

Contract Research

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New ways to hit goals

Adaptive design and simulation modeling are emerging as dependable strategies in clinical trials

In the ever-changing world of clinical trial management, there is a noticeably constant flow of new technologies and strategies. These new options offer organizations the chance to obtain better and more accurate information faster, leading to quicker clinical development of a drug. Two such emerging strategies are the use of **adaptive design** and the implementation of **simulation modeling** in clinical trials.

Adaptive design is a rapidly-growing, novel approach to clinical trials. Essentially, the process involves companies making modifications to certain aspects of clinical trials after initiation, without compromising the integrity or validity of the trial. This kind of flexibility is a key attraction to pharmaceutical developers, who are always looking for ways to simplify and accelerate data analysis.

There are multiple potential benefits to using the adaptive design approach. The first is the ability to identify unsuccessful trials early in the development process. The rectification of these trials can potentially slow

down the overall declining success rate of clinical studies. By identifying the problems earlier, companies can increase the probability of success, as well as the efficiency of a clinical trial, by comprehending data and adjusting on the fly.

By successfully using this method, companies may also reduce development costs and the time it takes for a drug to reach the market. For example, an adaptive trial can test five dosage arms with a budget similar to that of a two-dosage arm study using a classical randomized double-blind methodology. Due to interim analyses, unsuccessful dosages can be halted early, with resources concentrated on the most promising dosages.

The keys to successful design and implementation of adaptive trials are scientific expertise and — most importantly — emerging technology. These two aspects play an important role in the overall alteration of a trial.

“Technology is really the enabling factor that will allow adaptive design to become a standard approach to clinical development,” says Mark Clein,

president and chief financial officer, **United BioSource Corp.** (unitedbiosource.com). “Data must be captured in real time. Advanced statistics are applied to the data to determine what modifications to the trial, if any, are required. And then, any changes in the trial design must be implemented rapidly, often prior to the next patient enrollment.”

Another approach to clinical trials that is gaining momentum in the industry is simulation modeling. Companies are often seeking ways to assess costs and benefits associated with health-care. Simulation modeling involves collecting, handling, and analyzing cost and clinical data to support the development and commercialization of drugs, devices,



MARK CLEIN: Technology is a main factor in using adaptive design in clinical development.

or procedures. Essentially, the technique allows companies to project how their product will perform from a clinical and economic standpoint.

Mr. Clein's company, United BioSource, realizes the growth potential and believes in the overall future of adaptive design and simulation modeling. United BioSource, a global pharmaceutical services organization that helps emerging and established life sciences companies develop and commercialize medical products, recently made two acquisitions within these fields that will allow the company to tap into the prospective benefits of both approaches.

In September, UBC acquired ownership interest in **ClinResearch GmbH**, a leader in planning, conducting and reporting clinical studies for the pharmaceutical industry. ClinResearch, a principal adaptive design technology service provider, will now operate under the name UBC ClinResearch, and be the focal point of UBC's adaptive clinical trial offering.

The co-founder of ClinResearch, Reinhard Eisebitt, is recognized by FDA and European regulatory authorities as a thought leader in adaptive design based on the software and techniques he has helped develop.

Mr. Clein believes that this acquisition is a natural match for United BioSource and their plans to focus on a critical area of need in the pharmaceutical and life science industry: R&D productivity.

"Reinhard Eisebitt, a recognized leader in the field, is the co-developer of the leading sta-

tistical software used in adaptive programs, and has helped design and implement 80 adaptive programs over the past seven years," Mr. Clein says. "By combining UBC's statistical and technology offerings with Clin-

"Cost-effectiveness and value are becoming increasingly important in the evaluation of medical products and in determining the price that public and private insurers will agree to pay for these products."

Research's software and expertise, we can deliver an adaptive product that is at the cutting edge of what is possible."

Also in September, UBC acquired **Caro Research Inc.** (caroresearch.com), a provider of simulation technologies. One particular method of simulation in which the company specializes is Discrete Event Simulation.

The DES approach provides a clear, efficient way to simulate real-world environments and determine the impact on health-care costs of a new drug in actual practice. According to Mr. Clein, DES has been used "successfully for many years to solve a variety of problems in such diverse fields as business, science, and operations."

DES can also play a key role in trial design and planning. Using DES, sponsors can test numerous designs, and get a much more detailed understanding of what will make a trial successful — as well as what the potential costs will be.

The industry's standard ap-

proach to the measurement of value often relies on older technologies that cannot properly capture the course of a disease in actual practice. Often, the focus is on theoretical economic measures, such as the quality-adjusted life year. By definition, quality-adjusted life year is a way of measuring the quality and the quantity of life lived, as a means of quantifying the benefit of a medical intervention. These measures can easily be com-

prehended by economic analysts, but are not as helpful to health-care decision makers.

Mr. Clein believes that this new approach is a vital way for companies to evaluate post-market costs.

"Cost-effectiveness and value are becoming increasingly important in the evaluation of medical products and in determining the price that public and private insurers will agree to pay for these products," Mr. Clein says. "We believe simulation modeling will be a critical tool for making decisions about pricing and reimbursement of new drugs and devices."

The industry has recently been suffering through rising R&D costs, a dramatic slowdown of new drug approvals, and the vagueness of post-marketing projections. UBC executives believe that the company's focus on adaptive trials and simulation modeling addresses these issues and provides a blueprint for other pharmaceutical service organizations to follow.