Vince DeVita: the view from the top

➜ Interview by Chistine Haran

As director of the NCI between 1980 and 1988, Vince DeVita was a Commander in Chief of America's War on Cancer. He has little time for those who now criticise the plan of attack – or the outcome. But he warns that if we are to win the battles in the molecular arena, we will need to fight on an altogether grander scale.

Disillusionment with the speed of progress in finding a cure for cancer has led some people to question the vision of the 1971 National Cancer Act and the way it was interpreted as some sort of quasi-military campaign. Did you get it right?

VINCE DEVITA We had a very straightforward mandate to support basic research and the application of the results of the research to reduce the incidence and the morbidity and mortality from cancer.

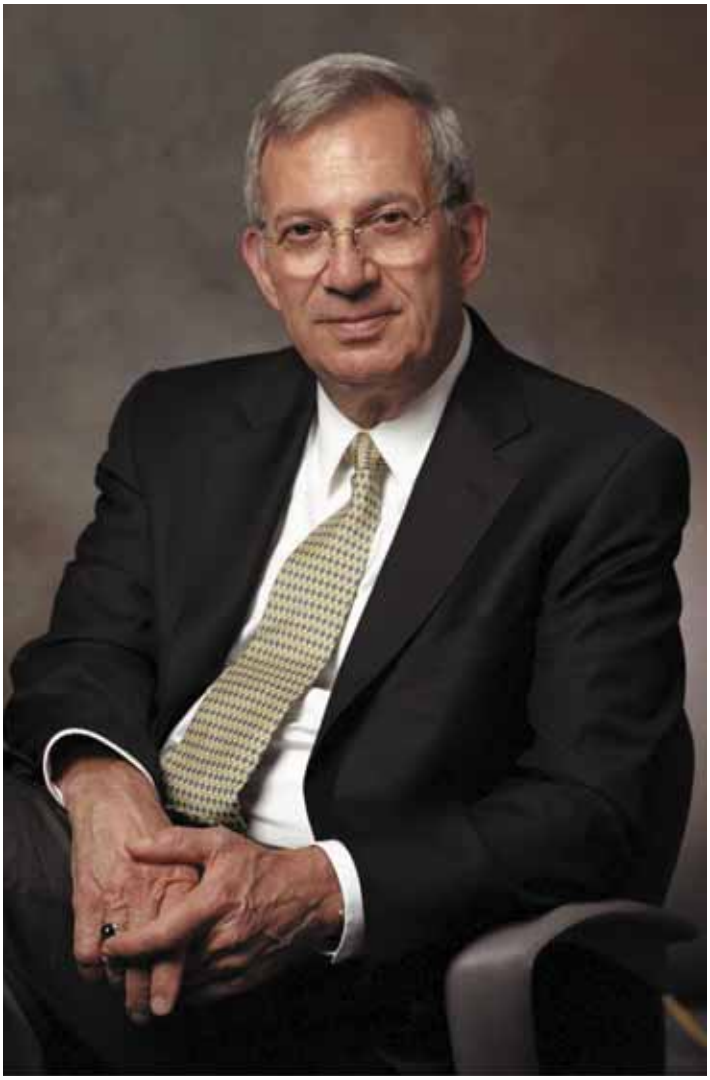
Period. End of story. What was so controversial about it? The National Institutes of Health [which include the National Cancer Institute] had never been involved in applications before. In fact they considered their job to be basic research, and the applications were done somewhere else.

That is why the Cancer Act was very controversial and everybody was against it, and if it wasn't for the fact that [advocate and philanthropist] Mary Lasker was so politically powerful it would never have passed.

Did the War on Cancer succeed?

VINCE DEVITA You hear and read that the War on Cancer failed, but actually it did everything it was supposed to do. It supported basic research handsomely. It has now spent about $50 billion on research, of which 80% has gone into basic research. It set up applications programmes – the EORTC [European Organisation for Research and Treatment of Cancer] and US clinical trials programmes. And what's happened to the incidence and morbidity and mortality of cancer? The incidence of cancer in this country started dropping in 1990 and has continued to drop every year since, and so has mortality. And the morbidity from cancer, comparing 1971 to 2005, is like night and day.

In 1971 when the Cancer Act was passed, a woman with breast cancer, for example, had a radical mastectomy and the breast was removed, all the muscle was removed and all you had was a thin layer of skin over ribs. Then women would get irradiated on top of that and their arms would swell up and neither the surgery nor the radiation did enough to cure the patient.



"I think the War on Cancer has been a resounding success, and I'm very pleased to have led it"

Nowadays you can have a lumpectomy and radiation therapy with a very good cosmetic effect, and you get adjuvant chemotherapy. Mortality has dropped in this country and survival has increased. Even though it's very difficult for a patient to be diagnosed with breast cancer and go through treatment, it's nowhere near as difficult as it was back then.

So every benchmark of the mandate has been hit and it's been hit in some places in Europe as well. I think the War on Cancer has been a resounding success, and I'm very pleased to have led it.

How did the NCI evolve under your leadership?

VINCE DEVITA When I became director in 1980, we created the cancer programme, as it was described in the Cancer Act. We reorganised the Institute so that it reflected treatment and prevention, and then we reorganised the treatment division. When I had taken over as director of the Division of Cancer Treatment in 1974, the treatment division didn't have all the treatment programmes in it. Drug development, for example, was in the treatment division, but supervision for all the clinical cooperative groups was in

"The whole ideal of the Cancer Act was to get these things going all over the world"

another division. So if you wanted to make the translation of a drug and put it in clinical trials, you had to go through another group of people. We put all the treatment programmes together where they belonged.
We also created the PDQ, the information system [for patients and health professionals]. We set up 11 bi-national agreements with European countries. We used the vehicle of cancer research to open up pathways to various countries, such as the Soviet Union. It was a frenzied time.

Was there any collaboration with Europe?
VINCE DEVITA In the beginning there was very little going on in Europe. So when the Cancer Act was passed there was a provision that Europeans could apply for grants through the National Cancer Institute. Thanks to people like Umberto Veronesi and Gianni Bonadonna in Italy and Henry Tagnon in Brussels, we had a receptive audience. So we set up the original grant for the EORTC. In Brussels, we also established a centre for drug screening, so our drug development programmes could access European cancer drug candidates. We provided money to the Istituto Nazionale Tumori in Italy for a biostatistical centre and for the CMF [cyclophosphamide, methotrexate, fluorouracil] clinical trials.
We did a lot in the beginning and the Europeans have done very well since. I think it's an important story because the whole ideal of the Cancer Act was just that: to get these things going all over the world, because what you learn in Europe is going to be applicable in the United States and vice versa.

What do you see as some of the more important recent contributions from European oncologists?
VINCE DEVITA The best work in Hodgkin's disease now is done in the German lymphoma study group. We have so many private doctors in this country who use yesterday's therapy that it's very hard to get them to put patients on tomorrow's protocols. The Germans do it. They put thousands of patients with Hodgkin's disease into a study, and all the major questions in Hodgkin's disease are going to be answered by the German study group. There have also been drugs of European origin; there's been good synergy in drug development.
But the Europeans still don't even come close to the US in terms of funding. The NIH budget is $26 bn a year. That probably exceeds the cancer research budget of the rest of the world. We're still the major defenders of the health of the world. They may not like me to say that but that's true.

How did you decide what research to fund in the early days of the War on Cancer?
VINCE DEVITA We did a lot of research contracts, which were very controversial. They were and are a dirty word in science. The reason people love grants is that if you're an investigator and you get an idea, you write a grant application and you submit it to the government. It's peer reviewed by scientists independent of you and you get a score. If the score is good enough, you get support. A research contract is somebody sitting at the NCI saying "I think we ought

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At a hearing of the President's Cancer Panel, at the Columbia University Cancer Center. Though already director of the NCI, DeVita (second from right) is a relative youngster

"You need $20m mobilised from five institutions, with the research directed by a major scientist"

to look for viruses in cancer and we're going to put in $50 million," and we'll ask who wants to apply for it. The fact of the matter is we did a study, which we never published, looking at the major advances in science. We asked a small group of people to identify 15 areas where there had been major advances and then we looked at the funding. What we found out was that every instrument that we used to support research was represented: research contracts, grants, cooperative groups, and so forth. So it was fallacious to think that one mechanism could support research then and it's even more fallacious now.

What do you think about the way research is funded today?

VINCE DEVITA Science has moved from the era dominated by individual scientists to what we call 'goal-directed' research. With all of the tools we have available now, you can address almost any major question in the cancer field. We're exactly where we wanted to be. But this will require that we mobilise very large numbers of resources.

So instead of doing a project in an individual lab for $200,000, what you need is $20 million worth of resources mobilised from five different institutions, and have the research directed by someone who is a major scientist in that particular area.

The mechanisms for supporting the new kind of research just aren't there and need to be assembled on a project by project basis, which is very inefficient. So there really needs to be re-thinking of how we spend money to support research.

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Are clinical investigators getting the support they need?

VINCE DEVITA Again we're back to the investigator-initiated research grant. When somebody sits in their small laboratory and they've written an experiment and it's all done mostly with the equipment that's contained in that room, it's very easy to review that grant. When you look at someone like me, I wanted to treat Hodgkin's disease. I didn't have to apply for a grant because I was at the Cancer Institute, but my grant application would have said I want previously untreated patients from all 50 states. I'm going to have to have money to put them up in a hotel and I'm going to have to buy drugs. You put this in a grant application and they would say, "You've got to be crazy," and give it a low score and it would never get funded. Clinical research is logistically more difficult and has always been and continues to be under-supported.

What about translational research?

VINCE DEVITA The idea of translational research was to take something from a laboratory and translate it into the clinic. It's become a bit of a joke. There isn't anything anymore that isn't called translational research. Real translational research has been a problem and will always be a problem because a basic scientist has a PhD and he or she learns to focus like a laser beam on a particular problem, while an MD trains very broadly and then wants to be a clinical investigator and harness the basic and the clinical. But these two people usually don't understand each other. The people who are successful in developing things that apply to people are the ones who understand the systems and can bring them together. And that's where the administration of science is important. An administrator, like the director of the Cancer Institute, has to understand you have to do more than just talk about applying research. You have to set up systems that support the individual investigator who is making the translation from the lab. It's getting easier for people to see the applications of what they do, but we still have not reformed how we support research to take advantage of the shift in attitudes.

Where is cancer treatment headed?

VINCE DEVITA I think this business of goal-directed research has given us the opportunity to do things you could not do before, and I think there are huge opportunities and huge problems. For example, the more specific a new targeted drug is against a target, the less effect it has against a cancer by itself. Erbitux* is an example; if you use it by itself, it doesn't have that much of an effect, but if you use it in combination with another therapy, the effect is magnified. And I think you're going to find that with almost everything that's coming along.

Curing cancer is still going to require combination therapies, four drugs with four targets for example. So you have four great drugs, each one owned by a separate company, each one having very little effect on its own. The way you're going to cure cancer is to have all four together in a clinical trial. Yet it's very rare for a pharmaceutical company to join a clinical trial where each one puts their drug into a clinical trial. They want it to be approved by itself so they can get some return for their stockholder.

There needs to be somebody who, if they see these four companies that own these four drugs, is able to bring them together to have a clinical trial without hurting the financial interests of companies. In this country, you need to have a cancer director over all cancer programmes who is able to bring industry together with government, together with acadaemia.

What are your own goals for the future?

VINCE DEVITA I try to do a lot by pointing out where we need to go. That's what I think you should do when you get to be a senior statesman

ROBERT A. LISAK

In conversation with a colleague at the Yale School of Medicine, 1995

"You need a director over all cancer programmes to bring industry, government and acadaemia together"

in the field. I have an interesting perspective because I was in the unusual position at a very young age of sitting on top of the whole cancer world. It gave me the opportunity to think, see and do things differently than other people. I stepped down as director of the Cancer Center at Yale a year ago, but they gave me a chair and the freedom to do what I think is best to do in this area.

I'm on the boards of companies, such as ImClone, because you need companies. I've become the editor in chief of a new journal called *Nature Clinical Practice: Oncology*. And Samuel Hellman and Steven Rosenberg and I have our textbook, *Cancer: Principles and Practice of Oncology*, which just came out in the seventh edition.

We are very proud of this book because we've always tried to keep each edition of the book facing the future – books usually face backward. We think part of the reduction in mortality in this country is due to the textbook, because it put all of this information in one place where people could get a good handle on it.

I'm also writing a book on the War on Cancer with my daughter for laypeople. It's to explain to people what their $50 billion went toward and some of the difficulties that we faced. Explaining to people how difficult it was to get from there to here may make it easier for the money to be provided to get from here to there.

I have no intention of retiring. I've never stayed in one job for more than 10 years. You just change what you do.

* DeVita is a member of the board of ImClone, the company that makes Erbitux