THE OFFICIAL PATIENT'S SOURCEBOOK *on*

GASTRIC CANCER

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Dedication

To the healthcare professionals dedicating their time and efforts to the study of gastric cancer.

Acknowledgements

The collective knowledge generated from academic and applied research summarized in various references has been critical in the creation of this sourcebook which is best viewed as a comprehensive compilation and collection of information prepared by various official agencies which directly or indirectly are dedicated to gastric cancer. All of the *Official Patient's Sourcebooks* draw from various agencies and institutions associated with the United States Department of Health and Human Services, and in particular, the Office of the Secretary of Health and Human Services (OS), the Administration for Children and Families (ACF), the Administration on Aging (AOA), the Agency for Healthcare Research and Quality (AHRQ), the Agency for Toxic Substances and Disease Registry (ATSDR), the Centers for Disease Control and Prevention (CDC), the Food and Drug Administration (FDA), the Healthcare Financing Administration (HCFA), the Health Resources and Services Administration (HRSA), the Indian Health Service (IHS), the institutions of the National Institutes of Health (NIH), the Program Support Center (PSC), and the Substance Abuse and Mental Health Services Administration (SAMHSA). In addition to these sources, information gathered from the National Library of Medicine, the United States Patent Office, the European Union, and their related organizations has been invaluable in the creation of this sourcebook. Some of the work represented was financially supported by the Research and Development Committee at INSEAD. This support is gratefully acknowledged. Finally, special thanks are owed to Tiffany LaRochelle for her excellent editorial support.

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About ICON Health Publications

In addition to gastric cancer, *Official Patient's Sourcebooks* are available for the following related topics:

- The Official Patient's Sourcebook on Adult Primary Liver Cancer
- The Official Patient's Sourcebook on Anal Cancer
- The Official Patient's Sourcebook on Colon Cancer
- The Official Patient's Sourcebook on Esophageal Cancer
- The Official Patient's Sourcebook on Extrahepatic Bile Duct Cancer
- The Official Patient's Sourcebook on Gallbladder Cancer
- The Official Patient's Sourcebook on Gastrointestinal Carcinoid Tumor
- The Official Patient's Sourcebook on Pancreatic Cancer
- The Official Patient's Sourcebook on Rectal Cancer
- The Official Patient's Sourcebook on Small Intestine Cancer

To discover more about ICON Health Publications, simply check with your preferred online booksellers, including Barnes & Noble.com and Amazon.com which currently carry all of our titles. Or, feel free to contact us directly for bulk purchases or institutional discounts:

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Table of Contents

INTRODUCTION

Overview

Dr. C. Everett Koop, former U.S. Surgeon General, once said, "The best prescription is knowledge."[1] The Agency for Healthcare Research and Quality (AHRQ) of the National Institutes of Health (NIH) echoes this view and recommends that every patient incorporate education into the treatment process. According to the AHRQ:

> Finding out more about your condition is a good place to start. By contacting groups that support your condition, visiting your local library, and searching on the Internet, you can find good information to help guide your treatment decisions. Some information may be hard to find—especially if you don't know where to look.[2]

As the AHRQ mentions, finding the right information is not an obvious task. Though many physicians and public officials had thought that the emergence of the Internet would do much to assist patients in obtaining reliable information, in March 2001 the National Institutes of Health issued the following warning:

> The number of Web sites offering health-related resources grows every day. Many sites provide valuable information, while others may have information that is unreliable or misleading.[3]

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[1] Quotation from **http://www.drkoop.com**.
[2] The Agency for Healthcare Research and Quality (AHRQ): **http://www.ahcpr.gov/consumer/diaginfo.htm**.
[3] Adapted from the NIH, National Cancer Institute (NCI): **http://cancertrials.nci.nih.gov/beyond/evaluating.html**.

Since the late 1990s, physicians have seen a general increase in patient Internet usage rates. Patients frequently enter their doctor's offices with printed Web pages of home remedies in the guise of latest medical research. This scenario is so common that doctors often spend more time dispelling misleading information than guiding patients through sound therapies. *The Official Patient's Sourcebook on Gastric Cancer* has been created for patients who have decided to make education and research an integral part of the treatment process. The pages that follow will tell you where and how to look for information covering virtually all topics related to gastric cancer, from the essentials to the most advanced areas of research.

The title of this book includes the word "official." This reflects the fact that the sourcebook draws from public, academic, government, and peer-reviewed research. Selected readings from various agencies are reproduced to give you some of the latest official information available to date on gastric cancer.

Given patients' increasing sophistication in using the Internet, abundant references to reliable Internet-based resources are provided throughout this sourcebook. Where possible, guidance is provided on how to obtain free-of-charge, primary research results as well as more detailed information via the Internet. E-book and electronic versions of this sourcebook are fully interactive with each of the Internet sites mentioned (clicking on a hyperlink automatically opens your browser to the site indicated). Hard copy users of this sourcebook can type cited Web addresses directly into their browsers to obtain access to the corresponding sites. Since we are working with ICON Health Publications, hard copy *Sourcebooks* are frequently updated and printed on demand to ensure that the information provided is current.

In addition to extensive references accessible via the Internet, every chapter presents a "Vocabulary Builder." Many health guides offer glossaries of technical or uncommon terms in an appendix. In editing this sourcebook, we have decided to place a smaller glossary within each chapter that covers terms used in that chapter. Given the technical nature of some chapters, you may need to revisit many sections. Building one's vocabulary of medical terms in such a gradual manner has been shown to improve the learning process.

We must emphasize that no sourcebook on gastric cancer should affirm that a specific diagnostic procedure or treatment discussed in a research study, patent, or doctoral dissertation is "correct" or your best option. This sourcebook is no exception. Each patient is unique. Deciding on appropriate

options is always up to the patient in consultation with their physician and healthcare providers.

Organization

This sourcebook is organized into three parts. Part I explores basic techniques to researching gastric cancer (e.g. finding guidelines on diagnosis, treatments, and prognosis), followed by a number of topics, including information on how to get in touch with organizations, associations, or other patient networks dedicated to gastric cancer. It also gives you sources of information that can help you find a doctor in your local area specializing in treating gastric cancer. Collectively, the material presented in Part I is a complete primer on basic research topics for patients with gastric cancer.

Part II moves on to advanced research dedicated to gastric cancer. Part II is intended for those willing to invest many hours of hard work and study. It is here that we direct you to the latest scientific and applied research on gastric cancer. When possible, contact names, links via the Internet, and summaries are provided. It is in Part II where the vocabulary process becomes important as authors publishing advanced research frequently use highly specialized language. In general, every attempt is made to recommend "free-to-use" options.

Part III provides appendices of useful background reading for all patients with gastric cancer or related disorders. The appendices are dedicated to more pragmatic issues faced by many patients with gastric cancer. Accessing materials via medical libraries may be the only option for some readers, so a guide is provided for finding local medical libraries which are open to the public. Part III, therefore, focuses on advice that goes beyond the biological and scientific issues facing patients with gastric cancer.

Scope

While this sourcebook covers gastric cancer, your doctor, research publications, and specialists may refer to your condition using a variety of terms. Therefore, you should understand that gastric cancer is often considered a synonym or a condition closely related to the following:

- Cancer Stomach
- Gastric Carcinoma
- Linitis Plastica

- Non-hodgkins Gastric Lymphoma
- Stomach Cancer
- Stomach Lymphoma, Non-hodgkins Type

In addition to synonyms and related conditions, physicians may refer to gastric cancer using certain coding systems. The International Classification of Diseases, 9th Revision, Clinical Modification (ICD-9-CM) is the most commonly used system of classification for the world's illnesses. Your physician may use this coding system as an administrative or tracking tool. The following classification is commonly used for gastric cancer:[4]

- 150.0 malignant neoplasm of stomach, cardia
- 151 malignant neoplasm of stomach
- 151.1 malignant neoplasm of stomach, pylorus
- 151.2 malignant neoplasm of stomach, pyloric antrum
- 151.3 malignant neoplasm of stomach, fundus of stomach
- 151.4 malignant neoplasm of stomach, body of stomach
- 151.5 malignant neoplasm of stomach, lesser curvature, unspecified
- 151.6 malignant neoplasm of stomach, greater curvature, unspecified
- 151.8 malignant neoplasm of stomach, other specified sites of stomach
- 151.9 malignant neoplasm of stomach, unspecified

For the purposes of this sourcebook, we have attempted to be as inclusive as possible, looking for official information for all of the synonyms relevant to gastric cancer. You may find it useful to refer to synonyms when accessing databases or interacting with healthcare professionals and medical librarians.

Moving Forward

Since the 1980s, the world has seen a proliferation of healthcare guides covering most illnesses. Some are written by patients or their family members. These generally take a layperson's approach to understanding and coping with an illness or disorder. They can be uplifting, encouraging, and

[4] This list is based on the official version of the World Health Organization's 9th Revision, International Classification of Diseases (ICD-9). According to the National Technical Information Service, "ICD-9CM extensions, interpretations, modifications, addenda, or errata other than those approved by the U.S. Public Health Service and the Health Care Financing Administration are not to be considered official and should not be utilized. Continuous maintenance of the ICD-9-CM is the responsibility of the federal government."

highly supportive. Other guides are authored by physicians or other healthcare providers who have a more clinical outlook. Each of these two styles of guide has its purpose and can be quite useful.

As editors, we have chosen a third route. We have chosen to expose you to as many sources of official and peer-reviewed information as practical, for the purpose of educating you about basic and advanced knowledge as recognized by medical science today. You can think of this sourcebook as your personal Internet age reference librarian.

Why "Internet age"? All too often, patients diagnosed with gastric cancer will log on to the Internet, type words into a search engine, and receive several Web site listings which are mostly irrelevant or redundant. These patients are left to wonder where the relevant information is, and how to obtain it. Since only the smallest fraction of information dealing with gastric cancer is even indexed in search engines, a non-systematic approach often leads to frustration and disappointment. With this sourcebook, we hope to direct you to the information you need that you would not likely find using popular Web directories. Beyond Web listings, in many cases we will reproduce brief summaries or abstracts of available reference materials. These abstracts often contain distilled information on topics of discussion.

While we focus on the more scientific aspects of gastric cancer, there is, of course, the emotional side to consider. Later in the sourcebook, we provide a chapter dedicated to helping you find peer groups and associations that can provide additional support beyond research produced by medical science. We hope that the choices we have made give you the most options available in moving forward. In this way, we wish you the best in your efforts to incorporate this educational approach into your treatment plan.

The Editors

PART I: THE ESSENTIALS

ABOUT PART I

Part I has been edited to give you access to what we feel are "the essentials" on gastric cancer. The essentials of a disease typically include the definition or description of the disease, a discussion of who it affects, the signs or symptoms associated with the disease, tests or diagnostic procedures that might be specific to the disease, and treatments for the disease. Your doctor or healthcare provider may have already explained the essentials of gastric cancer to you or even given you a pamphlet or brochure describing gastric cancer. Now you are searching for more in-depth information. As editors, we have decided, nevertheless, to include a discussion on where to find essential information that can complement what your doctor has already told you. In this section we recommend a process, not a particular Web site or reference book. The process ensures that, as you search the Web, you gain background information in such a way as to maximize your understanding.

CHAPTER 1. THE ESSENTIALS ON GASTRIC CANCER: GUIDELINES

Overview

Official agencies, as well as federally funded institutions supported by national grants, frequently publish a variety of guidelines on gastric cancer. These are typically called "Fact Sheets" or "Guidelines." They can take the form of a brochure, information kit, pamphlet, or flyer. Often they are only a few pages in length. The great advantage of guidelines over other sources is that they are often written with the patient in mind. Since new guidelines on gastric cancer can appear at any moment and be published by a number of sources, the best approach to finding guidelines is to systematically scan the Internet-based services that post them.

The National Institutes of Health (NIH)[5]

The National Institutes of Health (NIH) is the first place to search for relatively current patient guidelines and fact sheets on gastric cancer. Originally founded in 1887, the NIH is one of the world's foremost medical research centers and the federal focal point for medical research in the United States. At any given time, the NIH supports some 35,000 research grants at universities, medical schools, and other research and training institutions, both nationally and internationally. The rosters of those who have conducted research or who have received NIH support over the years include the world's most illustrious scientists and physicians. Among them are 97 scientists who have won the Nobel Prize for achievement in medicine.

[5] Adapted from the NIH: **http://www.nih.gov/about/NIHoverview.html**.

There is no guarantee that any one Institute will have a guideline on a specific disease, though the National Institutes of Health collectively publish over 600 guidelines for both common and rare diseases. The best way to access NIH guidelines is via the Internet. Although the NIH is organized into many different Institutes and Offices, the following is a list of key Web sites where you are most likely to find NIH clinical guidelines and publications dealing with gastric cancer and associated conditions:

- Office of the Director (OD); guidelines consolidated across agencies available at **http://www.nih.gov/health/consumer/conkey.htm**
- National Library of Medicine (NLM); extensive encyclopedia (A.D.A.M., Inc.) with guidelines available at **http://www.nlm.nih.gov/medlineplus/healthtopics.html**
- National Cancer Institute (NCI); guidelines available at **http://cancernet.nci.nih.gov/pdq/pdq_treatment.shtml**

Among the above, the National Cancer Institute (NCI) is particularly noteworthy. The NCI coordinates the National Cancer Program, which conducts and supports research, training, health information dissemination, and other programs with respect to the cause, diagnosis, prevention, and treatment of cancer, rehabilitation from cancer, and the continuing care of cancer patients and the families of cancer patients.[6] Specifically, the Institute:

- Supports and coordinates research projects conducted by universities, hospitals, research foundations, and businesses throughout this country and abroad through research grants and cooperative agreements.
- Conducts research in its own laboratories and clinics.
- Supports education and training in fundamental sciences and clinical disciplines for participation in basic and clinical research programs and treatment programs relating to cancer through career awards, training grants, and fellowships.
- Supports research projects in cancer control.
- Supports a national network of cancer centers.
- Collaborates with voluntary organizations and other national and foreign institutions engaged in cancer research and training activities.
- Encourages and coordinates cancer research by industrial concerns where such concerns evidence a particular capability for programmatic research.
- Collects and disseminates information on cancer.

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[6] This paragraph has been adapted from the NCI: **http://www.nci.nih.gov/**. "Adapted" signifies that a passage has been reproduced exactly or slightly edited for this book.

- Supports construction of laboratories, clinics, and related facilities necessary for cancer research through the award of construction grants.

The NCI, established under the National Cancer Act of 1937, is the Federal Government's principal agency for cancer research and training. The National Cancer Act of 1971 broadened the scope and responsibilities of the NCI and created the National Cancer Program. Over the years, legislative amendments have maintained the NCI authorities and responsibilities and added new information dissemination mandates as well as a requirement to assess the incorporation of state-of-the-art cancer treatments into clinical practice. Information dissemination is made possible through the NCI Online at **www.cancer.gov**. Cancer.gov offers to the public and physicians up-to-date information on the latest cancer research, current and upcoming clinical trials, statistics, research programs, and research funding.

The following patient guideline was recently published by the NCI on gastric cancer.

What Is Gastric Cancer?[7]

Cancer of the stomach, also called gastric cancer, is a disease in which cancer (malignant) cells are found in the tissues of the stomach. The stomach is a J-shaped organ in the upper abdomen where the food is broken down (digested). Food reaches the stomach through a tube called the esophagus that connects the mouth to the stomach. After leaving the stomach, partially digested food passes into the small intestine and then into the large intestine called the colon.

Sometimes cancer can be in the stomach for a long time and can grow very large before it causes symptoms. In the early stages of cancer of the stomach, a patient may have indigestion and stomach discomfort, a bloated feeling after eating, mild nausea, loss of appetite, or heartburn. In more advanced stages of cancer of the stomach, the patient may have blood in the stool, vomiting, weight loss, or pain in the stomach. The chance of getting stomach cancer is higher if the patient has had an infection of the stomach caused by Helicobacter pylori, or if the patient is older, is a man, smokes cigarettes, or frequently eats a diet that includes lots of dry, salted foods. Other factors that increase the chances of getting stomach cancer are a stomach disorder called atrophic gastritis or Menetrier's disease, a disorder of the blood called

[7] The following guidelines appeared on the NCI website on Aug. 26, 2002. The text was last modified in August 2002. The text has been adapted for this sourcebook.

pernicious anemia, or a hereditary condition of growths (called polyps) in the large intestine.

If there are symptoms, a doctor will usually order an upper gastrointestinal x-ray (also called an upper GI series). For this examination, the patient drinks a liquid containing barium, which makes the stomach easier to see in the x-ray. This test is usually performed in a doctor's office or in a hospital radiology department.

The doctor may also look inside the stomach with a thin, lighted tube called a gastroscope. This is called a gastroscopy, and it finds most cancers of the stomach. For this test, the gastroscope is inserted through the mouth and guided into the stomach. The doctor may spray a local anesthetic (a drug that causes loss of feeling for a short period of time) into the throat or give the patient other medicine before the test so that no pain is felt.

If the doctor sees tissue that is not normal, he or she may cut out a small piece so it can be looked at under a microscope to see if there are any cancer cells. This is called a biopsy. Biopsies are usually done during the gastroscopy.

The chance of recovery (prognosis) and choice of treatment depend on the stage of the cancer (whether it is just in the stomach or if it has spread to other places) and the patient's general state of health.

Stages of Gastric Cancer

Once cancer of the stomach is found, more tests will be done to find out if cancer cells have spread to other parts of the body. This is called staging. The doctor needs to know the stage of the disease to plan treatment. The following stages are used for cancer of the stomach:

Stage 0

Stage 0 cancer of the stomach is very early cancer. Cancer is found only in the innermost layer of the stomach wall.

Stage I

Cancer is in the second or third layers of the stomach wall and has not spread to lymph nodes near the cancer or is in the second layer of the stomach wall and has spread to lymph nodes very close to the tumor. (Lymph nodes are small bean-shaped structures that are found throughout the body. They produce and store infection-fighting cells.)

Stage II

Any of the following may be true:

- Cancer is in the second layer of the stomach wall and has spread to lymph nodes further away from the tumor.
- Cancer is only in the muscle layer (the third layer) of the stomach and has spread to lymph nodes very close to the tumor.
- Cancer is in all four layers of the stomach wall but has not spread to lymph nodes or other organs.

Stage III

Any of the following may be true:

- Cancer is in the third layer of the stomach wall and has spread to lymph nodes further away from the tumor.
- Cancer is in all four layers of the stomach wall and has spread to lymph nodes either very close to the tumor or further away from the tumor.
- Cancer is in all four layers of the stomach wall and has spread to nearby tissues. The cancer may or may not have spread to lymph nodes very close to the tumor.

Stage IV

Cancer has spread to nearby tissues and to lymph nodes further away from the tumor or has spread to other parts of the body.

Recurrent

Recurrent disease means that the cancer has come back (recurred) after it has been treated. It may come back in the stomach or in another part of the body such as the liver or lymph nodes.

How Is Gastric Cancer Treated?

There are treatments for most patients with cancer of the stomach. Two kinds of treatment are used:

- Surgery (taking out the cancer in an operation)
- Chemotherapy (using drugs to kill cancer cells)

Radiation therapy and biological therapy are being tested in clinical trials.

Surgery

Surgery is a common treatment of all stages of cancer of the stomach. The doctor may remove the cancer using one of the following operations:

- Subtotal gastrectomy removes the part of the stomach that contains cancer and parts of other tissues and organs near the tumor. Nearby lymph nodes are also removed (lymph node dissection). The spleen (an organ in the upper abdomen that filters the blood and removes old blood cells) may be removed if necessary.
- Total gastrectomy removes the entire stomach and parts of the esophagus, the small intestine, and other tissue near the tumor. The spleen is removed in some cases. Nearby lymph nodes are also removed (lymph node dissection). The esophagus is connected to the small intestine so a patient can continue to eat and swallow.

If only part of the stomach is removed, a patient should still be able to eat fairly normally. Frequent, small meals may need to be eaten, as well as foods low in sugar and high in fat and protein, if the entire stomach is removed. Most patients can adjust to this new way of eating.

Chemotherapy

Chemotherapy uses drugs to kill cancer cells. Chemotherapy may be taken by pill, or it may be put into the body by a needle in the vein or muscle. Chemotherapy is called a systemic treatment because the drug enters the bloodstream, travels through the body, and can kill cancer cells outside the stomach.

Adjuvant Therapy

Treatment given after surgery when no cancer cells can be seen is called adjuvant therapy. Adjuvant therapy for cancer of the stomach is being tested in clinical trials.

Radiation Therapy

Radiation therapy uses high-energy x-rays to kill cancer cells and shrink tumors. Radiation may come from a machine outside the body (external radiation therapy) or from putting materials that produce radiation (radioisotopes) through thin plastic tubes in the area where the cancer cells are found (internal radiation therapy).

Biological Therapy

Biological therapy tries to get the body to fight cancer. It uses materials made by the body or made in a laboratory to boost, direct, or restore the body's natural defenses against disease. Biological therapy is sometimes called biological response modifier (BRM) therapy or immunotherapy.

Treatment by Stage

Treatment of cancer of the stomach depends on the stage of the disease, the part of the stomach where the cancer is, and the patient's general health.

Standard treatment may be considered because of its effectiveness in patients in past studies, or participation in a clinical trial may be considered. Many patients with cancer of the stomach are not cured with standard therapy and some standard treatments may have more side effects than are desired. For these reasons, clinical trials are designed to find better ways to treat cancer

patients and are based on the most up-to-date information. Clinical trials are ongoing in most parts of the country for most stages of cancer of the stomach. To learn more about clinical trials, call the Cancer Information Service at 1-800-4-CANCER (1-800-422-6237); TTY at 1-800-332-8615.

Stage 0 Gastric Cancer

Treatment may be one of the following:

- Surgery to remove part of the stomach (subtotal gastrectomy) with removal of associated lymph nodes (lymphadenectomy).
- Surgery to remove the entire stomach and some of the tissue around it (total gastrectomy) with removal of associated lymph nodes (lymphadenectomy).

Stage I Gastric Cancer

Treatment may be one of the following:

- Surgery to remove part of the stomach (subtotal gastrectomy) with removal of associated lymph nodes (lymphadenectomy).
- Surgery to remove the entire stomach and some of the tissue around it (total gastrectomy) with removal of associated lymph nodes (lymphadenectomy).
- Surgery followed by chemotherapy plus radiation therapy.
- A clinical trial evaluating chemotherapy plus radiation therapy given before surgery.

Stage II Gastric Cancer

Treatment may be one of the following:

- Surgery to remove part of the stomach (subtotal gastrectomy) with removal of associated lymph nodes (lymphadenectomy).
- Surgery to remove the entire stomach and some of the tissue around it (total gastrectomy) with removal of associated lymph nodes (lymphadenectomy).
- Surgery followed by chemotherapy plus radiation therapy.

- A clinical trial evaluating chemotherapy plus radiation therapy given before surgery.

Stage III Gastric Cancer

Treatment may be one of the following:

- Surgery to remove the entire stomach and some of the tissue around it (total gastrectomy) with removal of associated lymph nodes (lymphadenectomy).
- Surgery followed by chemotherapy plus radiation therapy.
- A clinical trial evaluating chemotherapy plus radiation therapy given before surgery.

Stage IV Gastric Cancer

Treatment may be one of the following:

- Surgery to remove the entire stomach and some of the tissue around it (total gastrectomy) with removal of associated lymph nodes (lymphadenectomy) followed by chemotherapy plus radiation therapy.
- A clinical trial evaluating chemotherapy plus radiation therapy given before surgery.
- Chemotherapy to relieve symptoms.
- Surgery to remove to relieve symptoms, reduce bleeding, or remove a tumor that is blocking the stomach.
- Radiation therapy to relieve symptoms, reduce bleeding, or shrink a tumor that is blocking the stomach.
- Additional surgery to remove to relieve symptoms, reduce bleeding, or remove a tumor that is blocking the stomach.

Recurrent Gastric Cancer

Treatment may be one of the following:

- Chemotherapy to relieve symptoms.
- Surgery to relieve symptoms, reduce bleeding, or remove a tumor that is blocking the stomach.

- Radiation therapy to relieve symptoms, reduce bleeding, or shrink a tumor that is blocking the stomach.

To Learn More

Call

For more information, U.S. residents may call the National Cancer Institute's (NCI's) Cancer Information Service toll-free at 1-800-4-CANCER (1-800-422-6237), Monday through Friday from 9:00 a.m. to 4:30 p.m. Deaf and hard-of-hearing callers with TTY equipment may call 1-800-332-8615. The call is free and a trained Cancer Information Specialist is available to answer your questions.

Web Sites and Organizations

The NCI's Cancer.gov Web site (**http://cancer.gov**) provides online access to information on cancer, clinical trials, and other Web sites and organizations that offer support and resources for cancer patients and their families. There are also many other places where people can get materials and information about cancer treatment and services. Local hospitals may have information on local and regional agencies that offer information about finances, getting to and from treatment, receiving care at home, and dealing with problems associated with cancer treatment.

Publications

The NCI has booklets and other materials for patients, health professionals, and the public. These publications discuss types of cancer, methods of cancer treatment, coping with cancer, and clinical trials. Some publications provide information on tests for cancer, cancer causes and prevention, cancer statistics, and NCI research activities. NCI materials on these and other topics may be ordered online or printed directly from the NCI Publications Locator (**https://cissecure.nci.nih.gov/ncipubs**). These materials can also be ordered by telephone from the Cancer Information Service toll-free at 1-800-4-CANCER (1-800-422-6237), TTY at 1-800-332-8615.

LiveHelp

The NCI's LiveHelp service, a program available on several of the Institute's Web sites, provides Internet users with the ability to chat online with an Information Specialist. The service is available from Monday - Friday 9:00 AM - 10:00 PM Eastern Time. Information Specialists can help Internet users find information on NCI Web sites and answer questions about cancer.

Write

For more information from the NCI, please write to this address:

National Cancer Institute
Office of Communications
31 Center Drive, MSC 2580
Bethesda, MD 20892-2580

About PDQ

PDQ Is a Comprehensive Cancer Database Available on Cancer.gov

PDQ is the National Cancer Institute's (NCI's) comprehensive cancer information database. Most of the information contained in PDQ is available online at Cancer.gov (**http://cancer.gov**), the NCI's Web site. PDQ is provided as a service of the NCI. The NCI is part of the National Institutes of Health, the federal government's focal point for biomedical research.

PDQ Contains Cancer Information Summaries

The PDQ database contains summaries of the latest published information on cancer prevention, detection, genetics, treatment, supportive care, and complementary and alternative medicine. Most summaries are available in two versions. The health professional versions provide detailed information written in technical language. The patient versions are written in easy-to-understand, non-technical language. Both versions provide current and accurate cancer information.

The PDQ cancer information summaries are developed by cancer experts and reviewed regularly. Editorial Boards made up of experts in oncology and related specialties are responsible for writing and maintaining the cancer

information summaries. The summaries are reviewed regularly and changes are made as new information becomes available. The date on each summary ("Date Last Modified") indicates the time of the most recent change.

PDQ Contains Information on Clinical Trials

Before starting treatment, patients may want to think about taking part in a clinical trial. A clinical trial is a study to answer a scientific question, such as whether one treatment is better than another. Trials are based on past studies and what has been learned in the laboratory. Each trial answers certain scientific questions in order to find new and better ways to help cancer patients. During treatment clinical trials, information is collected about new treatments, the risks involved, and how well they do or do not work. If a clinical trial shows that a new treatment is better than one currently being used, the new treatment may become "standard."

Listings of clinical trials are included in PDQ and are available online at Cancer.gov (**http://cancer.gov/clinical_trials**). Descriptions of the trials are available in health professional and patient versions. Many cancer doctors who take part in clinical trials are also listed in PDQ. For more information, call the Cancer Information Service at 1-800-4-CANCER (1-800-422-6237); TTY at 1-800-332-8615.

More Guideline Sources

The guideline above on gastric cancer is only one example of the kind of material that you can find online and free of charge. The remainder of this chapter will direct you to other sources which either publish or can help you find additional guidelines on topics related to gastric cancer. Many of the guidelines listed below address topics that may be of particular relevance to your specific situation or of special interest to only some patients with gastric cancer. Due to space limitations these sources are listed in a concise manner. Do not hesitate to consult the following sources by either using the Internet hyperlink provided, or, in cases where the contact information is provided, contacting the publisher or author directly.

Topic Pages: MEDLINEplus

For patients wishing to go beyond guidelines published by specific Institutes of the NIH, the National Library of Medicine has created a vast and patient-

oriented healthcare information portal called MEDLINEplus. Within this Internet-based system are "health topic pages." You can think of a health topic page as a guide to patient guides. To access this system, log on to **http://www.nlm.nih.gov/medlineplus/healthtopics.html**. From there you can either search using the alphabetical index or browse by broad topic areas.

If you do not find topics of interest when browsing health topic pages, then you can choose to use the advanced search utility of MEDLINEplus at **http://www.nlm.nih.gov/medlineplus/advancedsearch.html**. This utility is similar to the NIH Search Utility, with the exception that it only includes material linked within the MEDLINEplus system (mostly patient-oriented information). It also has the disadvantage of generating unstructured results. We recommend, therefore, that you use this method only if you have a very targeted search.

The Combined Health Information Database (CHID)

CHID Online is a reference tool that maintains a database directory of thousands of journal articles and patient education guidelines on gastric cancer and related conditions. One of the advantages of CHID over other sources is that it offers summaries that describe the guidelines available, including contact information and pricing. CHID's general Web site is **http://chid.nih.gov/**. To search this database, go to **http://chid.nih.gov/detail/detail.html**. In particular, you can use the advanced search options to look up pamphlets, reports, brochures, and information kits. The following was recently posted in this archive:

- **Helicobacter Pylori in Gastrointestinal Disease**

  Source: Arlington, VA: American College of Gastroenterology. 1995. 24 p.

  Contact: Available from American College of Gastroenterology. 4900 B South 31st Street, Arlington, VA 22206. (703) 549-4440. Price: Single copy free.

  Summary: This continuing education booklet helps physicians understand the role of Helicobacter pylori in peptic ulcer disease, gastric cancer, and nonulcer dyspepsia. Topics include the invasive and noninvasive methods for diagnosing H. pylori; the various treatment options for H. pylori, including traditional and emerging therapies; issues of resistance and compliance as they relate to H. pylori therapies; and the purpose, findings, and recommendations of the NIH Consensus Panel for H. pylori. The booklet includes a posttest with which readers

can qualify for 1 hour of continuing medical education credit. 9 figures. 40 references.

The National Guideline Clearinghouse™

The National Guideline Clearinghouse™ offers hundreds of evidence-based clinical practice guidelines published in the United States and other countries. You can search their site located at **http://www.guideline.gov** by using the keyword "gastric cancer" or synonyms. The following was recently posted:

- **American Gastroenterological Association medical position statement: epidemiology, diagnosis, and treatment of pancreatic ductal adenocarcinoma.**

  Source: American Gastroenterological Association.; 1999 May (reviewed 2001); 2 pages

  http://www.guideline.gov/FRAMESETS/guideline_fs.asp?guideline=002289&sSearch_string=gastric+cancer

- **American Gastroenterological Association medical position statement: evaluation and management of occult and obscure gastrointestinal bleeding.**

  Source: American Gastroenterological Association.; 1999 July 18 (reviewed 2001); 4 pages

  http://www.guideline.gov/FRAMESETS/guideline_fs.asp?guideline=002288&sSearch_string=gastric+cancer

- **American Gastroenterological Association medical position statement: nausea and vomiting.**

  Source: American Gastroenterological Association.; 2000 May 21 (reviewed 2001); 2 pages

  http://www.guideline.gov/FRAMESETS/guideline_fs.asp?guideline=002286&sSearch_string=gastric+cancer

Healthfinder™

Healthfinder™ is an additional source sponsored by the U.S. Department of Health and Human Services which offers links to hundreds of other sites that

contain healthcare information. This Web site is located at **http://www.healthfinder.gov**. Again, keyword searches can be used to find guidelines. The following was recently found in this database:

- **Gastric Cancer (PDQ®): Treatment**

  Summary: Based on information in the PDQ summary for health professionals on gastric (stomach) cancer, this patient resource presents facts about current treatment of stomach cancer by cancer stage.

  Source: National Cancer Institute, National Institutes of Health

  http://www.healthfinder.gov/scripts/recordpass.asp?RecordType=0&RecordID=6194

- **Stomach (Gastric) Cancer Home Page**

  Summary: This web site links patients, health care professionals, and the general public to a range of topics related to stomach cancer, including diagnosis, screening, treatment, disease management, coping

  Source: National Cancer Institute, National Institutes of Health

  http://www.healthfinder.gov/scripts/recordpass.asp?RecordType=0&RecordID=6195

The NIH Search Utility

After browsing the references listed at the beginning of this chapter, you may want to explore the NIH Search Utility. This allows you to search for documents on over 100 selected Web sites that comprise the NIH-WEB-SPACE. Each of these servers is "crawled" and indexed on an ongoing basis. Your search will produce a list of various documents, all of which will relate in some way to gastric cancer. The drawbacks of this approach are that the information is not organized by theme and that the references are often a mix of information for professionals and patients. Nevertheless, a large number of the listed Web sites provide useful background information. We can only recommend this route, therefore, for relatively rare or specific disorders, or when using highly targeted searches. To use the NIH search utility, visit the following Web page: **http://search.nih.gov/index.html**.

Additional Web Sources

A number of Web sites that often link to government sites are available to the public. These can also point you in the direction of essential information. The following is a representative sample:

- AOL: **http://search.aol.com/cat.adp?id=168&layer=&from=subcats**
- drkoop.com®: **http://www.drkoop.com/conditions/ency/index.html**
- Family Village: **http://www.familyvillage.wisc.edu/specific.htm**
- Google: **http://directory.google.com/Top/Health/Conditions_and_Diseases/**
- Med Help International: **http://www.medhelp.org/HealthTopics/A.html**
- Open Directory Project: **http://dmoz.org/Health/Conditions_and_Diseases/**
- Yahoo.com: **http://dir.yahoo.com/Health/Diseases_and_Conditions/**
- WebMD®Health: **http://my.webmd.com/health_topics**

Vocabulary Builder

The material in this chapter may have contained a number of unfamiliar words. The following Vocabulary Builder introduces you to terms used in this chapter that have not been covered in the previous chapter:

Abdomen: The part of the body that contains the pancreas, stomach, intestines, liver, gallbladder, and other organs. [NIH]

Adenocarcinoma: Cancer that begins in cells that line certain internal organs and that have glandular (secretory) properties. [NIH]

Adjuvant: A substance which aids another, such as an auxiliary remedy; in immunology, nonspecific stimulator (e.g., BCG vaccine) of the immune response. [EU]

Anemia: A condition in which the number of red blood cells is below normal. [NIH]

Antimicrobial: Killing microorganisms, or suppressing their multiplication or growth. [EU]

Barium: An element of the alkaline earth group of metals. It has an atomic symbol Ba, atomic number 56, and atomic weight 138. All of its acid-soluble salts are poisonous. [NIH]

Biopsy: The removal of cells or tissues for examination under a microscope.

When only a sample of tissue is removed, the procedure is called an incisional biopsy or core biopsy. When an entire tumor or lesion is removed, the procedure is called an excisional biopsy. When a sample of tissue or fluid is removed with a needle, the procedure is called a needle biopsy or fine-needle aspiration. [NIH]

Cell: The individual unit that makes up all of the tissues of the body. All living things are made up of one or more cells. [NIH]

Chemotherapy: Treatment with anticancer drugs. [NIH]

Colon: The long, coiled, tubelike organ that removes water from digested food. The remaining material, solid waste called stool, moves through the colon to the rectum and leaves the body through the anus. [NIH]

Dyspepsia: Upset stomach. [NIH]

Dysphagia: Difficulty in swallowing. [EU]

Endocrinologist: A doctor that specializes in diagnosing and treating hormone disorders. [NIH]

Endocrinology: A subspecialty of internal medicine concerned with the metabolism, physiology, and disorders of the endocrine system. [NIH]

Esophagus: The muscular tube through which food passes from the throat to the stomach. [NIH]

Gastrectomy: An operation to remove all or part of the stomach. [NIH]

Gastric: Having to do with the stomach. [NIH]

Gastritis: Inflammation of the stomach. [EU]

Gastrointestinal: Refers to the stomach and intestines. [NIH]

Gastroscope: A thin, lighted tube used to view the inside of the stomach. [NIH]

Gastroscopy: An examination of the inside of the stomach using a thin, lighted tube (called a gastroscope) passed through the mouth and esophagus. [NIH]

Heartburn: Substernal pain or burning sensation, usually associated with regurgitation of gastric juice into the esophagus. [NIH]

Helicobacter: A genus of gram-negative, spiral-shaped bacteria that is pathogenic and has been isolated from the intestinal tract of mammals, including humans. [NIH]

Immunotherapy: Treatment to stimulate or restore the ability of the immune system to fight infection and disease. Also used to lessen side effects that may be caused by some cancer treatments. Also called biological therapy or biological response modifier (BRM) therapy. [NIH]

Intestine: A long, tube-shaped organ in the abdomen that completes the

process of digestion. There is both a large intestine and a small intestine. Also called the bowel. [NIH]

Invasive: 1. having the quality of invasiveness. 2. involving puncture or incision of the skin or insertion of an instrument or foreign material into the body; said of diagnostic techniques. [EU]

Liver: A large, glandular organ located in the upper abdomen. The liver cleanses the blood and aids in digestion by secreting bile. [NIH]

Lymph: The almost colorless fluid that travels through the lymphatic system and carries cells that help fight infection and disease. [NIH]

Lymphadenectomy: A surgical procedure in which the lymph nodes are removed and examined to see whether they contain cancer. Also called lymph node dissection. [NIH]

Malignant: Cancerous; a growth with a tendency to invade and destroy nearby tissue and spread to other parts of the body. [NIH]

Nausea: An unpleasant sensation, vaguely referred to the epigastrium and abdomen, and often culminating in vomiting. [EU]

Occult: Obscure; concealed from observation, difficult to understand. [EU]

Oncology: The study of cancer. [NIH]

Pancreatic: Having to do with the pancreas. [NIH]

Parenteral: Not through the alimentary canal but rather by injection through some other route, as subcutaneous, intramuscular, intraorbital, intracapsular, intraspinal, intrasternal, intravenous, etc. [EU]

Peptic: Pertaining to pepsin or to digestion; related to the action of gastric juices. [EU]

Pernicious: Tending to a fatal issue. [EU]

Pharmacists: Those persons legally qualified by education and training to engage in the practice of pharmacy. [NIH]

Polyp: A growth that protrudes from a mucous membrane. [NIH]

Prophylaxis: An attempt to prevent disease. [NIH]

Radioisotope: An unstable element that releases radiation as it breaks down. Radioisotopes can be used in imaging tests or as a treatment for cancer. [NIH]

Radiology: The use of radiation (such as x-rays) or other imaging technologies (such as ultrasound and magnetic resonance imaging) to diagnose or treat disease. [NIH]

Screening: Checking for disease when there are no symptoms. [NIH]

Spleen: An organ that is part of the lymphatic system. The spleen produces lymphocytes, filters the blood, stores blood cells, and destroys old blood

cells. It is located on the left side of the abdomen near the stomach. [NIH]

Staging: Performing exams and tests to learn the extent of the cancer within the body, especially whether the disease has spread from the original site to other parts of the body. [NIH]

Stomach: An organ that is part of the digestive system. It helps in the digestion of food by mixing it with digestive juices and churning it into a thin liquid. [NIH]

Stool: The waste matter discharged in a bowel movement; feces. [NIH]

Systemic: Affecting the entire body. [NIH]

Ulcer: A local defect, or excavation, of the surface of an organ or tissue; which is produced by the sloughing of inflammatory necrotic tissue. [EU]

CHAPTER 2. SEEKING GUIDANCE

Overview

Some patients are comforted by the knowledge that a number of organizations dedicate their resources to helping people with gastric cancer. These associations can become invaluable sources of information and advice. Many associations offer aftercare support, financial assistance, and other important services. Furthermore, healthcare research has shown that support groups often help people to better cope with their conditions.[8] In addition to support groups, your physician can be a valuable source of guidance and support. Therefore, finding a physician that can work with your unique situation is a very important aspect of your care.

In this chapter, we direct you to resources that can help you find patient organizations and medical specialists. We begin by describing how to find associations and peer groups that can help you better understand and cope with gastric cancer. The chapter ends with a discussion on how to find a doctor that is right for you.

Associations and Gastric Cancer

As mentioned by the Agency for Healthcare Research and Quality, sometimes the emotional side of an illness can be as taxing as the physical side.[9] You may have fears or feel overwhelmed by your situation. Everyone has different ways of dealing with disease or physical injury. Your attitude, your expectations, and how well you cope with your condition can all

[8] Churches, synagogues, and other houses of worship might also have groups that can offer you the social support you need.
[9] This section has been adapted from **http://www.ahcpr.gov/consumer/diaginf5.htm**.

influence your well-being. This is true for both minor conditions and serious illnesses. For example, a study on female breast cancer survivors revealed that women who participated in support groups lived longer and experienced better quality of life when compared with women who did not participate. In the support group, women learned coping skills and had the opportunity to share their feelings with other women in the same situation.

In addition to associations or groups that your doctor might recommend, we suggest that you consider the following list (if there is a fee for an association, you may want to check with your insurance provider to find out if the cost will be covered):

- **Digestive Disorders Foundation (UK)**

  Address: Digestive Disorders Foundation (UK) 3 St. Andrews Place, London, NW1 4LB, United Kingdom

  Telephone: 0171 486 0341 Toll-free: (800) 500-9976

  Fax: 0171 224 2012

  Email: ddf@digestivedisorders.org.uk

  Web Site: http://www.digestivedisorders.org.uk

  Background: The Digestive Disorders Foundation (DDF) is a voluntary organization in the United Kingdom dedicated to providing information to individuals with digestive disorders and their family members and funding research concerning these disorders. Since the DDF was founded in 1971, it has supported over 95 research fellowships. The Foundation also provides grants for equipment and travel fellowships, enabling researchers to visit laboratories abroad to improve their knowledge and expertise. In addition, the Digestive Disorders Foundation produces patient information leaflets discussing the symptoms, causes, and treatments of a wide range of digestive disorders including celiac disease; pancreatitis; peptic, gastric, and duodenal ulcers; diverticula; and Gilbert's syndrome. The Foundation is also committed to raising professional and public knowledge of digestive diseases through a series of events including scientific and public meetings. The DDF's web site on the Internet provides news updates, a glossary of medical terms, its series of patient information leaflets, and information concerning current research fellowships.

- **Lymphoma Research Foundation of America**

  Address: Lymphoma Research Foundation of America 8800 Venice Boulevard, Suite 207, Los Angeles, CA 90034

  Telephone: (310) 204- 7040 Toll-free: (800) 500-9976

Fax: (310) 204-7043

Email: LRFA@aol.com

Web Site: http://www.lymphoma.org

Background: The Lymphoma Research Foundation of America (LRFA) is a national voluntary nonprofit organization dedicated to funding lymphoma research and providing comprehensive educational and support programs to increase awareness and knowledge of lymphoma nationwide. Lymphoma refers to cancer of the lymphatic system, which is a network of glands and vessels that circulate a thin, watery fluid known as lymph throughout the body. A network of small organs called lymph nodes produce and store certain infection-fighting white blood cells; play a role in manufacturing antibodies; and filter out microorganisms and other foreign bodies within lymph. Lymphoma is classified into two major categories that are distinguished by cell type: Hodgkin's disease and non-Hodgkin's lymphoma. Both may be characterized by similar symptoms including night sweats, painless swelling of lymph nodes, fever, fatigue, itching, and weight loss. The Lymphoma Research Foundation of America was established in 1991 and currently has approximately 17,050 members. The Foundation's primary mission is to fund lymphoma research at universities and cancer centers across the nation through annual research grants and fellowship awards. In addition, the LRFA provides a one-on-one 'phone buddy support program' that matches affected individuals by cell type, stage and grade, or treatment plan; offers a lymphoma helpline that directs affected individuals and family members to cancer resources and clinical trial information; and conducts free support groups. The Foundation also holds an annual patient education forum; conducts an annual educational drive to inform the public about lymphoma; and has a web site on the Internet that features news on research and clinical trials and provides links to additional resources. The LRFA also publishes 'Lymphoma Update,' a quarterly newsletter that is circulated to over 30,000 patients, family members, and health care providers.

Finding More Associations

There are a number of directories that list additional medical associations that you may find useful. While not all of these directories will provide different information than what is listed above, by consulting all of them, you will have nearly exhausted all sources for patient associations.

The National Cancer Institute (NCI)

The National Cancer Institute (NCI) has complied a list of national organizations that offer services to people with cancer and their families. To view the list, see the NCI fact sheet online at the following Web address: **http://cis.nci.nih.gov/fact/8_1.htm**. The name of each organization is accompanied by its contact information and a brief explanation of its services.

The National Health Information Center (NHIC)

The National Health Information Center (NHIC) offers a free referral service to help people find organizations that provide information about gastric cancer. For more information, see the NHIC's Web site at **http://www.health.gov/NHIC/** or contact an information specialist by calling 1-800-336-4797.

DIRLINE

A comprehensive source of information on associations is the DIRLINE database maintained by the National Library of Medicine. The database comprises some 10,000 records of organizations, research centers, and government institutes and associations which primarily focus on health and biomedicine. DIRLINE is available via the Internet at the following Web site: **http://dirline.nlm.nih.gov/**. Simply type in "gastric cancer" (or a synonym) or the name of a topic, and the site will list information contained in the database on all relevant organizations.

The Combined Health Information Database

Another comprehensive source of information on healthcare associations is the Combined Health Information Database. Using the "Detailed Search" option, you will need to limit your search to "Organizations" and "gastric cancer". Type the following hyperlink into your Web browser: **http://chid.nih.gov/detail/detail.html**. To find associations, use the drop boxes at the bottom of the search page where "You may refine your search by." For publication date, select "All Years." Then, select your preferred language and the format option "Organization Resource Sheet." By making these selections and typing in "gastric cancer" (or synonyms) into the "For these words:" box, you will only receive results on organizations dealing

with gastric cancer. You should check back periodically with this database since it is updated every 3 months.

The National Organization for Rare Disorders, Inc.

The National Organization for Rare Disorders, Inc. has prepared a Web site that provides, at no charge, lists of associations organized by specific diseases. You can access this database at the following Web site: **http://www.rarediseases.org/cgi-bin/nord/searchpage**. Select the option called "Organizational Database (ODB)" and type "gastric cancer" (or a synonym) in the search box.

Cancer Support Groups[10]

People diagnosed with cancer and their families face many challenges that may leave them feeling overwhelmed, afraid, and alone. It can be difficult to cope with these challenges or to talk to even the most supportive family members and friends. Often, support groups can help people affected by cancer feel less alone and can improve their ability to deal with the uncertainties and challenges that cancer brings. Support groups give people who are affected by similar diseases an opportunity to meet and discuss ways to cope with the illness.

How Can Support Groups Help?

People who have been diagnosed with cancer sometimes find they need assistance coping with the emotional as well as the practical aspects of their disease. In fact, attention to the emotional burden of cancer is sometimes part of a patient's treatment plan. Cancer support groups are designed to provide a confidential atmosphere where cancer patients or cancer survivors can discuss the challenges that accompany the illness with others who may have experienced the same challenges. For example, people gather to discuss the emotional needs created by cancer, to exchange information about their disease—including practical problems such as managing side effects or returning to work after treatment—and to share their feelings. Support groups have helped thousands of people cope with these and similar situations.

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[10] This section has been adapted from the NCI: **http://cis.nci.nih.gov/fact/8_8.htm**.

Can Family Members and Friends Participate in Support Groups?

Family and friends are affected when cancer touches someone they love, and they may need help in dealing with stresses such as family disruptions, financial worries, and changing roles within relationships. To help meet these needs, some support groups are designed just for family members of people diagnosed with cancer; other groups encourage families and friends to participate along with the cancer patient or cancer survivor.

How Can People Find Support Groups?

Many organizations offer support groups for people diagnosed with cancer and their family members or friends. The NCI fact sheet *National Organizations That Offer Services to People with Cancer and Their Families* lists many cancer-concerned organizations that can provide information about support groups. This fact sheet is available at **http://cis.nci.nih.gov/fact/8_1.htm** on the Internet, or can be ordered from the Cancer Information Service at 1–800–4–CANCER (1–800–422–6237). Some of these organizations provide information on their Web sites about contacting support groups.

Doctors, nurses, or hospital social workers who work with cancer patients may also have information about support groups, such as their location, size, type, and how often they meet. Most hospitals have social services departments that provide information about cancer support programs. Additionally, many newspapers carry a special health supplement containing information about where to find support groups.

What Types of Support Groups Are Available?

Several kinds of support groups are available to meet the individual needs of people at all stages of cancer treatment, from diagnosis through follow-up care. Some groups are general cancer support groups, while more specialized groups may be for teens or young adults, for family members, or for people affected by a particular disease. Support groups may be led by a professional, such as a psychiatrist, psychologist, or social worker, or by cancer patients or survivors. In addition, support groups can vary in approach, size, and how often they meet. Many groups are free, but some require a fee (people can contact their health insurance company to find out whether their plan will cover the cost). It is important for people to find an atmosphere that is comfortable and meets their individual needs.

Online Support Groups

In addition to support groups, commercial Internet service providers offer forums and chat rooms for people with different illnesses and conditions. WebMD®, for example, offers such a service at their Web site: **http://boards.webmd.com/roundtable**. These online self-help communities can help you connect with a network of people whose concerns are similar to yours. Online support groups are places where people can talk informally. If you read about a novel approach, consult with your doctor or other healthcare providers, as the treatments or discoveries you hear about may not be scientifically proven to be safe and effective.

The Cancer Information Service[11]

The Cancer Information Service (CIS) is a program of the National Cancer Institute (NCI), the Nation's lead agency for cancer research. As a resource for information and education about cancer, the CIS is a leader in helping people become active participants in their own health care by providing the latest information on cancer in understandable language. Through its network of regional offices, the CIS serves the United States, Puerto Rico, the U.S. Virgin Islands, and the Pacific Islands.

For 25 years, the Cancer Information Service has provided the latest and most accurate cancer information to patients and families, the public, and health professionals by:

- Interacting with people one-on-one through its Information Service,
- Working with organizations through its Partnership Program,
- Participating in research efforts to find the best ways to help people adopt healthier behaviors,
- Providing access to NCI information over the Internet.

How Does the CIS Assist the Public?

Through the CIS toll-free telephone service (1–800–4–CANCER), callers speak with knowledgeable, caring staff who are experienced at explaining medical information in easy-to-understand terms. CIS information specialists answer calls in English and Spanish. They also provide cancer information to

[11] This section has been adapted from the NCI: **http://cis.nci.nih.gov/fact/2_5.htm**.

deaf and hard of hearing callers through the toll-free TTY number (1–800–332–8615). CIS staff have access to comprehensive, accurate information from the NCI on a range of cancer topics, including the most recent advances in cancer treatment. They take as much time as each caller needs, provide thorough and personalized attention, and keep all calls confidential.

The CIS also provides live, online assistance to users of NCI Web sites through LiveHelp, an instant messaging service that is available from 9:00 a.m. to 7:30 p.m. Eastern time, Monday through Friday. Through LiveHelp, information specialists provide answers to questions about cancer and help in navigating Cancer.gov, the NCI's Web site.

Through the telephone numbers or LiveHelp service, CIS users receive:

- Answers to their questions about cancer, including ways to prevent cancer, symptoms and risks, diagnosis, current treatments, and research studies;
- Written materials from the NCI;
- Referrals to clinical trials and cancer-related services, such as treatment centers, mammography facilities, or other cancer organizations;
- Assistance in quitting smoking from information specialists trained in smoking cessation counseling.

What Kind of Assistance Does the CIS Partnership Program Offer?

Through its Partnership Program, the CIS collaborates with established national, state, and regional organizations to reach minority and medically underserved audiences with cancer information. Partnership Program staff provide assistance to organizations developing programs that focus on breast and cervical cancer, clinical trials, tobacco control, and cancer awareness for special populations. To reach those in need, the CIS:

- Helps bring cancer information to people who do not traditionally seek health information or who may have difficulties doing so because of educational, financial, cultural, or language barriers;
- Provides expertise to organizations to help strengthen their ability to inform people they serve about cancer; and
- Links organizations with similar goals and helps them plan and evaluate programs, develop coalitions, conduct training on cancer-related topics, and use NCI resources.

How Do CIS Research Efforts Assist the Public?

The CIS plays an important role in research by studying the most effective ways to communicate with people about healthy lifestyles; health risks; and options for preventing, diagnosing, and treating cancer. The ability to conduct health communications research is a unique aspect of the CIS. Results from these research studies can be applied to improving the way the CIS communicates about cancer and can help other programs communicate more effectively.

How Do People Reach the Cancer Information Service?

- To speak with a CIS information specialist call 1–800–4–CANCER (1–800–422–6237), 9:00 a.m. to 4:30 p.m. local time, Monday through Friday. Deaf or hard of hearing callers with TTY equipment may call 1–800–332–8615.
- To obtain online assistance visit the NCI's Cancer Information Web site at **http://cancer.gov/cancer_information** and click on the LiveHelp link between 9:00 a.m. and 7:30 p.m. Eastern time, Monday through Friday.
- For information 24 hours a day, 7 days a week call 1–800–4–CANCER and select option 4 to hear recorded information at any time.
- Visit NCI's Web site at **http://cancer.gov** on the Internet.
- Visit the CIS Web site at **http://cancer.gov/cis** on the Internet.

Finding Cancer Resources in Your Community[12]

If you have cancer or are undergoing cancer treatment, there are places in your community to turn to for help. There are many local organizations throughout the country that offer a variety of practical and support services to people with cancer. However, people often don't know about these services or are unable to find them. National cancer organizations can assist you in finding these resources, and there are a number of things you can do for yourself.

Whether you are looking for a support group, counseling, advice, financial assistance, transportation to and from treatment, or information about cancer, most neighborhood organizations, local health care providers, or area hospitals are a good place to start. Often, the hardest part of looking for help is knowing the right questions to ask.

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[12] Adapted from the NCI: **http://cis.nci.nih.gov/fact/8_9.htm**.

What Kind of Help Can I Get?

Until now, you probably never thought about the many issues and difficulties that arise with a diagnosis of cancer. There are support services to help you deal with almost any type of problem that might occur. The first step in finding the help you need is knowing what types of services are available. The following pages describe some of these services and how to find them.

- **Information on Cancer.** Most national cancer organizations provide a range of information services, including materials on different types of cancer, treatments, and treatment-related issues.
- **Counseling.** While some people are reluctant to seek counseling, studies show that having someone to talk to reduces stress and helps people both mentally and physically. Counseling can also provide emotional support to cancer patients and help them better understand their illness. Different types of counseling include individual, group, family, self-help (sometimes called peer counseling), bereavement, patient-to-patient, and sexuality.
- **Medical Treatment Decisions.** Often, people with cancer need to make complicated medical decisions. Many organizations provide hospital and physician referrals for second opinions and information on clinical trials (research studies with people), which may expand treatment options.
- **Prevention and Early Detection.** While cancer prevention may never be 100 percent effective, many things (such as quitting smoking and eating healthy foods) can greatly reduce a person's risk for developing cancer. Prevention services usually focus on smoking cessation and nutrition. Early detection services, which are designed to detect cancer when a person has no symptoms of disease, can include referrals for screening mammograms, Pap tests, or prostate exams.
- **Home Health Care.** Home health care assists patients who no longer need to stay in a hospital or nursing home, but still require professional medical help. Skilled nursing care, physical therapy, social work services, and nutrition counseling are all available at home.
- **Hospice Care.** Hospice is care focused on the special needs of terminally ill cancer patients. Sometimes called *palliative care*, it centers around providing comfort, controlling physical symptoms, and giving emotional support to patients who can no longer benefit from curative treatment. Hospice programs provide services in various settings, including the patient's home, hospice centers, hospitals, or skilled nursing facilities. Your doctor or social worker can provide a referral for these services.

- **Rehabilitation.** Rehabilitation services help people adjust to the effects of cancer and its treatment. Physical rehabilitation focuses on recovery from the physical effects of surgery or the side effects associated with chemotherapy. Occupational or vocational therapy helps people readjust to everyday routines, get back to work, or find employment.
- **Advocacy.** Advocacy is a general term that refers to promoting or protecting the rights and interests of a certain group, such as cancer patients. Advocacy groups may offer services to assist with legal, ethical, medical, employment, legislative, or insurance issues, among others. For instance, if you feel your insurance company has not handled your claim fairly, you may want to advocate for a review of its decision.
- **Financial.** Having cancer can be a tremendous financial burden to cancer patients and their families. There are programs sponsored by the government and nonprofit organizations to help cancer patients with problems related to medical billing, insurance coverage, and reimbursement issues. There are also sources for financial assistance, and ways to get help collecting entitlements from Medicaid, Medicare, and the Social Security Administration.
- **Housing/Lodging.** Some organizations provide lodging for the family of a patient undergoing treatment, especially if it is a child who is ill and the parents are required to accompany the child to treatment.
- **Children's Services.** A number of organizations provide services for children with cancer, including summer camps, make-a-wish programs, and help for parents seeking child care.

How to Find These Services

Often, the services that people with cancer are looking for are right in their own neighborhood or city. The following is a list of places where you can begin your search for help.

- The hospital, clinic, or medical center where you see your doctor, received your diagnosis, or where you undergo treatment should be able to give you information. Your doctor or nurse may be able to tell you about your specific medical condition, pain management, rehabilitation services, home nursing, or hospice care.
- Most hospitals also have a social work, home care, or discharge planning department. This department may be able to help you find a support group, a nonprofit agency that helps people who have cancer, or the government agencies that oversee Social Security, Medicare, and

Medicaid. While you are undergoing treatment, be sure to ask the hospital about transportation, practical assistance, or even temporary child care. Talk to a hospital financial counselor in the business office about developing a monthly payment plan if you need help with hospital expenses.

- The public library is an excellent source of information, as are patient libraries at many cancer centers. A librarian can help you find books and articles through a literature search.
- A local church, synagogue, YMCA or YWCA, or fraternal order may provide financial assistance, or may have volunteers who can help with transportation and home care. Catholic Charities, the United Way, or the American Red Cross may also operate local offices. Some of these organizations may provide home care, and the United Way's information and referral service can refer you to an agency that provides financial help. To find the United Way serving your community, visit their online directory at **http://www.unitedway.org** on the Internet or look in the White Pages of your local telephone book.
- Local or county government agencies may offer low-cost transportation (sometimes called para-transit) to individuals unable to use public transportation. Most states also have an Area Agency on Aging that offers low-cost services to people over 60. Your hospital or community social worker can direct you to government agencies for entitlements, including Social Security, state disability, Medicaid, income maintenance, and food stamps. (Keep in mind that most applications to entitlement programs take some time to process.) The Federal government also runs the Hill-Burton program (1–800–638–0742), which funds certain medical facilities and hospitals to provide cancer patients with free or low-cost care if they are in financial need.

Getting the Most From a Service: What To Ask

No matter what type of help you are looking for, the only way to find resources to fit your needs is to ask the right questions. When you are calling an organization for information, it is important to think about what questions you are going to ask before you call. Many people find it helpful to write out their questions in advance, and to take notes during the call. Another good tip is to ask the name of the person with whom you are speaking in case you have follow-up questions. Below are some of the questions you may want to consider if you are calling or visiting a new agency and want to learn about how they can help:

- How do I apply [for this service]?
- Are there eligibility requirements? What are they?
- Is there an application process? How long will it take? What information will I need to complete the application process? Will I need anything else to get the service?
- Do you have any other suggestions or ideas about where I can find help?

The most important thing to remember is that you will rarely receive help unless you ask for it. In fact, asking can be the hardest part of getting help. Don't be afraid or ashamed to ask for assistance. Cancer is a very difficult disease, but there are people and services that can ease your burdens and help you focus on your treatment and recovery.

Finding Doctors Who Specialize in Cancer Care[13]

One of the most important aspects of your treatment will be the relationship between you and your doctor or specialist. All patients with gastric cancer must go through the process of selecting a physician. A common way to find a doctor who specializes in cancer care is to ask for a referral from your primary care physician. Sometimes, you may know a specialist yourself, or through the experience of a family member, coworker, or friend.

The following resources may also be able to provide you with names of doctors who specialize in treating specific diseases or conditions. However, these resources may not have information about the quality of care that the doctors provide.

- Your local hospital or its patient referral service may be able to provide you with a list of specialists who practice at that hospital.
- Your nearest National Cancer Institute (NCI)-designated cancer center can provide information about doctors who practice at that center. The NCI fact sheet *The National Cancer Institute Cancer Centers Program* describes and gives contact information, including Web sites, for NCI-designated cancer treatment centers around the country. Many of the cancer centers' Web sites have searchable directories of physicians who practice at each facility. The NCI's fact sheet is available at **http://cis.nci.nih.gov/fact/1_2.htm** on the Internet, or by calling the Cancer Information Service (CIS) at 1–800–4–CANCER (1–800–422–6237).

[13] Adapted from the NCI: **http://cis.nci.nih.gov/fact/7_47.htm**.

- The American Board of Medical Specialties (ABMS) publishes a list of board-certified physicians. The *Official ABMS Directory of Board Certified Medical Specialists* lists doctors' names along with their specialty and their educational background. This resource is available in most public libraries. The ABMS also has a Web site that can be used to verify whether a specific physician is board-certified. This free service is located at **http://www.abms.org/newsearch.asp** on the Internet. Verification of a physician's board certification can also be obtained by calling the ABMS at 1–866–275–2267 (1–866–ASK–ABMS).
- The American Medical Association (AMA) provides an online service called AMA Physician Select that offers basic professional information on virtually every licensed physician in the United States and its possessions. The database can be searched by doctor's name or by medical specialty. The AMA Physician Select service is located at **http://www.ama-assn.org/aps/amahg.htm** on the Internet.
- The American Society of Clinical Oncologists (ASCO) provides an online list of doctors who are members of ASCO. The member database has the names and affiliations of over 15,000 oncologists worldwide. It can be searched by doctor's name, institution's name, location, and/or type of board certification. This service is located at **http://www.asco.org/people/db/html/m_db.htm** on the Internet.
- The American College of Surgeons (ACOS) Fellowship Database is an online list of surgeons who are Fellows of the ACOS. The list can be searched by doctor's name, geographic location, or medical specialty. This service is located at **http://web.facs.org/acsdir/default.htm** on the Internet. The ACOS can be contacted at 633 North Saint Clair Street, Chicago, IL 60611–3211; or by telephone at 312–202–5000.
- Local medical societies may maintain lists of doctors in each specialty.
- Public and medical libraries may have print directories of doctors' names, listed geographically by specialty.
- Your local Yellow Pages may have doctors listed by specialty under "Physicians."

The Agency for Healthcare Research and Quality (AHRQ) offers *Your Guide to Choosing Quality Health Care*, which has information for consumers on choosing a health plan, a doctor, a hospital, or a long-term care provider. The Guide includes suggestions and checklists that you can use to determine which doctor or hospital is best for you. This resource is available at **http://www.ahrq.gov/consumer/qntool.htm** on the Internet. You can also

order the Guide by calling the AHRQ Publications Clearinghouse at 1–800–358–9295.

If you are a member of a health insurance plan, your choice may be limited to doctors who participate in your plan. Your insurance company can provide you with a list of participating primary care doctors and specialists. It is important to ask your insurance company if the doctor you choose is accepting new patients through your health plan. You also have the option of seeing a doctor outside your health plan and paying the costs yourself. If you have a choice of health insurance plans, you may first wish to consider which doctor or doctors you would like to use, then choose a plan that includes your chosen physician(s).

The National Comprehensive Cancer Network (NCCN) Physician Directory lists specialists who practice in the NCCN's 19 member institutions across the U.S. To access the directory, go to **http://www.nccn.org/** and click on "Physician Directory". To use this service, you will be required to scroll to the bottom of the page and select "I agree." Enter your search criteria and select "Find" at the bottom of the page. To obtain more information on a physician or institution, contact the institution's Physician Referral Department or the NCCN Patient Information and Referral Service at 1-888-909-NCCN or **patientinformation@nccn.org**.

If the previous sources did not meet your needs, you may want to log on to the Web site of the National Organization for Rare Disorders (NORD) at **http://www.rarediseases.org/**. NORD maintains a database of doctors with expertise in various rare diseases. The Metabolic Information Network (MIN), 800-945-2188, also maintains a database of physicians with expertise in various metabolic diseases.

Selecting Your Doctor[14]

There are many factors to consider when choosing a doctor. To make the most informed decision, you may wish to speak with several doctors before choosing one. When you meet with each doctor, you might want to consider the following:

- Does the doctor have the education and training to meet my needs?
- Does the doctor use the hospital that I have chosen?

[14] This section has been adapted from the AHRQ:
http://www.ahrq.gov/consumer/qntascii/qntdr.htm

- Does the doctor listen to me and treat me with respect?
- Does the doctor explain things clearly and encourage me to ask questions?
- What are the doctor's office hours?
- Who covers for the doctor when he or she is unavailable? Will that person have access to my medical records?
- How long does it take to get an appointment with the doctor?

If you are choosing a surgeon, you may wish to ask additional questions about the surgeon's background and experience with specific procedures. These questions may include:

- Is the surgeon board-certified?[15]
- Has the surgeon been evaluated by a national professional association of surgeons, such as the American College of Surgeons (ACOS)?
- At which treatment facility or facilities does the surgeon practice?
- How often does the surgeon perform the type of surgery I need?
- How many of these procedures has the surgeon performed? What was the success rate?

It is important for you to feel comfortable with the specialist that you choose, because you will be working closely with that person to make decisions about your cancer treatment. Trust your own observations and feelings when deciding on a doctor for your medical care.

Other health professionals and support services may also be important during cancer treatment. The National Cancer Institute fact sheet *Your Health Care Team: Your Doctor Is Only the Beginning* has information about these providers and services, and how to locate them. This fact sheet is located at **http://cis.nci.nih.gov/fact/8_10.htm** on the Internet, or can be obtained by calling the CIS at 1–800–4–CANCER (1–800–422–6237).

[15] While board certification is a good measure of a doctor's knowledge, it is possible to receive quality care from doctors who are not board certified.

Working with Your Doctor[16]

Research has shown that patients who have good relationships with their doctors tend to be more satisfied with their care and have better results. Here are some tips to help you and your doctor become partners:

- You know important things about your symptoms and your health history. Tell your doctor what you think he or she needs to know.
- It is important to tell your doctor personal information, even if it makes you feel embarrassed or uncomfortable.
- Bring a "health history" list with you (and keep it up to date).
- Always bring any medications you are currently taking with you to the appointment, or you can bring a list of your medications including dosage and frequency information. Talk about any allergies or reactions you have had to your medications.
- Tell your doctor about any natural or alternative medicines you are taking.
- Bring other medical information, such as x-ray films, test results, and medical records.
- Ask questions. If you don't, your doctor will assume that you understood everything that was said.
- Write down your questions before your visit. List the most important ones first to make sure that they are addressed.
- Consider bringing a friend with you to the appointment to help you ask questions. This person can also help you understand and/or remember the answers.
- Ask your doctor to draw pictures if you think that this would help you understand.
- Take notes. Some doctors do not mind if you bring a tape recorder to help you remember things, but always ask first.
- Let your doctor know if you need more time. If there is not time that day, perhaps you can speak to a nurse or physician assistant on staff or schedule a telephone appointment.
- Take information home. Ask for written instructions. Your doctor may also have brochures and audio and videotapes that can help you.

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[16] This section has been adapted from the AHRQ:
www.ahrq.gov/consumer/qntascii/qntdr.htm.

- After leaving the doctor's office, take responsibility for your care. If you have questions, call. If your symptoms get worse or if you have problems with your medication, call. If you had tests and do not hear from your doctor, call for your test results. If your doctor recommended that you have certain tests, schedule an appointment to get them done. If your doctor said you should see an additional specialist, make an appointment.

By following these steps, you will enhance the relationship you will have with your physician.

Finding a Cancer Treatment Facility[17]

Choosing a treatment facility is another important consideration for getting the best medical care possible. Although you may not be able to choose which hospital treats you in an emergency, you can choose a facility for scheduled and ongoing care. If you have already found a doctor for your cancer treatment, you may need to choose a facility based on where your doctor practices. Your doctor may be able to recommend a facility that provides quality care to meet your needs. You may wish to ask the following questions when considering a treatment facility:

- Has the facility had experience and success in treating my condition?
- Has the facility been rated by state, consumer, or other groups for its quality of care?
- How does the facility check and work to improve its quality of care?
- Has the facility been approved by a nationally recognized accrediting body, such as the American College of Surgeons (ACOS) and/or the Joint Commission on Accredited Healthcare Organizations (JCAHO)?
- Does the facility explain patients' rights and responsibilities? Are copies of this information available to patients?
- Does the treatment facility offer support services, such as social workers and resources to help me find financial assistance if I need it?
- Is the facility conveniently located?

If you are a member of a health insurance plan, your choice of treatment facilities may be limited to those that participate in your plan. Your

[17] Adapted from the NCI: **http://cis.nci.nih.gov/fact/7_47.htm**. At this Web site, information on how to find treatment facilities is also available for patients living outside the U.S.

insurance company can provide you with a list of approved facilities. Although the costs of cancer treatment can be very high, you have the option of paying out-of-pocket if you want to use a treatment facility that is not covered by your insurance plan. If you are considering paying for treatment yourself, you may wish to discuss the potential costs with your doctor beforehand. You may also want to speak with the person who does the billing for the treatment facility. In some instances, nurses and social workers can provide you with more information about coverage, eligibility, and insurance issues.

The following resources may help you find a hospital or treatment facility for your care:

- The NCI fact sheet *The National Cancer Institute Cancer Centers Program* describes and gives contact information for NCI-designated cancer treatment centers around the country.
- The ACOS accredits cancer programs at hospitals and other treatment facilities. More than 1,400 programs in the United States have been designated by the ACOS as Approved Cancer Programs. The ACOS Web site offers a searchable database of these programs at **http://web.facs.org/cpm/default.htm** on the Internet. The ACOS can be contacted at 633 North Saint Clair Street, Chicago, IL 60611–3211; or by telephone at 312–202–5000.
- The JCAHO is an independent, not-for-profit organization that evaluates and accredits health care organizations and programs in the United States. It also offers information for the general public about choosing a treatment facility. The JCAHO Web site is located at **http://www.jcaho.org** on the Internet. The JCAHO is located at One Renaissance Boulevard, Oakbrook Terrace, IL 60181–4294. The telephone number is 630–792–5800.
- The JCAHO offers an online Quality Check service that patients can use to determine whether a specific facility has been accredited by the JCAHO and view the organization's performance reports. This service is located at **http://www.jcaho.org/qualitycheck/directry/directry.asp** on the Internet.
- The AHRQ publication *Your Guide To Choosing Quality Health Care* has suggestions and checklists for choosing the treatment facility that is right for you.

Additional Cancer Support Information

In addition to the references above, the NCI has set up guidance Web sites that offers information on issues relating to cancer. These include:

- Facing Forward - A Guide for Cancer Survivors: **http://www.cancer.gov/cancer_information/doc_img.aspx?viewid=cc93a843-6fc0-409e-8798-5c65afc172fe**
- Taking Time: Support for People With Cancer and the People Who Care About Them: **http://www.cancer.gov/cancer_information/doc_img.aspx?viewid=21a46445-a5c8-4fee-95a3-d9d0d665077a**
- When Cancer Recurs: Meeting the Challenge: **http://www.cancer.gov/cancer_information/doc_img.aspx?viewid=9e13d0d2-b7de-4bd6-87da-5750300a0dab**
- Your Health Care Team: Your Doctor Is Only the Beginning: **http://cis.nci.nih.gov/fact/8_10.htm**

Vocabulary Builder

The following vocabulary builder provides definitions of words used in this chapter that have not been defined in previous chapters:

Bereavement: Refers to the whole process of grieving and mourning and is associated with a deep sense of loss and sadness. [NIH]

Cervical: Relating to the neck, or to the neck of any organ or structure. Cervical lymph nodes are located in the neck; cervical cancer refers to cancer of the uterine cervix, which is the lower, narrow end (the "neck") of the uterus. [NIH]

Charities: Social welfare organizations with programs designed to assist individuals in times of need. [NIH]

Curative: Tending to overcome disease and promote recovery. [EU]

Fatigue: The state of weariness following a period of exertion, mental or physical, characterized by a decreased capacity for work and reduced efficiency to respond to stimuli. [NIH]

Gland: An organ that produces and releases one or more substances for use in the body. Some glands produce fluids that affect tissues or organs. Others produce hormones or participate in blood production. [NIH]

Grade: The grade of a tumor depends on how abnormal the cancer cells

look under a microscope and how quickly the tumor is likely to grow and spread. Grading systems are different for each type of cancer. [NIH]

Lymphoma: Cancer that arises in cells of the lymphatic system. [NIH]

Mammogram: An x-ray of the breast. [NIH]

Mammography: The use of x-rays to create a picture of the breast. [NIH]

Microorganism: An organism that can be seen only through a microscope. Microorganisms include bacteria, protozoa, algae, and fungi. Although viruses are not considered living organisms, they are sometimes classified as microorganisms. [NIH]

Oncologist: A doctor who specializes in treating cancer. Some oncologists specialize in a particular type of cancer treatment. For example, a radiation oncologist specializes in treating cancer with radiation. [NIH]

Palliative: 1. affording relief, but not cure. 2. an alleviating medicine. [EU]

Pancreatitis: Acute or chronic inflammation of the pancreas, which may be asymptomatic or symptomatic, and which is due to autodigestion of a pancreatic tissue by its own enzymes. It is caused most often by alcoholism or biliary tract disease; less commonly it may be associated with hyperlipaemia, hyperparathyroidism, abdominal trauma (accidental or operative injury), vasculitis, or uraemia. [EU]

Pap test: The collection of cells from the cervix for examination under a microscope. It is used to detect changes that may be cancer or may lead to cancer, and can show noncancerous conditions, such as infection or inflammation. Also called a Pap smear. [NIH]

Prostate: A gland in males that surrounds the neck of the bladder and the urethra. It secretes a substance that liquifies coagulated semen. It is situated in the pelvic cavity behind the lower part of the pubic symphysis, above the deep layer of the triangular ligament, and rests upon the rectum. [NIH]

Sweat: The fluid excreted by the sweat glands. It consists of water containing sodium chloride, phosphate, urea, ammonia, and other waste products. [NIH]

CHAPTER 3. CLINICAL TRIALS AND GASTRIC CANCER

Overview

Very few medical conditions have a single treatment. The basic treatment guidelines that your physician has discussed with you, or those that you have found using the techniques discussed in Chapter 1, may provide you with all that you will require. For some patients, current treatments can be enhanced with new or innovative techniques currently under investigation. In this chapter, we will describe how clinical trials work and show you how to keep informed of trials concerning gastric cancer.

What Is a Clinical Trial?[18]

Clinical trials involve the participation of people in medical research. Most medical research begins with studies in test tubes and on animals. Treatments that show promise in these early studies may then be tried with people. The only sure way to find out whether a new treatment is safe, effective, and better than other treatments for gastric cancer is to try it on patients in a clinical trial.

[18] The discussion in this chapter has been adapted from the NIH and the NEI: **www.nei.nih.gov/netrials/ctivr.htm**.

What Kinds of Clinical Trials Are There?

Clinical trials are carried out in three phases:

- **Phase I.** Researchers first conduct Phase I trials with small numbers of patients and healthy volunteers. If the new treatment is a medication, researchers also try to determine how much of it can be given safely.
- **Phase II.** Researchers conduct Phase II trials in small numbers of patients to find out the effect of a new treatment on gastric cancer.
- **Phase III.** Finally, researchers conduct Phase III trials to find out how new treatments for gastric cancer compare with standard treatments already being used. Phase III trials also help to determine if new treatments have any side effects. These trials--which may involve hundreds, perhaps thousands, of people--can also compare new treatments with no treatment.

How Is a Clinical Trial Conducted?

Various organizations support clinical trials at medical centers, hospitals, universities, and doctors' offices across the United States. The "principal investigator" is the researcher in charge of the study at each facility participating in the clinical trial. Most clinical trial researchers are medical doctors, academic researchers, and specialists. The "clinic coordinator" knows all about how the study works and makes all the arrangements for your visits.

All doctors and researchers who take part in the study on gastric cancer carefully follow a detailed treatment plan called a protocol. This plan fully explains how the doctors will treat you in the study. The "protocol" ensures that all patients are treated in the same way, no matter where they receive care.

Clinical trials are controlled. This means that researchers compare the effects of the new treatment with those of the standard treatment. In some cases, when no standard treatment exists, the new treatment is compared with no treatment. Patients who receive the new treatment are in the treatment group. Patients who receive a standard treatment or no treatment are in the "control" group. In some clinical trials, patients in the treatment group get a new medication while those in the control group get a placebo. A placebo is a harmless substance, a "dummy" pill, that has no effect on gastric cancer. In other clinical trials, where a new surgery or device (not a medicine) is being tested, patients in the control group may receive a "sham treatment." This

treatment, like a placebo, has no effect on gastric cancer and does not harm patients.

Researchers assign patients "randomly" to the treatment or control group. This is like flipping a coin to decide which patients are in each group. If you choose to participate in a clinical trial, you will not know which group you will be appointed to. The chance of any patient getting the new treatment is about 50 percent. You cannot request to receive the new treatment instead of the placebo or sham treatment. Often, you will not know until the study is over whether you have been in the treatment group or the control group. This is called a "masked" study. In some trials, neither doctors nor patients know who is getting which treatment. This is called a "double masked" study. These types of trials help to ensure that the perceptions of the patients or doctors will not affect the study results.

Natural History Studies

Unlike clinical trials in which patient volunteers may receive new treatments, natural history studies provide important information to researchers on how gastric cancer develops over time. A natural history study follows patient volunteers to see how factors such as age, sex, race, or family history might make some people more or less at risk for gastric cancer. A natural history study may also tell researchers if diet, lifestyle, or occupation affects how a disease or disorder develops and progresses. Results from these studies provide information that helps answer questions such as: How fast will a disease or disorder usually progress? How bad will the condition become? Will treatment be needed?

What Is Expected of Patients in a Clinical Trial?

Not everyone can take part in a clinical trial for a specific disease or disorder. Each study enrolls patients with certain features or eligibility criteria. These criteria may include the type and stage of disease or disorder, as well as, the age and previous treatment history of the patient. You or your doctor can contact the sponsoring organization to find out more about specific clinical trials and their eligibility criteria. If you are interested in joining a clinical trial, your doctor must contact one of the trial's investigators and provide details about your diagnosis and medical history.

If you participate in a clinical trial, you may be required to have a number of medical tests. You may also need to take medications and/or undergo

surgery. Depending upon the treatment and the examination procedure, you may be required to receive inpatient hospital care. Or, you may have to return to the medical facility for follow-up examinations. These exams help find out how well the treatment is working. Follow-up studies can take months or years. However, the success of the clinical trial often depends on learning what happens to patients over a long period of time. Only patients who continue to return for follow-up examinations can provide this important long-term information.

Recent Trials on Gastric Cancer

The National Institutes of Health and other organizations sponsor trials on various diseases and disorders. Because funding for research goes to the medical areas that show promising research opportunities, it is not possible for the NIH or others to sponsor clinical trials for every disease and disorder at all times. The following lists recent trials dedicated to gastric cancer.[19] If the trial listed by the NIH is still recruiting, you may be eligible. If it is no longer recruiting or has been completed, then you can contact the sponsors to learn more about the study and, if published, the results. Further information on the trial is available at the Web site indicated. Please note that some trials may no longer be recruiting patients or are otherwise closed. Before contacting sponsors of a clinical trial, consult with your physician who can help you determine if you might benefit from participation.

- **A Phase I-II Clinical Trial of Cisplatin (Platinol) followed by Gemcitabine HCL (Gemzar) in Combination with Mild, Fever-Range Whole-Body Hyperthermia (LL-WBH) at 40.0 oC (104 oF) in Patients with Advanced Malignancies**

  Condition(s): Melanoma; Pancreatic Cancer; Gastric Cancer; Colon Cancer; Head and Neck Cancer

  Study Status: This study is currently recruiting patients.

  Sponsor(s): National Center for Research Resources (NCRR)

  Purpose - Excerpt: Hypothesis: Fever-range thermochemotherapy (long-duration, low-heat whole-body hyperthermia, LL-WBH, 40.0 oC for 6 h duration), with gemcitabine, cisplatin, and low-dose interferon-a (IFN-a), will improve the quality of life and survival of patients with metastatic or advanced gastrointestinal (G.I.) cancer, non-small cell (NSC), or small cell (SC) lung cancer. Specific Aims: Using a sequenced Phase I-II clinical trial format we will begin: a) A Phase I trial: To establish the maximal tolerated dose (MTD) of cisplatin administered 48 h before gemcitabine

[19] These are listed at **www.ClinicalTrials.gov**.

HCl + LL-WBH and low-dose IFN-a to treat patients with advanced or metastatic cancer. After establishing the MTD of cisplatin, we will continue: b) A Phase II trial: Using the established MTD dose of cisplatin we will evaluate the optimally scheduled/timed thermochemotherapy regimen's anticancer activity and toxicity in patients with metastatic G.I. malignancies such as pancreatic cancer, and/or chemotherapy-resistant NSC and SC lung cancer. Background: Advanced, metastatic G.I. and lung cancers are intrinsically resistant or rapidly become resistant to standard treatment. Hyperthermia may be useful to improve cancer response, resulting in improved patient wellbeing and survival. LL-WBH increases chemotherapy potency without increasing toxicity. Heat is itself cytotoxic, and also potentiates the cytotoxicity of anticancer drugs and cytokines in established cancers. Our own pre-clinical studies demonstrate significantly improved therapeutic indices (T.I.) in animals treated with gemcitabine HCl, cisplatin, and cytokines combined with LL-WBH compared to the same drugs at 37.0 oC. Both cisplatin and gemcitabine HCl are highly effective single agents and are now used in combination to treat lung and G.I. neoplasms, including pancreatic cancer. Clinically combining WBH + cisplatin + interferon- to treat patients with metastatic melanoma, we reported 1/6 patients experienced a complete response for >eight years and 3/ 6 patients experienced partial responses which improved their subjective well being without significant toxicity. On a compassionate basis, we have treated 4 patients with LL-WBH + gemcitabine HCl without toxic sequelae. This Phase I-II clinical protocol combines LL-WBH + cisplatin + gemcitabine HCl + low dose IFN-a is based on: a) clinical reports of improved efficacy of cisplatin with gemcitabine HCl; b) in vitro and our own in vivo studies of WBH with cisplatin, gemcitabine HCl, and cytokines that show a significantly improved T.I.; c) lack of toxicity experienced by patients with advanced cancer treated with LL-WBH + gemcitabine HCl, or with WBH + cisplatin + IFN-a. The Phase I trial will determine the maximal tolerated dose (MTD) of cisplatin that can be combined with fixed doses of LL-WBH + gemcitabine HCl + IFN-a. After establishing the MTD of cisplatin in the regimen, the continuing Phase II trial will examine the efficacy of this thermochemotherapy regimen to treat patients with advanced G.I., or lung cancer.

Phase(s): Phase II

Study Type: Interventional

Contact(s): Joan C. Bull, M.D. 1-713-500-6820; Texas; Department of Internal Medicine/Oncology, MSB 5.280, Houston, Texas, 77030, United States; Recruiting; Joan C. Bull, M.D. 713-500-6820

Web Site:
http://clinicaltrials.gov/ct/gui/show/NCT00005929;jsessionid=2AC9D6C2D7D27F311D68E79236309D3B

- **Antineoplaston Therapy in Treating Patients With Stomach Cancer**

  Condition(s): recurrent gastric cancer; stage III gastric cancer; stage IV gastric cancer; adenocarcinoma of the stomach

  Study Status: This study is currently recruiting patients.

  Sponsor(s): Burzynski Research Institute

  Purpose - Excerpt: Rationale: Antineoplastons are naturally occurring substances found in urine. Antineoplastons may inhibit the growth of cancer cells. Purpose: Phase II trial to study the effectiveness of antineoplaston therapy in treating patients with stomach cancer.

  Phase(s): Phase II

  Study Type: Treatment

  Contact(s): Texas; Burzynski Research Institute, Houston, Texas, 77055, United States; Recruiting; Stanislaw R. Burzynski 713-335-5697. Study chairs or principal investigators: Stanislaw R. Burzynski, Study Chair; Burzynski Research Institute

  Web Site:
  http://clinicaltrials.gov/ct/gui/show/NCT00003524;jsessionid=2AC9D6C2D7D27F311D68E79236309D3B

- **Assessing Quality of Life of Patients With Stomach Cancer**

  Condition(s): quality of life; adenocarcinoma of the stomach

  Study Status: This study is currently recruiting patients.

  Sponsor(s): EORTC Quality of Life Study Group; EORTC Gastrointestinal Tract Cancer Cooperative Group

  Purpose - Excerpt: Rationale: Assessing quality of life in patients who are undergoing cancer treatment may help determine the effect of treatment on these patients. Purpose: Clinical trial to study the effectiveness of a quality of life assessment in patients who are receiving treatment for stomach cancer.

  Study Type: Supportive Care

  Contact(s): see Web site below

  Web Site:
  http://clinicaltrials.gov/ct/gui/show/NCT00020826;jsessionid=2AC9D6C2D7D27F311D68E79236309D3B

- **Biological Therapy in Treating Patients With Advanced Cancer**

  Condition(s): stage III gastric cancer; stage IIIB breast cancer; stage II gastric cancer; stage IIIA breast cancer; stage III ovarian epithelial cancer; stage IV ovarian epithelial cancer; stage IV breast cancer; stage IV gastric cancer; stage II breast cancer

  Study Status: This study is currently recruiting patients.

  Sponsor(s): National Cancer Institute (NCI); Duke Comprehensive Cancer Center

  Purpose - Excerpt: Rationale: A person's white blood cells mixed with tumor proteins may make the body build an immune response to kill tumor cells. Purpose: Phase I trial to study the effectiveness of biological therapy in treating patients who have advanced cancer that shows no signs of disease following treatment.

  Phase(s): Phase I

  Study Type: Treatment

  Contact(s): North Carolina; Duke Comprehensive Cancer Center, Durham, North Carolina, 27710, United States; Recruiting; Michael A. Morse 919-681-3480. Study chairs or principal investigators: Michael A. Morse, Study Chair; Duke Comprehensive Cancer Center

  Web Site:
  http://clinicaltrials.gov/ct/gui/show/NCT00005956;jsessionid=2AC9D6C2D7D27F311D68E79236309D3B

- **Bryostatin 1 and Cisplatin in Treating Patients With Metastatic or Unresectable Stomach Cancer**

  Condition(s): stage III gastric cancer; stage IV gastric cancer

  Study Status: This study is currently recruiting patients.

  Sponsor(s): National Cancer Institute (NCI); University of Southern California

  Purpose - Excerpt: Rationale: Drugs used in chemotherapy use different ways to stop tumor cells from dividing so they stop growing or die. Bryostatin 1 may increase the effectiveness of cisplatin by making tumor cells more sensitive to the drug. Combining cisplatin with bryostatin 1 may kill more tumor cells. Purpose: Phase II trial to study the effectiveness of bryostatin 1 and cisplatin in treating patients who have metastatic or unresectable stomach cancer.

  Phase(s): Phase II

  Study Type: Treatment

Contact(s): see Web site below

Web Site:
http://clinicaltrials.gov/ct/gui/show/NCT00006389;jsessionid=2AC9D6C2D7D27F311D68E79236309D3B

- **Bryostatin 1 Plus Paclitaxel in Treating Patients With Locally Advanced or Metastatic Esophageal Cancer or Stomach Cancer**

  Condition(s): stage III gastric cancer; stage III esophageal cancer; stage IV esophageal cancer; adenocarcinoma of the esophagus; recurrent gastric cancer; stage IV gastric cancer; recurrent esophageal cancer; squamous cell carcinoma of the esophagus

  Study Status: This study is currently recruiting patients.

  Sponsor(s): National Cancer Institute (NCI); Memorial Sloan-Kettering Cancer Center

  Purpose - Excerpt: Rationale: Drugs used in chemotherapy use different ways to stop tumor cells from dividing so they stop growing or die. Combining more than one drug may kill more tumor cells. Purpose: Phase II trial to study the effectiveness of bryostatin 1 and paclitaxel in treating patients who have locally advanced or metastatic esophageal cancer or stomach cancer.

  Phase(s): Phase II

  Study Type: Treatment

  Contact(s): New York; Memorial Sloan-Kettering Cancer Center, New York, New York, 10021, United States; Recruiting; Gary K. Schwartz 212-639-8324. Study chairs or principal investigators: Gary K. Schwartz, Study Chair; Memorial Sloan-Kettering Cancer Center

  Web Site:
  http://clinicaltrials.gov/ct/gui/show/NCT00005599;jsessionid=2AC9D6C2D7D27F311D68E79236309D3B

- **Capecitabine Combined with Cisplatin in Treating Patients With Locally Advanced or Metastatic Solid Tumors**

  Condition(s): lung cancer; pancreatic cancer; gastric cancer; lip and oral cavity cancer; esophageal cancer; head and neck cancer; adult primary liver cancer; oropharyngeal cancer; breast cancer

  Study Status: This study is currently recruiting patients.

  Sponsor(s): National Cancer Institute (NCI); Kaplan Cancer Center

  Purpose - Excerpt: Rationale: Drugs used in chemotherapy use different ways to stop tumor cells from dividing so they stop growing or die.

Combining more than one chemotherapy drug may kill more tumor cells. Purpose: Phase I trial to study the effectiveness of capecitabine combined with cisplatin in treating patients who have locally advanced or metastatic solid tumors.

Phase(s): Phase I

Study Type: Treatment

Contact(s): New York; NYU School of Medicine's Kaplan Comprehensive Cancer Center, New York, New York, 10016, United States; Recruiting; Franco M. Muggia 212-263-6485. Study chairs or principal investigators: Franco M. Muggia, Study Chair; Kaplan Cancer Center

Web Site:
http://clinicaltrials.gov/ct/gui/show/NCT00010023;jsessionid=2AC9D6C2D7D27F311D68E79236309D3B

- **Chemotherapy and Radiation Therapy in Treating Patients With Stomach Cancer**

  Condition(s): stage III gastric cancer; stage II gastric cancer; stage I gastric cancer; stage IV gastric cancer; adenocarcinoma of the stomach

  Study Status: This study is currently recruiting patients.

  Sponsor(s): National Cancer Institute (NCI); Radiation Therapy Oncology Group

  Purpose - Excerpt: Rationale: Drugs used in chemotherapy use different ways to stop tumor cells from dividing so they stop growing or die. Radiation therapy uses high-energy x-rays to damage tumor cells. Combining chemotherapy with radiation therapy may kill more tumor cells. Purpose: Phase II trial to study the effectiveness of chemotherapy and radiation therapy in treating patients who have stomach cancer.

  Phase(s): Phase II

  Study Type: Treatment

  Contact(s): see Web site below

  Web Site:
  http://clinicaltrials.gov/ct/gui/show/NCT00003862;jsessionid=2AC9D6C2D7D27F311D68E79236309D3B

- **Chemotherapy and Radiation Therapy With or Without Fluorouracil in Treating Patients With Cancer of the Stomach Who Have Undergone Surgery**

  Condition(s): stage III gastric cancer; stage III esophageal cancer; adenocarcinoma of the esophagus; stage II gastric cancer; stage I gastric

cancer; stage I esophageal cancer; stage II esophageal cancer; adenocarcinoma of the stomach

Study Status: This study is currently recruiting patients.

Sponsor(s): National Cancer Institute (NCI); Radiation Therapy Oncology Group

Purpose - Excerpt: Rationale: Drugs used in chemotherapy use different ways to stop tumor cells from dividing so they stop growing or die. Radiation therapy uses high-energy x-rays to damage tumor cells. Combining chemotherapy with radiation therapy following surgery may kill more tumor cells. Purpose: Randomized phase II trial to study the effectiveness of combination chemotherapy and radiation therapy with or without fluorouracil in treating patients who have stage IB, stage IIB, or stage IIIB stomach cancer that has been removed during surgery.

Phase(s): Phase II

Study Type: Treatment

Contact(s): see Web site below

Web Site:
http://clinicaltrials.gov/ct/gui/show/NCT00011960;jsessionid=2AC9D6C2D7D27F311D68E79236309D3B

- **Chemotherapy in Treating Patients With Advanced Solid Tumors or Refractory Hematologic Cancers**

  Condition(s): lung cancer; gastric cancer; lip and oral cavity cancer; leukemia; renal cell cancer; head and neck cancer; colorectal cancer; ovarian sarcoma; melanoma; ovarian epithelial cancer; bladder cancer; colon cancer; prostate cancer; oropharyngeal cancer; breast cancer; kidney tumor

  Study Status: This study is currently recruiting patients.

  Sponsor(s): National Cancer Institute (NCI); Memorial Sloan-Kettering Cancer Center

  Purpose - Excerpt: Rationale: Drugs used in chemotherapy use different ways to stop tumor cells from dividing so they stop growing or die. Purpose: Phase I trial to study the effectiveness 17-allylamino-17-demethoxy geldanamycin in treating patients who have advanced solid tumors or refractory hematologic cancers.

  Phase(s): Phase I

  Study Type: Treatment

  Contact(s): New York; Memorial Sloan-Kettering Cancer Center, New York, New York, 10021, United States; Recruiting; Howard I. Scher 646-

422-4330. Study chairs or principal investigators: Howard I. Scher, Study Chair; Memorial Sloan-Kettering Cancer Center

Web Site:
http://clinicaltrials.gov/ct/gui/show/NCT00004065;jsessionid=2AC9D6C2D7D27F311D68E79236309D3B

- **Combination Chemotherapy and Surgery in Treating Patients With Locally Advanced Stomach Cancer**

  Condition(s): stage III gastric cancer; stage II gastric cancer

  Study Status: This study is currently recruiting patients.

  Sponsor(s): Swiss Institute for Applied Cancer Research

  Purpose - Excerpt: Rationale: Drugs used in chemotherapy use different ways to stop tumor cells from dividing so they stop growing or die. Combining more than one chemotherapy drug with surgery may kill more tumor cells. It is not yet known if chemotherapy followed by surgery is more effective than surgery followed by chemotherapy for stomach cancer. Purpose: Randomized phase III trial to compare the effectiveness of surgery followed by combination chemotherapy with that of combination chemotherapy followed by surgery in treating patients who have locally advanced stomach cancer.

  Phase(s): Phase III

  Study Type: Treatment

  Contact(s): Italy; Istituto Europeo Di Oncologia, Milano, 20141, Italy; Recruiting; N. Fazio 39-02-57489482; Switzerland; Hopital Cantonal Universitaire de Geneva, Geneva, CH-1211, Switzerland; Recruiting; Olivier Huber 41-22-3727704; Kantonsspital - St. Gallen, St. Gallen, CH-9007, Switzerland; Recruiting; Rudolf Morant 0171-243-00-43. Study chairs or principal investigators: Rudolf Morant, Study Chair; Swiss Institute for Applied Cancer Research

  Web Site:
  http://clinicaltrials.gov/ct/gui/show/NCT00005060;jsessionid=2AC9D6C2D7D27F311D68E79236309D3B

- **Combination Chemotherapy Followed by Surgery in Treating Patients With Stomach Cancer**

  Condition(s): stage III gastric cancer; stage II gastric cancer; stage I gastric cancer; stage IV gastric cancer

  Study Status: This study is currently recruiting patients.

  Sponsor(s): National Cancer Institute (NCI); Kaplan Cancer Center

Purpose - Excerpt: Rationale: Drugs used in chemotherapy use different ways to stop tumor cells from dividing so they stop growing or die. Combining more than one drug and combining chemotherapy with surgery may kill more tumor cells. Purpose: Phase II trial to study the effectiveness of irinotecan and cisplatin followed by surgery, floxuridine, and cisplatin in treating patients who have stomach cancer.

Phase(s): Phase II

Study Type: Treatment

Contact(s): New York; NYU School of Medicine's Kaplan Comprehensive Cancer Center, New York, New York, 10016, United States; Recruiting; Howard S. Hochster 212-652-1912. Study chairs or principal investigators: Howard S. Hochster, Study Chair; Kaplan Cancer Center

Web Site:
http://clinicaltrials.gov/ct/gui/show/NCT00004103;jsessionid=2AC9D6C2D7D27F311D68E79236309D3B

- **Combination Chemotherapy in Treating Patients With Advanced Stomach Cancer**

  Condition(s): stage III gastric cancer; recurrent gastric cancer; stage IV gastric cancer

  Study Status: This study is currently recruiting patients.

  Sponsor(s): Swiss Institute for Applied Cancer Research

  Purpose - Excerpt: Rationale: Drugs used in chemotherapy use different ways to stop tumor cells from dividing so they stop growing or die. Combining more than one drug may kill more tumor cells. It is not yet known which combination chemotherapy regimen is most effective in treating advanced stomach cancer. Purpose: Randomized phase II trial to compare the effectiveness of different regimens of combination chemotherapy in treating patients who have advanced stomach cancer.

  Phase(s): Phase II

  Study Type: Treatment

  Contact(s): Switzerland; Hopital Cantonal Universitaire de Geneva, Geneva, CH-1211, Switzerland; Recruiting; Arnaud Roth 022-372-77-43. Study chairs or principal investigators: Arnaud Roth, Study Chair; Swiss Institute for Applied Cancer Research

  Web Site:
  http://clinicaltrials.gov/ct/gui/show/NCT00004873;jsessionid=2AC9D6C2D7D27F311D68E79236309D3B

- **Combination Chemotherapy in Treating Patients With Stage III Ovarian Epithelial Cancer or Gastrointestinal Cancer**

  Condition(s): gastric cancer; colorectal cancer; ovarian epithelial cancer; colon cancer; rectal cancer

  Study Status: This study is currently recruiting patients.

  Sponsor(s): National Cancer Institute (NCI); Kaplan Cancer Center

  Purpose - Excerpt: Rationale: Drugs used in chemotherapy use different ways to stop tumor cells from dividing so they stop growing or die. Combining more than one drug and giving them by intraperitoneal infusion may kill more tumor cells. Purpose: Phase II trial to study the effectiveness of intraperitoneal combination chemotherapy in treating patients who have stage III ovarian epithelial cancer or gastrointestinal cancer.

  Phase(s): Phase II

  Study Type: Treatment

  Contact(s): New York; NYU School of Medicine's Kaplan Comprehensive Cancer Center, New York, New York, 10016, United States; Recruiting; Franco M. Muggia 212-263-6485. Study chairs or principal investigators: Franco M. Muggia, Study Chair; Kaplan Cancer Center

  Web Site:
  http://clinicaltrials.gov/ct/gui/show/NCT00005049;jsessionid=2AC9D6C2D7D27F311D68E79236309D3B

- **Combination Chemotherapy in Treating Patients With Unresectable Locally Advanced or Metastatic Stomach Cancer**

  Condition(s): stage III gastric cancer; stage III esophageal cancer; stage IV esophageal cancer; adenocarcinoma of the esophagus; stage IV gastric cancer; adenocarcinoma of the stomach

  Study Status: This study is currently recruiting patients.

  Sponsor(s): National Cancer Institute (NCI); M.D. Anderson Cancer Center

  Purpose - Excerpt: Rationale: Drugs used in chemotherapy use different ways to stop tumor cells from dividing so they stop growing or die. Combining more than one drug may kill more tumor cells. Purpose: Phase II trial to study the effectiveness of combining bryostatin1 and paclitaxel in treating patients who have unresectable locally advanced or metastatic stomach cancer.

  Phase(s): Phase II

  Study Type: Treatment

Contact(s): Texas; CCOP - M.D. Anderson Research Base, Houston, Texas, 77030-4009, United States; Recruiting; W. Archie Bleyer 713-792-8515; University of Texas - MD Anderson Cancer Center, Houston, Texas, 77030-4009, United States; Recruiting; Jaffer A. Ajani 713-792-2828. Study chairs or principal investigators: Jaffer A. Ajani, Study Chair; M.D. Anderson Cancer Center

Web Site:
http://clinicaltrials.gov/ct/gui/show/NCT00006081;jsessionid=2AC9D6C2D7D27F311D68E79236309D3B

- **Combination Chemotherapy Plus Filgrastim in Treating Patients With Advanced Solid Tumors**

  Condition(s): lung cancer; pancreatic cancer; gastric cancer; salivary gland cancer; lip and oral cavity cancer; adult soft tissue sarcoma; esophageal cancer; head and neck cancer; bone cancer; ovarian sarcoma; melanoma; ovarian epithelial cancer; bladder cancer; prostate cancer; Kaposi's sarcoma; oropharyngeal cancer; breast cancer; uterine sarcoma

  Study Status: This study is currently recruiting patients.

  Sponsor(s): National Cancer Institute (NCI); Norris Cotton Cancer Center

  Purpose - Excerpt: Rationale: Drugs used in chemotherapy use different ways to stop tumor cells from dividing so they stop growing or die. Colony-stimulating factors such as filgrastim may increase the number of immune cells found in bone marrow or peripheral blood and may help a person's immune system recover from the side effects of chemotherapy. Purpose: Phase I trial to study the effectiveness of combination chemotherapy plus filgrastim in treating patients who have advanced solid tumors.

  Phase(s): Phase I

  Study Type: Treatment

  Contact(s): New Hampshire; Norris Cotton Cancer Center, Lebanon, New Hampshire, 03756-0002, United States; Recruiting; James R. Rigas 603-650-6344. Study chairs or principal investigators: Konstantin H. Dragnev, Study Chair; Norris Cotton Cancer Center

  Web Site:
  http://clinicaltrials.gov/ct/gui/show/NCT00014456;jsessionid=2AC9D6C2D7D27F311D68E79236309D3B

- **Combination Chemotherapy Plus Radiation Therapy in Treating Patients With Esophageal Cancer**

  Condition(s): stage III gastric cancer; stage III esophageal cancer; adenocarcinoma of the esophagus; stage II gastric cancer; stage II esophageal cancer; squamous cell carcinoma of the esophagus; adenocarcinoma of the stomach

  Study Status: This study is currently recruiting patients.

  Sponsor(s): National Cancer Institute (NCI); Memorial Sloan-Kettering Cancer Center

  Purpose - Excerpt: Rationale: Drugs used in chemotherapy use different ways to stop tumor cells from dividing so they stop growing or die. Radiation therapy uses high-energy x-rays to damage tumor cells. Combining chemotherapy with radiation therapy may kill more tumor cells. Purpose: Phase I trial to study the effectiveness of chemotherapy plus radiation therapy in treating patients who have advanced cancer of the esophagus.

  Phase(s): Phase I

  Study Type: Treatment

  Contact(s): California; USC/Norris Comprehensive Cancer Center and Hospital, Los Angeles, California, 90033-0804, United States; Recruiting; Peter V. Danenberg 323-865-3000; New York; Memorial Sloan-Kettering Cancer Center, New York, New York, 10021, United States; Recruiting; Bruce David Minsky 212-639-6817. Study chairs or principal investigators: David H. Ilson, Study Chair; Memorial Sloan-Kettering Cancer Center

  Web Site:
  http://clinicaltrials.gov/ct/gui/show/NCT00005638;jsessionid=2AC9D6C2D7D27F311D68E79236309D3B

- **Combination Chemotherapy Plus Radiation Therapy With or Without Fluorouracil in Treating Patients With Cancer of the Esophagus or Stomach**

  Condition(s): stage III gastric cancer; stage III esophageal cancer; adenocarcinoma of the esophagus; stage II gastric cancer; stage I gastric cancer; stage I esophageal cancer; stage II esophageal cancer; squamous cell carcinoma of the esophagus; adenocarcinoma of the stomach

  Study Status: This study is currently recruiting patients.

  Sponsor(s): National Cancer Institute (NCI); Radiation Therapy Oncology Group

Purpose - Excerpt: Rationale: Drugs used in chemotherapy use different ways to stop tumor cells from dividing so they stop growing or die. Radiation therapy uses high-energy x-rays to damage tumor cells. Combining chemotherapy and radiation therapy may kill more tumor cells. Purpose: Randomized phase II trial to compare the effectiveness of combination chemotherapy plus radiation therapy with and without fluorouracil in treating patients who have cancer of the esophagus or stomach.

Phase(s): Phase II

Study Type: Treatment

Contact(s): see Web site below

Web Site:
http://clinicaltrials.gov/ct/gui/show/NCT00009880;jsessionid=2AC9D6C2D7D27F311D68E79236309D3B

- **DX-8951f in Treating Patients With Metastatic Stomach Cancer**

  Condition(s): stage III gastric cancer; stage III esophageal cancer; stage IV esophageal cancer; adenocarcinoma of the esophagus; recurrent gastric cancer; stage IV gastric cancer; recurrent esophageal cancer; adenocarcinoma of the stomach

  Study Status: This study is currently recruiting patients.

  Sponsor(s): Daiichi Pharmaceuticals

  Purpose - Excerpt: Rationale: Drugs used in chemotherapy use different ways to stop tumor cells from dividing so they stop growing or die. Purpose: Phase II trial to study the effectiveness of exatecan mesylate in treating patients who have metastatic stomach cancer.

  Phase(s): Phase II

  Study Type: Treatment

  Contact(s): see Web site below

  Web Site:
  http://clinicaltrials.gov/ct/gui/show/NCT00017212;jsessionid=2AC9D6C2D7D27F311D68E79236309D3B

- **Endoscopic Placement of Metal Stent in Patients With Cancer-Related Bowel Obstruction**

  Condition(s): gastric cancer; colorectal cancer; colon cancer; rectal cancer

  Study Status: This study is currently recruiting patients.

Sponsor(s): National Cancer Institute (NCI); Robert H. Lurie Cancer Center

Purpose - Excerpt: Rationale: The use of endoscopy to place a metal stent in the large intestine is less invasive than surgery for treating cancer-related bowel obstruction and may have fewer side effects and improve recovery. Purpose: Phase I/II trial to study the effectiveness of endoscopic placement of a metal stent in treating patients who have cancer-related bowel obstruction.

Phase(s): Phase I; Phase II

Study Type: Supportive Care

Contact(s): Illinois; Robert H. Lurie Comprehensive Cancer Center, Northwestern University, Chicago, Illinois, 60611-3013, United States; Recruiting; Willis Parsons, III 312-695-4028. Study chairs or principal investigators: Willis Parsons, III, Study Chair; Robert H. Lurie Cancer Center

Web Site:
http://clinicaltrials.gov/ct/gui/show/NCT00004911;jsessionid=2AC9D6C2D7D27F311D68E79236309D3B

- **Endoscopic Placement of Metal Stents in Treating Patients With Cancer- Related Duodenal Obstruction**

  Condition(s): pancreatic cancer; gastric cancer; colorectal cancer; colon cancer

  Study Status: This study is currently recruiting patients.

  Sponsor(s): National Cancer Institute (NCI); Robert H. Lurie Cancer Center

  Purpose - Excerpt: Rationale: The use of endoscopy to place metal stents in the duodenum is less invasive than surgery for treating cancer-related duodenal obstruction and may have fewer side effects and improve recovery. Purpose: Phase I/II trial to study the effectiveness of endoscopic placement of metal stents in treating patients who have cancer-related obstruction of the duodenum.

  Phase(s): Phase I; Phase II

  Study Type: Supportive Care

  Contact(s): Illinois; Robert H. Lurie Comprehensive Cancer Center, Northwestern University, Chicago, Illinois, 60611-3013, United States; Recruiting; Willis Parsons, III 312-695-4028. Study chairs or principal investigators: Willis Parsons, III, Study Chair; Robert H. Lurie Cancer Center

Web Site:
http://clinicaltrials.gov/ct/gui/show/NCT00004910;jsessionid=2AC9D6C2D7D27F311D68E79236309D3B

- **Erlotinib in Treating Patients With Advanced Esophageal Cancer or Stomach Cancer**

  Condition(s): stage III esophageal cancer; stage IV esophageal cancer; adenocarcinoma of the esophagus; recurrent esophageal cancer; squamous cell carcinoma of the esophagus

  Study Status: This study is currently recruiting patients.

  Sponsor(s): National Cancer Institute (NCI); Memorial Sloan-Kettering Cancer Center

  Purpose - Excerpt: Rationale: Erlotinib may stop the growth of cancer by blocking the enzymes necessary for tumor cell growth. Purpose: Phase II trial to study the effectiveness of erlotinib in treating patients who have advanced esophageal cancer or stomach cancer.

  Phase(s): Phase II

  Study Type: Treatment

  Contact(s): New York; Memorial Sloan-Kettering Cancer Center, New York, New York, 10021, United States; Recruiting; David H. Ilson 212-639-8306. Study chairs or principal investigators: David H. Ilson, Study Chair; Memorial Sloan-Kettering Cancer Center

  Web Site:
  http://clinicaltrials.gov/ct/gui/show/NCT00045526;jsessionid=2AC9D6C2D7D27F311D68E79236309D3B

- **Erlotinib in Treating Patients With Locally Advanced or Metastatic Stomach Cancer or Esophageal Cancer**

  Condition(s): stage III gastric cancer; stage III esophageal cancer; stage IV esophageal cancer; adenocarcinoma of the esophagus; recurrent gastric cancer; stage IV gastric cancer; recurrent esophageal cancer; stage II esophageal cancer; adenocarcinoma of the stomach

  Study Status: This study is currently recruiting patients.

  Sponsor(s): National Cancer Institute (NCI); Southwest Oncology Group

  Purpose - Excerpt: Rationale: Biological therapies such as erlotinib may interfere with the growth of tumor cells and slow the growth of the tumor. Purpose: Phase II trial to study the effectiveness of erlotinib in treating patients who have locally advanced or metastatic stomach cancer or esophageal cancer.

Phase(s): Phase II

Study Type: Treatment

Contact(s): see Web site below

Web Site:
http://clinicaltrials.gov/ct/gui/show/NCT00032123;jsessionid=2AC9D6C2D7D27F311D68E79236309D3B

- **Gemcitabine and Irinotecan in Treating Patients With Metastatic or Recurrent Cancer of the Esophagus**

  Condition(s): stage IV esophageal cancer; adenocarcinoma of the esophagus; recurrent gastric cancer; stage IV gastric cancer; recurrent esophageal cancer; squamous cell carcinoma of the esophagus; adenocarcinoma of the stomach

  Study Status: This study is currently recruiting patients.

  Sponsor(s): National Cancer Institute (NCI); Southwest Oncology Group

  Purpose - Excerpt: Rationale: Drugs used in chemotherapy use different ways to stop tumor cells from dividing so they stop growing or die. Combining more than one drug may kill more tumor cells. Purpose: Phase II trial to study the effectiveness of combination chemotherapy in treating patients who have metastatic or recurrent cancer of the esophagus.

  Phase(s): Phase II

  Study Type: Treatment

  Contact(s): see Web site below

  Web Site:
  http://clinicaltrials.gov/ct/gui/show/NCT00012363;jsessionid=2AC9D6C2D7D27F311D68E79236309D3B

- **High-Dose Combination Chemotherapy Plus Peripheral Stem Cell Transplantation in Treating Patients With Advanced Cancer**

  Condition(s): melanoma; ovarian epithelial cancer; pancreatic cancer; colon cancer; gastric cancer; adult soft tissue sarcoma; rectal cancer; breast cancer; esophageal cancer; colorectal cancer; kidney tumor; adult primary liver cancer; bone cancer

  Study Status: This study is currently recruiting patients.

  Sponsor(s): National Cancer Institute (NCI); Beckman Research Institute

  Purpose - Excerpt: Rationale: Drugs used in chemotherapy use different ways to stop tumor cells from dividing so they stop growing or die.

Peripheral stem cell transplantation may allow the doctor to give higher doses of chemotherapy drugs and kill more tumor cells. Purpose: Phase I trial to study the effectiveness of combination chemotherapy plus peripheral stem cell transplantation in treating patients who have advanced cancer.

Phase(s): Phase I

Study Type: Treatment

Contact(s): California; Cancer Center and Beckman Research Institute, City of Hope, Duarte, California, 91010-3000, United States; Recruiting; George Somlo 626-359-8111. Study chairs or principal investigators: George Somlo, Study Chair; Beckman Research Institute

Web Site:
http://clinicaltrials.gov/ct/gui/show/NCT00002854;jsessionid=2AC9D6C2D7D27F311D68E79236309D3B

- **Interleukin-12, Paclitaxel, and Trastuzumab in Treating Patients With Solid Tumors**

  Condition(s): recurrent ovarian epithelial cancer; recurrent small cell lung cancer; recurrent non-small cell lung cancer; recurrent gastric cancer; recurrent breast cancer; recurrent endometrial cancer

  Study Status: This study is currently recruiting patients.

  Sponsor(s): National Cancer Institute (NCI); Arthur G. James Cancer Hospital & Richard J. Solove Research Institute

  Purpose - Excerpt: Rationale: Interleukin-12 may kill tumor cells by stopping blood flow to the tumor and by stimulating a person's white blood cells to kill cancer cells. Drugs used in chemotherapy use different ways to stop tumor cells from dividing so they stop growing or die. Monoclonal antibodies such as trastuzumab can locate tumor cells and either kill them or deliver tumor-killing substances to them without harming normal cells. Combining interleukin-12, chemotherapy, and monoclonal antibody therapy may kill more tumor cells. Purpose: Phase I trial to study the effectiveness of interleukin-12, paclitaxel, and trastuzumab in treating patients who have solid tumors .

  Phase(s): Phase I

  Study Type: Treatment

  Contact(s): Ohio; Arthur G. James Cancer Hospital - Ohio State University, Columbus, Ohio, 43210-1240, United States; Recruiting; Charles L. Shapiro 614-293-7530. Study chairs or principal investigators: William Edgar Carson, III, Study Chair; Arthur G. James Cancer Hospital & Richard J. Solove Research Institute

Web Site:
http://clinicaltrials.gov/ct/gui/show/NCT00028535;jsessionid=2AC9D6C2D7D27F311D68E79236309D3B

- **Irinotecan and Paclitaxel in Treating Patients With Metastatic or Recurrent Cancer of the Esophagus or Stomach**

  Condition(s): stage IV esophageal cancer; adenocarcinoma of the esophagus; recurrent gastric cancer; stage IV gastric cancer; recurrent esophageal cancer; adenocarcinoma of the stomach

  Study Status: This study is currently recruiting patients.

  Sponsor(s): National Cancer Institute (NCI); Jonsson Comprehensive Cancer Center

  Purpose - Excerpt: Rationale: Drugs used in chemotherapy use different ways to stop tumor cells from dividing so they stop growing or die. Combining more than one drug may kill more tumor cells. Purpose: Phase II trial to study the effectiveness of combining irinotecan and paclitaxel in treating patients who have metastatic or recurrent cancer of the esophagus or stomach.

  Phase(s): Phase II

  Study Type: Treatment

  Contact(s): see Web site below

  Web Site:
  http://clinicaltrials.gov/ct/gui/show/NCT00020761;jsessionid=2AC9D6C2D7D27F311D68E79236309D3B

- **LMB-9 Immunotoxin in Treating Patients With Advanced Pancreatic, Esophageal, Stomach, Colon, or Rectal Cancer**

  Condition(s): pancreatic cancer; gastric cancer; esophageal cancer; colorectal cancer; colon cancer; rectal cancer

  Study Status: This study is currently recruiting patients.

  Sponsor(s): National Cancer Institute (NCI); University of Freiburg

  Purpose - Excerpt: Rationale: LMB-9 immunotoxin can locate tumor cells and kill them without harming normal cells. This may be an effective treatment for advanced pancreatic, esophageal, stomach, colon or rectal cancer. Purpose: Phase I trial to study the effectiveness of LMB-9 immunotoxin in treating patients who have advanced pancreatic, esophageal, stomach, colon, or rectal cancer.

  Phase(s): Phase I

Study Type: Treatment

Contact(s): Germany; University of Freiburg Medical Center, Freiburg, D-79106, Germany; Recruiting; Peter Hafkmeyer 011-49-761-2703401. Study chairs or principal investigators: Peter Hafkmeyer, Study Chair; University of Freiburg

Web Site:
http://clinicaltrials.gov/ct/gui/show/NCT00010270;jsessionid=2AC9D6C2D7D27F311D68E79236309D3B

- **Octreotide as Palliative Therapy for Cancer-Related Bowel Obstruction That Cannot Be Removed by Surgery**

  Condition(s): pancreatic cancer; gastric cancer; colorectal cancer; ovarian epithelial cancer; colon cancer; rectal cancer

  Study Status: This study is currently recruiting patients.

  Sponsor(s): National Cancer Institute (NCI); Robert H. Lurie Cancer Center

  Purpose - Excerpt: Rationale: Palliative therapy with octreotide may help patients who have bowel obstruction that cannot be removed by surgery to live longer and more comfortably. Purpose: Phase II trial to study the effectiveness of octreotide as palliative therapy in treating patients who have cancer-related bowel obstruction that cannot be removed by surgery.

  Phase(s): Phase II

  Study Type: Supportive Care

  Contact(s): Illinois; Robert H. Lurie Comprehensive Cancer Center, Northwestern University, Chicago, Illinois, 60611-3013, United States; Recruiting; J. Cameron Muir 312-908-5250. Study chairs or principal investigators: J. Cameron Muir, Study Chair; Robert H. Lurie Cancer Center

  Web Site:
  http://clinicaltrials.gov/ct/gui/show/NCT00004895;jsessionid=2AC9D6C2D7D27F311D68E79236309D3B

- **Ondansetron With or Without Dexamethasone to Prevent Vomiting in Patients Receiving Radiation Therapy to the Upper Abdomen**

  Condition(s): pancreatic cancer; gastric cancer; colorectal cancer; adult primary liver cancer; testicular cancer; ovarian epithelial cancer; colon cancer; cervical cancer

  Study Status: This study is currently recruiting patients.

Sponsor(s): NCIC-Clinical Trials Group

Purpose - Excerpt: Rationale: Antiemetic drugs may help to reduce or prevent vomiting in patients treated with radiation therapy. It is not yet known if ondansetron is more effective with or without dexamethasone in preventing vomiting caused by radiation therapy. Purpose: Randomized phase III trial to compare the effectiveness of ondansetron with or without dexamethasone in preventing vomiting in patients with cancer who are receiving radiation therapy to the upper abdomen.

Phase(s): Phase III

Study Type: Supportive Care

Contact(s): see Web site below

Web Site:
http://clinicaltrials.gov/ct/gui/show/NCT00016380;jsessionid=2AC9D6C2D7D27F311D68E79236309D3B

- **Radiation Therapy and Chemotherapy Before and After Surgery in Treating Patients With Esophageal Cancer**

  Condition(s): stage III gastric cancer; stage III esophageal cancer; stage IV esophageal cancer; adenocarcinoma of the esophagus; stage II gastric cancer; stage I gastric cancer; stage IV gastric cancer; stage I esophageal cancer; stage II esophageal cancer; adenocarcinoma of the stomach

  Study Status: This study is currently recruiting patients.

  Sponsor(s): National Cancer Institute (NCI); Eastern Cooperative Oncology Group

  Purpose - Excerpt: Rationale: Radiation therapy uses high-energy x-rays to damage tumor cells. Drugs used in chemotherapy use different ways to stop tumor cells from dividing so they stop growing or die. Combining radiation therapy with chemotherapy before and after surgery may kill more tumor cells. Purpose: Randomized phase II trial to compare the effectiveness of combining radiation therapy with two different chemotherapy regimens before and after surgery in treating patients who have esophageal cancer.

  Phase(s): Phase II

  Study Type: Treatment

  Contact(s): see Web site below

  Web Site:
  http://clinicaltrials.gov/ct/gui/show/NCT00033657;jsessionid=2AC9D6C2D7D27F311D68E79236309D3B

- **Study of T900607-sodium in subjects with previously treated gastric cancer or adenocarcinoma of the esophagus**

  Condition(s): Gastric Cancer; Esophageal Neoplasms

  Study Status: This study is currently recruiting patients.

  Sponsor(s): Tularik

  Purpose - Excerpt: This is a clinical research study of T900607-sodium to determine if it is effective and safe in treating gastric cancer and adenocarcinoma of the esophagus. Patients will be treated on a weekly basis with an intravenous injection of the study drug.

  Phase(s): Phase II

  Study Type: Interventional

  Contact(s): see Web site below

  Web Site:
  http://clinicaltrials.gov/ct/gui/show/NCT00048529;jsessionid=2AC9D6C2D7D27F311D68E79236309D3B

- **Surgery With or Without Combination Chemotherapy in Treating Patients With Cancer of the Esophagus**

  Condition(s): adenocarcinoma of the esophagus; stage II gastric cancer; stage I esophageal cancer; stage II esophageal cancer; stage I gastric cancer; adenocarcinoma of the stomach

  Study Status: This study is currently recruiting patients.

  Sponsor(s): Federation Nationale des Centres de Lutte Contre le Cancer

  Purpose - Excerpt: Rationale: Drugs used in chemotherapy use different ways to stop tumor cells from dividing so they stop growing or die. It is not known whether combining chemotherapy with surgery is more effective than surgery alone. Purpose: Randomized phase III trial to compare the effectiveness of surgery with or without combination chemotherapy in treating patients with cancer of the esophagus.

  Phase(s): Phase III

  Study Type: Treatment

  Contact(s): France; Centre Regional de Lutte Contre le Cancer - Centre Val d'Aurelle, Montpellier, 34298, France; Recruiting; Marc Ychou 67-61-31-36. Study chairs or principal investigators: Marc Ychou, Study Chair; Federation Nationale des Centres de Lutte Contre le Cancer

  Web Site:
  http://clinicaltrials.gov/ct/gui/show/NCT00002883;jsessionid=2AC9D6C2D7D27F311D68E79236309D3B

- **Surgery With or Without Combination Chemotherapy in Treating Patients With Stomach Cancer**

  Condition(s): stage III gastric cancer; stage II gastric cancer; stage IV gastric cancer; intestinal adenocarcinoma of the stomach; mixed adenocarcinoma of the stomach; diffuse adenocarcinoma of the stomach

  Study Status: This study is currently recruiting patients.

  Sponsor(s): EORTC Gastrointestinal Tract Cancer Cooperative Group

  Purpose - Excerpt: Rationale: Drugs used in chemotherapy use different ways to stop tumor cells from dividing so they stop growing or die. It is not yet known if surgery alone or surgery combined with chemotherapy is more effective in treating stomach cancer. Purpose: Randomized phase III trial to compare the effectiveness of surgery with or without combination chemotherapy in treating patients who have stage II, stage III, or stage IV stomach cancer.

  Phase(s): Phase III

  Study Type: Treatment

  Contact(s): see Web site below

  Web Site:
  http://clinicaltrials.gov/ct/gui/show/NCT00004099;jsessionid=2AC9D6C2D7D27F311D68E79236309D3B

- **UCN-01 and Irinotecan in Treating Patients With Advanced Solid Tumors**

  Condition(s): lung cancer; pancreatic cancer; gastric cancer; esophageal cancer; colorectal cancer; adult primary liver cancer; ovarian epithelial cancer; colon cancer; rectal cancer

  Study Status: This study is currently recruiting patients.

  Sponsor(s): National Cancer Institute (NCI); Sidney Kimmel Cancer Center

  Purpose - Excerpt: Rationale: UCN-01 may stop the growth of tumor cells by blocking the enzymes necessary for tumor cell growth. Drugs used in chemotherapy use different ways to stop tumor cells from dividing so they stop growing or die. Combining UCN-01 with chemotherapy may kill more tumor cells. Purpose: Phase I trial to study the effectiveness of combining UCN-01 with irinotecan in treating patients who have advanced solid tumors.

  Phase(s): Phase I

  Study Type: Treatment

Contact(s): Maryland; Sidney Kimmel Comprehensive Cancer Center at Johns Hopkins, Baltimore, Maryland, 21231-2410, United States; Recruiting; Ross C. Donehower 410-955-8838. Study chairs or principal investigators: Ross C. Donehower, Study Chair; Sidney Kimmel Cancer Center

Web Site:
http://clinicaltrials.gov/ct/gui/show/NCT00047242;jsessionid=2AC9D6C2D7D27F311D68E79236309D3B

- **UCN-01 and Irinotecan in Treating Patients With Metastatic or Unresectable Solid Tumors**

  Condition(s): lung cancer; pancreatic cancer; gastric cancer; lip and oral cavity cancer; endometrial cancer; esophageal cancer; head and neck cancer; colorectal cancer; adult primary liver cancer; ovarian sarcoma; ovarian epithelial cancer; colon cancer; prostate cancer; cervical cancer; oropharyngeal cancer; rectal cancer; breast cancer

  Study Status: This study is currently recruiting patients.

  Sponsor(s): National Cancer Institute (NCI); Washington University School of Medicine

  Purpose - Excerpt: Rationale: Drugs used in chemotherapy use different ways to stop tumor cells from dividing so they stop growing or die. UCN-01 may help irinotecan kill more cancer cells by making tumor cells more sensitive to the drug. Purpose: Phase I trial to study the effectiveness of combining UCN-01 with irinotecan in treating patients who have metastatic or unresectable solid tumors.

  Phase(s): Phase I

  Study Type: Treatment

  Contact(s): Missouri; Washington University School of Medicine, Saint Louis, Missouri, 63110, United States; Recruiting; Paula M. Fracasso 314-454-8817. Study chairs or principal investigators: Paula M. Fracasso, Study Chair; Washington University School of Medicine

  Web Site:
  http://clinicaltrials.gov/ct/gui/show/NCT00031681;jsessionid=2AC9D6C2D7D27F311D68E79236309D3B

- **Vaccine Therapy in Treating Patients With Cancer of the Gastrointestinal Tract**

  Condition(s): pancreatic cancer; gastric cancer; esophageal cancer; colorectal cancer; colon cancer; rectal cancer

Study Status: This study is currently recruiting patients.

Sponsor(s): National Cancer Institute (NCI); University of Texas

Purpose - Excerpt: Rationale: Vaccines may make the body build an immune response to kill tumor cells. Purpose: Randomized phase II trial to compare the effectiveness of two different vaccines in treating patients who have cancer of the gastrointestinal tract.

Phase(s): Phase II

Study Type: Treatment

Contact(s): Texas; University of Texas Medical Branch, Galveston, Texas, 77555-0209, United States; Recruiting; Robert P. Whitehead 409-772-1164. Study chairs or principal investigators: Robert P. Whitehead, Study Chair; University of Texas

Web Site:
http://clinicaltrials.gov/ct/gui/show/NCT00012246;jsessionid=2AC9D6C2D7D27F311D68E79236309D3B

- **Vaccine Therapy in Treating Patients With Solid Tumors**

  Condition(s): stage IV prostate cancer; stage IIIA non-small cell lung cancer; stage III gastric cancer; stage II non-small cell lung cancer; stage II gastric cancer; stage II ovarian epithelial cancer; recurrent adult brain tumor; stage III ovarian epithelial cancer; recurrent non-small cell lung cancer; stage IV ovarian epithelial cancer; recurrent gastric cancer; adenocarcinoma of the prostate; adult anaplastic astrocytoma; recurrent prostate cancer

  Study Status: This study is currently recruiting patients.

  Sponsor(s): Southwest Oncology Group

  Purpose - Excerpt: Rationale: Vaccines made from a peptide may make the body build an immune response to kill cancer cells. Purpose: Randomized phase I trial to compare two different vaccines in treating patients who have solid tumors.

  Phase(s): Phase I

  Study Type: Treatment

  Contact(s): Washington; University of Washington School of Medicine, Seattle, Washington, 98195, United States; Recruiting; Mary L. (Nora) Disis 206-616-1823; Veterans Affairs Medical Center - Seattle, Seattle, Washington, 98108, United States; Recruiting; William H. Schubach 206-764-2709. Study chairs or principal investigators: Robert B. Montgomery, Study Chair; Southwest Oncology Group

Web Site:
http://clinicaltrials.gov/ct/gui/show/NCT00023634;jsessionid=2AC9D6C2D7D27F311D68E79236309D3B

- **Vaccine Therapy With or Without Sargramostim in Treating Patients With Advanced or Metastatic Cancer**

  Condition(s): lung cancer; pancreatic cancer; gastric cancer; salivary gland cancer; head and neck cancer; colorectal cancer; adult primary liver cancer; testicular cancer; ovarian epithelial cancer; colon cancer; thyroid cancer; rectal cancer; breast cancer

  Study Status: This study is currently recruiting patients.

  Sponsor(s): National Cancer Institute (NCI); Fox Chase Cancer Center

  Purpose - Excerpt: Rationale: Vaccines may make the body build an immune response to kill tumor cells. Colony-stimulating factors such as sargramostim may increase the number of immune cells found in bone marrow or peripheral blood. Combining vaccine therapy with sargramostim may make tumor cells more sensitive to the vaccine and may kill more tumor cells. Purpose: Phase I trial to study the effectiveness of vaccine therapy with or without sargramostim in treating patients who have advanced or metastatic cancer.

  Phase(s): Phase I

  Study Type: Treatment

  Contact(s): Pennsylvania; Fox Chase Cancer Center, Philadelphia, Pennsylvania, 19111, United States; Recruiting; Margaret von Mehren 215-728-3545. Study chairs or principal investigators: Margaret von Mehren, Study Chair; Fox Chase Cancer Center

  Web Site:
  http://clinicaltrials.gov/ct/gui/show/NCT00028496;jsessionid=2AC9D6C2D7D27F311D68E79236309D3B

- **Oxaliplatin and Capecitabine in Treating Patients Who Have Advanced Esophageal Cancer or Stomach Cancer**

  Condition(s): stage III esophageal cancer; stage IV esophageal cancer; adenocarcinoma of the esophagus; recurrent gastric cancer; stage IV gastric cancer; recurrent esophageal cancer; adenocarcinoma of the stomach

  Study Status: This study is not yet open for patient recruitment.

  Sponsor(s): National Cancer Institute (NCI); North Central Cancer Treatment Group

Purpose - Excerpt: Rationale: Drugs used in chemotherapy use different ways to stop tumor cells from dividing so they stop growing or die. Combining more than one drug may kill more tumor cells. Purpose: Phase II trial to study the effectiveness of combining oxaliplatin with capecitabine in treating patients who have advanced esophageal cancer or stomach cancer.

Phase(s): Phase II

Study Type: Treatment

Contact(s): Michael J. O'Connell 507-284-2511. Study chairs or principal investigators: Michael J. O'Connell, Study Chair; North Central Cancer Treatment Group

Web Site:
http://clinicaltrials.gov/ct/gui/show/NCT00040859;jsessionid=2AC9D6C2D7D27F311D68E79236309D3B

Benefits and Risks[20]

What Are the Benefits of Participating in a Clinical Trial?

If you are interested in a clinical trial, it is important to realize that your participation can bring many benefits to you and society at large:

- A new treatment could be more effective than the current treatment for gastric cancer. Although only half of the participants in a clinical trial receive the experimental treatment, if the new treatment is proved to be more effective and safer than the current treatment, then those patients who did not receive the new treatment during the clinical trial may be among the first to benefit from it when the study is over.
- If the treatment is effective, then it may improve health or prevent diseases or disorders.
- Clinical trial patients receive the highest quality of medical care. Experts watch them closely during the study and may continue to follow them after the study is over.
- People who take part in trials contribute to scientific discoveries that may help other people with gastric cancer. In cases where certain diseases or

[20] This section has been adapted from ClinicalTrials.gov, a service of the National Institutes of Health:
http://www.clinicaltrials.gov/ct/gui/c/a1r/info/whatis?JServSessionIdzone_ct=9jmun6f291.

disorders run in families, your participation may lead to better care or prevention for your family members.

The Informed Consent

Once you agree to take part in a clinical trial, you will be asked to sign an "informed consent." This document explains a clinical trial's risks and benefits, the researcher's expectations of you, and your rights as a patient.

What Are the Risks?

Clinical trials may involve risks as well as benefits. Whether or not a new treatment will work cannot be known ahead of time. There is always a chance that a new treatment may not work better than a standard treatment. There is also the possibility that it may be harmful. The treatment you receive may cause side effects that are serious enough to require medical attention.

How Is Patient Safety Protected?

Clinical trials can raise fears of the unknown. Understanding the safeguards that protect patients can ease some of these fears. Before a clinical trial begins, researchers must get approval from their hospital's Institutional Review Board (IRB), an advisory group that makes sure a clinical trial is designed to protect patient safety. During a clinical trial, doctors will closely watch you to see if the treatment is working and if you are experiencing any side effects. All the results are carefully recorded and reviewed. In many cases, experts from the Data and Safety Monitoring Committee carefully monitor each clinical trial and can recommend that a study be stopped at any time. You will only be asked to take part in a clinical trial as a volunteer giving informed consent.

What Are a Patient's Rights in a Clinical Trial?

If you are eligible for a clinical trial, you will be given information to help you decide whether or not you want to participate. As a patient, you have the right to:

- Information on all known risks and benefits of the treatments in the study.

- Know how the researchers plan to carry out the study, for how long, and where.
- Know what is expected of you.
- Know any costs involved for you or your insurance provider.
- Know before any of your medical or personal information is shared with other researchers involved in the clinical trial.
- Talk openly with doctors and ask any questions.

After you join a clinical trial, you have the right to:

- Leave the study at any time. Participation is strictly voluntary. However, you should not enroll if you do not plan to complete the study.
- Receive any new information about the new treatment.
- Continue to ask questions and get answers.
- Maintain your privacy. Your name will not appear in any reports based on the study.
- Know whether you participated in the treatment group or the control group (once the study has been completed).

What Should You Ask before Deciding to Join a Clinical Trial?

Questions you should ask when thinking about joining a clinical trial include the following:

- What is the purpose of the clinical trial?
- What are the standard treatments for gastric cancer? Why do researchers think the new treatment may be better? What is likely to happen to me with or without the new treatment?
- What tests and treatments will I need? Will I need surgery? Medication? Hospitalization?
- How long will the treatment last? How often will I have to come back for follow-up exams?
- What are the treatment's possible benefits to my condition? What are the short- and long-term risks? What are the possible side effects?
- Will the treatment be uncomfortable? Will it make me feel sick? If so, for how long?
- How will my health be monitored?

- Where will I need to go for the clinical trial? How will I get there?
- How much will it cost to be in the study? What costs are covered by the study? How much will my health insurance cover?
- Will I be able to see my own doctor? Who will be in charge of my care?
- Will taking part in the study affect my daily life? Do I have time to participate?
- How do I feel about taking part in a clinical trial? Are there family members or friends who may benefit from my contributions to new medical knowledge?

Clinical Trials and Insurance Coverage[21]

As you consider enrolling in a clinical trial, you will face the critical issue of how to cover the costs of care. Even if you have health insurance, your coverage may not include some or all of the patient care costs associated with a clinical trial. This is because some health plans define clinical trials as "experimental" or "investigational" procedures.

Because lack of coverage for these costs can keep people from enrolling in trials, the National Cancer Institute is working with major health plans and managed care groups to find solutions. In the meantime, there are strategies that may help you deal with cost and coverage barriers. This section answers frequently asked questions about insurance coverage for clinical trial participation and directs you to additional information resources.

The material here is mainly concerned with treatment clinical trials, since other types of trials (prevention, screening, etc.) are newer and generally not covered by health insurance at all. However, this guide may become more relevant for prevention and other types of trials as these trials grow more common.

If you do not have any health insurance, you may find this section helpful for understanding some of the costs that trials involve.

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[21] Adapted from the NCI:
http://www.cancer.gov/clinical_trials/doc_header.aspx?viewid=1d92be79-8748-4bda-8005-2a56d332463b.

What Costs Do Trials Involve? Who Is Usually Responsible for Paying Them?

There are two types of costs associated with a trial: patient care costs and research costs.
Patient care costs fall into two categories:

- Usual care costs, such as doctor visits, hospital stays, clinical laboratory tests, x-rays, etc., which occur whether you are participating in a trial or receiving standard treatment. These costs have usually been covered by a third-party health plan, such as Medicare or private insurance.
- Extra care costs associated with clinical trial participation, such as the additional tests that may or may not be fully covered by the clinical trial sponsor and/or research institution.

The sponsor and the participant's health plan need to resolve coverage of these costs for particular trials.

Research costs are those associated with conducting the trial, such as data collection and management, research physician and nurse time, analysis of results, and tests purely performed for research purposes. Such costs are usually covered by the sponsoring organization, such as NCI or a pharmaceutical company.

Criteria Used by Health Plans to Make Reimbursement Decisions about Trials

Health insurance companies and managed care companies decide which health care services they will pay for by developing coverage policy regarding the specific services. In general, the most important factor determining whether something is covered is a health plan's judgment as to whether the service is established or investigational. Health plans usually designate a service as established if there is a certain amount of scientific data to show that it is safe and effective. If the health plan does not think that such data exist in sufficient quantity, the plan may label the service as investigational.

Health care services delivered within the setting of a clinical trial are very often categorized as investigational and not covered. This is because the health plan thinks that the major reason to perform the clinical trial is that there is not enough data to establish the safety and effectiveness of the

service being studied. Thus, for some health plans, any mention of the fact that the patient is involved in a clinical trial results in a denial of payment.

Your health plan may define specific criteria that a trial must meet before extending coverage, such as the following:

Sponsorship

Some plans may only cover costs of trials sponsored by organizations whose review and oversight of the trial is careful and scientifically rigorous, according to standards set by the health plan.

Trial Phase and Type

Some plans may cover patient care costs only for the clinical trials they judge to be "medically necessary" on a case-by-case basis. Trial phase may also affect coverage; for example, while a plan may be willing to cover costs associated with Phase III trials, which include treatments that have already been successful with a certain number of people, the plan may require some documentation of effectiveness before covering a Phase I or II trial.

While health plans are interested in efforts to improve prevention and screening, they currently seem less likely to have a review process in place for these trials. Therefore, it may be more difficult to get coverage for the care costs associated with them.

Some plans, especially smaller ones, will not cover any costs associated with a clinical trial. Policies vary widely, but in most cases your best bet is to have your doctor initiate discussions with the health plan.

Cost "Neutrality"

Some health plans may limit coverage to trials they consider cost-neutral (i.e., not significantly more expensive than the treatments considered standard).

Lack of Standard Therapy

Some plans limit coverage of trials to situations in which no standard therapy is available.

Facility and Personnel Qualifications

A health plan may require that the facility and medical staff meet specific qualifications to conduct a trial involving unique services, especially intensive therapy such as a bone marrow transplant (high-dose chemotherapy with bone marrow/ stem cell rescue).

Clinical Trials and Medicare Coverage

For up-to-date information about Medicare coverage of clinical trials, go to the Web site for the Centers for Medicaid & Medicare (**http://www.hcfa.gov/coverage/8d.htm**; formerly the Health Care Financing Administration). As of January 2001, the following information was accurate[22]:

What Will Medicare Pay?

- Anything normally covered is still covered when it is part of a clinical trial. This includes test, procedures, and doctor visits that are ordinarily covered.
- Anything normally covered even if it is a service or item associated with the experimental treatment. For example, Medicare will pay for the intravenous administration of a new chemotherapy drug being tested in a trial, including any therapy to prevent side effects from the new drug.
- Anything normally covered even if it resulted from your being in the clinical trial. For example, a test or hospitalization resulting from a side effect of the new treatment that Medicare would ordinarily cover.

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[22] On June 7, 2000, Present Clinton announced that Medicare would revise its payment policy to reimburse the routine patient care costs of clinical trials. The announcement is available for public viewing at the following Web address: **http://www.cancer.gov/clinical_trials/doc.aspx?viewid=320DD013-BA7A-4177-A000-2011089F34A0**.

What Costs Are Not Covered?

- Investigational items or services being tested in a trial. Sponsors of clinical trials often provide the new drug free, but make sure you ask your doctor before you begin.
- Items or services used solely for the data collection needs of the trial.
- Anything being provided free by the sponsor of the trial.

What Kinds of Clinical Trials Are Covered?

NCI's Cancer Information Service has provided a fact sheet for Medicare beneficiaries at the following Web site: **http://cis.nci.nih.gov/fact/8_14.htm**. In general, cancer treatment and diagnosis trials are covered if:

- They are funded by the National Cancer Institute (NCI), NCI-Designated Cancer Centers, NCI-Sponsored Clinical Trials Cooperative Groups and all other Federal agencies that fund cancer research. Other trials may be eligible for coverage and doctors can ask Medicare to pay the patients' costs. Ask your doctor about this before you begin.
- They are designed to treat or diagnose your cancer.
- The purpose or subject of the trial is within a Medicare benefit category. For example, cancer diagnosis and treatment are Medicare benefits, so these trials are covered. Cancer prevention trials are not currently covered.

Increasing the Likelihood of Insurance Coverage for Trials[23]

There are several steps you can follow to deal with coverage issues up front when deciding to enter a clinical trial. Along the way, enlist the help of family members and your doctor or other health professionals. You may find the following checklist useful:

[23] This section has been adapted from the NCI: **http://www.cancer.gov/clinical_trials/doc_header.aspx?viewid=1d92be79-8748-4bda-8005-2a56d332463b&docid=0df4397a-eccb-465f-bd33-a89e7a708c46**.

Understand the Costs Associated with the Trial

Ask your doctor or the trial's contact person about the costs that must be covered by you or your health plan. Are these costs significantly higher than those associated with standard care? Also, inquire about the experience of other patients in the trial. Have their plans paid for their care? Have there been any persistent problems with coverage? How often have the trial's administrators been successful in getting plans to cover patient care costs?

Understand Your Health Plan

Be sure you know what's in your policy; request and carefully review the actual contract language. If there's a specific exclusion for "experimental treatment," look closely at the policy to see how the plan defines such treatment and under what conditions it might be covered. If it is not clearly defined, call the plan's customer service line, consult their Web site, and/or write to them. Ask for specific information about clinical trials coverage.

Work Closely with Your Doctor

Talk with your doctor about the paperwork he or she submits to your health plan. If there have been problems with coverage in the past, you might ask your doctor or the hospital to send an information package to the plan that includes studies supporting the procedure's safety, benefits, and medical appropriateness. This package might include:

- Publications from peer-reviewed literature about the proposed therapy that demonstrate patient benefits;
- A letter that uses the insurance contract's own language to explain why the treatment, screening method, or preventive measure should be covered;
- Letters from researchers that explain the clinical trial;
- Support letters from patient advocacy groups.

Be sure to keep your own copy of any materials that the doctor sends to your health plan for future reference.

Work Closely with Your Company's Benefits Manager

This person may be helpful in enlisting the support of your employer to request coverage by the health plan.

Give Your Health Plan a Deadline

Ask the hospital or cancer center to set a target date for the therapy. This will help to ensure that coverage decisions are made promptly.

Know Your Rights[24]

A number of state governments are addressing the question of whether insurance companies ought to cover the costs associated with patients' participation in clinical trials. Lack of such coverage is a significant barrier to many patients who might otherwise benefit from enrolling in a trial. Lack of coverage also makes it harder for researchers to successfully conduct trials that could improve prevention and treatment options. Information on State initiatives and legislation concerning cancer-related clinical trials is available at **http://www.cancer.gov/ClinicalTrials/insurancelaws**. By conducting your own research and learning about your rights, you may increase the likelihood that your insurance company will cover the costs of a trial.

If Your Insurance Claim Is Denied after the Trial Has Begun

If a claim is denied, read your policy to find out what steps you can follow to make an appeal. In "What Cancer Survivors Need to Know about Health Insurance", the National Coalition for Cancer Survivorship suggests that you and your doctor demonstrate to the health plan that:

- The therapy is not just a research study, but also a valid procedure that benefits patients;
- Your situation is similar to that of other patients who are participating in clinical trials as part of a covered benefit;
- Possible complications have been anticipated and can be handled effectively.

[24] Adapted from Cancer.gov: **http://www.cancer.gov/ClinicalTrials/insurancelaws**.

You also may wish to contact your state insurance counseling hotline or insurance department for more help, or write your state insurance commissioner describing the problem.

Where Else Can I Turn for Assistance?

It's never easy to deal with financial issues when you or a loved one faces cancer. Unfortunately, costs can present a significant barrier to clinical trials participation. The range of insurance issues and health plan contracts makes it impossible to deal with all of them here. You may wish to consult this partial list of publications, organizations, and Web sites for more information:

Publications

What Cancer Survivors Need to Know about Health Insurance
National Coalition of Cancer Survivorship
1010 Wayne Avenue, 5th floor
Silver Spring, MD 20910
(301) 650-8868
http://www.cansearch.org/

Cancer Treatments Your Insurance Should Cover
The Association of Community Cancer Centers
11600 Nebel Street, Suite 201
Rockville, MD 20852
(301) 984-9496
http://www.accc-cancer.org/main2001.shtml

The Managed Care Answer Guide
Patient Advocate Foundation
739 Thimble Shoals Boulevard, Suite 704
Newport News, VA 23606
(757) 873-6668
E-mail: **ndepaf@pinn.net**

1998 Guide to Health Insurance for People with Medicare, The Medicare Handbook
Medicare Helpline: 1-800-444-4606
Health Care Financing Administration: **http://www.hcfa.gov/**
New Medicare site: **http://www.medicare.gov/**

Assistance Programs

Candlelighters Childhood Cancer Foundation
Ombudsman Program
910 Woodmont Avenue, #4607
Bethesda, MD 20814
(301) 657-8401; 1-800-366-2223 (toll-free)
E-mail: **info@candlelighters.org**
http://www.candlelighters.org
The Ombudsman Program helps families of children with cancer and survivors of childhood cancer resolve a range of problems, including insurance coverage difficulties. Local groups appoint a Parent Advocate who works with the treatment center on behalf of families.

Medical Care Management Corporation
5272 River Road, Suite 650
Bethesda, MD 20816-1405
(301) 652-1818
email: mcman@mcman.com
http://www.mcman.com/
Working for a range of clients, including health plans, employers, and patients, MCMC conducts independent, objective reviews of high-technology medical care cases to assist in decision-making. While it does charge for its services, MCMC also offers a volunteer program for those who cannot afford to pay.

More Information Resources

OncoLink
A service of the University of Pennsylvania Cancer Center.
http://www.oncolink.com/
In addition to general cancer information, this web site features a section on financial information for patients. Among the topics: viatical settlements, life insurance, a glossary of financial and medical terms, and news about billing and insurance.

American Association of Health Plans
1129 20th Street, NW, Suite 600
Washington, DC 20036-3421
(202) 778-3200
http://www.aahp.org/
The Web site section "For Consumers" includes a fact sheet on clinical research that describes various health plans' efforts to support research initiatives and collaborate with academic health centers and universities.

Health Insurance Association of America
555 13th Street, NW
Washington, DC 20004
(202) 824-1600

- Home page: **http://www.hiaa.org/**
- Consumer Information: **http://www.hiaa.org/consumer/**
- Insurance Counseling Hotlines by State: **http://www.hiaa.org/consumer/insurance_counsel.cfm**
- State Insurance Departments: **http://www.hiaa.org/consumer/state_insurance.cfm**

Government Initiatives to Expand Insurance Coverage for Trials[25]

The good news is that there has been a recent effort in the U.S. to assure clinical trials coverage, with NCI involved in several new initiatives as described below:

NCI-Department of Defense Agreement

An innovative 1996 agreement between NCI and the Department of Defense (DoD) has given thousands of DoD cancer patients more options for care and greater access to state-of-the-art treatments. Patients who are beneficiaries of TRICARE/CHAMPUS, the DoD's health program, are covered for NCI-sponsored Phase II and Phase III clinical treatment trials. NCI and DoD are refining a system that allows physicians and patients to determine quickly what current trials meet their needs and where they are taking place.

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[25] Adapted from the NCI:
http://www.cancer.gov/clinical_trials/doc_header.aspx?viewid=1d92be79-8748-4bda-8005-2a56d332463b&docid=d8092601-daf9-4794-8536-3be2712eb6b9.

NCI-Department of Veterans Affairs Agreement

A 1997 agreement with the Department of Veterans Affairs provides coverage for eligible veterans of the armed services to participate in NCI-sponsored prevention, diagnosis, and treatment studies nationwide. For additional information, see the VA/DoD Beneficiaries Digest Page at **http://www.va.gov/cancer.htm**.

Midwest Health Plans Agreement

Some NCI Cooperative Groups have reached agreements with several insurers in Wisconsin and Minnesota to provide more than 200,000 people with coverage. This coverage is allocated for patient care costs if they participate in a cooperative group-sponsored trial.

Pediatric Cancer Care Network

This network, a cooperative agreement among the Children's Cancer Group, the Pediatric Oncology Group, and the Blue Cross Blue Shield System Association (BCBS) nationwide, will ensure that children of BCBS subscribers receive care at designated centers of cancer care excellence and may promote the enrollment of children in Cooperative Group clinical trials.

Keeping Current on Clinical Trials

Various government agencies maintain databases on trials. The U.S. National Institutes of Health, through the National Library of Medicine, has developed ClinicalTrials.gov to provide patients, family members, and physicians with current information about clinical research across the broadest number of diseases and conditions.

The site was launched in February 2000 and currently contains approximately 5,700 clinical studies in over 59,000 locations worldwide, with most studies being conducted in the United States. ClinicalTrials.gov receives about 2 million hits per month and hosts approximately 5,400 visitors daily. To access this database, simply go to their Web site (**www.clinicaltrials.gov**) and search by "gastric cancer" (or synonyms).

While ClinicalTrials.gov is the most comprehensive listing of NIH-supported clinical trials available, not all trials are in the database. The database is

updated regularly, so clinical trials are continually being added. The following is a list of specialty databases affiliated with the National Institutes of Health that offer additional information on trials:

- For clinical studies at the Warren Grant Magnuson Clinical Center located in Bethesda, Maryland, visit their Web site: **http://clinicalstudies.info.nih.gov/**
- For clinical studies conducted at the Bayview Campus in Baltimore, Maryland, visit their Web site: **http://www.jhbmc.jhu.edu/studies/index.html**
- For cancer trials, visit the National Cancer Institute: **http://cancertrials.nci.nih.gov/**

General References

The following references describe clinical trials and experimental medical research. They have been selected to ensure that they are likely to be available from your local or online bookseller or university medical library. These references are usually written for healthcare professionals, so you may consider consulting with a librarian or bookseller who might recommend a particular reference. The following includes some of the most readily available references (sorted alphabetically by title; hyperlinks provide rankings, information and reviews at Amazon.com):

- **A Guide to Patient Recruitment : Today's Best Practices & Proven Strategies** by Diana L. Anderson; Paperback - 350 pages (2001), CenterWatch, Inc.; ISBN: 1930624115; **http://www.amazon.com/exec/obidos/ASIN/1930624115/icongroupinterna**
- **A Step-By-Step Guide to Clinical Trials** by Marilyn Mulay, R.N., M.S., OCN; Spiral-bound - 143 pages Spiral edition (2001), Jones & Bartlett Pub; ISBN: 0763715697; **http://www.amazon.com/exec/obidos/ASIN/0763715697/icongroupinterna**
- **The CenterWatch Directory of Drugs in Clinical Trials** by CenterWatch; Paperback - 656 pages (2000), CenterWatch, Inc.; ISBN: 0967302935; **http://www.amazon.com/exec/obidos/ASIN/0967302935/icongroupinterna**
- **The Complete Guide to Informed Consent in Clinical Trials** by Terry Hartnett (Editor); Paperback - 164 pages (2000), PharmSource Information Services, Inc.; ISBN: 0970153309; **http://www.amazon.com/exec/obidos/ASIN/0970153309/icongroupinterna**

- **Dictionary for Clinical Trials** by Simon Day; Paperback - 228 pages (1999), John Wiley & Sons; ISBN: 0471985961; **http://www.amazon.com/exec/obidos/ASIN/0471985961/icongroupinterna**
- **Extending Medicare Reimbursement in Clinical Trials** by Institute of Medicine Staff (Editor), et al; Paperback 1st edition (2000), National Academy Press; ISBN: 0309068886; **http://www.amazon.com/exec/obidos/ASIN/0309068886/icongroupinterna**
- **Handbook of Clinical Trials** by Marcus Flather (Editor); Paperback (2001), Remedica Pub Ltd; ISBN: 1901346293; **http://www.amazon.com/exec/obidos/ASIN/1901346293/icongroupinterna**

Vocabulary Builder

The following vocabulary builder gives definitions of words used in this chapter that have not been defined in previous chapters:

Anaplastic: A term used to describe cancer cells that divide rapidly and bear little or no resemblance to normal cells. [NIH]

Antibody: A type of protein made by certain white blood cells in response to a foreign substance (antigen). Each antibody can bind to only a specific antigen. The purpose of this binding is to help destroy the antigen. Antibodies can work in several ways, depending on the nature of the antigen. Some antibodies destroy antigens directly. Others make it easier for white blood cells to destroy the antigen. [NIH]

Antiemetic: An agent that prevents or alleviates nausea and vomiting. Also antinauseant. [EU]

Antineoplastons: Substances isolated from normal human blood and urine being tested as a type of treatment for some tumors and AIDS. [NIH]

Astrocytoma: A tumor that begins in the brain or spinal cord in small, star-shaped cells called astrocytes. [NIH]

Bladder: The organ that stores urine. [NIH]

Bowel: The long tube-shaped organ in the abdomen that completes the process of digestion. There is both a small and a large bowel. Also called the intestine. [NIH]

Capecitabine: An anticancer drug that belongs to the family of drugs called antimetabolites. [NIH]

Cisplatin: An anticancer drug that belongs to the family of drugs called platinum compounds. [NIH]

Colorectal: Having to do with the colon or the rectum. [NIH]

Cytokines: A class of substances that are produced by cells of the immune system and can affect the immune response. Cytokines can also be produced in the laboratory by recombinant DNA technology and given to people to affect immune responses. [NIH]

Cytotoxic: Cell-killing. [NIH]

Dexamethasone: A synthetic steroid (similar to steroid hormones produced naturally in the adrenal gland). Dexamethasone is used to treat leukemia and lymphoma and may be used to treat some of the problems caused by other cancers and their treatment. [NIH]

Duodenum: The first part of the small intestine. [NIH]

Endometrial: Having to do with the endometrium (the layer of tissue that lines the uterus). [NIH]

Endoscopy: The use of a thin, lighted tube (called an endoscope) to examine the inside of the body. [NIH]

Enzyme: A protein that speeds up chemical reactions in the body. [NIH]

Epithelial: Refers to the cells that line the internal and external surfaces of the body. [NIH]

Esophageal: Having to do with the esophagus, the muscular tube through which food passes from the throat to the stomach. [NIH]

Filgrastim: A colony-stimulating factor that stimulates the production of neutrophils (a type of white blood cell). It is a cytokine that belongs to the family of drugs called hematopoietic (blood-forming) agents. Also called granulocyte colony-stimulating factor (G-CSF). [NIH]

Floxuridine: An anticancer drug that belongs to the family of drugs called antimetabolites. [NIH]

Fluorouracil: An anticancer drug that belongs to the family of drugs called antimetabolites. [NIH]

Gemcitabine: An anticancer drug that belongs to the family of drugs called antimetabolites. [NIH]

Hyperthermia: A type of treatment in which body tissue is exposed to high temperatures to damage and kill cancer cells or to make cancer cells more sensitive to the effects of radiation and certain anticancer drugs. [NIH]

Immunotoxin: An antibody linked to a toxic substance. Some immmunotoxins can bind to cancer cells and kill them. [NIH]

Infusion: A method of putting fluids, including drugs, into the bloodstream. Also called intravenous infusion. [NIH]

Interferon: A biological response modifier (a substance that can improve the

body's natural response to disease). Interferons interfere with the division of cancer cells and can slow tumor growth. There are several types of interferons, including interferon-alpha, -beta, and -gamma. These substances are normally produced by the body. They are also made in the laboratory for use in treating cancer and other diseases. [NIH]

Intraperitoneal: IP. Within the peritoneal cavity (the area that contains the abdominal organs). [NIH]

Intravenous: IV. Into a vein. [NIH]

Irinotecan: An anticancer drug that belongs to a family of anticancer drugs called topoisomerase inhibitors. It is a camptothecin analogue. Also called CPT 11. [NIH]

Leukemia: Cancer of blood-forming tissue. [NIH]

Melanoma: A form of skin cancer that arises in melanocytes, the cells that produce pigment. Melanoma usually begins in a mole. [NIH]

Metastatic: Having to do with metastasis, which is the spread of cancer from one part of the body to another. [NIH]

Neoplasm: A new growth of benign or malignant tissue. [NIH]

Octreotide: A drug similar to the naturally occurring growth hormone inhibitor somatostatin. Octreotide is used to treat diarrhea and flushing associated with certain types of tumors. [NIH]

Ondansetron: A drug that prevents or reduces nausea and vomiting. [NIH]

Oral: By or having to do with the mouth. [NIH]

Oxaliplatin: An anticancer drug that belongs to the family of drugs called platinum compounds. [NIH]

Paclitaxel: An anticancer drug that belongs to the family of drugs called mitotic inhibitors. [NIH]

Peptide: Any compound consisting of two or more amino acids, the building blocks of proteins. Peptides are combined to make proteins. [NIH]

Proteins: Polymers of amino acids linked by peptide bonds. The specific sequence of amino acids determines the shape and function of the protein. [NIH]

Randomized: Describes an experiment or clinical trial in which animal or human subjects are assigned by chance to separate groups that compare different treatments. [NIH]

Refractory: Not readily yielding to treatment. [EU]

Sarcoma: A cancer of the bone, cartilage, fat, muscle, blood vessels or other connective or supportive tissue. [NIH]

Sargramostim: A colony-stimulating factor that stimulates the production of

blood cells, especially platelets, during chemotherapy. It is a cytokine that belongs to the family of drugs called hematopoietic (blood-forming) agents. Also called GM-CSF. [NIH]

Squamous: Scaly, or platelike. [EU]

Stent: A device placed in a body structure (such as a blood vessel or the gastrointestinal tract) to provide support and keep the structure open. [NIH]

Testicular: Pertaining to a testis. [EU]

Thyroid: A gland located near the windpipe (trachea) that produces thyroid hormone, which helps regulate growth and metabolism. [NIH]

Toxicity: The quality of being poisonous, especially the degree of virulence of a toxic microbe or of a poison. [EU]

Transplantation: The replacement of an organ with one from another person. [NIH]

Trastuzumab: A type of monoclonal antibody used in cancer detection or therapy. Monoclonal antibodies are laboratory-produced substances that can locate and bind to cancer cells. Trastuzumab blocks the effects of the growth factor protein HER2, which transmits growth signals to breast cancer cells. [NIH]

Unresectable: Unable to be surgically removed. [NIH]

Urine: Fluid containing water and waste products. Urine is made by the kidneys, stored in the bladder, and leaves the body through the urethra. [NIH]

Vaccine: A substance or group of substances meant to cause the immune system to respond to a tumor or to microorganisms, such as bacteria or viruses. [NIH]

PART II: ADDITIONAL RESOURCES AND ADVANCED MATERIAL

ABOUT PART II

In Part II, we introduce you to additional resources and advanced research on gastric cancer. All too often, patients who conduct their own research are overwhelmed by the difficulty in finding and organizing information. The purpose of the following chapters is to provide you an organized and structured format to help you find additional information resources on gastric cancer. In Part II, as in Part I, our objective is not to interpret the latest advances on gastric cancer or render an opinion. Rather, our goal is to give you access to original research and to increase your awareness of sources you may not have already considered. In this way, you will come across the advanced materials often referred to in pamphlets, books, or other general works. Once again, some of this material is technical in nature, so consultation with a professional familiar with gastric cancer is suggested.

CHAPTER 4. STUDIES ON GASTRIC CANCER

Overview

Every year, academic studies are published on gastric cancer or related conditions. Broadly speaking, there are two types of studies. The first are peer reviewed. Generally, the content of these studies has been reviewed by scientists or physicians. Peer-reviewed studies are typically published in scientific journals and are usually available at medical libraries. The second type of studies is non-peer reviewed. These works include summary articles that do not use or report scientific results. These often appear in the popular press, newsletters, or similar periodicals.

In this chapter, we will show you how to locate peer-reviewed references and studies on gastric cancer. We will begin by discussing research that has been summarized and is free to view by the public via the Internet. We then show you how to generate a bibliography on gastric cancer and teach you how to keep current on new studies as they are published or undertaken by the scientific community.

The Combined Health Information Database

The Combined Health Information Database summarizes studies across numerous federal agencies. To limit your investigation to research studies and gastric cancer, you will need to use the advanced search options. First, go to **http://chid.nih.gov/index.html**. From there, select the "Detailed Search" option (or go directly to that page with the following hyperlink: **http://chid.nih.gov/detail/detail.html**). The trick in extracting studies is found in the drop boxes at the bottom of the search page where "You may refine your search by." Select the dates and language you prefer, and the

format option "Journal Article." At the top of the search form, select the number of records you would like to see (we recommend 100) and check the box to display "whole records." We recommend that you type in "gastric cancer" (or synonyms) into the "For these words:" box. Consider using the option "anywhere in record" to make your search as broad as possible. If you want to limit the search to only a particular field, such as the title of the journal, then select this option in the "Search in these fields" drop box. The following is a sample of what you can expect from this type of search:

- **Helicobacter Pylori Infection, Gastritis and Gastric Cancer: Helicobacter Pylori Infection Among Japanese Children**

  Source: Journal of Gastroenterology and Hepatology. 15(12): 1382-1385. December 2000.

  Contact: Available from Blackwell Science. 54 University Street, Carlton South 3053, Victoria, Australia. +61393470300. Fax +61393475001. E-mail: Rob.Turner@blacksci-asia.com.au. Website: www.blackwell-science.com.

  Summary: In Japan, there are few reports describing Helicobacter pylori infection among young children. This article reports on a study undertaken to identify risk factors associated with H. pylori in school aged children in Japan. Subjects were first grade students of three elementary schools (n = 310) and second grade students of a junior high school (n = 300). Personal information, such as students' medical history, parents' history, family size, siblings, and household pets, was collected using a questionnaire. Saliva samples and personal information were collected twice. Among the children, factors related to Helicobacter antibody in saliva included spending a longer period of time in a nursery school or kindergarten and a maternal history of stomach disease. Birth order, sleeping situation, and number of siblings were not factors that were significantly related to Helicobacter antibody in the saliva. Chewing food for the infant, family size, rooms in the household, sharing a bedroom during childhood, pets, a past history, and a paternal history were not related to positivity. The results indicate that transmission is person to person, mainly through close contact with other children and intrafamilial infection. H. pylori infection seems to occur frequently early in life, probably before 6 years of age. 2 tables. 29 references.

- **Helicobacter Pylori Infection, Gastritis and Gastric Cancer: A Short-Term Eradication Therapy for Helicobacter Pylori Acute Gastritis**

  Source: Journal of Gastroenterology and Hepatology. 15(12): 1377-1381. December 2000.

Contact: Available from Blackwell Science. 54 University Street, Carlton South 3053, Victoria, Australia. +61393470300. Fax +61393475001. E-mail: Rob.Turner@blacksci-asia.com.au. Website: www.blackwell-science.com.

Summary: Acute gastritis (stomach inflammation), caused by an initial infection of Helicobacter pylori, may resolve spontaneously, but the infection sometimes becomes chronic. The authors of this article examined the efficacy of a short term H. pylori eradication therapy on acute gastritis. Among the 15 patients with hemorrhage acute gastritis who were randomly allocated to group A (eradication therapy) or group B (lansoprazole), 10 of the patients started to receive treatment within 1 day after the disease onset. The other five patients began the eradication therapy 4 to 6 days after disease onset (group C). Eradication therapy consisted of a daily oral administration of each of 30 milligrams lansoprazole (LPZ) once a day; 400 milligrams clarithromycin, twice a day; 1000 milligrams amoxicillin, twice a day; and 300 milligrams rebamipide, three times a day, for one week. If the endoscopy was normal, medication was stopped for the following 4 weeks before gastric endoscopy was performed again in order to assess H. pylori eradication. All group A patients were cured after the 1 week treatment and, therefore, they became H. pylori negative. Group B and C patients had erosions or ulcers after the 1 week treatment and so received an additional 3 week administration of LPZ. Four weeks later, their gastritis was cured and except for one group B patient, they became H. pylori negative. The authors conclude that in patients with acute gastritis, caused by an initial H. pylori infection, eradication therapy was efficacious in achieving early healing. This therapy should therefore be started as soon as possible after disease onset. 1 table. 25 references.

- **Food Groups and Colorectal Cancer Risk**

Source: British Journal of Cancer. 79(7-8):1283-1287, March 1999.

Summary: Researchers investigated the relationship between food group intake patterns and the incidence of colorectal cancer, using data from a case/control study conducted in the Swiss canton of Vaud, an area with intermediate colorectal cancer rates. The study ran from January 1992 through June 1997. Cases were patients with incident histologically confirmed colon or rectal cancers who had been admitted to a particular hospital. The case series included 223 patients, 142 of whom were men, with colon (199) or rectal (104) cancers. Their median age was 63 years. Control participants included 491 patients, 211 of whom were men, admitted to the same hospital for acute nonneoplastic conditions unrelated to long-term modification of diet. Interviewers administered a food-frequency questionnaire to assess habitual diet, including average

weekly frequency of consumption of specific foods or food groups. The findings confirmed that food intake patterns have a role in the risk of colorectal cancer, even after allowance for total energy, and a number of major nondietary correlates. Results indicated that there is a direct association between colorectal cancer risk and meats, specifically red meat, and an inverse one between cancer risk and various types of vegetables and fruit. Coffee drinking was protective, and alcohol was associated with a moderately increased risk. This protection is shared by a wide spectrum of fruits and vegetables, and is probably due to substances that are thermoresistant. Of special interest is an inverse relation with garlic, which has been related to reduced risk of gastric cancer in other studies. This has been linked to selected constituents of garlic, such as allyil sulfides, to an antibacterial or a more specific chemopreventive role of garlic. Whole grain, but not refined grain, was inversely related to colorectal cancer risk. 4 tables, 30 references.

- **Trend Toward a Reduced Prevalence of Helicobacter Pylori Infection, Chronic Gastritis, and Gastric Cancer in Japan**

  Source: Gastroenterology Clinics of North America. 29(3): 623-631. September 2000.

  Contact: Available from W.B. Saunders Company. 6277 Sea Harbor Drive, Orlando, FL 32821-9816. (800) 654-2452.

  Summary: Although there has been a remarkable decline in the prevalence and mortality (death) rates of gastric (stomach) cancer in developed countries, gastric cancer is one of the common malignancies in the world and is still the main cause of death in Japan. This article investigates the trends in Helicobacter pylori infection and gastritis in Japan over the past few decades. The author notes that it is important to investigate the relationship between H. pylori infection and gastric cancer and gastritis to understand better the mechanisms for carcinogenesis (the development of cancer) in the stomach. The author speculates that declines in H. pylori infection and gastritis over the past few decades may lead to a decline in gastric cancer in Japan, supplemented by excellent procedures for the early detection of gastric cancer. H. pylori infection rarely is acquired in adult life, so once it is eradicated, reinfection is not expected in adult patients. The author concludes that adequate treatment of H. pylori provides long term protection against gastric cancer.

- **Helicobacter Pylori and the Risk and Management of Associated Diseases: Gastritis, Ulcer Disease, Atrophic Gastritis and Gastric Cancer**

  Source: Alimentary Pharmacology and Therapeutics. 11(Supplement 1): 71-88. April 1997.

  Contact: Available from Mercury Airfreight International, Ltd. 2323 EF, Randolph Avenue, Avenel, NJ 07001. E-mail: journals.cs@blacksci.co.uk.

  Summary: This review article addresses the role of Helicobacter pylori and the effect of H. pylori eradication on gastritis, peptic ulcer disease, atrophic gastritis, and gastric cancer. The author emphasizes the various factors that influence the clinical course of this infection. H. pylori induces chronic gastritis in virtually all infected subjects. This inflammation can lead to peptic ulceration and atrophic gastritis in a considerable number of infected subjects. A minority eventually develops gastric cancer. The risk of such complications depends upon the severity of gastritis, which is determined by various host-and bacteria-related factors. Among bacterial factors, most of the evidence addresses the cagA pathogenicity island, the presence of which has been associated with more severe gastritis, peptic ulceration, atrophic gastritis, and gastric cancer. Among host factors, most of the evidence focuses on acid production in response to H. pylori infection. An increase in acid secretion limits H. pylori gastritis to the antrum at the risk of duodenal ulcer disease; a reduction allows more proximal inflammation at the risk of atrophic gastritis, gastric ulcer disease, and gastric cancer. Gastritis and atrophy negatively influence acid secretion. H. pylori eradication is required in peptic ulcer disease and may be advocated in patients on profound acid suppressive therapy; it has been shown to cure gastritis and prevent ulcer recurrence. The author concludes that further study is required to determine the efficacy of H. pylori eradication in the primary and secondary prevention of atrophic gastritis and gastric cancer. 3 figures. 193 references. (AA).

- **Relationship Between H. Pylori and Gastric Cancers Needs Further Evaluation: NIH Consensus Panel**

  Source: Blue Sheet. 37(7): 11-12. February 16, 1994.

  Contact: Available from Health Policy and Biomedical Research News of the Week. 5550 Friendship Boulevard, Suite One, Chevy Chase, MD 20815. (301) 657-9830; FAX (301) 656-3094.

  Summary: This article reports on the conclusions of an NIH Consensus Conference Panel that investigated the relationship between Helicobacter pylori and gastric cancers. The panel suggested that the 'interesting

relationship between H. pylori and gastric cancers requires further exploration,' noting that 'the effect of prevention or treatment of H. pylori infection on gastric cancer risk has not been studied adequately. The article reports on research evidence related to this topic; recommendations for antimicrobial therapy in people infected with H. pylori, including triple therapy with various antibiotics such as tetracycline, metronidazole, amoxicillin, bismuth subsalicylate, and omeprazole; the value of treating non-ulcer dyspepsia patients; side effects of antimicrobial therapy; and the use of the proton pump inhibitor Prilosec.

- **Benefits from Elimination of Helicobacter Pylori Infection Include Major Reduction in the Incidence of Peptic Ulcer Disease, Gastric Cancer, and Primary Gastric Lymphoma**

  Source: Preventive Medicine. 23(5): 712-716. September 1994.

  Summary: This article reports on a research study in which the author reviewed the accumulated data showing that successful treatment of Helicobacter pylori (H. pylori) infection results in healing of gastritis and cure of peptic ulcer disease. The author stresses that current data suggest that by elimination of H. pylori, it may be possible to prevent most gastric carcinomas and primary gastric lymphomas. The author concludes that H. pylori infection is a major public health problem and elimination or prevention of H. pylori infection will result in a tremendous reduction in medical costs, morbidity, and mortality. 1 table. 38 references. (AA-M).

- **Gastric Cancer**

  Source: Surgery. Number 85: 2033-2038. October 1990.

  Summary: This article discusses gastric cancer in two sections: primary prevention and secondary prevention. Primary prevention involves eradication of the cause of a particular disease, based on a knowledge of the initiating agent. Secondary prevention involves treatment of a disease at a stage when the long-term morbidity and mortality can be eradicated. The author discusses risk groups and risk factors for developing gastric cancer. After a brief consideration of the Birmingham staging system for gastric carcinoma, the author discusses the preoperative diagnosis of gastric adenocarcinoma; the results of preoperative investigations; the findings at laparotomy; and the surgical procedure. The author notes that, although other forms of cancer therapy such as chemotherapy and radiotherapy, have been disappointing in the management of gastric cancer, other treatments, especially hormone therapy, may prove to be more effective. 9 figures. 3 references.

- **Gastric Carcinoma Metastatic to the Mucosa of the Hard Palate**

  Source: Journal of Oral and Maxillofacial Surgery. 53(9): 1097-1098. September 1995.

  Summary: Metastatic tumors to the oral and maxillofacial region are rare, comprising only 1 percent of oral malignant tumors. In this article, the authors describe a case of adenocarcinoma of the stomach with metastasis to the mucosa of the hard palate. They note that metastasis to the oral soft tissue often represents advanced metastatic disease with a poor prognosis. They stress that the use of radiation, surgery, hormone therapy, and chemotherapy, alone or in combination, should be tailored to the responsiveness of both the primary and metastatic lesions. 3 figures. 12 references. (AA-M).

- **Gastric Cancer and Helicobacter Pylori**

  Source: Alimentary Pharmacology and Therapeutics. 16 (Supplement 4): 83-88. July 2002.

  Contact: Available from Alimentary Pharmacology and Therapeutics. Blackwell Science Ltd., Osney Mead, Oxford OX2 OEL, UK. +44(0)1865 206206. Fax +44(0)1865 721205. E-mail: journals.cs@blacksci.co.uk. Website: www.blackwell-science.com.

  Summary: This review article discusses gastric (stomach) cancer, the second most common cause of death from malignancy in the world. The pathogenesis of stomach cancer is comparatively well understood and its etiology (cause) multifactorial. Non-cardia gastric cancer usually arises in a stomach that has been inflamed over a long period and where atrophy and intestinal metaplasia have supervened. The most common cause of gastric inflammation is infection with Helicobacter pylori. Colonization with this organism increases the relative risk of developing stomach cancer by about six. The likelihood of stomach cancer increases with the severity and extent of the gastritis. Severity is influenced by the virulence of the infecting organism, the genetics of the host, bile reflux, dietary factors, and the presence of hypochlorhydria which influences the extent, as well as the severity, of the inflammation. The only predisposing factor which can easily be manipulated is H. pylori infection, which can be successfully treated in 80 to 90 percent of cases using a 1 week therapeutic regimen. 1 table. 27 references.

Federally Funded Research on Gastric Cancer

The U.S. Government supports a variety of research studies relating to gastric cancer and associated conditions. These studies are tracked by the Office of Extramural Research at the National Institutes of Health.[26] CRISP (Computerized Retrieval of Information on Scientific Projects) is a searchable database of federally funded biomedical research projects conducted at universities, hospitals, and other institutions. Visit the CRISP Web site at **http://commons.cit.nih.gov/crisp3/CRISP.Generate_Ticket**. You can perform targeted searches by various criteria including geography, date, as well as topics related to gastric cancer and related conditions.

For most of the studies, the agencies reporting into CRISP provide summaries or abstracts. As opposed to clinical trial research using patients, many federally funded studies use animals or simulated models to explore gastric cancer and related conditions. In some cases, therefore, it may be difficult to understand how some basic or fundamental research could eventually translate into medical practice. The following sample is typical of the type of information found when searching the CRISP database for gastric cancer:

- **Project Title: Gene Amplification and Overexpression in Gastric Cancer**

  Principal Investigator & Institution: El-Rifai, Wa-El M.; Internal Medicine; University of Virginia Charlottesville Box 400195 Charlottesville, Va 22904

  Timing: Fiscal Year 2002; Project Start 2-AUG-2002; Project End 1-JUL-2007

  Summary: (provided by applicant): The main objective of the proposed project is to characterize the genetic alterations at the long arm of chromosome 17 (17q) that are related to the development and/or progression of gastric adenocarcinoma. Previously, we have reported a novel amplicon at 17q in gastric cancer. Our aim is to characterize the target gene(s) at 17q critically altered in gastric adenocarcinoma and assess their clinical importance using tumor arrays. We have formulated a working hypothesis that amplification of genes on 17q is critical in the development of many gastric cancers. Furthermore, our most recent data

[26] Healthcare projects are funded by the National Institutes of Health (NIH), Substance Abuse and Mental Health Services (SAMHSA), Health Resources and Services Administration (HRSA), Food and Drug Administration (FDA), Centers for Disease Control and Prevention (CDCP), Agency for Healthcare Research and Quality (AHRQ), and Office of Assistant Secretary of Health (OASH).

using cDNA microarray technology on gastric cancer support this hypothesis and provide a solid foundation for the proposed project. Our specific aims are to: Aim #1: Identify the critical target(s) amplified and overexpressed at 17q in gastric cancers, Aim #2: Characterization of the gene(s)/ESTs with consistent changes in overexpression at 17q, and Aim #3: Validation of the biological and clinical significance of the upregulated gene(s). We will employ further specific cDNA microarrays containing the known transcripts from chromosome 17. Those genes/ESTs most abundantly and consistently overexpressed will be further confirmed using Northern blot and Real time RT-PCR analyses in our panel of primary gastric carcinomas. Cloning, sequencing, and bioinformatics strategies will be used to further characterize the genes/ESTs identified to be consistently overexpressed in the primary human gastric cancers. Validation of the biological and clinical significance of the now characterized genes overexpressed in gastric cancer (aim#3) will be tested using fluorescence in situ hybridization and immunohistochemistry on primary gastric cancer tumor tissue arrays which contain hundreds of cases with clinicopathologic and outcome data from our tumor database. The variations in gene amplification/expression profiles between different gastric carcinoma patients are anticipated to yield new information with important biologic and practical implications. Substantial progress in our understanding of gastric tumorigenesis and characterization of critical targets of overexpression at 17q with important implications are anticipated in these proposed studies.

Website: http://commons.cit.nih.gov/crisp3/CRISP.Generate_Ticket

- **Project Title: Genetic Epidemiology of Gastric Cancer**

  Principal Investigator & Institution: Theuer, Charles P.; Medicine; University of California Irvine Campus Dr Irvine, Ca 92697

  Timing: Fiscal Year 2000; Project Start 0-SEP-1998; Project End 9-SEP-2003

  Summary: (Applicant's Description) Gastric cancer is the eleventh leading cause of cancer-related deaths in the United States and remains one of the most serious worldwide health burdens. Upper endoscopy is effective in the diagnosis of gastric cancer and surgery for localized disease is usually curative. The majority of gastric cancer patients, however, are diagnosed at a late stage of the disease and die soon after diagnosis. Studies have not identified subgroups of patients in whom screening to detect early gastric cancer may be effective. Further gastric cancer studies are needed to determine its environmental and genetic risk factors particularly using population-based patients and their families so that cancer prevention and control strategies can be developed. We

propose to integrate techniques in genetic epidemiology and molecular biology to develop a means of identifying and characterizing inherited gastric cancer predisposing syndromes. The model will consider genetic factors that may be associated with tumor aggressiveness, environmental exposures and interactions among these factors. We will assemble a population-based series of approximately 350 gastric cancer cases and controls to assess the etiologic component associated with familial and potentially hereditary predisposition and to compare clinical, pathologic and prognostic features in sporadic, familial, and potentially hereditary gastric cancer. Methods already developed by the Epidemiology Division of UCI will be used to collect family history, epidemiologic risk factors, biologic samples (serum, lymphocytes, and paraffin-embedded tumor and normal tissue). We will test all gastric cancer cases for the replication error phenotype at microsatellites at seven loci. We will also test patient serum for IgG to Helicobacter pylori. Gene testing will be done on potential hereditary cases, focusing on the p53 and mismatch repair gene loci. This case-control study of possible genetic mutations will allow identification of populations at high risk for this cancer where opportunities for prevention and early detection of gastric cancer can be realized.

Website: http://commons.cit.nih.gov/crisp3/CRISP.Generate_Ticket

- **Project Title: GRP and Its Receptors: Role in Gastric Cancer**

  Principal Investigator & Institution: Carroll, Robert E.; Medicine; University of Illinois at Chicago at Chicago Chicago, Il 60612

  Timing: Fiscal Year 2000; Project Start 0-SEP-1999; Project End 9-SEP-2004

  Summary: (Applicant's Description): This proposal is directed to establishing the role of the gastrin-releasing p e p tide receptor (GRP-R) in causing the proliferation of non-antral adenocarcinomas of the stomach. GRP-R are not normally expressed by mucosal epithelial cells lining the gastrointestinal (GI) tract except in the antrum of the stomach. However, the applicants show that 40-50 percent of non-antral gastric cancers aberrantly express GRP-R, and provide data showing that these receptors can be activated by 2 different mechanisms. 1), GRP-R are often mutated such that they become constitutively active. This finding provides a non-mechanism whereby aberrant GRP-R expression alone can cause proliferation. 2), Immunohistochemical studies show that many, but not all tumors aberrantly e x press both receptor and ligand. Thus the proliferation of gastric adenocarcinomas may occur secondary to autocrine activation by GRP. Three separate approaches will be used to further elucidate the role of GRP/GRP-R in gastric cancer proliferation. I. Prospectively, RNA will be e x t racted from all patients with newly

diagnosed non-antral gastric adenocarcinoma at the time of initial endoscopic examination. GRP-R expression will be determined by RTPCR, and mutations screened for using the novel technique of conformational fragment length polymorphism (CFLP) analysis. Mutated GRP-R will be re-created by site-directed mutagenesis, and their functional consequence determined in transiently transfected CHO-KI cells. II. Retrospectively, the applicants will study 168 consecutive patients with gastric adenocarcinomas who underwent operative resection of their tumor between 1980-96. The paraffin blocks of these tumors have been collected and will be evaluated for both GRP and GRP-R expression by immunohistochemistry using specific antibodies. Initial and follow-up clinical data exists for these patients, allowing the applicants to correlate aberrant ligand and receptor expression with tumor stage, patient survival, and response to chemotherapy. To conclusively establish the role of GRP-R expression in gastric cancer, they will study a recently developed GRP-R "knock out" mouse. Knock-out mice, which have been genetically rendered incapable of expressing GRP-R. will be evaluated alongside wild type mice fed N-methyl-N'-nitro-N-nitrosoguanidine (MNNG), a gastric cancer-inducing agent, and the propyl derivative PNNG, which only causes intestinal metaplasia. These studies will allow the applicants to determine the contribution of the GRP-R to the development and progression of gastric adenocarcinomas, and potentially will lead to therapeutic advances in the treatment of this disease.

Website: http://commons.cit.nih.gov/crisp3/CRISP.Generate_Ticket

- **Project Title: HB-EGF'S Role in Atrophic Gastritis and Gastric Cancer**

  Principal Investigator & Institution: Koh, Theodore J.; Medicine; Univ of Massachusetts Med Sch Worcester 55 Lake Ave N Worcester, Ma 01655

  Timing: Fiscal Year 2001; Project Start 5-FEB-2001; Project End 0-NOV-2002

  Summary: We have found that gastrin is important in the growth of the colon, with gastrin deficiency resulting in decreased colonic proliferation, and over- expression of glycine-extended gastrin resulting in increased colonic proliferation and colonic mucosal hypertrophy. We have further demonstrated that gastrin appears to be a downstream target of the beta-catenin/Tcf-4 signaling pathway that mediates growth of intestinal polyps. Gastrin is also important in the development of the stomach. Gastrin deficiency results in a marked decreased in parietal cell number which can be rescued by short-term infusions of gastrin. With long term infusion however, parietal cell atrophy occurs. We have shown that transgenic mice that overexpress amidated gastrin also have initial

hyperplasia, followed by parietal cell atrophy, foveolar hyperplasia, and eventually invasive gastric cancer. At the time when parietal cell atrophy develops, there is an up-regulation of heparin binding epidermal-like growth factor (HB-EGF). We have shown that gastrin can directly up-regulate HB-EGF expression through a PKC-dependent pathway. From these findings we hypothesize that gastrin can directly influence the gastric stem cell to differentiate towards the parietal cell partway, but with time it causes up-regulation of HB-EGF in parietal cells which in a negative feedback loop inhibits differentiation towards parietal cells and promotes differentiation into pit cells. The aims are to test this hypothesis: 1. Determine the cis-acting regulatory elements involved in gastrin's regulation of the HB-EGF promoter. 2. Determine the role of HB-EGF expression in gastric parietal cells on gastric mucosal differentiation by creating transgenic mice that over-expression HB-EGF in parietal cells.

Website: http://commons.cit.nih.gov/crisp3/CRISP.Generate_Ticket

- **Project Title: Mouse Models of Gastric Cancer**

  Principal Investigator & Institution: Wang, Timothy C.; Professor of Medicine & Chief of Gi; Medicine; Univ of Massachusetts Med Sch Worcester 55 Lake Ave N Worcester, Ma 01655

  Timing: Fiscal Year 2001; Project Start 1-MAY-2001; Project End 0-APR-2006

  Summary: (Adapted from the investigator's abstract) Helicobacter pylori infection has been strongly linked to both hypergastrinemia and gastric cancer, but the role of elevated serum gastrin levels in progression to malignancy has not been well studied. Previous investigations have suggested that parietal cell loss or gastric atrophy represents a key preneoplastic precursor. Our group has developed a hypergastrinemic transgenic (insulin-gastrin or INS-GAS) mouse model that shows progression over time to gastric atrophy, intestinal metaplasia, dysplasia and gastric cancer. Further analyses of our INS-GAS mouse model, as well as studies in gastrin deficient (GAS-KO) mice, suggest that chronic elevations of amidated gas trin (G- 17) can lead to parietal cell decline, which can be prevented by infusions of incompletely processed glycine-extended gastrin (G-gly). Gastrin may also promote the development of cancer through induction of cyclooxygenase-2 (COX-2), resulting in increased proliferation and upregulation of VEGF. Helicobacterfelis infection of INS-GAS mice leads to a marked acceleration of gastric cancer and early mortality, suggesting a strong synergistic interaction between hypergastrinemia and Helicobacter infection. We propose to explore further the role of gastrin in gastric carcinogenesis. (1) A possible interaction between hypergastrinemia and p53 mutations will be

investigated. Alterations in the p53 gene will be investigated in neoplastic lesions, and INS-GAS mice will be crossed with p53 null mice and the response to Helicobacter infection tested. (2). Possible downstream targets (COX2 and VEGF) in gastrin/Helicobacter-dependent gastric cancer will be studied. Selective COX-2 antagonists will be administered to Helicobacter-infected INS-GAS mice, and INS-GAS mice will be crossed to VEGF-GFP transgenic mice to assess VEGF gene expression during cancer progression. (3). The importance of the parietal cell CCK-B/gastrin receptor and Gq signaling pathways will be determined. Highly specific CCK-B receptor antagonists will be administered, and a constitutively active Gq-coupled CCK-B receptor targeted to the parietal cell in transgenic mice. (4). The possible protective effective of glycine-extended gastrin, (G-gly) in the prevention of atrophy/cancer will be studied. Double transgenic mice (INS-GAS x G-gly) or INS-GAS mice receiving infusions of 0-gly will be infected with Helicobacter and progression to atrophy and cancer analyzed. Overall, these studies will explore the mechanisms by which gastrin may influence the parietal cell and susceptibility to gastric neoplasia.

Website: http://commons.cit.nih.gov/crisp3/CRISP.Generate_Ticket

- **Project Title: Effects of Dietary Polyunsaturated Fat On Helicobacter Pylori**

  Principal Investigator & Institution: Smoot, Duane T.; Howard University 2400 6Th St Nw Washington, Dc 20059

  Timing: Fiscal Year 2000

  Summary: Helicobacter pylori (H. pylori) infection is the most common cause of chronic gastritis in man, and it has been implicated as an etiological factor in the development of peptic ulcer disease. More recently, epidemiological studies have demonstrated that H. pylori is an independent risk factor for gastric cancer and that people infected with H. pylori have a 3-6 fold higher risk of developing this condition than non-infected persons. Progression from H. pylori-related superficial gastritis to atrophic gastritis with intestinal metaplasia is felt to be a precursor to gastric cancer development. Investigators have postulated that the natural progression of H. pylori-associated chronic gastritis is to atrophic gastritis, which may be prolonged or shortened by dietary factors. Diets rich in fruits and vegetables and low in starch and salt are associated with a decreased risk of gastric cancer. The presence of antioxidants in these diets has been postulated to be the factors responsible for the decrease in cancer risk. These diets are also high in polyunsaturated fat which, as opposed to saturated ft, has been shown to inhibit bacterial growth. Recent studies have confirmed that

polyunsatuated hat will inhibit H. pylori (named as a Class I carcinogen with an estimated attributable risk of 50-60% for gastric cancer by the World Health Organization) growth in vitro. Therefore, agents which inhibit bacterial growth, i.e., polyunsaturated fats are likely to decrease the risk of cancer due to this carcinogen. Investigators for this project postulate that diets high in fruits and vegetables protect gastric cancer because of the bacterial static properties of polyunsaturated fats. Since antioxidants such as vitamin E are present in oils rich in polyunsaturated fat, they feel that they serve mainly as a marker for ingestion of these fats, and are not the primary agents protecting against gastric cancer. This grant proposes to document in a cross-sectional study, the indirect correlation between polyunsaturated fat ingestion and gastric bacterial load. In vitro studies will be performed to elucidate the extent to which polynsaturated fat will not only inhibit growth, but also inhibit cytotoxicity induced by adherence of this bacterium to human gastric epithelial cells. Confirming this hypothesis would be very important to areas of the world which have a high incidence of gastric cancer, since these areas have both a high incidence of H. pylori and a high rate of re-infection with this organism after successful antibiotic treatment. Knowledge that dietary intake rich in polyunsaturated fat will reduce gastric cancer risk is likely to be a cost-effective way of preventing this disease, since there is a vaccine available and antibiotic therapy is not practical in certain countries.

Website: http://commons.cit.nih.gov/crisp3/CRISP.Generate_Ticket

- **Project Title: Gastric Preneoplasia in H Felis Infected Il10 Mice**

  Principal Investigator & Institution: Berg, Daniel J.; Internal Medicine; University of Iowa Iowa City, Ia 52242

  Timing: Fiscal Year 2000; Project Start 8-DEC-1997; Project End 0-NOV-2002

  Summary: (adapted from the investigator's abstract) The objectives of this proposal are to define the mechanisms by which chronic Helicobacter infection leads to the development of preneoplastic gastric epithelium, using a novel animal model, Helicobacter felis-infected interleukin 10-deficient mice (IL10-/-). Helicobacter pylori infection is the major etiologic agent of peptic ulcer disease, and chronic H. pylori infection can lead to the development of preneoplastic gastric epithelium and gastric cancer. Observations in this application demonstrate that Helicobacter felis infected IL-10 deficient mice develop severe chronic inflammation and preneoplastic gastric epithelium. The overall hypothesis of this application is that absence of IL-10 results in the development of a dysregulated immune/inflammatory response to Helicobacter. The

chronic, severe inflammation in H. felis-infected IL10-/- mice leads to dysregulated production of growth mediators which alters the normal growth and differentiation of gastric epithelium resulting in the development of preneoplastic gastric epithelium. The specific aims of the project are: (1) Characterize the immune and inflammatory response to H. felis in wild-type and IL10-/- mice. The composition of the inflammatory infiltrate in H. felis-infected wild-type and IL10-/- mice will be defined using immunohistochemistry and flow cytometry. The role of immune cell types in H. felis infection will be evaluated using mice deficient in B cells (IL10-/-/Bcell-/-), B and T cells (IL10-/-Rag2-/-), and neutrophil-depleted IL10-/- mice. Cytokine mediators in H. felis-infected IL10-/-mice will be assessed via (a) inhibition of cytokines with neutralizing antibodies; (b) inhibition of prostaglandin production using a cyclooxygenase inhibitor; and (c) the role of NO will be assessed through use of IL10-/-NOS-/- mice. (2) Characterize the epithelial phenotype in H. felis infected IL10-/- mice. Northern blot, RNAse protection, and in situ hybridization with lineage specific markers will be used to assess epithelial differentiation in H. felis-infected IL10-/- mice. Proliferation and apoptosis in the development of preneoplastic epithelium will also be assessed. (3) Define the role of candidate growth factors and their receptors in the development of preneoplastic epithelium in H. felis-infected IL10-/- mice. Northern blot analysis, RNAse protection assays, and in situ hybridization techniques will be used to evaluate the level and spatial pattern of growth factor and growth factor receptor expression. Characterization of this model of Helicobacter-induced preneoplasia will enhance our understanding of the mechanism by which chronic H. pylori infection leads to gastric cancer in humans and may lead to new strategies for the prevention of gastric ulcer.

Website: http://commons.cit.nih.gov/crisp3/CRISP.Generate_Ticket

- **Project Title: H Pylori Induced Oxidative DNA Damage**

  Principal Investigator & Institution: Groopman, John D.; Associate Director of Cancer Prevention; Johns Hopkins University 3400 N Charles St Baltimore, Md 21218

  Timing: Fiscal Year 2001; Project Start 3-JUL-2001; Project End 0-APR-2006

  Summary: The discovery of Helicobacter pylori (H. pylori) infection has greatly changed our understanding of upper G.I. tract, diseases, including peptic ulcer disease and stomach cancer. Antibiotics are first-line treatment for ulcer patients which are infected with this bacterium. Also, the World Health Organization has classified H. pylori as a group I

or definite carcinogen. People infected with H. pylori have a 3 to 6 fold higher risk of developing gastric cancer than non-infected persons. Progression from superficial gastritis caused by H. pylori to atrophic gastritis with intestinal metaplasia is felt to be a precursor to gastric cancer development. Investigators have postulated that the natural progression of H. pylori-associated chronic gastritis is to atrophic gastritis, which may be prolonged or shortened by dietary factors. A diet rich in fruits and vegetables and low in starch and salt is associated with a decreased risk of developing gastric cancer. The presence of antioxidants in this diet has been postulate to be responsible for the decrease in cancer risk. We postulate that H. pylori increases the susceptibility of gastric cells to injury from reactive oxygen species, in part by generating the production of intracellular reactive oxygen species. The specific aims of this grant are to (1) determine the ability of H. pylori exposure (live bacteria vs. bacterial proteins) to induce related DNA damage in gastric epithelial cell lines; and elucidate the spectrum and repair course of oxidant related DNA adducts formed after exposure to H. pylori. (2) identify the types of reactive oxygen species that are generated by exposure to H. pylori (live bacteria vs. bacterial proteins) using fluorescent microscopy, fluorometer and lucigenin- and luminol-derived chemiluminescence, and determine whether or not cytochrome p450s and/or mitochondria are important in the generation of reactive oxygen species after exposure to H. pylori. (3) Further evaluate the role of glutathione peroxidase and catalase in the detoxification of intracellular reactive oxygen species, and their association with oxidant induced DNA adducts and cell injury. These studies will demonstrate the potential significant role for bacteria in stimulating oxidative cell injury and DNA damage which may increase the susceptibility of lining epithelial cells to carcinogenic conversion.

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- **Project Title: Helicobacter Pylori and Gastric Oncogenesis**

  Principal Investigator & Institution: Fleisher, Albert S.; Medicine; University of Maryland Balt Prof School Professional Schools Baltimore, Md 21201

  Timing: Fiscal Year 2000; Project Start 1-SEP-2000

  Summary: H. Pylori infection is one of the most common infections of man and it disproportionately affects the economically disadvantaged throughout the world. Infected individuals typically have lifelong gastritis that can culminate in ulcer disease, gastric atrophy, and epithelial DNA damage leading to gastric cancer. The overall hypothesis of this proposal is that H. Pylori and its products result in a deleterious

cellular response that causes DNA damage and cancer. In previously published and preliminary work both in vivo and in vitro, my mentor~s laboratory has shown that gastric cancer is associated with a high frequency of microsatellite instability, a hallmark of defective DNA mismatch repair (MMR). I will test the hypothesis that DNA mismatch repair is modulated by H. Pylori products. I will evaluate the regulation by H. Pylori products. I will evaluate the regulation H. Pylori of the expression of mismatch repair genes such as hMSH2. H. Pylori bacteria and lysates from defined (cag A and vacA genotyped) strains will be used to stimulate cells and biopsies obtained from HP- infected and non-infected donors. I will use a quantitative functional DNA mismatch repair reporter system to test the effects of H. Pylori products on DNA mismatch repair in gastric epithelial cells in vitro. The results of these studies should provide novel information that will elucidate the central carcinogenetic steps of H. Pylori disease and will provide potential new targets for intervention and therapy.

Website: http://commons.cit.nih.gov/crisp3/CRISP.Generate_Ticket

- **Project Title: Host Response to Helicobacter Pylori Infection**

  Principal Investigator & Institution: Correa, Pelayo; Professor; Pathology; Louisiana State Univ Hsc New Orleans Health Sciences Ctr New Orleans New Orleans, La 70112

  Timing: Fiscal Year 2000; Project Start 0-SEP-1999; Project End 9-SEP-2002

  Summary: Gastritis due to Helicobacter Pylori is the most common chronic infection in the world today. It has been classified by IARC (WHO) as a Class I human carcinogen. Obviously only a very small portion of the infected population develops gastric cancer. This neoplasia, however, is the second most frequent in the world. In the United States, certain groups display higher risk, especially African Americans, Hispanics, Asian Americans and immigrants from Russia and Eastern Europe. This application addresses the question of different outcomes of H. Pylori infection, which in some subjects leads to gastric carcinogenesis and in others does not. The central hypothesis is that the dichotomy in outcome of the infection is driven by immunologic forces. The proposed small grant application will make it possible to conduct a feasibility study which will determine if a more definitive test of the hypothesis is possible. We will be focused on the cellular-mediated immune response studied in lymphocytes from the peripheral blood and from the gastric mucosa. Two major comparisons will be done: A) In Colombia H. pylori infected subjects living in Nari$o, at very high gastric cancer risk, will be compared with infected subjects living in the coastal city of Cartagena, at very low risk. b) In New Orleans, subjects diagnosed

with multiphocal atrophic gastritis (MAG), a cancer precursor lesion, will be compared with subjects with non-atrophic gastritis (diffuse antral gastritis or DAG), which is not associated with increased gastric cancer risk. A full battery of immunologic tests will be carried out to explore if the cytokines characteristic of the T-lymphocyte helper cells responses (Th1 vs. Th2) are different in the contrasting populations. If approved, this application will make it possible to collect the material needed and complement other resources of the department of Pathology to conduct the tests in our laboratories.

Website: http://commons.cit.nih.gov/crisp3/CRISP.Generate_Ticket

- **Project Title: Hpylori Induced DNA Damage and Immune Dysregulation**

  Principal Investigator & Institution: Wilson, Keith T.; Medicine; University of Maryland Balt Prof School Professional Schools Baltimore, Md 21201

  Timing: Fiscal Year 2000; Project Start 0-SEP-1997; Project End 9-SEP-2002

  Summary: (taken from the application) H. pylori infection is one of the most common infections of man and it disproportionately affects the economically disadvantaged throughout the world. Infected individuals typically have lifelong gastritis that can culminate in ulcer disease, gastric atrophy, and epithelial DNA damage leading to gastric cancer. There is now substantial evidence that these outcomes are the result of a complex interplay of multiple different H. pylori gene products with the gastric epithelium and mucosal immune and inflammatory systems. The co-investigators of this proposal have an ongoing interest in three distinct but interrelated aspects of H. pylori disease: the immune response, inflammation, and gastric cancer. In our previously published and preliminary work both in vivo and in vitro, we have shown that H. pylori directly induces an immune response skewed towards Th1 mediators, that H. pylori upregulates production of the inflammatory mediators nitric oxide (NO) and prostanoids, and that gastric cancer is associated with a high frequency of microsatellite instability, a hallmark of defective DNA mismatch repair (MMR). We suggest that the products of H. pylori induce an immune and inflammatory response program that is maladaptive, in that it does not eliminate the pathogen and at the same time causes tissue injury and epithelial DNA damage. Our proposal will test the following specific aims: The first aim will test the hypothesis that H. pylori products induce expression of critical immune and inflammatory mediators, such as cytokines, NO, and prostaglandins that counter-regulate each other and regulate mismatch repair genes such as hMSH2. The second aim will be to directly test the hypothesis that H.

pylori products and immune and inflammatory mediators contribute to genetic instability characteristic of gastric cancer, using a quantitative functional DNA mismatch reporter system and sensitive micromethod for DNA repair status. The results of these studies will provide new information that will elucidate the central pathogenetic steps of H. pylori disease and will provide potential new targets for intervention and therapy.

Website: http://commons.cit.nih.gov/crisp3/CRISP.Generate_Ticket

- **Project Title: Immunological Basis for H. Pylori-Related Malignancies**

  Principal Investigator & Institution: Obonyo, Marygorret; Medicine; University of California San Diego 9500 Gilman Dr San Diego, Ca 92093

  Timing: Fiscal Year 2002; Project Start 1-SEP-2002; Project End 1-AUG-2007

  Summary: (provided by applicant): The overall goal of this award is to provide a mentored research environment so that the candidate can develop into an independent investigator in the field of gastric cancer induced by Helicobacter pylori infection. The candidate is currently receiving postdoctoral training support under an NIH Research Supplement for Underrepresented Minorities, working on the inflammatory response to H. pylori infection of the gastric mucosa. This award will allow the candidate to develop a related but independent project on the role of the immune response to H. pylori in the development of gastric cancer. The candidate has received extensive training in animal models of infection and the molecular analysis of inflammatory mediators. The immediate career goal is to initiate the proposed work that builds on previous training and expertise but that moves in a new direction relevant to gastric cancer. The long-term career goal is to obtain independent funding for this project and to secure a faculty-level academic appointment. These goals will be achieved by mentoring from two senior investigators with extensive experience in research training and in the proposed area of study. Career development will be enhanced by a close but progressively independent scientific relationship with the mentors. The full resources of the UCSD Cancer Center will be used by the candidate. Increasing independence will be achieved by presentations at scientific meetings, critical reviews, publication of work, and grant submissions in later years. The research project is formulated to develop an independent line of investigation that is based on the previous and current work of the candidate. H. pylori infects the gastric mucosa, leading to peptic ulcers and a high risk of gastric cancer. The central hypothesis of this proposal is that H. pylori-induced immune response dysregulates gastric epithelial cell turnover,

resulting in carcinogenesis. The candidate has developed mouse and cell culture models of H. pylori infection and will use these to determine the roles of inflammatory mediators in gastric epithelial cell apoptosis and in the regulation of cell proliferation. Under this award, the candidate will be able to develop this work into a productive project that will gain independent funding.

Website: http://commons.cit.nih.gov/crisp3/CRISP.Generate_Ticket

- **Project Title: In Vivo Pathogenesis of Helicobacter Pylori**

  Principal Investigator & Institution: Fox, James G.; Director and Professor; Div of Comparative Medicine; Massachusetts Institute of Technology 77 Massachusetts Ave Cambridge, Ma 02139

  Timing: Fiscal Year 2000; Project Start 1-SEP-1996; Project End 1-AUG-2005

  Summary: (Adapted from the Applicant's Abstract): H. pylon, an infection approaching 100 percent in developing countries, has been strongly linked epidemiologically to gastric cancer, but the mechanism and cofactors required for gastric cancer are poorly understood. Furthermore, it is not known at what stage in progression to gastric cancer that eradication of H. pylon would interrupt the carcinogenic process. Polyparasitism is also ubiquitous in developing populations where H. pylori is endemic. The investigators have developed a C57BL/6 mouse model of chronic H. pylori/felis gastritis that is characterized by the progressive development of gastric atrophy, intestinal metaplasia and invasive gastric cancer. The mechanism of lesion development appears to involve increased apoptosis, mucus neck proliferation, intestinal metaplasia leading to altered cellular differentiation and changes in mucin phenotype and progression of invasive cancer in submucosal vasculature. They have also investigated bacterial and environmental factors that influence disease pathogenesis by generating isogenic mutants lacking specific candidate virulence determinants and by maintaining Helicobacter infected animals on diets high in salt. They have recently shown that in mice coinfected with helicobacter and a helminth infection, H. polygyrus, the gastric cytokine Thl/Th2 profile switches and the gastric phenotype changes from a Thl to a Th2 type gastritis. They now propose to explore the effects of specific genetic alterations, environmental influences and coinfections on the mucosal response and progression of Helicobacter associated gastric lesions. Specifically, they will ask whether 1) progression of H. pylon gastritis can be interrupted at critical points in the disease by antimicrobials or therapeutic vaccination to prevent development of premalignant lesions and gastric adenocarcinoma in the gerbil and/or mouse model 2)

Alternatively, do environmental factors such as dietary salt, accelerate or otherwise alter the carcinogenic process, and importantly does the strain of H. pylon (with and without specified pathogenic determinants) influence the outcome of gastric disease in the mouse and gerbil model 3) Does modulation of the Thl/Th2 axis of the immune system by various helminth infections influence the severity and progression of gastritis in rodent models. Overall, these rodent models of Helicobacter infection will be used to study the mechanism by which Helicobacter contributes to neoplasia, and the factors (host, bacteria, dietary or co-infections) which confer susceptibility and/or resistance to premalignant lesions and gastric cancer.

Website: http://commons.cit.nih.gov/crisp3/CRISP.Generate_Ticket

- **Project Title: Mechanisms of Growth Inhibition by Helicobacter Pylori**

  Principal Investigator & Institution: Ashktorab, Hassan; Medicine; Howard University 2400 6Th St Nw Washington, Dc 20059

  Timing: Fiscal Year 2001; Project Start 0-SEP-2001; Project End 1-AUG-2003

  Summary: (provided by applicant): The discovery that H. pylori is an important factor in the development of peptic ulcers has dramatically changed the way ulcer patients are treated. Ulcers heal faster in persons treated with antibiotics in addition to acid medication. One possible explanation for this observation is that cell generation is impaired by H. pylori; thus, ulcer healing occurs more rapidly in the absence of H. pylori infection. Epidemiological studies have strongly associated H. pylori with gastric carcinogenesis. These data led the World Health Organization to designate H. pylori a Class I carcinogen. It is felt that at least half of all gastric cancers are attributed to infection with this bacterium. However, there is little known as to how H. pylori may directly effect gastric cells to cause gastric cancer. Epidemiological data supports this bacterium as a cofactor because it causes chronic gastritis which may progress to atrophic gastritis, a precursor lesion for intestinal type gastric cancer. However, this bacterium is also strongly linked to diffuse gastric cancer which occurs in otherwise normal (non-atrophic) gastric mucosa, where the bacterial infection is present at the time the cancer occurs. In vivo studies show that some bacterial strains cause significant cell injury in the absence of a rise in gastric apoptosis. One explanation is that the bacterium, while causing cell injury, is able to down regulate apoptosis. The decrease in apoptosis in injured gastric cells is one possible mechanism by which this bacterium might directly increase the susceptibility of gastric cells to carcinogenic conversion. This grant proposes to evaluate the direct effects of H. pylori on the cell death

in gastric epithelial cells. The Specific Aims of this project are: 1)To better elucidate the involvement of the p53 pathway in H. pylori induced apoptosis by determining the extent of phosphorylation of p53 in cells exposed to H. pylori strains and the importance of phosphorylation at serine-15,-20 and-46 in regard to apoptosis. Also, to evaluate p53 phosphorylation in response to ROS species in the absence of H. pylori and in the presence of H. pylori and antioxidants. 2)To determine the involvement and significance of activation of p53AIPl, which is activated by phosphorylating p53 at serine-46. The mechnism of bacterial exposure on the gastric epithelial cell death has not been studied in regard to p53. These studies are important to elucidate specific p53 pathways that are modulated by exposure to this bacterium, resulting in an regulating cell death. Specifically, whether or not stimulation of reactive oxygen species (ROS) by H. pylori is essential for p53 phosphorylation leading to apoptosis. These studies will help to establish how bacteria can increase apoptosis possibly through generation of ROS and in specific circumstances this may alter one's risk of developing cancer.

Website: http://commons.cit.nih.gov/crisp3/CRISP.Generate_Ticket

- **Project Title: Regulation of Gastrin Receptors On GI Cancer Cells**

  Principal Investigator & Institution: Frucht, Harold; Fox Chase Cancer Center 7701 Burholme Ave Philadelphia, Pa 19111

  Timing: Fiscal Year 2000; Project Start 1-AUG-1996; Project End 0-JUN-2001

  Summary: The aim of the present research is to determine the mechanism by which receptors of the gastrin family of peptides confer a growth advantage on gastrointestinal malignancies. The experiments will determine whether conferred growth is a result of normal receptor ligand binding or a result of abnormalities of the gastrin receptor. We will determine the role of receptor expression regulation, such as up or down regulation and internalization, as well as the role of abnormally expressed receptors, the role of receptors specific for ligands other than gastrin, whether there is a functional uncoupling of receptor binding from receptor expression, or whether a combination of these exist and accounts for the growth stimulation of gastrointestinal tumors. The specific aims are as follows: 1) Determine the expression and the dynamics of expression of gastrin receptors on human colon and gastric cancer cells. We will determine the expression of gastrin receptor transcript and protein. This will be correlated with peptide binding studies to determine whether a functional uncoupling exists. This will be accomplished by Northern analysis, TR-PCR, antibody immunofluorescence, ligand binding, and Southern analysis. Cultured

cells and surgical specimens will be utilized. 2) Determine the mitogenic effect of the gastrin receptor on human colon and gastric cancer cells. Cells bearing receptors which maintain a normal binding and expression relationship will be characterized by proliferation assays using specific receptor agonists and antagonists. Cells bearing receptors which do not exhibit a receptor binding-expression relationship will be studied in proliferation assays using anti-sense constructs. 3) Demonstrate the interaction of gastrointestinal peptides with gastrin and the gastrin receptor on human colon and gastric cancer cells. Peptide and receptors other than those of the gastrin family will be analyzed for a possible effect on the dynamics of gastrin receptor expression. This will be accomplished using biochemical and molecular probes for the bombesin, VIP, and muscarinic cholinergic families of peptide and neurotransmitters. Determinations will be performed by Northern and Southern analysis, and radiolabelled ligand binding.

Website: http://commons.cit.nih.gov/crisp3/CRISP.Generate_Ticket

E-Journals: PubMed Central[27]

PubMed Central (PMC) is a digital archive of life sciences journal literature developed and managed by the National Center for Biotechnology Information (NCBI) at the U.S. National Library of Medicine (NLM).[28] Access to this growing archive of e-journals is free and unrestricted.[29] To search, go to **http://www.pubmedcentral.nih.gov/index.html#search**, and type "gastric cancer" (or synonyms) into the search box. This search gives you access to full-text articles. The following is a sample of items found for gastric cancer in the PubMed Central database:

- **Alterations of E-cadherin and [beta]-catenin in gastric cancer** by Chen Huiping, Sigrun Kristjansdottir, Jon G. Jonasson, Jonas Magnusson, Valgardur Egilsson, and Sigurdur Ingvarsson; 2001 http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=60969
- **Composition and Gene Expression of the cag Pathogenicity Island in Helicobacter pylori Strains Isolated from Gastric Carcinoma and**

[27] Adapted from the National Library of Medicine: **http://www.pubmedcentral.nih.gov/about/intro.html**.

[28] With PubMed Central, NCBI is taking the lead in preservation and maintenance of open access to electronic literature, just as NLM has done for decades with printed biomedical literature. PubMed Central aims to become a world-class library of the digital age.

[29] The value of PubMed Central, in addition to its role as an archive, lies the availability of data from diverse sources stored in a common format in a single repository. Many journals already have online publishing operations, and there is a growing tendency to publish material online only, to the exclusion of print.

Gastritis Patients in Costa Rica by Alessandra Occhialini, Armelle Marais, Maria Urdaci, Rafaela Sierra, Nubia Munoz, Antonello Covacci, and Francis Megraud; 2001 March
http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=98100

- **Helicobacter pylori Activates the Cyclin D1 Gene through Mitogen-Activated Protein Kinase Pathway in Gastric Cancer Cells** by Yoshihiro Hirata, Shin Maeda, Yuzo Mitsuno, Masao Akanuma, Yutaka Yamaji, Keiji Ogura, Haruhiko Yoshida, Yasushi Shiratori, and Masao Omata; 2001 June
http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=98458
- **Potential role and chronology of abnormal expression of the Deleted in Colon Cancer (DCC) and the p53 proteins in the development of gastric cancer** by Francesco Graziano, Stefano Cascinu, Maria Pia Staccioli, Vincenzo Catalano, Maria Cristina Rossi, Anna Maria Baldelli, Paolo Giordani, Pietro Muretto, and Giuseppina Catalano; 2001
http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=37544
- **Relationship of Anti-Lewis x and Anti-Lewis y Antibodies in Serum Samples from Gastric Cancer and Chronic Gastritis Patients to Helicobacter pylori-Mediated Autoimmunity** by Michael A. Heneghan, Ciaran F. McCarthy, Daiva Janulaityte, and Anthony P. Moran; 2001 August
http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=98564

The National Library of Medicine: PubMed

One of the quickest and most comprehensive ways to find academic studies in both English and other languages is to use PubMed, maintained by the National Library of Medicine. The advantage of PubMed over previously mentioned sources is that it covers a greater number of domestic and foreign references. It is also free to the public.[30] If the publisher has a Web site that offers full text of its journals, PubMed will provide links to that site, as well as to sites offering other related data. User registration, a subscription fee, or some other type of fee may be required to access the full text of articles in some journals.

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[30] PubMed was developed by the National Center for Biotechnology Information (NCBI) at the National Library of Medicine (NLM) at the National Institutes of Health (NIH). The PubMed database was developed in conjunction with publishers of biomedical literature as a search tool for accessing literature citations and linking to full-text journal articles at Web sites of participating publishers. Publishers that participate in PubMed supply NLM with their citations electronically prior to or at the time of publication.

To generate your own bibliography of studies dealing with gastric cancer, simply go to the PubMed Web site at **www.ncbi.nlm.nih.gov/pubmed**. Type "gastric cancer" (or synonyms) into the search box, and click "Go." The following is the type of output you can expect from PubMed for "gastric cancer" (hyperlinks lead to article summaries):

- **#8 Esophageal and gastric cancer in the united states.**
  Author(s): Brown L, Devesa.
  Source: Annals of Epidemiology. 2002 October; 12(7): 492.
  http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=12377434&dopt=Abstract

- **#85 Association of serum antibodies to the helicobacter pylori caga antigen with precancerous gastric lesions in chinese populations with contrasting gastric cancer rates.**
  Author(s): Groves F, Perez-Perez G, Zhang L, You W, Lipsitz S, Gail M, Fraumeni J, Blaser M.
  Source: Annals of Epidemiology. 2002 October; 12(7): 521.
  http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=12377511&dopt=Abstract

- **3-Hydroxy-3-methylglutaryl coenzyme A reductase activity and low-density lipoprotein receptor expression in diffuse-type and intestinal-type human gastric cancer.**
  Author(s): Caruso MG, Notarnicola M, Cavallini A, Di Leo A.
  Source: Journal of Gastroenterology. 2002; 37(7): 504-8.
  http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=12162407&dopt=Abstract

- **A ner paradigm of chemotherapy for gastric cancer: speeding up, and more clinical trials to catch up.**
  Author(s): Sakamoto J.
  Source: Gastric Cancer : Official Journal of the International Gastric Cancer Association and the Japanese Gastric Cancer Association. 2002; 5(2): 55-7. No Abstract Available.
  http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=12132512&dopt=Abstract

- **A patient with advanced gastric cancer, underwent curative gastrectomy and partial resection of metachronous hepatic metastases, is surviving for 13 years to date.**
  Author(s): Yano S, Koufuji K, Aoyagi K, Murakami N, Terasaki Y, Miyagi M, Takeda J, Shirouzu K.

Source: Kurume Med J. 2002; 49(1-2): 53-6.
http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=12235873&dopt=Abstract

- **A phase I study of weekly docetaxel, 24-hour infusion of high-dose fluorouracil/leucovorin and Cisplatin in patients with advanced gastric cancer.**
  Author(s): Chen LT, Liu TW, Wu CW, Chung TR, Shiah HS, Jan CM, Liu JM, Whang-Peng J, Chang JY.
  Source: Oncology. 2002; 63(3): 239-47.
  http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=12381903&dopt=Abstract

- **A phase III randomized trial of 5-fluorouracil, doxorubicin, and mitomycin C versus 5-fluorouracil and mitomycin C versus 5-fluorouracil alone in curatively resected gastric cancer.**
  Author(s): Chang HM, Jung KH, Kim TY, Kim WS, Yang HK, Lee KU, Choe KJ, Heo DS, Bang YJ, Kim NK.
  Source: Annals of Oncology : Official Journal of the European Society for Medical Oncology / Esmo. 2002 November; 13(11): 1779-85.
  http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=12419751&dopt=Abstract

- **A randomized study of nutritional support in patients with colorectal and gastric cancer.**
  Author(s): Persson CR, Johansson BB, Sjoden PO, Glimelius BL.
  Source: Nutrition and Cancer. 2002; 42(1): 48-58.
  http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=12235650&dopt=Abstract

- **Advanced gastric cancer with liver metastases successfully treated with S-1.**
  Author(s): Watanabe S, Tanaka T, Takeuchi T, Takabayashi H, Hirayama Y.
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Author(s): Kim MJ, Kim HS, Song KS, Noh SH, Kim HG, Paik YK, Kim HO.
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  Author(s): Tsuburaya A, Noguchi Y, Yoshikawa T, Saito A, Doi C, Okamoto T, Fukuzawa K.
  Source: Hepatogastroenterology. 2002 July-August; 49(46): 1150-2.
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  Author(s): Iwazawa T, Kinuta M, Yano H, Matsui S, Tamagaki S, Yasue A, Okada K, Kanoh T, Tono T, Nakano Y, Okamoto S, Monden T.
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- **An unusual presentation of metastatic gastric cancer found during inguinal hernia repair: case report and review of the literature.**
  Author(s): Oruc MT, Kulah B, Saylam B, Moran M, Albayrak L, Coskun F.
  Source: Hernia : the Journal of Hernias and Abdominal Wall Surgery. 2002 July; 6(2): 88-90.
  http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=12152647&dopt=Abstract

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  Author(s): Mullaney PJ, Wadley MS, Hyde C, Wyatt J, Lawrence G, Hallissey MT, Fielding JW.
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  Author(s): Shimada S, Shiomori K, Honmyo U, Maeno M, Yagi Y, Ogawa M.
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  Author(s): Barbosa AJ, Castro LP.
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  Author(s): Rha SY, Jeung HC, Roh JK, Kim JJ, Noh SH, Min JS, Kim BS, Chung HC.
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  Author(s): Sasazuki S, Sasaki S, Tsugane S.
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  Author(s): Tanabe S, Koizumi W, Mitomi H, Nakai H, Murakami S, Nagaba S, Kida M, Oida M, Saigenji K.
  Source: Gastrointestinal Endoscopy. 2002 November; 56(5): 708-13.
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  Author(s): Enjoji A.
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  Author(s): Lee JH, Hyung WJ, Noh SH.
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  Author(s): Ji J, Chen X, Leung SY, Chi JT, Chu KM, Yuen ST, Li R, Chan AS, Li J, Dunphy N, So S.
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  Author(s): Miyachi K, Fujita M, Tanaka N, Sasaki K, Sunagawa M.
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Vocabulary Builder

Abdominal: Having to do with the abdomen, which is the part of the body between the chest and the hips that contains the pancreas, stomach, intestines, liver, gallbladder, and other organs. [NIH]

Adenoma: A noncancerous tumor. [NIH]

Aggressiveness: The quality of being aggressive (= characterized by aggression; militant; enterprising; spreading with vigour; chemically active; variable and adaptable). [EU]

Alimentary: Pertaining to food or nutritive material, or to the organs of digestion. [EU]

Amoxicillin: An antibiotic drug used to treat infection. It belongs to the family of drugs called penicillins or penicillin derivatives. [NIH]

Angiogenesis: Blood vessel formation. Tumor angiogenesis is the growth of blood vessels from surrounding tissue to a solid tumor. This is caused by the release of chemicals by the tumor. [NIH]

Antibacterial: A substance that destroys bacteria or suppresses their growth or reproduction. [EU]

Antibiotic: A drug used to treat infections caused by bacteria and other microorganisms. [NIH]

Antioxidant: A substance that prevents damage caused by free radicals. Free radicals are highly reactive chemicals that often contain oxygen. They are produced when molecules are split to give products that have unpaired electrons. This process is called oxidation. [NIH]

Apoptosis: A normal series of events in a cell that leads to its death. [NIH]

Ascites: Abnormal buildup of fluid in the abdomen. [NIH]

Aspiration: Removal of fluid from a lump, often a cyst, with a needle and a syringe. [NIH]

Assay: Determination of the amount of a particular constituent of a mixture,

or of the biological or pharmacological potency of a drug. [EU]

Asymptomatic: Having no signs or symptoms of disease. [NIH]

Atrophy: A wasting away; a diminution in the size of a cell, tissue, organ, or part. [EU]

Bacteria: A large group of single-cell microorganisms. Some cause infections and disease in animals and humans. The singular of bacteria is bacterium. [NIH]

Bile: A fluid made by the liver and stored in the gallbladder. Bile is excreted into the small intestine where it helps digest fat. [NIH]

Biochemical: Relating to biochemistry; characterized by, produced by, or involving chemical reactions in living organisms. [EU]

Bismuth: A metallic element that has the atomic symbol Bi, atomic number 83 and atomic weight 208.98. [NIH]

Bombesin: A tetradecapeptide originally obtained from the skins of toads Bombina bombina and B. variegata. It is also an endogenous neurotransmitter in many animals including mammals. Bombesin affects vascular and other smooth muscle, gastric secretion, and renal circulation and function. [NIH]

Carcinogenesis: The process by which normal cells are transformed into cancer cells. [NIH]

Carcinogenic: Producing carcinoma. [EU]

Cardia: That part of the stomach surrounded by the esophagogastric junction, characterized by the lack of acid-forming cells. [NIH]

Carotene: The general name for a group of pigments found in green, yellow, and leafy vegetables, and yellow fruits. The pigments are fat-soluble, unsaturated aliphatic hydrocarbons functioning as provitamins and are converted to vitamin A through enzymatic processes in the intestinal wall. [NIH]

Catalase: An oxidoreductase that catalyzes the conversion of hydrogen peroxide to water and oxygen. It is present in many animal cells. A deficiency of this enzyme results in acatalasia. EC 1.11.1.6. [NIH]

CEA: Carcinoembryonic antigen. A substance that is sometimes found in an increased amount in the blood of people with certain cancers. [NIH]

Cholinergic: Resembling acetylcholine in pharmacological action; stimulated by or releasing acetylcholine or a related compound. [EU]

Chromosome: Part of a cell that contains genetic information. Except for sperm and eggs, all human cells contain 46 chromosomes. [NIH]

Chronic: A disease or condition that persists or progresses over a long period of time. [NIH]

Clarithromycin: An antibiotic drug used to treat infection. It belongs to the family of drugs called macrolides. [NIH]

Coagulation: 1. the process of clot formation. 2. in colloid chemistry, the solidification of a sol into a gelatinous mass; an alteration of a disperse phase or of a dissolved solid which causes the separation of the system into a liquid phase and an insoluble mass called the clot or curd. Coagulation is usually irreversible. 3. in surgery, the disruption of tissue by physical means to form an amorphous residuum, as in electrocoagulation and photocoagulation. [EU]

Coenzyme: An organic nonprotein molecule, frequently a phosphorylated derivative of a water-soluble vitamin, that binds with the protein molecule (apoenzyme) to form the active enzyme (holoenzyme). [EU]

Cutaneous: Having to do with the skin. [NIH]

Detoxification: Treatment designed to free an addict from his drug habit. [EU]

Distal: Remote; farther from any point of reference; opposed to proximal. In dentistry, used to designate a position on the dental arch farther from the median line of the jaw. [EU]

Docetaxel: An anticancer drug that belongs to the family of drugs called mitotic inhibitors. [NIH]

Doxorubicin: An anticancer drug that belongs to the family of drugs called antitumor antibiotics. It is an anthracycline. [NIH]

Dysplasia: Cells that look abnormal under a microscope but are not cancer. [NIH]

Endemic: Present or usually prevalent in a population or geographical area at all times; said of a disease or agent. Called also endemial. [EU]

Epidemiological: Relating to, or involving epidemiology. [EU]

Epidermal: Pertaining to or resembling epidermis. Called also epidermic or epidermoid. [EU]

Epithelium: A thin layer of tissue that covers organs, glands, and other structures within the body. [NIH]

Erythrocytes: Cells that carry oxygen to all parts of the body. Also called red blood cells (RBCs). [NIH]

Etoposide: An anticancer drug that is a podophyllotoxin derivative and belongs to the family of drugs called mitotic inhibitors. [NIH]

Fluorescence: The property of emitting radiation while being irradiated. The radiation emitted is usually of longer wavelength than that incident or absorbed, e.g., a substance can be irradiated with invisible radiation and emit visible light. X-ray fluorescence is used in diagnosis. [NIH]

Glycine: A non-essential amino acid. It is found primarily in gelatin and silk

fibroin and used therapeutically as a nutrient. It is also a fast inhibitory neurotransmitter. [NIH]

Grading: A system for classifying cancer cells in terms of how abnormal they appear when examined under a microscope. The objective of a grading system is to provide information about the probable growth rate of the tumor and its tendency to spread. The systems used to grade tumors vary with each type of cancer. Grading plays a role in treatment decisions. [NIH]

Gynecology: A medical-surgical specialty concerned with the physiology and disorders primarily of the female genital tract, as well as female endocrinology and reproductive physiology. [NIH]

Habitual: Of the nature of a habit; according to habit; established by or repeated by force of habit, customary. [EU]

Hemorrhage: Bleeding or escape of blood from a vessel. [NIH]

Heparin: A drug that helps prevent blood clots from forming. It belongs to the family of drugs called anticoagulants (blood thinners). [NIH]

Hepatic: Refers to the liver. [NIH]

Hernia: (he protrusion of a loop or knuckle of an organ or tissue through an abnormal opening. [EU]

Hybridization: The genetic process of crossbreeding to produce a hybrid. Hybrid nucleic acids can be formed by nucleic acid hybridization of DNA and RNA molecules. Protein hybridization allows for hybrid proteins to be formed from polypeptide chains. [NIH]

Hyperplasia: An abnormal increase in the number of cells in an organ or tissue. [NIH]

Hypertension: Abnormally high blood pressure. [NIH]

Hypertrophy: Nutrition) the enlargement or overgrowth of an organ or part due to an increase in size of its constituent cells. [EU]

Immunohistochemistry: Histochemical localization of immunoreactive substances using labeled antibodies as reagents. [NIH]

Induction: The act or process of inducing or causing to occur, especially the production of a specific morphogenetic effect in the developing embryo through the influence of evocators or organizers, or the production of anaesthesia or unconsciousness by use of appropriate agents. [EU]

Inflammation: A response of redness, swelling, pain, and a feeling of heat in certain areas which is meant to protect tissues affected by injury or disease. [NIH]

Ingestion: Taking into the body by mouth [NIH]

Inguinal: Pertaining to the inguen, or groin. [EU]

Insulin: A hormone made by the islet cells of the pancreas. Insulin controls the amount of sugar in the blood by moving it into the cells, where it can be used by the body for energy. [NIH]

Intracellular: Inside a cell. [NIH]

Intravascular: Within a vessel or vessels. [EU]

Laparoscopy: The insertion of a thin, lighted tube (called a laparoscope) through the abdominal wall to inspect the inside of the abdomen and remove tissue samples. [NIH]

Laparotomy: A surgical incision made in the wall of the abdomen. [NIH]

Lesion: An area of abnormal tissue change. [NIH]

Leucovorin: A drug used to protect normal cells from high doses of the anticancer drug methotrexate. It is also used to increase the antitumor effects of fluorouracil and tegafur-uracil, an oral treatment alternative to intravenous fluorouracil. [NIH]

Lipoprotein: Any of the lipid-protein complexes in which lipids are transported in the blood; lipoprotein particles consist of a spherical hydrophobic core of triglycerides or cholesterol esters surrounded by an amphipathic monolayer of phospholipids, cholesterol, and apolipoproteins; the four principal classes are high-density, low-density, and very-low-density lipoproteins and chylomicrons. [EU]

Luminol: 5-Amino-2,3-dihydro-1,4-phthalazinedione. Substance that emits light on oxidation. It is used in chemical determinations. [NIH]

Lymphocyte: A white blood cell. Lymphocytes have a number of roles in the immune system, including the production of antibodies and other substances that fight infection and diseases. [NIH]

Malignancy: A cancerous tumor that can invade and destroy nearby tissue and spread to other parts of the body. [NIH]

Mediator: An object or substance by which something is mediated, such as (1) a structure of the nervous system that transmits impulses eliciting a specific response; (2) a chemical substance (transmitter substance) that induces activity in an excitable tissue, such as nerve or muscle; or (3) a substance released from cells as the result of the interaction of antigen with antibody or by the action of antigen with a sensitized lymphocyte. [EU]

Mentors: Senior professionals who provide guidance, direction and support to those persons desirous of improvement in academic positions, administrative positions or other career development situations. [NIH]

Mesenchymal: Refers to cells that develop into connective tissue, blood vessels, and lymphatic tissue. [NIH]

Metaplasia: A change of cells to a form that does not normally occur in the

tissue in which it is found. [NIH]

Metastasis: The spread of cancer from one part of the body to another. Tumors formed from cells that have spread are called "secondary tumors" and contain cells that are like those in the original (primary) tumor. The plural is metastases. [NIH]

Metronidazole: A drug used to treat bacterial, fungal, and parasitic infections. It is also being studied in the treatment of some cancers. [NIH]

Microscopy: The application of microscope magnification to the study of materials that cannot be properly seen by the unaided eye. [NIH]

Milligram: A measure of weight. A milligram is approximately 450,000-times smaller than a pound and 28,000-times smaller than an ounce. [NIH]

Mitochondria: Parts of a cell where aerobic production (also known as cell respiration) takes place. [NIH]

Mitomycin: An anticancer drug that belongs to the family of drugs called antitumor antibiotics. [NIH]

Molecular: Of, pertaining to, or composed of molecules : a very small mass of matter. [EU]

Mucosa: A mucous membrane, or tunica mucosa. [EU]

Mucus: A thick, slippery fluid produced by the membranes that line certain organs of the body, including the nose, mouth, throat, and vagina. [NIH]

Mutagenesis: Process of generating genetic mutations. It may occur spontaneously or be induced by mutagens. [NIH]

Necrosis: Refers to the death of living tissues. [NIH]

Neoplasia: Abnormal and uncontrolled cell growth. [NIH]

Neurotransmitter: Any of a group of substances that are released on excitation from the axon terminal of a presynaptic neuron of the central or peripheral nervous system and travel across the synaptic cleft to either excite or inhibit the target cell. Among the many substances that have the properties of a neurotransmitter are acetylcholine, norepinephrine, epinephrine, dopamine, glycine, y-aminobutyrate, glutamic acid, substance P, enkephalins, endorphins, and serotonin. [EU]

Neutrophil: A type of white blood cell. [NIH]

Obstetrics: A medical-surgical specialty concerned with management and care of women during pregnancy, parturition, and the puerperium. [NIH]

Omeprazole: A drug that inhibits gastric acid secretion. [NIH]

Palate: The roof of the mouth. The front portion is bony (hard palate), and the back portion is muscular (soft palate). [NIH]

Paradoxical: Occurring at variance with the normal rule. [EU]

Paraffin: A mixture of solid hydrocarbons obtained from petroleum. It has a wide range of uses including as a stiffening agent in ointments, as a lubricant, and as a topical anti-inflammatory. It is also commonly used as an embedding material in histology. [NIH]

Parietal: 1. of or pertaining to the walls of a cavity. 2. pertaining to or located near the parietal bone, as the parietal lobe. [EU]

Peroxidase: A hemeprotein from leukocytes. Deficiency of this enzyme leads to a hereditary disorder coupled with disseminated moniliasis. It catalyzes the conversion of a donor and peroxide to an oxidized donor and water. EC 1.11.1.7. [NIH]

Phenotype: The outward appearance of the individual. It is the product of interactions between genes and between the genotype and the environment. This includes the killer phenotype, characteristic of yeasts. [NIH]

Phosphorylation: The introduction of a phosphoryl group into a compound through the formation of an ester bond between the compound and a phosphorus moiety. [NIH]

Polyposis: The development of numerous polyps (growths that protrude from a mucous membrane). [NIH]

Polysaccharide: A type of carbohydrate. It contains sugar molecules that are linked together chemically. [NIH]

Precancerous: A term used to describe a condition that may (or is likely to) become cancer. Also called premalignant. [NIH]

Precursor: Something that precedes. In biological processes, a substance from which another, usually more active or mature substance is formed. In clinical medicine, a sign or symptom that heralds another. [EU]

Predisposition: A latent susceptibility to disease which may be activated under certain conditions, as by stress. [EU]

Premalignant: A term used to describe a condition that may (or is likely to) become cancer. Also called precancerous. [NIH]

Preoperative: Preceding an operation. [EU]

Prevalence: The total number of cases of a given disease in a specified population at a designated time. It is differentiated from incidence, which refers to the number of new cases in the population at a given time. [NIH]

Progression: Increase in the size of a tumor or spread of cancer in the body. [NIH]

Prostaglandins: A group of compounds derived from unsaturated 20-carbon fatty acids, primarily arachidonic acid, via the cyclooxygenase pathway. They are extremely potent mediators of a diverse group of physiological processes. [NIH]

Proximal: Nearest; closer to any point of reference; opposed to distal. [EU]

Radiotherapy: The treatment of disease by ionizing radiation. [EU]

Receptor: A molecule inside or on the surface of a cell that binds to a specific substance and causes a specific physiologic effect in the cell. [NIH]

Recurrence: The return of cancer, at the same site as the original (primary) tumor or in another location, after the tumor had disappeared. [NIH]

Reflux: The term used when liquid backs up into the esophagus from the stomach. [NIH]

Reinfection: A second infection by the same pathogenic agent, or a second infection of an organ such as the kidney by a different pathogenic agent. [EU]

Resected: Surgical removal of part of an organ. [NIH]

Resection: Removal of tissue or part or all of an organ by surgery. [NIH]

Secretion: 1. the process of elaborating a specific product as a result of the activity of a gland; this activity may range from separating a specific substance of the blood to the elaboration of a new chemical substance. 2. any substance produced by secretion. [EU]

Serine: A non-essential amino acid occurring in natural form as the L-isomer. It is synthesized from glycine or threonine. It is involved in the biosynthesis of purines, pyrimidines, and other amino acids. [NIH]

Serology: The study of serum, especially of antigen-antibody reactions in vitro. [NIH]

Serum: The clear liquid part of the blood that remains after blood cells and clotting proteins have been removed. [NIH]

Shunt: A surgically created diversion of fluid (e.g., blood or cerebrospinal fluid) from one area of the body to another area of the body. [NIH]

Species: A taxonomic category subordinate to a genus (or subgenus) and superior to a subspecies or variety, composed of individuals possessing common characters distinguishing them from other categories of individuals of the same taxonomic level. In taxonomic nomenclature, species are designated by the genus name followed by a Latin or Latinized adjective or noun. [EU]

Spectrum: A charted band of wavelengths of electromagnetic vibrations obtained by refraction and diffraction. By extension, a measurable range of activity, such as the range of bacteria affected by an antibiotic (antibacterial s.) or the complete range of manifestations of a disease. [EU]

Sporadic: Neither endemic nor epidemic; occurring occasionally in a random or isolated manner. [EU]

Sulfides: Chemical groups containing the covalent sulfur bonds -S-. The sulfur atom can be bound to inorganic or organic moieties. [NIH]

Supplementation: Adding nutrients to the diet. [NIH]

Suppressive: Tending to suppress : effecting suppression; specifically : serving to suppress activity, function, symptoms. [EU]

Synergistic: Acting together; enhancing the effect of another force or agent. [EU]

Telomerase: Essential ribonucleoprotein reverse transcriptase that adds telomeric DNA to the ends of eukaryotic chromosomes. Telomerase appears to be repressed in normal human somatic tissues but reactivated in cancer, and thus may be necessary for malignant transformation. EC 2.7.7.-. [NIH]

Tetracycline: An antibiotic drug used to treat infection. [NIH]

Tomography: A series of detailed pictures of areas inside the body; the pictures are created by a computer linked to an x-ray machine. [NIH]

TPA: 12-O-tetradecanoylphorbol-13-acetate. A drug that is being studied as a treatment for hematologic cancer. [NIH]

Tumour: 1. swelling, one of the cardinal signs of inflammations; morbid enlargement. 2. a new growth of tissue in which the multiplication of cells is uncontrolled and progressive; called also neoplasm. [EU]

Ulceration: 1. the formation or development of an ulcer. 2. an ulcer. [EU]

Vaccination: Treatment with a vaccine. [NIH]

Virulence: The degree of pathogenicity within a group or species of microorganisms or viruses as indicated by case fatality rates and/or the ability of the organism to invade the tissues of the host. [NIH]

Virus: Submicroscopic organism that causes infectious disease. In cancer therapy, some viruses may be made into vaccines that help the body build an immune response to, and kill, tumor cells. [NIH]

CHAPTER 5. PATENTS ON GASTRIC CANCER

Overview

You can learn about innovations relating to gastric cancer by reading recent patents and patent applications. Patents can be physical innovations (e.g. chemicals, pharmaceuticals, medical equipment) or processes (e.g. treatments or diagnostic procedures). The United States Patent and Trademark Office defines a patent as a grant of a property right to the inventor, issued by the Patent and Trademark Office.[31] Patents, therefore, are intellectual property. For the United States, the term of a new patent is 20 years from the date when the patent application was filed. If the inventor wishes to receive economic benefits, it is likely that the invention will become commercially available to patients with gastric cancer within 20 years of the initial filing. It is important to understand, therefore, that an inventor's patent does not indicate that a product or service is or will be commercially available to patients with gastric cancer. The patent implies only that the inventor has "the right to exclude others from making, using, offering for sale, or selling" the invention in the United States. While this relates to U.S. patents, similar rules govern foreign patents.

In this chapter, we show you how to locate information on patents and their inventors. If you find a patent that is particularly interesting to you, contact the inventor or the assignee for further information.

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[31]Adapted from The U. S. Patent and Trademark Office:
http://www.uspto.gov/web/offices/pac/doc/general/whatis.htm.

Patents on Gastric Cancer

By performing a patent search focusing on gastric cancer, you can obtain information such as the title of the invention, the names of the inventor(s), the assignee(s) or the company that owns or controls the patent, a short abstract that summarizes the patent, and a few excerpts from the description of the patent. The abstract of a patent tends to be more technical in nature, while the description is often written for the public. Full patent descriptions contain much more information than is presented here (e.g. claims, references, figures, diagrams, etc.). We will tell you how to obtain this information later in the chapter. The following is an example of the type of information that you can expect to obtain from a patent search on gastric cancer:

- **Human gastric cancer antigen gene and gastric cancer antigen protein**

  Inventor(s): Kikuchi; Kokichi (Sapporo, JP), Sato; Noriyuki (Sapporo, JP), Torigoe; Toshihiko (Sapporo, JP), Sahara; Hiroeki (Sapporo, JP), Suzuki; Manabu (Kawasaki, JP), Hamuro; Junji (Kawasaaki, JP)

  Assignee(s): Ajinomoto Co., Inc. (Tokyo, JP), Kokichi Kikuchi (Sapporo, JP)

  Patent Number: 6,444,800

  Date filed: July 7, 1999

  Abstract: A tumor antigen gene is identified by screening a cDNA library derived from a gastric cancer cell line that can induce gastric cancer antigen specific cytotoxic T cell (CTL) by means of hybridization and PCR utilizing an amino acid sequence of peptide fragment of a known gastric cancer antigen protein, introducing a selected cDNA clone into a cell of gastric cancer cell line that cannot induce gastric cancer antigen specific CTL so that the clone should be expressed in the cell, and selecting a transgenic cell that has acquired the ability to induce CTL. According to the present invention, there are provided a protein capable of inducing immune response against human gastric cancer, DNA encoding the protein, as well as vaccine for treatment and prevention of human gastric cancer, and agent for treatment and prevention of human gastric cancer.

  Excerpt(s): The present invention relates to a protein capable of inducing a cytotoxic T cell (Cytotoxic T Lymphocytes, see "Ika Men'ekigaku (Medical Immunology), Revised 3rd Edition, Ed. by K. Kikuchi, also abbreviated as "CTL" hereinafter) against human gastric cancer cells in vivo or in vitro, and a DNA encoding the protein. Particularly, the present invention relates to a protein capable of presenting CTL against human gastric cancer cells by being bound to HLA-A31 antigen (Human

Leucocyte Antigen, see "Gendai Men'ekigaku (Current Immunology)", 2nd Edition, Ed. By Y. Yamamura and T. Tada), and a DNA encoding the protein. ... The present invention also relates to an agent for prevention or treatment of human gastric cancer, which comprises a protein capable of inducing CTL against human gastric cancer cells in vivo or in vitro, and a vaccine for prevention or treatment of human gastric cancer, which comprises a recombinant virus or a recombinant bacterium containing a DNA encoding the protein. ... On the other hand, as for digestive tract cancers including gastric cancer, the presence of a tumor antigen peptide which can induce CTL has been identified by the present inventors (Japanese Patent Unexamined Publication [KOKAI] No. Hei 9-151200/1997). However, it has not been clarified at all what kind of protein from which tumor peptide is derived, and much less structure of DNA encoding the tumor antigen protein.

Web site: http://www.delphion.com/details?pn=US06444800__

- **Diagnosis of early gastric cancer**

  Inventor(s): Ristimaki; Ari (Helsinki, FI), Harkonen; Matti (Espoo, FI), Sipponen; Pentti (Espoo, FI)

  Assignee(s): Biohit Oyj (Helsinki, FI)

  Patent Number: 6,416,961

  Date filed: September 14, 1999

  Abstract: The present invention pertains to a method for determination of the significance of a histologically detected premalignant lesion as a risk for intestinal type gastric cancer or carcinoma in situ, comprising detecting from a patient sample comprising gastric mucosa cellsa) cyclooxygenase-2 Cox-2) mRNA expression, orb) Cox-2 protein;wherein overexpression of Cox-2 is indicative of an increased risk for intestinal type gastric cancer.

  Excerpt(s): Gastric cancer is one of the most frequent and lethal malignancies in the world (Coleman et al., 1993). It is the fourth most common malignancy in Finnish males and the fifth in females, and accounts for 5% of all malignancies in Finland (Cancer Incidence in Finland 1994. Finnish Cancer Registry, Helsinki, 1996). Early detection of stomach cancer is difficult, and in most western countries the five year survival rate is less than 20% (Wanebo et al., 1993). More than 90% of stomach cancers are adenocarcinomas, which are divided into intestinal and diffuse types by the Lauren classification (Lauren, 1965). ... Since it is not known, whether Cox-2 is present in gastric cancer tissues in vivo, or in premalignant lesions of gastric carcinoma, we studied its expression in

adenocarcinomas of the stomach, as well as in grave gastric dysplasias (which are highly premalignant). We found elevated levels of Cox-2 mRNA, but not those of Cox-1, in human gastric adenocarcinoma tissues and grave dysplasias of the stomach. However, the expression of Cox-2 was not elevated in mild dysplasias that rarely transform to malignancies. In gastric carcinoma, Cox-2 protein was primarily localized in the cancer cells. ... Expression of Cox-2 in human carcinomas seems, at least so far, to be restricted to the gastrointestinal tract. However, as colon carcinoma and stomach carcinoma are both epidemiologically, morphologically and genetically distinct diseases, the fact that elevated levels of Cox-2 mRNA and protein have been found in rodent and in human colon carcinoma tissues, does not give any indication of their role in gastric tissues. The fact that one gastric carcinoma cell line was shown to express high steady-state levels of Cox-2 mRNA, is neither any indication of its role in early gastric cancer in vivo.

Web site: http://www.delphion.com/details?pn=US06416961__

- **Peptide capable of inducing immune response to human gastric cancer and agent for preventing or treating human gastric cancer, containing the peptide**

  Inventor(s): Kikuchi; Kokichi (No. 7-1, Fushimi 3-chome, Chuo-ku, Sapporo-shi, Hokkaido, JP), Sato; Noriyuki (Sapporo, JP), Sahara; Hiromitsu (Rishirifuji-machi, JP), Yasojima; Takahiro (Hokkaido, JP), Wada; Yoshimasa (Sapporo, JP), Suzuki; Manabu (Kawasaki, JP), Hamuro; Junji (Kawasaki, JP)

  Assignee(s): Ajinomoto Co., Inc. (Tokyo, JP), Kikuchi; Kokichi (Sapporo, JP)

  Patent Number: 6,368,852

  Date filed: June 24, 1998

  Abstract: A peptide that induces CTL against human gastric cancer cells is provided. A peptide having a specific amino-acid sequence and induces cytotoxic T cells that targets gastric cancer cells may be used as an agent for preventing or treating gastric cancer.

  Excerpt(s): The present invention further relates to an agent useful for preventing or treating human gastric cancer, the agent containing a peptide capable of inducing CTL to a human gastric cancer cell in vivo or in vitro, and to a vaccine for preventing or treating human gastric cancer, the vaccine containing a recombinant virus or a recombinant bacterium having a DNA encoding such a peptide. ... On the basis of these considerations, a cancer antigen peptide capable of inducing CTL has

been studied. However, only a peptide derived from a protein, i.e. MAGE family, Mart-1, Tyrosinase, gp100, which is a cancer antigen present in melanoma tumors has been made clear to date. With respect to cancers of the digestive tract including gastric cancer, the presence of a cancer antigen peptide capable of inducing CTL and the structure of the cancer antigen peptide are currently unknown. ... Accordingly, it is one object of the present invention to provide novel peptides capable of inducing an immune response to human gastric cancer.

Web site: http://www.delphion.com/details?pn=US06368852__

- **Anti-human gastric cancer monoclonal antibody**

  Inventor(s): Yoshida; Hajime (Sagamihara, JP), Hanai; Nobuo (Mercer Island, WA), Furuya; Akiko (Machida, JP)

  Assignee(s): Kyowa Hakko Kogyo Co., Ltd. (Tokyo, JP)

  Patent Number: 5,051,355

  Date filed: December 6, 1989

  Abstract: An anti-human gastric cancer monoclonal antibody, AMC-462, which belongs to the class IgG.sub.1, reacts with human digestive system cancer, and recognizes sialylated glycoproteins or glycolipids as the antigen is disclosed. It is effective for diagnosis of digestive system cancer, especially pancreatic cancer.

  Excerpt(s): The present inventors have found that the monoclonal antibody AMC-462 produced by a hybridoma cell line between a spleen cell obtained from a mouse immunized with human gastric cancer tissue membrane preparations and a murine myeloma cell line has a strong reactivity with digestive system cancer, especially with pancreatic cancer, and is capable of detecting the presence of digestive system cancer in respect of the samples which give negative results in the serodiagnosis using NS19-9 or DuPan-2 and have completed the present invention based on the findings. ... The invention thus provides an anti-human gastric cancer-reactive monoclonal antibody obtained by fusing spleen cells of a mouse immunized with human gastric cancer tissue membrane preparations and murine myeloma cell lines to generate hybridomas, selecting from among the hybridomas obtained a hybridoma clone producing a monoclonal antibody having specificity to human gastric cancer and cultivating the selected hybridoma in a medium or administering the hybridoma to a mouse to thereby cause hybridoma cell propagation in the ascitic fluid in the mouse, followed by separation, from the culture or ascitic fluid, of the antibody capable of recognizing sialylated glycoproteins or glycolipids as antigens. ... Mice of 3-10 weeks

of age, preferably 8-week-old mice, are immunized with human gastric cancer cells, tissues or membrane preparations derived from such tissues to cause mice to generate antibody-producing cells in the spleen, lymph node and peripheral blood. Mice that have immunological tolerance as a result of pretreatment with normal human stomach cells should preferably be used as the mice to be immunized. The immunization is generally performed by administering human gastric cancer cells (10.sup.6 to 10.sup.7 cells per animal), human gastric cancer tissues, or membrane preparations (membrane fragments) derived from such tissues (10-500 .mu.g per animal) together with an appropriate adjuvant (e.g. Freund's complete adjuvant, or aluminum hydroxide gel plus B. pertussis vaccine) to the animals subcutaneously, intravenously or intraperitoneally. Thereafter, the antigen administration is repeated 2-5 times at 1- to 2-week intervals. Three to seven days after each immunization, the blood is sampled from the eyeground venous plexus and the serum of each sample is tested as to whether it reacts with human gastric cancer by the enzyme immunoassay technique given below [Enzyme-linked Immunosorbent Assay (ELISA), published by Igaku Shoin, Tokyo 1976], for instance.

Web site: http://www.delphion.com/details?pn=US05051355__

- **Human monoclonal antibody to antigen of gastric cancer and B-cell line for producing this antibody, method for preparing this B-cell line and antibody, antigen and method of preparation of this antigen**

  Inventor(s): Abe; Tsutomu (Fuji, JP), Fukumoto; Masayuki (Saitama, JP)

  Assignee(s): Asahi Kasei Kabushiki Kaisha (Osaka, JP)

  Patent Number: 5,024,946

  Date filed: September 29, 1986

  Abstract: The present invention relates to a human B-cell line capable of producing a human monoclonal antibody against an antigen found on gastric cancer cell lines or tissues. The B-cell line is formed by culturing B-cells of a lymph node obtained from a patient with gastric cancer and a HAT sensitive B-cell line. The antigen is also disclosed.

  Excerpt(s): The present invention relates to a novel human B-cell line and more specifically to a human B-cell line for the production of a novel monoclonal antibody to an antigen of human gastric cancer, to the antibody so produced and to the antigen. ... A. Ochiai et al. [Proceedings of the Japanese Cancer Association, The 44th Annual Meeting October 1985 (TOKYO) pp132] disclosed a new human gastric cancer-related antigen having a molecular weight of about 46 kilodaltons which exists in

tissues of gastric cancer, colon cancer, lung cancer and so on, and which further exists in neutrophil leukocytes which are one type of leukocytes or macrophages. ... There has now been discovered a novel human B-cell line which is capable of producing a novel human monoclonal antibody against an antigen found on gastric cancer cell lines or gastric cancer tissues.

Web site: http://www.delphion.com/details?pn=US05024946__

- **Immunochemical diagnostic method for gastric cancer**

  Inventor(s): Deutsch; Emmanuel (469 Beacon St., Boston, MA 02115)

  Assignee(s): none reported

  Patent Number: 4,219,539

  Date filed: February 24, 1978

  Abstract: Using anti-IgG and anti-Fc sera which is reacted with gastric cancer juice from a patient by double diffusion on Ouchterlony agarose, there is repeatedly obtained a double precipitin line. Under immunoelectrophoresis, anodic displacement of anti-IgG and anti-Fc sera is observed. The .beta..sub.1 to .alpha..sub.1 precipitin line with anti-IgG and anti-Fc is thus formed to be characteristic of gastric cancer juice. These double precipitin lines correspond to an antigen-antibody complex which are uniquely identified by Ouchterlony immunodiffusion assay with these anti-immunoglobulin sera. Only a single precipitin line is formed between gastric cancer juice and anti-Fab serum.Both with anti-IgG and anti-Fc, various lines are obtained under immunoelectrophoresis with different mobilities, from gamma to .alpha..sub.1. With anti-Fab, however, there is no displacement toward the anode. Normally, Fc seldom moves beyond the site of origin. Thus, both IgG and Fc of gastric cancer juice exhibit a displacement toward the anode.

  Excerpt(s): This invention is generally in the field of differentiating between malignant and benign tumors of the gastric mucosa and specifically in the field of gastric cancer diagnosis as a tool in early and reproducible detection of gastric cancer by assaying the gastric juice of the patient. ... The invention has found and reported with his coworkers in Cancer Research, volume 33, January 1973, that an antigen which is different from and distinct from Gold's carcinoembryonic antigen is present in gastric cancer secretions and reacts immunochemically to give one precipitin line on double diffusion in agar gel. ... The unexpected improvement in immunological particularity is based upon the discovery that the B.sub.1 to a.sub.1 line more characteristic of gastric cancer juice corresponds to an antigen-antibody complex and, with this in mind, the

assay of various gastric juices on Ouchterlony immunodiffusion with anti-immunoglobulin sera demonstrated that all the juices gave precipitin lines with both IgG and IgA but that IgG produces a double line with gastric cancer juice, but only one line with juices from normal subjects or subjects with gastric ulcer.

Web site: http://www.delphion.com/details?pn=US04219539__

Patent Applications on Gastric Cancer

As of December 2000, U.S. patent applications are open to public viewing.[32] Applications are patent requests which have yet to be granted (the process to achieve a patent can take several years). The following patent applications have been filed since December 2000 relating to gastric cancer:

- **Isolated nucleic acid molecules associated with gastric cancer and methods for diagnosing and treating gastric cancer**

  Inventor(s): Obata, Yuichi ; (Chikusa-ku, JP)

  Correspondence: Wolf Greenfield & Sacks, Pc; Federal Reserve Plaza; 600 Atlantic Avenue; Boston; MA; 02210-2211; US

  Patent Application Number: 20020037541

  Date filed: April 17, 2001

  Abstract: Various molecules associated with disorders such as gastric cancer are disclosed. The invention also discloses diagnostic and therapeutic methods based upon these molecules.

  Excerpt(s): This invention relates to the isolation of genes associated with gastric cancer, methods of diagnosing gastric cancer using these, as well as other genes which are known, as well as therapeutic approaches to treating such conditions. ... The foregoing examples demonstrate several features of the invention. These include diagnostic methods for determining presence of transformed cells, such as gastric cancer cells, in a sample. The sample may contain whole cells or it may be, e.g., a body fluid sample, or an effusion, etc., where the sample may contain cells, but generally will contain shed antigen. The experiments indicate that there is a family of proteins, expression of which is associated with gastric cancer. Hence, the invention involves, inter alia, detecting at least two of the proteins set out in Table 1 wherein, presence of these is indicative of a pathology, such as gastric cancer or other type of related condition. Exemplary of the type of diagnostic assays which can be carried out are

[32] This has been a common practice outside the United States prior to December 2000.

immunoassays, amplification assays (e.g., PCR), or, what will be referred to herein as a "display array". "Display array" as used herein refers to a depiction of the protein profile of a given sample. Exemplary of such displays are 2-dimensional electrophoresis, banding patterns such as SDS-gels, and so forth. Thus, one aspect of the invention involves diagnosing gastric cancer or a related condition by determining protein display of a sample, wherein a determination of at least two of the proteins, or expression of their genes, as set forth in Table 1, is indicative of gastric cancer or a related condition. There are many ways to carry out these assays. For example, as indicated herein, antibodies to the proteins were found in patient samples. One can assay for these antibodies using, e.g., the methodology described herein, or by using a purified protein or proteins or antigenic fragment thereof, and so forth. One can also assay for the protein itself, using antibodies, which may be isolated from samples, or generated using the protein and standard techniques. This antibodies can then be labelled, if desired, and used in standard immunoassays. These antibodies or oligonucleotide probes/primers may also be used to examine biopsied tissue samples, e.g., to diagnose precancerous conditions, early stage cancers, and so forth. ... Any of these assays can also be used in progression/regression studies. One can monitor the course of an abnormality such as gastric cancer which involve expression of any one of the proteins, the expression of which is governed by nucleic acid molecules which comprise SEQ ID NOS: 40-48 and 56-87, simply by monitoring levels of the protein, its expression, and so forth using any or all of the methods set forth supra.

Web site: http://appft1.uspto.gov/netahtml/PTO/search-bool.html

- **Method for screening the risk of gastric cancer**

  Inventor(s): Harkonen, Matti ; (Espoo, FI)

  Correspondence: Birch Stewart Kolasch & Birch; PO Box 747; Falls Church; VA; 22040-0747; US

  Patent Application Number: 20010039025

  Date filed: March 14, 2001

  Abstract: Method for screening the risk for gastric cancer using, in combination, the determination of serum pepsinogen I, gastrin-17 and the supporting determination of Helicobacter pylori antibodies from blood serum, in order to detect either atrophy of the corpus area, atrophy of the antrum area or atrophy of the mucosa of the whole stomach as well as a causative Helicobacter pylori infection, whereby the risk for gastric

cancer can be evaluated and the necessary gastroscopy and follow-up can be planned.

Excerpt(s): In the following background information is presented relating to methods for screening for the risk of gastric cancer, primarily using pepsinogen I and gastrin-17 determination from a blood sample. ... Although the occurrence of new cases of gastric cancer has diminished in the recent years, gastric cancer is still one of the most common malignancies. In Finland, approximately 250 to 300 new cases of cancer/one million people/year are registered. In the age group of people above 50, there are an estimated 2350 cases of stomach cancer, which is about 3 per mille of the age group population (Finnish Cancer Registry--The Institute for Statistical and Epidemiological Cancer Research 1993). In addition to Finland, there is a high gastric cancer incidence in Iceland, South America and especially in Japan. ... The prognosis of gastric cancer is usually poor, as there is no specific treatment. Presently the only possibility of successfully treating gastric cancer is its early detection and total removal surgically.

Web site: http://appft1.uspto.gov/netahtml/PTO/search-bool.html

Keeping Current

In order to stay informed about patents and patent applications dealing with gastric cancer, you can access the U.S. Patent Office archive via the Internet at no cost to you. This archive is available at the following Web address: **http://www.uspto.gov/main/patents.htm**. Under "Services," click on "Search Patents." You will see two broad options: (1) Patent Grants, and (2) Patent Applications. To see a list of granted patents, perform the following steps: Under "Patent Grants," click "Quick Search." Then, type "gastric cancer" (or synonyms) into the "Term 1" box. After clicking on the search button, scroll down to see the various patents which have been granted to date on gastric cancer. You can also use this procedure to view pending patent applications concerning gastric cancer. Simply go back to the following Web address: **http://www.uspto.gov/main/patents.htm**. Under "Services," click on "Search Patents." Select "Quick Search" under "Patent Applications." Then proceed with the steps listed above.

Vocabulary Builder

Aluminum: A metallic element that has the atomic number 13, atomic

symbol Al, and atomic weight 26.98. [NIH]

Antigens: Substances that cause the immune system to make a specific immune response. [NIH]

Benign: Not cancerous; does not invade nearby tissue or spread to other parts of the body. [NIH]

Corpus: The body of the uterus. [NIH]

Diffusion: The process of becoming diffused, or widely spread; the spontaneous movement of molecules or other particles in solution, owing to their random thermal motion, to reach a uniform concentration throughout the solvent, a process requiring no addition of energy to the system. [EU]

Effusion: The escape of fluid into a part or tissue, as an exudation or a transudation. [EU]

Electrophoresis: An electrochemical process in which macromolecules or colloidal particles with a net electric charge migrate in a solution under the influence of an electric current. [NIH]

Gels: Colloids with a solid continuous phase and liquid as the dispersed phase; gels may be unstable when, due to temperature or other cause, the solid phase liquifies; the resulting colloid is called a sol. [NIH]

Glycoprotein: A protein that has sugar molecules attached to it. [NIH]

Hybridomas: Cells artificially created by fusion of activated lymphocytes with neoplastic cells. The resulting hybrid cells are cloned and produce pure or "monoclonal" antibodies or T-cell products, identical to those produced by the immunologically competent parent, and continually grow and divide as the neoplastic parent. [NIH]

Immunization: The induction of immunity. [EU]

Immunoassay: Immunochemical assay or detection of a substance by serologic or immunologic methods. Usually the substance being studied serves as antigen both in antibody production and in measurement of antibody by the test substance. [NIH]

Immunodiffusion: Technique involving the diffusion of antigen or antibody through a semisolid medium, usually agar or agarose gel, with the result being a precipitin reaction. [NIH]

Immunoglobulin: A protein that acts as an antibody. [NIH]

Immunology: The study of the body's immune system. [NIH]

Indicative: That indicates; that points out more or less exactly; that reveals fairly clearly. [EU]

Lethal: Deadly, fatal. [EU]

Leukocytes: Cells that help the body fight infections and other diseases.

Also called white blood cells (WBCs). [NIH]

Macrophage: A type of white blood cell that surrounds and kills microorganisms, removes dead cells, and stimulates the action of other immune system cells. [NIH]

Membrane: A very thin layer of tissue that covers a surface. [NIH]

Molecule: A chemical made up of two or more atoms. The atoms in a molecule can be the same (an oxygen molecule has two oxygen atoms) or different (a water molecule has two hydrogen atoms and one oxygen atom). Biological molecules, such as proteins and DNA, can be made up of many thousands of atoms. [NIH]

Myeloma: Cancer that arises in plasma cells, a type of white blood cell. [NIH]

Plexus: A network or tangle; a general term for a network of lymphatic vessels, nerves, or veins. [EU]

Recombinant: 1. a cell or an individual with a new combination of genes not found together in either parent; usually applied to linked genes. [EU]

Tolerance: 1. the ability to endure unusually large doses of a drug or toxin. 2. acquired drug tolerance; a decreasing response to repeated constant doses of a drug or the need for increasing doses to maintain a constant response. [EU]

CHAPTER 6. BOOKS ON GASTRIC CANCER

Overview

This chapter provides bibliographic book references relating to gastric cancer. You have many options to locate books on gastric cancer. The simplest method is to go to your local bookseller and inquire about titles that they have in stock or can special order for you. Some patients, however, feel uncomfortable approaching their local booksellers and prefer online sources (e.g. **www.amazon.com** and **www.bn.com**). In addition to online booksellers, excellent sources for book titles on gastric cancer include the Combined Health Information Database and the National Library of Medicine. Once you have found a title that interests you, visit your local public or medical library to see if it is available for loan.

Book Summaries: Federal Agencies

The Combined Health Information Database collects various book abstracts from a variety of healthcare institutions and federal agencies. To access these summaries, go to **http://chid.nih.gov/detail/detail.html**. You will need to use the "Detailed Search" option. To find book summaries, use the drop boxes at the bottom of the search page where "You may refine your search by." Select the dates and language you prefer. For the format option, select "Monograph/Book." Now type "gastric cancer" (or synonyms) into the "For these words:" box. You will only receive results on books. You should check back periodically with this database which is updated every 3 months. The following is a typical result when searching for books on gastric cancer:

- **Helicobacter Pylori Handbook**

  Source: Oxford, England: Blackwell Science Ltd. 1995. 56 p.

Contact: Available from Blackwell Science, Inc. 238 Main Street, Cambridge, MA 02142. (800) 215-1000 or (617) 876-7000. Fax (617) 492-5263. Price: $9.95. ISBN: 0865426597.

Summary: The link between Helicobacter pylori infection and ulcer disease has been one of the most significant discoveries in gastroenterology in the past decade. The role of this organism in the development of nonulcer dyspepsia, gastric cancer, and lymphoma is also attracting interest. This monograph is designed to keep health care professionals whose specialty lies outside the field of gastroenterology abreast of this rapidly changing area. The author provides a concise, up to date review of H. pylori infection, current approaches to its diagnosis and treatment, and the position of H. pylori eradication in the management of gastrointestinal disorders. Written in outline format, the monograph covers epidemiology, transmission, the host response to infection, classification of gastritis, H. pylori and peptic ulcer disease or gastric cancer, H. pylori in children, diagnostic tests used to confirm infection, drug therapy, patient selection, and patients with dyspepsia. A list of further reading and a subject index appear at the end. 17 figures. 16 tables. 8 references. (AA-M).

- **Digestive Diseases in the United States: Epidemiology and Impact**

  Source: Bethesda, MD: National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK). 1994. 799 p.

  Contact: Available from National Digestive Diseases Information Clearinghouse. 2 Information Way, Bethesda, MD 20892-3570. (800) 891-5389 or (301) 654-3810. E-mail: nddic@info.niddk.nih.gov. Price: $15.00.

  Summary: This monograph is a compendium of descriptive statistics about the scope and impact of digestive diseases in the United States. Each chapter provides national and population data based on the prevalence, incidence, medical care, disability, mortality, and research needs. Twenty chapters cover the following conditions: infectious diarrheas, viral hepatitis, esophageal cancer, gastric cancer, colorectal cancer, liver cancer, pancreatic cancer, hemorrhoids, esophageal diseases, peptic ulcer, gastritis and nonulcer dyspepsia, acute appendicitis, abdominal wall hernia, inflammatory bowel diseases, diverticular disease of the colon, constipation, irritable bowel syndrome, chronic liver disease and cirrhosis, gallstones, and pancreatitis. These chapters compare the impact and costs of the disease to other diseases. The book also includes an overview chapter, a chapter about the cost of digestive diseases in the United States, and a listing of all digestive diseases diagnostic codes for the ninth and tenth editions of the International Classification of

Diseases. Extensive figures are used throughout the volume. 3 appendices.

The National Library of Medicine Book Index

The National Library of Medicine at the National Institutes of Health has a massive database of books published on healthcare and biomedicine. Go to the following Internet site, **http://locatorplus.gov/**, and then select "Search LOCATORplus." Once you are in the search area, simply type "gastric cancer" (or synonyms) into the search box, and select "books only." From there, results can be sorted by publication date, author, or relevance. The following was recently catalogued by the National Library of Medicine:[33]

- **1st International Gastric Cancer Congress: Kyoto (Japan), March 29-April 1, 1995.** Author: editors, M. Nishi, H. Sugano, and T. Takahashi
- **3rd International Gastric Cancer Congress: Seoul, Korea, April 27-30, 1999.** Author: editor in chief, Jin-Pok Kim; associate editors, Young-Jae Mok, Jin-Sik Min; Year: 1999
- **Atlas of x-ray diagnosis of early gastric cancer.** Author: Hikoo Shirakabe ... [et al.]; Year: 1982
- **Cancer of the stomach.** Author: edited by Paul E. Preece, Alfred Cuschieri, James M. Wellwood; Year: 1986
- **Early gastric cancer: a contribution to the pathology and to gastric cancer histogenesis.** Author: by Aage Johansen; Year: 1981
- **Early gastric cancer: proceedings of the Second BSG-SK&F International Workshop.** Author: organised by the Education and Science Committee of the British Society of Gastroenterology, Chepstow, 20th-22nd September l981; edited by P.B. Cotton; Year: 1982
- **Early gastric cancer.** Author: edited by Tadashige Murakami; Year: 1971
- **Early gastric cancer; current status of diagnosis. Edited by E. Grundmann, H. Grunze [and] S. Witte.** ; Year: 1974

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[33] In addition to LOCATORPlus, in collaboration with authors and publishers, the National Center for Biotechnology Information (NCBI) is adapting biomedical books for the Web. The books may be accessed in two ways: (1) by searching directly using any search term or phrase (in the same way as the bibliographic database PubMed), or (2) by following the links to PubMed abstracts. Each PubMed abstract has a "Books" button that displays a facsimile of the abstract in which some phrases are hypertext links. These phrases are also found in the books available at NCBI. Click on hyperlinked results in the list of books in which the phrase is found. Currently, the majority of the links are between the books and PubMed. In the future, more links will be created between the books and other types of information, such as gene and protein sequences and macromolecular structures. See **http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?db=Books.**

- **Effect of wider resection of the prognosis of gastric cancer.** Author: Thomas, Walton Dowdell; Year: 1949
- **Endoscopy in gastric cancer.** Author: Nelson, Robert S. (Robert Stuart), 1911-; Year: 1970
- **End-results in the treatment of gastric cancer; an analytical study and statistical survey of sixty years of surgical treatment, by Edward M. Livingston ... and George T. Pack ... with a foreword by Bowman C. Crowell ...** Author: Livingston, Edward Meakin, 1895-; Year: 1939
- **Epidemiological, experimental, and clinical studies on gastric cancer; proceedings of the International Conference on Gastric Cancer, Nagoya, Japan, November 2-3, 1966. Editors: Riojun Kinoshita, Takeo Nagayo [and] Tatsuya Tanaka.** Author: International Conference on Gastric Cancer (1966: Nagoya, Japan); Year: 1968
- **Epidemiology, prevention, and early detection of gastric cancer: first international symposium, Republic of San Marino, 28th-29th September 1985.** Author: edited by the Scientific Committee; Year: 1987
- **Gastric cancer: proceedings of the International Symposium on Gastric Cancer, Birmingham, 22-23 September 1980.** Author: editors, J.W.L. Fielding ... [et al.]; Year: 1981
- **Gastric cancer in Saskatchewan, 1932-1955.** Author: Barclay, Thomas Hugh Crawford, 1915-; Year: 1958
- **Gastric cancer.** Author: Iason, Alfred Herbert, 1891-; Year: 1953
- **Gastric cancer.** Author: edited by Harold O. Douglass, Jr; Year: 1988
- **Gastric cancer.** Author: edited by Carl J. Pfeiffer; with contributions by R. Armigo ... [et al.]; Year: 1979
- **Gastric cancer.** Author: edited by Ch. Herfarth and P. Schlag; Year: 1979
- **Gastric cancer.** Author: edited by Takashi Sugimura and Mitsuru Sasako; Year: 1997
- **Gastric cancer.** Author: M. Nishi ... [et al.] (eds.); Year: 1993
- **Histogenesis and precursors of human gastric cancer: research and practice.** Author: Takeo Nagayo; Year: 1986
- **Invasion of veins by gastric cancer.** Author: Adson, Martin A., 1924-; Year: 1955
- **Multimodality therapy for gastric cancer.** Author: T. Nakajima, T. Yamaguchi (eds.); Year: 1999
- **New trends in gastric cancer: background and videosurgery.** Author: edited by Peter I. Reed ... [et al.]; Year: 1990
- **Precursors of gastric cancer.** Author: edited by Si-Chun Ming; Year: 1984

- **Progress in gastric cancer research 1997: proceedings of the 2nd International Gastric Cancer Congress, Munich, Germany, April 27-30, 1997.** Author: editors, Jörg Rüdiger Siewert, Jürgen D. Roder; Year: 1997
- **Radiodiagnosis of endophytic gastric cancer.** Author: L.M. Portnoi and M.P. Dibirov; Year: 1995
- **Results of surgery in the treatment of gastric cancer; a clinical study of 987 cases, by S. J. Viikari [et al.].** Author: Viikari, Sauli Johannes; Year: 1962
- **Selected abstracts on diagnosis and treatment of gastric cancer.** Author: John R. Stroehlein, consulting reviewer; Year: 1983

Chapters on Gastric Cancer

Frequently, gastric cancer will be discussed within a book, perhaps within a specific chapter. In order to find chapters that are specifically dealing with gastric cancer, an excellent source of abstracts is the Combined Health Information Database. You will need to limit your search to book chapters and gastric cancer using the "Detailed Search" option. Go directly to the following hyperlink: **http://chid.nih.gov/detail/detail.html**. To find book chapters, use the drop boxes at the bottom of the search page where "You may refine your search by." Select the dates and language you prefer, and the format option "Book Chapter." By making these selections and typing in "gastric cancer" (or synonyms) into the "For these words:" box, you will only receive results on chapters in books. The following is a typical result when searching for book chapters on gastric cancer:

- **Diseases and Conditions of the Digestive System**

  Source: in Frazier, M.S.; Drzymkowski, J.W.; Doty, S.J. Essentials of Human Diseases and Conditions. 2nd ed. Philadelphia, PA: W.B. Saunders Company. 2000. p. 214-255.

  Contact: Available from W.B. Saunders Company. Book Order Fulfillment Department, 11830 Westline Industrial Drive, Saint Louis, MO 63146-9988. (800) 545-2522 or (314) 453-7010. Fax (800) 568-5136 or (314) 453-7095. E-mail: wbsbcs@harcourt.com. Website: customerservice.wbsaunders.com. Price: $34.95 plus shipping and handling. ISBN: 0721684750.

  Summary: This chapter, from a comprehensive text on human diseases and conditions, familiarizes readers with the various conditions that can afflict the alimentary canal and the accessory organs of the digestive system. Gastrointestinal (GI) problems are common and often cause

anxiety because of the way in which they interfere with a sense of well being. The 'gut' is also often associated with emotional responses. The chapter covers the processes of normal digestion and absorption; the importance of normal teeth and a normal bite; the presenting symptoms of temporomandibular joint (TMJ) syndrome; the etiology of herpes simple compared to the etiology of candidiasis (thrush); complications of esophageal varices; the pathology and etiology of peptic ulcers; the diagnosis of gastric cancer; hiatal and other types of abdominal hernias; the pathology involved in Crohn's disease and ulcerative colitis; the etiology of gastroenteritis; functional and mechanical obstruction of the bowel; intestinal obstruction; diverticulosis versus diverticulitis; the treatment of colorectal cancer; the relationship between broad spectrum antibiotics and pseudomembranous enterocolitis; the causes of inflammation of the peritoneum; the symptoms and signs of cirrhosis of the liver; the etiology, transmission, and prevention of hepatitis A and hepatitis C; the clinical picture of biliary colic and acute pancreatitis; the manifestations of malnutrition and malabsorption; the diagnostic criteria for celiac disease (gluten intolerance); the different presentations of anorexia nervosa and bulimia; and the components of a successful weight loss program. Each of the topics includes a brief discussion of symptoms and signs, etiology (causes), diagnosis, and treatment. The chapter is illustrated with line drawings and concludes with a list of review questions. A brief list of related information resource organizations is also included. 25 figures. 1 table.

- **Gastritis and Ulcers in Children**

  Source: in Wyllie, R. and Hyams, J.S., eds. Pediatric Gastrointestinal Disease. 2nd ed. Philadelphia, PA: W.B. Saunders Company. 1999. p. 221-243.

  Contact: Available from W.B. Saunders Company. Book Order Fulfillment Department, 11830 Westline Industrial Drive, Saint Louis, MO 63146-9988. (800) 545-2522 or (314) 453-7010. Fax (800) 568-5136 or (314) 453-7095. E-mail: wbsbcs@harcourt.com. Website: customerservice.wbsaunders.com. Price: $155.00 plus shipping and handling. ISBN: 0721674615.

  Summary: This chapter on gastritis and ulcers in children is from a medical textbook that covers all facets of clinical pediatric gastrointestinal disease. The text emphasizes a clinical focus and incorporates anatomy and physiology considerations into each chapter rather than a separate section. The authors of this chapter maintain that although the overall prevalence of gastritis in children is not defined, an understanding of the causes of pediatric gastritis and mucosal ulceration is critical for the

management of children with abdominal pain. The authors review the pathogenesis of gastritis, including acid secretion, the bicarbonate mucus barrier, and genetic factors; and causes of secondary peptic ulcer disease (PUD), including excessive acid secretion (due to Zollinger Ellison syndrome, or gastrinoma), other disorders of acid hypersecretion, Crohn's disease, eosinophilic gastroenteritis, Menetrier's disease (hypertrophic gastritis), autoimmune gastritis, and stress related gastritis and ulcers. The authors then discuss drug related gastritis and ulcers, primarily those due to nonsteroidal antiinflammatory agents. The role of Helicobacter pylori is explored next, including its epidemiology, pathogenesis, microbiology, methods for detection, H. pylori associated gastroduodenal disease in children (including gastric cancer and gastric lymphomas), treatment of H. pylori infection and vaccine development, and indications for treatment (patient selection). The authors then review the clinical findings (including diagnosis, histopathology, classification) of primary and secondary gastritis and primary and secondary peptic ulcer disease. The chapter concludes with a brief discussion of treatment strategies for gastric inflammation, including mucosal cytoprotection, enhancement of mucosal barrier function, and acid secretion inhibition and acid neutralization. 7 figures. 4 tables. 348 references.

- **Dyspepsia: Current Understanding and Management**

  Source: in Coggins, C.H., Hancock, E.W., Levitt, L.J., eds. Annual Review of Medicine: Selected Topics in the Clinical Sciences, Volume 49. Palo Alto, CA: Annual Reviews Inc. 1998. p 475-493.

  Contact: Available from Annual Reviews Inc. 4139 El Camino Way, P.O. Box 10139, Palo Alto, CA 94303-0139. (800) 523-8635. Fax (415) 855-9815. Price: $60.00. ISBN: 0824305493.

  Summary: Dyspepsia, defined as pain or discomfort centered in the upper abdomen, is reported by one in four adults in Western societies. This article summarizes the current understanding and management of dyspepsia. The most important causes of dyspepsia are nonulcer (functional) dyspepsia, peptic ulcer, gastroesophageal reflux, and, rarely, gastric cancer. Persons with heartburn alone are not considered to have dyspepsia. The division of dyspepsia into symptom based subgroups (ulcer-like, dysmotility-like, reflux-like, and unspecified) has proven to be of doubtful value for the clinician, as it has a low predictive value for identifying the causes of dyspepsia. Upper endoscopy remains the gold standard test; ultrasound and blood tests have a low yield. The role of Helicobacter pylori in peptic ulcer disease is well known, but the clinical role of the infection in nonulcer dyspepsia remains very controversial. In uninvestigated dyspeptic patients who are H. pylori infected based on a

noninvasive test, empiric anti-H. pylori therapy is a reasonable and probably cost-effective option. In documented nonulcer dyspepsia, prokinetics are superior to placebo while antisecretory therapy is of less certain efficacy. 2 figures. 3 tables. 120 references. (AA).

- **Helicobacter Pylori Infection, a Paradigm for Chronic Mucosal Inflammation: Pathogenesis and Implications for Eradication and Prevention**

  Source: in Schrier, R.W., et al., eds. Advances in Internal Medicine. Vol 41. St. Louis, MO: Mosby-Year Book, Inc. 1996. p. 85-117.

  Contact: Available from Mosby Year-Book, Inc. 11830 Westline Industrial Drive, St. Louis, MO 63146. (800) 426-4545. Fax (800) 535-9935. E-mail: customer.support@mosby.com. Price: $72.95. ISBN: 0815183143. ISSN: 00652822.

  Summary: This chapter, from a yearbook of advances in internal medicine, covers the role of Helicobacter pylori infection in chronic mucosal inflammation, focusing on its pathogenesis and on implications for its eradication and prevention. After a brief section on the history of medical understanding of H. pylori, the authors discuss microbiology and epidemiology; clinical features, including acute infection, peptic ulcer disease, atrophic gastritis and gastric cancer, and gastric lymphoma; pathogenesis, including colonization of the gastric mucosa, gastric inflammation, characteristics of H. pylori strains associated with increased virulence, and microecologic perspectives; and treatment options, including the prospects for a vaccine. Four antibiotics to which H. pylori is susceptible in vivo are amoxicillin, tetracycline, clarithromycin, and metronidazole; bismuth salts are also included in many drug regimens. The authors conclude by reporting on animal studies on immunization against H. pylori. 3 figures. 3 tables. 214 references.

- **History of Gastric Surgery**

  Source: in Whistle, C.; Nyhus, L.M.; and Donahue, P.E, eds. Surgery of the Esophagus, Stomach, and Small Intestine. 5th ed. Boston, MA: Little, Brown and Company. 1995. p. 354-385.

  Contact: Available from Lippincott-Raven Publishers. 12107 Insurance Way, Hagerstown, MD 21740. (800) 777-2295. Fax (301) 824-7390. E-mail: lrorders@phl.lrpub.com. Website: http://www.lrpub.com. Price: $199.95. ISBN: 0316924423.

  Summary: In this chapter, from a medical textbook on surgery of the esophagus, stomach, and small intestine, the authors outline the history

of gastric surgery. Topics include the surgical antecedents to abdominal surgery; surgical anesthesia; Theodor Billroth and gastric resection for cancer; total gastrectomy for cancer; Merrem's experimental pylorectomy; recognition of gastric cancer; early detection attitude; decreased incidence; hopeless attitude toward gastric cancer now obsolete; the evolution of gastric anastomosis; peptic ulcer, including the derivation of the terminology; early experimental vagotomy studies; Pavlov's work on gastric secretion; clinical vagotomy studies; operations for gastric ulcer; gastrojejunostomy and pyloroplasty for duodenal ulcer; neostomal ulcer after Billroth resections for duodenal ulcer; the antral exclusion operation; segmental gastric resection; surgical closure of peptic ulcer perforation; and gastric miscellany, including Zollinger-Ellison syndrome, gastric wounds, gastrostomy for removal of foreign bodies, gastrostomy studies on patients with gastric fistulas, gastrostomy, congenital conditions, operations for cardiospasm, and organ suspension. The chapter features many historical drawings and illustrations of medical equipment and techniques, as well as photographs of many early researchers and surgeons. Two special comments sections are appended to the chapter. 16 figures. 3 tables. 180 references.

- **Gastrointestinal Disorders of the Stomach and Duodenum in the Elderly**

  Source: in Gelb, A.M., ed. Clinical Gastroenterology in the Elderly. New York, NY: Marcel Dekker, Inc. 1996. p. 37-72.

  Contact: Available from Marcel Dekker, Inc. Cimarron Road, P.O. Box 5005, Monticello, NY 12701-5185. (800) 228-1160 or (914) 796-1919. Fax (914) 796-1772. E-mail: bookorders@dekker.com. Website: www.dekker.com. Price: $135.00 plus shipping and handling. ISBN: 0824793986.

  Summary: This chapter on gastrointestinal disorders of the stomach and duodenum is from a textbook that offers an up to date reference source on geriatric gastroenterology. The author notes that older people account for a disproportionate share of the morbidity and mortality from gastritis, peptic ulcer, and gastric cancer. The chapter begins with a review of physiologic changes that occur with aging in the areas of acid secretion, gastric motility, gastroduodenal mucosal prostaglandins, and gastrointestinal proliferation. The next section reviews gastritis, particularly caused by Helicobacter pylori infection, and covers symptoms, diagnostic tests, and eradication of the bacteria. Conservative recommendations have been broadened recently to include treating most patients with H. pylori infection. The next section covers peptic ulcer disease (PUD), a condition that is more serious in older people and

presents in an atypical manner. The author covers epidemiology, NSAIDs as a cause of PUD, clinical features of gastric and duodenal ulcers, and complications, including gastrointestinal hemorrhage, perforation, and obstruction. Long term maintenance therapy for PUD is often given to older persons who have had relapses or complications, or who would be at particular risk for another ulcer or serious outcome. The final section covers gastric carcinoma, discussing gastric adenocarcinoma following ulcer surgery, H. pylori infection, and gastric polyps. 54 references.

- **Helicobacter Pylori: Epidemiology and Pathogenesis**

  Source: in Brandt, L., et al., eds. Clinical Practice of Gastroenterology. Volume One. Philadelphia, PA: Current Medicine. 1999. p. 249-254.

  Contact: Available from W.B. Saunders Company. Order Fulfillment, 6277 Sea Harbor Drive, Orlando, FL 32887. (800) 545-2522. Fax (800) 874-6418 or (407) 352-3445. Website: www.wbsaunders.com. Price: $235.00 plus shipping and handling. ISBN: 0443065209 (two volume set); 0443065217 (volume 1); 0443065225 (volume 2).

  Summary: Helicobacter pylori (H. pylori) is the leading cause of gastric and duodenal ulcers, and it has been associated with gastric neoplasia, both adenocarcinoma and lymphoma (stomach cancers). In most people, however, infection is a symbiotic situation in which minor histologic changes occur in the gastric mucosa (stomach lining) that are without clinical consequence, despite a lifetime presence of the organism. This chapter on the epidemiology and pathogenesis of H. pylori is from a lengthy textbook that brings practitioners up to date on the complexities of gastroenterology practice, focusing on the essentials of patient care. The author reviews the present understanding of the epidemiology and transmission of H. pylori. The prevalence of H. pylori in the developing world is remarkable in that most of the population is infected. Infection is acquired in childhood, much like most other enteric infections, but H. pylori infection differs in that it is a persistent infection that may last a lifetime yet cause no ill effects in the host. The prevalence of H. pylori infection in the developed world has fallen dramatically during the past 50 years. The most recent data for children suggest that H. pylori will become rare because of improving socioeconomic status and improving sanitation. The routes of infection include oral to oral, fecal to oral, or environmental transmission. Eradication of the organism can reduce the recurrence rate of most duodenal and gastric ulcers, may reduce the incidence of gastric cancer, but is unlikely to have a significant impact on dyspepsia (heartburn). The author concludes that little is known about the mode of transmission of H. pylori or its pathogenesis, but both of

these areas are the focus of intense research. 2 figures. 4 tables. 28 references.

General Home References

In addition to references for gastric cancer, you may want a general home medical guide that spans all aspects of home healthcare. The following list is a recent sample of such guides (sorted alphabetically by title; hyperlinks provide rankings, information, and reviews at Amazon.com):

- **Cancer: 50 Essential Things to Do** by Greg Anderson, O. Carl Simonton; Paperback - 184 pages; Revised & Updated edition (August 1999), Plume; ISBN: 0452280745; **http://www.amazon.com/exec/obidos/ASIN/0452280745/icongroupinterna**
- **Cancer Encyclopedia -- Collections of Anti-Cancer & Anti-Carcinogenic Agents, Chemicals, Drugs and Substances** by John C. Bartone; Paperback (January 2002), ABBE Publishers Association of Washington, DC; ISBN: 0788326791; **http://www.amazon.com/exec/obidos/ASIN/0788326791/icongroupinterna**
- **Cancer Sourcebook: Basic Consumer Health Information About Major Forms and Stages of Cancer** by Edward J. Prucha (Editor); Library Binding - 1100 pages, 3rd edition (August 1, 2000), Omnigraphics, Inc.; ISBN: 0780802276; **http://www.amazon.com/exec/obidos/ASIN/0780802276/icongroupinterna**
- **Cancer Supportive Care: A Comprehensive Guide for Patients and Their Families** by Ernest H. Rosenbaum, M.D., Isadora Rosenbaum, M.A.; Paperback - 472 pages (November 5, 1998), Somerville House Books Limited; ISBN: 1894042115; **http://www.amazon.com/exec/obidos/ASIN/1894042115/icongroupinterna**
- **Cancer Symptom Management: Patient Self-Care Guides (Book with CD-ROM for Windows & Macintosh)** by Connie Henke Yarbro (Editor), et al; CD-ROM - 264 pages, 2nd Book & CD-Rom edition (January 15, 2000), Jones & Bartlett Publishing; ISBN: 0763711675; http://www.amazon.com/exec/obidos/ASIN/0763711675/icongroupinterna
- **Diagnosis Cancer: Your Guide Through the First Few Months** by Wendy Schlessel Harpham, Ann Bliss Pilcher (Illustrator); Paperback: 230 pages; Revised & Updated edition (November 1997), .W. Norton & Company; ISBN: 0393316912; **http://www.amazon.com/exec/obidos/ASIN/0393316912/icongroupinterna**

- **The Human Side of Cancer: Living with Hope, Coping with Uncertainty** by Jimmie C. Holland, M.D., Sheldon Lewis; Paperback - 368 pages (October 2, 2001), Quill; ISBN: 006093042X; **http://www.amazon.com/exec/obidos/ASIN/006093042X/icongroupinterna**

Vocabulary Builder

Algorithms: A procedure consisting of a sequence of algebraic formulas and/or logical steps to calculate or determine a given task. [NIH]

Anastomosis: A procedure to connect healthy sections of tubular structures in the body after the diseased portion has been surgically removed. [NIH]

Anesthesia: Loss of feeling or awareness. Local anesthetics cause loss of feeling in a part of the body. General anesthetics put the person to sleep. [NIH]

Anorectal: Pertaining to the anus and rectum or to the junction region between the two. [EU]

Anorexia: An abnormal loss of the appetite for food. Anorexia can be caused by cancer, AIDS, a mental disorder (i.e., anorexia nervosa), or other diseases. [NIH]

Antecedent: Existing or occurring before in time or order often with consequential effects. [EU]

Anxiety: The unpleasant emotional state consisting of psychophysiological responses to anticipation of unreal or imagined danger, ostensibly resulting from unrecognized intrapsychic conflict. Physiological concomitants include increased heart rate, altered respiration rate, sweating, trembling, weakness, and fatigue; psychological concomitants include feelings of impending danger, powerlessness, apprehension, and tension. [EU]

Appendicitis: Acute inflammation of the vermiform appendix. [NIH]

Atypical: Irregular; not conformable to the type; in microbiology, applied specifically to strains of unusual type. [EU]

Biliary: Having to do with the liver, bile ducts, and/or gallbladder. [NIH]

Candidiasis: Infection with a fungus of the genus Candida. It is usually a superficial infection of the moist cutaneous areas of the body, and is generally caused by C. albicans; it most commonly involves the skin (dermatocandidiasis), oral mucous membranes (thrush, def. 1), respiratory tract (bronchocandidiasis), and vagina (vaginitis). Rarely there is a systemic infection or endocarditis. Called also moniliasis, candidosis, oidiomycosis, and formerly blastodendriosis. [EU]

Cirrhosis: A type of chronic, progressive liver disease. [NIH]

Colic: Paroxysms of pain. This condition usually occurs in the abdominal region but may occur in other body regions as well. [NIH]

Colitis: Inflammation of the colon. [NIH]

Constipation: Infrequent or difficult evacuation of the faeces. [EU]

Cytoprotection: The process by which chemical compounds provide protection to cells against harmful agents. [NIH]

Diarrhea: Passage of excessively liquid or excessively frequent stools. [NIH]

Diverticulitis: Inflammation of a diverticulum, especially inflammation related to colonic diverticula, which may undergo perforation with abscess formation. Sometimes called left-sided or L-sides appendicitis. [EU]

Diverticulosis: A condition marked by small sacs or pouches (diverticula) in the walls of an organ such as the stomach or colon. These sacs can become inflamed and cause a condition called diverticulitis, which may be a risk factor for certain types of cancer. [NIH]

Empiric: Empirical; depending upon experience or observation alone, without using scientific method or theory. [EU]

Enterocolitis: Inflammation involving both the small intestine and the colon; see also enteritis. [EU]

Esophagitis: Inflammation of the esophagus (the tube that carries food from the mouth to the stomach). [NIH]

Fistula: An abnormal passage or communication, usually between two internal organs, or leading from an internal organ to the surface of the body; frequently designated according to the organs or parts with which it communicates, as anovaginal, brochocutaneous, hepatopleural, pulmonoperitoneal, rectovaginal, urethrovaginal, and the like. Such passages are frequently created experimentally for the purpose of obtaining body secretions for physiologic study. [EU]

Flatulence: The presence of excessive amounts of air or gases in the stomach or intestine, leading to distention of the organs. [EU]

Gastrinoma: A tumor that causes over-production of gastric acid. It usually occurs in the islet cells of the pancreas, but may also occur in the esophagus, stomach, spleen, or lymph nodes. [NIH]

Gastroduodenal: Pertaining to or communicating with the stomach and duodenum, as a gastroduodenal fistula. [EU]

Gastroenteritis: An acute inflammation of the lining of the stomach and intestines, characterized by anorexia, nausea, diarrhoea, abdominal pain, and weakness, which has various causes, including food poisoning due to infection with such organisms as Escherichia coli, Staphylococcus aureus, and Salmonella species; consumption of irritating food or drink; or

psychological factors such as anger, stress, and fear. Called also enterogastritis. [EU]

Gastrostomy: Creation of an artificial external opening into the stomach for nutritional support or gastrointestinal compression. [NIH]

Gluten: The protein of wheat and other grains which gives to the dough its tough elastic character. [EU]

Hemorrhoid: An enlarged or swollen blood vessel, usually located near the anus or the rectum. [NIH]

Hepatitis: Inflammation of the liver. [NIH]

Herpes: Any inflammatory skin disease caused by a herpesvirus and characterized by the formation of clusters of small vesicles. When used alone, the term may refer to herpes simplex or to herpes zoster. [EU]

Histology: The study of tissues and cells under a microscope. [NIH]

Hypersecretion: Excessive secretion. [EU]

Incontinence: Inability to control the flow of urine from the bladder (urinary incontinence) or the escape of stool from the rectum (fecal incontinence). [NIH]

Malabsorption: Impaired intestinal absorption of nutrients. [EU]

Microbiology: The study of microorganisms such as fungi, bacteria, algae, archaea, and viruses. [NIH]

Motility: The ability to move spontaneously. [EU]

Neutralization: An act or process of neutralizing. [EU]

NSAIDs: Nonsteroidal anti-inflammatory drugs. A group of drugs that decrease fever, swelling, pain, and redness. [NIH]

Parasitic: Having to do with or being a parasite. A parasite is an animal or a plant that lives on or in an organism of another species and gets at least some of its nutrients from it. [NIH]

Perforation: 1. the act of boring or piercing through a part. 2. a hole made through a part or substance. [EU]

Peritoneum: The tissue that lines the abdominal wall and covers most of the organs in the abdomen. [NIH]

Physiologic: Having to do with the functions of the body. When used in the phrase "physiologic age," it refers to an age assigned by general health, as opposed to calendar age. [NIH]

Relapse: The return of signs and symptoms of cancer after a period of improvement. [NIH]

Sanitation: The development and establishment of environmental conditions favorable to the health of the public. [NIH]

Veins: The vessels carrying blood toward the heart. [NIH]

Viral: Pertaining to, caused by, or of the nature of virus. [EU]

CHAPTER 7. MULTIMEDIA ON GASTRIC CANCER

Overview

Information on gastric cancer can come in a variety of formats. Among multimedia sources, video productions, slides, audiotapes, and computer databases are often available. In this chapter, we show you how to keep current on multimedia sources of information on gastric cancer. We start with sources that have been summarized by federal agencies, and then show you how to find bibliographic information catalogued by the National Library of Medicine. If you see an interesting item, visit your local medical library to check on the availability of the title.

Bibliography: Multimedia on Gastric Cancer

The National Library of Medicine is a rich source of information on healthcare-related multimedia productions including slides, computer software, and databases. To access the multimedia database, go to the following Web site: **http://locatorplus.gov/**. Select "Search LOCATORplus." Once in the search area, simply type in gastric cancer (or synonyms). Then, in the option box provided below the search box, select "Audiovisuals and Computer Files." From there, you can choose to sort results by publication date, author, or relevance. The following multimedia has been indexed on gastric cancer. For more information, follow the hyperlink indicated:

- **Cancer of the stomach.** Source: American College of Surgeons; produced by Ciné-Med; Year: 1995; Format: Videorecording; Woodbury, Conn.: Ciné-Med, c1995.

- **Cancer of the stomach.** Source: American Cancer Society; [made by] Wexler Films; Year: 1967; Format: Motion picture; [New York]: The Society, 1967.
- **Cancer of the upper gastrointestinal tract.** Source: Mitchell C. Posner, Everett E. Vokes, Ralph R. Weichselbaum; Year: 2002; Format: Edited by; Hamilton: B.C. Decker, 2002.
- **Distal splenorenal shunt in the therapy of bleeding esophageal varices due to portal hypertension : demonstrating selective decompression of esophagogastric varices.** Source: Robert Zeppa, Duane G. Hutson; produced by Davis& Geck; Year: 1972; Format: Motion picture; Danbury, Conn: Davis; Geck, [1972]
- **Exfoliative cytologic method in the diagnosis of gastric cancer.** Source: produced by Audio Productions, Inc; Year: 1951; Format: Motion picture; United States: American Cancer Society, c1951.
- **Experience with mesocaval teflon H-shunt for emergency variceal bleeding.** Source: WRAMC TV; Year: 1973; Format: Videorecording; Washington: WRAMC TV, [1973]
- **Gastric acid secretion.** Source: American Gastroenterological Association; Year: 1975; Format: Slide; [Thorofare, N. J.]: The Association; [Baltimore: for sale by Milner-Fenwick], c1975.
- **Gastric bypass.** Source: from the Motion Picture Library of the American College of Surgeons; Year: 1983; Format: Videorecording; Danbury, Conn.: American College of Surgeons/Davis ; Geck Surgical Film-Video Library, [1983]
- **Gastric cancer : diagnosis and treatment: an interactive training program.** Source: authors, J. R. Siewert, D. Kelsen, K. Maruyama; co-authors, H. Feussner ... [et al.]; Year: 2000; Format: Electronic resource; Berlin; New York: Springer-Verlag, c2000.
- **Gastric emptying disorders.** Source: Marshfield Medical Foundation, in cooperation with Marshfield Clinic & St. Joseph's Hospital; Year: 1984; Format: Videorecording; Marshfield, WI: Marshfield Regional Video Network, 1984.
- **Gastric lavage.** Source: American College of Physicians; [made by] Medex International, inc; Year: 1976; Format: Videorecording; [Philadelphia]: The College, c1976.
- **Gastric lavage.** Source: Duane Bietz, Diana Massucco, Linda Milgrom; produced by the Dept. of Surgery and Health Sciences Learning Resources Center University of Washington; Year: 1976; Format: Videorecording; Seattle: The University: [for loan or sale by its Health Sciences Center for Educational Resources], 1976.

- **Gastric resection for cancer of the stomach.** Source: produced by DG, Davis & Geck; Year: 1983; Format: Videorecording; Danbury, Conn.: American Cyanamid, c1983.
- **Gastric retention in peptic ulcer disease : a reappraisal.** Source: Academy of Health Sciences, Health Sciences Media Division; Year: 1977; Format: Videorecording; Ft. Sam Houston, Tex.: The Academy: [for sale by its Health Sciences Media Division], 1977.
- **Gastric secretion.** Source: authors, Eugene D. Jacobson, Leonard R. Johnson, Edward W. Moore; [produced by American Gastroenterological Association]; Year: 1985; Format: Slide; [Thorofare, N.J.]: The Association, c1985.
- **Second primary gastric cancer of the reconstructed esophagus.** Source: from the Motion Picture Library of the American College of Surgeons; Year: 1986; Format: Videorecording; Danbury, Conn.: American College of Surgeons, Davis ; Geck Surgical Film-Video Library, [1986]

Vocabulary Builder

Bypass: A surgical procedure in which the doctor creates a new pathway for the flow of body fluids. [NIH]

Pancreas: A glandular organ located in the abdomen. It makes pancreatic juices, which contain enzymes that aid in digestion, and it produces several hormones, including insulin. The pancreas is surrounded by the stomach, intestines, and other organs. [NIH]

Poisoning: A condition or physical state produced by the ingestion, injection or inhalation of, or exposure to a deleterious agent. [NIH]

CHAPTER 8. PERIODICALS AND NEWS ON GASTRIC CANCER

Overview

Keeping up on the news relating to gastric cancer can be challenging. Subscribing to targeted periodicals can be an effective way to stay abreast of recent developments on gastric cancer. Periodicals include newsletters, magazines, and academic journals.

In this chapter, we suggest a number of news sources and present various periodicals that cover gastric cancer beyond and including those which are published by patient associations mentioned earlier. We will first focus on news services, and then on periodicals. News services, press releases, and newsletters generally use more accessible language, so if you do chose to subscribe to one of the more technical periodicals, make sure that it uses language you can easily follow.

News Services & Press Releases

Well before articles show up in newsletters or the popular press, they may appear in the form of a press release or a public relations announcement. One of the simplest ways of tracking press releases on gastric cancer is to search the news wires. News wires are used by professional journalists, and have existed since the invention of the telegraph. Today, there are several major "wires" that are used by companies, universities, and other organizations to announce new medical breakthroughs. In the following sample of sources, we will briefly describe how to access each service. These services only post recent news intended for public viewing.

PR Newswire

Perhaps the broadest of the wires is PR Newswire Association, Inc. To access this archive, simply go to **http://www.prnewswire.com**. Below the search box, select the option "The last 30 days." In the search box, type "gastric cancer" or synonyms. The search results are shown by order of relevance. When reading these press releases, do not forget that the sponsor of the release may be a company or organization that is trying to sell a particular product or therapy. Their views, therefore, may be biased. The following is typical of press releases that can be found on PR Newswire:

- **First Findings From Pemtumomab Gastric Cancer Trial Presented**

  Summary: London, Oct. 24 /PRNewswire/ -- Antisoma plc, the UK-based biopharmaceutical company, announces that preliminary findings from its pilot phase II trial of pemtumomab in gastric cancer are being presented today at a scientific meeting in the USA. The trial was primarily designed to evaluate the safety of the drug in gastric cancer patients. Pemtumomab was generally well tolerated in a group of eight patients who had received surgery to remove or reduce their tumour.

  Pemtumomab is already in advanced trials for ovarian cancer, following the demonstration of a survival benefit in an earlier phase II trial. Both ovarian and gastric cancers are characterized by spread within the abdominal cavity, and pemtumomab is injected directly into this space to counter cancer locally. The gastric data suggest that pemtumomab could potentially be used in a variety of abdominal tumors, since they extend favorable tolerability findings seen in ovarian cancer patients to patients with a different type of tumor, a different surgical history and to men as well as women. Full data from the trial will be available after its completion in mid-2003.

  The preliminary data are being presented by Prof Pawel Murawa of the Wielkopolske Oncology Centre in Poznan, Poland, at the Ninth Conference on Cancer Therapy with Antibodies and Immunoconjugates in Princeton, USA. Copies of the poster are available on the Antisoma website at http://www.antisoma.com/latest-news. Prof Murawa said, "We are pleased to be involved in evaluating a novel approach to the treatment of gastric cancer, for which present therapies are clearly inadequate".

  Glyn Edwards, CEO of Antisoma, said, "This trial in gastric cancer complements our phase III study in ovarian cancer as part of our strategy

to realize the full medical and commercial potential of pemtumomab. We look forward to seeing the final results next year. Gastric cancer is a significant malignancy which is currently poorly treated, and we estimate that up to 120,000 people could be eligible for pemtumomab therapy each year".

Except for the historical information presented, certain matters discussed in this statement are forward looking statements that are subject to a number of risks and uncertainties that could cause actual results to differ materially from results, performance or achievements expressed or implied by such statements. These risks and uncertainties may be associated with product discovery and development, including statements regarding the Company's clinical development programs, the expected timing of clinical trials and regulatory filings. Such statements are based on management's current expectations, but actual results may differ materially.

Reuters

The Reuters' Medical News database can be very useful in exploring news archives relating to gastric cancer. While some of the listed articles are free to view, others can be purchased for a nominal fee. To access this archive, go to **http://www.reutershealth.com/frame2/arch.html** and search by "gastric cancer" (or synonyms). The following was recently listed in this archive for gastric cancer:

- **Total dietary antioxidant potential associated with reduced risk of gastric cancer**
  Source: Reuters Medical News
  Date: November 01, 2002
  http://www.reuters.gov/archive/2002/11/01/professional/links/20021101epid007.html
- **Docetaxel, 5-FU and epirubicin combo shows promise for advanced gastric cancer**
  Source: Reuters Industry Breifing
  Date: October 21, 2002
  http://www.reuters.gov/archive/2002/10/21/business/links/20021021drgd007.html

- **H. pylori infection may explain familial clustering of gastric cancer**
  Source: Reuters Medical News
  Date: October 18, 2002
  http://www.reuters.gov/archive/2002/10/18/professional/links/20021018epid006.html
- **Aphton files to fast track G17DT for treatment of stomach cancer**
  Source: Reuters Industry Breifing
  Date: August 21, 2002
  http://www.reuters.gov/archive/2002/08/21/business/links/20020821rglt003.html
- **Anti-gastrin agent improves response to chemotherapy for gastric cancer**
  Source: Reuters Medical News
  Date: July 31, 2002
  http://www.reuters.gov/archive/2002/07/31/professional/links/20020731drgd006.html
- **Examination of 10 nodes required for accurate gastric carcinoma staging**
  Source: Reuters Medical News
  Date: June 10, 2002
  http://www.reuters.gov/archive/2002/06/10/professional/links/20020610clin023.html
- **Multi-organ resection increases risk of complications with gastric cancer surgery**
  Source: Reuters Medical News
  Date: June 05, 2002
  http://www.reuters.gov/archive/2002/06/05/professional/links/20020605clin009.html
- **Sentinel node mapping accurately detects gastric cancer metastases**
  Source: Reuters Medical News
  Date: June 03, 2002
  http://www.reuters.gov/archive/2002/06/03/professional/links/20020603clin008.html
- **Targeted liposomal cisplatin promising in model of disseminated gastric cancer**
  Source: Reuters Industry Breifing
  Date: May 27, 2002
  http://www.reuters.gov/archive/2002/05/27/business/links/20020527scie004.html

- **COX-2 expression increased in intestinal-type gastric cancer**
  Source: Reuters Industry Breifing
  Date: May 17, 2002
  http://www.reuters.gov/archive/2002/05/17/business/links/20020517clin017.html
- **Research IDs gene that suppresses stomach cancer**
  Source: Reuters Health eLine
  Date: April 04, 2002
  http://www.reuters.gov/archive/2002/04/04/eline/links/20020404elin016.html
- **High-dose folic acid prevents gastric cancer in animals**
  Source: Reuters Industry Breifing
  Date: December 26, 2001
  http://www.reuters.gov/archive/2001/12/26/business/links/20011226scie002.html
- **Risk of gastric cancer doubled in first-degree relatives in Iceland**
  Source: Reuters Medical News
  Date: October 12, 2001
  http://www.reuters.gov/archive/2001/10/12/professional/links/20011012epid005.html
- **Helicobacter pylori infection more definitively linked to gastric cancer**
  Source: Reuters Medical News
  Date: September 13, 2001
  http://www.reuters.gov/archive/2001/09/13/professional/links/20010913epid002.html
- **Adjuvant chemoradiotherapy improves survival after resection of gastric cancer**
  Source: Reuters Medical News
  Date: September 05, 2001
  http://www.reuters.gov/archive/2001/09/05/professional/links/20010905clin008.html
- **Excess gastric cancer as well as leukemia reported in Down's syndrome patients**
  Source: Reuters Medical News
  Date: September 03, 2001
  http://www.reuters.gov/archive/2001/09/03/professional/links/20010903epid004.html

- **Novuspharma gastric cancer drugs advance in trials**
  Source: Reuters Industry Breifing
  Date: June 14, 2001
  http://www.reuters.gov/archive/2001/06/14/business/links/20010614drgd001.html
- **Adjuvant chemotherapy beneficial after curative resection for gastric cancer**
  Source: Reuters Medical News
  Date: May 02, 2001
  http://www.reuters.gov/archive/2001/05/02/professional/links/20010502clin016.html
- **Risk of gastric cancer unrelated to green tea consumption**
  Source: Reuters Medical News
  Date: February 28, 2001
  http://www.reuters.gov/archive/2001/02/28/professional/links/20010228epid005.html
- **Green tea may not prevent stomach cancer: study**
  Source: Reuters Health eLine
  Date: February 28, 2001
  http://www.reuters.gov/archive/2001/02/28/eline/links/20010228elin007.html
- **Cyclooxygenase 2 expression in gastric cancer poor prognostic indicator**
  Source: Reuters Medical News
  Date: February 16, 2001
  http://www.reuters.gov/archive/2001/02/16/professional/links/20010216clin015.html
- **Outcome of gastric cancer in Japan suggests that US treatment could improve**
  Source: Reuters Medical News
  Date: December 12, 2000
  http://www.reuters.gov/archive/2000/12/12/professional/links/20001212prof002.html
- **Antioxidant supplements or anti-H. pylori therapy may prevent gastric cancer**
  Source: Reuters Medical News
  Date: December 05, 2000
  http://www.reuters.gov/archive/2000/12/05/professional/links/20001205clin015.html

- **Low selenium levels linked to esophageal, gastric cancers**
  Source: Reuters Medical News
  Date: November 08, 2000
  http://www.reuters.gov/archive/2000/11/08/professional/links/20001108epid001.html
- **Chemotherapy plus radiation boosts survival after gastric cancer surgery**
  Source: Reuters Medical News
  Date: October 25, 2000
  http://www.reuters.gov/archive/2000/10/25/professional/links/20001025clin007.html
- **Selective gastric cancer screening indicated in US**
  Source: Reuters Medical News
  Date: October 06, 2000
  http://www.reuters.gov/archive/2000/10/06/professional/links/20001006publ002.html
- **Genetic classification of gastric cancers may help predict clinical outcome**
  Source: Reuters Industry Breifing
  Date: August 25, 2000
  http://www.reuters.gov/archive/2000/08/25/business/links/20000825clin003.html
- **Cathepsin expression correlates with severity of gastric carcinoma**
  Source: Reuters Industry Breifing
  Date: August 11, 2000
  http://www.reuters.gov/archive/2000/08/11/business/links/20000811scie005.html
- **Postsurgical chemoradiation greatly improves survival of stomach cancer patients**
  Source: Reuters Medical News
  Date: May 24, 2000
  http://www.reuters.gov/archive/2000/05/24/professional/links/20000524clin006.html
- **Host genetic factors increase H. pylori-related gastric cancer risk**
  Source: Reuters Medical News
  Date: March 23, 2000
  http://www.reuters.gov/archive/2000/03/23/professional/links/20000323scie004.html

- **Genes linked to increased risk of stomach cancer**
  Source: Reuters Health eLine
  Date: March 22, 2000
  http://www.reuters.gov/archive/2000/03/22/eline/links/20000322elin004.html
- **H. pylori plays critical role in familial gastric cancer**
  Source: Reuters Medical News
  Date: January 03, 2000
  http://www.reuters.gov/archive/2000/01/03/professional/links/20000103clin002.html
- **Paclitaxel plus 5-FU effective against locally advanced gastric cancer**
  Source: Reuters Medical News
  Date: December 16, 1999
  http://www.reuters.gov/archive/1999/12/16/professional/links/19991216drgd002.html
- **Adjuvant chemotherapy improves survival after resection of stage III gastric cancer**
  Source: Reuters Medical News
  Date: December 14, 1999
  http://www.reuters.gov/archive/1999/12/14/professional/links/19991214clin002.html
- **No mortality reduction linked to gastric cancer screening in preliminary study**
  Source: Reuters Medical News
  Date: September 09, 1999
  http://www.reuters.gov/archive/1999/09/09/professional/links/19990909publ001.html
- **Subtotal gastrectomy preferable to total gastrectomy in selected gastric cancer patients**
  Source: Reuters Medical News
  Date: August 19, 1999
  http://www.reuters.gov/archive/1999/08/19/professional/links/19990819clin010.html
- **Aspirin, other NSAIDs help prevent gastric cancer**
  Source: Reuters Medical News
  Date: August 12, 1999
  http://www.reuters.gov/archive/1999/08/12/professional/links/19990812clin004.html

- **Aspirin may prevent stomach cancer**
  Source: Reuters Health eLine
  Date: August 11, 1999
  http://www.reuters.gov/archive/1999/08/11/eline/links/19990811elin014.html
- **Adjuvant chemotherapy confers no survival benefit in stage T1-T2 gastric cancer**
  Source: Reuters Medical News
  Date: July 27, 1999
  http://www.reuters.gov/archive/1999/07/27/professional/links/19990727clin013.html
- **H. pylori CagA gene associated with increased risk of stomach cancer in under-40s**
  Source: Reuters Medical News
  Date: June 15, 1999
  http://www.reuters.gov/archive/1999/06/15/professional/links/19990615clin003.html
- **Submucosal invasion predicts nodal status in early stage gastric cancer**
  Source: Reuters Medical News
  Date: May 19, 1999
  http://www.reuters.gov/archive/1999/05/19/professional/links/19990519clin007.html
- **Salty snacks tied to stomach cancer risk**
  Source: Reuters Health eLine
  Date: May 17, 1999
  http://www.reuters.gov/archive/1999/05/17/eline/links/19990517elin007.html
- **Risk of, protective factors for gastric cancer in Mexico similar to other parts of world**
  Source: Reuters Medical News
  Date: May 17, 1999
  http://www.reuters.gov/archive/1999/05/17/professional/links/19990517epid003.html
- **Alteration of both c-met and c-erb B-2 suggests poor prognosis in gastric cancer**
  Source: Reuters Medical News
  Date: May 10, 1999
  http://www.reuters.gov/archive/1999/05/10/professional/links/19990510clin003.html

- **Prophylactic oophorectomy may benefit some women with gastric carcinoma**
  Source: Reuters Medical News
  Date: April 02, 1999
  http://www.reuters.gov/archive/1999/04/02/professional/links/19990402clin006.html
- **Routine extended lymph-node dissection not recommended for gastric cancer patients**
  Source: Reuters Medical News
  Date: March 25, 1999
  http://www.reuters.gov/archive/1999/03/25/professional/links/19990325clin003.html
- **CagA H. pylori gene does not explain variation in gastric cancer rates**
  Source: Reuters Medical News
  Date: February 17, 1999
  http://www.reuters.gov/archive/1999/02/17/professional/links/19990217epid004.html
- **High intake of simple carbohydrates, vitamins A and B2 linked to risk of gastric cancer**
  Source: Reuters Medical News
  Date: November 20, 1998
  http://www.reuters.gov/archive/1998/11/20/professional/links/19981120epid002.html
- **H. pylori not sole cause of gastric cancer**
  Source: Reuters Health eLine
  Date: September 14, 1998
  http://www.reuters.gov/archive/1998/09/14/eline/links/19980914elin006.html
- **Animal evidence links H. pylori with gastric cancer**
  Source: Reuters Medical News
  Date: September 03, 1998
  http://www.reuters.gov/archive/1998/09/03/professional/links/19980903scie002.html

The NIH

Within MEDLINEplus, the NIH has made an agreement with the New York Times Syndicate, the AP News Service, and Reuters to deliver news that can be browsed by the public. Search news releases at **http://www.nlm.nih.gov/medlineplus/alphanews_a.html.** MEDLINEplus

allows you to browse across an alphabetical index. Or you can search by date at **http://www.nlm.nih.gov/medlineplus/newsbydate.html**. Often, news items are indexed by MEDLINEplus within their search engine.

Business Wire

Business Wire is similar to PR Newswire. To access this archive, simply go to **http://www.businesswire.com**. You can scan the news by industry category or company name.

Internet Wire

Internet Wire is more focused on technology than the other wires. To access this site, go to **http://www.internetwire.com** and use the "Search Archive" option. Type in "gastric cancer" (or synonyms). As this service is oriented to technology, you may wish to search for press releases covering diagnostic procedures or tests that you may have read about.

Search Engines

Free-to-view news can also be found in the news section of your favorite search engines (see the health news page at Yahoo: **http://dir.yahoo.com/Health/News_and_Media/,** or use this Web site's general news search page **http://news.yahoo.com/.** Type in "gastric cancer" (or synonyms). If you know the name of a company that is relevant to gastric cancer, you can go to any stock trading Web site (such as **www.etrade.com**) and search for the company name there. News items across various news sources are reported on indicated hyperlinks.

BBC

Covering news from a more European perspective, the British Broadcasting Corporation (BBC) allows the public free access to their news archive located at **http://www.bbc.co.uk/**. Search by "gastric cancer" (or synonyms).

Newsletter Articles

If you choose not to subscribe to a newsletter, you can nevertheless find references to newsletter articles. We recommend that you use the Combined Health Information Database, while limiting your search criteria to "newsletter articles." Again, you will need to use the "Detailed Search" option. Go directly to the following hyperlink: **http://chid.nih.gov/detail/detail.html**. Go to the bottom of the search page where "You may refine your search by." Select the dates and language that you prefer. For the format option, select "Newsletter Article."

By making these selections, and typing in "gastric cancer" (or synonyms) into the "For these words:" box, you will only receive results on newsletter articles. You should check back periodically with this database as it is updated every 3 months. The following is a typical result when searching for newsletter articles on gastric cancer:

- **Helicobacter Pylori Infection and Gastric Cancer in the Asia Pacific Region**

  Source: Asian Pacific Gastroenterology News. Issue 4: 11. June 2000.

  Contact: Available from Blackwell Science Asia. 54 University Street, Carlton, Victoria 3053, Australia. 61 3 9347 0300. Fax 61 3 9347 5001. E-mail: Chris.Hum@blacksci-asia.com.au.

  Summary: Helicobacter pylori infection causes histological gastritis; chronic gastritis from long term H. pylori infection results in gastric mucosal atrophy, which eventually progresses to intestinal metaplasia and sometimes to gastric (stomach) cancer. This brief article reviews the problem of H. pylori infection and gastric cancer in the Asia Pacific region. The author reports data that show just over 10 percent of H. pylori infected persons in Japan may develop gastric cancer. The prevalence of asymptomatic H. pylori infection differs greatly between countries, being low in developed countries and high in developing countries. Because H. pylori is transmitted via the fecal to oral route, and children are more readily infected than adults, the author notes that conducting a survey on H. pylori infection is the same as assessing the water supply and sewage systems of a country. The present prevalence of H. pylori infection in Japan is extremely low at an early age, as in other developed countries, and subsequently shows a rapid increase until it reaches a plateau of approximately 70 percent at 50 years of age. The author also explores the different incidence of gastric cancer as it varies between countries. It is suggested that H. pylori infection leads to histological chronic gastritis, regardless of the strain of the organism, and

after that the course of the disease depends on environmental factors (diet, age), virulence of H. pylori strains, and host factors including genetics. The author concludes by calling for additional research collaboration between countries in the Asia Pacific region. 1 figure.

Academic Periodicals Covering Gastric Cancer

Academic periodicals can be a highly technical yet valuable source of information on gastric cancer. We have compiled the following list of periodicals known to publish articles relating to gastric cancer and which are currently indexed within the National Library of Medicine's PubMed database (follow hyperlinks to view more information, summaries, etc., for each). In addition to these sources, to keep current on articles written on gastric cancer published by any of the periodicals listed below, you can simply follow the hyperlink indicated or go to the following Web site: **www.ncbi.nlm.nih.gov/pubmed**. Type the periodical's name into the search box to find the latest studies published.

If you want complete details about the historical contents of a periodical, you can also visit the Web site: **http://www.ncbi.nlm.nih.gov/entrez/jrbrowser.cgi**. Here, type in the name of the journal or its abbreviation, and you will receive an index of published articles. At **http://locatorplus.gov/** you can retrieve more indexing information on medical periodicals (e.g. the name of the publisher). Select the button "Search LOCATORplus." Then type in the name of the journal and select the advanced search option "Journal Title Search." The following is a sample of periodicals which publish articles on gastric cancer:

- **Acta Pharmacologica Sinica. (Acta Pharmacol Sin)**
  http://www.ncbi.nlm.nih.gov/entrez/jrbrowser.cgi?field=0&regexp=Acta+Pharmacologica+Sinica&dispmax=20&dispstart=0

- **British Journal of Cancer. (Br J Cancer)**
  http://www.ncbi.nlm.nih.gov/entrez/jrbrowser.cgi?field=0&regexp=British+Journal+of+Cancer&dispmax=20&dispstart=0

- **Cancer Detection and Prevention. (Cancer Detect Prev)**
  http://www.ncbi.nlm.nih.gov/entrez/jrbrowser.cgi?field=0&regexp=Cancer+Detection+and+Prevention&dispmax=20&dispstart=0

- **Cancer Research. (Cancer Res)**
  http://www.ncbi.nlm.nih.gov/entrez/jrbrowser.cgi?field=0&regexp=Cancer+Research&dispmax=20&dispstart=0

- **Clinical Nuclear Medicine. (Clin Nucl Med)**
  http://www.ncbi.nlm.nih.gov/entrez/jrbrowser.cgi?field=0&regexp=Clinical+Nuclear+Medicine&dispmax=20&dispstart=0

- **Clinical Radiology. (Clin Radiol)**
  http://www.ncbi.nlm.nih.gov/entrez/jrbrowser.cgi?field=0&regexp=Clinical+Radiology&dispmax=20&dispstart=0

- **Gastrointestinal Endoscopy. (Gastrointest Endosc)**
  http://www.ncbi.nlm.nih.gov/entrez/jrbrowser.cgi?field=0&regexp=Gastrointestinal+Endoscopy&dispmax=20&dispstart=0

- **Journal of Clinical Pathology. (J Clin Pathol)**
  http://www.ncbi.nlm.nih.gov/entrez/jrbrowser.cgi?field=0&regexp=Journal+of+Clinical+Pathology&dispmax=20&dispstart=0

- **Journal of Gastroenterology. (J Gastroenterol)**
  http://www.ncbi.nlm.nih.gov/entrez/jrbrowser.cgi?field=0&regexp=Journal+of+Gastroenterology&dispmax=20&dispstart=0

- **Journal of Surgical Oncology. (J Surg Oncol)**
  http://www.ncbi.nlm.nih.gov/entrez/jrbrowser.cgi?field=0&regexp=Journal+of+Surgical+Oncology&dispmax=20&dispstart=0

- **Scandinavian Journal of Gastroenterology. (Scand J Gastroenterol)**
  http://www.ncbi.nlm.nih.gov/entrez/jrbrowser.cgi?field=0&regexp=Scandinavian+Journal+of+Gastroenterology&dispmax=20&dispstart=0

- **Upsala Journal of Medical Sciences. (Ups J Med Sci)**
  http://www.ncbi.nlm.nih.gov/entrez/jrbrowser.cgi?field=0&regexp=Upsala+Journal+of+Medical+Sciences&dispmax=20&dispstart=0

Vocabulary Builder

Carbohydrate: An aldehyde or ketone derivative of a polyhydric alcohol,

particularly of the pentahydric and hexahydric alcohols. They are so named because the hydrogen and oxygen are usually in the proportion to form water, (CH2O)n. The most important carbohydrates are the starches, sugars, celluloses, and gums. They are classified into mono-, di-, tri-, poly- and heterosaccharides. [EU]

Epirubicin: An anticancer drug that belongs to the family of drugs called antitumor antibiotics. [NIH]

Immunoconjugates: Combinations of diagnostic or therapeutic substances linked with specific immune substances such as immunoglobulins, monoclonal antibodies or antigens. Often the diagnostic or therapeutic substance is a radionuclide. These conjugates are useful tools for specific targeting of drugs and radioisotopes in the chemotherapy and radioimmunotherapy of certain cancers. [NIH]

Liposomal: A drug preparation that contains the active drug in very tiny fat particles. This fat-encapsulated drug is absorbed better, and its distribution to the tumor site is improved. [NIH]

Oophorectomy: Surgery to remove one or both ovaries. [NIH]

Ovary: Either of the paired glands in the female that produce the female germ cells and secrete some of the female sex hormones. [NIH]

Radioimmunotherapy: Treatment with a radioactive substance that is linked to an antibody that will attach to the tumor when injected into the body. [NIH]

Selenium: An essential dietary mineral. [NIH]

Yttrium: A rare elemental metal. A radioactive form of yttrium is used in radiation therapy and some types of immunotherapy. [NIH]

CHAPTER 9. PHYSICIAN GUIDELINES AND DATABASES

Overview

Doctors and medical researchers rely on a number of information sources to help patients with their conditions. Many will subscribe to journals or newsletters published by their professional associations or refer to specialized textbooks or clinical guides published for the medical profession. In this chapter, we focus on databases and Internet-based guidelines created or written for this professional audience.

NIH Guidelines

For the more common diseases, The National Institutes of Health publish guidelines that are frequently consulted by physicians. Publications are typically written by one or more of the various NIH Institutes. For physician guidelines, commonly referred to as "clinical" or "professional" guidelines, you can visit the following Institutes:

- Office of the Director (OD); guidelines consolidated across agencies available at **http://www.nih.gov/health/consumer/conkey.htm**
- National Institute of General Medical Sciences (NIGMS); fact sheets available at **http://www.nigms.nih.gov/news/facts/**
- National Library of Medicine (NLM); extensive encyclopedia (A.D.A.M., Inc.) with guidelines: **http://www.nlm.nih.gov/medlineplus/healthtopics.html**
- National Cancer Institute (NCI); guidelines available at **http://cancernet.nci.nih.gov/pdq/pdq_treatment.shtml**

In this chapter, we begin by reproducing one such guideline for gastric cancer:

What Is Gastric Cancer?[34]

In the United States, gastric cancer ranks 14th in incidence among the major types of cancer malignancies. While the precise etiology is unknown, acknowledged risk factors for gastric cancer include: Helicobacter pylori gastric infection, advanced age, male gender, diet including dry salted foods, atrophic gastritis, pernicious anemia, cigarette smoking, Menetrier's disease, and familial polyposis.[35]

Adenocarcinoma histology accounts for 90% to 95% of all gastric malignancies, and management of this histology will be discussed in this summary. The site of cancer origin within the stomach has changed in frequency in the United States over recent decades.[36] Cancer of the distal half of the stomach has been decreasing in the United States since the 1930s. However, in the last 2 decades, the incidence of cancer of the cardia and gastroesophageal junction has been rapidly rising. The incidence of this cancer has increased dramatically, especially in patients under 40 years of age.

The prognosis of patients with gastric cancer is related to tumor extent and includes both nodal involvement and direct tumor extension beyond the gastric wall.[37] Tumor grade may also provide some prognostic information.[38]

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[34] The following guidelines appeared on the NCI website on Aug. 26, 2002. The text was last modified in July 2002. The text has been adapted for this sourcebook.

[35] Kurtz RC, Sherlock P: The diagnosis of gastric cancer. Seminars in Oncology 12(1): 11-18, 1985. Note: Separate PDQ summaries on Prevention of Gastric Cancer and Screening for Gastric Cancer are also available.

Scheiman JM, Cutler AF: Helicobacter pylori and gastric cancer. American Journal of Medicine 106(2): 222-226, 1999.

Fenoglio-Preiser CM, Noffsinger AE, Belli J, et al.: Pathologic and phenotypic features of gastric cancer. Seminars in Oncology 23(3): 292-306, 1996.

[36] Blot WJ, Devesa SS, Kneller RW, et al.: Rising incidence of adenocarcinoma of the esophagus and gastric cardia. JAMA: Journal of the American Medical Association 265(10): 1287-1289, 1991.

[37] Siewert JR, Bottcher K, Stein HJ, et al.: Relevant prognostic factors in gastric cancer: ten-year results of the German Gastric Cancer Study. Annals of Surgery 228(4): 449-461, 1998.

Nakamura K, Ueyama T, Yao T, et al.: Pathology and prognosis of gastric carcinoma. Findings in 10,000 patients who underwent primary gastrectomy. Cancer 70(5): 1030-1037, 1992.

[38] Adachi Y, Yasuda K, Inomata M, et al.: Pathology and prognosis of gastric carcinoma. Well versus poorly differentiated type. Cancer 89(7): 1418-1424, 2000.

In localized distal gastric cancer, more than 50% of the patients can be cured. However, early stage disease accounts for only 10% to 20% of all cases diagnosed in the United States. The remaining patients present with metastatic disease in either regional or distant sites. The overall survival rate in these patients at 5 years ranges from almost no survival for patients with disseminated disease to almost 50% survival for patients with localized distal gastric cancers confined to resectable regional disease. Even with apparent localized disease, the 5-year survival rate of patients with proximal gastric cancer is only 10% to 15%. Although the treatment of patients with disseminated gastric cancer may result in palliation of symptoms and some prolongation of survival, long remissions are uncommon.

Radical surgery represents the standard form of therapy having curative intent. However, the incidence of local failure in the tumor bed and regional lymph nodes, and distant failure via hematogenous or peritoneal routes remain high.[39] Therefore, adjuvant therapy has been evaluated. Chemotherapy or radiation therapy as single adjuvant modalities have not significantly altered overall survival patterns. Adjuvant postoperative 5-fluorouracil (5-FU)-based chemotherapy following curative resection for localized gastric cancer demonstrated no survival benefit in a meta-analysis of randomized trials published since 1980.[40] A prospective randomized trial from the British Stomach Cancer Group failed to demonstrate a survival benefit for postoperative adjuvant radiation alone, although loco-regional failures were decreased from 27% to 10.6%.[41]

Adjuvant external-beam radiation therapy with combined chemotherapy has been evaluated in the United States. In a phase III intergroup trial (INT-0116), 556 patients with completely resected stage IB to stage IV M0 adenocarcinoma of the stomach and gastroesophageal junction were randomized to receive surgery alone or surgery plus postoperative chemotherapy (5-FU and leucovorin) and concurrent radiation therapy (45 Gy). With 5 years median follow-up, a significant survival benefit has been reported for adjuvant combined modality therapy.[42] Median survival was 36

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[39] Gunderson LL, Sosin H: Adenocarcinoma of the stomach: areas of failure in a re-operation series (second or symptomatic look) clinicopathologic correlation and implications for adjuvant therapy. International Journal of Radiation Oncology, Biology, Physics 8(1): 1-11, 1982.

[40] Scheiman JM, Cutler AF: Helicobacter pylori and gastric cancer. American Journal of Medicine 106(2): 222-226, 1999.

[41] Fenoglio-Preiser CM, Noffsinger AE, Belli J, et al.: Pathologic and phenotypic features of gastric cancer. Seminars in Oncology 23(3): 292-306, 1996.

[42] Macdonald JS, Smalley SR, Benedetti J, et al.: Chemoradiotherapy after surgery compared with surgery alone for adenocarcinoma of the stomach or gastroesophageal junction. New England Journal of Medicine 345(10): 725-730, 2001.

months for the adjuvant chemoradiation group as compared to 27 months for the surgery alone arm (p=0.005). Three-year overall survival and relapse-free survival were 50% and 48% with adjuvant chemoradiation versus 41% and 31% for surgery alone (p=0.005). Neoadjuvant chemoradiation therapy is under clinical evaluation.[43]

Gastrointestinal stromal tumors occur most commonly in the stomach. (Refer to the PDQ summary on Adult Soft Tissue Sarcoma Treatment for more information.)

Cellular Classification

The cellular classification relates only to adenocarcinomas and not to other cell types such as lymphoma and sarcomas.[44] Adenocarcinomas can be divided into the following subtypes:

- Fungating or polypoid
- Ulcerating
- Superficial spreading
- Diffusely spreading (linitis plastica)

Microscopically, four histologic types of adenocarcinoma may prove to have prognostic significance:[45]

- Intestinal
- Pylorocardial (or antral)
- Signet ring cell[46]
- Anaplastic (undifferentiated)

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[43] Ajani JA, Radiation Therapy Oncology Group: Phase II Study of Preoperative Chemotherapy and Chemoradiotherapy in Patients With Potentially Resectable Adenocarcinoma of the Stomach (Summary Last Modified 04/2000), RTOG-9904, clinical trial, active, 11/24/1999.

[44] Fine G, Chan K: Alimentary tract. In: Kissane JM, Ed.: Anderson's Pathology. Saint Louis: CV Mosby, Vol 2, 8th ed., 1985, pp 1055-1095.

[45] Stomach. In: American Joint Committee on Cancer: AJCC Cancer Staging Manual. Philadelphia, Pa: Lippincott-Raven Publishers, 5th ed., 1997, pp 71-76.

[46] Maehara Y, Sakaguchi Y, Moriguchi S, et al.: Signet ring cell carcinoma of the stomach. Cancer 69(7): 1645-1650, 1992.

Other histologies include:

- Papillary adenocarcinoma
- Mucinous adenocarcinoma
- Adenosquamous carcinoma
- Squamous cell carcinoma
- Mixed adeno- and choriocarcinoma

Stage Information

The American Joint Committee on Cancer (AJCC) has designated staging by TNM classification.[47]

TNM Definitions

Primary Tumor (T)

- TX: Primary tumor cannot be assessed
- T0: No evidence of primary tumor
- Tis: Carcinoma in situ: intraepithelial tumor without invasion of the lamina propria
- T1: Tumor invades lamina propria or submucosa
- T2: Tumor invades the muscularis propria or the subserosa*
- T3: Tumor penetrates the serosa (visceral peritoneum) without invading adjacent structures**,***
- T4: Tumor invades adjacent structures***

*Note: A tumor may penetrate the muscularis propria with extension into the gastrocolic or gastrohepatic ligaments or into the greater or lesser omentum without perforation of the visceral peritoneum covering these

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[47] Stomach. In: American Joint Committee on Cancer: AJCC Cancer Staging Manual. Philadelphia, Pa: Lippincott-Raven Publishers, 5th ed., 1997, pp 71-76.
Roder JD, Bottcher K, et al. for the German Gastric Cancer Study Group: Classification of regional lymph node metastasis from gastric carcinoma. Cancer 82(4): 621-631, 1998.
Ichikura T, Tomimatsu S, Uefuji K, et al.: Evaluation of the new American Joint Committee on Cancer/International Union Against Cancer classification of lymph node metastasis from gastric carcinoma in comparison with the Japanese classification. Cancer 86(4): 553-558, 1999.

structures. In this case, the tumor is classified T2. If there is perforation of the visceral peritoneum covering the gastric ligaments or omentum, the tumor should be classified T3.

**Note: The adjacent structures of the stomach include the spleen, transverse colon, liver, diaphragm, pancreas, abdominal wall, adrenal gland, kidney, small intestine, and retroperitoneum.

***Note: Intramural extension to the duodenum or esophagus is classified by the depth of greatest invasion in any of these sites, including stomach.

Regional Lymph Nodes (N)

The regional lymph nodes are the perigastric nodes, found along the lesser and greater curvatures, and the nodes located along the left gastric, common hepatic, splenic, and celiac arteries. For pN, a regional lymphadenectomy specimen will ordinarily contain at least 15 lymph nodes. Involvement of other intra-abdominal lymph nodes, such as the hepatoduodenal, retropancreatic, mesenteric, and para-aortic, is classified as distant metastasis.

- NX: Regional lymph node(s) cannot be assessed
- N0: No regional lymph node metastasis
- N1: Metastasis in 1 to 6 regional lymph nodes
- N2: Metastasis in 7 to 15 regional lymph nodes
- N3: Metastasis in more than 15 regional lymph nodes

Distant Metastasis (M)

- MX: Distant metastasis cannot be assessed
- M0: No distant metastasis
- M1: Distant metastasis

AJCC Stage Groupings

Stage 0

- Tis, N0, M0

Stage IA

- T1, N0, M0

Stage IB

- T1, N1, M0
- T2, N0, M0

Stage II

- T1, N2, M0
- T2, N1, M0
- T3, N0, M0

Stage IIIA

- T2, N2, M0
- T3, N1, M0
- T4, N0, M0

Stage IIIB

- T3, N2, M0

Stage IV

- T4, N1, M0
- T1, N3, M0
- T2, N3, M0
- T3, N3, M0
- T4, N2, M0
- T4, N3, M0
- Any T, Any N, M1

Treatment Option Overview

The designations in PDQ that treatments are "standard" or "under clinical evaluation" are not to be used as a basis for reimbursement determinations.

Stage 0 Gastric Cancer

Stage 0 is gastric cancer confined to mucosa. Experience in Japan where stage 0 is diagnosed frequently, indicates that greater than 90% of patients treated by gastrectomy with lymphadenectomy will survive beyond 5 years. An American series has confirmed these results.[48]

Stage I Gastric Cancer

Surgical resection including regional lymphadenectomy is the treatment of choice for patients with stage I gastric cancer.[49] If the lesion is not in the cardioesophageal junction and does not diffusely involve the stomach, subtotal gastrectomy is the procedure of choice, since it has been demonstrated to provide equivalent survival when compared with total gastrectomy and is associated with decreased morbidity.[50] [Level of evidence: 1iiA] When the lesion involves the cardia, proximal subtotal gastrectomy or total gastrectomy (including a sufficient length of esophagus) may be performed with curative intent. If the lesion diffusely involves the stomach, total gastrectomy is required. At a minimum, surgical resection should include greater and lesser curvature perigastric regional lymph nodes. Note that in patients with stage I gastric cancer perigastric lymph nodes may contain cancer.

In patients with node-positive (T1 N1) and muscle-invasive (T2 N0) disease, postoperative chemoradiation may be considered. Intergroup-0116, a prospective multi-institution phase III trial evaluating postoperative combined chemoradiation versus surgery alone in 556 patients with completely resected stage IB to stage IV M0 adenocarcinoma of the stomach

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[48] Green PH, O'Toole KM, Slonim D, et al.: Increasing incidence and excellent survival of patients with early gastric cancer: experience in a United States medical center. American Journal of Medicine 85(5): 658-661, 1988.

[49] Brennan MF, Karpeh MS: Surgery for gastric cancer: the American view. Seminars in Oncology 23(3): 352-359, 1996.

[50] Bozzetti F, Marubini E, Bonfanti G, et al.: Subtotal versus total gastrectomy for gastric cancer: five-year survival rates in multicenter randomized Italian trial. Annals of Surgery 230(2): 170-178, 1999.

and gastroesophageal junction reported a significant survival benefit with adjuvant combined modality therapy.[51] [Level of evidence: 1iiA] With a median follow-up of 5 years, median survival was 36 months for the adjuvant chemoradiation group as compared to 27 months for the surgery alone arm (p=0.005). Three-year overall survival and relapse-free survival were 50% and 48% with adjuvant chemoradiation versus 41% and 31% for surgery alone (p=0.005). However, only 36 patients in the trial had stage IB tumors (18 in each arm).[52] Since the prognosis is relatively favorable for patients with completely resected stage IB disease, the effectiveness of adjuvant chemoradiation for the this group is less clear. Neoadjuvant chemoradiation therapy is under clinical evaluation.[53]

Standard treatment options:

- One of the following surgical procedures:
  - Distal subtotal gastrectomy (if the lesion is not in the fundus or at the cardioesophageal junction)
  - Proximal subtotal gastrectomy or total gastrectomy, both with distal esophagectomy (if the lesion involves the cardia). These tumors often involve the submucosal lymphatics of the esophagus.
  - Total gastrectomy (if the tumor involves the stomach diffusely or arises in the body of the stomach and extends to within 6 centimeters of the cardia or distal antrum)
  - Regional lymphadenectomy is recommended with all of the above procedures. Splenectomy is not routinely performed.[54]
- Postoperative chemoradiation therapy for patients with node-positive (T1 N1) and muscle-invasive (T2 N0) disease.[55]

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[51] Macdonald JS, Smalley SR, Benedetti J, et al.: Chemoradiotherapy after surgery compared with surgery alone for adenocarcinoma of the stomach or gastroesophageal junction. New England Journal of Medicine 345(10): 725-730, 2001.

[52] Kelsen DP: Postoperative adjuvant chemoradiation therapy for patients with resected gastric cancer: intergroup 116. Journal of Clinical Oncology 18(21 suppl): 32s-34s, 2000.

[53] Ajani JA, Radiation Therapy Oncology Group: Phase II Study of Preoperative Chemotherapy and Chemoradiotherapy in Patients With Potentially Resectable Adenocarcinoma of the Stomach (Summary Last Modified 04/2000), RTOG-9904, clinical trial, active, 11/24/1999.

[54] Brennan MF, Karpeh MS: Surgery for gastric cancer: the American view. Seminars in Oncology 23(3): 352-359, 1996.

[55] Macdonald JS, Smalley SR, Benedetti J, et al.: Chemoradiotherapy after surgery compared with surgery alone for adenocarcinoma of the stomach or gastroesophageal junction. New England Journal of Medicine 345(10): 725-730, 2001.

Treatment options under clinical evaluation:

- Neoadjuvant chemoradiation therapy.[56]

Stage II Gastric Cancer

Surgical resection with regional lymphadenectomy is the treatment of choice for patients with stage II gastric cancer.[57] If the lesion is not in the cardioesophageal junction and does not diffusely involve the stomach, subtotal gastrectomy is the procedure of choice. When the lesion involves the cardia, proximal subtotal gastrectomy or total gastrectomy may be performed with curative intent. If the lesion diffusely involves the stomach, total gastrectomy and appropriate lymph node resection may be required. The role of extended lymph node (D2) dissection is uncertain[58] and in some series is associated with increased morbidity.[59]

Postoperative chemoradiation may be considered for patients with stage II gastric cancer. Intergroup-0116, a prospective multi-institution phase III trial evaluating postoperative combined chemoradiation versus surgery alone in 556 patients with completely resected stage IB to stage IV M0 adenocarcinoma of the stomach and gastroesophageal junction reported a significant survival benefit with adjuvant combined modality therapy.[60] With a median follow-up of 5 years, median survival was 36 months for the adjuvant chemoradiation group as compared to 27 months for the surgery alone arm (p=0.005). Three-year overall survival and relapse-free survival were 50% and 48% with adjuvant chemoradiation versus 41% and 31% for

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[56] Ajani JA, Radiation Therapy Oncology Group: Phase II Study of Preoperative Chemotherapy and Chemoradiotherapy in Patients With Potentially Resectable Adenocarcinoma of the Stomach (Summary Last Modified 04/2000), RTOG-9904, clinical trial, active, 11/24/1999.

[57] Brennan MF, Karpeh MS: Surgery for gastric cancer: the American view. Seminars in Oncology 23(3): 352-359, 1996.

[58] Kitamura K, Yamaguchi T, Sawai K, et al.: Chronologic changes in the clinicopathologic findings and survival of gastric cancer patients. Journal of Clinical Oncology 15(12): 3471-3480, 1997.

[59] Bonenkamp JJ, Songun I, Hermans J, et al.: Randomised comparison of morbidity after D1 and D2 dissection for gastric cancer in 996 Dutch patients. Lancet 345(8952): 745-748, 1995. Cuschieri A, Fayers P, Fielding J, et al.: Postoperative morbidity and mortality after D1 and D2 resections for gastric cancer: preliminary results of the MRC randomised controlled surgical trial: the Surgical Cooperative Group. Lancet 347(9007): 995-999, 1996.

[60] Macdonald JS, Smalley SR, Benedetti J, et al.: Chemoradiotherapy after surgery compared with surgery alone for adenocarcinoma of the stomach or gastroesophageal junction. New England Journal of Medicine 345(10): 725-730, 2001.

surgery alone (p=0.005). Neoadjuvant chemoradiation therapy is under clinical evaluation.[61]

Standard treatment options:

- One of the following surgical procedures:
  - Distal subtotal gastrectomy (if the lesion is not in the fundus or at the cardioesophageal junction)
  - Proximal subtotal gastrectomy or total gastrectomy (if the lesion involves the cardia)
  - Total gastrectomy (if the tumor involves the stomach diffusely or arises in the body of the stomach and extends to within 6 centimeters of the cardia)
  - Regional lymphadenectomy is recommended with all of the above procedures. Splenectomy is not routinely performed.[62]
- Postoperative chemoradiation therapy.[63]

Treatment options under clinical evaluation:

- Neoadjuvant chemoradiation therapy.[64]

Stage III Gastric Cancer

All patients with tumors that can be resected should undergo surgery. Up to 15% of selected stage III patients can be cured by surgery alone, particularly if lymph node involvement is minimal (<7 lymph nodes).

Postoperative chemoradiation may be considered for patients with stage III gastric cancer. Intergroup-0116, a prospective multi-institution phase III trial

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[61] Ajani JA, Radiation Therapy Oncology Group: Phase II Study of Preoperative Chemotherapy and Chemoradiotherapy in Patients With Potentially Resectable Adenocarcinoma of the Stomach (Summary Last Modified 04/2000), RTOG-9904, clinical trial, active, 11/24/1999.

[62] Brennan MF, Karpeh MS: Surgery for gastric cancer: the American view. Seminars in Oncology 23(3): 352-359, 1996.

[63] Macdonald JS, Smalley SR, Benedetti J, et al.: Chemoradiotherapy after surgery compared with surgery alone for adenocarcinoma of the stomach or gastroesophageal junction. New England Journal of Medicine 345(10): 725-730, 2001.

[64] Ajani JA, Radiation Therapy Oncology Group: Phase II Study of Preoperative Chemotherapy and Chemoradiotherapy in Patients With Potentially Resectable Adenocarcinoma of the Stomach (Summary Last Modified 04/2000), RTOG-9904, clinical trial, active, 11/24/1999.

evaluating postoperative combined chemoradiation versus surgery alone in 556 patients with completely resected stage IB to stage IV M0 adenocarcinoma of the stomach and gastroesophageal junction reported a significant survival benefit with adjuvant combined modality therapy.[65] With a median follow-up of 5 years, median survival was 36 months for the adjuvant chemoradiation group as compared to 27 months for the surgery alone arm (p=0.005). Three-year overall survival and relapse-free survival were 50% and 48% with adjuvant chemoradiation versus 41% and 31% for surgery alone (p=0.005). Neoadjuvant chemoradiation therapy is under clinical evaluation.[66] All newly diagnosed patients with stage III gastric cancer should be considered candidates for clinical trials.[67]

Standard treatment options:

- Radical surgery: Curative resection procedures are confined to patients who at the time of surgical exploration do not have extensive nodal involvement.
- Postoperative chemoradiation therapy.[68]

Treatment options under clinical evaluation:

- Neoadjuvant chemoradiation therapy.[69]

Stage IV Gastric Cancer with No Distant Metastases (M0)

All patients with stage IV (M0) tumors that can be resected should undergo surgery followed by postoperative chemoradiation therapy.[70] However, the

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[65] Macdonald JS, Smalley SR, Benedetti J, et al.: Chemoradiotherapy after surgery compared with surgery alone for adenocarcinoma of the stomach or gastroesophageal junction. New England Journal of Medicine 345(10): 725-730, 2001.

[66] Ajani JA, Radiation Therapy Oncology Group: Phase II Study of Preoperative Chemotherapy and Chemoradiotherapy in Patients With Potentially Resectable Adenocarcinoma of the Stomach (Summary Last Modified 04/2000), RTOG-9904, clinical trial, active, 11/24/1999.

[67] Douglass HO, Nava HR: Gastric adenocarcinoma: management of the primary disease. Seminars in Oncology 12(1): 32-45, 1985.
Douglass HO: Gastric cancer: overview of current therapies. Seminars in Oncology 12(3, Suppl 4): 57-62, 1985.

[68] Macdonald JS, Smalley SR, Benedetti J, et al.: Chemoradiotherapy after surgery compared with surgery alone for adenocarcinoma of the stomach or gastroesophageal junction. New England Journal of Medicine 345(10): 725-730, 2001.

[69] Ajani JA, Radiation Therapy Oncology Group: Phase II Study of Preoperative Chemotherapy and Chemoradiotherapy in Patients With Potentially Resectable Adenocarcinoma of the Stomach (Summary Last Modified 04/2000), RTOG-9904, clinical trial, active, 11/24/1999.

majority of patients with stage IV disease with no evidence of distance metastatic disease have tumors that are unresectable for cure at diagnosis (as determined at surgical exploration or as defined preoperatively with computed tomography, endoscopic ultrasonography, laparoscopy, or other studies). These patients should be considered candidates for clinical trials.

Standard treatment options:

- Radical surgery if possible, followed by postoperative chemoradiation.[71]

Treatment options under clinical evaluation:

- Neoadjuvant chemoradiation therapy.[72]

Stage IV Gastric Cancer with Distant Metastases (M1)

All newly diagnosed patients with hematogenous or peritoneal metastases should be considered candidates for clinical trials if possible. In some patients, chemotherapy may provide substantial palliation and occasional durable remission, although it does not prolong life or provide a cure.[73]

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[70] Macdonald JS, Smalley SR, Benedetti J, et al.: Chemoradiotherapy after surgery compared with surgery alone for adenocarcinoma of the stomach or gastroesophageal junction. New England Journal of Medicine 345(10): 725-730, 2001.

[71] Macdonald JS, Smalley SR, Benedetti J, et al.: Chemoradiotherapy after surgery compared with surgery alone for adenocarcinoma of the stomach or gastroesophageal junction. New England Journal of Medicine 345(10): 725-730, 2001.

[72] Ajani JA, Radiation Therapy Oncology Group: Phase II Study of Preoperative Chemotherapy and Chemoradiotherapy in Patients With Potentially Resectable Adenocarcinoma of the Stomach (Summary Last Modified 04/2000), RTOG-9904, clinical trial, active, 11/24/1999.

[73] Vanhoefer U, Rougier P, Wilke H, et al.: Final results of a randomized phase III trial of sequential high-dose methotrexate, fluorouracil, and doxorubicin versus etoposide, leucovorin, and fluorouracil versus infusional fluorouracil and cisplatin in advanced gastric cancer: a trial of the European Organization for Research and Treatment of Cancer Gastrointestinal Tract Cancer Cooperative Group. Journal of Clinical Oncology 18(14): 2648-2657, 2000.

Comis RL, Carter SK: Integration of chemotherapy into combined modality treatment of solid tumors. III. Gastric cancer. Cancer Treatment Reviews 1(3): 221-238, 1974.

Cullinan SA, Moertel CG, Fleming TR, et al.: A comparison of three chemotherapeutic regimens in the treatment of advanced pancreatic and gastric carcinoma. JAMA: Journal of the American Medical Association 253(14): 2061-2067, 1985.

Macdonald JS, Schein PS, Woolley PV, et al.: 5-Fluorouracil, doxorubicin, and mitomycin (FAM) combination chemotherapy for advanced gastric cancer. Annals of Internal Medicine 93(4): 533-536, 1980.

Douglass HO, Lavin PT, Goudsmit A, et al.: An Eastern Cooperative Oncology Group evaluation of combinations of methyl-CCNU, mitomycin C, Adriamycin, and 5-fluorouracil

Because survival is poor with all available single and multimodal approaches to treatment, no single approach can be considered state of the art.[74]

Standard treatment options:

- Palliative chemotherapy with:
  - Fluorouracil[75]
  - FAM: fluorouracil + doxorubicin + mitomycin-C[76]
  - FAP: fluorouracil + doxorubicin + cisplatin[77]
  - ECF: epirubicin + cisplatin + fluorouracil[78]

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in advanced measurable gastric cancer (EST-2277). Journal of Clinical Oncology 2(12): 1372-1381, 1984.
Moertel CG, Rubin J, O'Connell MJ, et al.: A phase II study of combined 5-fluorouracil, doxorubicin, and cisplatin in the treatment of advanced upper gastrointestinal adenocarcinomas. Journal of Clinical Oncology 4(7):1053-1057, 1986.
Waters JS, Norman A, Cunningham D, et al.: Long-term survival after epirubicin, cisplatin and fluorouracil for gastric cancer: results of a randomized trial. British Journal of Cancer 80(1/2): 269-272, 1999.
Ajani JA, Ota DM, Jackson DE, et al.: Current strategies in the management of locoregional and metastatic gastric carcinoma. Cancer 67(1): 260-265, 1991.
Cascinu S, Labianca R, Alessandroni P, et al.: Intensive weekly chemotherapy for advanced gastric cancer using fluorouracil, cisplatin, epi-doxorubicin, 6S-leucovorin, glutathione, and filgrastim: a report from the Italian Group for the Study of Digestive Tract Cancer. Journal of Clinical Oncology 15(11): 3313-3319, 1997.

[74] Vanhoefer U, Rougier P, Wilke H, et al.: Final results of a randomized phase III trial of sequential high-dose methotrexate, fluorouracil, and doxorubicin versus etoposide, leucovorin, and fluorouracil versus infusional fluorouracil and cisplatin in advanced gastric cancer: a trial of the European Organization for Research and Treatment of Cancer Gastrointestinal Tract Cancer Cooperative Group. Journal of Clinical Oncology 18(14): 2648-2657, 2000.

[75] Comis RL, Carter SK: Integration of chemotherapy into combined modality treatment of solid tumors. III. Gastric cancer. Cancer Treatment Reviews 1(3): 221-238, 1974.
Cullinan SA, Moertel CG, Fleming TR, et al.: A comparison of three chemotherapeutic regimens in the treatment of advanced pancreatic and gastric carcinoma. JAMA: Journal of the American Medical Association 253(14): 2061-2067, 1985.

[76] Macdonald JS, Schein PS, Woolley PV, et al.: 5-Fluorouracil, doxorubicin, and mitomycin (FAM) combination chemotherapy for advanced gastric cancer. Annals of Internal Medicine 93(4): 533-536, 1980.
Douglass HO, Lavin PT, Goudsmit A, et al.: An Eastern Cooperative Oncology Group evaluation of combinations of methyl-CCNU, mitomycin C, Adriamycin, and 5-fluorouracil in advanced measurable gastric cancer (EST-2277). Journal of Clinical Oncology 2(12): 1372-1381, 1984.

[77] Moertel CG, Rubin J, O'Connell MJ, et al.: A phase II study of combined 5-fluorouracil, doxorubicin, and cisplatin in the treatment of advanced upper gastrointestinal adenocarcinomas. Journal of Clinical Oncology 4(7):1053-1057, 1986.

  - ELF: etoposide + fluorouracil + leucovorin[79]
  - PELF: cisplatin + epidoxorubicin + leucovorin + fluorouracil with glutathione and filgrastim[80]
  - FAMTX: fluorouracil + doxorubicin + methotrexate[81]
  - FUP: fluorouracil + cisplatin[82]
- Endoscopic laser therapy or endoluminal stent placement may be helpful to patients whose tumors have occluded the gastric inlet.[83]
- Palliative radiation therapy may alleviate bleeding, pain, and obstruction.
- Palliative resection should be reserved for patients with continued bleeding or obstruction.

Recurrent Gastric Cancer

Because survival is poor with all available single and multimodal approaches to treatment, patients should be considered candidates for phase I and II clinical trials testing new anticancer drugs or biologicals. Patients with obstructive tumors in the gastric remnant may be relieved of dysphagia by endoscopic Nd:Yag or electrocautery destruction of the obstructing

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[78] Waters JS, Norman A, Cunningham D, et al.: Long-term survival after epirubicin, cisplatin and fluorouracil for gastric cancer: results of a randomized trial. British Journal of Cancer 80(1/2): 269-272, 1999.

[79] Ajani JA, Ota DM, Jackson DE, et al.: Current strategies in the management of locoregional and metastatic gastric carcinoma. Cancer 67(1): 260-265, 1991.

[80] Cascinu S, Labianca R, Alessandroni P, et al.: Intensive weekly chemotherapy for advanced gastric cancer using fluorouracil, cisplatin, epi-doxorubicin, 6S-leucovorin, glutathione, and filgrastim: a report from the Italian Group for the Study of Digestive Tract Cancer. Journal of Clinical Oncology 15(11): 3313-3319, 1997.

[81] Vanhoefer U, Rougier P, Wilke H, et al.: Final results of a randomized phase III trial of sequential high-dose methotrexate, fluorouracil, and doxorubicin versus etoposide, leucovorin, and fluorouracil versus infusional fluorouracil and cisplatin in advanced gastric cancer: a trial of the European Organization for Research and Treatment of Cancer Gastrointestinal Tract Cancer Cooperative Group. Journal of Clinical Oncology 18(14): 2648-2657, 2000.

[82] Vanhoefer U, Rougier P, Wilke H, et al.: Final results of a randomized phase III trial of sequential high-dose methotrexate, fluorouracil, and doxorubicin versus etoposide, leucovorin, and fluorouracil versus infusional fluorouracil and cisplatin in advanced gastric cancer: a trial of the European Organization for Research and Treatment of Cancer Gastrointestinal Tract Cancer Cooperative Group. Journal of Clinical Oncology 18(14): 2648-2657, 2000.

[83] Ell C, Hochberger J, May A, et al.: Coated and uncoated self-expanding metal stents for malignant stenosis in the upper GI tract: preliminary clinical experiences with Wallstents. American Journal of Gastroenterology 98(9): 1496-1500, 1994.

lesion. Radiation therapy may also help control bleeding, pain, and obstruction.

Standard treatment options:

- Palliative chemotherapy with:
  - Fluorouracil[84]
  - FAM: fluorouracil + doxorubicin + mitomycin-C[85]
  - FAP: fluorouracil + doxorubicin + cisplatin[86]
  - ECF: epirubicin + cisplatin + fluorouracil[87]
  - ELF: etoposide + fluorouracil + leucovorin[88]
  - FLAP: fluorouracil + leucovorin + doxorubicin + cisplatin[89]
  - PELF: cisplatin + epidoxorubicin + leucovorin + fluorouracil with glutathione and filgrastim[90]
  - FAMTX: fluorouracil + doxorubicin + methotrexate[91]
  - FUP: fluorouracil + cisplatin[92]

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[84] Comis RL, Carter SK: Integration of chemotherapy into combined modality treatment of solid tumors. III. Gastric cancer. Cancer Treatment Reviews 1(3): 221-238, 1974.

[85] Macdonald JS, Schein PS, Woolley PV, et al.: 5-Fluorouracil, doxorubicin, and mitomycin (FAM) combination chemotherapy for advanced gastric cancer. Annals of Internal Medicine 93(4): 533-536, 1980.

[86] Moertel CG, Rubin J, O'Connell MJ, et al.: A phase II study of combined 5-fluorouracil, doxorubicin, and cisplatin in the treatment of advanced upper gastrointestinal adenocarcinomas. Journal of Clinical Oncology 4(7):1053-1057, 1986.

[87] Waters JS, Norman A, Cunningham D, et al.: Long-term survival after epirubicin, cisplatin and fluorouracil for gastric cancer: results of a randomized trial. British Journal of Cancer 80(1/2): 269-272, 1999.

[88] Ajani JA, Ota DM, Jackson DE, et al.: Current strategies in the management of locoregional and metastatic gastric carcinoma. Cancer 67(1): 260-265, 1991.

[89] Vaughn DJ, Meropol NJ, Holroyde C, et al.: A phase II study of 5-fluorouracil, leucovorin, adriamycin, and cisplatin (FLAP) for metastatic gastric and gastroesophageal junction adenocarcinoma: a Penn Cancer Clinical Trial Group and Roswell Park Cancer Institute Community Oncology Research Program Trial. American Journal of Clinical Oncology 20(3): 242-246, 1997.

[90] Cascinu S, Labianca R, Alessandroni P, et al.: Intensive weekly chemotherapy for advanced gastric cancer using fluorouracil, cisplatin, epi-doxorubicin, 6S-leucovorin, glutathione, and filgrastim: a report from the Italian Group for the Study of Digestive Tract Cancer. Journal of Clinical Oncology 15(11): 3313-3319, 1997.

[91] Vanhoefer U, Rougier P, Wilke H, et al.: Final results of a randomized phase III trial of sequential high-dose methotrexate, fluorouracil, and doxorubicin versus etoposide, leucovorin, and fluorouracil versus infusional fluorouracil and cisplatin in advanced gastric cancer: a trial of the European Organization for Research and Treatment of Cancer Gastrointestinal Tract Cancer Cooperative Group. Journal of Clinical Oncology 18(14): 2648-2657, 2000.

- Endoscopic laser therapy or electrocautery may be helpful for obstructive lesions.
- Radiation therapy may alleviate bleeding, pain, and obstruction.

NIH Databases

In addition to the various Institutes of Health that publish professional guidelines, the NIH has designed a number of databases for professionals.[93] Physician-oriented resources provide a wide variety of information related to the biomedical and health sciences, both past and present. The format of these resources varies. Searchable databases, bibliographic citations, full text articles (when available), archival collections, and images are all available. The following are referenced by the National Library of Medicine:[94]

- **Bioethics:** Access to published literature on the ethical, legal and public policy issues surrounding healthcare and biomedical research. This information is provided in conjunction with the Kennedy Institute of Ethics located at Georgetown University, Washington, D.C.: **http://www.nlm.nih.gov/databases/databases_bioethics.html**
- **HIV/AIDS Resources:** Describes various links and databases dedicated to HIV/AIDS research: **http://www.nlm.nih.gov/pubs/factsheets/aidsinfs.html**
- **NLM Online Exhibitions:** Describes "Exhibitions in the History of Medicine": **http://www.nlm.nih.gov/exhibition/exhibition.html**. Additional resources for historical scholarship in medicine: **http://www.nlm.nih.gov/hmd/hmd.html**
- **Biotechnology Information:** Access to public databases. The National Center for Biotechnology Information conducts research in computational biology, develops software tools for analyzing genome data, and disseminates biomedical information for the better understanding of molecular processes affecting human health and disease: **http://www.ncbi.nlm.nih.gov/**

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[92] Vanhoefer U, Rougier P, Wilke H, et al.: Final results of a randomized phase III trial of sequential high-dose methotrexate, fluorouracil, and doxorubicin versus etoposide, leucovorin, and fluorouracil versus infusional fluorouracil and cisplatin in advanced gastric cancer: a trial of the European Organization for Research and Treatment of Cancer Gastrointestinal Tract Cancer Cooperative Group. Journal of Clinical Oncology 18(14): 2648-2657, 2000.

[93] Remember, for the general public, the National Library of Medicine recommends the databases referenced in MEDLINE*plus* (**http://medlineplus.gov/** or **http://www.nlm.nih.gov/medlineplus/databases.html**).

[94] See **http://www.nlm.nih.gov/databases/databases.html**.

- **Population Information:** The National Library of Medicine provides access to worldwide coverage of population, family planning, and related health issues, including family planning technology and programs, fertility, and population law and policy: **http://www.nlm.nih.gov/databases/databases_population.html**
- **Cancer Information:** Access to caner-oriented databases: **http://www.nlm.nih.gov/databases/databases_cancer.html**
- **Profiles in Science:** Offering the archival collections of prominent twentieth-century biomedical scientists to the public through modern digital technology: **http://www.profiles.nlm.nih.gov/**
- **Chemical Information:** Provides links to various chemical databases and references: **http://sis.nlm.nih.gov/Chem/ChemMain.html**
- **Clinical Alerts:** Reports the release of findings from the NIH-funded clinical trials where such release could significantly affect morbidity and mortality: **http://www.nlm.nih.gov/databases/alerts/clinical_alerts.html**
- **Space Life Sciences:** Provides links and information to space-based research (including NASA): **http://www.nlm.nih.gov/databases/databases_space.html**
- **MEDLINE:** Bibliographic database covering the fields of medicine, nursing, dentistry, veterinary medicine, the healthcare system, and the pre-clinical sciences: **http://www.nlm.nih.gov/databases/databases_medline.html**
- **Toxicology and Environmental Health Information (TOXNET):** Databases covering toxicology and environmental health: **http://sis.nlm.nih.gov/Tox/ToxMain.html**
- **Visible Human Interface:** Anatomically detailed, three-dimensional representations of normal male and female human bodies: **http://www.nlm.nih.gov/research/visible/visible_human.html**

While all of the above references may be of interest to physicians who study and treat gastric cancer, the following are particularly noteworthy.

The Combined Health Information Database

A comprehensive source of information on clinical guidelines written for professionals is the Combined Health Information Database. You will need to limit your search to "Brochure/Pamphlet," "Fact Sheet," or "Information Package" and gastric cancer using the "Detailed Search" option. Go directly to the following hyperlink: **http://chid.nih.gov/detail/detail.html**. To find

associations, use the drop boxes at the bottom of the search page where "You may refine your search by." For the publication date, select "All Years," select your preferred language, and the format option "Fact Sheet." By making these selections and typing "gastric cancer" (or synonyms) into the "For these words:" box above, you will only receive results on fact sheets dealing with gastric cancer. The following is a sample result:

- **Gastritis**

  Source: Camp Hill, PA: Chek-Med Systems, Inc. 199x. [2 p.].

  Contact: Available from Chek-Med Systems, Inc. 200 Grandview Avenue, Camp Hill, PA 17011-1706. (800) 451-5797 or (717) 761-1170. Fax (717) 761-0216. Price: $22.00 per pack of 50 brochures; 3 pack minimum.

  Summary: This patient education brochure describes gastritis, a condition defined as inflammation of the stomach. In gastritis, white blood cells move into the wall of the stomach as a response to some type of injury. The brochure discusses the causes (etiology) of gastroparesis, including helicobacter pylori (a bacteria that can live in the mucous lining of the stomach), autoimmune gastritis (which results in pernicious anemia because the body can no longer absorb vitamin B12), side effects of aspirin and nonsteroidal antiinflammatory drugs (NSAIDs), alcohol and other chemicals, and hypertrophic gastritis. The symptoms of gastritis depend on how acute the illness is and how long it has been present. In the acute phase, there may be pain or gnawing in the upper abdomen, nausea, and vomiting. In the chronic phase, the pain may be dull and there may be loss of appetite with a feeling of fullness after several bites of food. The brochure cautions that often there are no symptoms at all. Diagnosis is made from the patient's medical history, in conjunction with endoscopy and biopsy of the stomach lining. An upper gastrointestinal (GI) x-ray exam and certain blood tests may also be helpful. Treatment depends on the cause; for most types of gastritis, reduction of stomach acid by medication is often helpful. Serious complications of gastritis are unusual. One exception is the H. pylori infection which, when present for a long time, may lead to stomach cancer in some individuals. 2 figures.

The NLM Gateway[95]

The NLM (National Library of Medicine) Gateway is a Web-based system that lets users search simultaneously in multiple retrieval systems at the U.S. National Library of Medicine (NLM). It allows users of NLM services to

[95] Adapted from NLM: **http://gateway.nlm.nih.gov/gw/Cmd?Overview.x**.

initiate searches from one Web interface, providing "one-stop searching" for many of NLM's information resources or databases.[96] One target audience for the Gateway is the Internet user who is new to NLM's online resources and does not know what information is available or how best to search for it. This audience may include physicians and other healthcare providers, researchers, librarians, students, and, increasingly, patients, their families, and the public.[97] To use the NLM Gateway, simply go to the search site at **http://gateway.nlm.nih.gov/gw/Cmd**. Type "gastric cancer" (or synonyms) into the search box and click "Search." The results will be presented in a tabular form, indicating the number of references in each database category.

Results Summary

Category	Items Found
Journal Articles	350810
Books / Periodicals / Audio Visual	2586
Consumer Health	294
Meeting Abstracts	2575
Other Collections	87
Total	356352

HSTAT[98]

HSTAT is a free, Web-based resource that provides access to full-text documents used in healthcare decision-making.[99] HSTAT's audience includes healthcare providers, health service researchers, policy makers, insurance companies, consumers, and the information professionals who serve these groups. HSTAT provides access to a wide variety of publications,

[96] The NLM Gateway is currently being developed by the Lister Hill National Center for Biomedical Communications (LHNCBC) at the National Library of Medicine (NLM) of the National Institutes of Health (NIH).

[97] Other users may find the Gateway useful for an overall search of NLM's information resources. Some searchers may locate what they need immediately, while others will utilize the Gateway as an adjunct tool to other NLM search services such as PubMed® and MEDLINEplus®. The Gateway connects users with multiple NLM retrieval systems while also providing a search interface for its own collections. These collections include various types of information that do not logically belong in PubMed, LOCATORplus, or other established NLM retrieval systems (e.g., meeting announcements and pre-1966 journal citations). The Gateway will provide access to the information found in an increasing number of NLM retrieval systems in several phases.

[98] Adapted from HSTAT: **http://www.nlm.nih.gov/pubs/factsheets/hstat.html**.

[99] The HSTAT URL is **http://hstat.nlm.nih.gov/**.

including clinical practice guidelines, quick-reference guides for clinicians, consumer health brochures, evidence reports and technology assessments from the Agency for Healthcare Research and Quality (AHRQ), as well as AHRQ's Put Prevention Into Practice.[100] Simply search by "gastric cancer" (or synonyms) at the following Web site: **http://text.nlm.nih.gov**.

Coffee Break: Tutorials for Biologists[101]

Some patients may wish to have access to a general healthcare site that takes a scientific view of the news and covers recent breakthroughs in biology that may one day assist physicians in developing treatments. To this end, we recommend "Coffee Break," a collection of short reports on recent biological discoveries. Each report incorporates interactive tutorials that demonstrate how bioinformatics tools are used as a part of the research process. Currently, all Coffee Breaks are written by NCBI staff.[102] Each report is about 400 words and is usually based on a discovery reported in one or more articles from recently published, peer-reviewed literature.[103] This site has new articles every few weeks, so it can be considered an online magazine of sorts, and intended for general background information. You can access the Coffee Break Web site at the following hyperlink: **http://www.ncbi.nlm.nih.gov/Coffeebreak/**.

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[100] Other important documents in HSTAT include: the National Institutes of Health (NIH) Consensus Conference Reports and Technology Assessment Reports; the HIV/AIDS Treatment Information Service (ATIS) resource documents; the Substance Abuse and Mental Health Services Administration's Center for Substance Abuse Treatment (SAMHSA/CSAT) Treatment Improvement Protocols (TIP) and Center for Substance Abuse Prevention (SAMHSA/CSAP) Prevention Enhancement Protocols System (PEPS); the Public Health Service (PHS) Preventive Services Task Force's *Guide to Clinical Preventive Services*; the independent, nonfederal Task Force on Community Services *Guide to Community Preventive Services*; and the Health Technology Advisory Committee (HTAC) of the Minnesota Health Care Commission (MHCC) health technology evaluations.

[101] Adapted from **http://www.ncbi.nlm.nih.gov/Coffeebreak/Archive/FAQ.html**.

[102] The figure that accompanies each article is frequently supplied by an expert external to NCBI, in which case the source of the figure is cited. The result is an interactive tutorial that tells a biological story.

[103] After a brief introduction that sets the work described into a broader context, the report focuses on how a molecular understanding can provide explanations of observed biology and lead to therapies for diseases. Each vignette is accompanied by a figure and hypertext links that lead to a series of pages that interactively show how NCBI tools and resources are used in the research process.

Other Commercial Databases

In addition to resources maintained by official agencies, other databases exist that are commercial ventures addressing medical professionals. Here are a few examples that may interest you:

- **CliniWeb International:** Index and table of contents to selected clinical information on the Internet; see **http://www.ohsu.edu/cliniweb/**.
- **Image Engine:** Multimedia electronic medical record system that integrates a wide range of digitized clinical images with textual data stored in the University of Pittsburgh Medical Center's MARS electronic medical record system; see the following Web site: **http://www.cml.upmc.edu/cml/imageengine/imageEngine.html**.
- **Medical World Search:** Searches full text from thousands of selected medical sites on the Internet; see **http://www.mwsearch.com/**.
- **MedWeaver:** Prototype system that allows users to search differential diagnoses for any list of signs and symptoms, to search medical literature, and to explore relevant Web sites; see **http://www.med.virginia.edu/~wmd4n/medweaver.html**.
- **Metaphrase:** Middleware component intended for use by both caregivers and medical records personnel. It converts the informal language generally used by caregivers into terms from formal, controlled vocabularies; see the following Web site: **http://www.lexical.com/Metaphrase.html**.

The Genome Project and Gastric Cancer

With all the discussion in the press about the Human Genome Project, it is only natural that physicians, researchers, and patients want to know about how human genes relate to gastric cancer. In the following section, we will discuss databases and references used by physicians and scientists who work in this area.

Online Mendelian Inheritance in Man (OMIM)

The Online Mendelian Inheritance in Man (OMIM) database is a catalog of human genes and genetic disorders authored and edited by Dr. Victor A. McKusick and his colleagues at Johns Hopkins and elsewhere. OMIM was developed for the World Wide Web by the National Center for

Biotechnology Information (NCBI).[104] The database contains textual information, pictures, and reference information. It also contains copious links to NCBI's Entrez database of MEDLINE articles and sequence information.

To search the database, go to **http://www.ncbi.nlm.nih.gov/Omim/searchomim.html**. Type "gastric cancer" (or synonyms) in the search box, and click "Submit Search." If too many results appear, you can narrow the search by adding the word "clinical." Each report will have additional links to related research and databases. By following these links, especially the link titled "Database Links," you will be exposed to numerous specialized databases that are largely used by the scientific community. These databases are overly technical and seldom used by the general public, but offer an abundance of information. The following is an example of the results you can obtain from the OMIM for gastric cancer:

- **Gastric Cancer**
  Web site: http://www.ncbi.nlm.nih.gov/htbin-post/Omim/dispmim?137215

Genes and Disease (NCBI - Map)

The Genes and Disease database is produced by the National Center for Biotechnology Information of the National Library of Medicine at the National Institutes of Health. This Web site categorizes each disorder by the system of the body associated with it. Go to **http://www.ncbi.nlm.nih.gov/disease/**, and browse the system pages to have a full view of important conditions linked to human genes. Since this site is regularly updated, you may wish to re-visit it from time to time. The following systems and associated disorders are addressed:

- **Cancer:** Uncontrolled cell division.
  Examples: Breast And Ovarian Cancer, Burkitt lymphoma, chronic myeloid leukemia, colon cancer, lung cancer, malignant melanoma, multiple endocrine neoplasia, neurofibromatosis, p53 tumor suppressor, pancreatic cancer, prostate cancer, Ras oncogene, RB: retinoblastoma, von

[104] Adapted from **http://www.ncbi.nlm.nih.gov/**. Established in 1988 as a national resource for molecular biology information, NCBI creates public databases, conducts research in computational biology, develops software tools for analyzing genome data, and disseminates biomedical information--all for the better understanding of molecular processes affecting human health and disease.

Hippel-Lindau syndrome.
Web site: **http://www.ncbi.nlm.nih.gov/disease/Cancer.html**

Entrez

Entrez is a search and retrieval system that integrates several linked databases at the National Center for Biotechnology Information (NCBI). These databases include nucleotide sequences, protein sequences, macromolecular structures, whole genomes, and MEDLINE through PubMed. Entrez provides access to the following databases:

- **PubMed:** Biomedical literature (PubMed),
  Web site: **http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?db=PubMed**
- **Nucleotide Sequence Database (Genbank):**
  Web site:
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?db=Nucleotide
- **Protein Sequence Database:**
  Web site: **http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?db=Protein**
- **Structure:** Three-dimensional macromolecular structures,
  Web site: **http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?db=Structure**
- **Genome:** Complete genome assemblies,
  Web site: **http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?db=Genome**
- **PopSet:** Population study data sets,
  Web site: **http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?db=Popset**
- **OMIM:** Online Mendelian Inheritance in Man,
  Web site: **http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?db=OMIM**
- **Taxonomy:** Organisms in GenBank,
  Web site:
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?db=Taxonomy
- **Books:** Online books,
  Web site: **http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?db=books**
- **ProbeSet:** Gene Expression Omnibus (GEO),
  Web site: **http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?db=geo**
- **3D Domains:** Domains from Entrez Structure,
  Web site: **http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?db=geo**
- **NCBI's Protein Sequence Information Survey Results:**
  Web site: **http://www.ncbi.nlm.nih.gov/About/proteinsurvey/**

To access the Entrez system at the National Center for Biotechnology Information, go to **http://www.ncbi.nlm.nih.gov/entrez/**, and then select the database that you would like to search. The databases available are listed in the drop box next to "Search." In the box next to "for," enter "gastric cancer" (or synonyms) and click "Go."

Jablonski's Multiple Congenital Anomaly/Mental Retardation (MCA/MR) Syndromes Database[105]

This online resource can be quite useful. It has been developed to facilitate the identification and differentiation of syndromic entities. Special attention is given to the type of information that is usually limited or completely omitted in existing reference sources due to space limitations of the printed form.

At the following Web site you can also search across syndromes using an index: **http://www.nlm.nih.gov/mesh/jablonski/syndrome_toc/toc_a.html.** You can search by keywords at this Web site: **http://www.nlm.nih.gov/mesh/jablonski/syndrome_db.html**.

The Genome Database[106]

Established at Johns Hopkins University in Baltimore, Maryland in 1990, the Genome Database (GDB) is the official central repository for genomic mapping data resulting from the Human Genome Initiative. In the spring of 1999, the Bioinformatics Supercomputing Centre (BiSC) at the Hospital for Sick Children in Toronto, Ontario assumed the management of GDB. The Human Genome Initiative is a worldwide research effort focusing on structural analysis of human DNA to determine the location and sequence of the estimated 100,000 human genes. In support of this project, GDB stores and curates data generated by researchers worldwide who are engaged in the mapping effort of the Human Genome Project (HGP). GDB's mission is to provide scientists with an encyclopedia of the human genome which is continually revised and updated to reflect the current state of scientific knowledge. Although GDB has historically focused on gene mapping, its focus will broaden as the Genome Project moves from mapping to sequence, and finally, to functional analysis.

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[105] Adapted from the National Library of Medicine: **http://www.nlm.nih.gov/mesh/jablonski/about_syndrome.html**.

[106] Adapted from the Genome Database: **http://gdbwww.gdb.org/gdb/aboutGDB.html#mission**.

To access the GDB, simply go to the following hyperlink: **http://www.gdb.org/**. Search "All Biological Data" by "Keyword." Type "gastric cancer" (or synonyms) into the search box, and review the results. If more than one word is used in the search box, then separate each one with the word "and" or "or" (using "or" might be useful when using synonyms). This database is extremely technical as it was created for specialists. The articles are the results which are the most accessible to non-professionals and often listed under the heading "Citations." The contact names are also accessible to non-professionals.

Specialized References

The following books are specialized references written for professionals interested in gastric cancer (sorted alphabetically by title, hyperlinks provide rankings, information, and reviews at Amazon.com):

- **Advanced and Critical Care Oncology Nursing: Managing Primary Complications** by Cynthia C. Chernecky (Editor), et al; Paperback - 736 pages (September 18, 1997), W B Saunders Co; ISBN: 0721668607; **http://www.amazon.com/exec/obidos/ASIN/0721668607/icongroupinterna**
- **Cancer: Etiology, Diagnosis, and Treatment** by Walter J. Burdette; Paperback - 287 pages, 1st edition (January 15, 1998), McGraw Hill Text; ISBN: 0070089922; **http://www.amazon.com/exec/obidos/ASIN/0070089922/icongroupinterna**
- **Cancer Management: A Multidisciplinary Approach: Medical, Surgical & Radiation** by Richard Pazdur (Editor), et al; Paperback - 982 pages, 5th edition (June 15, 2001), Publisher Research & Representation, Inc.; ISBN: 1891483080; **http://www.amazon.com/exec/obidos/ASIN/1891483080/icongroupinterna**
- **Familial Cancer and Prevention: Molecular Epidemiology: A New Strategy Toward Cancer Control** by Joji Utsunomiya (Editor), et al; Hardcover (April 1999), Wiley-Liss; ISBN: 0471249378; **http://www.amazon.com/exec/obidos/ASIN/0471249378/icongroupinterna**
- **Fundamentals of Cancer Epidemiology** by Philip C. Nasca, Ph.D. (Editor), Pastides Harris, Ph.D., MPH (Editor); Hardcover - 368 pages, 1st edition (February 15, 2001), Aspen Publishers, Inc.; ISBN: 0834217767; **http://www.amazon.com/exec/obidos/ASIN/0834217767/icongroupinterna**
- **Helping Cancer Patients Cope: A Problem-Solving Approach** by Arthur M. Nezu (Editor), et al; Hardcover - 314 pages (December 15, 1998),

American Psychological Association (APA); ISBN: 1557985332; **http://www.amazon.com/exec/obidos/ASIN/1557985332/icongroupinterna**

- **Quantitative Estimation and Prediction of Human Cancer Risks (Iarc Scientific Publications, 131)** by Suresh H. Moolgavkar (Editor), et al; Paperback (September 1999), Oxford University Press; ISBN: 9283221311; **http://www.amazon.com/exec/obidos/ASIN/9283221311/icongroupinterna**
- **Textbook of Cancer Epidemiology** by ADAMI, et al; Hardcover - 385 pages, 1st edition (July 15, 2002), Oxford University Press; ISBN: 0195109694; http://www.amazon.com/exec/obidos/ASIN/0195109694/icongroupinterna

Vocabulary Builder

Arteries: The vessels carrying blood away from the heart. [NIH]

Choriocarcinoma: A rare cancer in women of child-bearing age in which cancer cells grow in the tissues that are formed in the uterus after conception. Also called gestational trophoblastic disease, gestational trophoblastic neoplasia, gestational trophoblastic tumor, or molar pregnancy. [NIH]

Diaphragm: The thin muscle below the lungs and heart that separates the chest from the abdomen. [NIH]

Esophagectomy: An operation to remove a portion of the esophagus. [NIH]

Fundus: The larger part of a hollow organ that is farthest away from the organ's opening. The bladder, gallbladder, stomach, uterus, eye, and cavity of the middle ear all have a fundus. [NIH]

Hematogenous: Originating in the blood or spread through the bloodstream. [NIH]

Intraepithelial: Within the layer of cells that form the surface or lining of an organ. [NIH]

Ligament: A band of fibrous tissue that connects bones or cartilages, serving to support and strengthen joints. [EU]

Mesenteric: Pertaining to the mesentery : a membranous fold attaching various organs to the body wall. [EU]

Methotrexate: An anticancer drug that belongs to the family of drugs called antimetabolites. [NIH]

Mucinous: Containing or resembling mucin, the main compound in mucus. [NIH]

Omentum: A fold of the peritoneum (the thin tissue that lines the abdomen) that surrounds the stomach and other organs in the abdomen. [NIH]

Papillary: Pertaining to or resembling papilla, or nipple. [EU]

Postoperative: After surgery. [NIH]

Remission: A decrease in or disappearance of signs and symptoms of cancer. In partial remission, some, but not all, signs and symptoms of cancer have disappeared. In complete remission, all signs and symptoms of cancer have disappeared, although there still may be cancer in the body. [NIH]

Splenectomy: An operation to remove the spleen. [NIH]

Ultrasonography: A procedure in which sound waves (called ultrasound) are bounced off tissues and the echoes are converted to a picture (sonogram). [NIH]

CHAPTER 10. DISSERTATIONS ON GASTRIC CANCER

Overview

University researchers are active in studying almost all known diseases. The result of research is often published in the form of Doctoral or Master's dissertations. You should understand, therefore, that applied diagnostic procedures and/or therapies can take many years to develop after the thesis that proposed the new technique or approach was written.

In this chapter, we will give you a bibliography on recent dissertations relating to gastric cancer. You can read about these in more detail using the Internet or your local medical library. We will also provide you with information on how to use the Internet to stay current on dissertations.

Dissertations on Gastric Cancer

ProQuest Digital Dissertations is the largest archive of academic dissertations available. From this archive, we have compiled the following list covering dissertations devoted to gastric cancer. You will see that the information provided includes the dissertation's title, its author, and the author's institution. To read more about the following, simply use the Internet address indicated. The following covers recent dissertations dealing with gastric cancer:

- **Mlecular Comparison of Gastric Cancer Specimens from Japan with Those of Americans of European Descent** by Theuer, Charles Philip; PhD from University of California, Irvine, 2002, 87 pages
  http://wwwlib.umi.com/dissertations/fullcit/3039231

- **Study on Cyclooxygenase 2 Expression in Gastric Carcinoma with Reference to Genetic and Epigenetic Alterations** by Lee, Tin Lap; PhD from Chinese University of Hong Kong (people's Republic of China), 2001, 185 pages
  http://wwwlib.umi.com/dissertations/fullcit/3001514

Keeping Current

As previously mentioned, an effective way to stay current on dissertations dedicated to gastric cancer is to use the database called *ProQuest Digital Dissertations* via the Internet, located at the following Web address: **http://wwwlib.umi.com/dissertations.** The site allows you to freely access the last two years of citations and abstracts. Ask your medical librarian if the library has full and unlimited access to this database. From the library, you should be able to do more complete searches than with the limited 2-year access available to the general public.

PART III. APPENDICES

ABOUT PART III

Part III is a collection of appendices on general medical topics which may be of interest to patients with gastric cancer and related conditions.

APPENDIX A. RESEARCHING YOUR MEDICATIONS

Overview

There are a number of sources available on new or existing medications which could be prescribed to patients with gastric cancer. While a number of hard copy or CD-Rom resources are available to patients and physicians for research purposes, a more flexible method is to use Internet-based databases. In this chapter, we will begin with a general overview of medications. We will then proceed to outline official recommendations on how you should view your medications. You may also want to research medications that you are currently taking for other conditions as they may interact with medications for gastric cancer. Research can give you information on the side effects, interactions, and limitations of prescription drugs used in the treatment of gastric cancer. Broadly speaking, there are two sources of information on approved medications: public sources and private sources. We will emphasize free-to-use public sources.

Your Medications: The Basics[107]

The Agency for Health Care Research and Quality has published extremely useful guidelines on how you can best participate in the medication aspects of gastric cancer. Taking medicines is not always as simple as swallowing a pill. It can involve many steps and decisions each day. The AHCRQ recommends that patients with gastric cancer take part in treatment decisions. Do not be afraid to ask questions and talk about your concerns. By taking a moment to ask questions early, you may avoid problems later. Here are some points to cover each time a new medicine is prescribed**:**

- Ask about all parts of your treatment, including diet changes, exercise, and medicines.
- Ask about the risks and benefits of each medicine or other treatment you might receive.
- Ask how often you or your doctor will check for side effects from a given medication.

Do not hesitate to ask what is important to you about your medicines. You may want a medicine with the fewest side effects, or the fewest doses to take each day. You may care most about cost, or how the medicine might affect how you live or work. Or, you may want the medicine your doctor believes will work the best. Telling your doctor will help him or her select the best treatment for you.

Do not be afraid to "bother" your doctor with your concerns and questions about medications for gastric cancer. You can also talk to a nurse or a pharmacist. They can help you better understand your treatment plan. Feel free to bring a friend or family member with you when you visit your doctor. Talking over your options with someone you trust can help you make better choices, especially if you are not feeling well. Specifically, ask your doctor the following:

- The name of the medicine and what it is supposed to do.
- How and when to take the medicine, how much to take, and for how long.
- What food, drinks, other medicines, or activities you should avoid while taking the medicine.
- What side effects the medicine may have, and what to do if they occur.
- If you can get a refill, and how often.

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[107] This section is adapted from AHCRQ: **http://www.ahcpr.gov/consumer/ncpiebro.htm**.

- About any terms or directions you do not understand.
- What to do if you miss a dose.
- If there is written information you can take home (most pharmacies have information sheets on your prescription medicines; some even offer large-print or Spanish versions).

Do not forget to tell your doctor about all the medicines you are currently taking (not just those for gastric cancer). This includes prescription medicines and the medicines that you buy over the counter. Then your doctor can avoid giving you a new medicine that may not work well with the medications you take now. When talking to your doctor, you may wish to prepare a list of medicines you currently take, the reason you take them, and how you take them. Be sure to include the following information for each:

- Name of medicine
- Reason taken
- Dosage
- Time(s) of day

Also include any over-the-counter medicines, such as:

- Laxatives
- Diet pills
- Vitamins
- Cold medicine
- Aspirin or other pain, headache, or fever medicine
- Cough medicine
- Allergy relief medicine
- Antacids
- Sleeping pills
- Others (include names)

Learning More about Your Medications

Because of historical investments by various organizations and the emergence of the Internet, it has become rather simple to learn about the

medications your doctor has recommended for gastric cancer. One such source is the United States Pharmacopeia. In 1820, eleven physicians met in Washington, D.C. to establish the first compendium of standard drugs for the United States. They called this compendium the "U.S. Pharmacopeia (USP)." Today, the USP is a non-profit organization consisting of 800 volunteer scientists, eleven elected officials, and 400 representatives of state associations and colleges of medicine and pharmacy. The USP is located in Rockville, Maryland, and its home page is located at **www.usp.org**. The USP currently provides standards for over 3,700 medications. The resulting USP DI® Advice for the Patient® can be accessed through the National Library of Medicine of the National Institutes of Health. The database is partially derived from lists of federally approved medications in the Food and Drug Administration's (FDA) Drug Approvals database.[108]

While the FDA database is rather large and difficult to navigate, the Phamacopeia is both user-friendly and free to use. It covers more than 9,000 prescription and over-the-counter medications. To access this database, simply type the following hyperlink into your Web browser: **http://www.nlm.nih.gov/medlineplus/druginformation.html**. To view examples of a given medication (brand names, category, description, preparation, proper use, precautions, side effects, etc.), simply follow the hyperlinks indicated within the United States Pharmacopoeia (USP). It is important to read the disclaimer by the USP (**http://www.nlm.nih.gov/medlineplus/drugdisclaimer.html**) before using the information provided.

Of course, we as editors cannot be certain as to what medications you are taking. Therefore, we have compiled a list of medications associated with the treatment of gastric cancer. Once again, due to space limitations, we only list a sample of medications and provide hyperlinks to ample documentation (e.g. typical dosage, side effects, drug-interaction risks, etc.). The following drugs have been mentioned in the Pharmacopeia and other sources as being potentially applicable to gastric cancer:

[108] Though cumbersome, the FDA database can be freely browsed at the following site: **www.fda.gov/cder/da/da.htm**.

Antacids

- **Oral - U.S. Brands:** Advanced Formula Di-Gel; Alamag; Alamag Plus; Alenic Alka; Alenic Alka Extra Strength; Alka-Mints; Alkets; Alkets Extra Strength; Almacone; Almacone II; AlternaGEL; Alu-Cap; Aludrox; Alu-Tab; Amitone; Amphojel; Antacid Gelcaps; Antacid Liquid; Antacid L
  http://www.nlm.nih.gov/medlineplus/druginfo/antacidsoral202047.html

Mitomycin

- **Systemic - U.S. Brands:** Mutamycin
  http://www.nlm.nih.gov/medlineplus/druginfo/mitomycinsystemic202376.html

Commercial Databases

In addition to the medications listed in the USP above, a number of commercial sites are available by subscription to physicians and their institutions. You may be able to access these sources from your local medical library or your doctor's office.

Reuters Health Drug Database

The Reuters Health Drug Database can be searched by keyword at the hyperlink: **http://www.reutershealth.com/frame2/drug.html**.

Mosby's GenRx

Mosby's GenRx database (also available on CD-Rom and book format) covers 45,000 drug products including generics and international brands. It provides prescribing information, drug interactions, and patient information. Information can be obtained at the following hyperlink: **http://www.genrx.com/Mosby/PhyGenRx/group.html**.

Physicians Desk Reference

The Physicians Desk Reference database (also available in CD-Rom and book format) is a full-text drug database. The database is searchable by brand name, generic name or by indication. It features multiple drug interactions

reports. Information can be obtained at the following hyperlink: **http://physician.pdr.net/physician/templates/en/acl/psuser_t.htm**.

Other Web Sites

A number of additional Web sites discuss drug information. As an example, you may like to look at **www.drugs.com** which reproduces the information in the Pharmacopeia as well as commercial information. You may also want to consider the Web site of the Medical Letter, Inc. which allows users to download articles on various drugs and therapeutics for a nominal fee: **http://www.medletter.com/**.

Drug Development and Approval

The following Web sites can be valuable resources when conducting research on the development and approval of new cancer drugs:

- FDA Home Page: Search for drugs currently in development or those which have been recently approved by the FDA.
  http://redir.nci.nih.gov/cgi-bin/redir.pl?section=Cancerinfo&destURI=http://www.fda.gov/
- Cancer Liaison Program: Answers questions from the public about drug approval processes, cancer clinical trials, and access to investigational therapies.
  http://redir.nci.nih.gov/cgi-bin/redir.pl?section=Cancerinfo&destURI=http://www.fda.gov/oashi/cancer/cancer.html
- Center for Drug Evaluation and Research
  http://redir.nci.nih.gov/cgi-bin/redir.pl?section=Cancerinfo&destURI=http://www.fda.gov/cder/
- Drug Approvals by Cancer Indications (Alphabetical List)
  http://redir.nci.nih.gov/cgi-bin/redir.pl?section=Cancerinfo&destURI=http://www.fda.gov/oashi/cancer/cdrugalpha.html
- Drug Approvals by Cancer Indications (Cancer Type)
  http://redir.nci.nih.gov/cgi-bin/redir.pl?section=Cancerinfo&destURI=http://www.fda.gov/oashi/cancer/cdrugind.html
- Electronic Orange Book of Approved Drug Products
  http://redir.nci.nih.gov/cgi-

bin/redir.pl?section=Cancerinfo&destURI=http://www.fda.gov/cder/ob/default.htm

- Guidance Documents for Industry: Contains an archive of documents describing FDA policies on specific topics.
  http://redir.nci.nih.gov/cgi-bin/redir.pl?section=Cancerinfo&destURI=http://www.fda.gov/cder/guidance/index.htm
- Industry Collaboration: Provides information to industry on the process for getting new drugs into clinical trials.
  http://ctep.cancer.gov/industry/index.html
- Investigator's Handbook: Provides information to investigators on specific procedures related to clinical trial development.
  http://ctep.cancer.gov/handbook/index.html
- Questions and Answers About NCI's Natural Products Branch: A fact sheet that describes the functions of this branch, which collects and analyzes specimens of plant, marine, and microbial origin for possible anticancer properties.
  http://cis.nci.nih.gov/fact/7_33.htm

Understanding the Approval Process for New Cancer Drugs[109]

Since June 1996, about 80 new cancer-related drugs, or new uses for drugs already on the market, have been approved by the U.S. Food and Drug Administration (FDA), the division of the U.S. Department of Health and Human Services charged with ensuring the safety and effectiveness of new drugs before they can go on the market. (The FDA maintains an annotated online list of drugs approved for use with cancer since 1996.) Some of these drugs treat cancer, some alleviate pain and other symptoms, and, in one case, reduce the risk of invasive cancer in people who are considered high-risk. The FDA relied on the results of clinical trials in making every one of these approvals. Without reliable information about a drug's effects on humans, it would be impossible to approve any drug for widespread use.

[109] Adapted from the NCI:
http://www.cancer.gov/clinical_trials/doc_header.aspx?viewid=d94cbfac-e478-4704-9052-d8e8a3372b56.

When considering a new drug, the FDA faces two challenges:

- First, making sure that the drug is safe and effective before it is made widely available;
- Second, ensuring that drugs which show promise are made available as quickly as possible to the people they can help.

To deal with these challenges, the FDA maintains a rigorous review process but also has measures in place to make some drugs available in special cases. This aim of this section is to acquaint you with the drug approval process and point you to other resources for learning more about it.

The Role of the Federal Drug Administration (FDA)

Approval is only one step in the drug development process. In fact, the FDA estimates that, on average, it takes eight and a half years to study and test a new drug before it can be approved for the general public. That includes early laboratory and animal testing, as well as the clinical trials that evaluate the drugs in humans. The FDA plays a key role at three main points in this process:

- Determining whether or not a new drug shows enough promise to be given to people in clinical trials
- Once clinical trials begin, deciding whether or not they should continue, based on reports of efficacy and adverse reactions
- When clinical trials are completed, deciding whether or not the drug can be sold to the public and what its label should say about directions for use, side effects, warnings, and the like.

To make these decisions, the FDA must review studies submitted by the drug's sponsor (usually the manufacturer), evaluate any adverse reports from preclinical studies and clinical trials (that is, reports of side effects or complications), and review the adequacy of the chemistry and manufacturing. This process is lengthy, but it is meant to ensure that only beneficial drugs with acceptable side effects will make their way into the hands of the public. At the same time, recent legislative mandates and streamlined procedures within the FDA have accelerated the approval of effective drugs, especially for serious illnesses such as cancer. In addition, specific provisions make some drugs available to patients with special needs even before the approval process is complete.

From Lab to Patient Care

By law, the Food and Drug Administration (FDA) must review all test results for new drugs to ensure that products are safe and effective for specific uses. "Safe" does not mean that the drug is free of possible adverse side effects; rather, it means that the potential benefits have been determined to outweigh any risks. The testing process begins long before the first person takes the drug, with preliminary research and animal testing.

If a drug proves promising in the lab, the drug company or sponsor must apply for FDA approval to test it in clinical trials involving people. For drugs, the application, called an Investigational New Drug (IND) Application, is sent through the Center for Drug Evaluation and Research's (CDER) IND Review Process; for biological agents, the IND is sent to the Center for Biologics Evaluation and Research (CBER). Once the IND is approved by CDER or CBER, clinical trials can begin.

If the drug makes it through the clinical trials process—that is, the studies show that it is superior to current drugs—the manufacturer must submit a New Drug Application (NDA) or (for biological agents) a Biologics License Application (BLA) to the FDA. (Biological agents, such as serums, vaccines, and cloned proteins, are manufactured from substances taken from living humans or animals.) This application must include:

- The exact chemical makeup of the drug or biologic and the mechanisms by which it is effective
- Results of animal studies
- Results of clinical trials
- How the drug or biologic is manufactured, processed, and packaged
- Quality control standards
- Samples of the product in the form(s) in which it is to be administered.

Once the FDA receives the NDA or BLA from the manufacturer or developer, the formal New Drug Application Review Process or Biologics/Product License Application Review Process begins.

For an overview of the entire process from start to finish, see the CDER's visual representation of The New Drug Development Process: Steps from Test Tube to New Drug Application Review, which is available for public viewing at the following Web address: **http://www.fda.gov/cder/handbook/develop.htm**.

Speed versus Safety in the Approval Process

The FDA's current goal is that no more than ten months will pass between the time that a complete application is submitted and the FDA takes action on it. But the process is not always smooth. Sometimes FDA's external advisory panels call for additional research or data. In other cases, the FDA staff asks for more information or revised studies. Some new drug approvals have taken as little as 42 days; other more difficult NDAs have spent years in the approval process.

Setting Priorities

The order in which NDAs are assessed by the FDA is determined by a classification system designed to give priority to drugs with the greatest potential benefits. All drugs that offer significant medical advances over existing therapies for any disease are considered "priority" drugs in the approval process. NDAs for cancer treatment drugs are reviewed for this status primarily by the Division of Oncology Drug Products in the FDA's Center for Drug Evaluation and Research (CDER). For Biologic License Applications (vaccines, blood products, and medicines made from animal products), the Center for Biologics Evaluation and Research (CBER) provides additional regulation and oversight.

Expert Advice

The FDA relies on a system of independent advisory committees, made up of professionals from outside the agency, for expert advice and guidance in making sound decisions about drug approval. Each committee meets as needed to weigh available evidence and assess the safety, effectiveness, and appropriate use of products considered for approval. In addition, these committees provide advice about general criteria for evaluation and scientific issues not related to specific products. The Oncologic Drugs Advisory Committee (ODAC) meets regularly to provide expert advice on cancer-related treatments and preventive drugs.

Each committee is composed of representatives from the research science and medical fields. At least one member on every advisory committee must represent the consumer perspective.

Final Approval

As the FDA looks at all the data submitted and the results of its own review, it applies two benchmark questions to each application for drug approval:

- Do the results of well-controlled studies provide substantial evidence of effectiveness?
- Do the results show the product is safe under the conditions of use in the proposed labeling? In this context, "safe" means that potential benefits have been determined to outweigh any risks.

Continued Vigilance

The FDA's responsibility for new drug treatments does not stop with final approval. The Office of Compliance in the Center for Drug Evaluation and Research (CDER) implements and tracks programs to make sure manufacturers comply with current standards and practice regulations. CDER's Office of Drug Marketing, Advertising, and Communication monitors new drug advertising to make sure it is truthful and complete. At the Center for Biologic Evaluation and Research, biologics are followed with the same vigilance after approval. And through a system called MedWatch, the FDA gets feedback from health professionals and consumers on how the new drugs are working, any adverse reactions, and potential problems in labeling and dosage.

Online FDA Resources

The following information from the FDA should help you better understand the drug approval process:

- Center for Drug Evaluation and Research: **http://www.fda.gov/cder/handbook**
- From Test Tube to Patient: New Drug Development in the U.S. – a special January 1995 issue of the magazine FDA Consumer: **http://www.fda.gov/fdac/special/newdrug/ndd_toc.html**
- Milestones in U.S. Food and Drug Law History: **http://www.fda.gov/opacom/backgrounders/miles.html**
- Drug Approvals for Cancer Indications: **http://www.fda.gov/oashi/cancer/cdrug.html**

Getting Drugs to Patients Who Need Them

Clinical trials provide the most important information used by the FDA in determining whether a new drug shows "substantial evidence of effectiveness," or whether an already-approved drug can be used effectively in new ways (for example, to treat or prevent other types of cancer, or at a different dosage). The FDA must certify that a drug has shown promise in laboratory and animal trials before human testing can begin. The trials process includes three main stages and involves continuous review, which ensures that the sponsor can stop the study early if major problems develop or unexpected levels of treatment benefit are found. As with all clinical trials, benefits and risks must be carefully weighed by the researchers conducting the study and the patients who decide to participate.

Not everyone is eligible to participate in a clinical trial. Some patients do not fit the exact requirements for studies, some have rare forms of cancer for which only a limited number of studies are underway, and others are too ill to participate. Working with the NCI and other sponsors, the FDA has established special conditions under which a patient and his or her physician can apply to receive cancer drugs that have not yet been through the approval process. In the past, these special case applications for new drugs were grouped under the name "compassionate uses." More recently, such uses have expanded to include more patients and more categories of investigational drugs.

Access to Investigational Drugs

The process of new drug development has many parts. In the United States, until a drug has been approved by the FDA, it can generally be obtained only through several mechanisms: enrollment in a clinical trial studying the drug, an expanded access program or special exemption/compassionate use programs. For more information about investigational drugs, see "Questions and Answers: Access to Investigational Drugs" at **http://www.cancer.gov/cancer_information/doc_img.aspx?viewid=74b62d84-e135-451f-9bc9-d54358ede947**.

"Group C" Drugs

In the 1970s, researchers from the NCI became concerned about the lag between the date when an investigational drug was found to have anti-tumor activity and the time that drug became available on the market.

Working with the FDA, the NCI established the "Group C" classification to allow access to drugs with reproducible activity. Group C drugs are provided to properly trained physicians who have registered using a special form to assure that their patient qualifies under guideline protocols for the drug. Each Group C drug protocol specifies patient eligibility, reporting methodology, and drug use. Not only does Group C designation (now called Group C/Treatment INDs) speed new drugs to patients who need them most, but the process also allows the NCI to gather important information on the safety as well as activity of the drugs in the settings in which they will be most used after final FDA approval. Drugs are placed in the Group C category by agreement between the FDA and the NCI. Group C drugs are always provided free of charge, and the Health Care Financing Administration provides coverage for care associated with Group C therapy.

Treatment INDs

In 1987, the FDA began authorizing the use of new drugs still in the development process to treat certain seriously ill patients. In these cases, the process is referred to as a treatment investigational new drug application (Treatment IND). Clinical trials of the new drug must already be underway and have demonstrated positive results that are reproducible. The FDA sets guidelines about what constitutes serious and life-threatening illnesses, how much must already be known about a drug's side effects and benefits, and where physicians can obtain the drug for treatment. For many seriously ill patients, the risks associated with taking a not-yet-completely proven drug are outweighed by the possible benefits.

Accelerated Approval

"Accelerated approval" is the short-hand term for the FDA's new review system which, in the 1990s, has been used to ensure rapid approval while at the same time putting new safeguards into place. Accelerated approval is based on "surrogate endpoint" judgments: FDA can grant marketing approval to drugs and treatments that, according to certain indicators, prove they are likely to have beneficial effects on a disease or condition, even before such direct benefits have been shown clinically. Accelerated approval does NOT mean that additional clinical trials are not needed or that FDA stops gathering information about the effects of the drug; a follow-up study is required to demonstrate activity by more conventional endpoints.

Contraindications and Interactions (Hidden Dangers)

Some of the medications mentioned in the previous discussions can be problematic for patients with gastric cancer--not because they are used in the treatment process, but because of contraindications, or side effects. Medications with contraindications are those that could react with drugs used to treat gastric cancer or potentially create deleterious side effects in patients with gastric cancer. You should ask your physician about any contraindications, especially as these might apply to other medications that you may be taking for common ailments.

Drug-drug interactions occur when two or more drugs react with each other. This drug-drug interaction may cause you to experience an unexpected side effect. Drug interactions may make your medications less effective, cause unexpected side effects, or increase the action of a particular drug. Some drug interactions can even be harmful to you.

Be sure to read the label every time you use a nonprescription or prescription drug, and take the time to learn about drug interactions. These precautions may be critical to your health. You can reduce the risk of potentially harmful drug interactions and side effects with a little bit of knowledge and common sense.

Drug labels contain important information about ingredients, uses, warnings, and directions which you should take the time to read and understand. Labels also include warnings about possible drug interactions. Further, drug labels may change as new information becomes available. This is why it's especially important to read the label every time you use a medication. When your doctor prescribes a new drug, discuss all over-the-counter and prescription medications, dietary supplements, vitamins, botanicals, minerals and herbals you take as well as the foods you eat. Ask your pharmacist for the package insert for each prescription drug you take. The package insert provides more information about potential drug interactions.

A Final Warning

At some point, you may hear of alternative medications from friends, relatives, or in the news media. Advertisements may suggest that certain alternative drugs can produce positive results for patients with gastric cancer. Exercise caution--some of these drugs may have fraudulent claims,

and others may actually hurt you. The Food and Drug Administration (FDA) is the official U.S. agency charged with discovering which medications are likely to improve the health of patients with gastric cancer. The FDA warns patients to watch out for[110]:

- Secret formulas (real scientists share what they know)
- Amazing breakthroughs or miracle cures (real breakthroughs don't happen very often; when they do, real scientists do not call them amazing or miracles)
- Quick, painless, or guaranteed cures
- If it sounds too good to be true, it probably isn't true.

If you have any questions about any kind of medical treatment, the FDA may have an office near you. Look for their number in the blue pages of the phone book. You can also contact the FDA through its toll-free number, 1-888-INFO-FDA (1-888-463-6332), or on the World Wide Web at **www.fda.gov**.

General References

In addition to the resources provided earlier in this chapter, the following general references describe medications (sorted alphabetically by title; hyperlinks provide rankings, information and reviews at Amazon.com):

- **Antifolate Drugs in Cancer Therapy (Cancer Drug Discovery and Development)** by Ann L. Jackman (Editor); Hardcover: 480 pages; (March 1999), Humana Press; ISBN: 0896035964; **http://www.amazon.com/exec/obidos/ASIN/0896035964/icongroupinterna**
- **Consumers Guide to Cancer Drugs** by Gail M. Wilkes, et al; Paperback - 448 pages, 1st edition (January 15, 2000), Jones & Bartlett Publishing; ISBN: 0763711705; **http://www.amazon.com/exec/obidos/ASIN/0763711705/icongroupinterna**
- **Patient Education Guide to Oncology Drugs (Book with CD-ROM)** by Gail M. Wilkes, et al; CD-ROM - 447 pages, 1st edition (January 15, 2000), Jones & Bartlett Publishing; ISBN: 076371173X; **http://www.amazon.com/exec/obidos/ASIN/076371173X/icongroupinterna**
- **The Role of Multiple Intensification in Medical Oncology** by M. S. Aapro (Editor), D. Maraninchi (Editor); Hardcover (June 1998), Springer

[110] This section has been adapted from **http://www.fda.gov/opacom/lowlit/medfraud.html**.

Verlag; ISBN: 3540635432;
http://www.amazon.com/exec/obidos/ASIN/3540635432/icongroupinterna

Vocabulary Builder

The following vocabulary builder gives definitions of words used in this chapter that have not been defined in previous chapters:

Preclinical: Before a disease becomes clinically recognizable. [EU]

APPENDIX B. RESEARCHING ALTERNATIVE MEDICINE

Overview[111]

Research indicates that the use of complementary and alternative therapies is increasing. A large-scale study published in the November 11, 1998, issue of the Journal of the American Medical Association found that CAM use among the general public increased from 34 percent in 1990 to 42 percent in 1997.

Several surveys of CAM use by cancer patients have been conducted with small numbers of patients. One study published in the February 2000 issue of the journal *Cancer* reported that 37 percent of 46 patients with prostate cancer used one or more CAM therapies as part of their cancer treatment. These therapies included herbal remedies, old-time remedies, vitamins, and special diets. A larger study of CAM use in patients with different types of cancer was published in the July 2000 issue of the Journal of Clinical Oncology . That study found that 83 percent of 453 cancer patients had used at least one CAM therapy as part of their cancer treatment. The study included CAM therapies such as special diets, psychotherapy, spiritual practices, and vitamin supplements. When psychotherapy and spiritual practices were excluded, 69 percent of patients had used at least one CAM therapy in their cancer treatment.

In this chapter, we will begin by giving you a broad perspective on complementary and alternative therapies. Next, we will introduce you to official information sources on CAM relating to gastric cancer. Finally, at the conclusion of this chapter, we will provide a list of readings on gastric cancer from various authors. We will begin, however, with the National Center for

[111]Adapted from the NCI: **http://cis.nci.nih.gov/fact/9_14.htm**.

Complementary and Alternative Medicine's (NCCAM) overview of complementary and alternative medicine.

What Is CAM?[112]

Complementary and alternative medicine (CAM) covers a broad range of healing philosophies, approaches, and therapies. Generally, it is defined as those treatments and healthcare practices which are not taught in medical schools, used in hospitals, or reimbursed by medical insurance companies. Many CAM therapies are termed "holistic," which generally means that the healthcare practitioner considers the whole person, including physical, mental, emotional, and spiritual health. Some of these therapies are also known as "preventive," which means that the practitioner educates and treats the person to prevent health problems from arising, rather than treating symptoms after problems have occurred.

People use CAM treatments and therapies in a variety of ways. Therapies are used alone (often referred to as alternative), in combination with other alternative therapies, or in addition to conventional treatment (sometimes referred to as complementary). Complementary and alternative medicine, or "integrative medicine," includes a broad range of healing philosophies, approaches, and therapies. Some approaches are consistent with physiological principles of Western medicine, while others constitute healing systems with non-Western origins. While some therapies are far outside the realm of accepted Western medical theory and practice, others are becoming established in mainstream medicine.

Complementary and alternative therapies are used in an effort to prevent illness, reduce stress, prevent or reduce side effects and symptoms, or control or cure disease. Some commonly used methods of complementary or alternative therapy include mind/body control interventions such as visualization and relaxation, manual healing including acupressure and massage, homeopathy, vitamins or herbal products, and acupuncture.

Should you wish to explore non-traditional types of treatment, be sure to discuss all issues concerning treatments and therapies with your healthcare provider, whether a physician or practitioner of complementary and alternative medicine. Competent healthcare management requires knowledge of both conventional and alternative therapies you are taking for the practitioner to have a complete picture of your treatment plan.

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[112] Adapted from the NCCAM: **http://nccam.nih.gov/nccam/fcp/faq/index.html#what-is**.

The decision to use complementary and alternative treatments is an important one. Consider before selecting an alternative therapy, the safety and effectiveness of the therapy or treatment, the expertise and qualifications of the healthcare practitioner, and the quality of delivery. These topics should be considered when selecting any practitioner or therapy.

What Are the Domains of Alternative Medicine?[113]

The list of CAM practices changes continually. The reason being is that these new practices and therapies are often proved to be safe and effective, and therefore become generally accepted as "mainstream" healthcare practices. Today, CAM practices may be grouped within five major domains: (1) alternative medical systems, (2) mind-body interventions, (3) biologically-based treatments, (4) manipulative and body-based methods, and (5) energy therapies. The individual systems and treatments comprising these categories are too numerous to list in this sourcebook. Thus, only limited examples are provided within each.

Alternative Medical Systems

Alternative medical systems involve complete systems of theory and practice that have evolved independent of, and often prior to, conventional biomedical approaches. Many are traditional systems of medicine that are practiced by individual cultures throughout the world, including a number of venerable Asian approaches.

Traditional oriental medicine emphasizes the balance or disturbances of qi (pronounced chi) or vital energy in health and disease, respectively. Traditional oriental medicine consists of a group of techniques and methods including acupuncture, herbal medicine, oriental massage, and qi gong (a form of energy therapy). Acupuncture involves stimulating specific anatomic points in the body for therapeutic purposes, usually by puncturing the skin with a thin needle.

Ayurveda is India's traditional system of medicine. Ayurvedic medicine (meaning "science of life") is a comprehensive system of medicine that places equal emphasis on body, mind, and spirit. Ayurveda strives to restore the innate harmony of the individual. Some of the primary Ayurvedic

[113] Adapted from the NCCAM: **http://nccam.nih.gov/nccam/fcp/classify/index.html**.

treatments include diet, exercise, meditation, herbs, massage, exposure to sunlight, and controlled breathing.

Other traditional healing systems have been developed by the world's indigenous populations. These populations include Native American, Aboriginal, African, Middle Eastern, Tibetan, and Central and South American cultures. Homeopathy and naturopathy are also examples of complete alternative medicine systems.

Homeopathic medicine is an unconventional Western system that is based on the principle that "like cures like," i.e., that the same substance that in large doses produces the symptoms of an illness, in very minute doses cures it. Homeopathic health practitioners believe that the more dilute the remedy, the greater its potency. Therefore, they use small doses of specially prepared plant extracts and minerals to stimulate the body's defense mechanisms and healing processes in order to treat illness.

Naturopathic medicine is based on the theory that disease is a manifestation of alterations in the processes by which the body naturally heals itself and emphasizes health restoration rather than disease treatment. Naturopathic physicians employ an array of healing practices, including the following: diet and clinical nutrition, homeopathy, acupuncture, herbal medicine, hydrotherapy (the use of water in a range of temperatures and methods of applications), spinal and soft-tissue manipulation, physical therapies (such as those involving electrical currents, ultrasound, and light), therapeutic counseling, and pharmacology.

Mind-Body Interventions

Mind-body interventions employ a variety of techniques designed to facilitate the mind's capacity to affect bodily function and symptoms. Only a select group of mind-body interventions having well-documented theoretical foundations are considered CAM. For example, patient education and cognitive-behavioral approaches are now considered "mainstream." On the other hand, complementary and alternative medicine includes meditation, certain uses of hypnosis, dance, music, and art therapy, as well as prayer and mental healing.

Biological-Based Therapies

This category of CAM includes natural and biological-based practices, interventions, and products, many of which overlap with conventional medicine's use of dietary supplements. This category includes herbal, special dietary, orthomolecular, and individual biological therapies.

Herbal therapy employs an individual herb or a mixture of herbs for healing purposes. An herb is a plant or plant part that produces and contains chemical substances that act upon the body. Special diet therapies, such as those proposed by Drs. Atkins, Ornish, Pritikin, and Weil, are believed to prevent and/or control illness as well as promote health. Orthomolecular therapies aim to treat disease with varying concentrations of chemicals such as magnesium, melatonin, and mega-doses of vitamins. Biological therapies include, for example, the use of laetrile and shark cartilage to treat cancer and the use of bee pollen to treat autoimmune and inflammatory diseases.

Manipulative and Body-Based Methods

This category includes methods that are based on manipulation and/or movement of the body. For example, chiropractors focus on the relationship between structure and function, primarily pertaining to the spine, and how that relationship affects the preservation and restoration of health. Chiropractors use manipulative therapy as an integral treatment tool.

In contrast, osteopaths place particular emphasis on the musculoskeletal system and practice osteopathic manipulation. Osteopaths believe that all of the body's systems work together and that disturbances in one system may have an impact upon function elsewhere in the body. Massage therapists manipulate the soft tissues of the body to normalize those tissues.

Energy Therapies

Energy therapies focus on energy fields originating within the body (biofields) or those from other sources (electromagnetic fields). Biofield therapies are intended to affect energy fields (the existence of which is not yet experimentally proven) that surround and penetrate the human body. Some forms of energy therapy manipulate biofields by applying pressure and/or manipulating the body by placing the hands in or through these fields. Examples include Qi gong, Reiki and Therapeutic Touch.

Qi gong is a component of traditional oriental medicine that combines movement, meditation, and regulation of breathing to enhance the flow of vital energy (qi) in the body, improve blood circulation, and enhance immune function. Reiki, the Japanese word representing Universal Life Energy, is based on the belief that, by channeling spiritual energy through the practitioner, the spirit is healed and, in turn, heals the physical body. Therapeutic Touch is derived from the ancient technique of "laying-on of hands." It is based on the premises that the therapist's healing force affects the patient's recovery and that healing is promoted when the body's energies are in balance. By passing their hands over the patient, these healers identify energy imbalances.

Bioelectromagnetic-based therapies involve the unconventional use of electromagnetic fields to treat illnesses or manage pain. These therapies are often used to treat asthma, cancer, and migraine headaches. Types of electromagnetic fields which are manipulated in these therapies include pulsed fields, magnetic fields, and alternating current or direct current fields.

Research indicates that the use of complementary and alternative therapies is increasing. A large-scale study published in the November 11, 1998, issue of the Journal of the American Medical Association found that CAM use among the general public increased from 34 percent in 1990 to 42 percent in 1997.

Several surveys of CAM use by cancer patients have been conducted with small numbers of patients. One study published in the February 2000 issue of the journal Cancer reported that 37 percent of 46 patients with prostate cancer used one or more CAM therapies as part of their cancer treatment. These therapies included herbal remedies, old-time remedies, vitamins, and special diets. A larger study of CAM use in patients with different types of cancer was published in the July 2000 issue of the Journal of Clinical Oncology . That study found that 83 percent of 453 cancer patients had used at least one CAM therapy as part of their cancer treatment. The study included CAM therapies such as special diets, psychotherapy, spiritual practices, and vitamin supplements. When psychotherapy and spiritual practices were excluded, 69 percent of patients had used at least one CAM therapy in their cancer treatment.

How Are Complementary and Alternative Approaches Evaluated?[114]

It is important that the same scientific evaluation which is used to assess conventional approaches be used to evaluate complementary and alternative therapies. A number of medical centers are evaluating complementary and alternative therapies by developing clinical trials (research studies with people) to test them.

Conventional approaches to cancer treatment have generally been studied for safety and effectiveness through a rigorous scientific process, including clinical trials with large numbers of patients. Often, less is known about the safety and effectiveness of complementary and alternative methods. Some of these complementary and alternative therapies have not undergone rigorous evaluation. Others, once considered unorthodox, are finding a place in cancer treatment—not as cures, but as complementary therapies that may help patients feel better and recover faster. One example is acupuncture. According to a panel of experts at a National Institutes of Health (NIH) Consensus Conference in November 1997, acupuncture has been found to be effective in the management of chemotherapy-associated nausea and vomiting and in controlling pain associated with surgery. Some approaches, such as laetrile, have been studied and found ineffective or potentially harmful.

NCI-Sponsored Clinical Trials in Complementary and Alternative Medicine

The NCI is currently sponsoring several clinical trials (research studies with patients) that study complementary and alternative treatments for cancer. Current trials include enzyme therapy with nutritional support for the treatment of inoperable pancreatic cancer, shark cartilage therapy for the treatment of non-small cell lung cancer, and studies of the effects of diet on prostate and breast cancers. Some of these trials compare alternative therapies with conventional treatments, while others study the effects of complementary approaches used in addition to conventional treatments. Patients who are interested in taking part in these or any clinical trials should talk with their doctor.

More information about clinical trials sponsored by the NCI can be obtained from NCCAM (http://nccam.nih.gov, 1-888-644-6226), OCCAM

[114]Adapted from the NCI: **http://cis.nci.nih.gov/fact/9_14.htm**

(http://occam.nci.nih.gov), and the NCI's Cancer Information Service (CIS) (http://cis.nci.nih.gov, 1-800-4-CANCER).

Questions to Ask Your Healthcare Provider about CAM

When considering complementary and alternative therapies, ask your healthcare provider the following questions:

- What benefits can be expected from this therapy?
- What are the risks associated with this therapy?
- Do the known benefits outweigh the risks?
- What side effects can be expected?
- Will the therapy interfere with conventional treatment?
- Is this therapy part of a clinical trial? If so, who is sponsoring the trial?
- Will the therapy be covered by health insurance?
- How can patients and their health care providers learn more about complementary and alternative therapies?

Finding CAM References on Gastric Cancer

Having read the previous discussion, you may be wondering which complementary or alternative treatments might be appropriate for gastric cancer. For the remainder of this chapter, we will direct you to a number of official sources which can assist you in researching studies and publications. Some of these articles are rather technical, so some patience may be required.

National Center for Complementary and Alternative Medicine

The National Center for Complementary and Alternative Medicine (NCCAM) of the National Institutes of Health (**http://nccam.nih.gov**) has created a link to the National Library of Medicine's databases to allow patients to search for articles that specifically relate to gastric cancer and complementary medicine. To search the database, go to the following Web site: **www.nlm.nih.gov/nccam/camonpubmed.html**. Select "CAM on PubMed." Enter "gastric cancer" (or synonyms) into the search box. Click "Go." The following references provide information on particular aspects of

complementary and alternative medicine (CAM) that are related to gastric cancer:

- **51 cases of gastric cancer treated by the turbidity descending and stasis resolving method.**
  Author(s): Li J, Qin G, Zhao D, Chen X.
  Source: J Tradit Chin Med. 1995 December; 15(4): 243-51. No Abstract Available.
  http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=8709601&dopt=Abstract

- **9th Seah Cheng Siang Memorial Lecture: gastric cancer--where are we now?**
  Author(s): Lam SK.
  Source: Ann Acad Med Singapore. 1999 November; 28(6): 881-9.
  http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=10672411&dopt=Abstract

- **A new schedule for etoposide, epidoxorubicin and cisplatin with granulocyte colony stimulating factor for advanced gastric cancer: a feasibility study.**
  Author(s): Pronzato P, Vigani A, Pensa F, Botto F, Ghio E, Neri E, Tognoni A, Vaira F.
  Source: Anticancer Res. 1997 September-October; 17(5B): 3873-6.
  http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=9427795&dopt=Abstract

- **A phase 2 study of weekly high-dose 5-fluorouracil and leucovorin plus biweekly plus biweekly alternating doxorubicin and cisplatin for advanced gastric cancer.**
  Author(s): Markman M.
  Source: Journal of Cancer Research and Clinical Oncology. 1998; 124(7): 353. No Abstract Available.
  http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=9719497&dopt=Abstract

- **A phase I study of paclitaxel and 5-fluorouracil in advanced gastric cancer.**
  Author(s): Cascinu S, Ficarelli R, Safi MA, Graziano F, Catalano G, Cellerino R.

Source: European Journal of Cancer (Oxford, England: 1990). 1997 September; 33(10): 1699-702.
http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=9389936&dopt=Abstract

- **A phase II study of carboplatin and paclitaxel in the treatment of patients with advanced esophageal and gastric cancer.**
  Author(s): Philip PA, Zalupski MM, Gadgeel S, Hussain M, Shields A.
  Source: Seminars in Oncology. 1997 December; 24(6 Suppl 19): S19-86-S19-88.
  http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=9427274&dopt=Abstract

- **A phase II study of etoposide, doxorubicin, and carboplatin in the treatment of advanced gastric cancer.**
  Author(s): Wang X, Pang L, Feng J.
  Source: American Journal of Clinical Oncology : the Official Publication of the American Radium Society. 2002 February; 25(1): 71-5.
  http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=11823701&dopt=Abstract

- **A phase II study of sequential chemotherapy with docetaxel after the weekly PELF regimen in advanced gastric cancer. A report from the Italian group for the study of digestive tract cancer.**
  Author(s): Cascinu S, Graziano F, Barni S, Labianca R, Comella G, Casaretti R, Frontini L, Catalano V, Baldelli AM, Catalano G.
  Source: British Journal of Cancer. 2001 February; 84(4): 470-4.
  http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=11207039&dopt=Abstract

- **A phase II study of weekly docetaxel as salvage chemotherapy for advanced gastric cancer.**
  Author(s): Graziano F, Catalano V, Baldelli AM, Giordani P, Testa E, Lai V, Catalano G, Battelli N, Cascinu S.
  Source: Annals of Oncology : Official Journal of the European Society for Medical Oncology / Esmo. 2000 October; 11(10): 1263-6.
  http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=11106114&dopt=Abstract

- **A phase II trial of etoposide, leucovorin and 5-fluorouracil (ELF) in patients with advanced gastric cancer.**
  Author(s): Au E, Koo WH, Tan EH, Ang PT.

Source: Journal of Chemotherapy (Florence, Italy). 1996 August; 8(4): 300-3.
http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=8873837&dopt=Abstract

- **A phase II trial of paclitaxel and weekly 24 h infusion of 5-fluorouracil/folinic acid in patients with advanced gastric cancer.**
  Author(s): Bokemeyer C, Lampe CS, Clemens MR, Hartmann JT, Quietzsch D, Forkmann L, Kollmannsberger C, Kanz L.
  Source: Anti-Cancer Drugs. 1997 April; 8(4): 396-9.
  http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=9180395&dopt=Abstract

- **A pilot study of adjuvant chemotherapy with double modulation of 5-fluorouracil by methotrexate and leucovorin in gastric cancer patients.**
  Author(s): De Vita F, Orditura M, Auriemma A, Infusino S, Catalano G.
  Source: Panminerva Medica. 1999 March; 41(1): 35-8.
  http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=10230255&dopt=Abstract

- **Activation and the interaction of proapoptotic genes in modulating sensitivity to anticancer drugs in gastric cancer cells.**
  Author(s): Kim R, Ohi Y, Inoue H, Toge T.
  Source: International Journal of Oncology. 1999 October; 15(4): 751-6.
  http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=10493958&dopt=Abstract

- **Advanced gastric cancer with multiple lymph node metastasis successfully treated with etoposide, adriamycin and cisplatin.**
  Author(s): Shigemitsu K, Naomoto Y, Matsuno T, Gochi A, Isozaki H, Tanaka N.
  Source: Journal of Gastroenterology and Hepatology. 2001 May; 16(5): 581-5.
  http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=11350560&dopt=Abstract

- **An in vitro chemosensitivity test for gastric cancer using collagen gel droplet embedded culture.**
  Author(s): Hanatani Y, Kobayashi H, Kodaira S, Takami H, Asagoe T, Kaneshiro E.

Source: Oncol Rep. 2000 September-October; 7(5): 1027-33.
http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=10948334&dopt=Abstract

- **Apoptosis induced by isoliquiritigenin in human gastric cancer MGC-803 cells.**
  Author(s): Ma J, Fu NY, Pang DB, Wu WY, Xu AL.
  Source: Planta Medica. 2001 November; 67(8): 754-7.
  http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=11731922&dopt=Abstract

- **Applying a highly specific and reproducible cDNA RDA method to clone garlic up-regulated genes in human gastric cancer cells.**
  Author(s): Li Y, Lu YY.
  Source: World Journal of Gastroenterology : Wjg. 2002 April; 8(2): 213-6.
  http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=11925594&dopt=Abstract

- **CDK4 down-regulation induced by paclitaxel is associated with G1 arrest in gastric cancer cells.**
  Author(s): Yoo YD, Park JK, Choi JY, Lee KH, Kang YK, Kim CS, Shin SW, Kim YH, Kim JS.
  Source: Clinical Cancer Research : an Official Journal of the American Association for Cancer Research. 1998 December; 4(12): 3063-8.
  http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=9865921&dopt=Abstract

- **Chemotherapy for gastric cancer in Japan.**
  Author(s): Furue H.
  Source: Gan to Kagaku Ryoho. 1997 May; 24 Suppl 1: 120-5. Review. No Abstract Available.
  http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=9210894&dopt=Abstract

- **Chemotherapy in gastric cancer: an economic evaluation of the FAM (5-fluorouracil, adriamycin, mitomycin C) versus ELF (etoposide, leucovorin, 5-fluorouracil) regimens.**
  Author(s): Norum J, Angelsen V.

Source: Journal of Chemotherapy (Florence, Italy). 1995 October; 7(5): 455-9.
http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=8596132&dopt=Abstract

- **Chemotherapy of metastatic gastric cancer.**
  Author(s): Wils J.
  Source: Gan to Kagaku Ryoho. 2000 May; 27 Suppl 2: 395-8. Review. No Abstract Available.
  http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=10895185&dopt=Abstract

- **Cisplatin, etoposide, and weekly high-dose 5-fluorouracil and leucovorin infusion (PE-HDFL)--a very effective regimen with good patients' compliance for advanced gastric cancer.**
  Author(s): Cheng AL, Yeh KH, Lin JT, Hsu C, Liu MY.
  Source: Anticancer Res. 1998 March-April; 18(2B): 1267-72.
  http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=9615799&dopt=Abstract

- **Clinical benefit and response in patients with gastric cancer to weekly 24-hour infusion of high-dose 5-fluorouracil (5-FU) and leucovorin (LV).**
  Author(s): Lin YC, Liu HE, Wang CH, Wang HM, Yang TS, Liau CT, Chen JS.
  Source: Anticancer Res. 1999 November-December; 19(6C): 5615-20.
  http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=10697628&dopt=Abstract

- **Clinical experiences in the thermoradiotherapy for advanced gastric cancer.**
  Author(s): Nagata Y, Hiraoka M, Nishimura Y, Masunaga S, Akuta K, Li YP, Koishi M, Mitsumori M, Okuno Y, Takahashi M, et al.
  Source: International Journal of Hyperthermia : the Official Journal of European Society for Hyperthermic Oncology, North American Hyperthermia Group. 1995 July-August; 11(4): 501-10.
  http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=7594804&dopt=Abstract

- **Combination chemotherapy of irinotecan plus cisplatin for advanced gastric cancer: efficacy and feasibility in clinical practice.**

Author(s): Yoshida M, Boku N, Ohtsu A, Muto M, Nagashima F, Yoshida S.
Source: Gastric Cancer : Official Journal of the International Gastric Cancer Association and the Japanese Gastric Cancer Association. 2001; 4(3): 144-9.
http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=11760080&dopt=Abstract

- **Combination chemotherapy with docetaxel and cisplatin for locally advanced and metastatic gastric cancer.**
  Author(s): Ridwelski K, Gebauer T, Fahlke J, Kroning H, Kettner E, Meyer F, Eichelmann K, Lippert H.
  Source: Annals of Oncology : Official Journal of the European Society for Medical Oncology / Esmo. 2001 January; 12(1): 47-51.
  http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=11249048&dopt=Abstract

- **Combination chemotherapy with Tegafur.Uracil (UFT), etoposide, adriamycin and cisplatinum (UFT-EAP) for advanced gastric cancer.**
  Author(s): Hayakawa M, Morise K, Chin K, Sugihara M, Morooka Y, Maeda H, Hattori T, Saito H.
  Source: Japanese Journal of Clinical Oncology. 1994 October; 24(5): 282-8.
  http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=7967107&dopt=Abstract

- **Comparative study of lifestyles of residents in high and low risk areas for gastric cancer in Jiangsu Province, China; with special reference to allium vegetables.**
  Author(s): Takezaki T, Gao CM, Ding JH, Liu TK, Li MS, Tajima K.
  Source: J Epidemiol. 1999 November; 9(5): 297-305.
  http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=10616262&dopt=Abstract

- **Construction of cDNA representational difference analysis based on two cDNA libraries and identification of garlic inducible expression genes in human gastric cancer cells.**
  Author(s): Li Y, Yang L, Cui JT, Li WM, Guo RF, Lu YY.
  Source: World Journal of Gastroenterology : Wjg. 2002 April; 8(2): 208-12.
  http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=11925593&dopt=Abstract

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  Author(s): Yonemura Y, Kinoshita K, Fujimura T, Fushida S, Sawa T, Matsuki N, Tanaka S, Kamata T, Takashima T, Miyazaki I.
  Source: Hepatogastroenterology. 1996 September-October; 43(11): 1260-72.
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- **Developments in the treatment of gastric cancer in Europe.**
  Author(s): Kohne CH, Wils JA, Wilke HJ.
  Source: Oncology (Huntingt). 2000 December; 14(12 Suppl 14): 22-5. Review.
  http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=11200144&dopt=Abstract

- **Diet and gastric cancer: a casecontrol study in Fujian Province, China.**
  Author(s): Ye WM, Yi YN, Luo RX, Zhou TS, Lin RT, Chen GD.
  Source: World Journal of Gastroenterology : Wjg. 1998 December; 4(6): 516-518.
  http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=11819359&dopt=Abstract

- **Dietary factors and gastric cancer in Korea: a case-control study.**
  Author(s): Kim HJ, Chang WK, Kim MK, Lee SS, Choi BY.
  Source: International Journal of Cancer. Journal International Du Cancer. 2002 February 1; 97(4): 531-5.
  http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=11802218&dopt=Abstract

- **Differential display of vincristine-resistance-related genes in gastric cancer SGC7901 cell.**
  Author(s): Wang X, Lan M, Shi YQ, Lu J, Zhong YX, Wu HP, Zai HH, Ding J, Wu KC, Pan BR, Jin JP, Fan DM.
  Source: World Journal of Gastroenterology : Wjg. 2002 February; 8(1): 54-9.
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- **Direct interaction between a quinoline derivative, MS-209, and multidrug resistance protein (MRP) in human gastric cancer cells.**

Author(s): Nakamura T, Oka M, Aizawa K, Soda H, Fukuda M, Terashi K, Ikeda K, Mizuta Y, Noguchi Y, Kimura Y, Tsuruo T, Kohno S.
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http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=10049760&dopt=Abstract

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  Author(s): Sulkes A, Smyth J, Sessa C, Dirix LY, Vermorken JB, Kaye S, Wanders J, Franklin H, LeBail N, Verweij J.
  Source: British Journal of Cancer. 1994 August; 70(2): 380-3.
  http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=7914428&dopt=Abstract

- **Docetaxel 75 mg/m(2) is active and well tolerated in patients with metastatic or recurrent gastric cancer: a phase II trial.**
  Author(s): Bang YJ, Kang WK, Kang YK, Kim HC, Jacques C, Zuber E, Daglish B, Boudraa Y, Kim WS, Heo DS, Kim NK.
  Source: Japanese Journal of Clinical Oncology. 2002 July; 32(7): 248-54.
  http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=12324575&dopt=Abstract

- **Effect of Acanthopanax giraldii Harms Var. Hispidus Hoo polysaccharides on the human gastric cancer cell line SGC-7901 and its possible mechanism.**
  Author(s): Lu X, Su M, Li Y, Zeng L, Liu X, Li J, Zheng B, Wang S.
  Source: Chin Med J (Engl). 2002 May; 115(5): 716-21.
  http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=12133541&dopt=Abstract

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  Author(s): Kornek GV, Raderer M, Schull B, Fiebiger W, Gedlicka C, Lenauer A, Depisch D, Schneeweiss B, Lang F, Scheithauer W.
  Source: British Journal of Cancer. 2002 June 17; 86(12): 1858-63.
  http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=12085176&dopt=Abstract

- **Effects of alpha-tocopherol and beta-carotene supplementation on gastric cancer incidence in male smokers (ATBC Study, Finland).**

Author(s): Malila N, Taylor PR, Virtanen MJ, Korhonen P, Huttunen JK, Albanes D, Virtamo J.
Source: Cancer Causes & Control : Ccc. 2002 September; 13(7): 617-23.
http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=12296509&dopt=Abstract

- **Effects of Chinese Jianpi herbs on cell apoptosis and related gene expression in human gastric cancer grafted onto nude mice.**
  Author(s): Zhao AG, Zhao HL, Jin XJ, Yang JK, Tang LD.
  Source: World Journal of Gastroenterology : Wjg. 2002 October; 8(5): 792-6.
  http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=12378617&dopt=Abstract

- **Effects of three-month oral supplementation of beta-carotene and vitamin C on serum concentrations of carotenoids and vitamins in middle-aged subjects: a pilot study for a randomized controlled trial to prevent gastric cancer in high-risk Japanese population.**
  Author(s): Sasaki S, Tsubono Y, Okubo S, Hayashi M, Kakizoe T, Tsugane S.
  Source: Japanese Journal of Cancer Research : Gann. 2000 May; 91(5): 464-70.
  http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=10835489&dopt=Abstract

- **Effects of topoisomerase II inhibitors on gastric cancer cells characterized by different genetic lesions.**
  Author(s): Scovassi AL, Pellegata NS, Di Stefano L, Padovan L, Negri C, Prosperi E, Riva F, Ciomei M, Ranzani GN.
  Source: Anticancer Res. 2001 July-August; 21(4A): 2803-8.
  http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=11724358&dopt=Abstract

- **Efficacy of continuous hyperthermic peritoneal perfusion for the prophylaxis and treatment of peritoneal metastasis of advanced gastric cancer: evaluation by multivariate regression analysis.**
  Author(s): Hirose K, Katayama K, Iida A, Yamaguchi A, Nakagawara G, Umeda S, Kusaka Y.
  Source: Oncology. 1999; 57(2): 106-14.
  http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=10461056&dopt=Abstract

- **Enhanced expression of insulin-like growth factor binding protein-3 sensitizes the growth inhibitory effect of anticancer drugs in gastric cancer cells.**
  Author(s): Lee DY, Yi HK, Hwang PH, Oh Y.
  Source: Biochemical and Biophysical Research Communications. 2002 June 7; 294(2): 480-6.
  http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=12051736&dopt=Abstract

- **Enhancement of antitumor effect by intratumoral administration of bax gene in combination with anticancer drugs in gastric cancer.**
  Author(s): Kim R, Minami K, Nishimoto N, Toge T.
  Source: International Journal of Oncology. 2001 February; 18(2): 363-7.
  http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=11172605&dopt=Abstract

- **Enhancement of chemotherapeutic agents induced-apoptosis associated with activation of c-Jun N-terminal kinase 1 and caspase 3 (CPP32) in bax-transfected gastric cancer cells.**
  Author(s): Kim R, Ohi Y, Inoue H, Toge T.
  Source: Anticancer Res. 2000 January-February; 20(1A): 439-44.
  http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=10769693&dopt=Abstract

Additional Web Resources

A number of additional Web sites offer encyclopedic information covering CAM and related topics. The following is a representative sample:

- Alternative Medicine Foundation, Inc.: **http://www.herbmed.org/**
- AOL: **http://search.aol.com/cat.adp?id=169&layer=&from=subcats**
- Chinese Medicine: **http://www.newcenturynutrition.com/**
- drkoop.com®: **http://www.drkoop.com/InteractiveMedicine/IndexC.html**
- Family Village: **http://www.familyvillage.wisc.edu/med_altn.htm**
- Google: **http://directory.google.com/Top/Health/Alternative/**
- Healthnotes: **http://www.thedacare.org/healthnotes/**
- Open Directory Project: **http://dmoz.org/Health/Alternative/**
- TPN.com: **http://www.tnp.com/**

- Yahoo.com: **http://dir.yahoo.com/Health/Alternative_Medicine/**
- WebMD®Health: **http://my.webmd.com/drugs_and_herbs**
- WellNet: **http://www.wellnet.ca/herbsa-c.htm**
- WholeHealthMD.com: **http://www.wholehealthmd.com/reflib/0,1529,,00.html**

The following is a specific Web list relating to gastric cancer; please note that any particular subject below may indicate either a therapeutic use, or a contraindication (potential danger), and does not reflect an official recommendation:

- **General Overview**

  Breast Cancer
  Source: Healthnotes, Inc.; www.healthnotes.com
  Hyperlink:
  http://www.thedacare.org/healthnotes/Concern/Cancer_Breast.htm

  Cancer Prevention (Reducing the Risk)
  Source: Prima Communications, Inc.
  Hyperlink: http://www.personalhealthzone.com/pg000272.html

  Cancer Prevention and Diet
  Source: Healthnotes, Inc.; www.healthnotes.com
  Hyperlink:
  http://www.thedacare.org/healthnotes/Concern/Cancer_Diet.htm

  Cancer, Colorectal
  Source: Integrative Medicine Communications;
  www.onemedicine.com
  Hyperlink:
  http://www.drkoop.com/interactivemedicine/ConsConditions/CancerColorectalcc.html

  Colon Cancer
  Source: Healthnotes, Inc.; www.healthnotes.com
  Hyperlink:
  http://www.thedacare.org/healthnotes/Concern/Cancer_Colon.htm

Colorectal Cancer
Source: Integrative Medicine Communications; www.onemedicine.com
Hyperlink: http://www.drkoop.com/interactivemedicine/ConsConditions/CancerColorectalcc.html

Gastritis
Source: Healthnotes, Inc.; www.healthnotes.com
Hyperlink: http://www.thedacare.org/healthnotes/Concern/Gastritis.htm

Gastritis
Source: Integrative Medicine Communications; www.onemedicine.com
Hyperlink: http://www.drkoop.com/interactivemedicine/ConsConditions/Gastritiscc.html

Lung Cancer
Source: Healthnotes, Inc.; www.healthnotes.com
Hyperlink: http://www.thedacare.org/healthnotes/Concern/Cancer_Lung.htm

Peptic Ulcer
Source: Healthnotes, Inc.; www.healthnotes.com
Hyperlink: http://www.thedacare.org/healthnotes/Concern/Peptic_Ulcer.htm

Peptic Ulcer
Source: Integrative Medicine Communications; www.onemedicine.com
Hyperlink: http://www.drkoop.com/interactivemedicine/ConsConditions/PepticUlcercc.html

Prostate Cancer
Source: Healthnotes, Inc.; www.healthnotes.com
Hyperlink: http://www.thedacare.org/healthnotes/Concern/Cancer_Prostate.htm

Stomach Inflammation
Source: Integrative Medicine Communications; www.onemedicine.com
Hyperlink: http://www.drkoop.com/interactivemedicine/ConsConditions/Gastritiscc.html

Ulcer, Peptic
Source: Integrative Medicine Communications; www.onemedicine.com
Hyperlink: http://www.drkoop.com/interactivemedicine/ConsConditions/PepticUlcercc.html

- **Herbs and Supplements**

Allium sativum
Source: Integrative Medicine Communications; www.onemedicine.com
Hyperlink: http://www.drkoop.com/interactivemedicine/ConsHerbs/Garlicch.html

Apium graveolens
Source: Integrative Medicine Communications; www.onemedicine.com
Hyperlink: http://www.drkoop.com/interactivemedicine/ConsHerbs/CelerySeedch.html

Beta-Carotene
Source: Prima Communications, Inc.
Hyperlink: http://www.personalhealthzone.com/pg000104.html

Borago
Alternative names: Borage; Borago officinalis
Source: Alternative Medicine Foundation, Inc.; www.amfoundation.org
Hyperlink: http://www.herbmed.org/

Cayenne
Alternative names: Capsicum annuum, Capsicum frutescens
Source: Healthnotes, Inc.; www.healthnotes.com
Hyperlink:
http://www.thedacare.org/healthnotes/Herb/Cayenne.htm

Celery Seed
Alternative names: Apium graveolens
Source: Integrative Medicine Communications;
www.onemedicine.com
Hyperlink:
http://www.drkoop.com/interactivemedicine/ConsHerbs/CelerySeedch.html

Fiber
Source: Integrative Medicine Communications;
www.onemedicine.com
Hyperlink:
http://www.drkoop.com/interactivemedicine/ConsSupplements/Fibercs.html

Ginseng
Source: Prima Communications, Inc.
Hyperlink: http://www.personalhealthzone.com/pg000100.html

Glutathione
Source: Healthnotes, Inc.; www.healthnotes.com
Hyperlink:
http://www.thedacare.org/healthnotes/Supp/Glutathione.htm

Green Tea
Alternative names: Camellia sinensis
Source: Healthnotes, Inc.; www.healthnotes.com
Hyperlink:
http://www.thedacare.org/healthnotes/Herb/Green_Tea.htm

Green Tea
Source: Prima Communications, Inc.
Hyperlink: http://www.personalhealthzone.com/pg000175.html

Lepidium meyenii1
Alternative names: Maca; Lepidium meyenii Walp.
Source: Alternative Medicine Foundation, Inc.; www.amfoundation.org
Hyperlink: http://www.herbmed.org/

Lycopene
Source: Healthnotes, Inc.; www.healthnotes.com
Hyperlink: http://www.thedacare.org/healthnotes/Supp/Lycopene.htm

Lycopene
Source: WholeHealthMD.com, LLC.; www.wholehealthmd.com
Hyperlink: http://www.wholehealthmd.com/refshelf/substances_view/0,1525,803,00.html

Ocimum
Alternative names: Basil, Albahaca; Ocimum basilicum
Source: Alternative Medicine Foundation, Inc.; www.amfoundation.org
Hyperlink: http://www.herbmed.org/

Panax
Alternative names: Ginseng; Panax ginseng
Source: Alternative Medicine Foundation, Inc.; www.amfoundation.org
Hyperlink: http://www.herbmed.org/

Shiitake
Alternative names: Lentinus edodes
Source: Healthnotes, Inc.; www.healthnotes.com
Hyperlink: http://www.thedacare.org/healthnotes/Herb/Shiitake.htm

General References

A good place to find general background information on CAM is the National Library of Medicine. It has prepared within the MEDLINEplus system an information topic page dedicated to complementary and alternative medicine. To access this page, go to the MEDLINEplus site at: **www.nlm.nih.gov/medlineplus/alternativemedicine.html.** This Web site

provides a general overview of various topics and can lead to a number of general sources. The following additional references describe, in broad terms, alternative and complementary medicine (sorted alphabetically by title; hyperlinks provide rankings, information, and reviews at Amazon.com):

- **Alternative Medicine Definitive Guide to Cancer** by W. John Diamond, et al; Hardcover - 1120 pages Package edition (March 18, 1997), Alternativemedicine.Com Books; ISBN: 1887299017; **http://www.amazon.com/exec/obidos/ASIN/1887299017/icongroupinterna**
- **Beating Cancer With Nutrition - Revised** by Patrick Quillin, Noreen Quillin (Contributor); Paperback - 352 pages; Book & CD edition (January 1, 2001), Bookworld Services; ISBN: 0963837281; **http://www.amazon.com/exec/obidos/ASIN/0963837281/icongroupinterna**
- **Cancer: Increasing Your Odds for Survival - A Resource Guide for Integrating Mainstream, Alternative and Complementary Therapies** by David Bognar, Walter Cronkite; Paperback (August 1998), Hunter House; ISBN: 0897932471; **http://www.amazon.com/exec/obidos/ASIN/0897932471/icongroupinterna**
- **Choices in Healing** by Michael Lerner; Paperback - 696 pages; (February 28, 1996), MIT Press; ISBN: 0262621045; **http://www.amazon.com/exec/obidos/ASIN/0262621045/icongroupinterna**
- **The Gerson Therapy: The Amazing Nutritional Program for Cancer and Other Illnesses** by Charlotte Gerson, Morton Walker, D.P.M.; Paperback - 448 pages (October 2001), Kensington Publishing Corp.; ISBN: 1575666286; **http://www.amazon.com/exec/obidos/ASIN/1575666286/icongroupinterna**
- **Natural Compounds in Cancer Therapy** by John C. Boik; Paperback - 520 pages (March 2001), Oregon Medical Press; ISBN: 0964828014; **http://www.amazon.com/exec/obidos/ASIN/0964828014/icongroupinterna**
- **There's No Place Like Hope: A Guide to Beating Cancer in Mind-Sized Bites** by Vickie Girard, Dan Zadra (Editor); Hardcover - 161 pages (April 2001), Compendium Inc.; ISBN: 1888387416; **http://www.amazon.com/exec/obidos/ASIN/1888387416/icongroupinterna**
- **Your Life in Your Hands** by Jane A. Plant, Ph.D; Hardcover - 272 pages (December 13, 2000), St. Martins Press (Trade); ISBN: 0312275617; **http://www.amazon.com/exec/obidos/ASIN/0312275617/icongroupinterna**

For additional information on complementary and alternative medicine, ask your doctor or write to:

National Institutes of Health
National Center for Complementary and Alternative Medicine Clearinghouse
P. O. Box 8218
Silver Spring, MD 20907-8218

Vocabulary Builder

The following vocabulary builder gives definitions of words used in this chapter that have not been defined in previous chapters:

Capsicum: A genus of Solanaceous shrubs that yield capsaicin. Several varieties have sweet or pungent edible fruits that are used as vegetables when fresh and spices when the pods are dried. [NIH]

Carboplatin: An anticancer drug that belongs to the family of drugs called platinum compounds. [NIH]

Carotenoids: Substance found in yellow and orange fruits and vegetables and in dark green, leafy vegetables. May reduce the risk of developing cancer. [NIH]

Collagen: A fibrous protein found in cartilage and other connective tissue. [NIH]

Erythropoietin: Produced in the adult kidney, a colony-stimulating factor that stimulates the production of red blood cells. [NIH]

Ginseng: An herb with a root that has been used in some cultures to treat certain medical problems. It may have anticancer effects. [NIH]

Granulocyte: A type of white blood cell that fights bacterial infection. Neutrophils, eosinophils, and basophils are granulocytes. [NIH]

Inoperable: Not suitable to be operated upon. [EU]

Lycopene: A red pigment found in tomatoes and some fruits. [NIH]

Perfusion: Bathing an organ or tissue with a fluid. In regional perfusion, a specific area of the body (usually an arm or a leg) receives high doses of anticancer drugs through a blood vessel. Such a procedure is performed to treat cancer that has not spread. [NIH]

Psychotherapy: A generic term for the treatment of mental illness or emotional disturbances primarily by verbal or nonverbal communication. [NIH]

Radium: Radium. A radioactive element of the alkaline earth series of

metals. It has the atomic symbol Ra, atomic number 88, and atomic weight 226. Radium is the product of the disintegration of uranium and is present in pitchblende and all ores containing uranium. It is used clinically as a source of beta and gamma-rays in radiotherapy, particularly brachytherapy. [NIH]

Tegafur: An anticancer drug that belongs to the family of drugs called antimetabolites. [NIH]

Vincristine: An anticancer drug that belongs to the family of plant drugs called vinca alkaloids. [NIH]

APPENDIX C. RESEARCHING NUTRITION

Overview

Since the time of Hippocrates, doctors have understood the importance of diet and nutrition to patients' health and well-being. Since then, they have accumulated an impressive archive of studies and knowledge dedicated to this subject. Based on their experience, doctors and healthcare providers may recommend particular dietary supplements to patients with gastric cancer. Any dietary recommendation is based on a patient's age, body mass, gender, lifestyle, eating habits, food preferences, and health condition. It is therefore likely that different patients with gastric cancer may be given different recommendations. Some recommendations may be directly related to gastric cancer, while others may be more related to the patient's general health. These recommendations, themselves, may differ from what official sources recommend for the average person.

In this chapter we will begin by briefly reviewing the essentials of diet and nutrition that will broadly frame more detailed discussions of gastric cancer. We will then show you how to find studies dedicated specifically to nutrition and gastric cancer.

Food and Nutrition: General Principles

What Are Essential Foods?

Food is generally viewed by official sources as consisting of six basic elements: (1) fluids, (2) carbohydrates, (3) protein, (4) fats, (5) vitamins, and (6) minerals. Consuming a combination of these elements is considered to be a healthy diet:

- **Fluids** are essential to human life as 80-percent of the body is composed of water. Water is lost via urination, sweating, diarrhea, vomiting, diuretics (drugs that increase urination), caffeine, and physical exertion.
- **Carbohydrates** are the main source for human energy (thermoregulation) and the bulk of typical diets. They are mostly classified as being either simple or complex. Simple carbohydrates include sugars which are often consumed in the form of cookies, candies, or cakes. Complex carbohydrates consist of starches and dietary fibers. Starches are consumed in the form of pastas, breads, potatoes, rice, and other foods. Soluble fibers can be eaten in the form of certain vegetables, fruits, oats, and legumes. Insoluble fibers include brown rice, whole grains, certain fruits, wheat bran and legumes.
- **Proteins** are eaten to build and repair human tissues. Some foods that are high in protein are also high in fat and calories. Food sources for protein include nuts, meat, fish, cheese, and other dairy products.
- **Fats** are consumed for both energy and the absorption of certain vitamins. There are many types of fats, with many general publications recommending the intake of unsaturated fats or those low in cholesterol.

Vitamins and minerals are fundamental to human health, growth, and, in some cases, disease prevention. Most are consumed in your diet (exceptions being vitamins K and D which are produced by intestinal bacteria and sunlight on the skin, respectively). Each vitamin and mineral plays a different role in health. The following outlines essential vitamins:

- **Vitamin A** is important to the health of your eyes, hair, bones, and skin; sources of vitamin A include foods such as eggs, carrots, and cantaloupe.
- **Vitamin B^1**, also known as thiamine, is important for your nervous system and energy production; food sources for thiamine include meat, peas, fortified cereals, bread, and whole grains.
- **Vitamin B^2**, also known as riboflavin, is important for your nervous system and muscles, but is also involved in the release of proteins from

nutrients; food sources for riboflavin include dairy products, leafy vegetables, meat, and eggs.

- **Vitamin B^3**, also known as niacin, is important for healthy skin and helps the body use energy; food sources for niacin include peas, peanuts, fish, and whole grains
- **Vitamin B^6**, also known as pyridoxine, is important for the regulation of cells in the nervous system and is vital for blood formation; food sources for pyridoxine include bananas, whole grains, meat, and fish.
- **Vitamin B^{12}** is vital for a healthy nervous system and for the growth of red blood cells in bone marrow; food sources for vitamin B^{12} include yeast, milk, fish, eggs, and meat.
- **Vitamin C** allows the body's immune system to fight various diseases, strengthens body tissue, and improves the body's use of iron; food sources for vitamin C include a wide variety of fruits and vegetables.
- **Vitamin D** helps the body absorb calcium which strengthens bones and teeth; food sources for vitamin D include oily fish and dairy products.
- **Vitamin E** can help protect certain organs and tissues from various degenerative diseases; food sources for vitamin E include margarine, vegetables, eggs, and fish.
- **Vitamin K** is essential for bone formation and blood clotting; common food sources for vitamin K include leafy green vegetables.
- **Folic Acid** maintains healthy cells and blood and, when taken by a pregnant woman, can prevent her fetus from developing neural tube defects; food sources for folic acid include nuts, fortified breads, leafy green vegetables, and whole grains.

It should be noted that one can overdose on certain vitamins which become toxic if consumed in excess (e.g. vitamin A, D, E and K).
Like vitamins, minerals are chemicals that are required by the body to remain in good health. Because the human body does not manufacture these chemicals internally, we obtain them from food and other dietary sources. The more important minerals include:

- **Calcium** is needed for healthy bones, teeth, and muscles, but also helps the nervous system function; food sources for calcium include dry beans, peas, eggs, and dairy products.
- **Chromium** is helpful in regulating sugar levels in blood; food sources for chromium include egg yolks, raw sugar, cheese, nuts, beets, whole grains, and meat.

- **Fluoride** is used by the body to help prevent tooth decay and to reinforce bone strength; sources of fluoride include drinking water and certain brands of toothpaste.
- **Iodine** helps regulate the body's use of energy by synthesizing into the hormone thyroxine; food sources include leafy green vegetables, nuts, egg yolks, and red meat.
- **Iron** helps maintain muscles and the formation of red blood cells and certain proteins; food sources for iron include meat, dairy products, eggs, and leafy green vegetables.
- **Magnesium** is important for the production of DNA, as well as for healthy teeth, bones, muscles, and nerves; food sources for magnesium include dried fruit, dark green vegetables, nuts, and seafood.
- **Phosphorous** is used by the body to work with calcium to form bones and teeth; food sources for phosphorous include eggs, meat, cereals, and dairy products.
- **Selenium** primarily helps maintain normal heart and liver functions; food sources for selenium include wholegrain cereals, fish, meat, and dairy products.
- **Zinc** helps wounds heal, the formation of sperm, and encourage rapid growth and energy; food sources include dried beans, shellfish, eggs, and nuts.

The United States government periodically publishes recommended diets and consumption levels of the various elements of food. Again, your doctor may encourage deviations from the average official recommendation based on your specific condition. To learn more about basic dietary guidelines, visit the Web site: **http://www.health.gov/dietaryguidelines/**. Based on these guidelines, many foods are required to list the nutrition levels on the food's packaging. Labeling Requirements are listed at the following site maintained by the Food and Drug Administration: **http://www.cfsan.fda.gov/~dms/lab-cons.html**. When interpreting these requirements, the government recommends that consumers become familiar with the following abbreviations before reading FDA literature:[115]

- **DVs (Daily Values):** A new dietary reference term that will appear on the food label. It is made up of two sets of references, DRVs and RDIs.
- **DRVs (Daily Reference Values):** A set of dietary references that applies to fat, saturated fat, cholesterol, carbohydrate, protein, fiber, sodium, and potassium.

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[115] Adapted from the FDA: **http://www.fda.gov/fdac/special/foodlabel/dvs.html**.

- **RDIs (Reference Daily Intakes):** A set of dietary references based on the Recommended Dietary Allowances for essential vitamins and minerals and, in selected groups, protein. The name "RDI" replaces the term "U.S. RDA."
- **RDAs (Recommended Dietary Allowances):** A set of estimated nutrient allowances established by the National Academy of Sciences. It is updated periodically to reflect current scientific knowledge.

What Are Dietary Supplements?[116]

Dietary supplements are widely available through many commercial sources, including health food stores, grocery stores, pharmacies, and by mail. Dietary supplements are provided in many forms including tablets, capsules, powders, gel-tabs, extracts, and liquids. Historically in the United States, the most prevalent type of dietary supplement was a multivitamin/mineral tablet or capsule that was available in pharmacies, either by prescription or "over the counter." Supplements containing strictly herbal preparations were less widely available. Currently in the United States, a wide array of supplement products are available, including vitamin, mineral, other nutrients, and botanical supplements as well as ingredients and extracts of animal and plant origin.

The Office of Dietary Supplements (ODS) of the National Institutes of Health is the official agency of the United States which has the expressed goal of acquiring "new knowledge to help prevent, detect, diagnose, and treat disease and disability, from the rarest genetic disorder to the common cold."[117] According to the ODS, dietary supplements can have an important impact on the prevention and management of disease and on the maintenance of health.[118] The ODS notes that considerable research on the effects of dietary supplements has been conducted in Asia and Europe where

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[116] This discussion has been adapted from the NIH: **http://ods.od.nih.gov/whatare/whatare.html**.

[117] Contact: The Office of Dietary Supplements, National Institutes of Health, Building 31, Room 1B29, 31 Center Drive, MSC 2086, Bethesda, Maryland 20892-2086, Tel: (301) 435-2920, Fax: (301) 480-1845, E-mail: **ods@nih.gov**.

[118] Adapted from **http://ods.od.nih.gov/about/about.html**. The Dietary Supplement Health and Education Act defines dietary supplements as "a product (other than tobacco) intended to supplement the diet that bears or contains one or more of the following dietary ingredients: a vitamin, mineral, amino acid, herb or other botanical; or a dietary substance for use to supplement the diet by increasing the total dietary intake; or a concentrate, metabolite, constituent, extract, or combination of any ingredient described above; and intended for ingestion in the form of a capsule, powder, softgel, or gelcap, and not represented as a conventional food or as a sole item of a meal or the diet."

the use of plant products, in particular, has a long tradition. However, the overwhelming majority of supplements have not been studied scientifically. To explore the role of dietary supplements in the improvement of health care, the ODS plans, organizes, and supports conferences, workshops, and symposia on scientific topics related to dietary supplements. The ODS often works in conjunction with other NIH Institutes and Centers, other government agencies, professional organizations, and public advocacy groups.

To learn more about official information on dietary supplements, visit the ODS site at **http://ods.od.nih.gov/whatare/whatare.html**. Or contact:

The Office of Dietary Supplements
National Institutes of Health
Building 31, Room 1B29
31 Center Drive, MSC 2086
Bethesda, Maryland 20892-2086
Tel: (301) 435-2920
Fax: (301) 480-1845
E-mail: ods@nih.gov

Finding Studies on Gastric Cancer

The NIH maintains an office dedicated to patient nutrition and diet. The National Institutes of Health's Office of Dietary Supplements (ODS) offers a searchable bibliographic database called the IBIDS (International Bibliographic Information on Dietary Supplements). The IBIDS contains over 460,000 scientific citations and summaries about dietary supplements and nutrition as well as references to published international, scientific literature on dietary supplements such as vitamins, minerals, and botanicals.[119] IBIDS is available to the public free of charge through the ODS Internet page: **http://ods.od.nih.gov/databases/ibids.html**.

After entering the search area, you have three choices: (1) IBIDS Consumer Database, (2) Full IBIDS Database, or (3) Peer Reviewed Citations Only. We recommend that you start with the Consumer Database. While you may not find references for the topics that are of most interest to you, check back

[119] Adapted from **http://ods.od.nih.gov**. IBIDS is produced by the Office of Dietary Supplements (ODS) at the National Institutes of Health to assist the public, healthcare providers, educators, and researchers in locating credible, scientific information on dietary supplements. IBIDS was developed and will be maintained through an interagency partnership with the Food and Nutrition Information Center of the National Agricultural Library, U.S. Department of Agriculture.

periodically as this database is frequently updated. More studies can be found by searching the Full IBIDS Database. Healthcare professionals and researchers generally use the third option, which lists peer-reviewed citations. In all cases, we suggest that you take advantage of the "Advanced Search" option that allows you to retrieve up to 100 fully explained references in a comprehensive format. Type "gastric cancer" (or synonyms) into the search box. To narrow the search, you can also select the "Title" field. The following is a typical result when searching for recently indexed consumer information on gastric cancer:

- **Diet, Helicobacter pylori infection, food preservation and gastric cancer risk: are there new roles for preventative factors?**
  Author(s): School of Nutrition, Tufts University.
  Source: Hwang, H Dwyer, J Russell, R M Nutr-Revolume 1994 March; 52(3): 75-83 0029-6643

The following information is typical of that found when using the "Full IBIDS Database" when searching using "gastric cancer" (or a synonym):

- **Diet and gastric cancer in Portugal - a multivariate model.**
  Author(s): Servico de Bioestatistica e Informatoca Medica, Faculadade de Medicina da Universidade do Porto, Al. Prof. Hernani Monteiro, 4200 Porto (Portugal)
  Source: Azevedo, L.F. Salgueiro, L.F. Claro, R. Teixeira Pinto, A. Costa Pereira, A. European-Journal-of-Cancer-Prevention (United Kingdom). (1999). volume 8(1) page 41-48. neoplasms stomach mankind diet mortality social structure consumption meat meat products vegetables fruits retinol carotenoids rice wines carbohydrates men women sex biological differences
  Summary: neoplasme estomac genre humain regime alimentaire mortalite structure sociale consommation viande produit carne legume fruits retinol carotenoide riz vin glucide homme femme sexe difference biologique

Additional physician-oriented references include:

- **5-Fluorouracil, epirubicin, and mitomycin C versus 5-fluorouracil, epirubicin, mitomycin C, and leucovorin in advanced gastric carcinoma. A randomized trial.**
  Author(s): Department of Pathology Physiology, Athens University School of Medicine, Greece.
  Source: Tsavaris, N B Tentas, K Kosmidis, P Mylonakis, N Sakelaropoulos, N Kosmas, C Lisaios, B Soumilas, A Mandrekois, D

Tsetis, A Klonaris, C Am-J-Clin-Oncol. 1996 October; 19(5): 517-21 0277-3732

- **A case of type IIa early gastric cancer developed in pernicious anemia.**
  Author(s): Department of Internal Medicine, Hanyang University College of Medicine, Seoul, Korea.
  Source: Ahn, M J Han, D Park, Y J Park, G T Sohn, D H Lee, Y Y Jung, T J Choi, I Y Kim, I S Jang, S J J-Korean-Med-Sci. 1998 February; 13(1): 81-4 1011-8934

- **A phase II study of paclitaxel, weekly, 24-hour continous infusion 5-fluorouracil, folinic acid and cisplatin in patients with advanced gastric cancer.**
  Author(s): Department of Hematology/Oncology, University of Tuebingen Medical Center, Tuebingen, Germany.
  Source: Kollmannsberger, C Quietzsch, D Haag, C Lingenfelser, T Schroeder, M Hartmann, J T Baronius, W Hempel, V Clemens, M Kanz, L Bokemeyer, C Br-J-Cancer. 2000 August; 83(4): 458-62 0007-0920

- **A phase II trial of 5-fluorouracil and high-dose intravenous leucovorin in gastric carcinoma.**
  Source: Arbuck, S G Douglass, H O Trave, F Milliron, S Baroni, M Nava, H Emrich, L J Rustum, Y M J-Clin-Oncol. 1987 August; 5(8): 1150-6 0732-183X

- **A phase II trial of 5-fluorouracil and high-dose leucovorin in gastric carcinoma and a phase I trial of intraperitoneal 5-fluorouracil and leucovorin.**
  Author(s): Department of Surgical Oncology, Roswell Park Memorial Institute, Buffalo, NY 14263.
  Source: Arbuck, S G Douglass, H O Trave, F Rustum, Y M NCI-Monogr. 1987; (5): 203-5 0893-2751

- **A pilot clinical trial of postoperative intensive weekly chemotherapy using cisplatin, epi-doxorubicin, 5-fluorouracil, 6S-leucovorin, glutathione and filgrastim in patients with resected gastric cancer.**
  Author(s): Section of Experimental Oncology, Ospedale S. Salvatore, Pesaro, Italy.
  Source: Graziano, F Cardarelli, N Marcellini, M Menichetti, E T Catalano, G Cascinu, S Tumori. 1998 May-June; 84(3): 368-71 0300-8916

- **Activated killer cell activity of spleen cells from patients with gastric carcinoma.**
  Author(s): Department of Surgery, Kyushu University, Beppu, Japan.
  Source: Akiyoshi, T Koba, F Arinaga, S Tsuji, H J-Clin-Lab-Immunol. 1987 August; 23(4): 197-201 0141-2760

- **An early phase II study of a 3-hour infusion of paclitaxel for advanced gastric cancer.**
  Author(s): Department of Gastrointestinal Oncology/Gastroenterology, National Cancer Center Hospital East, Kashiwanoha, Kashiwa, Japan.
  Source: Ohtsu, A Boku, N Tamura, F Muro, K Shimada, Y Saigenji, K Akazawa, S Kitajima, M Kanamaru, R Taguchi, T Am-J-Clin-Oncol. 1998 August; 21(4): 416-9 0277-3732
- **An early phase II study of etoposide (VP-16) in advanced gastric cancer.**
  Author(s): Department of Medical Oncology, National Cancer Center Hospital, Tokyo.
  Source: Yamao, T Shimada, Y Ohtsu, A Hosokawa, K Shirao, K Kondo, H Fukuda, H Saito, D Yoshida, S Jpn-J-Clin-Oncol. 1996 February; 26(1): 36-41 0368-2811
- **Apoptosis Induced by Isoliquiritigenin in Human Gastric Cancer MGC-803 Cells.**
  Author(s): Department of Biochemistry, Center for Biopharmaceutical Research and State Key Laboratory For Biocontrol, College of Life Science, Zhongshan University, Guangzhou, P. R. China.
  Source: Ma, J Fu, N Y Pang, D B Wu, W Y Xu, A L Planta-Med. 2001 November; 67(8): 754-7 0032-0943
- **Comparison of blocked and non-blocked ricin-antibody immunotoxins against human gastric carcinoma and colorectal adenocarcinoma cell lines.**
  Author(s): Applied Medicinal Chemistry Institute, University of Turin, Italy.
  Source: Cattel, L Delprino, L Brusa, P Dosio, F Comoglio, P M Prat, M Cancer-Immunol-Immunother. 1988; 27(3): 233-40 0340-7004
- **Consumption of alcohol, coffee, and tobacco, and gastric cancer in Spain.**
  Author(s): Unit of Epidemiology, Hospital de Mataro, Spain.
  Source: Agudo, A Gonzalez, C A Marcos, G Sanz, M Saigi, E Verge, J Boleda, M Ortego, J Cancer-Causes-Control. 1992 Mar; 3(2): 137-43 0957-5243
- **Detection of methylation damage in DNA of gastric cancer tissues using 32P postlabelling assay.**
  Author(s): Department of Veterinary Pathology, College of Medicine, Seoul National University, Suwon, Korea. daeyong@plaza.snu.ac.kr
  Source: Kim, D Y Cho, M H Yang, H K Hemminki, K Kim, J P Jang, J J KuMarch, R Jpn-J-Cancer-Res. 1999 October; 90(10): 1104-8 0910-5050

- **Discrimination of mitotic cells using anti-p105 monoclonal antibody to analyze the mode of action of etoposide and podophyllotoxin in human gastric cancer cells.**
  Author(s): Department of Surgery II, School of Medicine, Kanazawa University.
  Source: Ohyama, S Yonemura, Y Tsugawa, K Miyazaki, I Tanaka, M Sasaki, T Jpn-J-Cancer-Res. 1991 November; 82(11): 1258-62 0910-5050
- **Docetaxel (Taxotere) in advanced gastric cancer: results of a phase II clinical trial. EORTC Early Clinical Trials Group.**
  Author(s): Institute of Oncology, Beilinson Medical Center, Petah Tiqva, Israel.
  Source: Sulkes, A Smyth, J Sessa, C Dirix, L Y Vermorken, J B Kaye, S Wanders, J Franklin, H LeBail, N Verweij, J Br-J-Cancer. 1994 August; 70(2): 380-3 0007-0920
- **Down-regulation of protein kinase C activity by sorbitol rapidly induces apoptosis in human gastric cancer cell lines.**
  Author(s): Department of Biosignaling, Faculty of Medicine, Tottori University, Yonago 683-8503, Japan. 1mizawa@grape.med.tottori-u.ac.jp
  Source: Izawa, M Teramachi, K Apoptosis. 2001 October; 6(5): 353-8 1360-8185
- **Efficacy of the association of folinic acid and 5-fluorouracil alone versus folinic acid and 5-fluorouracil plus 4-epidoxorubicin in the treatment of advanced gastric carcinoma.**
  Author(s): Department of Medicine, Oncology Institute, Bari, Italia.
  Source: Colucci, G Giotta, F Maiello, E Cifarelli, R A Leo, S Giuliani, F Pezzella, G Pedicini, A Valori, V Am-J-Clin-Oncol. 1995 December; 18(6): 519-24 0277-3732
- **Epidemiology of gastric cancer: an evaluation of available evidence.**
  Author(s): Epidemiology Unit, CSPO, Careggi Hospital, Florence, Italy.
  Source: Palli, D J-Gastroenterol. 2000; 35 Suppl 1284-9 0944-1174
- **Expression of peroxisome proliferator-activated receptor (PPAR)gamma in gastric cancer and inhibitory effects of PPARgamma agonists.**
  Author(s): Second Department of Internal Medicine, Shimane Medical University, Izumo, Shimane, Japan.
  Source: Sato, H Ishihara, S Kawashima, K Moriyama, N Suetsugu, H Kazumori, H Okuyama, T Rumi, M A Fukuda, R Nagasue, N Kinoshita, Y Br-J-Cancer. 2000 November; 83(10): 1394-400 0007-0920
- **Final results of a randomized phase III trial of sequential high-dose methotrexate, fluorouracil, and doxorubicin versus etoposide, leucovorin, and fluorouracil versus infusional fluorouracil and cisplatin in advanced gastric cancer: A trial of the European**

Organization for Research and Treatment of Cancer Gastrointestinal Tract Cancer Cooperative Group.
Author(s): Department of Internal Medicine (Cancer Research), West German Cancer Center, University of Essen Medical School, Essen, Germany.
Source: Vanhoefer, U Rougier, P Wilke, H Ducreux, M P Lacave, A J Van Cutsem, E Planker, M Santos, J G Piedbois, P Paillot, B Bodenstein, H Schmoll, H J Bleiberg, H Nordlinger, B Couvreur, M L Baron, B Wils, J A J-Clin-Oncol. 2000 July; 18(14): 2648-57 0732-183X

Federal Resources on Nutrition

In addition to the IBIDS, the United States Department of Health and Human Services (HHS) and the United States Department of Agriculture (USDA) provide many sources of information on general nutrition and health. Recommended resources include:

- healthfinder®, HHS's gateway to health information, including diet and nutrition: **http://www.healthfinder.gov/scripts/SearchContext.asp?topic=238&page=0**
- The United States Department of Agriculture's Web site dedicated to nutrition information: **www.nutrition.gov**
- The Food and Drug Administration's Web site for federal food safety information: **www.foodsafety.gov**
- The National Action Plan on Overweight and Obesity sponsored by the United States Surgeon General: **http://www.surgeongeneral.gov/topics/obesity/**
- The Center for Food Safety and Applied Nutrition has an Internet site sponsored by the Food and Drug Administration and the Department of Health and Human Services: **http://vm.cfsan.fda.gov/**
- Center for Nutrition Policy and Promotion sponsored by the United States Department of Agriculture: **http://www.usda.gov/cnpp/**
- Food and Nutrition Information Center, National Agricultural Library sponsored by the United States Department of Agriculture: **http://www.nal.usda.gov/fnic/**
- Food and Nutrition Service sponsored by the United States Department of Agriculture: **http://www.fns.usda.gov/fns/**

Additional Web Resources

A number of additional Web sites offer encyclopedic information covering food and nutrition. The following is a representative sample:

- AOL: **http://search.aol.com/cat.adp?id=174&layer=&from=subcats**
- Family Village: **http://www.familyvillage.wisc.edu/med_nutrition.html**
- Google: **http://directory.google.com/Top/Health/Nutrition/**
- Healthnotes: **http://www.thedacare.org/healthnotes/**
- Open Directory Project: **http://dmoz.org/Health/Nutrition/**
- Yahoo.com: **http://dir.yahoo.com/Health/Nutrition/**
- WebMD®Health: **http://my.webmd.com/nutrition**
- WholeHealthMD.com: **http://www.wholehealthmd.com/reflib/0,1529,,00.html**

The following is a specific Web list relating to gastric cancer; please note that any particular subject below may indicate either a therapeutic use, or a contraindication (potential danger), and does not reflect an official recommendation:

- **Vitamins**

  Vitamin C
  Source: Prima Communications, Inc.
  Hyperlink: http://www.personalhealthzone.com/pg000098.html

- **Minerals**

  Chromium
  Source: Integrative Medicine Communications; www.onemedicine.com
  Hyperlink: http://www.drkoop.com/interactivemedicine/ConsSupplements/Chromiumcs.html

Cisplatin
Source: Healthnotes, Inc.; www.healthnotes.com
Hyperlink:
http://www.thedacare.org/healthnotes/Drug/Cisplatin.htm

- **Food and Diet**

Garlic
Alternative names: Allium sativum
Source: Healthnotes, Inc.; www.healthnotes.com
Hyperlink: http://www.thedacare.org/healthnotes/Herb/Garlic.htm

Garlic
Alternative names: Allium sativum
Source: Integrative Medicine Communications;
www.onemedicine.com
Hyperlink:
http://www.drkoop.com/interactivemedicine/ConsHerbs/Garlicch.html

Low-Salt Diet
Source: Healthnotes, Inc.; www.healthnotes.com
Hyperlink:
http://www.thedacare.org/healthnotes/Diet/Low_Salt_Diet.htm

Vocabulary Builder

The following vocabulary builder defines words used in the references in this chapter that have not been defined in previous chapters:

Calcium: A mineral found in teeth, bones, and other body tissues. [NIH]

Capsules: Hard or soft soluble containers used for the oral administration of medicine. [NIH]

Cholesterol: The principal sterol of all higher animals, distributed in body tissues, especially the brain and spinal cord, and in animal fats and oils. [NIH]

Degenerative: Undergoing degeneration : tending to degenerate; having the character of or involving degeneration; causing or tending to cause degeneration. [EU]

Fetus: The developing offspring from 7 to 8 weeks after conception until birth. [NIH]

Hematology: A subspecialty of internal medicine concerned with

morphology, physiology, and pathology of the blood and blood-forming tissues. [NIH]

Immunotoxins: Semisynthetic conjugates of various toxic molecules, including radioactive isotopes and bacterial or plant toxins, with specific immune substances such as immunoglobulins, monoclonal antibodies, and antigens. The antitumor or antiviral immune substance carries the toxin to the tumor or infected cell where the toxin exerts its poisonous effect. [NIH]

Iodine: A nonmetallic element of the halogen group that is represented by the atomic symbol I, atomic number 53, and atomic weight of 126.90. It is a nutritionally essential element, especially important in thyroid hormone synthesis. In solution, it has anti-infective properties and is used topically. [NIH]

Neural: 1. pertaining to a nerve or to the nerves. 2. situated in the region of the spinal axis, as the neutral arch. [EU]

Niacin: Water-soluble vitamin of the B complex occurring in various animal and plant tissues. Required by the body for the formation of coenzymes NAD and NADP. Has pellagra-curative, vasodilating, and antilipemic properties. [NIH]

Overdose: 1. to administer an excessive dose. 2. an excessive dose. [EU]

Phosphorous: Having to do with or containing the element phosphorus. [NIH]

Potassium: A metallic element that is important in body functions such as regulation of blood pressure and of water content in cells, transmission of nerve impulses, digestion, muscle contraction, and heart beat. [NIH]

Retinol: Vitamin A. It is essential for proper vision and healthy skin and mucous membranes. Retinol is being studied for cancer prevention; it belongs to the family of drugs called retinoids. [NIH]

Riboflavin: Nutritional factor found in milk, eggs, malted barley, liver, kidney, heart, and leafy vegetables. The richest natural source is yeast. It occurs in the free form only in the retina of the eye, in whey, and in urine; its principal forms in tissues and cells are as FMN and FAD. [NIH]

Sorbitol: A polyhydric alcohol with about half the sweetness of sucrose. Sorbitol occurs naturally and is also produced synthetically from glucose. It was formerly used as a diuretic and may still be used as a laxative and in irrigating solutions for some surgical procedures. It is also used in many manufacturing processes, as a pharmaceutical aid, and in several research applications. [NIH]

Thermoregulation: Heat regulation. [EU]

Thyroxine: An amino acid of the thyroid gland which exerts a stimulating effect on thyroid metabolism. [NIH]

APPENDIX D. FINDING MEDICAL LIBRARIES

Overview

At a medical library you can find medical texts and reference books, consumer health publications, specialty newspapers and magazines, as well as medical journals. In this appendix, we show you how to quickly find a medical library in your area.

Preparation

Before going to the library, highlight the references mentioned in this sourcebook that you find interesting. Focus on those items that are not available via the Internet, and ask the reference librarian for help with your search. He or she may know of additional resources that could be helpful to you. Most importantly, your local public library and medical libraries have Interlibrary Loan programs with the National Library of Medicine (NLM), one of the largest medical collections in the world. According to the NLM, most of the literature in the general and historical collections of the National Library of Medicine is available on interlibrary loan to any library. NLM's interlibrary loan services are only available to libraries. If you would like to access NLM medical literature, then visit a library in your area that can request the publications for you.[120]

[120] Adapted from the NLM: **http://www.nlm.nih.gov/psd/cas/interlibrary.html**.

Finding a Local Medical Library

The quickest method to locate medical libraries is to use the Internet-based directory published by the National Network of Libraries of Medicine (NN/LM). This network includes 4626 members and affiliates that provide many services to librarians, health professionals, and the public. To find a library in your area, simply visit **http://nnlm.gov/members/adv.html** or call 1-800-338-7657.

Medical Libraries Open to the Public

In addition to the NN/LM, the National Library of Medicine (NLM) lists a number of libraries that are generally open to the public and have reference facilities. The following is the NLM's list plus hyperlinks to each library Web site. These Web pages can provide information on hours of operation and other restrictions. The list below is a small sample of libraries recommended by the National Library of Medicine (sorted alphabetically by name of the U.S. state or Canadian province where the library is located):[121]

- **Alabama:** Health InfoNet of Jefferson County (Jefferson County Library Cooperative, Lister Hill Library of the Health Sciences), **http://www.uab.edu/infonet/**
- **Alabama:** Richard M. Scrushy Library (American Sports Medicine Institute), **http://www.asmi.org/LIBRARY.HTM**
- **Arizona:** Samaritan Regional Medical Center: The Learning Center (Samaritan Health System, Phoenix, Arizona), **http://www.samaritan.edu/library/bannerlibs.htm**
- **California:** Kris Kelly Health Information Center (St. Joseph Health System), **http://www.humboldt1.com/~kkhic/index.html**
- **California:** Community Health Library of Los Gatos (Community Health Library of Los Gatos), **http://www.healthlib.org/orgresources.html**
- **California:** Consumer Health Program and Services (CHIPS) (County of Los Angeles Public Library, Los Angeles County Harbor-UCLA Medical Center Library) - Carson, CA, **http://www.colapublib.org/services/chips.html**
- **California:** Gateway Health Library (Sutter Gould Medical Foundation)
- **California:** Health Library (Stanford University Medical Center), **http://www-med.stanford.edu/healthlibrary/**

[121] Abstracted from **http://www.nlm.nih.gov/medlineplus/libraries.html**.

- **California:** Patient Education Resource Center - Health Information and Resources (University of California, San Francisco), **http://sfghdean.ucsf.edu/barnett/PERC/default.asp**
- **California:** Redwood Health Library (Petaluma Health Care District), **http://www.phcd.org/rdwdlib.html**
- **California:** San José PlaneTree Health Library, **http://planetreesanjose.org/**
- **California:** Sutter Resource Library (Sutter Hospitals Foundation), **http://go.sutterhealth.org/comm/resc-library/sac-resources.html**
- **California:** University of California, Davis. Health Sciences Libraries
- **California:** ValleyCare Health Library & Ryan Comer Cancer Resource Center (ValleyCare Health System), **http://www.valleycare.com/library.html**
- **California:** Washington Community Health Resource Library (Washington Community Health Resource Library), **http://www.healthlibrary.org/**
- **Colorado:** William V. Gervasini Memorial Library (Exempla Healthcare), **http://www.exempla.org/conslib.htm**
- **Connecticut:** Hartford Hospital Health Science Libraries (Hartford Hospital), **http://www.harthosp.org/library/**
- **Connecticut:** Healthnet: Connecticut Consumer Health Information Center (University of Connecticut Health Center, Lyman Maynard Stowe Library), **http://library.uchc.edu/departm/hnet/**
- **Connecticut:** Waterbury Hospital Health Center Library (Waterbury Hospital), **http://www.waterburyhospital.com/library/consumer.shtml**
- **Delaware:** Consumer Health Library (Christiana Care Health System, Eugene du Pont Preventive Medicine & Rehabilitation Institute), **http://www.christianacare.org/health_guide/health_guide_pmri_health_info.cfm**
- **Delaware:** Lewis B. Flinn Library (Delaware Academy of Medicine), **http://www.delamed.org/chls.html**
- **Georgia:** Family Resource Library (Medical College of Georgia), **http://cmc.mcg.edu/kids_families/fam_resources/fam_res_lib/frl.htm**
- **Georgia:** Health Resource Center (Medical Center of Central Georgia), **http://www.mccg.org/hrc/hrchome.asp**
- **Hawaii:** Hawaii Medical Library: Consumer Health Information Service (Hawaii Medical Library), **http://hml.org/CHIS/**

- **Idaho:** DeArmond Consumer Health Library (Kootenai Medical Center), **http://www.nicon.org/DeArmond/index.htm**
- **Illinois:** Health Learning Center of Northwestern Memorial Hospital (Northwestern Memorial Hospital, Health Learning Center), **http://www.nmh.org/health_info/hlc.html**
- **Illinois:** Medical Library (OSF Saint Francis Medical Center), **http://www.osfsaintfrancis.org/general/library/**
- **Kentucky:** Medical Library - Services for Patients, Families, Students & the Public (Central Baptist Hospital), **http://www.centralbap.com/education/community/library.htm**
- **Kentucky:** University of Kentucky - Health Information Library (University of Kentucky, Chandler Medical Center, Health Information Library), **http://www.mc.uky.edu/PatientEd/**
- **Louisiana:** Alton Ochsner Medical Foundation Library (Alton Ochsner Medical Foundation), **http://www.ochsner.org/library/**
- **Louisiana:** Louisiana State University Health Sciences Center Medical Library-Shreveport, **http://lib-sh.lsuhsc.edu/**
- **Maine:** Franklin Memorial Hospital Medical Library (Franklin Memorial Hospital), **http://www.fchn.org/fmh/lib.htm**
- **Maine:** Gerrish-True Health Sciences Library (Central Maine Medical Center), **http://www.cmmc.org/library/library.html**
- **Maine:** Hadley Parrot Health Science Library (Eastern Maine Healthcare), **http://www.emh.org/hll/hpl/guide.htm**
- **Maine:** Maine Medical Center Library (Maine Medical Center), **http://www.mmc.org/library/**
- **Maine:** Parkview Hospital, **http://www.parkviewhospital.org/communit.htm#Library**
- **Maine:** Southern Maine Medical Center Health Sciences Library (Southern Maine Medical Center), **http://www.smmc.org/services/service.php3?choice=10**
- **Maine:** Stephens Memorial Hospital Health Information Library (Western Maine Health), **http://www.wmhcc.com/hil_frame.html**
- **Manitoba, Canada:** Consumer & Patient Health Information Service (University of Manitoba Libraries), **http://www.umanitoba.ca/libraries/units/health/reference/chis.html**
- **Manitoba, Canada:** J.W. Crane Memorial Library (Deer Lodge Centre), **http://www.deerlodge.mb.ca/library/libraryservices.shtml**

- **Maryland:** Health Information Center at the Wheaton Regional Library (Montgomery County, Md., Dept. of Public Libraries, Wheaton Regional Library), **http://www.mont.lib.md.us/healthinfo/hic.asp**
- **Massachusetts:** Baystate Medical Center Library (Baystate Health System), **http://www.baystatehealth.com/1024/**
- **Massachusetts:** Boston University Medical Center Alumni Medical Library (Boston University Medical Center), **http://med-libwww.bu.edu/library/lib.html**
- **Massachusetts:** Lowell General Hospital Health Sciences Library (Lowell General Hospital), **http://www.lowellgeneral.org/library/HomePageLinks/WWW.htm**
- **Massachusetts:** Paul E. Woodard Health Sciences Library (New England Baptist Hospital), **http://www.nebh.org/health_lib.asp**
- **Massachusetts:** St. Luke's Hospital Health Sciences Library (St. Luke's Hospital), **http://www.southcoast.org/library/**
- **Massachusetts:** Treadwell Library Consumer Health Reference Center (Massachusetts General Hospital), **http://www.mgh.harvard.edu/library/chrcindex.html**
- **Massachusetts:** UMass HealthNet (University of Massachusetts Medical School), **http://healthnet.umassmed.edu/**
- **Michigan:** Botsford General Hospital Library - Consumer Health (Botsford General Hospital, Library & Internet Services), **http://www.botsfordlibrary.org/consumer.htm**
- **Michigan:** Helen DeRoy Medical Library (Providence Hospital and Medical Centers), **http://www.providence-hospital.org/library/**
- **Michigan:** Marquette General Hospital - Consumer Health Library (Marquette General Hospital, Health Information Center), **http://www.mgh.org/center.html**
- **Michigan:** Patient Education Resouce Center - University of Michigan Cancer Center (University of Michigan Comprehensive Cancer Center), **http://www.cancer.med.umich.edu/learn/leares.htm**
- **Michigan:** Sladen Library & Center for Health Information Resources - Consumer Health Information, **http://www.sladen.hfhs.org/library/consumer/index.html**
- **Montana:** Center for Health Information (St. Patrick Hospital and Health Sciences Center), **http://www.saintpatrick.org/chi/librarydetail.php3?ID=41**

- **National:** Consumer Health Library Directory (Medical Library Association, Consumer and Patient Health Information Section), **http://caphis.mlanet.org/directory/index.html**
- **National:** National Network of Libraries of Medicine (National Library of Medicine) - provides library services for health professionals in the United States who do not have access to a medical library, **http://nnlm.gov/**
- **National:** NN/LM List of Libraries Serving the Public (National Network of Libraries of Medicine), **http://nnlm.gov/members/**
- **Nevada:** Health Science Library, West Charleston Library (Las Vegas Clark County Library District), **http://www.lvccld.org/special_collections/medical/index.htm**
- **New Hampshire:** Dartmouth Biomedical Libraries (Dartmouth College Library), **http://www.dartmouth.edu/~biomed/resources.htmld/conshealth.htmld/**
- **New Jersey:** Consumer Health Library (Rahway Hospital), **http://www.rahwayhospital.com/library.htm**
- **New Jersey:** Dr. Walter Phillips Health Sciences Library (Englewood Hospital and Medical Center), **http://www.englewoodhospital.com/links/index.htm**
- **New Jersey:** Meland Foundation (Englewood Hospital and Medical Center), **http://www.geocities.com/ResearchTriangle/9360/**
- **New York:** Choices in Health Information (New York Public Library) - NLM Consumer Pilot Project participant, **http://www.nypl.org/branch/health/links.html**
- **New York:** Health Information Center (Upstate Medical University, State University of New York), **http://www.upstate.edu/library/hic/**
- **New York:** Health Sciences Library (Long Island Jewish Medical Center), **http://www.lij.edu/library/library.html**
- **New York:** ViaHealth Medical Library (Rochester General Hospital), **http://www.nyam.org/library/**
- **Ohio:** Consumer Health Library (Akron General Medical Center, Medical & Consumer Health Library), **http://www.akrongeneral.org/hwlibrary.htm**
- **Oklahoma:** Saint Francis Health System Patient/Family Resource Center (Saint Francis Health System), **http://www.sfh-tulsa.com/patientfamilycenter/default.asp**

- **Oregon:** Planetree Health Resource Center (Mid-Columbia Medical Center), **http://www.mcmc.net/phrc/**
- **Pennsylvania:** Community Health Information Library (Milton S. Hershey Medical Center), **http://www.hmc.psu.edu/commhealth/**
- **Pennsylvania:** Community Health Resource Library (Geisinger Medical Center), **http://www.geisinger.edu/education/commlib.shtml**
- **Pennsylvania:** HealthInfo Library (Moses Taylor Hospital), **http://www.mth.org/healthwellness.html**
- **Pennsylvania:** Hopwood Library (University of Pittsburgh, Health Sciences Library System), **http://www.hsls.pitt.edu/chi/hhrcinfo.html**
- **Pennsylvania:** Koop Community Health Information Center (College of Physicians of Philadelphia), **http://www.collphyphil.org/kooppg1.shtml**
- **Pennsylvania:** Learning Resources Center - Medical Library (Susquehanna Health System), **http://www.shscares.org/services/lrc/index.asp**
- **Pennsylvania:** Medical Library (UPMC Health System), **http://www.upmc.edu/passavant/library.htm**
- **Quebec, Canada:** Medical Library (Montreal General Hospital), **http://ww2.mcgill.ca/mghlib/**
- **South Dakota:** Rapid City Regional Hospital - Health Information Center (Rapid City Regional Hospital, Health Information Center), **http://www.rcrh.org/education/LibraryResourcesConsumers.htm**
- **Texas:** Houston HealthWays (Houston Academy of Medicine-Texas Medical Center Library), **http://hhw.library.tmc.edu/**
- **Texas:** Matustik Family Resource Center (Cook Children's Health Care System), **http://www.cookchildrens.com/Matustik_Library.html**
- **Washington:** Community Health Library (Kittitas Valley Community Hospital), **http://www.kvch.com/**
- **Washington:** Southwest Washington Medical Center Library (Southwest Washington Medical Center), **http://www.swmedctr.com/Home/**

APPENDIX E. YOUR RIGHTS AND INSURANCE

Overview

Any patient with gastric cancer faces a series of issues related more to the healthcare industry than to the medical condition itself. This appendix covers two important topics in this regard: your rights and responsibilities as a patient, and how to get the most out of your medical insurance plan.

Your Rights as a Patient

The President's Advisory Commission on Consumer Protection and Quality in the Healthcare Industry has created the following summary of your rights as a patient.[122]

Information Disclosure

Consumers have the right to receive accurate, easily understood information. Some consumers require assistance in making informed decisions about health plans, health professionals, and healthcare facilities. Such information includes:

- ***Health plans.*** Covered benefits, cost-sharing, and procedures for resolving complaints, licensure, certification, and accreditation status, comparable measures of quality and consumer satisfaction, provider network composition, the procedures that govern access to specialists and emergency services, and care management information.

[122]Adapted from Consumer Bill of Rights and Responsibilities: **http://www.hcqualitycommission.gov/press/cbor.html#head1**.

- ***Health professionals.*** Education, board certification, and recertification, years of practice, experience performing certain procedures, and comparable measures of quality and consumer satisfaction.
- ***Healthcare facilities.*** Experience in performing certain procedures and services, accreditation status, comparable measures of quality, worker, and consumer satisfaction, and procedures for resolving complaints.
- ***Consumer assistance programs.*** Programs must be carefully structured to promote consumer confidence and to work cooperatively with health plans, providers, payers, and regulators. Desirable characteristics of such programs are sponsorship that ensures accountability to the interests of consumers and stable, adequate funding.

Choice of Providers and Plans

Consumers have the right to a choice of healthcare providers that is sufficient to ensure access to appropriate high-quality healthcare. To ensure such choice, the Commission recommends the following:

- ***Provider network adequacy.*** All health plan networks should provide access to sufficient numbers and types of providers to assure that all covered services will be accessible without unreasonable delay -- including access to emergency services 24 hours a day and 7 days a week. If a health plan has an insufficient number or type of providers to provide a covered benefit with the appropriate degree of specialization, the plan should ensure that the consumer obtains the benefit outside the network at no greater cost than if the benefit were obtained from participating providers.
- ***Women's health services.*** Women should be able to choose a qualified provider offered by a plan -- such as gynecologists, certified nurse midwives, and other qualified healthcare providers -- for the provision of covered care necessary to provide routine and preventative women's healthcare services.
- ***Access to specialists.*** Consumers with complex or serious medical conditions who require frequent specialty care should have direct access to a qualified specialist of their choice within a plan's network of providers. Authorizations, when required, should be for an adequate number of direct access visits under an approved treatment plan.
- ***Transitional care.*** Consumers who are undergoing a course of treatment for a chronic or disabling condition (or who are in the second or third trimester of a pregnancy) at the time they involuntarily change health

plans or at a time when a provider is terminated by a plan for other than cause should be able to continue seeing their current specialty providers for up to 90 days (or through completion of postpartum care) to allow for transition of care.

- ***Choice of health plans.*** Public and private group purchasers should, wherever feasible, offer consumers a choice of high-quality health insurance plans.

Access to Emergency Services

Consumers have the right to access emergency healthcare services when and where the need arises. Health plans should provide payment when a consumer presents to an emergency department with acute symptoms of sufficient severity--including severe pain--such that a "prudent layperson" could reasonably expect the absence of medical attention to result in placing that consumer's health in serious jeopardy, serious impairment to bodily functions, or serious dysfunction of any bodily organ or part.

Participation in Treatment Decisions

Consumers have the right and responsibility to fully participate in all decisions related to their healthcare. Consumers who are unable to fully participate in treatment decisions have the right to be represented by parents, guardians, family members, or other conservators. Physicians and other health professionals should:

- Provide patients with sufficient information and opportunity to decide among treatment options consistent with the informed consent process.
- Discuss all treatment options with a patient in a culturally competent manner, including the option of no treatment at all.
- Ensure that persons with disabilities have effective communications with members of the health system in making such decisions.
- Discuss all current treatments a consumer may be undergoing.
- Discuss all risks, benefits, and consequences to treatment or nontreatment.
- Give patients the opportunity to refuse treatment and to express preferences about future treatment decisions.

- Discuss the use of advance directives -- both living wills and durable powers of attorney for healthcare -- with patients and their designated family members.
- Abide by the decisions made by their patients and/or their designated representatives consistent with the informed consent process.

Health plans, health providers, and healthcare facilities should:

- Disclose to consumers factors -- such as methods of compensation, ownership of or interest in healthcare facilities, or matters of conscience -- that could influence advice or treatment decisions.
- Assure that provider contracts do not contain any so-called "gag clauses" or other contractual mechanisms that restrict healthcare providers' ability to communicate with and advise patients about medically necessary treatment options.
- Be prohibited from penalizing or seeking retribution against healthcare professionals or other health workers for advocating on behalf of their patients.

Respect and Nondiscrimination

Consumers have the right to considerate, respectful care from all members of the healthcare industry at all times and under all circumstances. An environment of mutual respect is essential to maintain a quality healthcare system. To assure that right, the Commission recommends the following:

- Consumers must not be discriminated against in the delivery of healthcare services consistent with the benefits covered in their policy, or as required by law, based on race, ethnicity, national origin, religion, sex, age, mental or physical disability, sexual orientation, genetic information, or source of payment.
- Consumers eligible for coverage under the terms and conditions of a health plan or program, or as required by law, must not be discriminated against in marketing and enrollment practices based on race, ethnicity, national origin, religion, sex, age, mental or physical disability, sexual orientation, genetic information, or source of payment.

Confidentiality of Health Information

Consumers have the right to communicate with healthcare providers in confidence and to have the confidentiality of their individually identifiable

healthcare information protected. Consumers also have the right to review and copy their own medical records and request amendments to their records.

Complaints and Appeals

Consumers have the right to a fair and efficient process for resolving differences with their health plans, healthcare providers, and the institutions that serve them, including a rigorous system of internal review and an independent system of external review. A free copy of the Patient's Bill of Rights is available from the American Hospital Association.[123]

Patient Responsibilities

Treatment is a two-way street between you and your healthcare providers. To underscore the importance of finance in modern healthcare as well as your responsibility for the financial aspects of your care, the President's Advisory Commission on Consumer Protection and Quality in the Healthcare Industry has proposed that patients understand the following "Consumer Responsibilities."[124] In a healthcare system that protects consumers' rights, it is reasonable to expect and encourage consumers to assume certain responsibilities. Greater individual involvement by the consumer in his or her care increases the likelihood of achieving the best outcome and helps support a quality-oriented, cost-conscious environment. Such responsibilities include:

- Take responsibility for maximizing healthy habits such as exercising, not smoking, and eating a healthy diet.
- Work collaboratively with healthcare providers in developing and carrying out agreed-upon treatment plans.
- Disclose relevant information and clearly communicate wants and needs.
- Use your health insurance plan's internal complaint and appeal processes to address your concerns.
- Avoid knowingly spreading disease.

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[123] To order your free copy of the Patient's Bill of Rights, telephone 312-422-3000 or visit the American Hospital Association's Web site: **http://www.aha.org**. Click on "Resource Center," go to "Search" at bottom of page, and then type in "Patient's Bill of Rights." The Patient's Bill of Rights is also available from Fax on Demand, at 312-422-2020, document number 471124.

[124] Adapted from **http://www.hcqualitycommission.gov/press/cbor.html#head1**.

- Recognize the reality of risks, the limits of the medical science, and the human fallibility of the healthcare professional.
- Be aware of a healthcare provider's obligation to be reasonably efficient and equitable in providing care to other patients and the community.
- Become knowledgeable about your health plan's coverage and options (when available) including all covered benefits, limitations, and exclusions, rules regarding use of network providers, coverage and referral rules, appropriate processes to secure additional information, and the process to appeal coverage decisions.
- Show respect for other patients and health workers.
- Make a good-faith effort to meet financial obligations.
- Abide by administrative and operational procedures of health plans, healthcare providers, and Government health benefit programs.

Choosing an Insurance Plan

There are a number of official government agencies that help consumers understand their healthcare insurance choices.[125] The U.S. Department of Labor, in particular, recommends ten ways to make your health benefits choices work best for you.[126]

1. Your options are important. There are many different types of health benefit plans. Find out which one your employer offers, then check out the plan, or plans, offered. Your employer's human resource office, the health plan administrator, or your union can provide information to help you match your needs and preferences with the available plans. The more information you have, the better your healthcare decisions will be.

2. Reviewing the benefits available. Do the plans offered cover preventive care, well-baby care, vision or dental care? Are there deductibles? Answers to these questions can help determine the out-of-pocket expenses you may face. Matching your needs and those of your family members will result in the best possible benefits. Cheapest may not always be best. Your goal is high quality health benefits.

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[125] More information about quality across programs is provided at the following AHRQ Web site:
http://www.ahrq.gov/consumer/qntascii/qnthplan.htm.

[126] Adapted from the Department of Labor:
http://www.dol.gov/dol/pwba/public/pubs/health/top10-text.html.

3. Look for quality. The quality of healthcare services varies, but quality can be measured. You should consider the quality of healthcare in deciding among the healthcare plans or options available to you. Not all health plans, doctors, hospitals and other providers give the highest quality care. Fortunately, there is quality information you can use right now to help you compare your healthcare choices. Find out how you can measure quality. Consult the U.S. Department of Health and Human Services publication "Your Guide to Choosing Quality Health Care" on the Internet at **www.ahcpr.gov/consumer**.

4. Your plan's summary plan description (SPD) provides a wealth of information. Your health plan administrator can provide you with a copy of your plan's SPD. It outlines your benefits and your legal rights under the Employee Retirement Income Security Act (ERISA), the federal law that protects your health benefits. It should contain information about the coverage of dependents, what services will require a co-pay, and the circumstances under which your employer can change or terminate a health benefits plan. Save the SPD and all other health plan brochures and documents, along with memos or correspondence from your employer relating to health benefits.

5. Assess your benefit coverage as your family status changes. Marriage, divorce, childbirth or adoption, and the death of a spouse are all life events that may signal a need to change your health benefits. You, your spouse and dependent children may be eligible for a special enrollment period under provisions of the Health Insurance Portability and Accountability Act (HIPAA). Even without life-changing events, the information provided by your employer should tell you how you can change benefits or switch plans, if more than one plan is offered. If your spouse's employer also offers a health benefits package, consider coordinating both plans for maximum coverage.

6. Changing jobs and other life events can affect your health benefits. Under the Consolidated Omnibus Budget Reconciliation Act (COBRA), you, your covered spouse, and your dependent children may be eligible to purchase extended health coverage under your employer's plan if you lose your job, change employers, get divorced, or upon occurrence of certain other events. Coverage can range from 18 to 36 months depending on your situation. COBRA applies to most employers with 20 or more workers and requires your plan to notify you of your rights. Most plans require eligible individuals to make their COBRA election within 60 days of the plan's notice. Be sure to follow up with your plan sponsor if you don't receive notice, and make sure you respond within the allotted time.

7. HIPAA can also help if you are changing jobs, particularly if you have a medical condition. HIPAA generally limits pre-existing condition exclusions to a maximum of 12 months (18 months for late enrollees). HIPAA also requires this maximum period to be reduced by the length of time you had prior "creditable coverage." You should receive a certificate documenting your prior creditable coverage from your old plan when coverage ends.

8. Plan for retirement. Before you retire, find out what health benefits, if any, extend to you and your spouse during your retirement years. Consult with your employer's human resources office, your union, the plan administrator, and check your SPD. Make sure there is no conflicting information among these sources about the benefits you will receive or the circumstances under which they can change or be eliminated. With this information in hand, you can make other important choices, like finding out if you are eligible for Medicare and Medigap insurance coverage.

9. Know how to file an appeal if your health benefits claim is denied. Understand how your plan handles grievances and where to make appeals of the plan's decisions. Keep records and copies of correspondence. Check your health benefits package and your SPD to determine who is responsible for handling problems with benefit claims. Contact PWBA for customer service assistance if you are unable to obtain a response to your complaint.

10. You can take steps to improve the quality of the healthcare and the health benefits you receive. Look for and use things like Quality Reports and Accreditation Reports whenever you can. Quality reports may contain consumer ratings -- how satisfied consumers are with the doctors in their plan, for instance-- and clinical performance measures -- how well a healthcare organization prevents and treats illness. Accreditation reports provide information on how accredited organizations meet national standards, and often include clinical performance measures. Look for these quality measures whenever possible. Consult "Your Guide to Choosing Quality Health Care" on the Internet at **www.ahcpr.gov/consumer**.

Medicare and Medicaid

Illness strikes both rich and poor families. For low-income families, Medicaid is available to defer the costs of treatment. The Health Care Financing Administration (HCFA) administers Medicare, the nation's largest health insurance program, which covers 39 million Americans. In the following pages, you will learn the basics about Medicare insurance as well as useful

contact information on how to find more in-depth information about Medicaid.[127]

Who is Eligible for Medicare?

Generally, you are eligible for Medicare if you or your spouse worked for at least 10 years in Medicare-covered employment and you are 65 years old and a citizen or permanent resident of the United States. You might also qualify for coverage if you are under age 65 but have a disability or End-Stage Renal disease (permanent kidney failure requiring dialysis or transplant). Here are some simple guidelines:

You can get Part A at age 65 without having to pay premiums if:

- You are already receiving retirement benefits from Social Security or the Railroad Retirement Board.
- You are eligible to receive Social Security or Railroad benefits but have not yet filed for them.
- You or your spouse had Medicare-covered government employment.

If you are under 65, you can get Part A without having to pay premiums if:

- You have received Social Security or Railroad Retirement Board disability benefit for 24 months.
- You are a kidney dialysis or kidney transplant patient.

Medicare has two parts:

- Part A (Hospital Insurance). Most people do not have to pay for Part A.
- Part B (Medical Insurance). Most people pay monthly for Part B.

Part A (Hospital Insurance)

Helps Pay For: Inpatient hospital care, care in critical access hospitals (small facilities that give limited outpatient and inpatient services to people in rural areas) and skilled nursing facilities, hospice care, and some home healthcare.

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[127] This section has been adapted from the Official U.S. Site for Medicare Information: **http://www.medicare.gov/Basics/Overview.asp**.

Cost: Most people get Part A automatically when they turn age 65. You do not have to pay a monthly payment called a premium for Part A because you or a spouse paid Medicare taxes while you were working.

If you (or your spouse) did not pay Medicare taxes while you were working and you are age 65 or older, you still may be able to buy Part A. If you are not sure you have Part A, look on your red, white, and blue Medicare card. It will show "Hospital Part A" on the lower left corner of the card. You can also call the Social Security Administration toll free at 1-800-772-1213 or call your local Social Security office for more information about buying Part A. If you get benefits from the Railroad Retirement Board, call your local RRB office or 1-800-808-0772. For more information, call your Fiscal Intermediary about Part A bills and services. The phone number for the Fiscal Intermediary office in your area can be obtained from the following Web site: **http://www.medicare.gov/Contacts/home.asp**.

Part B (Medical Insurance)

Helps Pay For: Doctors, services, outpatient hospital care, and some other medical services that Part A does not cover, such as the services of physical and occupational therapists, and some home healthcare. Part B helps pay for covered services and supplies when they are medically necessary.

Cost: As of 2001, you pay the Medicare Part B premium of $50.00 per month. In some cases this amount may be higher if you did not choose Part B when you first became eligible at age 65. The cost of Part B may go up 10% for each 12-month period that you were eligible for Part B but declined coverage, except in special cases. You will have to pay the extra 10% cost for the rest of your life.

Enrolling in Part B is your choice. You can sign up for Part B anytime during a 7-month period that begins 3 months before you turn 65. Visit your local Social Security office, or call the Social Security Administration at 1-800-772-1213 to sign up. If you choose to enroll in Part B, the premium is usually taken out of your monthly Social Security, Railroad Retirement, or Civil Service Retirement payment. If you do not receive any of the above payments, Medicare sends you a bill for your part B premium every 3 months. You should receive your Medicare premium bill in the mail by the 10th of the month. If you do not, call the Social Security Administration at 1-800-772-1213, or your local Social Security office. If you get benefits from the Railroad Retirement Board, call your local RRB office or 1-800-808-0772. For more information, call your Medicare carrier about bills and services. The

phone number for the Medicare carrier in your area can be found at the following Web site: **http://www.medicare.gov/Contacts/home.asp**. You may have choices in how you get your healthcare including the Original Medicare Plan, Medicare Managed Care Plans (like HMOs), and Medicare Private Fee-for-Service Plans.

Medicaid

Medicaid is a joint federal and state program that helps pay medical costs for some people with low incomes and limited resources. Medicaid programs vary from state to state. People on Medicaid may also get coverage for nursing home care and outpatient prescription drugs which are not covered by Medicare. You can find more information about Medicaid on the HCFA.gov Web site at **http://www.hcfa.gov/medicaid/medicaid.htm**.

States also have programs that pay some or all of Medicare's premiums and may also pay Medicare deductibles and coinsurance for certain people who have Medicare and a low income. To qualify, you must have:

- Part A (Hospital Insurance),
- Assets, such as bank accounts, stocks, and bonds that are not more than $4,000 for a single person, or $6,000 for a couple, and
- A monthly income that is below certain limits.

For more information on these programs, look at the Medicare Savings Programs brochure, **http://www.medicare.gov/Library/PDFNavigation/PDFInterim.asp?Language=English&Type=Pub&PubID=10126**. There are also Prescription Drug Assistance Programs available. Find information on these programs which offer discounts or free medications to individuals in need at **http://www.medicare.gov/Prescription/Home.asp**.

Financial Assistance for Cancer Care[128]

Cancer imposes heavy economic burdens on both patients and their families. For many people, a portion of medical expenses is paid by their health insurance plan. For individuals who do not have health insurance or who need financial assistance to cover health care costs, resources are available,

[128] Adapted from the NCI: **http://cis.nci.nih.gov/fact/8_3.htm**.

including government-sponsored programs and services supported by voluntary organizations.

Cancer patients and their families should discuss any concerns they may have about health care costs with their physician, medical social worker, or the business office of their hospital or clinic.

The organizations and resources listed below may offer financial assistance. Organizations that provide publications in Spanish or have Spanish-speaking staff have been identified.

- The American Cancer Society (ACS) office can provide the telephone number of the local ACS office serving your area. The local ACS office may offer reimbursement for expenses related to cancer treatment including transportation, medicine, and medical supplies. The ACS also offers programs that help cancer patients, family members, and friends cope with the emotional challenges they face. Some publications are available in Spanish. Spanish-speaking staff are available. Telephone: 1–800–ACS–2345 (1–800–227–2345). Web site: **http://www.cancer.org**
- The *AVONCares* Program for Medically Underserved Women provides financial assistance and relevant education and support to low income, under- and uninsured, underserved women throughout the country in need of diagnostic and/or related services (transportation, child care, and social support) for the treatment of breast, cervical, and ovarian cancers. Telephone: 1–800–813–HOPE (1–800–813–4673). Web site: **http://www.cancercare.org**.

Community voluntary agencies and service organizations such as the Salvation Army, Lutheran Social Services, Jewish Social Services, Catholic Charities, and the Lions Club may offer help. These organizations are listed in your local phone directory. Some churches and synagogues may provide financial help or services to their members.
Fundraising is another mechanism to consider. Some patients find that friends, family, and community members are willing to contribute financially if they are aware of a difficult situation. Contact your local library for information about how to organize fundraising efforts.

General assistance programs provide food, housing, prescription drugs, and other medical expenses for those who are not eligible for other programs. Funds are often limited. Information can be obtained by contacting your state or local Department of Social Services; this number is found in the local telephone directory.

Hill-Burton is a program through which hospitals receive construction funds from the Federal Government. Hospitals that receive Hill-Burton funds are required by law to provide some services to people who cannot afford to pay for their hospitalization. Information about which facilities are part of this program is available by calling the toll-free number or visiting the Web site shown below. A brochure about the program is available in Spanish. Telephone: 1–800–638–0742. Web site: **http://www.hrsa.gov/osp/dfcr/obtain/consfaq.htm**.

Income Tax Deductions

Medical costs that are not covered by insurance policies sometimes can be deducted from annual income before taxes. Examples of tax deductible expenses might include mileage for trips to and from medical appointments, out-of-pocket costs for treatment, prescription drugs or equipment, and the cost of meals during lengthy medical visits. The local Internal Revenue Service office, tax consultants, or certified public accountants can determine medical costs that are tax deductible. These telephone numbers are available in the local telephone directory. Web site: **http://www.irs.ustreas.gov**.

The Patient Advocate Foundation

The Patient Advocate Foundation (PAF) is a national nonprofit organization that provides education, legal counseling, and referrals to cancer patients and survivors concerning managed care, insurance, financial issues, job discrimination, and debt crisis matters. Telephone: 1–800–532–5274. **Web site: http://www.patientadvocate.org**.

Patient Assistance Programs are offered by some pharmaceutical manufacturers to help pay for medications. To learn whether a specific drug might be available at reduced cost through such a program, talk with a physician or a medical social worker.

Transportation

There are nonprofit organizations that arrange free or reduced cost air transportation for cancer patients going to or from cancer treatment centers. Financial need is not always a requirement. To find out about these programs, talk with a medical social worker. Ground transportation services

may be offered or mileage reimbursed through the local ACS or your state or local Department of Social Services.

Veterans Benefits

Eligible veterans and their dependents may receive cancer treatment at a Veterans Administration Medical Center. Treatment for service-connected conditions is provided, and treatment for other conditions may be available based on the veteran's financial need. Some publications are available in Spanish. Spanish-speaking staff are available in some offices. Telephone: 1–877–222–VETS. Web site: **http://www.va.gov/vbs/health**.

NORD's Medication Assistance Programs

Finally, the National Organization for Rare Disorders, Inc. (NORD) administers medication programs sponsored by humanitarian-minded pharmaceutical and biotechnology companies to help uninsured or under-insured individuals secure life-saving or life-sustaining drugs.[129] NORD programs ensure that certain vital drugs are available "to those individuals whose income is too high to qualify for Medicaid but too low to pay for their prescribed medications." The program has standards for fairness, equity, and unbiased eligibility. It currently covers some 14 programs for nine pharmaceutical companies. NORD also offers early access programs for investigational new drugs (IND) under the approved "Treatment INDs" programs of the Food and Drug Administration (FDA). In these programs, a limited number of individuals can receive investigational drugs that have yet to be approved by the FDA. These programs are generally designed for rare diseases or disorders. For more information, visit **www.rarediseases.org**.

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[129] Adapted from NORD: **http://www.rarediseases.org/cgi-bin/nord/progserv#patient?id=rPIzL9oD&mv_pc=30**.

Additional Resources

In addition to the references already listed in this chapter, you may need more information on health insurance, hospitals, or the healthcare system in general. The NIH has set up an excellent guidance Web site that addresses these and other issues. Topics include:[130]

- Health Insurance: **http://www.nlm.nih.gov/medlineplus/healthinsurance.html**
- Health Statistics: **http://www.nlm.nih.gov/medlineplus/healthstatistics.html**
- HMO and Managed Care: **http://www.nlm.nih.gov/medlineplus/managedcare.html**
- Hospice Care: **http://www.nlm.nih.gov/medlineplus/hospicecare.html**
- Medicaid: **http://www.nlm.nih.gov/medlineplus/medicaid.html**
- Medicare: **http://www.nlm.nih.gov/medlineplus/medicare.html**
- Nursing Homes and Long-term Care: **http://www.nlm.nih.gov/medlineplus/nursinghomes.html**
- Patient's Rights, Confidentiality, Informed Consent, Ombudsman Programs, Privacy and Patient Issues: **http://www.nlm.nih.gov/medlineplus/patientissues.html**
- Veteran's Health, Persian Gulf War, Gulf War Syndrome, Agent Orange: **http://www.nlm.nih.gov/medlineplus/veteranshealth.html**

Vocabulary Builder

Pallor: A clinical manifestation consisting of an unnatural paleness of the skin. [NIH]

[130] You can access this information at: **http://www.nlm.nih.gov/medlineplus/healthsystem.html**.

ONLINE GLOSSARIES

The Internet provides access to a number of free-to-use medical dictionaries and glossaries. The National Library of Medicine has compiled the following list of online dictionaries:

- ADAM Medical Encyclopedia (A.D.A.M., Inc.), comprehensive medical reference: **http://www.nlm.nih.gov/medlineplus/encyclopedia.html**
- MedicineNet.com Medical Dictionary (MedicineNet, Inc.): **http://www.medterms.com/Script/Main/hp.asp**
- Merriam-Webster Medical Dictionary (Inteli-Health, Inc.): **http://www.intelihealth.com/IH/**
- Multilingual Glossary of Technical and Popular Medical Terms in Eight European Languages (European Commission) - Danish, Dutch, English, French, German, Italian, Portuguese, and Spanish: **http://allserv.rug.ac.be/~rvdstich/eugloss/welcome.html**
- On-line Medical Dictionary (CancerWEB): **http://www.graylab.ac.uk/omd/**
- Technology Glossary (National Library of Medicine) - Health Care Technology: **http://www.nlm.nih.gov/nichsr/ta101/ta10108.htm**
- Terms and Definitions (Office of Rare Diseases): **http://rarediseases.info.nih.gov/ord/glossary_a-e.html**

Beyond these, MEDLINEplus contains a very user-friendly encyclopedia covering every aspect of medicine (licensed from A.D.A.M., Inc.). The ADAM Medical Encyclopedia Web site address is **http://www.nlm.nih.gov/medlineplus/encyclopedia.html**. ADAM is also available on commercial Web sites such as drkoop.com (**http://www.drkoop.com/**) and Web MD (**http://my.webmd.com/adam/asset/adam_disease_articles/a_to_z/a)**. Topics of interest can be researched by using keywords before continuing elsewhere, as these basic definitions and concepts will be useful in more advanced areas of research. You may choose to print various pages specifically relating to gastric cancer and keep them on file. The NIH, in particular, suggests that patients with gastric cancer visit the following Web sites in the ADAM Medical Encyclopedia:

- **Basic Guidelines for Gastric Cancer**

  Gastric cancer
  Web site:
  http://www.nlm.nih.gov/medlineplus/ency/article/000223.htm

  Helicobacter pylori
  Web site:
  http://www.nlm.nih.gov/medlineplus/ency/article/000229.htm

- **Signs & Symptoms for Gastric Cancer**

  Abdominal fullness prematurely after meals
  Web site:
  http://www.nlm.nih.gov/medlineplus/ency/article/003127.htm

  Abdominal mass
  Web site:
  http://www.nlm.nih.gov/medlineplus/ency/article/003274.htm

  Abdominal pain
  Web site:
  http://www.nlm.nih.gov/medlineplus/ency/article/003120.htm

  Anemia
  Web site:
  http://www.nlm.nih.gov/medlineplus/ency/article/000560.htm

  Belching
  Web site:
  http://www.nlm.nih.gov/medlineplus/ency/article/003080.htm

  Breath odor
  Web site:
  http://www.nlm.nih.gov/medlineplus/ency/article/003058.htm

  Difficulty swallowing
  Web site:
  http://www.nlm.nih.gov/medlineplus/ency/article/003115.htm

Heartburn
Web site:
http://www.nlm.nih.gov/medlineplus/ency/article/003114.htm

Nausea and vomiting
Web site:
http://www.nlm.nih.gov/medlineplus/ency/article/003117.htm

Pallor
Web site:
http://www.nlm.nih.gov/medlineplus/ency/article/003244.htm

Stress
Web site:
http://www.nlm.nih.gov/medlineplus/ency/article/003211.htm

Vomiting
Web site:
http://www.nlm.nih.gov/medlineplus/ency/article/003117.htm

Vomiting blood
Web site:
http://www.nlm.nih.gov/medlineplus/ency/article/003118.htm

Weight loss
Web site:
http://www.nlm.nih.gov/medlineplus/ency/article/003107.htm

- **Diagnostics and Tests for Gastric Cancer**

Abdominal CT scan
Web site:
http://www.nlm.nih.gov/medlineplus/ency/article/003789.htm

Biopsy
Web site:
http://www.nlm.nih.gov/medlineplus/ency/article/003416.htm

CBC
Web site:
http://www.nlm.nih.gov/medlineplus/ency/article/003642.htm

CT
Web site:
http://www.nlm.nih.gov/medlineplus/ency/article/003330.htm

EGD (esophagogastroduodenoscopy)
Web site:
http://www.nlm.nih.gov/medlineplus/ency/article/003888.htm

Endoscopy
Web site:
http://www.nlm.nih.gov/medlineplus/ency/article/003338.htm

Gastric acid
Web site:
http://www.nlm.nih.gov/medlineplus/ency/article/003883.htm

GI series
Web site:
http://www.nlm.nih.gov/medlineplus/ency/article/003816.htm

Upper GI series
Web site:
http://www.nlm.nih.gov/medlineplus/ency/article/003816.htm

- **Nutrition for Gastric Cancer**

Food additives
Web site:
http://www.nlm.nih.gov/medlineplus/ency/article/002435.htm

Vitamin C
Web site:
http://www.nlm.nih.gov/medlineplus/ency/article/002404.htm

- **Surgery and Procedures for Gastric Cancer**

Gastrectomy
Web site:
http://www.nlm.nih.gov/medlineplus/ency/article/002945.htm

- **Background Topics for Gastric Cancer**

  Cancer - support group
  Web site:
  http://www.nlm.nih.gov/medlineplus/ency/article/002166.htm

  Chemotherapy
  Web site:
  http://www.nlm.nih.gov/medlineplus/ency/article/002324.htm

  Chronic
  Web site:
  http://www.nlm.nih.gov/medlineplus/ency/article/002312.htm

  Gastrectomy
  Web site:
  http://www.nlm.nih.gov/medlineplus/ency/article/002945.htm

  Gastrointestinal disorders - support group
  Web site:
  http://www.nlm.nih.gov/medlineplus/ency/article/002178.htm

  Incidence
  Web site:
  http://www.nlm.nih.gov/medlineplus/ency/article/002387.htm

  Malignancy
  Web site:
  http://www.nlm.nih.gov/medlineplus/ency/article/002253.htm

  Radiation therapy
  Web site:
  http://www.nlm.nih.gov/medlineplus/ency/article/001918.htm

  Support group
  Web site:
  http://www.nlm.nih.gov/medlineplus/ency/article/002150.htm

Online Dictionary Directories

The following are additional online directories compiled by the National Library of Medicine, including a number of specialized medical dictionaries and glossaries:

- Medical Dictionaries: Medical & Biological (World Health Organization): **http://www.who.int/hlt/virtuallibrary/English/diction.htm#Medical**
- MEL-Michigan Electronic Library List of Online Health and Medical Dictionaries (Michigan Electronic Library): **http://mel.lib.mi.us/health/health-dictionaries.html**
- Patient Education: Glossaries (DMOZ Open Directory Project): **http://dmoz.org/Health/Education/Patient_Education/Glossaries/**
- Web of Online Dictionaries (Bucknell University): **http://www.yourdictionary.com/diction5.html#medicine**

GASTRIC CANCER GLOSSARY

The following is a complete glossary of terms used in this sourcebook. The definitions are derived from official public sources including the National Institutes of Health [NIH] and the European Union [EU]. After this glossary, we list a number of additional hardbound and electronic glossaries and dictionaries that you may wish to consult.

Abdomen: The part of the body that contains the pancreas, stomach, intestines, liver, gallbladder, and other organs. [NIH]

Abdominal: Having to do with the abdomen, which is the part of the body between the chest and the hips that contains the pancreas, stomach, intestines, liver, gallbladder, and other organs. [NIH]

Adenocarcinoma: Cancer that begins in cells that line certain internal organs and that have glandular (secretory) properties. [NIH]

Adenoma: A noncancerous tumor. [NIH]

Adjuvant: A substance which aids another, such as an auxiliary remedy; in immunology, nonspecific stimulator (e.g., BCG vaccine) of the immune response. [EU]

Aggressiveness: The quality of being aggressive (= characterized by aggression; militant; enterprising; spreading with vigour; chemically active; variable and adaptable). [EU]

Algorithms: A procedure consisting of a sequence of algebraic formulas and/or logical steps to calculate or determine a given task. [NIH]

Alimentary: Pertaining to food or nutritive material, or to the organs of digestion. [EU]

Aluminum: A metallic element that has the atomic number 13, atomic symbol Al, and atomic weight 26.98. [NIH]

Amoxicillin: An antibiotic drug used to treat infection. It belongs to the family of drugs called penicillins or penicillin derivatives. [NIH]

Anaplastic: A term used to describe cancer cells that divide rapidly and bear little or no resemblance to normal cells. [NIH]

Anastomosis: A procedure to connect healthy sections of tubular structures in the body after the diseased portion has been surgically removed. [NIH]

Anemia: A condition in which the number of red blood cells is below normal. [NIH]

Anesthesia: Loss of feeling or awareness. Local anesthetics cause loss of feeling in a part of the body. General anesthetics put the person to sleep. [NIH]

Angiogenesis: Blood vessel formation. Tumor angiogenesis is the growth of blood vessels from surrounding tissue to a solid tumor. This is caused by the release of chemicals by the tumor. [NIH]

Anorectal: Pertaining to the anus and rectum or to the junction region between the two. [EU]

Anorexia: An abnormal loss of the appetite for food. Anorexia can be caused by cancer, AIDS, a mental disorder (i.e., anorexia nervosa), or other diseases. [NIH]

Antecedent: Existing or occurring before in time or order often with consequential effects. [EU]

Antibacterial: A substance that destroys bacteria or suppresses their growth or reproduction. [EU]

Antibiotic: A drug used to treat infections caused by bacteria and other microorganisms. [NIH]

Antibody: A type of protein made by certain white blood cells in response to a foreign substance (antigen). Each antibody can bind to only a specific antigen. The purpose of this binding is to help destroy the antigen. Antibodies can work in several ways, depending on the nature of the antigen. Some antibodies destroy antigens directly. Others make it easier for white blood cells to destroy the antigen. [NIH]

Antiemetic: An agent that prevents or alleviates nausea and vomiting. Also antinauseant. [EU]

Antigens: Substances that cause the immune system to make a specific immune response. [NIH]

Antimicrobial: Killing microorganisms, or suppressing their multiplication or growth. [EU]

Antineoplastons: Substances isolated from normal human blood and urine being tested as a type of treatment for some tumors and AIDS. [NIH]

Antioxidant: A substance that prevents damage caused by free radicals. Free radicals are highly reactive chemicals that often contain oxygen. They are produced when molecules are split to give products that have unpaired electrons. This process is called oxidation. [NIH]

Anxiety: The unpleasant emotional state consisting of psychophysiological responses to anticipation of unreal or imagined danger, ostensibly resulting from unrecognized intrapsychic conflict. Physiological concomitants include increased heart rate, altered respiration rate, sweating, trembling, weakness, and fatigue; psychological concomitants include feelings of impending danger, powerlessness, apprehension, and tension. [EU]

Apoptosis: A normal series of events in a cell that leads to its death. [NIH]

Appendicitis: Acute inflammation of the vermiform appendix. [NIH]

Arteries: The vessels carrying blood away from the heart. [NIH]

Ascites: Abnormal buildup of fluid in the abdomen. [NIH]

Aspiration: Removal of fluid from a lump, often a cyst, with a needle and a syringe. [NIH]

Assay: Determination of the amount of a particular constituent of a mixture, or of the biological or pharmacological potency of a drug. [EU]

Astrocytoma: A tumor that begins in the brain or spinal cord in small, star-shaped cells called astrocytes. [NIH]

Asymptomatic: Having no signs or symptoms of disease. [NIH]

Atrophy: A wasting away; a diminution in the size of a cell, tissue, organ, or part. [EU]

Atypical: Irregular; not conformable to the type; in microbiology, applied specifically to strains of unusual type. [EU]

Bacteria: A large group of single-cell microorganisms. Some cause infections and disease in animals and humans. The singular of bacteria is bacterium. [NIH]

Barium: An element of the alkaline earth group of metals. It has an atomic symbol Ba, atomic number 56, and atomic weight 138. All of its acid-soluble salts are poisonous. [NIH]

Benign: Not cancerous; does not invade nearby tissue or spread to other parts of the body. [NIH]

Bereavement: Refers to the whole process of grieving and mourning and is associated with a deep sense of loss and sadness. [NIH]

Bile: A fluid made by the liver and stored in the gallbladder. Bile is excreted into the small intestine where it helps digest fat. [NIH]

Biliary: Having to do with the liver, bile ducts, and/or gallbladder. [NIH]

Biochemical: Relating to biochemistry; characterized by, produced by, or involving chemical reactions in living organisms. [EU]

Biopsy: The removal of cells or tissues for examination under a microscope. When only a sample of tissue is removed, the procedure is called an incisional biopsy or core biopsy. When an entire tumor or lesion is removed, the procedure is called an excisional biopsy. When a sample of tissue or fluid is removed with a needle, the procedure is called a needle biopsy or fine-needle aspiration. [NIH]

Bismuth: A metallic element that has the atomic symbol Bi, atomic number 83 and atomic weight 208.98. [NIH]

Bladder: The organ that stores urine. [NIH]

Bombesin: A tetradecapeptide originally obtained from the skins of toads

Bombina bombina and B. variegata. It is also an endogenous neurotransmitter in many animals including mammals. Bombesin affects vascular and other smooth muscle, gastric secretion, and renal circulation and function. [NIH]

Bowel: The long tube-shaped organ in the abdomen that completes the process of digestion. There is both a small and a large bowel. Also called the intestine. [NIH]

Bypass: A surgical procedure in which the doctor creates a new pathway for the flow of body fluids. [NIH]

Calcium: A mineral found in teeth, bones, and other body tissues. [NIH]

Candidiasis: Infection with a fungus of the genus Candida. It is usually a superficial infection of the moist cutaneous areas of the body, and is generally caused by C. albicans; it most commonly involves the skin (dermatocandidiasis), oral mucous membranes (thrush, def. 1), respiratory tract (bronchocandidiasis), and vagina (vaginitis). Rarely there is a systemic infection or endocarditis. Called also moniliasis, candidosis, oidiomycosis, and formerly blastodendriosis. [EU]

Capecitabine: An anticancer drug that belongs to the family of drugs called antimetabolites. [NIH]

Capsicum: A genus of Solanaceous shrubs that yield capsaicin. Several varieties have sweet or pungent edible fruits that are used as vegetables when fresh and spices when the pods are dried. [NIH]

Capsules: Hard or soft soluble containers used for the oral administration of medicine. [NIH]

Carbohydrate: An aldehyde or ketone derivative of a polyhydric alcohol, particularly of the pentahydric and hexahydric alcohols. They are so named because the hydrogen and oxygen are usually in the proportion to form water, (CH2O)n. The most important carbohydrates are the starches, sugars, celluloses, and gums. They are classified into mono-, di-, tri-, poly- and heterosaccharides. [EU]

Carboplatin: An anticancer drug that belongs to the family of drugs called platinum compounds. [NIH]

Carcinogenesis: The process by which normal cells are transformed into cancer cells. [NIH]

Carcinogenic: Producing carcinoma. [EU]

Cardia: That part of the stomach surrounded by the esophagogastric junction, characterized by the lack of acid-forming cells. [NIH]

Carotene: The general name for a group of pigments found in green, yellow, and leafy vegetables, and yellow fruits. The pigments are fat-soluble,

unsaturated aliphatic hydrocarbons functioning as provitamins and are converted to vitamin A through enzymatic processes in the intestinal wall. [NIH]

Carotenoids: Substance found in yellow and orange fruits and vegetables and in dark green, leafy vegetables. May reduce the risk of developing cancer. [NIH]

Catalase: An oxidoreductase that catalyzes the conversion of hydrogen peroxide to water and oxygen. It is present in many animal cells. A deficiency of this enzyme results in acatalasia. EC 1.11.1.6. [NIH]

CEA: Carcinoembryonic antigen. A substance that is sometimes found in an increased amount in the blood of people with certain cancers. [NIH]

Cell: The individual unit that makes up all of the tissues of the body. All living things are made up of one or more cells. [NIH]

Cervical: Relating to the neck, or to the neck of any organ or structure. Cervical lymph nodes are located in the neck; cervical cancer refers to cancer of the uterine cervix, which is the lower, narrow end (the "neck") of the uterus. [NIH]

Charities: Social welfare organizations with programs designed to assist individuals in times of need. [NIH]

Chemotherapy: Treatment with anticancer drugs. [NIH]

Cholesterol: The principal sterol of all higher animals, distributed in body tissues, especially the brain and spinal cord, and in animal fats and oils. [NIH]

Cholinergic: Resembling acetylcholine in pharmacological action; stimulated by or releasing acetylcholine or a related compound. [EU]

Choriocarcinoma: A rare cancer in women of child-bearing age in which cancer cells grow in the tissues that are formed in the uterus after conception. Also called gestational trophoblastic disease, gestational trophoblastic neoplasia, gestational trophoblastic tumor, or molar pregnancy. [NIH]

Chromosome: Part of a cell that contains genetic information. Except for sperm and eggs, all human cells contain 46 chromosomes. [NIH]

Chronic: A disease or condition that persists or progresses over a long period of time. [NIH]

Cirrhosis: A type of chronic, progressive liver disease. [NIH]

Cisplatin: An anticancer drug that belongs to the family of drugs called platinum compounds. [NIH]

Clarithromycin: An antibiotic drug used to treat infection. It belongs to the family of drugs called macrolides. [NIH]

Coagulation: 1. the process of clot formation. 2. in colloid chemistry, the

solidification of a sol into a gelatinous mass; an alteration of a disperse phase or of a dissolved solid which causes the separation of the system into a liquid phase and an insoluble mass called the clot or curd. Coagulation is usually irreversible. 3. in surgery, the disruption of tissue by physical means to form an amorphous residuum, as in electrocoagulation and photocoagulation. [EU]

Coenzyme: An organic nonprotein molecule, frequently a phosphorylated derivative of a water-soluble vitamin, that binds with the protein molecule (apoenzyme) to form the active enzyme (holoenzyme). [EU]

Colic: Paroxysms of pain. This condition usually occurs in the abdominal region but may occur in other body regions as well. [NIH]

Colitis: Inflammation of the colon. [NIH]

Collagen: A fibrous protein found in cartilage and other connective tissue. [NIH]

Colon: The long, coiled, tubelike organ that removes water from digested food. The remaining material, solid waste called stool, moves through the colon to the rectum and leaves the body through the anus. [NIH]

Colorectal: Having to do with the colon or the rectum. [NIH]

Constipation: Infrequent or difficult evacuation of the faeces. [EU]

Corpus: The body of the uterus. [NIH]

Curative: Tending to overcome disease and promote recovery. [EU]

Cutaneous: Having to do with the skin. [NIH]

Cytokines: A class of substances that are produced by cells of the immune system and can affect the immune response. Cytokines can also be produced in the laboratory by recombinant DNA technology and given to people to affect immune responses. [NIH]

Cytoprotection: The process by which chemical compounds provide protection to cells against harmful agents. [NIH]

Cytotoxic: Cell-killing. [NIH]

Degenerative: Undergoing degeneration : tending to degenerate; having the character of or involving degeneration; causing or tending to cause degeneration. [EU]

Detoxification: Treatment designed to free an addict from his drug habit. [EU]

Dexamethasone: A synthetic steroid (similar to steroid hormones produced naturally in the adrenal gland). Dexamethasone is used to treat leukemia and lymphoma and may be used to treat some of the problems caused by other cancers and their treatment. [NIH]

Diaphragm: The thin muscle below the lungs and heart that separates the chest from the abdomen. [NIH]

Diarrhea: Passage of excessively liquid or excessively frequent stools. [NIH]

Diffusion: The process of becoming diffused, or widely spread; the spontaneous movement of molecules or other particles in solution, owing to their random thermal motion, to reach a uniform concentration throughout the solvent, a process requiring no addition of energy to the system. [EU]

Distal: Remote; farther from any point of reference; opposed to proximal. In dentistry, used to designate a position on the dental arch farther from the median line of the jaw. [EU]

Diverticulitis: Inflammation of a diverticulum, especially inflammation related to colonic diverticula, which may undergo perforation with abscess formation. Sometimes called left-sided or L-sides appendicitis. [EU]

Diverticulosis: A condition marked by small sacs or pouches (diverticula) in the walls of an organ such as the stomach or colon. These sacs can become inflamed and cause a condition called diverticulitis, which may be a risk factor for certain types of cancer. [NIH]

Docetaxel: An anticancer drug that belongs to the family of drugs called mitotic inhibitors. [NIH]

Doxorubicin: An anticancer drug that belongs to the family of drugs called antitumor antibiotics. It is an anthracycline. [NIH]

Duodenum: The first part of the small intestine. [NIH]

Dyspepsia: Upset stomach. [NIH]

Dysphagia: Difficulty in swallowing. [EU]

Dysplasia: Cells that look abnormal under a microscope but are not cancer. [NIH]

Effusion: The escape of fluid into a part or tissue, as an exudation or a transudation. [EU]

Electrophoresis: An electrochemical process in which macromolecules or colloidal particles with a net electric charge migrate in a solution under the influence of an electric current. [NIH]

Empiric: Empirical; depending upon experience or observation alone, without using scientific method or theory. [EU]

Endemic: Present or usually prevalent in a population or geographical area at all times; said of a disease or agent. Called also endemial. [EU]

Endocrinologist: A doctor that specializes in diagnosing and treating hormone disorders. [NIH]

Endocrinology: A subspecialty of internal medicine concerned with the metabolism, physiology, and disorders of the endocrine system. [NIH]

Endometrial: Having to do with the endometrium (the layer of tissue that lines the uterus). [NIH]

Endoscopy: The use of a thin, lighted tube (called an endoscope) to examine the inside of the body. [NIH]

Enterocolitis: Inflammation involving both the small intestine and the colon; see also enteritis. [EU]

Enzyme: A protein that speeds up chemical reactions in the body. [NIH]

Epidemiological: Relating to, or involving epidemiology. [EU]

Epidermal: Pertaining to or resembling epidermis. Called also epidermic or epidermoid. [EU]

Epirubicin: An anticancer drug that belongs to the family of drugs called antitumor antibiotics. [NIH]

Epithelial: Refers to the cells that line the internal and external surfaces of the body. [NIH]

Epithelium: A thin layer of tissue that covers organs, glands, and other structures within the body. [NIH]

Erythrocytes: Cells that carry oxygen to all parts of the body. Also called red blood cells (RBCs). [NIH]

Erythropoietin: Produced in the adult kidney, a colony-stimulating factor that stimulates the production of red blood cells. [NIH]

Esophageal: Having to do with the esophagus, the muscular tube through which food passes from the throat to the stomach. [NIH]

Esophagectomy: An operation to remove a portion of the esophagus. [NIH]

Esophagitis: Inflammation of the esophagus (the tube that carries food from the mouth to the stomach). [NIH]

Esophagus: The muscular tube through which food passes from the throat to the stomach. [NIH]

Etoposide: An anticancer drug that is a podophyllotoxin derivative and belongs to the family of drugs called mitotic inhibitors. [NIH]

Fatigue: The state of weariness following a period of exertion, mental or physical, characterized by a decreased capacity for work and reduced efficiency to respond to stimuli. [NIH]

Fetus: The developing offspring from 7 to 8 weeks after conception until birth. [NIH]

Filgrastim: A colony-stimulating factor that stimulates the production of neutrophils (a type of white blood cell). It is a cytokine that belongs to the family of drugs called hematopoietic (blood-forming) agents. Also called granulocyte colony-stimulating factor (G-CSF). [NIH]

Fistula: An abnormal passage or communication, usually between two internal organs, or leading from an internal organ to the surface of the body;

frequently designated according to the organs or parts with which it communicates, as anovaginal, brochocutaneous, hepatopleural, pulmonoperitoneal, rectovaginal, urethrovaginal, and the like. Such passages are frequently created experimentally for the purpose of obtaining body secretions for physiologic study. [EU]

Flatulence: The presence of excessive amounts of air or gases in the stomach or intestine, leading to distention of the organs. [EU]

Floxuridine: An anticancer drug that belongs to the family of drugs called antimetabolites. [NIH]

Fluorescence: The property of emitting radiation while being irradiated. The radiation emitted is usually of longer wavelength than that incident or absorbed, e.g., a substance can be irradiated with invisible radiation and emit visible light. X-ray fluorescence is used in diagnosis. [NIH]

Fluorouracil: An anticancer drug that belongs to the family of drugs called antimetabolites. [NIH]

Fundus: The larger part of a hollow organ that is farthest away from the organ's opening. The bladder, gallbladder, stomach, uterus, eye, and cavity of the middle ear all have a fundus. [NIH]

Gastrectomy: An operation to remove all or part of the stomach. [NIH]

Gastric: Having to do with the stomach. [NIH]

Gastrinoma: A tumor that causes over-production of gastric acid. It usually occurs in the islet cells of the pancreas, but may also occur in the esophagus, stomach, spleen, or lymph nodes. [NIH]

Gastritis: Inflammation of the stomach. [EU]

Gastroduodenal: Pertaining to or communicating with the stomach and duodenum, as a gastroduodenal fistula. [EU]

Gastroenteritis: An acute inflammation of the lining of the stomach and intestines, characterized by anorexia, nausea, diarrhoea, abdominal pain, and weakness, which has various causes, including food poisoning due to infection with such organisms as Escherichia coli, Staphylococcus aureus, and Salmonella species; consumption of irritating food or drink; or psychological factors such as anger, stress, and fear. Called also enterogastritis. [EU]

Gastrointestinal: Refers to the stomach and intestines. [NIH]

Gastroscope: A thin, lighted tube used to view the inside of the stomach. [NIH]

Gastroscopy: An examination of the inside of the stomach using a thin, lighted tube (called a gastroscope) passed through the mouth and esophagus. [NIH]

Gastrostomy: Creation of an artificial external opening into the stomach for nutritional support or gastrointestinal compression. [NIH]

Gels: Colloids with a solid continuous phase and liquid as the dispersed phase; gels may be unstable when, due to temperature or other cause, the solid phase liquifies; the resulting colloid is called a sol. [NIH]

Gemcitabine: An anticancer drug that belongs to the family of drugs called antimetabolites. [NIH]

Ginseng: An herb with a root that has been used in some cultures to treat certain medical problems. It may have anticancer effects. [NIH]

Gland: An organ that produces and releases one or more substances for use in the body. Some glands produce fluids that affect tissues or organs. Others produce hormones or participate in blood production. [NIH]

Gluten: The protein of wheat and other grains which gives to the dough its tough elastic character. [EU]

Glycine: A non-essential amino acid. It is found primarily in gelatin and silk fibroin and used therapeutically as a nutrient. It is also a fast inhibitory neurotransmitter. [NIH]

Glycoprotein: A protein that has sugar molecules attached to it. [NIH]

Grade: The grade of a tumor depends on how abnormal the cancer cells look under a microscope and how quickly the tumor is likely to grow and spread. Grading systems are different for each type of cancer. [NIH]

Grading: A system for classifying cancer cells in terms of how abnormal they appear when examined under a microscope. The objective of a grading system is to provide information about the probable growth rate of the tumor and its tendency to spread. The systems used to grade tumors vary with each type of cancer. Grading plays a role in treatment decisions. [NIH]

Granulocyte: A type of white blood cell that fights bacterial infection. Neutrophils, eosinophils, and basophils are granulocytes. [NIH]

Gynecology: A medical-surgical specialty concerned with the physiology and disorders primarily of the female genital tract, as well as female endocrinology and reproductive physiology. [NIH]

Habitual: Of the nature of a habit; according to habit; established by or repeated by force of habit, customary. [EU]

Heartburn: Substernal pain or burning sensation, usually associated with regurgitation of gastric juice into the esophagus. [NIH]

Helicobacter: A genus of gram-negative, spiral-shaped bacteria that is pathogenic and has been isolated from the intestinal tract of mammals, including humans. [NIH]

Hematogenous: Originating in the blood or spread through the

bloodstream. [NIH]

Hematology: A subspecialty of internal medicine concerned with morphology, physiology, and pathology of the blood and blood-forming tissues. [NIH]

Hemorrhage: Bleeding or escape of blood from a vessel. [NIH]

Hemorrhoid: An enlarged or swollen blood vessel, usually located near the anus or the rectum. [NIH]

Heparin: A drug that helps prevent blood clots from forming. It belongs to the family of drugs called anticoagulants (blood thinners). [NIH]

Hepatic: Refers to the liver. [NIH]

Hepatitis: Inflammation of the liver. [NIH]

Hernia: (he protrusion of a loop or knuckle of an organ or tissue through an abnormal opening. [EU]

Herpes: Any inflammatory skin disease caused by a herpesvirus and characterized by the formation of clusters of small vesicles. When used alone, the term may refer to herpes simplex or to herpes zoster. [EU]

Histology: The study of tissues and cells under a microscope. [NIH]

Hybridization: The genetic process of crossbreeding to produce a hybrid. Hybrid nucleic acids can be formed by nucleic acid hybridization of DNA and RNA molecules. Protein hybridization allows for hybrid proteins to be formed from polypeptide chains. [NIH]

Hybridomas: Cells artificially created by fusion of activated lymphocytes with neoplastic cells. The resulting hybrid cells are cloned and produce pure or "monoclonal" antibodies or T-cell products, identical to those produced by the immunologically competent parent, and continually grow and divide as the neoplastic parent. [NIH]

Hyperplasia: An abnormal increase in the number of cells in an organ or tissue. [NIH]

Hypersecretion: Excessive secretion. [EU]

Hypertension: Abnormally high blood pressure. [NIH]

Hyperthermia: A type of treatment in which body tissue is exposed to high temperatures to damage and kill cancer cells or to make cancer cells more sensitive to the effects of radiation and certain anticancer drugs. [NIH]

Hypertrophy: Nutrition) the enlargement or overgrowth of an organ or part due to an increase in size of its constituent cells. [EU]

Immunization: The induction of immunity. [EU]

Immunoassay: Immunochemical assay or detection of a substance by serologic or immunologic methods. Usually the substance being studied

serves as antigen both in antibody production and in measurement of antibody by the test substance. [NIH]

Immunoconjugates: Combinations of diagnostic or therapeutic substances linked with specific immune substances such as immunoglobulins, monoclonal antibodies or antigens. Often the diagnostic or therapeutic substance is a radionuclide. These conjugates are useful tools for specific targeting of drugs and radioisotopes in the chemotherapy and radioimmunotherapy of certain cancers. [NIH]

Immunodiffusion: Technique involving the diffusion of antigen or antibody through a semisolid medium, usually agar or agarose gel, with the result being a precipitin reaction. [NIH]

Immunoglobulin: A protein that acts as an antibody. [NIH]

Immunohistochemistry: Histochemical localization of immunoreactive substances using labeled antibodies as reagents. [NIH]

Immunology: The study of the body's immune system. [NIH]

Immunotherapy: Treatment to stimulate or restore the ability of the immune system to fight infection and disease. Also used to lessen side effects that may be caused by some cancer treatments. Also called biological therapy or biological response modifier (BRM) therapy. [NIH]

Immunotoxin: An antibody linked to a toxic substance. Some immmunotoxins can bind to cancer cells and kill them. [NIH]

Incontinence: Inability to control the flow of urine from the bladder (urinary incontinence) or the escape of stool from the rectum (fecal incontinence). [NIH]

Indicative: That indicates; that points out more or less exactly; that reveals fairly clearly. [EU]

Induction: The act or process of inducing or causing to occur, especially the production of a specific morphogenetic effect in the developing embryo through the influence of evocators or organizers, or the production of anaesthesia or unconsciousness by use of appropriate agents. [EU]

Inflammation: A response of redness, swelling, pain, and a feeling of heat in certain areas which is meant to protect tissues affected by injury or disease. [NIH]

Infusion: A method of putting fluids, including drugs, into the bloodstream. Also called intravenous infusion. [NIH]

Ingestion: Taking into the body by mouth [NIH]

Inguinal: Pertaining to the inguen, or groin. [EU]

Inoperable: Not suitable to be operated upon. [EU]

Insulin: A hormone made by the islet cells of the pancreas. Insulin controls

the amount of sugar in the blood by moving it into the cells, where it can be used by the body for energy. [NIH]

Interferon: A biological response modifier (a substance that can improve the body's natural response to disease). Interferons interfere with the division of cancer cells and can slow tumor growth. There are several types of interferons, including interferon-alpha, -beta, and -gamma. These substances are normally produced by the body. They are also made in the laboratory for use in treating cancer and other diseases. [NIH]

Intestine: A long, tube-shaped organ in the abdomen that completes the process of digestion. There is both a large intestine and a small intestine. Also called the bowel. [NIH]

Intracellular: Inside a cell. [NIH]

Intraepithelial: Within the layer of cells that form the surface or lining of an organ. [NIH]

Intraperitoneal: IP. Within the peritoneal cavity (the area that contains the abdominal organs). [NIH]

Intravascular: Within a vessel or vessels. [EU]

Intravenous: IV. Into a vein. [NIH]

Invasive: 1. having the quality of invasiveness. 2. involving puncture or incision of the skin or insertion of an instrument or foreign material into the body; said of diagnostic techniques. [EU]

Iodine: A nonmetallic element of the halogen group that is represented by the atomic symbol I, atomic number 53, and atomic weight of 126.90. It is a nutritionally essential element, especially important in thyroid hormone synthesis. In solution, it has anti-infective properties and is used topically. [NIH]

Irinotecan: An anticancer drug that belongs to a family of anticancer drugs called topoisomerase inhibitors. It is a camptothecin analogue. Also called CPT 11. [NIH]

Laparoscopy: The insertion of a thin, lighted tube (called a laparoscope) through the abdominal wall to inspect the inside of the abdomen and remove tissue samples. [NIH]

Laparotomy: A surgical incision made in the wall of the abdomen. [NIH]

Lesion: An area of abnormal tissue change. [NIH]

Lethal: Deadly, fatal. [EU]

Leucovorin: A drug used to protect normal cells from high doses of the anticancer drug methotrexate. It is also used to increase the antitumor effects of fluorouracil and tegafur-uracil, an oral treatment alternative to intravenous fluorouracil. [NIH]

Leukemia: Cancer of blood-forming tissue. [NIH]

Leukocytes: Cells that help the body fight infections and other diseases. Also called white blood cells (WBCs). [NIH]

Ligament: A band of fibrous tissue that connects bones or cartilages, serving to support and strengthen joints. [EU]

Lipoprotein: Any of the lipid-protein complexes in which lipids are transported in the blood; lipoprotein particles consist of a spherical hydrophobic core of triglycerides or cholesterol esters surrounded by an amphipathic monolayer of phospholipids, cholesterol, and apolipoproteins; the four principal classes are high-density, low-density, and very-low-density lipoproteins and chylomicrons. [EU]

Liposomal: A drug preparation that contains the active drug in very tiny fat particles. This fat-encapsulated drug is absorbed better, and its distribution to the tumor site is improved. [NIH]

Liver: A large, glandular organ located in the upper abdomen. The liver cleanses the blood and aids in digestion by secreting bile. [NIH]

Luminol: 5-Amino-2,3-dihydro-1,4-phthalazinedione. Substance that emits light on oxidation. It is used in chemical determinations. [NIH]

Lycopene: A red pigment found in tomatoes and some fruits. [NIH]

Lymph: The almost colorless fluid that travels through the lymphatic system and carries cells that help fight infection and disease. [NIH]

Lymphadenectomy: A surgical procedure in which the lymph nodes are removed and examined to see whether they contain cancer. Also called lymph node dissection. [NIH]

Lymphocyte: A white blood cell. Lymphocytes have a number of roles in the immune system, including the production of antibodies and other substances that fight infection and diseases. [NIH]

Lymphoma: Cancer that arises in cells of the lymphatic system. [NIH]

Macrophage: A type of white blood cell that surrounds and kills microorganisms, removes dead cells, and stimulates the action of other immune system cells. [NIH]

Malabsorption: Impaired intestinal absorption of nutrients. [EU]

Malignancy: A cancerous tumor that can invade and destroy nearby tissue and spread to other parts of the body. [NIH]

Malignant: Cancerous; a growth with a tendency to invade and destroy nearby tissue and spread to other parts of the body. [NIH]

Mammogram: An x-ray of the breast. [NIH]

Mammography: The use of x-rays to create a picture of the breast. [NIH]

Mediator: An object or substance by which something is mediated, such as (1) a structure of the nervous system that transmits impulses eliciting a specific response; (2) a chemical substance (transmitter substance) that induces activity in an excitable tissue, such as nerve or muscle; or (3) a substance released from cells as the result of the interaction of antigen with antibody or by the action of antigen with a sensitized lymphocyte. [EU]

Melanoma: A form of skin cancer that arises in melanocytes, the cells that produce pigment. Melanoma usually begins in a mole. [NIH]

Membrane: A very thin layer of tissue that covers a surface. [NIH]

Mentors: Senior professionals who provide guidance, direction and support to those persons desirous of improvement in academic positions, administrative positions or other career development situations. [NIH]

Mesenchymal: Refers to cells that develop into connective tissue, blood vessels, and lymphatic tissue. [NIH]

Mesenteric: Pertaining to the mesentery : a membranous fold attaching various organs to the body wall. [EU]

Metaplasia: A change of cells to a form that does not normally occur in the tissue in which it is found. [NIH]

Metastasis: The spread of cancer from one part of the body to another. Tumors formed from cells that have spread are called "secondary tumors" and contain cells that are like those in the original (primary) tumor. The plural is metastases. [NIH]

Metastatic: Having to do with metastasis, which is the spread of cancer from one part of the body to another. [NIH]

Methotrexate: An anticancer drug that belongs to the family of drugs called antimetabolites. [NIH]

Metronidazole: A drug used to treat bacterial, fungal, and parasitic infections. It is also being studied in the treatment of some cancers. [NIH]

Microbiology: The study of microorganisms such as fungi, bacteria, algae, archaea, and viruses. [NIH]

Microorganism: An organism that can be seen only through a microscope. Microorganisms include bacteria, protozoa, algae, and fungi. Although viruses are not considered living organisms, they are sometimes classified as microorganisms. [NIH]

Microscopy: The application of microscope magnification to the study of materials that cannot be properly seen by the unaided eye. [NIH]

Milligram: A measure of weight. A milligram is approximately 450,000-times smaller than a pound and 28,000-times smaller than an ounce. [NIH]

Mitochondria: Parts of a cell where aerobic production (also known as cell

respiration) takes place. [NIH]

Mitomycin: An anticancer drug that belongs to the family of drugs called antitumor antibiotics. [NIH]

Molecular: Of, pertaining to, or composed of molecules : a very small mass of matter. [EU]

Molecule: A chemical made up of two or more atoms. The atoms in a molecule can be the same (an oxygen molecule has two oxygen atoms) or different (a water molecule has two hydrogen atoms and one oxygen atom). Biological molecules, such as proteins and DNA, can be made up of many thousands of atoms. [NIH]

Motility: The ability to move spontaneously. [EU]

Mucinous: Containing or resembling mucin, the main compound in mucus. [NIH]

Mucosa: A mucous membrane, or tunica mucosa. [EU]

Mucus: A thick, slippery fluid produced by the membranes that line certain organs of the body, including the nose, mouth, throat, and vagina. [NIH]

Mutagenesis: Process of generating genetic mutations. It may occur spontaneously or be induced by mutagens. [NIH]

Myeloma: Cancer that arises in plasma cells, a type of white blood cell. [NIH]

Nausea: An unpleasant sensation, vaguely referred to the epigastrium and abdomen, and often culminating in vomiting. [EU]

Necrosis: Refers to the death of living tissues. [NIH]

Neoplasia: Abnormal and uncontrolled cell growth. [NIH]

Neoplasm: A new growth of benign or malignant tissue. [NIH]

Neural: 1. pertaining to a nerve or to the nerves. 2. situated in the region of the spinal axis, as the neutral arch. [EU]

Neurotransmitter: Any of a group of substances that are released on excitation from the axon terminal of a presynaptic neuron of the central or peripheral nervous system and travel across the synaptic cleft to either excite or inhibit the target cell. Among the many substances that have the properties of a neurotransmitter are acetylcholine, norepinephrine, epinephrine, dopamine, glycine, y-aminobutyrate, glutamic acid, substance P, enkephalins, endorphins, and serotonin. [EU]

Neutralization: An act or process of neutralizing. [EU]

Neutrophil: A type of white blood cell. [NIH]

Niacin: Water-soluble vitamin of the B complex occurring in various animal and plant tissues. Required by the body for the formation of coenzymes NAD and NADP. Has pellagra-curative, vasodilating, and antilipemic

properties. [NIH]

NSAIDs: Nonsteroidal anti-inflammatory drugs. A group of drugs that decrease fever, swelling, pain, and redness. [NIH]

Obstetrics: A medical-surgical specialty concerned with management and care of women during pregnancy, parturition, and the puerperium. [NIH]

Occult: Obscure; concealed from observation, difficult to understand. [EU]

Octreotide: A drug similar to the naturally occurring growth hormone inhibitor somatostatin. Octreotide is used to treat diarrhea and flushing associated with certain types of tumors. [NIH]

Omentum: A fold of the peritoneum (the thin tissue that lines the abdomen) that surrounds the stomach and other organs in the abdomen. [NIH]

Omeprazole: A drug that inhibits gastric acid secretion. [NIH]

Oncologist: A doctor who specializes in treating cancer. Some oncologists specialize in a particular type of cancer treatment. For example, a radiation oncologist specializes in treating cancer with radiation. [NIH]

Oncology: The study of cancer. [NIH]

Ondansetron: A drug that prevents or reduces nausea and vomiting. [NIH]

Oophorectomy: Surgery to remove one or both ovaries. [NIH]

Oral: By or having to do with the mouth. [NIH]

Ovary: Either of the paired glands in the female that produce the female germ cells and secrete some of the female sex hormones. [NIH]

Overdose: 1. to administer an excessive dose. 2. an excessive dose. [EU]

Oxaliplatin: An anticancer drug that belongs to the family of drugs called platinum compounds. [NIH]

Paclitaxel: An anticancer drug that belongs to the family of drugs called mitotic inhibitors. [NIH]

Palate: The roof of the mouth. The front portion is bony (hard palate), and the back portion is muscular (soft palate). [NIH]

Palliative: 1. affording relief, but not cure. 2. an alleviating medicine. [EU]

Pallor: A clinical manifestation consisting of an unnatural paleness of the skin. [NIH]

Pancreas: A glandular organ located in the abdomen. It makes pancreatic juices, which contain enzymes that aid in digestion, and it produces several hormones, including insulin. The pancreas is surrounded by the stomach, intestines, and other organs. [NIH]

Pancreatic: Having to do with the pancreas. [NIH]

Pancreatitis: Acute or chronic inflammation of the pancreas, which may be

asymptomatic or symptomatic, and which is due to autodigestion of a pancreatic tissue by its own enzymes. It is caused most often by alcoholism or biliary tract disease; less commonly it may be associated with hyperlipaemia, hyperparathyroidism, abdominal trauma (accidental or operative injury), vasculitis, or uraemia. [EU]

Pap test: The collection of cells from the cervix for examination under a microscope. It is used to detect changes that may be cancer or may lead to cancer, and can show noncancerous conditions, such as infection or inflammation. Also called a Pap smear. [NIH]

Papillary: Pertaining to or resembling papilla, or nipple. [EU]

Paradoxical: Occurring at variance with the normal rule. [EU]

Paraffin: A mixture of solid hydrocarbons obtained from petroleum. It has a wide range of uses including as a stiffening agent in ointments, as a lubricant, and as a topical anti-inflammatory. It is also commonly used as an embedding material in histology. [NIH]

Parasitic: Having to do with or being a parasite. A parasite is an animal or a plant that lives on or in an organism of another species and gets at least some of its nutrients from it. [NIH]

Parenteral: Not through the alimentary canal but rather by injection through some other route, as subcutaneous, intramuscular, intraorbital, intracapsular, intraspinal, intrasternal, intravenous, etc. [EU]

Parietal: 1. of or pertaining to the walls of a cavity. 2. pertaining to or located near the parietal bone, as the parietal lobe. [EU]

Peptic: Pertaining to pepsin or to digestion; related to the action of gastric juices. [EU]

Peptide: Any compound consisting of two or more amino acids, the building blocks of proteins. Peptides are combined to make proteins. [NIH]

Perforation: 1. the act of boring or piercing through a part. 2. a hole made through a part or substance. [EU]

Perfusion: Bathing an organ or tissue with a fluid. In regional perfusion, a specific area of the body (usually an arm or a leg) receives high doses of anticancer drugs through a blood vessel. Such a procedure is performed to treat cancer that has not spread. [NIH]

Peritoneum: The tissue that lines the abdominal wall and covers most of the organs in the abdomen. [NIH]

Pernicious: Tending to a fatal issue. [EU]

Peroxidase: A hemeprotein from leukocytes. Deficiency of this enzyme leads to a hereditary disorder coupled with disseminated moniliasis. It catalyzes the conversion of a donor and peroxide to an oxidized donor and

water. EC 1.11.1.7. [NIH]

Pharmacists: Those persons legally qualified by education and training to engage in the practice of pharmacy. [NIH]

Phenotype: The outward appearance of the individual. It is the product of interactions between genes and between the genotype and the environment. This includes the killer phenotype, characteristic of YEASTS. [NIH]

Phosphorous: Having to do with or containing the element phosphorus. [NIH]

Phosphorylation: The introduction of a phosphoryl group into a compound through the formation of an ester bond between the compound and a phosphorus moiety. [NIH]

Physiologic: Having to do with the functions of the body. When used in the phrase "physiologic age," it refers to an age assigned by general health, as opposed to calendar age. [NIH]

Plexus: A network or tangle; a general term for a network of lymphatic vessels, nerves, or veins. [EU]

Poisoning: A condition or physical state produced by the ingestion, injection or inhalation of, or exposure to a deleterious agent. [NIH]

Polyp: A growth that protrudes from a mucous membrane. [NIH]

Polyposis: The development of numerous polyps (growths that protrude from a mucous membrane). [NIH]

Polysaccharide: A type of carbohydrate. It contains sugar molecules that are linked together chemically. [NIH]

Postoperative: After surgery. [NIH]

Potassium: A metallic element that is important in body functions such as regulation of blood pressure and of water content in cells, transmission of nerve impulses, digestion, muscle contraction, and heart beat. [NIH]

Precancerous: A term used to describe a condition that may (or is likely to) become cancer. Also called premalignant. [NIH]

Preclinical: Before a disease becomes clinically recognizable. [EU]

Precursor: Something that precedes. In biological processes, a substance from which another, usually more active or mature substance is formed. In clinical medicine, a sign or symptom that heralds another. [EU]

Predisposition: A latent susceptibility to disease which may be activated under certain conditions, as by stress. [EU]

Premalignant: A term used to describe a condition that may (or is likely to) become cancer. Also called precancerous. [NIH]

Preoperative: Preceding an operation. [EU]

Prevalence: The total number of cases of a given disease in a specified population at a designated time. It is differentiated from incidence, which refers to the number of new cases in the population at a given time. [NIH]

Progression: Increase in the size of a tumor or spread of cancer in the body. [NIH]

Prophylaxis: An attempt to prevent disease. [NIH]

Prostaglandins: A group of compounds derived from unsaturated 20-carbon fatty acids, primarily arachidonic acid, via the cyclooxygenase pathway. They are extremely potent mediators of a diverse group of physiological processes. [NIH]

Prostate: A gland in males that surrounds the neck of the bladder and the urethra. It secretes a substance that liquifies coagulated semen. It is situated in the pelvic cavity behind the lower part of the pubic symphysis, above the deep layer of the triangular ligament, and rests upon the rectum. [NIH]

Proteins: Polymers of amino acids linked by peptide bonds. The specific sequence of amino acids determines the shape and function of the protein. [NIH]

Proximal: Nearest; closer to any point of reference; opposed to distal. [EU]

Psychotherapy: A generic term for the treatment of mental illness or emotional disturbances primarily by verbal or nonverbal communication. [NIH]

Radioimmunotherapy: Treatment with a radioactive substance that is linked to an antibody that will attach to the tumor when injected into the body. [NIH]

Radioisotope: An unstable element that releases radiation as it breaks down. Radioisotopes can be used in imaging tests or as a treatment for cancer. [NIH]

Radiology: The use of radiation (such as x-rays) or other imaging technologies (such as ultrasound and magnetic resonance imaging) to diagnose or treat disease. [NIH]

Radiotherapy: The treatment of disease by ionizing radiation. [EU]

Radium: Radium. A radioactive element of the alkaline earth series of metals. It has the atomic symbol Ra, atomic number 88, and atomic weight 226. Radium is the product of the disintegration of uranium and is present in pitchblende and all ores containing uranium. It is used clinically as a source of beta and gamma-rays in radiotherapy, particularly brachytherapy. [NIH]

Randomized: Describes an experiment or clinical trial in which animal or human subjects are assigned by chance to separate groups that compare different treatments. [NIH]

Receptor: A molecule inside or on the surface of a cell that binds to a

specific substance and causes a specific physiologic effect in the cell. [NIH]

Recombinant: 1. a cell or an individual with a new combination of genes not found together in either parent; usually applied to linked genes. [EU]

Recurrence: The return of cancer, at the same site as the original (primary) tumor or in another location, after the tumor had disappeared. [NIH]

Reflux: The term used when liquid backs up into the esophagus from the stomach. [NIH]

Refractory: Not readily yielding to treatment. [EU]

Reinfection: A second infection by the same pathogenic agent, or a second infection of an organ such as the kidney by a different pathogenic agent. [EU]

Relapse: The return of signs and symptoms of cancer after a period of improvement. [NIH]

Remission: A decrease in or disappearance of signs and symptoms of cancer. In partial remission, some, but not all, signs and symptoms of cancer have disappeared. In complete remission, all signs and symptoms of cancer have disappeared, although there still may be cancer in the body. [NIH]

Resected: Surgical removal of part of an organ. [NIH]

Resection: Removal of tissue or part or all of an organ by surgery. [NIH]

Retinol: Vitamin A. It is essential for proper vision and healthy skin and mucous membranes. Retinol is being studied for cancer prevention; it belongs to the family of drugs called retinoids. [NIH]

Riboflavin: Nutritional factor found in milk, eggs, malted barley, liver, kidney, heart, and leafy vegetables. The richest natural source is yeast. It occurs in the free form only in the retina of the eye, in whey, and in urine; its principal forms in tissues and cells are as FMN and FAD. [NIH]

Sanitation: The development and establishment of environmental conditions favorable to the health of the public. [NIH]

Sarcoma: A cancer of the bone, cartilage, fat, muscle, blood vessels or other connective or supportive tissue. [NIH]

Sargramostim: A colony-stimulating factor that stimulates the production of blood cells, especially platelets, during chemotherapy. It is a cytokine that belongs to the family of drugs called hematopoietic (blood-forming) agents. Also called GM-CSF. [NIH]

Screening: Checking for disease when there are no symptoms. [NIH]

Secretion: 1. the process of elaborating a specific product as a result of the activity of a gland; this activity may range from separating a specific substance of the blood to the elaboration of a new chemical substance. 2. any substance produced by secretion. [EU]

Selenium: An essential dietary mineral. [NIH]

Serine: A non-essential amino acid occurring in natural form as the L-isomer. It is synthesized from glycine or threonine. It is involved in the biosynthesis of purines, pyrimidines, and other amino acids. [NIH]

Serology: The study of serum, especially of antigen-antibody reactions in vitro. [NIH]

Serum: The clear liquid part of the blood that remains after blood cells and clotting proteins have been removed. [NIH]

Shunt: A surgically created diversion of fluid (e.g., blood or cerebrospinal fluid) from one area of the body to another area of the body. [NIH]

Sorbitol: A polyhydric alcohol with about half the sweetness of sucrose. Sorbitol occurs naturally and is also produced synthetically from glucose. It was formerly used as a diuretic and may still be used as a laxative and in irrigating solutions for some surgical procedures. It is also used in many manufacturing processes, as a pharmaceutical aid, and in several research applications. [NIH]

Species: A taxonomic category subordinate to a genus (or subgenus) and superior to a subspecies or variety, composed of individuals possessing common characters distinguishing them from other categories of individuals of the same taxonomic level. In taxonomic nomenclature, species are designated by the genus name followed by a Latin or Latinized adjective or noun. [EU]

Spectrum: A charted band of wavelengths of electromagnetic vibrations obtained by refraction and diffraction. By extension, a measurable range of activity, such as the range of bacteria affected by an antibiotic (antibacterial s.) or the complete range of manifestations of a disease. [EU]

Spleen: An organ that is part of the lymphatic system. The spleen produces lymphocytes, filters the blood, stores blood cells, and destroys old blood cells. It is located on the left side of the abdomen near the stomach. [NIH]

Splenectomy: An operation to remove the spleen. [NIH]

Sporadic: Neither endemic nor epidemic; occurring occasionally in a random or isolated manner. [EU]

Squamous: Scaly, or platelike. [EU]

Staging: Performing exams and tests to learn the extent of the cancer within the body, especially whether the disease has spread from the original site to other parts of the body. [NIH]

Stent: A device placed in a body structure (such as a blood vessel or the gastrointestinal tract) to provide support and keep the structure open. [NIH]

Stomach: An organ that is part of the digestive system. It helps in the

digestion of food by mixing it with digestive juices and churning it into a thin liquid. [NIH]

Stool: The waste matter discharged in a bowel movement; feces. [NIH]

Sulfides: Chemical groups containing the covalent sulfur bonds -S-. The sulfur atom can be bound to inorganic or organic moieties. [NIH]

Supplementation: Adding nutrients to the diet. [NIH]

Suppressive: Tending to suppress: effecting suppression; specifically: serving to suppress activity, function, symptoms. [EU]

Sweat: The fluid excreted by the sweat glands. It consists of water containing sodium chloride, phosphate, urea, ammonia, and other waste products. [NIH]

Synergistic: Acting together; enhancing the effect of another force or agent. [EU]

Systemic: Affecting the entire body. [NIH]

Tegafur: An anticancer drug that belongs to the family of drugs called antimetabolites. [NIH]

Telomerase: Essential ribonucleoprotein reverse transcriptase that adds telomeric DNA to the ends of eukaryotic chromosomes. Telomerase appears to be repressed in normal human somatic tissues but reactivated in cancer, and thus may be necessary for malignant transformation. EC 2.7.7.-. [NIH]

Testicular: Pertaining to a testis. [EU]

Tetracycline: An antibiotic drug used to treat infection. [NIH]

Thermoregulation: Heat regulation. [EU]

Thyroid: A gland located near the windpipe (trachea) that produces thyroid hormone, which helps regulate growth and metabolism. [NIH]

Thyroxine: An amino acid of the thyroid gland which exerts a stimulating effect on thyroid metabolism. [NIH]

Tolerance: 1. the ability to endure unusually large doses of a drug or toxin. 2. acquired drug tolerance; a decreasing response to repeated constant doses of a drug or the need for increasing doses to maintain a constant response. [EU]

Tomography: A series of detailed pictures of areas inside the body; the pictures are created by a computer linked to an x-ray machine. [NIH]

Toxicity: The quality of being poisonous, especially the degree of virulence of a toxic microbe or of a poison. [EU]

TPA: 12-O-tetradecanoylphorbol-13-acetate. A drug that is being studied as a treatment for hematologic cancer. [NIH]

Transplantation: The replacement of an organ with one from another person. [NIH]

Trastuzumab: A type of monoclonal antibody used in cancer detection or therapy. Monoclonal antibodies are laboratory-produced substances that can locate and bind to cancer cells. Trastuzumab blocks the effects of the growth factor protein HER2, which transmits growth signals to breast cancer cells. [NIH]

Tumour: 1. swelling, one of the cardinal signs of inflammations; morbid enlargement. 2. a new growth of tissue in which the multiplication of cells is uncontrolled and progressive; called also neoplasm. [EU]

Ulcer: A local defect, or excavation, of the surface of an organ or tissue; which is produced by the sloughing of inflammatory necrotic tissue. [EU]

Ulceration: 1. the formation or development of an ulcer. 2. an ulcer. [EU]

Ultrasonography: A procedure in which sound waves (called ultrasound) are bounced off tissues and the echoes are converted to a picture (sonogram). [NIH]

Unresectable: Unable to be surgically removed. [NIH]

Urine: Fluid containing water and waste products. Urine is made by the kidneys, stored in the bladder, and leaves the body through the urethra. [NIH]

Vaccination: Treatment with a vaccine. [NIH]

Vaccine: A substance or group of substances meant to cause the immune system to respond to a tumor or to microorganisms, such as bacteria or viruses. [NIH]

Veins: The vessels carrying blood toward the heart. [NIH]

Vincristine: An anticancer drug that belongs to the family of plant drugs called vinca alkaloids. [NIH]

Viral: Pertaining to, caused by, or of the nature of virus. [EU]

Virulence: The degree of pathogenicity within a group or species of microorganisms or viruses as indicated by case fatality rates and/or the ability of the organism to invade the tissues of the host. [NIH]

Virus: Submicroscopic organism that causes infectious disease. In cancer therapy, some viruses may be made into vaccines that help the body build an immune response to, and kill, tumor cells. [NIH]

Visceral: , from viscus a viscus) pertaining to a viscus. [EU]

Yttrium: A rare elemental metal. A radioactive form of yttrium is used in radiation therapy and some types of immunotherapy. [NIH]

General Dictionaries and Glossaries

While the above glossary is essentially complete, the dictionaries listed here cover virtually all aspects of medicine, from basic words and phrases to more advanced terms (sorted alphabetically by title; hyperlinks provide rankings, information and reviews at Amazon.com):

- **The Cancer Dictionary** by Roberta Altman, Michael J., Md Sarg; Paperback - 368 pages, 2nd Revised edition (November 1999), Checkmark Books; ISBN: 0816039542; **http://www.amazon.com/exec/obidos/ASIN/0816039542/icongroupinterna**
- **Dictionary of Medical Acronymns & Abbreviations** by Stanley Jablonski (Editor), Paperback, 4th edition (2001), Lippincott Williams & Wilkins Publishers, ISBN: 1560534605, **http://www.amazon.com/exec/obidos/ASIN/1560534605/icongroupinterna**
- **Dictionary of Medical Terms : For the Nonmedical Person (Dictionary of Medical Terms for the Nonmedical Person, Ed 4)** by Mikel A. Rothenberg, M.D, et al, Paperback - 544 pages, 4th edition (2000), Barrons Educational Series, ISBN: 0764112015, **http://www.amazon.com/exec/obidos/ASIN/0764112015/icongroupinterna**
- **A Dictionary of the History of Medicine** by A. Sebastian, CD-Rom edition (2001), CRC Press-Parthenon Publishers, ISBN: 185070368X, **http://www.amazon.com/exec/obidos/ASIN/185070368X/icongroupinterna**
- **Dorland's Illustrated Medical Dictionary (Standard Version)** by Dorland, et al, Hardcover - 2088 pages, 29th edition (2000), W B Saunders Co, ISBN: 0721662544, **http://www.amazon.com/exec/obidos/ASIN/0721662544/icongroupinterna**
- **Dorland's Electronic Medical Dictionary** by Dorland, et al, Software, 29th Book & CD-Rom edition (2000), Harcourt Health Sciences, ISBN: 0721694934, **http://www.amazon.com/exec/obidos/ASIN/0721694934/icongroupinterna**
- **Dorland's Pocket Medical Dictionary (Dorland's Pocket Medical Dictionary, 26th Ed)** Hardcover - 912 pages, 26th edition (2001), W B Saunders Co, ISBN: 0721682812, **http://www.amazon.com/exec/obidos/ASIN/0721682812/icongroupinterna/103-4193558-7304618**
- **Melloni's Illustrated Medical Dictionary (Melloni's Illustrated Medical Dictionary, 4th Ed)** by Melloni, Hardcover, 4th edition (2001), CRC Press-Parthenon Publishers, ISBN: 85070094X, **http://www.amazon.com/exec/obidos/ASIN/85070094X/icongroupinterna**

- **Stedman's Electronic Medical Dictionary Version 5.0 (CD-ROM for Windows and Macintosh, Individual)** by Stedmans, CD-ROM edition (2000), Lippincott Williams & Wilkins Publishers, ISBN: 0781726328, **http://www.amazon.com/exec/obidos/ASIN/0781726328/icongroupinterna**
- **Stedman's Medical Dictionary** by Thomas Lathrop Stedman, Hardcover - 2098 pages, 27th edition (2000), Lippincott, Williams & Wilkins, ISBN: 068340007X, **http://www.amazon.com/exec/obidos/ASIN/068340007X/icongroupinterna**
- **Stedman's Oncology Words** by Beverly J. Wolpert (Editor), Stedmans; Paperback - 502 pages, 3rd edition (June 15, 2000), Lippincott, Williams & Wilkins; ISBN: 0781726549; **http://www.amazon.com/exec/obidos/ASIN/0781726549/icongroupinterna**
- **Tabers Cyclopedic Medical Dictionary (Thumb Index)** by Donald Venes (Editor), et al, Hardcover - 2439 pages, 19th edition (2001), F A Davis Co., ISBN: 0803606540, **http://www.amazon.com/exec/obidos/ASIN/0803606540/icongroupinterna**

INDEX


9 780597 833533