

# ACCENT

## Cancer: The feared disease still stumps researchers

### Self-examinations and regular check-ups help detect three types of cancer prevalent among young people

By **SUSAN HUDSON**  
Features Editor

**C**ancer kills more people between the ages of 15 and 34 than any other disease. Only accidents kill more young women and homicides and accidents more young men.

Although a cure for this dread disease has not yet been discovered, some cancers that affect young people can be detected early enough to be treated successfully.

Unfortunately, most young people neglect important self-examinations and regular medical check-ups, disregard early warning signals and remain ignorant of how their environment, lifestyle and background can affect their chances of having cancer and thus needlessly fall victim to the disease.

Three types of cancer that often affect young people — cervical cancer (women), testicular cancer (men) and breast cancer (women) — can usually be treated successfully if detected early enough.

#### Cervical cancer

Cancer of the cervix, the lower narrow end of the uterus that projects into the upper vagina, is particularly widespread among college-age women.

"We are alerting young women of college age that they may be at high risk," said Diana McGrath, director of the Cancer Education and Communication program at Duke University.

An estimated 7,100 women will die from cervical cancer this year, most of them needlessly.

"Cervical cancer is a highly curable disease," McGrath said. "If it is spotted early, the chances are very good that it can be cured."

The reasons that college age women have a higher risk for cervical cancer are twofold: they are at the age when both sexual activity and the number of sex partners increase. Virgins almost never develop cancer of the cervix.

The key to early detection of cervical cancer is a simple, painless, in-office procedure called the Pap test. For this test, the doctor scrapes a tissue sample from the rim of the cervix that is then examined for the presence of abnormal cells.

"Doctors often see abnormalities during the Pap test, but it's usually the result of women using the Pill," McGrath said. If the doctor does find something unusual, he will usually ask the woman to come back in three months and repeat the Pap test.

Another examination a doctor may perform is called a colposcopy. Looking through a colposcope, the doctor examines the cervix for abnormalities by painting the areas with iodine, which reveals the suspicious cells. The doctor can then scrape some of the tissue out for a biopsy. Abnormalities found during these tests could indicate one of three conditions, dysplasia, carcinoma *in situ* or invasive cancer.

Dysplasia, or the presence of abnormal cells, may be classified as mild, moderate or severe. It is the condition that affects more women in their late teens or early 20s. If untreated, dysplasia may go through a series of changes and develop into cancer.

Carcinoma *in situ* (literally, "where it begins"), also known as very early cancer, sometimes occurs in women in their 20s. This cancer affects only the top layers of cells in the cervix but if left untreated, it may progress to invasive cancer.

The most dangerous condition of the three is invasive cancer of the cervix. One symptom of invasive cancer is abnormal

bleeding from the vagina, but this condition may have no symptoms at all, including pain. If unchecked, invasive cancer of the cervix may spread to other parts of the body.

Treatment for dysplasia and very early cancer is usually minor, such as cryosurgery (freezing) or cauterization (burning) of the abnormal cells. Since the cervix contains no pain-sensitive nerve fibers, these procedures are only slightly uncomfortable.

The treatment of more advanced cancer can be very serious, possibly involving the surgical removal of the cervix and uterus — a hysterectomy. This decision should be carefully considered beforehand since after having this operation the woman can no longer bear children.

#### Testicular cancer

Testicular cancer, the one that strikes young men more often than older men, has the highest incidence rate and fifth highest mortality rate for cancers in young men.

In this cancer, malignant tumors grow in the testes and usually spread to other organs unless medically treated. In 88 percent of testicular cancer cases, the disease has spread throughout the body by the time it is actually diagnosed by a physician.

Since the testicular cancer tumors are often painless, it is important that young men regularly examine their testes for slight enlargement or a change in consistency. This examination takes only three minutes and should be done once a month.

"Most men don't know about doing testicular examinations," McGrath said. "Now we're putting the same emphasis on testicular examinations for men as on breast examinations for women."

There are two basic steps for testicular

self-examination. The first step is visual examination of the testes for abnormal changes, such as swelling of the scrotal sac.

Then the testes are physically examined as the man feels for lumps or swelling in each testicle. Men should not confuse the epididymus, the rope-like sperm collecting structure on the top and back of each testicle, with an abnormal lump.

Although not all tumors are cancerous, young men should report any abnormal lumps to their physicians. Other symptoms of testicular cancer include breast enlargement, a dull ache in the scrotum, lower abdomen and groin, or a feeling of heaviness in these areas.

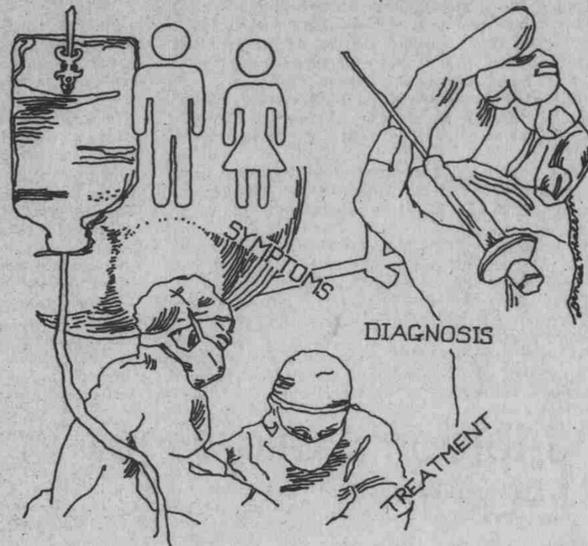
If a tumor is diagnosed as malignant, the cancerous testicle is usually removed. Removal of one testicle does not render the young man impotent or infertile and an artificial, gel-filled testicle made of medical plastic may be inserted during the operation. Radiation and chemotherapy (taking a combination of anti-cancer drugs) are also effective treatments for testicular cancer.

#### Breast cancer

Breast cancer is the leading cause of cancer death for females between the ages of 15 and 34. Last year breast cancer killed 37,000 women.

Cancer of the breast can be identified by unusual lumps, puckering, redness, irritation, pain or tenderness of the breast. A discharge from or an inversion of the nipple is sometimes a warning signal.

Although eight out of 10 breast lumps are benign, it is important for a woman to examine her breasts at least once a month. Women locate 90 percent of all breast lumps themselves, and if the lump is



cancerous, early detection can lead to arrest of the cancer.

tions, the physician will be able to determine if the abnormality is really cancer.

The best time to perform a breast self-examination is two to three days after the end of the menstrual period. The first step is checking in a mirror for external changes in the breasts.

In the event that cancer is diagnosed, surgical procedures ranging from a simple mastectomy (removal of the breast only) to radical mastectomy (removal of the breast, underlying muscles and auxiliary lymph nodes) may be prescribed. Radiation therapy, hormonal therapy and chemotherapy are additional treatments for breast cancer.

By first clasping her hands behind her head and then placing her hands firmly on her hips, a woman can check for a change in the shape or contour of her breasts.

Prevention is an often overlooked way of treating cancer. Sometimes just curbing excesses in lifestyle can decrease one's chances of getting some kinds of cancer. For example, eating less and shedding extra pounds could help a woman avoid breast cancer since that disease is more predominant in obese women.

In the shower, a woman can examine her breasts for lumps by pressing her fingers over them in small circular motions. Women should also gently squeeze each nipple to check for a discharge.

"You can choose the lifestyle that you want," McGrath said. "But you can't choose the consequences of that lifestyle."

## Cancer Center upholds UNC's research reputation

By **MELISSA MOORE**  
Staff Writer

**I**ndividual cancer research is by nature a slow process. But at the Cancer Research Center at UNC's School of Medicine, faculty members from various backgrounds all work as a group to discover the causes of cancer.

"The unit itself is stronger than any individual," said Dr. J.W. Pledger, a molecular biologist in the program.

"Basic and clinical research on various aspects

of cancer has been performed by individual faculty (members) at the schools of Medicine and Public Health for over 30 years," said Dr. Shelley Earp, associate to the director of the center.

But because of changes in the complexity of cancer research, a faculty advisory committee planned and applied for a grant to establish a Cancer Center in 1974, Earp said. The Cancer Center was subsequently founded in 1975 with a National Cancer Institute grant.

"Since that time the Cancer Research Center has encouraged interactions between different departments, provided specialized research facili-

ties, promoted symposia and seminars, provided efficient, economical ways to make supplies and equipment available to faculty, and co-recruited and supported promising new faculty to promote interdisciplinary research," Earp said.

The National Cancer Institute recently renewed the center's grant for the third time. Individual researchers obtain their own funding for projects from various agencies of the National Institute of Health and private foundations such as the American Cancer Society and the Leukemia Society of America, Earp said.

The initial aim of the center was to develop six basic science research programs: tumor immunology, tumor virology, cancer epidemiology, chemical carcinogenesis, cancer cell biology and drug development, Earp said.

In the last three years, the center has begun to develop other areas of study — cancer control and clinical research. "The cancer control program attempts to develop new strategies for cancer prevention and to promote the utilization of preventive methods known to be effective," Earp said. Investigators in the clinical and basic research programs "collaborate in an attempt to determine which aspects of basic research are clinically applicable," he said.

Each of the six areas of basic research studies a different aspect of cancer.

The cancer cell biology program seeks to understand normal cell growth and how control of this growth is lost when cancer develops, Pledger said. When cancer is present, cells which are going through the normal growth cycle do not stop growing. Although the body would normally tell the cells to stop proliferating if the body does not need any more, when cancer is present, cells do not stop growing. Next, a tumor forms and cells can infiltrate other parts of the body. In addition, tumors can arise from other tumors. The researchers in cancer cell biology want to understand why this process happens.

Dr. Stephen Haskill of the tumor immunology program said, "We're doing experimental studies, taking normal blood macrophages (large cells which consume foreign material and debris), trying to see what makes them become killer cells, what

agents activate them so they can destroy tumor cells and how you could use them to treat cancer." It is possible to educate cells to kill cancer cells or to stimulate cancer cells to grow better, he said.

Dr. Yung-Chi Cheng of the drug development program said that program focuses not only on the discovery of new drugs but also on improvement of old drugs. Few compounds look promising for development of new drugs, and it is too early to say if they can be used in the clinic, he said.

However, a new protocol (regimen) developed in clinical research is "one of the hottest protocols used in the country for leukemia," Cheng said. "We've been helping them improve that protocol, making it even better." Collaboration between researchers in different disciplines is very important, he said.

Cheng also said, "We hope to develop a protocol for treatment which will be more effective than current treatment for brain tumors."

Dr. Ron Swanstrom of the tumor virology program said, "Viruses give us a system to study rapidly developing cancers. Some types of tumors are probably caused by viruses, though the number is small." He said many characteristics of a cell change when a cell is transformed. "Now that we have an idea of the primary change, we want to look at other changes."

The key question: How does a virus cause cell transformation? "We know that cells are growing inappropriately but don't know what controls appropriate growth," Swanstrom said. "We don't know enough about the normal cell. I think we're getting close to some of those answers."

Researchers in tumor virology study cells grown in cultures. One reason is the expense of working with animals. But at some point they must go back to animal study to see if they are right, Swanstrom said.

Dr. David Kaufman of the chemical carcinogenesis program said, "Cancer happens because things change slowly over a long period of time. It's that that we're trying to reproduce (in the laboratory)."

"We're trying to develop methods to look at evolution of malignancies," he said. Researchers in chemical carcinogenesis use radioactive material

in laboratory work because it allows them to see what is happening immediately.

Dr. Barbara Hulka of the cancer epidemiology program said, "We're interested in disease causation." Unlike the other basic research programs, which do laboratory work, epidemiology work is with groups of people. "We work with statisticians with quantitative numerical data," Hulka said.

Epidemiologists' research goes even more slowly than in other basic research programs. They must gather information about hundreds of subjects and manipulate all the information to get it on a computer before they can look at it, Hulka said. Studies can last for years.

"Of course we all live in the era of having to apply for funding," she said. This takes even more time.

Hulka said prevention of cancer is a better route to take than searching for a cure. Similarly, Kaufman said, "In the long run, it is better to prevent the disease from happening than to try to treat it. For the most part, that's the objective of our approach. We look for a means to recognize it earlier when it is more treatable." In describing the Cancer Research Center, he said, "It's really a process of mutual dependency."

Swanstrom said, "I think prevention is something that in the short run we have potential for making the greatest strides in." He said smoking is an example of something people could avoid and that, in time, other environmental factors which cause cancer will be recognized.

When asked about one cure for the many different kinds of cancer, Pledger said, "Right now — in the immediate future — I don't think there will be one cure that will cure everything." He said, "We're learning a lot; magnificent discoveries are made every day. But it is a very complex thing, and we know so very little."

In December 1981, construction began on a new \$8.4 million building for the Center. The Lineberger Cancer Research Center Building will bring together people in the basic aspects of research, Earp said. It will have specifically designed laboratories for core facilities and will give the center a greater sense of identity, he said.



DTH/Jeff Neuville

Dr. J.W. Pledger conducting research at the Cancer Research Center ... The Center searches for a prevention to the disease

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