These curriculum guidelines for tenth-, eleventh-, and twelfth-grade students discuss the prevention, early detection and treatment, and control of cancer. The nature of cancer, the epidemiological factors related to it, the types of treatments available, and rehabilitation of cancer victims are discussed. Finally, the unit discusses personal and community responsibility regarding cancer control. Upon completion of the unit, the student will be able to (1) differentiate between a normal and cancer cell in terms of purpose and function, (2) describe the process of cancerous cell proliferation and its effects on surrounding tissue and of the entire body, (3) associate suspected cancer-causing factors with commonly occurring cancers, and the common sites of cancer in human beings, (4) analyze cancer morbidity and mortality rates in the population of the country, of regions with differing rates, and of the community, (5) show how early detection affects cure and/or eradication rates, (6) compare methods of treatment, (7) show how continued follow-up ensures sustained control, (8) identify services and resources aimed at cancer control and prevention, (9) determine ways of using these resources, (10) demonstrate how to do a self-examination for cancer detection, (11) describe world, national, and regional organizations involved in cancer eradication, and (12) identify personal responsibility for cancer control and prevention.

The text of the guide is divided into three columns per page, dealing with concepts, activities, and supplementary information for the teacher. A glossary of terms and seventeen appendixes of charts, graphs, and drawings expand on information contained in the text.
HEALTH EDUCATION:
CANCER PREVENTION AND CONTROL

Curriculum Guides
Grades 10, 11, and 12

The University of the State of New York/The State Education Department
Curriculum Development Center/Albany 12234
Bureau of School Health Education and Services
1976
HEALTH EDUCATION:
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Curriculum Development Center/Albany 12234
Bureau of School Health Education and Services
1976
Regents of The University (with years when terms expire)

Sands Point

Purchase


1983 Harold E. Newcomb, B.A. Owege

1985 William A. Genrich, B.S., L.H.D., L.L.D. Buffalo

1982 Emlyn L. Griffith, A.B., J.D. Rome

1977 Genevieve S. Klein, B.S., M.A. Bayside


1983 Mary Alice Kendall, B.S. Irondequoit

1984 Jorge L. Batista, B.A., J.D. Bronx


1979 Laur. Chodos, B.A., M.A. Clifton Park


President of The University and Commissioner of Education
Ewald B. Nyquist

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Frances A. Bernstein
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There are approximately 136,000 new cases of breast and uterine cancer diagnosed each year, and approximately 44,000 deaths. More than 90% of the uterine cancer deaths can be prevented if each woman would receive a yearly Pap test. In addition, most breast cancer fatalities could be prevented if the disease were detected in its early stages. Breast cancer can be detected early through a monthly self-breast examination.

These curriculum guidelines place major emphasis upon the prevention, early detection and treatment, and control of cancer. This is especially true regarding the four most preventable forms of cancer -- lung, skin, breast, and cervical. The nature of all cancers, the epidemiological factors related to them, the types of treatments available, and rehabilitation of cancer patients are discussed. Finally, the student will learn about personal and community responsibility regarding cancer control.
OBJECTIVES

At the completion of the unit in health education dealing with cancer prevention and control, the student will be able to:

1. Differentiate between a normal and cancer cell in terms of purpose and function in life-sustaining processes.

2. Describe the process of cell proliferation in cancer and the resultant effects the cancerous growth has on the life and functions of the surrounding tissue and of the entire body.

3. Associate suspected cancer-causing factors with commonly occurring cancer, and the common sites of cancer in children, in males, and in females.

4. Analyze cancer morbidity and mortality rates in the population of the country, of regions with differing rates, and of the community.

5. Show how the early cancer detection affects the rate of cure and/or possible eradication of certain types of cancer.


7. Show how continued follow-up studies of cancer patients ensures sustained control.

8. Identify community resources and services aimed at cancer control and prevention.

9. Determine ways of using and/or assisting community resources and services in their projects.

10. Demonstrate how to do a self-examination for purposes of early cancer detection.

11. Describe the chief research efforts aimed at cancer eradication by world, national, and regional organizations.

12. Identify personal responsibility in cancer control and prevention through health maintenance and an active role in the maintenance of a safe and healthful environment.
I. Cancer Control - A Problem for Society

Cancer is a common chronic disease in the U.S. and throughout the world. It is the second cause of death in the U.S.

One in four people alive today will develop cancer.

Cancer strikes someone in 2 of every 3 families.

The economic costs to society of cancer are very great.

Because the costs to society are so great, cancer control, i.e., prevention and treatment, has become a major social issue. (See Training Manual for a discussion on "The Economics of Cancer".)

There are many efforts being made to control the incidence of cancer.

ACTIVITIES

Write the National Cancer Institute (NCI) for information on the National Cancer Program.

Show ACS film, "Investment in Life", (8512).

Ask behavioral scientists, (psychologists, anthropologists, sociologists) about the role of various psychosocial factors in health status, attitudes and behavior. (See Training Manual - "Psychological and Social Aspects of Cancer Education".)

Present figures from chart "Cancer Around the World" (Lesson 8, "The Nature of Cancer, Senior High", ACS #2054.01). Refer to chart comparing cancer incidence and other major diseases.

Discuss various ways the national economy is adversely affected.

In what way is the cost of cancer borne by society as a whole?

Write local, state, or federal legislators for their opinions on the role of government in cancer control. What are some recent legislature introduced in this regard?

Cost to society are incurred through:

1) Costs of treatment, i.e., doctor bills, hospitalization and drugs; insurance premiums, social security and welfare payments, lost tax revenue.

2) Loss of worker talent and productivity because of illness or death.

Approaches to controlling cancer:

1) Support research aimed at finding cure and improving detection and treatment.

2) Increase availability and quality of existing care.

3) Educate public in cancer prevention and detection.

4) Where possible, eliminate cancer causing agents in the environment and prevent introduction of new ones.
Increases in technology have created environments that contribute to an increase in the incidence of some types of cancer.

Appoint students to research pros and cons of the following issues:

1) The benefits of atomic energy outweigh the health dangers to society.

2) The development of the SST (supersonic transport), with stress on the effects on the stratosphere.

3) The dangers of automobile air pollution are great enough to justify a crash program to curtail auto use.

II. The Basic Nature of Cancer

Cancer is a large group of diseases with similar characteristics.

Use: ACS teaching kit, "The Nature of Cancer", Senior High, Lesson 1, #1054.02

Use a wall chart of the circulatory and lymphatic systems to demonstrate how cancer cells spread through the body. (See Appendix V.)

Some of the similar characteristics of the various types of cancers are:

1) Longer cell life than the cells from normal tissues from which cancers are derived.

2) Failure to maintain boundaries of normal tissues and organs.

3) Under the microscope, cancer cells resemble immature cells rather than mature cells.

4) Capable of metastasis (spread) and growth in distant parts of the body.

5) Loss of specific function.

Even with the similar properties of all cancers, there are great differences between the many different types.

Some of the differences are:

1) Site (location of tumor)

2) Severity of illness

3) Causes (if known)

4) Occurrence in different age groups and sexes.
Cancer disrupts the body's homeostasis.

**ACTIVITIES**

Define homeostasis: How is cancer related to homeostasis?

Discuss homeostasis: Have students run in place, take pulse, then take Pulse 60 seconds later. Compare.

Scientists have identified several kinds of cancers, which fall into three general categories.

What are the three classifications of cancer?

What methods are used to treat cancer?

Cancer is a form of abnormal cell growth; it can strike in any body cell. (See Appendix IV.)

Describe the characteristics of cancer.

**SUPPLEMENTARY INFORMATION**

For these reasons, it is better to think of cancer as a collection of diseases.

Homeostasis is the ability of the body to maintain itself, or keep a steady state, against changes in the internal and external environments.

When the heart rate accelerates, it increases the flow of blood containing oxygen and nutrients to the muscles and carrying wastes away. After resting, the heart beat returns to normal.

When homeostasis is interfered with, the cells of the body cannot adjust properly to changes and suffer a loss of vitality and health.

There are three types of cancer as follows:

1) **Carcinoma** - affects epithelial cells, such as skin, lining of gut or lungs, lining of ducts as in liver or breast.
2) **Sarcoma** - affects bone and connective tissues and nervous system.
3) **Diffuse tumors** - "liquid tumors" - leukemias.

In some cancers, surgery is the treatment of choice, in others radiotherapy and in others chemotherapy. (See Training Manual on "Cancer Treatment").

Our understanding of the mechanism of cancer production is not complete. However, the understanding of the biology of cancer has improved greatly.
Specific properties of various cancers vary from site to site, depending upon the type of cells affected.

Cancers grow and spread at varying rates and different types of cancers are most susceptible to different types of treatment.

Cancer's abnormal cells upset the normal functions of the body.

Diagram mitosis: Illustrate cancer cells in a mitotic process.

- How does this differ from normal mitosis?
- How is it similar?

View ACS film, "From One Cell" (N2348).

In discussion, stress the importance of early detection in leading to treatment before metastasis begins.

Describe the difference in survival rating from those with cancer who are treated early and those who are not.

It is felt by many observers that an alteration in the genetic code (DNA, RNA) caused by outside factors may underlie the basis for cancer.

Both normal and cancer cells reproduce by mitosis. In normal cells the process of mitosis is orderly and sequential and forms only two new daughter cells. In cancer cells, the process is disorderly and wild. Several new daughter cells are formed. In fact, new cells may begin to divide before a previous division is completed. (See Appendix IV.)

Interference of the normal body state will eventually lead to illness.

It is hypothesized that 80% of all human cancers are caused by agents in the environment. A good example of this is the series of chemical carcinogens found in cigarette smoke.
A. Occurrence

Occurrence of cancer varies by site but is much more common in certain sites than others.

Cancer spreads by a process known as metastasis. (See Appendix V.)

Epidemiological studies of cancer include information on cancer incidence in:
- different countries
- races
- sex
- region (urban-rural)
- habits (smoking)
- diet
- occupation
- health habits
- heredity

Describe the process of metastasis.

Why is cancer more common in certain sites than others?
What environmental factors contribute to this occurrence?

"Cancer Rates and Risks" produced by NCI is an excellent reference used to review the basic epidemiology of cancer.

(See appendix for several major charts for student references.)

Have students make a list of food they eat for one week. Read the labels of those in packages and list the chemicals added. List fresh foods and the possible chemical residue from insecticides or preservatives.

- Are there any chemicals or identified carcinogens in their diets?
- Describe other substances that are consumed that may have carcinogens in them, e.g., tobacco.
- Is there any relationship between alcoholic beverage consumption and cancer?

(See Training Manual for listing of carcinogens; also for a discussion of "Hormones and Cancer").

Skin cancer is the most common form.

Other than skin:
Male: The lung, prostate and large intestine are the three most common sites.
Female: Breast, large intestine, and cervix (uterus) are the three most common sites.
(See Training Manual for discussion on "Cancer Sites").

Diet is one of the most interesting areas of research pertaining to cancer incidence. Future research may give certain dietary statistics which humans will follow to reduce the risk of certain forms of cancer.

Certain chemicals have already been identified in minute amounts in certain foods which have caused cancer in laboratory animals.

- Aflatoxin - a mold found on spoiled peanuts, cereals, and corn is found where liver cancer is common.
- N-Nitrosamines - a compound found in the environment which has been related to cancer of the esophagus.
CONCEPTS

The foods people eat can be a source of substances that can cause cancer in certain organs of the body. (See Training Manual - "Does Cancer Run in Families?")

ACTIVITIES

What government agency (or agencies) is responsible for the foods we eat?

How effective are their programs?

Describe how this agency goes about to insuring the safety of the foods eaten by people.

SUPPLEMENTARY INFORMATION

- Smoked or Pickled Foods - related to a high incidence of cancer of the stomach in areas of the world where these foods are commonly used.

- Combinations of dietary components (low protein, different vitamin levels) with certain chemicals may have carcinogenic actions.

- Low Fat diet - is related to a low incidence of cancer of the colon and rectum in the Japanese population.

- Vinyl Chloride - a chemical used in the plastic industry has been related to a higher incidence of cancer of the liver. PVC food packaging has been banned.

Over-reaction to information published in newspapers, magazines or books can be more harmful than the problem itself. Dietary facts related to cancer are still basically in experimental form but much research is being done around the world in this area, and very interesting facts will be produced as time goes on.

It is society's responsibility as well as the individuals to pursue good health. Prevention and early diagnosis of cancer can only take place if the public is motivated to act through knowledge.

Even though the majority of cancers are not preventable, through education and early detection, these cancers could be more treatable.
III. Skin Cancer

Skin cancer is prevented by avoiding excessive exposure to the sun. (See Training Manual - "Cancer Sites").

Recent success in treating skin cancer by mobilizing the body's immune defenses holds promise of great advances in the treatment of all cancers.

Skin cancer responds well to treatment. (See Training Manual for a discussion of "Cancer Immunotherapy").

Show ACS film, "Sense in the Sun", (#2331 English, #2331.19 Spanish).

Have students research the incidence of skin cancer in the various states.

Have students discuss with local pharmacist the variety of available sun screens and report to class on their use and effectiveness.

Students research and report on the effect on the ozone layer of:
1) jet planes - particularly SST
2) aerosols containing fluorocarbons

Define immunotherapy.

Describe how it is used in treatment of skin cancer.

Have students report on the immune system and how it fights disease.

Discuss: How the immune system may be mobilized to fight cancer.

Most deaths from skin cancer result from malignant melanoma, a rare skin cancer, the cause of which has not been discovered.

Skin cancer is more common in the South where exposure to the sun is greater.

The ozone layer in the stratosphere protects the earth from heavy bombardment by cancer-causing ultraviolet rays.

Many factors of modern life, i.e., jet planes, may reduce the amount of ozone, increasing exposure to ultraviolet rays and increase skin cancer incidence.

Sun lamps do not cause cancer.

Very rarely, physicians observe cases of spontaneous regression of cancer. This disappearance of all clinical symptoms of cancer occurs without any form of treatment. Scientists regard this as a sign that the body has certain immune defenses which attack cancer cells as they would bacteria or other outside invaders.

Immunotherapy seeks to stimulate and increase the effectiveness of immune elements in the host which specifically attack tumors. Immunotherapy has been proven effective in the treatment of certain kinds of skin cancer. Its use is being studied in the treatment of other forms of cancer.
V. Lung Cancer

Most lung cancer can be prevented by not smoking cigarettes.

Cigarette smoke contains carcinogens - chemicals which cause cancer.

Filters are designed to remove chemicals (tars) from the smoke.

Smoking is also related to cancer of the mouth, esophagus, larynx, bladder and pancreas.

Since the confirmation of the ill effects of smoking on health, the percentage of adult smokers had declined.

See ACS kit, "Nature of Cancer, Senior High", Lesson 5, (#2054,02).

Discuss the epidemic of lung cancer following the introduction of cigarettes during WWI, using a simple wall chart or chalk board (see graph in Appendix X.)

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Collect cigarette tars with a manual smoking machine. Compare amounts collected from various brands including filter cigarettes. (Use "Smoking Simulator", #2732, ACS).

Appoint students to research and report on the nature of specific chemicals found in cigarette smoke and their effects on the body.

Show ACS film, "The Embattled Cell", (#2397).

Discuss incidence of oral, larynx, esophageal and bladder cancer in smokers. ACS Pamphlet "Cancer of the Mouth", (#2630) and "Cancer of the Larynx", (#2631).

Have students research and report on the Surgeon General's Report on Smoking and Health, 1964. See also subsequent reports.

BPMI will supply information on animal experiments in cancer research.


Chemicals identified in cigarette smoke and tars:
1) Polycyclic Aromatic Hydrocarbons
2) Nicotine
3) Ammonia
4) Cadmium
5) Carbon Monoxide
6) Arsenic
7) Methane
8) Chloroform
9) Phenol
10) Aldehydes
11) Nitrogen Oxide and Nitrosamines
12) Amines

In 1965, 43% of adults smoked. By 1971, the percentage had fallen to 36%. There are over 30,000,000 ex-cigarette smokers. However, smoking among women is increasing. It is believed that this will lead to a
V. Breast Cancer

Breast cancer and cervical cancer are diseases, which detected early and treated promptly, are highly curable.

What positive effects did this report have on the people who smoke?

Discuss how the attitudes of society have changed since the publication of the Surgeon General's Report in relation to:

1) The general awareness of health dangers.
2) How many people have quit or reduced their smoking.
3) The growing popularity of filter and low tar cigarettes.

Have a student report on the growth in the use of filter cigarettes.

Discuss: Reduced smoking and increased demand for low-tar cigarettes represent a radical change in public attitude toward smoking.

Have students bring in and discuss cigarette ads and the various techniques used to persuade people to smoke.

Students may wish to organize a stop-smoking clinic. The local unit of ACS will provide help or write: Public Education Dept., Roswell Park Memorial Institute for information.

Cigarette advertizers are chiefly concerned with selling more cigarettes and persuading non-smokers to smoke.

Marijuana, like any other burning leaf, produces carcinogenic tars. Despite reports that THC (tetrahydrocannabinol) inhibits tumor growth, there is no reason to believe that smoking marijuana prevents lung cancer. It most probably contributes to it. (See Training Manual for a discussion on "Marijuana and Lung Cancer").

(See ACS Booklet, "Stop Smoking Program Guide", #5003.)

This section on breast and cervical cancer may be presented in a coed setting or to only the women. It is suggested that all senior high school girls be the

continued rapid increase in female lung cancer rate.

The average cigarette of today is 50% lower in tar content than 20 years ago.

In 1965, 3.5% of cigarettes were filter-tipped. Today filters account for 85% of the market. (See Strand II on "Tobacco and Drugs" for further information.)

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1 in every 13 women will develop breast cancer.

The specific cause of breast cancer is unknown.

There is no known preventive measure in relation to breast cancer.

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Use a wall chart to show incidence of breast cancer in relation to other malignancies.

Encourage students to discuss experience with breast cancer among relatives and acquaintances.

What are the characteristics of women most likely to develop breast cancer?

What factors are suspected of being associated with the cause of breast cancer?

Does breast feeding increase the likelihood of the mother developing breast cancer?

Discuss cystic disease. (See Training Manual for a discussion of "Cystic Disease" and "Hormones and Cancer").

Women who have a higher risk of breast cancer are those who:

1) Are over 35 (risk increases with age).

2) A woman who has never had a child.

3) A woman who had her first child after age of 25.

4) A woman whose mother, sisters or other maternal relatives have had breast cancer.

5) A woman who experienced early menarche and/or late menopause.

In general, a woman's hormonal status affects her chances of breast cancer. No specific cause is known. It is believed that several factors including hormones, viruses and environmental agents may be involved.

There is no evidence that breast feeding affects the incidence of breast cancer. There is little evidence that the use of birth control pills increases the risk of breast cancer or that breast cancer is caused by a bump or blow to the breast.
CONCEPTS

Detected early, breast cancer is a highly curable disease.

The best way for a woman to protect herself against breast cancer is with breast self-examination and a yearly physical checkup.

Every woman should examine her breasts every month after her menstrual period.

Most lumps which are found are benign but only a doctor can tell for sure.

A woman who finds a lump should notify a doctor at once.

Every woman should visit the doctor for a physical exam at least once a year.

ACTIVITIES

Discuss famous people who have had breast cancer; notably, Mrs. Betty Ford, Mrs. Happy Rockefeller, and Shirley Temple Black.

Show ACS film, "Something Very Special", #2354, and ACS Pamphlet, "How to Examine Your Breasts", #2008, and Wall Chart, "How to Examine Your Breasts", #2123. Also available in 3'x5' poster, #2224 or 4'x8' poster, #2207.

Use a "Betsi" teaching model (available from ACS) to familiarize each girl with the method of Breast Self-Examination (BSE) - Breast Teaching Models. Demonstrate and practice breast self-examination (See Appendix XVI and Training Manual for more information.)

Discuss with students why women do not practice BSE, pointing out that conscientious and regular BSE eliminates anxiety instead of creating it.

Encourage students in discussion to identify blocks to positive action (BSE) and arrive at a group decision for action.

Discuss reasons why women hesitate to report changes in their breasts to doctors and reiterate the importance of early treatment.

SUPPLEMENTARY INFORMATION

95% of breast cancers are detected by the women themselves.


Use of the "Betsi" is very important in teaching BSE. Films and demonstrations supplement, but do not replace, the "Betsi", a technique which utilizes tactile perception.

Women should practice BSE even after menopause.

Self-consciousness, fear, apathy and laziness are some of the chief reasons many women fail to examine their breasts.

Only 20-25% of lumps surgically removed are malignant.

Reasons why women fail to report breast changes:
1) Fear that all lumps are cancerous and all cancers fatal.
2) Modesty
3) Ignorance of the meaning of changes.
4) Lack of confidence in BSE.
Physicians may employ sophisticated techniques such as mammography, thermography, xeroradiography in detecting breast cancer.

Discuss the new detection tools a doctor can use to find breast cancer earlier.
1) What are they?
2) Why may they be necessary?
3) What do they show?

Invite a physician, radiologist or health department official to discuss the uses of mammography, thermography and xeroradiography.

Assign a student to research and report on the availability of mammography, thermography and xeroradiography in your community.

Write an article on breast cancer and breast self-examination for the school newspaper.

Like most cancers, breast cancer is treated by surgery, radiotherapy or chemotherapy.

Many treatment modes are available to a physician. The physician selects the best mode of treatment based on his appraisal of the individual case.

Discuss: The aim of cancer treatment is the removal or destruction of all cancer cells. How is this achieved?

Invite a physician or health department representative to discuss breast cancer and to teach self-examination.

Invite a woman who has had a mastectomy to discuss her operation and adjustment to life. A speaker may be available through "Help Yourself to Recovery" or "Reach to Recovery", both sponsored by the local unit of the ACS.

Define mastectomy.

Mammography and xeroradiography are x-ray techniques for discovering and identifying tumors. Thermography relies on the fact that tumors produce more heat than surrounding tissues. A thermogram is a "heat picture" of the breast. Thermography has not been found to be as useful as the other two techniques. Mammography may be useful as a mass screening technique particularly in women of high risk, i.e., those over 40 with a familial history of breast cancer. Currently, economic and logistical barriers rule out mammography as a mass screening technique for all women. Also, physicians advise against repeated, unnecessary use of x-rays.

Surgical removal of the breast is called mastectomy. It is usually necessary to remove the entire breast in order to be sure no cancer cells escape.

Radical mastectomy involves removal of the breast with the overlying skin, the pectoral muscles and axillary lymph nodes (located near ribs and under arms).

Super radical mastectomy involves removal of additional lymph nodes in the chest wall.

Modified radical mastectomy involves removal of the breast and overlying skin and axillary lymph nodes but preservation of the pectoral muscles.
Both surgery and radiation therapy may be used in treating breast cancer.

Who makes the decision as to which kind of mastectomy is needed?

Distinguish between the several kinds of mastectomies.

State how each of the following treatments contribute to curing cancer:
- surgery
- radiation therapy
- chemotherapy

Simple mastectomy consists merely of removal of the breast with lymph nodes and pectoral muscles left intact.

"Lumpectomy" or removal of the tumor and surrounding tissue, with part of breast left intact is not widely advocated because of the possibility that breast cancer is a multi-focal disease arising at several different points in the breast.

In addition to surgery, radiation therapy may be used pre and post operatively to kill cancer cells and reduce tumor size. Chemotherapy provides relief and extends life in cases beyond cure. In addition, breast cancer, unlike most cancers, is affected by changes in hormonal status, and physicians may manipulate a patient's status, surgically or with endocrine replacements (hormones). (See Training Manual for discussion of "Hormones and Cancer").

This year there will be more than 80,000 cases of cancer of the uterine cervix. Almost 2/3 of these, however, are carcinoma in-situ of the cervix, a relatively easy disease to cure surgically.

Carcinoma in-situ - when all tumor cells still lie within the tissue of origin.

Invasive cancer - when the tumor cells extend through the membranes of the tissue of origin.

Cervical Cancer

Cancers of the uterine cervix is the second most common cancer in women, after breast cancer (excluding skin cancer).

Discuss: The relation of cervical cancer to sexual activity.

How common is cervical cancer?

What is the cause of cervical cancer?

Show ACS films, "It's Up to You", #2368 or "For A Wonderful Life", #2342.
There is evidence that the incidence of cervical cancer varies with specific epidemiological factors.

Cervical cancer begins as a slow-growing, easily treatable disease. If undetected or left untreated, the early cancer can become invasive cancer, a more difficult problem to treat.

Cervical cancer is treatable and curable.

Develop a graph showing the incidence of cervical cancer for women who have had several children; low income and high income groups, and epidemiological factors.

Cancer of the uterine cervix accounts for 12% of malignancies in women. Almost 8,000 women die of it every year.

The cause of cervical cancer is unknown but a possible relationship has been found to early sexual activity and multiple partners.

It is extremely rare in virgins. Incidence is higher in married than in single women, in women who married young or began sexual intercourse at an early age. It is higher in low-income groups than in high-income groups of the same given population. Incidence rises with the number of sexual partners.

Research is currently aimed at the possibility that cervical cancer is caused by a virus, possibly transmitted during intercourse. (See Training Manual for a discussion on "Viruses").
The Pap Test makes possible detection of cervical cancer many years before overt symptoms appear, when the disease is easily cured.

The Pap Test is a simple, quick and painless procedure which may be done in a physician's office or a clinic.

Any woman who has begun to have sexual intercourse should have a Pap Test every year.

Treatment of cervical cancer varies with individual circumstances and the extent of spread.

In early cases of cancer a woman may be successfully treated and still retain her childbearing capacity.

Daughters of mothers who received "DES" during pregnancy may be at risk of developing cancer of the cervix or vagina. All young women who think they have been so exposed should consult a physician.

Student report on the story of Dr. Papanicolaou and the development and introduction of the "Pap" Test.

Show ACS film, "The Odyssey of Dr. Pap", #2364:

Invite a doctor, R.N., or Health Department representative to speak on and describe the Pap Test.

Discuss with students how they feel about the Pap Test and the idea of visiting a doctor even when they feel healthy.

Assign students to inquire at local hospitals, clinics, and health departments about availability of Pap Test. Report to class.

Discuss the treatment of cervical cancer and the importance of early detection.

Write an article for the school newspaper on the Pap Test; who needs it and where it is available. (Reference: "Cancer of the Uterus", #2006, and "1976 Cancer Facts and Figures", #5008).

Essentially, the procedure for the Pap Test is as follows:

Living cells are collected from the vaginal fluid and by gently scraping the surface of the cervix. The cells are spread on a microscope slide and sent to a laboratory to be examined by pathologists, trained to recognize abnormal cells. If the Pap smear reveals cells suspicious of cancer, the physician confirms the diagnosis with a biopsy (the surgical removal and examination of bits of tissue from the suspected area).

Cervical cancer can be treated by surgery or radiation. Women in the early stages of carcinoma in-situ who wish to have children can be treated by simple surgical methods and retain full sexual function. Women not desiring children may have a total hysterectomy with preservation of the ovaries. (Hysterectomy is the removal of the uterus.) Preservation of the ovaries is important in maintaining the female hormone balance.

(For further discussion of diethylstibestrol (DES), See "Hormones" in Training Manual).
VII. Colon and Rectum Cancer

Colon and rectum cancer is the most common internal cancer and the second-leading killer after lung cancer.

While there is no known way to prevent cancer of the colon and rectum, mortality can be reduced by annual physical checkups, including a proctoscopic exam after age 40.

ACTIVITIES

Discuss the incidence of colon and rectum cancer.

Show ACS film, "On With Your Life".


VIII. Rehabilitation

Rehabilitation is an increasingly important facet of total cancer care.

(See Training Manual for a discussion on the cost of cancer.)

Rehabilitation includes meeting not only the physical but the social, emotional-vocational, and educational needs of the cancer patient.

(See Training Manual for a discussion of "Rehabilitation of the Cancer Patient".)

Invite a person who has had a laryngectomy or mastectomy to speak to the class, or invite a rehabilitation specialist from a local hospital to describe his or her profession.

There is some evidence linking diet to incidence of cancer of the colon and rectum. This indicates that a decrease in high fat foods such as beef and an increase in "bulk" foods such as whole grains, would be beneficial.

Colon and rectum cancer is a slow-growing cancer, which detected early is highly curable. A proctoscopic exam should be part of every physical after age 40.

As the long term survival from cancer increases, the importance of rehabilitation, that is, the adjustment of the patient to his family, his community or his job, increases.

Professional therapists - include:
- physical therapist
- occupational therapist
- speech therapist
- enterostomal therapist

Rehabilitation is a continuing process beginning as soon as a patient enters the hospital to the aspects of continuing care after the hospital stay. Rehabilitation is a coordinated effort by members of the rehabilitation team. The basic rehabilitation team consists of the patient, the doctor, clergy, nurse, and family. Therapy sessions with the
IX. Cancer Quackery

Treatment by a cancer quack is most dangerous since it causes a delay in adequate treatment by a competent physician.

Role playing - Have some students take the role of cancer patients with disabilities. Other students may play family members, employers, friends, etc.

Invite a local therapist or hospital social worker to speak about the emotional and physical aspects of rehabilitation.

Discuss cancer quackery.
- What is the motivation of the cancer quack?
- Does the cancer quack differ from other quacks?
- Why do individuals seek quack treatment?
- What can a community do to lessen the hazards of quackery? What can the individual do?
- What is the fundamental element needed to combat quackery?
- What are the characteristics of a cancer quack?

Show ACS film, "Journey Into Darkness", #2370, and ACS Pamphlet, "I Have A Secret Cure for Cancer", #2095.

What are some recent cancer "cures" that have been widely publicized? Consider both devices and drugs.

Develop a summary table listing "medical cures", "devices" and "claims". Do the promoters provide any scientific evidence of the effectiveness of their product?

A person is a quack if:
1) He offers a cancer treatment only available from himself.
2) The treatment bears his own name, or is offered in the name of his private research organization whose other members are not listed.
3) He claims he is being persecuted by the "medical establishment".
4) He uses letters of testimonials or letters from patients in support of his treatment.
5) He refuses or discourages other opinions with specialists in the medical profession.

Quackery can best be combated through a well-informed public.
(See Training Manual for a discussion of "Cancer Quackery" and "Unproven Methods").
CONCEPTS

Early detection and treatment by a competent physician can decrease the death rate from all forms of cancer.

Fear and other emotions associated with cancer may motivate an individual to seek quack cures out of desperation.

ACTIVITIES

What is the role of Federal agencies, Food and Drug Administration, Federal Communication Commission, Federal Trade Commission, in protecting people from these quack products? What other agencies provide the general public with some form of protection?

Describe or list ways one can select a qualified physician.

Assign students to report on specific unproven cancer cures.

SUPPLEMENTARY INFORMATION

See ACS booklet, "Unproven Methods of Cancer Management". (Code 3014)

He is a reputable doctor if:
1) He does not offer an exclusive treatment. Approved treatments are available in many hospitals.
2) He does not "patent" a treatment or cure that could help all mankind, and his membership in medical organizations is always on record.
3) He belongs to organizations which spread the latest in medical knowledge - not suppress this information.
4) He does not divulge case histories to the public.
5) He insists upon laboratory proof of cancer in making his final diagnosis, and before treatment is given.
6) He always welcomes a consultation with colleagues in the medical profession.

X. Community Responsibility in Cancer Control

The solution to the cancer problem lies in the decision by individuals to assume both a personal and social responsibility in cancer control.

Have a small number of students research and report on the National Cancer Program.

Have students report on recent periodical references about cancer research.

Have the students make up their own pamphlets on cancer prevention.

The National Cancer Program is federally funded program aimed at eliminating or preventing all human cancers. It supports research and education in cancer prevention, detection, diagnosis, treatment and rehabilitation.

Cancer research is a very extensive project including many areas of interest. (See Training Manual - "The National Cancer Program".)
CONCEPTS

There are several voluntary agencies, most notably the American Cancer Society engaged in the war on cancer.

Roswell Park Memorial Institute, one of the world's oldest leading cancer research, treatment, and educational centers, is a part of the New York State Department of Health.

ACTIVITIES

Invite a speaker from the ACS to speak on the role of the Society in cancer control. Consider public education programs, research efforts, rehabilitation and treatment programs, and individual counseling.

Students devise a plan of personal action which will protect themselves and help the fight against cancer.

Have students survey the community to determine the kinds and extent of cancer programs available. Look for programs related to:
1) cancer detection
2) cancer education
3) treatment facilities
4) research
5) coordination of efforts

Can-Dial, an audio-tape library offered by Roswell Park Memorial Institute, is available to all New York State teachers and students for reference work. Call 1-800-462-1884 toll free. (See Appendix XVII for the list of tapes.)

SUPPLEMENTARY INFORMATION

Examples of other organizations are:
- various hospital and local research institutes notably, Roswell Park Memorial Institute and Memorial Sloan-Kettering Institute.

Some actions students may consider are:
1) Stop smoking.
2) Protect one's self from the sun.
3) Perform regular BSE.
4) Have a yearly Pap Test.
5) Have regular physical and dental exams.
6) Enter the health field as a professional or volunteer.
7) Become an informed citizen able to hold intelligent positions on issues like pollution, atomic power, etc.
8) Begin now to educate family, friends, and schoolmates about cancer.
GLOSSARY

ATP - an abbreviation for adenosine triphosphate, a compound which serves as a carrier of energy for cells.

bacteriophage - a type of virus that parasitizes bacteria.

benign - not cancerous.

cancer - a large group of diseases which involve the uncontrolled reproduction of abnormal cells. Cancer cells invade and destroy normal tissue.

carbon dioxide - an odorless, colorless gas (CO2) resulting from oxidation of carbon. It is formed in the tissues, excreted by lungs. It assists in maintaining the neutrality of body tissues and fluids.

carcinogen - a cancer-causing substance.

carcinoma - a cancer that begins in epithelial (covering) tissue.

carcinoma-in-situ - a cancer that remains in its original location without spreading.

cervix - neck or necklike part. Uterine cervix - the lower and narrow end of the uterus.

chemotherapy - the use of chemical compounds to treat cancer.

chromosomes - long threads containing DNA found within the nucleus of a cell. Chromosomes contain the cell's hereditary material.

chromatid - one chromosome of a double chromosome formed during mitosis.

DNA - Deoxyribose nucleic acid - a molecule found in chromosomes and some viruses. DNA is involved with inheritance of traits and directs building of proteins.

enterostomy - artificial opening into intestine through the abdominal wall.
epidemiology - the study of the conditions under which diseases occur in a population.

homeostasis - a tendency toward uniformity or stability in the normal body states of the organism.

hormone - a chemical substance produced in the body and carried in the blood to another organ or part of the body where it effects functional activity.

immune - to be resistant to disease.

immunotherapy - treatment by the production of immunity; a reaction to invading potentially dangerous cells.

inorganic - generally, compounds that do not contain carbon (carbon dioxide is an exception).

malignant - cancerous, life-threatening.

mammography - a special technique for diagnostic x-ray examination of the breast.

mastectomy - surgical removal of the breast.

menarche - the beginning of the menstrual function.

metabolism - all the physical and chemical activities by which living organized substance is produced and maintained.

metastasis - the spread of disease from one organ or part to another not directly connected. In this way cancer may occur in different parts of the body, spreading from one primary tumor.

mitosis - a division of the nucleus of cells involving the replication and lengthwise splitting of chromosomes, and the formation of two new cells.
mitochondria - the cellular "powerhouses" which provide the cell with most of its usable energy.

mutation - a permanent transmissible change in the characters of an offspring, from those of its parents. An inherited change - resulting often from a change in DNA.

nucleotide - a unit of a DNA molecule.

organelle - specific organized particles within most cells which perform a specific function.

parasite - a plant or animal that lives upon or within another living organism, without giving compensation for advantages gained.

pathology - the branch of medicine that deals with the essential nature of diseases. (structural and functional changes in tissues and organs which cause or are caused by disease).

pH - a measure of the degree of acidity or alkalinity of a substance.

phagocyte - a white blood cell which engulfs foreign particles invading the body.

polycyclic hydrocarbon - carbon compounds consisting of many rings of elements. The compounds have been associated with tumors and cancer.

Pap Test - can detect cancer of the cervix and uterus early.

Procto - examination of the colon and rectum for the presence of growths.

psycho-social - relating psychological and social conditions to general health attitudes.

RNA - Ribonucleic acid - a molecule found in cells and some viruses. RNA is also involved with inheritance of traits.
regression - returning to a former state.

ribosomes - organelles within cells that are involved with protein synthesis.

sarcoma - a cancer that begins in connective tissue. (bone, muscle)

spindle - spindle shaped achromatic figure along which the chromosomes are distributed during mitosis and meiosis.

thymine - one of the nitrogenous bases in DNA.

transduction - the transfer of hereditary material from one organism to another by a virus.

tumor - an abnormal growth which persists and grows independently of its surrounding structures.

virus - a submicroscopic infectious agent, composed of nucleic acid and DNA or RNA, and a protein coat. A virus invades living cells and reproduces within the cells.

xeroradiography - a dry, photoelectric process for recording x-ray images. Good for showing contrasts in soft tissue. Used in breast cancer detection.
APPENDIX 1

DIAGRAM OF A TYPICAL CELL

American Cancer Society "Nature of Cancer" Junior High Teaching Kit #2054.01
SOME EXAMPLES OF HUMAN CELLS

Nerve Cell

Muscle Cell

Two views of Red Blood Cell

Epithelial Cells

Elena Greco
APPENDIX 3

CELL DIVISION - MITOSIS

A. NUCLEAR ACTIVITY (CHROMATIN MATRIX)
B. CHROMOSOME AGGREGATION AND REPLICATION
C. CHROMOSOME SEPARATION
D. NUCLEAR FORMATION
E. CELL MEMBRANE ESTABLISHED
F. CELL SEPARATION

THIS DIVISION IS NORMAL BECAUSE:
1) CHROMOSOMES REPLICATE AND MIGRATE TO OPPOSITE ENDS OF THE CELL
2) TWO NUCLEI ARE FORMED
3) THE NUCLEI ARE SMALL AND STAIN LIGHTLY
4) TWO SIMILAR CELLS AREproduced
AN EXAMPLE OF ABNORMAL CELL DIVISION

A. Activity in nucleus (abnormal)
B. Chromosome aggregation and replication
C. Abnormal separation into three areas (tripolar mitosis)
D. Three nuclei form
E. Abnormal nuclear separation
F. Separation into abnormal cells

This division is abnormal because:
1) Three replications of chromosomes instead of two (B)
2) Three nuclei are formed (instead of two normal nuclei)
3) The nuclei are generally larger and stain darker
4) Abnormal cells are produced (F)
A. NORMAL TISSUE  
B. ABNORMAL CELL APPEARS  
C. GROWTH OF ABNORMAL TISSUE  
D. CONTINUED GROWTH OF TUMOR, INVADING ADJACENT AREAS  
E. METASTASIS THROUGH NEARBY BLOOD VESSEL (CAPILLARY)
CANCER INCIDENCE BY SITE AND SEX: United States, 1969-1971
(age-adjusted to 1970 U. S. population).

MALE
Lung and Bronchus
Prostate
Colon and Rectum
Bladder
Stomach
Total Leukemia
Pancreas
Lymphoma (including Hodgkin's Disease)
Larynx
Kidney

FEMALE
Breast
Colon and Rectum
Cervix (in-situ)
Corpus Uteri
Cervix (invasive)
Lung and Bronchus
Ovary
Lymphoma (including Hodgkin's Disease)
Pancreas
Total Leukemia

NUMBER OF CASES PER 100,000 POPULATION
0   10  20  30  40  50  60  70  80
RATE PER 100,000 POPULATION

1980

1990

TIME Units
APPENDIX 8

DEATH RATES FOR THE 11 LEADING CAUSES OF DEATH:
United States, 1970

DEATH RATE / 100,000

Diseases of the Heart
CANCER
Cerebrovascular Disease
Accidents
Influenza and Pneumonia
Certain Causes of Mortality in Early Infancy
Diabetes Mellitus
Arteriosclerosis
Cirrhosis of Liver
Bronchitis, Emphysema, and Asthma
Suicide
## APPENDIX 9

### Mortality for Leading Causes of Death: United States, 1971

<table>
<thead>
<tr>
<th>Rank</th>
<th>Cause of Death</th>
<th>Number of Deaths</th>
<th>Death Rate per 100,000 Population</th>
<th>Percent of Total Deaths</th>
<th>Rank</th>
<th>Cause of Death</th>
<th>Number of Deaths</th>
<th>Death Rate per 100,000 Population</th>
<th>Percent of Total Deaths</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Causes</td>
<td>1,227,542</td>
<td>932.2</td>
<td>100.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Disease of Heart</td>
<td>743,138</td>
<td>359.5</td>
<td>38.6</td>
<td>9</td>
<td>Aneurysm</td>
<td>31,521</td>
<td>152</td>
<td>1.6</td>
</tr>
<tr>
<td>2</td>
<td>Cancer</td>
<td>331,398</td>
<td>163.2</td>
<td>17.5</td>
<td>10</td>
<td>Suicide</td>
<td>24,092</td>
<td>117</td>
<td>1.2</td>
</tr>
<tr>
<td>3</td>
<td>Stroke</td>
<td>209,092</td>
<td>101.1</td>
<td>10.8</td>
<td>11</td>
<td>Emphysema</td>
<td>22,599</td>
<td>109</td>
<td>1.2</td>
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<tr>
<td>4</td>
<td>Accidents</td>
<td>113,409</td>
<td>54.9</td>
<td>5.9</td>
<td>12</td>
<td>Homicide</td>
<td>18,767</td>
<td>91</td>
<td>1.0</td>
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<tr>
<td>5</td>
<td>Influenza &amp; Pneumonia</td>
<td>57,194</td>
<td>27.7</td>
<td>3.0</td>
<td>13</td>
<td>Congenital Anomalies</td>
<td>15,957</td>
<td>7.7</td>
<td>0.8</td>
</tr>
<tr>
<td>6</td>
<td>Certain Diseases of Infancy</td>
<td>38,494</td>
<td>18.6</td>
<td>2.0</td>
<td>14</td>
<td>Nephritis and Nephrosis</td>
<td>8,443</td>
<td>4.1</td>
<td>0.4</td>
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<tr>
<td>7</td>
<td>Diabetes Mellitus</td>
<td>30,256</td>
<td>14.5</td>
<td>1.7</td>
<td>15</td>
<td>Hypertension</td>
<td>7,837</td>
<td>3.8</td>
<td>0.4</td>
</tr>
<tr>
<td>8</td>
<td>Cirrhosis of Liver</td>
<td>31,698</td>
<td>15.4</td>
<td>1.7</td>
<td>Other &amp; Ill Defined</td>
<td>228,547</td>
<td>110.8</td>
<td>11.9</td>
<td></td>
</tr>
</tbody>
</table>

Source: Vital Statistics of the United States, 1971
Prepared by Research Department, American Cancer Society, July, 1974

### Applying Cancer Statistics Locally

<table>
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<tr>
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</thead>
<tbody>
<tr>
<td>1,000</td>
<td>7</td>
<td>4</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td>250</td>
<td>150</td>
</tr>
<tr>
<td>2,500</td>
<td>15</td>
<td>9</td>
<td>3</td>
<td>6</td>
<td>2</td>
<td>500</td>
<td>300</td>
</tr>
<tr>
<td>5,000</td>
<td>22</td>
<td>13</td>
<td>4</td>
<td>8</td>
<td>3</td>
<td>750</td>
<td>450</td>
</tr>
<tr>
<td>10,000</td>
<td>42</td>
<td>18</td>
<td>6</td>
<td>11</td>
<td>4</td>
<td>1,000</td>
<td>600</td>
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<tr>
<td>15,000</td>
<td>67</td>
<td>21</td>
<td>7</td>
<td>14</td>
<td>5</td>
<td>1,250</td>
<td>750</td>
</tr>
<tr>
<td>25,000</td>
<td>74</td>
<td>43</td>
<td>15</td>
<td>28</td>
<td>9</td>
<td>2,500</td>
<td>1,500</td>
</tr>
<tr>
<td>50,000</td>
<td>185</td>
<td>107</td>
<td>37</td>
<td>70</td>
<td>23</td>
<td>6,250</td>
<td>3,750</td>
</tr>
<tr>
<td>100,000</td>
<td>370</td>
<td>215</td>
<td>75</td>
<td>140</td>
<td>47</td>
<td>12,500</td>
<td>7,500</td>
</tr>
<tr>
<td>200,000</td>
<td>740</td>
<td>436</td>
<td>150</td>
<td>280</td>
<td>93</td>
<td>25,000</td>
<td>15,000</td>
</tr>
<tr>
<td>500,000</td>
<td>1,480</td>
<td>860</td>
<td>300</td>
<td>560</td>
<td>186</td>
<td>50,000</td>
<td>30,000</td>
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<tr>
<td>1,000,000</td>
<td>3,700</td>
<td>2,150</td>
<td>750</td>
<td>1,400</td>
<td>465</td>
<td>125,000</td>
<td>75,000</td>
</tr>
</tbody>
</table>

**NOTE:** The figures can only be the roughest approximation of actual data for your community. It is suggested that every effort be made to obtain actual data from a Registry source.

American Cancer Society "1976 Cancer Facts and Figures" #5008
INCREASE IN CIGARETTE SALES AND LUNG CANCER 1900-1975

Surgeon General's Report

Beginning of Health Warnings

Advent of Modern Advertising

W.W.II

WWI

1910 1920 1930 1940 1950 1960 1970 75

LUNG CANCER MORTALITY

LUNG CANCER

CIGARETTE SALES

BILLION CIGARETTES

81,000

40,000

5,000

100

200

300

400

500
### ESTIMATED NEW CASES AND DEATHS FOR MAJOR SITES OF CANCER – 1975*

<table>
<thead>
<tr>
<th>Site</th>
<th>No. of Cases</th>
<th>Deaths</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lung</td>
<td>91,000</td>
<td>81,000</td>
</tr>
<tr>
<td>Colon-Rectum</td>
<td>99,000</td>
<td>49,000</td>
</tr>
<tr>
<td>Breast</td>
<td>89,000</td>
<td>33,000</td>
</tr>
<tr>
<td>Uterus</td>
<td>46,000**</td>
<td>11,000</td>
</tr>
<tr>
<td>Oral</td>
<td>23,000</td>
<td>8,000</td>
</tr>
<tr>
<td>Skin</td>
<td>9,000***</td>
<td>5,000</td>
</tr>
<tr>
<td>Leukemia</td>
<td>21,000</td>
<td>15,000</td>
</tr>
</tbody>
</table>

*Figures rounded to the nearest 1000.

**If carcinoma-in-situ included, cases total over 86,000.

***Estimates vary widely, from 300,000-600,000 or more, for superficial skin cancer.

INCIDENCE RATES ARE BASED ON RATES FROM N.C.I. THIRD NATIONAL CANCER SURVEY.

---

### FIVE YEAR CANCER SURVIVAL RATES* FOR SELECTED SITES

- **Bladder**: 71% localized, 21% regional
- **Breast**: 94% localized, 56% regional
- **Colon & Rectum**: 71% localized, 28% regional
- **Larynx**: 75% localized, 25% regional
- **Lung**: 53% localized, 48% regional
- **Leukemia**: 57% localized, 43% regional
- **Prostate**: 66% localized, 34% regional
- **Uterus**: 62% localized, 38% regional

*Adjusted for normal life expectancy of sex and race. Source: SEER results from NCI.

---

### CANCER INCIDENCE BY SITE AND SEX*

- **Skin**: 1%
- **Oral**: 5%
- **Lung**: 22%
- **Colon & Rectum**: 14%
- **Other Digestive**: 12%
- **Prostate**: 17%
- **Urinary**: 9%
- **Leukemia & Lymphomas**: 8%
- **All Other**: 12%

*Excluding superficial skin cancer and carcinoma-in-situ of uterine cervix.

### CANCER DEATHS BY SITE AND SEX

- **Skin**: 1%
- **Oral**: 3%
- **Lung**: 33%
- **Colon & Rectum**: 12%
- **Other Digestive**: 15%
- **Prostate**: 9%
- **Urinary**: 6%
- **Leukemia & Lymphomas**: 9%
- **All Other**: 12%

American Cancer Society "1976 Cancer Facts and Figures" #5008
**LEADING CANCER SITES, 1974**

<table>
<thead>
<tr>
<th>SITE</th>
<th>ESTIMATED NEW CASES 1974</th>
<th>ESTIMATED DEATHS 1974</th>
<th>WARNING SIGNAL IF YOU HAVE ONE, SEE YOUR DOCTOR</th>
<th>SAFEGUARDS</th>
<th>COMMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>BREAST</td>
<td>90,000</td>
<td>33,000</td>
<td>LUMP OR THICKENING IN THE BREAST.</td>
<td>ANNUAL CHECKUP, MONTHLY BREAST SELF EXAM.</td>
<td>THE LEADING CAUSE OF CANCER DEATH IN WOMEN.</td>
</tr>
<tr>
<td>COLON AND RECTUM</td>
<td>99,000</td>
<td>48,000</td>
<td>CHANGE IN BOWEL HABITS; BLEEDING.</td>
<td>ANNUAL CHECKUP INCLUDING PROCTOSCOPY, ESPECIALLY FOR THOSE OVER 40.</td>
<td>CONSIDERED A HIGHLY CURABLE DISEASE WHEN DIGITAL AND PROCTOSCOPIC EXAMINATIONS ARE INCLUDED IN ROUTINE CHECKUPS.</td>
</tr>
<tr>
<td>LUNG</td>
<td>83,000</td>
<td>75,000</td>
<td>PERSISTENT COUGH, OR LINGERING RESPIRATORY ILLNESS.</td>
<td>PREVENTION: HEED FACTS ABOUT SMOKING, ANNUAL CHECKUP, CHEST X-RAY.</td>
<td>THE LEADING CAUSE OF CANCER DEATH AMONG MEN, THIS FORM OF CANCER IS LARGELY PREVENTABLE.</td>
</tr>
<tr>
<td>ORAL (INCLUDING PHARYNX)</td>
<td>24,000</td>
<td>8,000</td>
<td>Sore that does not heal, difficulty in swallowing.</td>
<td>ANNUAL CHECKUP.</td>
<td>MANY MORE LIVES SHOULD BE SAVED BECAUSE THE MOUTH IS EASILY ACCESSIBLE TO VISUAL EXAMINATION BY PHYSICIANS AND DENTISTS.</td>
</tr>
<tr>
<td>SKIN</td>
<td>300,000*</td>
<td>5,000</td>
<td>Sore that does not heal, or change in wart or mole.</td>
<td>ANNUAL CHECKUP, AVOIDANCE OF OVEREXPOSURE TO SUN.</td>
<td>SKIN CANCER IS READILY DETECTED BY OBSERVATION, AND DIAGNOSED BY SIMPLE BIOPSY.</td>
</tr>
<tr>
<td>UTERUS</td>
<td>46,000*</td>
<td>11,000</td>
<td>UNUSUAL BLEEDING OR DISCHARGE.</td>
<td>ANNUAL CHECKUP, INCLUDING PELVIC EXAMINATION WITH PAP TEST.</td>
<td>UTERINE CANCER MORTALITY HAS DECLINED 55% DURING THE LAST 35 YEARS. WITH WIDER APPLICATION OF THE PAP TEST, MANY MORE LIVES CAN BE SAVED, ESPECIALLY FROM CERVICAL CANCER.</td>
</tr>
<tr>
<td>KIDNEY AND BLADDER</td>
<td>43,000</td>
<td>15,000</td>
<td>URINARY DIFFICULTY, BLEEDING - IN WHICH CASE CONSULT DOCTOR AT ONCE.</td>
<td>ANNUAL CHECKUP WITH URINALYSIS.</td>
<td>PROTECTIVE MEASURES FOR WORKERS IN HIGH-RISK INDUSTRIES ARE HELPING TO ELIMINATE ONE OF THE IMPORTANT CAUSES OF THESE CANCERS.</td>
</tr>
<tr>
<td>LARYNX</td>
<td>10,000</td>
<td>3,000</td>
<td>HOARSENESS - DIFFICULTY IN SWALLOWING.</td>
<td>ANNUAL CHECKUP, INCLUDING MIRROR LARYNGOSCOPY.</td>
<td>READILY CURABLE IF CAUGHT EARLY.</td>
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<tr>
<td>PROSTATE</td>
<td>54,000</td>
<td>10,000</td>
<td>URINARY DIFFICULTY.</td>
<td>ANNUAL CHECKUP, INCLUDING PALPATION.</td>
<td>OCCURS MAINLY IN MEN OVER 60. THE DISEASE CAN BE DETECTED BY PALPATION AND URINALYSIS AT ANNUAL CHECKUP.</td>
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<tr>
<td>STOMACH</td>
<td>23,000</td>
<td>14,000</td>
<td>INDIGESTION.</td>
<td>ANNUAL CHECKUP.</td>
<td>A 40% DECLINE IN MORTALITY IN 20 YEARS, FOR REASONS YET UNKNOWN.</td>
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<tr>
<td>LEUKEMIA</td>
<td>21,000</td>
<td>15,000</td>
<td>LEUKEMIA IS A CANCER OF BLOOD-FORMING TISSUES AND IS CHARACTERIZED BY THE ABNORMAL PRODUCTION OF IMMATURE WHITE BLOOD CELLS. ACUTE LEUKEMIA STRIKES MAINLY CHILDREN AND IS TREATED BY DRUGS WHICH HAVE EXTENDED LIFE FROM A FEW MONTHS TO AS MUCH AS TEN YEARS. CHRONIC LEUKEMIA STRIKES USUALLY AFTER AGE 25 AND PROGRESSES LESS RAPIDLY. IF DRUGS OR VACCINES ARE FOUND WHICH CAN CURE OR PREVENT ANY CANCERS THEY PROBABLY WILL BE SUCCESSFUL FIRST FOR LEUKEMIA AND THE LYMPHOMAS.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LYMPHOMAS</td>
<td>28,000</td>
<td>20,000</td>
<td>THESE DISEASES ARISE IN THE LYMPH SYSTEM AND INCLUDE HODGKIN'S AND LYMPHOSARCOMA. SOME PATIENTS WITH LYMPHATIC CANCERS CAN LEAD NORMAL LIVES FOR MANY YEARS.</td>
<td></td>
<td></td>
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</table>

*Carcinoma-in-situ of the uterine cervix and superficial skin cancers not included in totals.*

American Cancer Society "Nature of Cancer "Senior High School Teaching Kit, Lesson 7, #2054.02
CANCER PREVENTION AND CONTROL

Cancer’s Warning Signals!

1. Change in bowel or bladder habits.
2. A sore that does not heal.
3. Unusual bleeding or discharge.
4. Thickening or lump in breast or elsewhere.
5. Indigestion, or difficulty in swallowing.
6. Obvious change in wart or mole.
7. Nagging cough or hoarseness.

If you have a warning signal, see your doctor.

Protect Yourself With These Safeguards Against CANCER

<table>
<thead>
<tr>
<th>Organ</th>
<th>Recommendation</th>
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<tr>
<td>BREAST</td>
<td>Monthly Self-Exam</td>
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<tr>
<td>UTERUS</td>
<td>Pap Test Once a Year</td>
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<tr>
<td>LUNG</td>
<td>Don’t Smoke Cigarettes</td>
</tr>
<tr>
<td>SKIN</td>
<td>Avoid Excess Sun</td>
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<tr>
<td>COLON RECTUM</td>
<td>Procto Annually Especially After 40</td>
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<tr>
<td>MOUTH</td>
<td>Exams Regularly</td>
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# TRENDS IN AGE-ADJUSTED CANCER DEATH RATES

**Per 100,000 Population 1952-54 to Recent**

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<th>Sex</th>
<th>Site</th>
<th>1952-54</th>
<th>Recent</th>
<th>Percent Changes</th>
<th>Comments</th>
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<tr>
<td>Male</td>
<td>All Sites</td>
<td>136.0</td>
<td>155.1</td>
<td>+ 14</td>
<td>Steady increase mainly due to lung cancer.</td>
</tr>
<tr>
<td>Female</td>
<td>All Sites</td>
<td>118.5</td>
<td>109.6</td>
<td>- 8</td>
<td>Slight decrease.</td>
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<tr>
<td>Male</td>
<td>Breast</td>
<td>0.2</td>
<td>0.2</td>
<td>-</td>
<td>Constant rate.</td>
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<tr>
<td>Female</td>
<td>Breast</td>
<td>21.8</td>
<td>22.9</td>
<td>+ 5</td>
<td>Slight fluctuations: Overall no change.</td>
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<tr>
<td>Male</td>
<td>Colon &amp; Rectum</td>
<td>19.3</td>
<td>18.8</td>
<td>- 3</td>
<td>Slight decrease in both sexes.</td>
</tr>
<tr>
<td>Female</td>
<td>Colon &amp; Rectum</td>
<td>18.0</td>
<td>15.8</td>
<td>- 12</td>
<td>Slight decrease in both sexes.</td>
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<tr>
<td>Male</td>
<td>Lung</td>
<td>22.7</td>
<td>44.5</td>
<td>+ 96</td>
<td>Steady increase in both sexes due to cigarette smoking.</td>
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<tr>
<td>Female</td>
<td>Lung</td>
<td>4.0</td>
<td>8.1</td>
<td>+ 103</td>
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</tr>
<tr>
<td>Male</td>
<td>Oral</td>
<td>4.6</td>
<td>4.9</td>
<td>+ 7</td>
<td>Slight fluctuations: Overall no change in both sexes.</td>
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<tr>
<td>Female</td>
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<td>1.4</td>
<td>1.4</td>
<td>-</td>
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<tr>
<td>Male</td>
<td>Skin</td>
<td>2.4</td>
<td>2.5</td>
<td>+ 4</td>
<td>Slight fluctuations: Overall no change in both sexes.</td>
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<tr>
<td>Female</td>
<td>Uterus</td>
<td>17.2</td>
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<td>- 38</td>
<td>Steady decrease attributed in part to widening acceptance of regular checkup with “Pap Test”.</td>
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<tr>
<td>Male</td>
<td>Esophagus</td>
<td>3.8</td>
<td>4.1</td>
<td>+ 8</td>
<td>Slight fluctuations: Overall no change in both sexes.</td>
</tr>
<tr>
<td>Female</td>
<td>Esophagus</td>
<td>1.1</td>
<td>1.1</td>
<td>-</td>
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<tr>
<td>Male</td>
<td>Stomach</td>
<td>16.9</td>
<td>9.1</td>
<td>- 46</td>
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<td>- 48</td>
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<td>Prostate</td>
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<td>Ovary</td>
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<td>+ 6</td>
<td>Steady increase.</td>
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<tr>
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<td>Ovary</td>
<td>7.2</td>
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<tr>
<td>Male</td>
<td>Kidney</td>
<td>2.9</td>
<td>3.5</td>
<td>+ 21</td>
<td>Steady slight increase.</td>
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<tr>
<td>Female</td>
<td>Kidney</td>
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<td>1.7</td>
<td>-</td>
<td>Slight fluctuations: Overall no change.</td>
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<tr>
<td>Male</td>
<td>Leukemia</td>
<td>6.8</td>
<td>7.3</td>
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<td>Early increase, later leveling off.</td>
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<td>Female</td>
<td>Leukemia</td>
<td>4.7</td>
<td>4.6</td>
<td>- 2</td>
<td>Slight early increase, later leveling off.</td>
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# APPENDIX 15

## CANCER AROUND THE WORLD

### Age-Adjusted Death Rates Per 100,000 Population for Selected Cancer Sites for 39 Countries - 1966-67

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<th>Country</th>
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**Note:** Figures in parentheses are orders of rank within site and sex group.

*Source: World Health Statistics Annual 1966-67*
How to examine your breasts

In the shower:
Examine your breasts during bath or shower; hands glide easier over wet skin. Fingers flat, move gently over every part of each breast. Use right hand to examine left breast, left hand for right breast. Check for any lump, hard knot, thickening.

1

Before a mirror:
Inspect your breasts with arms at your sides. Next, raise your arms high overhead. Look for any changes in contour of each breast, swelling, dimpling of skin or changes in the nipple.

2

Then, rest palms on hips and press down firmly to flex your chest muscles. Left and right breasts will not exactly match—few women's breasts do.

Regular inspection shows what is normal for you and will give you confidence in your examination.

3

Lying down:
To examine your right breast, put a pillow or folded towel under your right shoulder. Place right hand behind your head—this distributes breast tissue more evenly on the chest. With left hand, fingers flat, press gently in small circles. Hands around an imaginary clock, 10 o'clock, at outermost top of your right breast, for 12 o'clock, then move to 1 o'clock, and so on around the circle back to 12. A ridge of firm tissue in the lower curve of each breast is normal. Then move in an inch, toward the nipple, keep circling to examine every part of your breast, including nipple. This requires at least three more circles. Now slowly repeat procedure on your left breast with a pillow under your left shoulder and left hand behind head. Notice how your breast structure feels.

Finally, squeeze the nipple of each breast gently between thumb and index finger. Any discharge, clear or bloody, should be reported to your doctor immediately.
TOLL FREE  
CANCER INFORMATION  
CAN-DIAL  
cancer information through your telephone

In Erie County  
CALL 845-3380  
Outside Erie County  
CALL TOLL FREE  
1-800-462-1884  
Monday-Sunday  
8 a.m. - 12 mid.

Cancer Dial has prepared this library of taped messages concerning cancer. Now you can listen to answers to some of the commonly asked questions on cancer in the privacy of your home or office. This toll-free service is available throughout New York State.

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NEW YORK STATE DEPARTMENT OF HEALTH  
666 ELM STREET, BUFFALO, NEW YORK 14203  
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CANCER INFORMATION TAPE LIBRARY*

1. What is Cancer?  
3. Cancer of the Breast—And How to Detect It.  
4. Lung Cancer.  
5. If You Want to Give Up Cigarettes.  
7. Cancer of the Uterus.  
8. Cancer of the Skin.  
10. Leukemia.  
11. Cancer of the Mouth.  
12. Service and Rehabilitation Information for Patients and Their Families.  
22. What is the Pap Test—How Can It Help You?  
23. What is the Roswell Park Memorial Institute?  
24. Radiation Therapy in Cancer Treatment.  
25. Words from a Hospital Chaplain.  
26. The Effect of Cigarette Smoking on the Non-Smoker.  
29. Questions and Answers About Smoking and Quitting.  
32. Questions and Answers About Smoking and Health.  
33. Cancer of the Thyroid Gland.  
34. Speech Therapy After Cancer Treatment.  
35. Cancer Facts for the Senior Citizen.  
36. The Economic Impact of Cancer on the Family.  

*Spanish language tapes are available. Numbers 61-80 are the same topics as English tapes 1-30.

When the operator answers, request the number and title of the particular tape you are interested in hearing.

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