The past decade has seen a transition in clinical oncology, from the traditional cancer treatment model based on a tumor’s anatomic site of origin to a new model based on a tumor’s molecular characteristics.

This fundamental reconsideration of the nature of cancer treatment has unfolded as cancer centers faced the need to adopt sophisticated data management systems while “doing more with less” with ever-leaner budgets. In this demanding environment, clinical trials managers have been challenged to implement new or more streamlined approaches to every aspect of trial operation, from financing to patient screening and accrual, to day-to-day administration.

In 2009, AACI launched the Clinical Research Initiative (CRI) to provide a forum in which cancer centers could share best practices for addressing the multiple challenges facing the national clinical trials enterprise. Although cancer centers each have unique features and strengths, their leaders recognize that they all face similar demands and can benefit from sharing ideas and solutions. By implementing and sharing innovative approaches to clinical trials management challenges, cancer centers are ensuring that the clinical trials enterprise can continue pushing forward the boundaries of cancer treatment for the benefit of patients.

**Umbrellas and Baskets**

Variously referred to as “precision medicine” or “targeted therapy,” the emerging focus on cancer treatments that target specific genetic mutations or molecular pathways in tumors has brought potentially powerful new tools into the cancer armamentarium. But it has also dramatically increased the complexity of conducting cancer clinical trials.

For a conventional trial of a novel cancer therapy, a center could expect to accrue one patient out of every two or three who were screened. For trials of molecularly targeted therapies, however, only one patient in 40 may have the mutation of interest. This slim ratio drives up both the time required to screen patients and the cost of doing so. With each cancer center able to accrue perhaps a handful of patients for a molecularly driven trial, more trials are being conducted at multiple sites to achieve the total enrollment needed for viability.

Novel trial designs are emerging that enable new agents aimed at multiple molecular targets to be tested in a single trial. The Lung Cancer Master Protocol, or Lung-MAP trial, is an example of a so-called umbrella trial, in which multiple drugs are being tested against multiple mutations in one tumor type, in this case, squamous cell lung cancer.

At the same time, the concept of segregating cancers by organ system—lung cancer, breast cancer, etc.—is breaking down as it becomes clear that tumors originating at different anatomic sites may be driven by the same molecular abnormalities. In “basket” or “bucket” trials, a single drug is tested against a single mutation in multiple tumor types. The multi-arm NCI-Molecular Analysis for Therapy Choice (NCI-MATCH) trial combines aspects of both umbrella and basket trials.

These innovations have challenged cancer centers’ traditional approaches to managing clinical trials by tumor type—for example, having one trial manager oversee all breast cancer trials from start to finish.
In a major shift, many centers have moved toward managing trials by function—for example, designating staff whose sole job is to screen patients for molecularly driven trials and establishing teams with expertise in managing multi-site or multi-disease trials. Centers have also revised their cost estimation procedures to take into account the need to screen larger numbers of patients for molecularly driven trials.

**Faster, Faster**

Activating clinical trials and accruing patients in a timely fashion are two challenges that have long concerned cancer centers and have taken on renewed urgency in the precision-medicine era. Review by multiple committees and institutional review boards (IRBs) often stretched to months or years the time needed to approve and open a trial. Then came patient accrual, frequently a slow process, with many trials closing or never being completed because of inadequate numbers of patients.

To reduce trial activation times, cancer centers have implemented strategies such as using a single, centralized IRB; requiring multiple committees to review a trial protocol simultaneously instead of consecutively; designating staff as trials activation specialists; and using contracts that include pre-approved language to minimize time spent on contract negotiations. To speed up patient accrual, centers have adopted methods such as reducing administrative barriers to trial recruitment and devising innovative funding strategies to support investigator-initiated trials.

**Big Data**

Complex new trial designs and the proliferation of multi-site trials have increased the demands on cancer centers’ information management capabilities.

For years, many centers relied on “home-grown” clinical trials management systems that performed a few functions well, such as tracking how many clinical trials were active and when a patient went on or off a particular study.

Over time, however, many of these systems became cumbersome to use as functions not originally included in the design were added on.

Many cancer centers have adopted the same powerful trials data management system that offers both greater functionality and interoperability, facilitating, for example, information sharing among centers participating in the same multi-site trial. Features enable tracking of a patient’s progress through a trial, including when his or her next visit or procedure is scheduled, and generating an alert if the person is hospitalized. Data-entry safeguards flag errors that could lead to an incorrect medication or dose being prescribed. Robust financial management tools facilitate invoice and collections tracking, budget preparation, and the generation of cost reports.

In 2009, shortly after the launch of the CRI, James P. Thomas, MD, PhD, then chair of the initiative’s steering committee, described the initiative’s goals this way: “Performing clinical trials is a very slow and costly process, and we need to find ways to make that more efficient. Each cancer center addresses these issues in a vacuum, but as a group, maybe we can make some progress.”

Seven years on, cancer centers have found that by acting as a group to share ideas and strategies, they are indeed stronger and better equipped to address the ongoing challenges of a still-evolving clinical trials enterprise.