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In Aftermath Of NEJM Article, Critic Bailar Declares The Defeat Of Cancer Treatment

"Cancer Undefeated," a critical appraisal of cancer mortality rates published in the May 29 issue of the New England Journal of Medicine, confirms NCI statistics on one important point: cancer mortality is declining.

Scholarly debates about the paper revolve around differences of opinion about the authors' presentation of data and its interpretation. However, that debate may have been overshadowed by the media coverage of the paper.

In press interviews, the authors, John Bailar and Heather Gornik, both of the University of Chicago, repeated their claims that the decreases

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In Brief

Columbia University Doubles Lab Space; GM Cancer Awards To Suit, Folkman, Nurse

COLUMBIA UNIVERSITY opened the Russ Berrie Medical Science Pavilion at Columbia Presbyterian Medical Center in New York. The $66 million building doubles the university's cancer research laboratory space. Eight faculty members from the Herbert Irving Comprehensive Cancer Center will participate in cancer genetic research at the pavilion. . . . **GENERAL MOTORS** Cancer Research Foundation awarded the General Motors Cancer Research Foundation Science Awards to **Herman Suit**, **M. Judah Folkman**, and **Paul Nurse**. Suit received the Charles Kettering medal for outstanding contributions to the treatment of cancer. Suit, professor of radiation oncology at Massachusetts General Hospital, was recognized for demonstrating the efficacy of combined regional resectioning and radiotherapy to treat extremity sarcomas. Folkman, the Julia Dyckman Andrus professor of pediatric surgery at Harvard Medical School, received the Charles Mott medal for outstanding research in cancer causation or prevention for his work on the significance of angiogenesis in tumor growth. Nurse received the Alfred Sloan Jr. medal for efforts in basic science contributing to cancer research. Nurse is director-general of the Imperial Cancer Research Fund in London. . . . **MITCHEL BERGER** was named chair of the department of neurological surgery and director of the Brain Tumor Research Center, University of California, San Francisco. Berger is a former professor of neurosurgery at University of Washington School of Medicine, chief of Northwest Neuro-Oncology Research and Therapy Section and chief of pediatric neurosurgical oncology at Children's Hospital and Medical Center.

In This Issue:

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Debate Goes Prime Time Following Paper's Publication

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in mortality are most likely due to cancer prevention and early detection rather than treatment. In one interview, Bailar suggested that two-thirds of the NCI budget should be devoted to cancer prevention.

Undoubtedly, the conclusions of "Cancer Undefeated" will be challenged in the pages of the New England Journal of Medicine. While scientists are generally able to resolve scientific disputes, refuting a USA Today cover story titled "Billion-Dollar War on Cancer a Bust?" presents a different challenge.

Reporters have been treating Bailar and Gornik with reverence, apparently not asking for justification for their conclusions and recommendations. *[See story on page 4].*

Asked by **The Cancer Letter** to explain his proposal, Bailar said that two-thirds was a "rubber number." Asked to explain how that number was derived, Bailar said: "It's basically founded on my understanding of cancer trends and progress in cancer research over 40 years that I have tracked these matters." *[See story on page 5].*

Many readers of "Cancer Undefeated" were surprised to see Bailar's acknowledgment of former NCI Director Samuel Broder for "kindly suggesting the title" for the paper.

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In an interview, Bailar said Broder suggested the title for the paper. Broder said he had no prior knowledge of "Cancer Undefeated," vehemently disagrees with its conclusions, and is surprised by the acknowledgment. *[See story on page 6].*

"I think Dr. Bailar has gone beyond the data in order to dramatize the issues," said Barbara Rimer, chairman of the National Cancer Advisory Board and director of cancer control research at Duke University Medical Center.

"Scientists have, more and more, taken liberties with data to get the attention of the media," Rimer said to **The Cancer Letter**. "If you want to get attention, you need to be dramatic. Trying to mandate percentages for prevention versus treatment results in an overly simplistic view of science.

"It's unfortunate that Dr. Bailar frames important policy issues as dichotomies, because it can result in polarization of scientists and the public."

Bailar is chairman of the University of Chicago Department of Health Studies, a member of the New England Journal of Medicine editorial board, as well as member of the Institute of Medicine and its National Cancer Policy Board.

Technical Issues

On May 29, at a Los Angeles "field hearing" on cancer research, Sen. Arlen Specter (R-PA), chairman of the Senate Labor, HHS and Education Subcommittee brandished a copy of that day's USA Today.

Was the government's "Billion-Dollar War On Cancer A Bust?" as the headline suggested? After returning to Washington, Specter began to make plans for a hearing on the controversy.

Ironically, the differences between Bailar's and Gornik's data and NCI's are, for the most part, technical, and the figures on cancer mortality are not in dispute.

While NCI adjusts the survival data using the ages of the U.S. population as they were in 1970, Bailar and Gornik used the 1990 age adjustment. Controlling for the changing of ages of the population allows researchers to track trends, including cancer mortality.

The choice of age adjustment is largely a matter of tradition. Many NIH institutes use the 1940 population. NCI uses the 1970 population, largely because that year's census is closest to the passage of the National Cancer Act of 1971.

According to NCI, with the 1970 age

adjustment, cancer mortality dropped by about 2.6 percent between 1991 and 1995. With the 1990 age adjustment used by Bailar and Gornik, cancer mortality dropped by 1 percent between 1991 and 1994.

"This drop may well portend larger improvements to come," Bailar and Gornik write. "Even if rates turn upward again, the decline will surely resume within the next few years as a result of reduction of smoking over recent decades."

This, too, is not disputed by NCI.

"One area of agreement is that around 1991, a corner was turned, and for the first time since the beginning of the National Cancer Program, cancer mortality began to drop," said Barnett Kramer, deputy director if the NCI Division of Cancer Prevention and Control. "Also, I agree that as far as one can project, it looks like the decrease in mortality will continue for some time."

Bailar and NCI drew their data from the same source: the National Center for Health Statistics. However, before the Institute announced its findings on the drop in mortality, it obtained raw data for 1995. These data, which showed a continued downward trend, were not available to Bailar, sources said.

Sources said that even though NCI continued its tradition of presenting cancer mortality data age-adjusted for 1970, prior to the announcement of the mortality drop, the Institute ran the numbers with a 1990 age adjustment. These numbers, which were not released at the time, also showed a drop in mortality, sources said.

While Bailar's mortality figures are not disputed, his conclusions and recommendations are.

"Observed changes in mortality due to cancer primarily reflect changing incidence or early detection," the paper states. "The effect of new treatments for cancer on mortality has been largely disappointing. The most promising approach to the control of cancer is a national commitment to prevention, with a concomitant re-balancing of the focus and funding of research."

Bailar acknowledges better treatment in several cancers, improvements in imaging and palliation, as well as advances in the understanding of cancer.

The paper's conclusions, based on consideration of mortality from a variety of cancers, are likely to be disputed in great detail, as NCI officials are preparing to answer questions in Congress. Also, NCI and the American Society of Clinical Oncology are writing responses to the New England Journal of Medicine.

"The death rates at the population level reflect a huge spectrum of interventions," NCI official Kramer said to **The Cancer Letter**. "Some of them are preventive, some of them are early detection, some of them are clearly treatment-related, and some are combined.

"Advances in all aspects of the National Cancer Program, including smoking cessation, behavioral research, treatment interventions, screening technologies, have led to decreases—and the magnitude of the decrease varies by disease.

"Perhaps the central issue is the question, can you predict the future simply by looking at the past? I would say that the nature of science is that often you can't.

"The entire U.S. cancer mortality has started to turn around for the first time," Kramer said. "Since, at the population level, many interventions are delayed in their impact, the fact that the decrease in mortality has been modest doesn't mean that the trends will not accelerate."

Detection vs. Treatment

Former NCI Director Broder said it is "insane" for Bailar to ascribe a part of the drop to early detection rather than advances in therapy.

"His answer is, 'No you shouldn't take credit, because treatment didn't do that; that's all due to earlier diagnosis,'" said Broder, senior vice president, research and development, at IVAX Corp., of Miami. "That's insane.

"You don't treat somebody with a diagnosis. Do we have a rule that it's unfair to fight the tumor? You have to give it a head start, or it wouldn't be fair to diagnose it early? As though early diagnosis is not part of treatment. When you say, it doesn't count because it's due to earlier diagnosis, well, who brought you the earlier diagnosis? Your friendly National Cancer Program.

"This is really an attack on basic science under the guise of being an attack on treatment," Broder said.

Former NCI Director Vincent DeVita said Bailar's most recent article is consistent with his previous publications.

"The purpose of this paper is to throw mud on the progress being made," said DeVita, director of the Yale Cancer Center. "I don't believe that Dr. Bailar, who always claims that we should put money

into prevention, has the foggiest notion of how much money is going into prevention, and in what proportion.

"He didn't when I was the [NCI] director and I doubt he does now. And yet he concludes that more money should go into prevention. He doesn't understand the fact that molecular biology money has been the biggest investment and the best investment in prevention that we ever had.

"He inaccurately presents the data primarily to get a point of view across as opposed to presenting data analytically," DeVita said. "One has to question whether the New England Journal is exercising good judgment."

Ultimately, "Cancer Undefeated" and media coverage that followed its publication may harm patients, said Robert Mayer, president of ASCO and professor at Dana-Farber Cancer Institute and Harvard Medical School.

"Reductions in cancer mortality have many explanations," Mayer said to **The Cancer Letter**. "For Bailar and Gornik to so directly dismiss widely utilized, well accepted advances in treatment not only is absurd on their part, but is also potentially damaging to patients with newly diagnosed malignant conditions who may be influenced by the media publicity surrounding this extreme view to reject life-saving treatment."

Bailar Hits Cancer Program For "Imaginary Treatments"

In news stories about "Cancer Undefeated," John Bailar, the paper's lead author, made repeated sarcastic references to "imaginary treatments" and "wonderful cures," and called for a redirection of NCI funds to prevention.

"Critic of War on Cancer Touts Prevention: Despite The Decline in Deaths, Treatment Still Called A Failure," the Chicago Tribune declared in a headline.

"I just fear we're deluding ourselves if we stubbornly keep basing our hopes on imaginary treatments," Bailar said to the Chicago Tribune.

Asked by a Tribune reporter if the final cure could be around the corner, Bailar responded: "Around the corner. Over the next hill. Just keep pushing. I was hearing that language back in 1956 when I got into cancer research.

"I think it's foolish to base public policy on the assumption that if we just keep trying harder, it's eventually going to work. It hasn't. Surgery, chemo, radiation—that has been about it.

"So let's take the next logical step—let's shift more resources to where it already has been proved that they can make a difference. A national commitment to the prevention and earliest possible detection of cancer, instead of hopes and prayers for universal cures—that's the way to go now."

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On the PBS news program, The News Hour With Jim Lehrer, reporter Elizabeth Farnsworth asked Bailar how much of the NCI budget is devoted to cancer prevention and what the treatment versus prevention ratio should be.

"It's hard to pin down the precise distribution of funds," Bailar said. "The best estimate I can make is about four-to-one in favor of research on treatment. And I think it should be tipped the other way to some degree, maybe two-to-one in favor of prevention."

On the program, Bailar said advances in treatment have been primarily in the cure of uncommon cancers, and therefore have not had an effect on the general population.

Another guest, David Nathan, of the Dana-Farber Cancer Institute, disagreed.

"I'm a doctor, and I take care of patients," Nathan said. "And I take care of them one at a time. And when I started out doing cancer care in little children, I had a 100 percent failure. I didn't save a single child when I first went to the NCI in 1956. And now my group at the Dana-Farber Cancer Institute and all around the world are salvaging children with cancer at a rate of 80 percent in childhood leukemia. Now, childhood leukemia is an uncommon disease, but it's awfully important if you happen to be a child with leukemia. So it really is—depending on how you look at this cup—half full or half empty.

"I think it's a triumph, but then again I take care of patients," Nathan said.

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"The cold reality about the failure to cure cancer," said ABC World News Tonight anchor Peter Jennings in a lead-in to a health news segment.

The next image was that of Richard Nixon, the President who signed the National Cancer Act.

In the story that followed, Bailar gave the nation the bad news: "We have tried and tried and tried. I am simply not convinced any more that there are wonderful cancer cures waiting to be found."

Ned Potter, the network's medical

correspondent, pointed out that the fact that Bailar's paper was published in the New England Journal of Medicine gives it credibility. "Dr. Bailar might have been just one dissenting voice if he had not published his argument here," Potter said. "The fact that it appears in The New England Journal of Medicine makes it difficult to dismiss."

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On the CNBC program Bull Session, Heather Gornik, Bailar's co-author, said cancer treatment was not a factor in the decline in cancer mortality.

"Death rates are declining primarily as a reflection of decreased tobacco use over past decades," Gornik said. "It has nothing to do with chemotherapy, for the most part, with few exceptions. And it has everything to do with changes primarily in lung cancer mortality."

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In "Billion-Dollar War On Cancer A Bust?", USA Today reporter Steve Sternberg offered an inaccurate interpretation of the dispute between NCI and Bailar:

"Bailar and Gornik found that the nation's cancer death rate…peaked in 1991, and then declined by 1% by 1994… The NCI greeted the report's publication with a statement asserting that the decline cancer death rates was greater than that reported by Bailar…amounting to 2.6% between 1991 and 1995."

Actually, NCI was not disputing the magnitude of the decline. Instead, the Institute's statement described the impact of Bailar's selection of the 1990 age adjustment.

"The choice of a 'standard population' for age adjustment… is not dictated by any scientific rules," the Institute said in a May 28 statement.

Interview With Bailar

Bailar: Scientific Opportunities In Prevention "Not Developed"

The Cancer Letter *asked John Bailar to outline his reasoning for proposing that two-thirds of the NCI budget be devoted to prevention. The interview was conducted by Editor Paul Goldberg. The transcript of the exchange follows:*

The Cancer Letter: You've said in some of your [press] interviews that two-thirds of NCI efforts should go to prevention. Why two-thirds?

Bailar: Two-thirds is a rubber number, and I would not tie anybody to that. It could be more, it could be less, it would certainly depend on what is available, proposed, and ready for funding as we approach that much higher proportion. My rough sense of things in 1997 is that a two-to-one ratio is about right.

CL: Based on?

B: Based on my understanding of what we are likely to get out of further efforts in various areas.

CL: How do you determine that?

B: It's basically founded on my understanding of cancer trends and progress in cancer research over 40 years that I have tracked these matters.

CL: It's a hard one for me to understand, because I don't have that sense.

B: I wish that I could give you a percentage to three decimals about where the balance should settle down. To say a ratio of two-to-one is obviously a very rough cut. And it is meant to be rough.

CL: And you can't go beyond that?

B: I do not think at this time I can be any more precise about it.

CL: Is it based on analysis of scientific opportunities?

B: It is based on my understanding of what we are likely to be able to accomplish. The scientific opportunities in prevention are simply not fully developed because prevention has been starved of research funds over a period of many years. Substantial increase in the availability of funding will be useful in part by getting a lot more investigators to think very hard about what might be accomplished.

It's hard even to say how much has gone into treatment or prevention in the past because so much is simply not classified. When it is classified, the classification is difficult and often inaccurate. Some work is so basic, it's hard to put on one side or the other. Other things are less ambiguous, but where there is some discretion in the matter, investigators may tend to classify their work according to whatever seems to be popular at the moment.

CL: And then there is a question of what is prevention. Is nutrition prevention?

B: It certainly can be.

CL: Is isolation of cancer genes prevention?

B: If that information is used in the population to interrupt the progress of biologic changes toward the development of a malignant neoplasm.

CL: Is genetic testing prevention?

B: I would give the same answer. Testing and putting the answer on a shelf is not prevention. If you test and are then moved to do something, that can be prevention. For example, genetic testing might

in time identify persons who are at high risk of certain forms of cancer and cause them to be more restrictive about exposures to certain carcinogens. I would say that would be prevention.

CL: Is tamoxifen prevention?

B: I would say that, if there were an effective way to use tamoxifen, so that a breast cancer never appears when it would otherwise have developed, that is prevention. The use of tamoxifen to prevent recurrence of breast cancer is not what I would call prevention because the disease is already there. I'm not saying it isn't worth doing.

I would like very much if you would make clear that we are not attacking treatment. Treatment is already effective in about half of cancer patients. Their disease can be cured. Treatment has a lot to offer every other patient in terms of longer and better survival, and these are advantages that we shouldn't lose. It's not a question of whether the glass is half-full or half-empty, we all agree that it's half-full. The problem we see is that it's the same half-full now that it was 20 and 30 years ago.

CL: Is mammography or PSA testing prevention?

B: Mammography is not what I would classify as prevention, but it is certainly earlier detection.

CL: Is early detection close to prevention, in your point of view?

B: We are arguing in favor of a real expansion in early detection as well as prevention. Though early detection has not been effective for a large number of cancers, it clearly is effective for some. I think almost every observer would agree that the Pap smear is a real public health device. I think there is general agreement that mammography in women over the age of 50 is beneficial, and can reduce their breast cancer mortality rate by a third. But mammography is not prevention, it's detection of a cancer that has formed but has not progressed to the stage where it can not be effectively treated.

The Pap smear is more a matter of definition. It tends to identify pre-malignant lesions that can be effectively treated so that they never become malignant. But it is also effective in detecting early stages of different cancer, so it really does some of both.

CL: If you're talking about two-thirds-to-one-third, would that include mammography?

B: I would be happy to see earlier detection included with prevention in this kind of judgment.

CL: What about basic research, is that a part of what you would describe as treatment?

B: Research comes in a whole lot of different degrees of being basic or applied or developmental or whatever you want to call it. I would certainly include on the prevention side, anything that has a clear and specific link to the prevention of malignant change.

CL: Would basic research be treatment?

B: Where do you draw the line and say this is no longer basic research, and instead we'll call it prevention or treatment or early detection or something else? That's a fuzzy line.

CL: Sitting in 1997, how do we know what's going to be promising 10 years from now? How can we say two-thirds vs. one-third?

B: Well, we can't. And I'm perfectly prepared to see that suggested ratio of two-to-one change with time. It's a target that I am suggesting in response to a lot of questions on "you don't like what we've got, what would you prefer?"

We get criticized if we don't have a number, and we get criticized if we do have a number. The two-to-one is my best guess at this point in 1997, but it could well be different at some future time.

Broder Says No Thanks To Bailar's Acknowledgment

In "Cancer Undefeated," Bailar and Gornik wrote that the paper's title was suggested by former NCI Director Samuel Broder.

In an interview, Bailar repeated that assertion, stating that Broder made the recommendation following a meeting of the President's Cancer Panel, where Bailar and other critics of the Institute were invited to speak.

Bailar said that following the meeting, which occurred in September 1993, Broder sent him a paper titled "Tuberculosis Undefeated," and suggested that Bailar write a similar work and call it "Cancer Undefeated."

"I don't think Sam would agree with anything else in the paper," Bailar said to **The Cancer Letter**.

Broder, senior vice president, research and development, of IVAX Corp. in Miami, said he had not seen Bailar's paper prior to publication and did not suggest its title. However, Broder said he did send Bailar a paper called "Tuberculosis Undefeated."

That paper, written by John Crofton and published in the Sept. 3, 1960, issue of British Medical Journal, called for an all-out war on

tuberculosis. "I believe that we now have the weapons to defeat tuberculosis finally and completely, but that we could be using these weapons more extensively and more intensively and more intelligently than at present," Crofton wrote. "In economically developed countries we have certainly made progress, but might not this progress be much more rapid?"

Broder saw the paper as a metaphor for the challenge of cancer. The case study of an unsuccessful war on tuberculosis illuminated a winning strategy for the war on cancer: gather societal resolve to hit the disease hard, and hit it on all fronts at once.

"I was trying to teach him something," Broder said of his motivation for sending the article to Bailar. "I was naïve enough at the time to think that you can convince people through scholarly debate. Obviously, my message was totally discarded.

"This makes me profoundly and deeply sad," Broder said

Philosophically, "Cancer Undefeated" is the exact opposite of "Tuberculosis Undefeated," Broder said. "He is scaring a lot of people," Broder said. "He is taking away hope. I don't like that."

Broder said he was puzzled by the acknowledgment. "Generally, such acknowledgments are reserved for a mentor, or someone who had given the author a reagent, or someone who had pointed the author to a number you didn't know," Broder said. "I don't understand how one gets from sending him a paper to suggesting the title. That's a lot of leaps. Why didn't he acknowledge Crofton? It was his title, not mine."

"I'm sorry if he disagrees with our use of the title," Bailar said after being informed by a reporter about Broder's reaction. "I'm especially sorry if he is uncomfortable with the acknowledgment that he suggested it."

Letters To The Editors:

'Sensationalism' Stirs Mistrust, Hurts Research And Patients

To the Editor:

"Have I been wasting my time?" I was asked this by a young volunteer, who for the last five years has spent her time asking for contributions for the American Cancer Society. "This really hurts," said a dedicated young physician-scientist in cancer research at the Johns Hopkins Hospital. As president of the American Association for Cancer Research, I was very disappointed.

We were all responding to the headline in USA Today on May 29 that read, "Billion-Dollar War on Cancer a Bust?" Dr. John Bailar was quoted in the interview as saying, "Frankly, I'm not convinced that there are wonderful cures waiting to be discovered."

I cringe to think how this demoralizes the hopes of millions of cancer patients. I can only imagine the impact of these words on Congress at this most critical time, when many are trying to help funding for cancer research while drastic reductions in federal expenses are underway.

Patients, researchers, and their many dedicated supporters have been dealt a devastating blow by this poorly-veiled sensationalism—yet another contribution by Dr. John Bailar. I don't think anyone can owe a debt of gratitude for these headlines, and I don't think Dr. Bailar was surprised by the response.

Certainly, every field needs Socratic thinking, an iconoclast, and harsh critics. However, where does the line fall between good, honest criticism and inflaming public mistrust by implying some misuse of funding by misdirection or by a cover-up?

Who in the scientific community did not recognize the importance of prevention, the need to stop smoking, to have better diets, even before Bailar's heralding? Six cancers have been cured, but the big six cancers have frustrated us. We are not throwing in the towel on finding a cure, as Dr. Bailar suggests.

"An ounce of prevention is worth a pound of cure." Cancer researchers are working on both. In laboratories near me, dedicated scientists are studying reactive oxygen species, identifying protective factors in vegetables such as broccoli, designing new chemoprevention agents and taking them into clinical trials in epidemic areas of liver cancer in China, and studying the regulation of protective enzymes in human tumors. None of those investigators will be helped by Bailar's article. They can only look forward to a potential decrease in cancer research funding produced by public mistrust.

We desperately need to put out the fire, not to fan the flames. Certainly we need better smoke detectors, fire prevention, and public education. We don't need to blame the fire department and say they are stupid in their approach. They have already breathed too much smoke.

We can all do better—and we will. In the meantime, let us sweep up the broken glass from

these headlines, and get back to work—both on a prevention and a cure.

Let us keep the faith.

Donald Coffey
Professor of oncology, pharmacology, and molecular sciences
Johns Hopkins Hospital

Survivors Want More Research Of All Types, Says Stovall

To the Editor:

Opponents of federally funded cancer research were handed new ammunition with a publication in the New England Journal of Medicine of another polemic against the national cancer research effort by Dr. John Bailar. As previously elaborated in a 1986 article in the same journal, Dr. Bailar's thesis is that the dollars invested by the U.S. government in cancer research have paid little, if any, dividend and that federal funding should be sharply redirected toward prevention studies.

There is no question that prevention is a vital component of any effort to control cancer. However, as a 26-year survivor of cancer who believes that cancer research has made a difference in her life, I cannot let stand such an unbalanced view of the state of our efforts against cancer.

Progress over the last 25 years is prolonging the lives of thousands by improving post-operative therapy to prevent recurrence; detecting the disease in its early stages; improving quality of life; and making normal life expectancies a reality for many cancer survivors.

As a member of the National Cancer Advisory Board with responsibility for review of grant applications for federally-funded research, I witness many exciting opportunities for new discoveries in all areas of cancer research going unfunded for lack of resources. If we are failing to win enough battles in this so-called "war on cancer," it is not because of too much funding for basic and clinical research, but not enough funding for all cancer research.

At the outset of the national cancer research effort, the American public, conditioned by medical miracles like the polio vaccine, was led to believe that a cure for cancer could be equally simple. Polio was one disease that could be defeated with relatively unsophisticated vaccine technology. In contrast, cancer represents hundreds of different diseases, each with its own complexity.

Nevertheless, in the slightly more than 10 years since Dr. Bailar's 1986 article, cancer research has provided a number of advances that have increased the lifespan and quality of life of many people with cancer. Among these advances are:

—Refinements in the basic tools of cancer treatment—chemotherapy, surgery, and radiation—including therapy that combines these treatment modalities in new ways.

—The virtual cure of some forms of the disease, such as testicular cancer, and the significant reduction in mortality rates for childhood cancer and Hodgkin's disease.

—More effective agents such as the taxanes and camptothecans, as well as immune system stimulants including interferons and interleukins.

—Development of technologies that were not envisioned in 1986, including therapies based on antisense and antiangiogenesis.

—Advances in treatment of pain, fatigue, infections, nausea, and other quality of life measures, including ways to decrease toxicity from chemotherapy.

—Genetic discoveries that offer promise not only for earlier identification of cancer risk, but also for new treatment methods.

Even if Dr. Bailar's admirable call for a national commitment to cancer prevention came to pass, an aging population would still have to deal with cancer. No matter how much tobacco consumption is reduced, how much sunscreen we apply, how much our diet improves, or how many environmental carcinogens are eliminated, cancer will probably still be a reality, because we don't know what causes it.

Our nation's investment in cancer research has given us a greatly enhanced understanding of cancer biology. We need to at least redouble our investment to enable the translation of these basic science discoveries into patient care. Ideally, that investment will also yield knowledge that would tell us how to prevent cancer. A broad-based investment in cancer research offers the best chance to turn the admittedly incremental improvements of the last decade into major progress against this disease.

The 7.4 million people like me who live with the legacy of a cancer diagnosis, and the 1.5 million who will be diagnosed this year, want nothing less than for our nation to invest much more in all types of cancer research.

Ellen Stovall
Executive Director
National Coalition for Cancer Survivorship