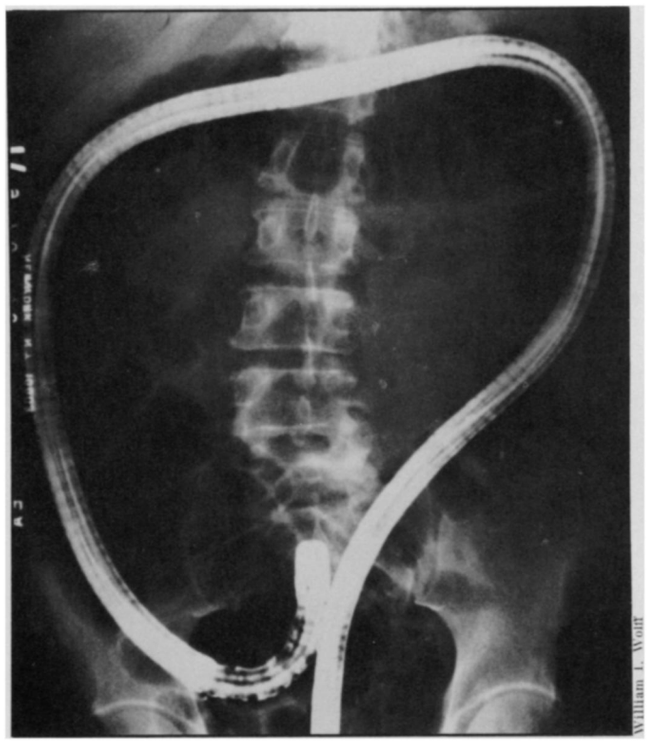
Is the Great Cancer Cure already with us?

Although a cancer panacea remains elusive, physicians are slowly but surely extending cancer patients' lives

by Joan Arehart-Treichel



The colonoscope is inserted into the colon (large intestine). It allows the doctor to see a full six feet up the colon, and to remove polyps from the colon before they become cancerous.

Since the National Cancer Act of 1971, there has been a continual hubbub about conquering cancer. The public has been led to believe that some morning it will wake up, and newspaper headlines will glare: Cancer Cure Found! The cure, of course, will have come about because some smart or lucky scientist anguished away days and nights until he found the key.

But science rarely works that way. Breakthroughs come in bits and pieces. And it's exactly in this slow, undramatic way that cancer scientists have greatly increased the number of long-term or even permanent cancer remissions since cancer therapy was first tried during the 19th century. During the 1930's only one out of five cancer patients could expect a remission for five years or perhaps longer. Then one out of three could expect such a remission. Now the rate is approaching one out of two patients. And some of these patients will go on to live out their natural lifespan.

In short, cancer cures—or at least ample remissions—are already with us. And they're increasing every day. So much so, in fact, that health professionals are now facing a new problem—integrating successfully treated patients back into society. One job applicant out of a thousand is now a former cancer patient, and may of them have trouble getting employment.

Of course, tough challenges still lie ahead. There is a need to extend the present remission rates, to find effective treatments for certain cancers that are still intractable and to bring the best available treatment to those patients who need it.

Cancer is certainly nothing new. King Herod of Judea died from it. So did Napoleon. And so have many lesser known persons throughout the centuries. Treatments for cancers aren't new either. Surgery was tried during the 19th century, if not before. The 20th century, of course, has seen the real boom in cancer treatments.

After World War II, X-rays joined surgery in treating localized cancers. In 1948 the first cancer drug was approved by the U.S. Food and Drug Administration. Today there are several dozen cancer drugs on the market. They exert various biochemical actions, but most of them interfere in some way or another with the division of cancer cells. Drugs are most effective against cancers that are spreading. In 1964 Georges Mathé of the Paul-Brousse Hospital near Paris gave Bacillus Calmette-Guérin (BCG)—the tuberculosis vaccine—to children dying from leukemia. As he hoped, the vaccine primed the children's immune systems. Some of his patients are still alive today, 10 years later. Mathé's work opened the door on still another kind of cancer treatment. This was immunotherapy.

During the past few years, however, there has been a new trend toward the treatment of cancer. It is the combining of various treatments so they will be as effective as possible against various cancers. These multipronged approaches are obtaining more dramatic results than the use of isolated forms of treatment. This fact was underscored time and again at the National Conference on Advances in Cancer Management, held in New York City recently. The conference was jointly sponsored by the National Cancer Institute and the American Chemical Society. Some 3,000 of the nation's physicians attended.

In 1956, for instance, the outlook was dismal for children with leukemia. The survival average was six months. Now, thanks to an uphill fight combining four or five drugs with X-rays, the survival average is five years. This

"total therapy," as it is called, was devised by Donald Pinkel and his team at St. Jude Children's Research Hospital in Memphis. It is now being used in many cancer centers.

The prognosis for patients with Hodgkin's disease—cancer of the lymph tissues—has also improved dramatically in recent years, first because of X-rays, then because of the use of drugs. A number of patients go on to live 20, even 30 years. But physicians aren't stopping here. During the next decade, Saul A. Rosenberg and his colleagues of Stanford University School of Medicine hope to extend survival rates still more by trying new X-ray and drug combinations.

Sarcomas are cancers of the bone. A third of the victims are adolescents. Physicians are extending the lives of these patients by giving them surgery plus drugs. Gerald Rosen of the Memorial Hospital for Cancer and Allied Disesases in New York City, and his colleagues, are working toward an even greater refinement of the combination treatment by using X-rays to zap cancer cells that have grown away from a major tumor. This way, they hope to spare the growing ends of the bones of young sarcoma patients.

Rosen and his team are trying a combination of surgery, drugs and immunotherapy on some patients. They also tried something highly experimental on three young girls with cancer of the thigh bone. They gave the patients drugs to shrink their tumors, cut out the remaining tumors, then inserted a prosthetic device where destroyed bone and tissues had been. This way they were able to avoid amputating the patients' legs. The long-term survival of these patients remains to be seen, however. Until then, amputation remains the standard treatment for cancer of the femur.

Melanomas are skin cancers erupting out of moles. They are likewise showing marked regression under combination therapy. Donald L. Morton and his colleagues at the University of California at Los Angeles School of Medicine have been treating melanoma patients for three years with surgery, or with surgery plus BCG. The aim, he says, was to see whether the immunotherapy helped extend tumor-free remissions. It turned out that it did. Cancer recurrences were twice as frequent among the patients who had received surgery alone as it was among the patients who had received surgery plus immunotherapy.

For a year now, Morton and his coworkers have also been giving some melanoma patients surgery, surgery plus BCG, or surgery plus BCG plus a vaccine comprised of tumor cells. Morton told SCIENCE NEWS that he expects the tumor cell vaccine to be even more effective than BCG in bringing about remissions. This is because BCG primes the immune system in general, whereas the tumor cell vaccine specifically primes the system against cancer.

The approaches they are using consist of cleaning out large tumors with surgery, then using immunotherapy to wipe out any leftover cancer cells. Morton stresses, though, that immunotherapy "is still in the horse and buggy days." Under certain conditions BCG has made cancer cells grow faster rather than slower in animals. There is the danger that it might do the same in patients.

Nor are breast cancer patients being bypassed by combination therapy. Bernard Fisher, a surgeon with the University of Pittsburgh School of Medicine, and Eleanor D. Montague, a radiotherapist with the M.D. Anderson Hospital and Tumor Institute in Houston, report that lesser operations followed by X-ray therapy or drug treatment might be as effective as radical surgery in treating breast cancer patients.

Although combination therapy is greatly contributing to current cancer remissions, technological advances are also making a difference. The colonoscope, for instance, is a fiberoptics instrument that lets physicians see far up the colon and to remove polyps before they invade the cell wall and become cancerous. William I. Wolff and his surgical team at Beth Israel Medical Center in New York City have used the colonoscope to remove polyps from the colons of 2,000 patients. Other surgical teams around the United States are using it too.

The EMI scanner—an X-ray scanner that pictures cross-sections of the brain—can differentiate between a brain tumor and a blood clot (SN: 9/1/73, p. 134). By improving the diagnosis of brain tumors, the scanner should also improve treatment of brain tumors. The scanner is now being used at a dozen American medical centers.

And then there is charged-particle radiography. It consists of passing charged atomic particles (matter) through tissue, as opposed to passing X-rays (light) through tissues (SN: 10/13/73, p. 234). It shows promise in the treatment of deep tumors, such as those of the head and neck. Unlike X-rays, it doesn't jeopardize the body's immune system. However, such modes of therapy are still piggybacking on large accelerators developed by the Atomic Energy Commission. The need is to come up with hospital machines that do the same trick. Several groups of scientists are trying to design such machines.

Of course, tough challenges still lie ahead. One is to extend present cancer remissions still further. Another is to find effective treatment for those cancers that are still largely hopeless. Two of the major ones are lung cancer and brain cancer.

There are several reasons why lung cancers are nearly always fatal, and swiftly so. For one, they are usually not discovered until cancer cells near their 35th division. Once cancer cells reach the 40th division, they usually become fatal. For another, smokers, who are most likely to get lung cancer, usually get it in various tissues of one or both lungs, making treatment doubly difficult.

Brain tumors are often fatal for other reasons. It's difficult to diagnose them (although the EMI scanner should help as it becomes more widely available). The biology and pathology of brain tumors are not very well understood. And brain cells resist drugs and immune defenses through the so-called "blood brain barrier."

Still, scientists have not given up on these two cancers. C. Gordon Zubrod of the University of Miami School of Medicine believes that X-rays, surgery, drugs and maybe even immunotherapy might eventually make a dent in lung cancer mortality. Michael D. Walker of the National Cancer Institute in Baltimore believes that a good operation to remove most of a brain tumor, followed up with X-rays and drugs, looks promising. "We need to continually bang on these cells," he asserts, "because we cannot kill them all—not yet."

Meanwhile there is a pressing need to bring the latest medical treatments to cancer patients throughout the United States. Conferences such as the one in New York City, where physicians hear about the latest treatments, are helping. So are efforts of the National Cancer Institute.

During the past couple of years, the NCI has been setting up treatment demonstration networks. Certain hospitals are given funds to show other hospitals and individual physicians in their areas the latest diagnoses and treatments for certain cancers. The NCI is also funding various medical centers so they can become comprehensive cancer centers and influence the treatment of cancer in their geographic areas.

The NCI likewise informs the public about which physicians in their area are using the latest cancer treatments. This way, a person with a particular kind of cancer can get in touch with a physician who is up on the best treatment for his kind of cancer.

Information on which physicians are treating certain cancers can be obtained from: Office of Cancer Communications, Building 31, Room 10A21, National Cancer Institute, Bethesda, Md. 22014. □