Understanding the Publication and Format of Cancer Research Studies [1]

This section has been reviewed and approved by the Cancer.Net Editorial Board [2], 06/2013

Key Messages:

- The results of research studies are published in journals or other scientific publications after being reviewed by experts.
- Published research studies follow a specific format that mirrors the scientific process and allows other researchers to repeat the study.
- To find cancer research studies, people can search a specific publication?s website or use an online database.
- Abstracts are usually available online free of charge, but access to complete journal articles usually requires a subscription or payment.

Doctors and scientists are always looking for better ways to care for people with cancer. To make scientific advances, doctors conduct research studies in the laboratory or with volunteers in the clinic, known as clinical trials [3]. Well-designed research studies help answer important questions about the biology of cancer, investigate new tests and treatments, and identify areas for future study.

However, the results of these studies cannot improve the care and treatment of people with cancer unless other doctors know about them. Publishing research studies in scientific and medical journals is the primary way scientific professionals communicate their findings. They may publish original research, which describes the results of a study they conducted, or write a review article, which evaluates all of the available published research on a particular topic.

Although most cancer research studies are written for medical and scientific professionals, it is becoming more common for patients and their caregivers to read studies while researching a specific type of cancer and the available treatment options. However, because research studies are written in a specific format and use scientific terms, it may be hard for a person without medical or scientific training to understand and interpret them. Therefore, it is important to talk with your doctor or another member of your health care team about the research you find online or in a journal.

Research publishing process

Scientific research studies are usually published in journals, which are periodicals (publications with a fixed time period between issues) that focus on a specific topic, such as clinical cancer research. These publications help introduce new findings to the research community and document the process used to get these results.

Numerous journals specializing in cancer research are available in print and online formats, including the American Society of Clinical Oncology?s (ASCO?s) *Journal of Clinical Oncology* [4] and *Journal of Oncology Practice* [5]. Such periodicals are usually published weekly, biweekly, monthly, or quarterly, but some are published at longer intervals.

Before being published in these highly specialized publications, articles must be reviewed by subject matter experts. To that end, journal editors send unpublished versions of research articles to independent peer reviewers, who then evaluate, based on their expertise and the information provided, whether the data are accurate and the conclusions are scientifically valid.

Anatomy of a research article

Research studies published in journals follow a specific format and structure. This format closely mirrors the scientific process and presents the information in a way that allows others to repeat the study, if needed. Specifically, most articles present background information, the experiment?s methodology or process, results, and the meaning of the findings. This structure, also known as **I** ntroduction, **M**ethods, **R**esults, **a**nd **D**iscussion or IMRAD, is officially endorsed by the International Committee of Medical Journal Editors. However, it is important to note that some journals call these sections by different names.

Introduction. This section should answer the following two questions: (1) why was this study done and (2) what question is being answered. For example, does this treatment extend the lives of patients with stage IV colon cancer?

Methods. In this section, researchers describe how they answered the question they stated in the introduction. They will explain the study?s design and describe the study participants, including information about their demographics (such as age and sex), their type and stage of cancer (such as stage I lung cancer), and how they were selected. If a treatment was being tested, this section should include information about how, how much, and how often the treatment was given. The researchers should also state what outcome (result) they were measuring, such as survival rate, tumor shrinkage, treatment side effects, or quality of life, as well as the statistical methods they used to analyze the data they collected.

Results. This section summarizes the data that was collected from each participant, focusing on the most important findings of the study. These data are often presented with text, graphics, and tables.

Discussion. Sometimes called the conclusion, this section describes what the results mean in relation to the study?s purpose and places the results within the larger context of cancer research. It notes whether the results confirm or contradict previous research and explains the significance of the findings.

The abstract

The most relevant information from the introduction, methods, results, and discussion sections are placed in an abstract, which is a summary that allows readers to quickly learn about the important aspects of the research. The abstract is typically placed at the beginning of published articles. In addition, abstracts are the main method of communication at scientific meetings, where preliminary study results are often presented before they are published.

Searching for research studies

There are a number of ways to find articles and abstracts that can help you learn more about new discoveries and advances in cancer treatment. If you know the name of the journal in which an article is published, visit the publication?s website and use either the search function or the online archive to locate the abstract. Through the *Journal of Clinical Oncology* [6], for example, you may search by keyword, author, year of publication, or topic. You may also browse abstracts and the table of contents for every issue.

You can also use large, online databases, which house study abstracts, to identify relevant studies. One popular database used heavily in the cancer research community is PubMed [7]. PubMed is a service of the National Library of Medicine that includes more than 22 million citations (a reference to a source that provides information such as the author names, article title, journal title, date of publication, and page numbers) from a wide variety of scientific and medical journals.

Sometimes using this database can be challenging because of the huge number of articles it contains, but you can make it easier by searching only cancer-related articles. If you are having trouble finding information on a specific topic, try to identify the medical term for the general, common language term you have been trying to search. For example, try ?renal cell carcinoma? instead of ?kidney cancer.? However, that may not be necessary because PubMed has a feature

that "translates" the most common cancer terms into the appropriate scientific terms.

Abstracts can usually be accessed online free of charge, but complete journal articles published within the past year are typically only available in print and online to people with a subscription to the journal or to those who pay a one-time fee for a specific article. Recently, though, six publishers: ASCO, the American Association for Cancer Research, Elsevier, SAGE, Wiley and Wolters Kluwer Health, and the Copyright Clearance Center, have joined together as part of an initiative called patientACCESS. PatientACCESS provides free access to medical research articles to patients being treated for cancer and their caregivers. Learn more about accessing research articles with patientACCESS [8].

For printed copies of medical journals, visit a local library or university.

More Information

Understanding Cancer Research Study Designs and How to Evaluate Results [9]

Podcast: How to Read a Medical Abstract [10]

Journal Links [11]

Research Summaries for Patients [12]

CancerProgress.Net [13]

Links:
[1] http://www.cancer.net/research-and-advocacy/introduction-cancer-research/understanding-publication-and-format-cancer-research-studies
[2] http://www.cancer.net/about-us
[3] http://www.cancer.net/node/24863
[4] http://jco.ascopubs.org/
[5] http://jop.ascopubs.org/
[6] http://www.jco.org/
[7] http://www.pubmed.gov/
[8] http://www.cancer.net/node/29231
[9] http://www.cancer.net/node/24719
[10] http://www.cancer.net/sites/cancer.net/files/How_to_Read_a_Medical_Abstract.mp3
[11] http://www.cancer.net/node/25373
[12] http://www.cancer.net/node/48
[13] http://www.cancerprogress.net/