

UC DAVIS CLINICAL AND TRANSLATIONAL SCIENCE CENTER

# CTScconnections

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# The art of team science advances scientific discovery

**MULTIDISCIPLINARY RESEARCH** and collaboration are core values of translational science. A well-honed, multidisciplinary team can advance scientific discovery beyond what is usually possible by a single investigator working in a silo.

But creating an effective team takes more than simply identifying a group of potential collaborators. Tina Palmieri, the assistant chief of burns at Shriners Hospital for Children – Northern California and the director of the UC Davis Regional Burn Center, embraced the value of collaborative research to a good end. Her success was recognized by Fred Meyers, vice dean of the UC Davis School of Medicine, who lauded, “Palmieri has become the national leader for conducting multicenter clinical trials in burns.” Palmieri attributes much of this success to creating a team environment that works.

Early in her career path, Palmieri recognized that building an optimal team meant bringing together people from diverse disciplines with different areas of expertise and communication styles. She chose to specialize in burn care in part because it epitomizes team medicine – every person who cares for a burn patient is essential. Likewise, when considering research opportunities, Palmieri believed that a team science approach would facilitate discovery, understanding and translation.

To broaden her training, Palmieri enrolled in the UC Davis Mentored Clinical Research Training Program (MCRTP), which focuses on team science. During her time in the program, Palmieri learned not only the mechanics of science, but also the philosophy of team science. This training provided a solid foundation for her future multicenter clinical trial work.

When she became a founding member of the American Burn Association Multicenter Trials Group

(MCTG), Palmieri found the perfect arena to build and organize collaborative research teams among burn centers. Writing the group’s first paper on toxic epidermal necrolysis,



*Members of the clinical, biostatistics and informatics cores of the UC Davis Department of Surgery Data Coordinating Center.*

Palmieri secured the cooperation and participation of 20 burn centers from across the U.S. and Canada. This article demonstrated the value of a team approach to multicenter clinical trials, supporting Palmieri’s conviction that projects of this magnitude require the energy and expertise of a wide variety of individuals – each of whom contribute in a distinct way. To date, the MCTG has garnered more than \$25 million to conduct projects, including multicenter randomized clinical trials involving many national and international burn centers.

Augmenting the expertise of her research team with the help of an alliance of agencies and institutions has proven to be a valuable method of extending the team’s reach. The American Burn Association provides administrative help; the CTSC offers informatics, biostatistics, and regulatory support; and the Department of Defense has contributed funding and topic expertise (e.g., the

injured soldier) that enhances the group’s ability to conduct medical research on burn injuries.

At the heart of the MCTG, however, is the UC Davis Department of

Surgery Data Coordinating Center – and the belief that results are only as good as the data upon which they are based. Obtaining high-quality data in an analyzable format is of the highest priority. To this end, a multidisciplinary team consisting of clinicians, biomedical informaticists and biostatisticians was assembled. These disciplines provide expertise from creation of data collection instruments in a secure environment, through data input to analysis.

From the beginning, the research team worked together to design data collection tools that met the needs of each discipline interacting with the data.

Director of Research Operations MaryBeth Lawless, R.N., a key leader in the development and coordination of the team as well as a liaison to researchers, ensured that the data collection tools captured what was envisioned by the principal investigator.

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Research nurses and coordinators provided input on the design of data collection instruments for accurate data collection and verified the accuracy of data entered into the database.

Sandra Taylor Ph.D., lead biostatistician, developed data analysis plans and contributed to data collection from the perspective of facilitating interim and final data analyses. Prior to each project, Taylor examined the study protocol to identify and address any potential design flaws prior to implementation.

A team of biomedical informaticists (Deborah Lee, M.B.A. and Brian Chan, Ph.D.) developed secure electronic databases that optimized data capture and accuracy, as well as enabled efficient interim and final data analyses.

Members of each discipline play a critical role in producing the high-quality

data necessary for transformative research. Collaboration among team members and the principal investigator ensures fidelity with the protocol throughout the process.

Thus far, the group has conducted seven multicenter studies involving 1,080 patients in 23 different states and three countries; two national registry studies involving more than 6 million records.

A group of subject matter experts, each committed to excellence and achieving the bigger goal, underlies the success of this story. “Each person on the data team provides valuable input on the project. Each is empowered to express their viewpoint, and we address concerns together as a team. The success of the project depends on it,” said Palmieri.

Keys to building a successful research data team:

- Identify ALL the disciplines and individuals needed to conduct the trial, including physicians and nurses, biostatisticians, biomedical informaticists, and research coordinators.
- Unite the team to identify goals and priorities for the group. Quality of data collection and analysis should be the priority.
- Develop rules for communication and set up regular meetings. Give everyone a voice at the table.
- Periodically reassess study progress, identify areas of deficiency, and work together to resolve issues.
- Bring the team together to celebrate successes. Success is contagious.