gallery serves as a community-facing, lay-person-friendly resource that allows people to browse, learn about, and express interest in studies or easily share opportunities with family and friends.

All interactions between the public and study teams are tracked

COVID Success Story

The CTSC Recruitment Team facilitated the use of telehealth by developing guidance to support research video visits and training on the use of Voice over Internet Protocol (VoIP) calling and SMS texting to preserve privacy and maintain records in a HIPAA-compliant platform (StudyPages).

on the platform, which makes it extremely effective when research team members work from disparate, remote locations. The use of StudyPages has had a measurable impact on clinical trials recruitment supporting the UC Davis mission to promote high quality research. To date, UC Davis StudyPages has realized over 750,000 views, nearly 24,000 clicks, 17,000 sign-ups, and over 2,100 enrollments.

Behind the public facing gallery of studies, StudyPages offers research teams a robust toolbox that contains several dashboards tracking recruitment activities, a content editing tool, and a participant management platform. The participant management capabilities include Voice-Over IP calls and texts, allowing study team members to use pre-assigned phone numbers/email addresses instead of their personal numbers. In addition, each study team member can add notes documenting recruitment progress and change the status of a participant along the continuum from “Interested” to “Enrolled.” The CTSC provides study teams the

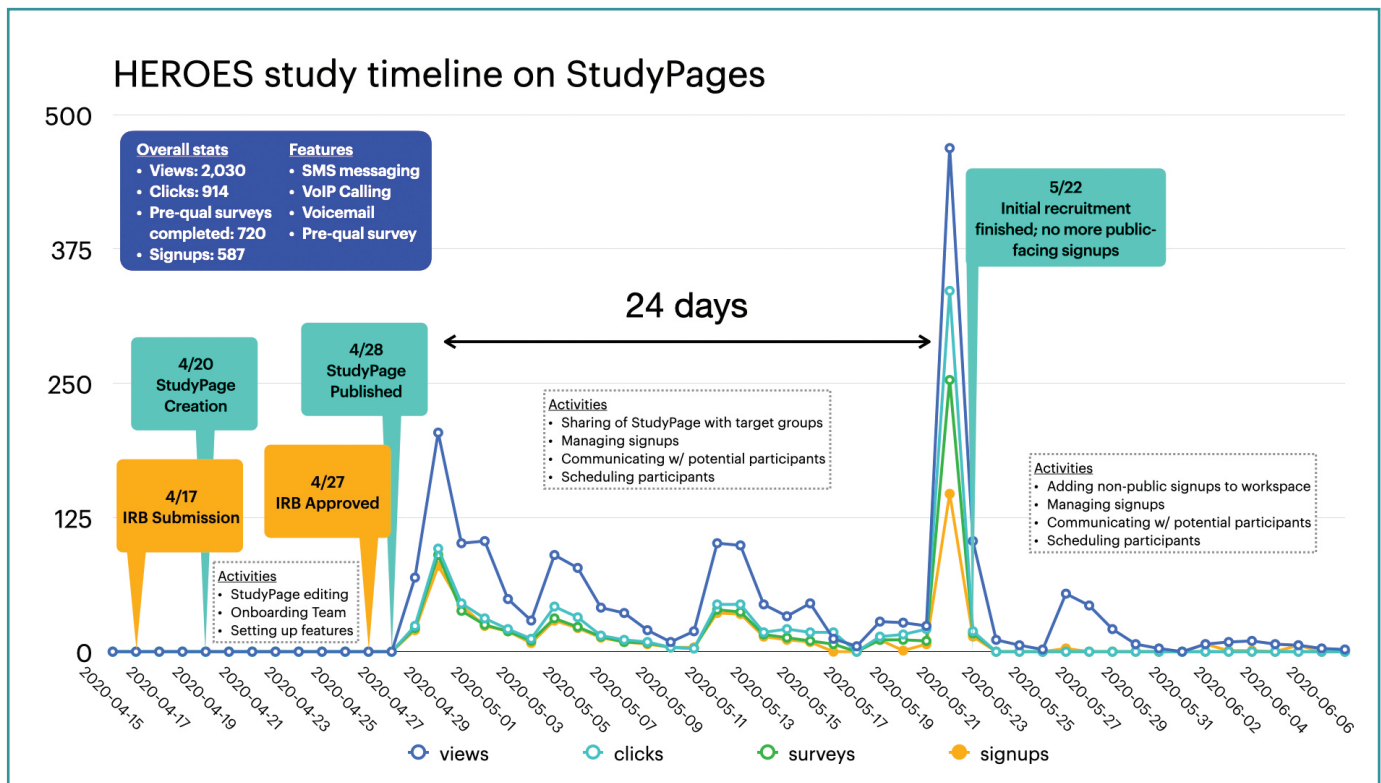
“The CTSC assisted with the UC Davis Healthcare Worker COVID Serology (HEROES) study. Our research team used StudyPages to describe the procedures, design a brief screening questionnaire, and contact potential subjects with phone and voicemail features in a secure way using the researcher portal. Subjects used a link from the StudyPage to self-schedule appointments online. We enrolled 235 subjects using StudyPages features. In less than 2 days we received 145 sign-ups and enrolled our final group of 100 subjects. StudyPages features permitted efficient scheduling and saved time for research staff and study subjects alike.”

—Allyson Sage (Department of Emergency Medicine research manager & HEROES study staff)

ability to post, monitor, and control all activity surrounding research subject recruitment in a single, secure, shareable portal – a feature that was especially valuable as teams began to work remotely during the COVID-19 pandemic.

By integrating StudyPages into MyUCDavisHealth, the CTSC offers a seamless transition from a trusted, accessible patient portal to a gallery of active clinical studies. Inviting UC Davis Health patients to participate in research studies through the application is a recruitment approach that allows investigators (with IRB approval) to send targeted invitations to patients who may be eligible to participate in research studies.

The recruitment process begins by identifying a cohort of potential participants using electronic medical record (EMR) data. The EMR Research Functionalities Team assists the study team by uploading the cohort into the EMR, then the study staff selects the patients and sends a recruitment invitation. Patients receive a brief email informing them of a new message about research. Once logged into





HEROES study team from the Department of Emergency Medicine. Pictured, from left: Allyson Sage, Eric Hanson, Donovan Nielsen, Abhi Gorhe, and Faryal Imam. Not pictured but also assisted with study enrollment: Amia Andrade, Amy Hyatt (Department of Neurology), Jasman Kaur, Kyle Pimenta and John Stevenson.

MyUCDavisHealth, patients see the invitation for the study with an additional link directing them to expanded information in StudyPages. Clicking the “I’m interested” button begins a dialog with the study team. The study team receives an EMR in-basket message with the patient’s information and response. The study

team can then follow-up with that patient per the study’s preferred workflow. Patients can easily opt out of receiving future invitations through the MyUCDHealth portal.

Education and Training

A productive and effective workforce requires that individuals have the information they need to perform their job duties. Because research is a highly regulated field, staff supporting clinical research benefit from education and training in a constantly changing environment. The CTSC provides access to knowledge and resources that support UC Davis research teams. A common base of knowledge and best practices are cornerstones of the clinical research training infrastructure.

Currently, educational offerings include instructor-led training, hands-on labs, Lunch & Learns, and a comprehensive online resource (*Clinical Research Guidebook* – <https://bit.ly/3cDtixy> with UC Davis Health login). Topics encompass operational, regulatory, and EMR workflows for those with research experiences ranging from entry-level to advanced.

A new course allows clinical research coordinators (CRCs) to learn and practice limited clinical skills for research purposes at UC Davis clinics and hospital. The training is

conducted at Sierra College and aligns with an upcoming policy which will allow clinical procedures to be performed by unlicensed research staff. The training program covers phlebotomy, vital signs, and EKG lead placement.

Multiple new programs to help support the research community – including EMR Research Training, a Clinical Research Coordinator (CRC) Advisory Council, and New Hire Research Orientation – are in development.

- The EMR Research Training Program will include comprehensive, hands-on training for new research employees and current users who did not receive formal EMR training.
- The CRC Advisory Council will be comprised of experienced UC Davis CRCs, managers, and supervisors. The council will identify key training gaps and provide input/feedback on establishing workflows.
- The New Hire Research Orientation Program will provide onboarding to key UC Davis research functions (Compliance, IRB, Investigational Drug Services, Patient Financial Services/Professional Billing), systems (EMR, the Bridge),

Using the EMR to Support Research

The UC Davis Health Electronic Medical Record (EMR) holds information for millions of UC Davis patients, making it an essential resource for a range of clinical research topics. In partnership with the CTSC, the EMR research team deploys tools to facilitate participant recruitment. Functionalities such as reports, at-a-glance dashboards, alerts, and the MyUCDavisHealth application (formerly known as MyChart) are available to streamline recruitment. These tools lift the burden and remove obstacles for investigators conducting life changing research.



Limited Clinical Skills training in progress – EKG lead placement.

and topics (such as Research Compliance and IRB Reporting) that are necessary for a successful career.

Federal Compliance

At UC Davis, any study flagged as a “clinical trial” (independent of the sponsor) must be registered on the Public Record System (PRS) at ClinicalTrials.gov (CT.gov). Industry sponsors register their own trials and provide study teams with the CT.gov registration number; however, for investigator-initiated clinical trials the onus is on the UC Davis study team to enter the study onto the CT.gov website.

As PRS administrators, the CTSC opens new accounts and assists with uploading information about the study into the system. The CTSC monitors the platform and sends reminders to resolve outstanding issues. Non-compliance with PRS disclosures could present significant problems for the investigator and the university. Penalties can range from encountering considerable issues at the time of publication to significant financial liabilities.

Study Logistics (RAFT)

The CTSC Regulatory And Feasibility Team (RAFT) provides consultation to support investigators from study design to implementation by advising, editing, reviewing, training, and connecting to resources. RAFT aims to strengthen investigator-initiated protocols by infusing the scientific idea with operational expertise. The outcome of this service is a protocol enhanced with logistical details that help ensure success during IRB Committee review and subsequent implementation.

Study Start-Up and Coordination

The Clinical Trials Office (CTO) also employs a small team of CRCs who provide comprehensive study support and short-term coverage. Offering services through a variety of payment models, this team of experienced

RAFT Success Story

A study team approached RAFT with a request to dispatch a research coordinator to participants’ homes for collection of samples. After consultation, the study team redesigned the workflow to include a sample kit that was easy for participants to self-administer and return by mail to UC Davis. The RAFT team also helped craft a protocol amendment to ensure a smooth IRB submission. Investigators at any stage of a protocol or idea under development are invited to take advantage of RAFT services.

CRCs can pick up studies at any point in time and maintain them for the gap period.

The CTO Regulatory and Finance teams specialize on start-up services. The start-up process delivers a fully negotiated and IRB-approved protocol to relieve department CRCs from these time-consuming start-up activities. The CTO aims for a 90-day start up, recovery of startup costs from sponsor startup fees, and is practiced in the art of negotiating clinical trial agreements to ensure financial feasibility in advance.

Clinical Services

The CTSC operates a clinic in the Cypress building that is devoted to the conduct of clinical research in a safe, compliant, and patient-centric atmosphere. At the forefront of innovation for novel therapies, the clinic – known as the CTSC Clinical Research Center (or CCRC) – works with principal investigators across multiple disciplines throughout UC Davis Health and the academic campus.

Staffed with a nurse practitioner, three registered nurses, exercise physiologist, senior research

associate, and biospecimen resource manager, the CCRC provides resources and a wide range of services for ambulatory care and inpatient studies. The clinic facilities include four infusion chairs, a hospital bed, procedure rooms, an interview room, exercise physiology laboratory, DEXA machine, and laboratory with equipment to process and label specimens. There is also a shared workspace where investigators and their staff can attend to patients seen in the clinic. While study-specific supplies must be provided by the research team, the clinic stocks routine items like IV and phlebotomy supplies and dressings. A crash cart is also available in the event of an emergency. The clinic has a refrigerator and $\leq 80^{\circ}\text{C}$ freezer for studies that require short- and long-term specimen storage. Studies that require overnight stays or higher intensity trials are managed and coordinated by the CCRC Nurse Manager and East 4 Accelerated Access Unit under a cooperative arrangement where overnight study participants are able to spend multiple nights if required by a study protocol.

With a staff skilled and knowledgeable in the conduct of complex clinical trials, nutritional



Rogelio (Jojie) Almario, CCRC phlebotomy technician and staff research associate.

trials, and other research, the CCRC works as a team to prioritize participant safety, protocol integrity, and institutional compliance for all studies requesting their assistance. Selected by the UC Davis Institute for Regenerative Cures Alpha Stem Cell Clinic, the CCRC administers a range of cell therapy trials for participants with multiple ailments including Duchenne's Muscular Dystrophy (DMD) and Glioblastoma Multiforme. The CCRC also collects data and samples for patients enrolled in the national *All of Us* trial.

COVID Success Story

During the Shelter-In-Place mandate, a MIND Institute study team sought assistance with remote study visits and drug dispensing. The CTSC team prepared and mailed remote study packets to participants and coordinated video calls with the PI prior to drug self-administration by patients in their homes.

Expertise Across the Disease Spectrum

Physical Medicine and Rehabilitation. The CCRC was one of the few US sites selected to take part in the Sarepta Therapeutics trial of Exondys 51 (eteplirsen) for the treatment of DMD and provided nursing support for the drug infusions, which occurred once a week for over two years. The drug targets the genetic code called "exon 51" in the DMD gene leading to increased production of dystrophin – the protein that is deficient in DMD. Eteplirsen is the first pharmacologic treatment other than glucocorticoids to be approved by the FDA for DMD patients with this unique exon-skipping gene.

Neurology. The CCRC supported a Huntington's Disease gene therapy trial aimed at minimizing symptoms and improving quality of life for patients, family members, and caregivers. Clinical staff performed lumbar punctures for intrathecal administration of the investigational product. This trial required nursing support that included serial blood draws and continuous monitoring for 48 hours.

Infectious Diseases. The CCRC is working on an HIV treatment trial to replace multiple daily oral medications with an investigational product injected subcutaneously by a nurse. This trial required that the product be administered within 10 minutes of preparation by the Investigational Drug Services (IDS) pharmacist. In addition, the product is provided in three syringes, all of which must be injected within the time allotted. This study required extensive coordination and collaboration between the Division of Infectious Disease, IDS, and the CCRC, including dry-runs and simulation of the visits. To date, three study participants successfully received this product and the study is ongoing.

As research activities adjusted to address the COVID-19 pandemic, the CCRC also supported a multi-center study of Remdesivir, a drug developed by Gilead Sciences Inc. Remdesivir is a broad-spectrum antiviral treatment that was previously tested in humans with Ebola virus. Still investigational, the drug was shown to be promising in animal models for the treatment of Middle East respiratory syndrome (MERS) and severe acute respiratory syndrome (SARS), which are both caused by other coronaviruses.

The study is funded by the NIH National Institute of Allergy and Infectious Diseases. Stuart Cohen, chief of the Division of Infectious

Diseases in the Department of Internal Medicine at UC Davis Health and director of Hospital Epidemiology and Infection Control, is leading the investigation at UC Davis. CCRC staff supports the study by collecting specimens from COVID-positive patients at the CCRC and on Davis 14, and by collecting vital signs and performing physical exams at the CCRC.

Hematology. The CCRC provided support for a hemophilia trial with a viral vector that required a high level of monitoring. Viral vectors are used for gene therapy to deliver a corrective or therapeutic gene and can pose a higher than usual potential for anaphylaxis or response from the immune system. The CCRC nurse practitioner and nursing staff are highly experienced in treating such events and stabilizing patients in an ambulatory or the inpatient setting.

Cardiology. The CCRC has also been recruited to help with cardiopulmonary exercise testing by the CCRC exercise physiologist to evaluate VO2 max in participants



Karimeh Borghei, CCRC nurse practitioner (L), in powered air-purifying respirator (PAPR) with Christopher Kain, manager of the CCRC.

with congestive heart failure. These visits will be conducted with the CCRC nurse practitioner at the bedside monitoring the participants for any electrocardiogram changes or changes in vital signs.



Karimeh Borghei, CCRC nurse practitioner.

Expertise Across the Continuum

Clinical research is one of the key areas where the CTSC provides vast expertise across the continuum of research. From concept to completion, the CTSC offers a team of experts who deliver guidance and training, tools to support subject recruitment and tracking, regulatory knowledge and support, and study conduct in compliance with regulations and good clinical practices. In addition to study implementation services provided at a cost, the CTSC has a variety of complimentary offerings, including participant recruitment, ClinicalTrials.gov support, and a robust education and training program. The CTSC provides these services to support clinical research across the campus and helps to build research teams of the future to improve human health.



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