

Oncology Trials 101 - The Basics and Then Some

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ABSTRACT

What makes oncology trials unique? What characteristics do they share with other clinical trials? What does the future hold for oncology research? This paper looks at the oncology therapeutic area under a microscope to determine the answers to these questions and more.

INTRODUCTION

Many years ago, parents dreamed that their child would be the one to “find a cure for cancer.” Today that dream is actually coming true more than ever. Research and clinical trials are advancing at astounding rates, providing hope to millions of patients. Cancer no longer is an automatic death sentence for a patient as it once was. This paper looks at the history of oncology research, where we are today, and possible advances for the future.

What is Oncology?

Oncology is defined as the branch of medicine that deals with the study and treatment of cancer. Growing up, it was every mother’s dream that their child would someday discover the cure for cancer. Thanks to advances in science and technology, some of those dreams have become a reality.

A recent check of clinicaltrials.gov (a registry of federally and privately supported clinical trials conducted in the United States and around the world) listed 141,506 trials in the Cancers and Other Neoplasms category. Equally impressive is that these trials cover 405 different indications.

The statistics related to cancer are still staggering. According to the American Cancer Society, nearly half of the male population (44.29%) will contract some type of invasive cancer in their lifetime, and almost one in four (23.20%) will die from cancer. The numbers for females are also high: 37.76% and 19.58%, respectively.

How does oncology compare to other therapeutic areas?

Oncology is somewhat more complicated than other therapeutic areas. The endpoints, for one, differ greatly. For example, rather than running a clinical trial to test the safety and efficacy of an antibiotic against an infection, an oncology trial is trying to extend and improve a subject’s quality of life.

One of the main differentiators is the role of comparator drugs in oncology trials. Placebos are never used in place of treatment when an existing standard therapy exists. If a patient is given a placebo in an oncology trial, it is always in conjunction with other approved treatments. In other therapeutic areas, it is common to have a placebo arm compared to the drug being studied.

Another difference is how adverse events are reported. In non-oncology trials, adverse events are scored as mild, moderate or severe. In oncology, they are given numeric grades with guidelines provided by the National Cancer Institute: Common Terminology Criteria for Adverse Events (CTCAE). In some cases, a grade of 1 corresponds to mild, 2 to moderate, and 3 to severe. There are also two additional grades that may be assigned; 4 is a life-threatening or disabling adverse event, and 5 is a death related to the adverse event. Not all adverse events will allow all five grades. The lowest grade available for iron overload is 2 (Asymptomatic iron overload, intervention not indicated) while tinnitus and vertigo only go as high as grade 3. For more information related to CTCAE codes, please visit http://ctep.cancer.gov/protocolDevelopment/codes_values.htm#ctc.

Patient recruitment is often more of a challenge with oncology trials. Often more sites are needed to meet population requirements which increases costs to the sponsor incrementally. According to Applied Clinical Trials, "Lack of participation can cause an oncology trial to recruit slowly, often lengthening the trial's timeline by months or even years." The article goes on to detail some of the challenges of recruiting for oncology trials, including the lack of patient reimbursement, recruiting older patients, negative perceptions of clinical trial treatments, logistics, and access to clinical trial opportunities.

<http://appliedclinicaltrialsonline.findpharma.com/appliedclinicaltrials/Patient%2FSubject+Recruitment/Recruiting-Challenges-in-US-Oncology-Trials/ArticleStandard/Article/detail/154233>

Analyzing and interpreting clinical trial results

Efficacy in solid tumor studies is determined using the Response Evaluation Criteria in Solid Tumors, commonly known as RECIST. These rules were developed in 2000 as a joint effort between European, American and Canadian institutions to define when cancer patients improve, stay the same or worsen. The response categories are known as complete response, partial response, stable disease, progressive disease, and non-evaluable. Data is analyzed related to the Target (or Primary) Lesion, Nontarget (or Secondary) Lesions, and New Lesions to determine an Overall Response.

In January 2009, a consortium published RECIST 1.1 as the first formal revision. The intent was to address some of the original's shortcomings, as well as to reflect realities of current clinical practices and prioritizes Target Lesions.

Positive results for blood cancers such as leukemia involve measuring the reduction of and slowing the reproduction of cancerous cells, as well as increasing the cancer free cells.

Survival analyses are used within oncology trials. Two common analyses are Overall Survival (OS) and Progression Free Survival (PFS). The latter consists of survival while the cancer is either eradicated or stabilized.

Quality of life is also an important component in the outcome of oncology trials.

In some cases, if a new drug's efficacy is as good as or better than an already approved therapy, yet is more cost effective or has an improved safety profile, then the new therapy will be considered a success.

What does the future look like for Oncology?

Oncology research and related clinical trials are ever increasing. Many biotech companies are started simply to search for a cure of one type of cancer or another. The Human Genome Project, much as it has for several other disease states, helps us to better understand the genetic factors related to cancer. It is hoped that researchers can also use this information to develop targeted therapies which are less invasive than current treatments.

New diagnostic tools are also the key to early detection and subsequent treatments of cancer.

Advances in supportive care, drugs used to manage the side effects of cancer treatments, have and will continue to improve the quality of life of cancer patients.

Finally, prevention and healthy lifestyle choices are being touted more frequently as a means to help reduce the burden of cancer on society.

CONCLUSIONS

The National Cancer Act was signed into law 40 years ago and was intended "to amend the Public Health Service Act so as to strengthen the National Cancer Institute in order to more effectively carry out the national effort against cancer."

Since then, there have been phenomenal advances in research and treatments, thanks in part to clinical trials. Yet there is still much to be done, as cancer remains one of the leading causes of death. The National Cancer Institute states it best: "Our ultimate goal of reducing the burden of cancer in this nation and worldwide can only be accomplished through a strong commitment to further research." (<http://www.cancer.gov/cancertopics/factsheet/cancer-advances-in-focus>)

If the past is any guide, we can expect to see even greater advances in this field due to novel therapies and targeted treatments enabled by genomics. As an industry, we will take even greater steps, and make even more mothers proud of our collective accomplishments.

RESOURCES/LINKS:

There is a wealth of information available related to cancer and treatment options. These links and resources are by no means comprehensive, but are a good starting point for one looking to learn more about oncology.

ClinicalTrials.gov – A Service of the U.S. National Institutes of Health
http://clinicaltrials.gov/ct2/search/browse?brwse=cond_cat_BC04

National Cancer Institute
<http://www.cancer.gov/>

Cancer Therapy Evaluation Program
<http://ctep.cancer.gov/>

American Society of Clinical Oncology (ASCO)
<http://www.asco.org>
<http://www.cancer.net>

American Cancer Society
<http://www.cancer.org/>

The Coalition of Cancer Cooperative Groups
<http://www.cancertrialshelp.org>

Applied Clinical Trials
<http://appliedclinicaltrialsonline.com/>

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