

The War on Cancer

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In God We Trust, All Others Show Data: A Reply to the NCI Director's "Challenge Vision" – Part 2

Predictions of Cure

In a 2004 article, Dr. Andrew C. von Eschenbach, the director of the US National Cancer Institute (NCI) boldly asserted that cancer would be vanquished by 2015. But where does he think the new breakthrough treatments are going to come from? He rests his hopes on the new "targeted" drugs, as well as "extraordinary enabling technologies" of various types, including bioinformatics and nanotechnology.

What exactly do these terms mean? The field of bioinformatics is perhaps too new to have acquired a single, clear definition, although one website describes it as "the application of computer technology to the management of biological information. Specifically, it is the science of developing computer databases and algorithms to facilitate and expedite biological research, particularly in genomics."

And how does nanotechnology fit into the picture? This is a particularly vague term, whose many definitions range from "technology that changes atoms to create something new" to "an experimental technology which uses individual atoms or molecules as the components of minute machines, measured by the nanometer, or a millionth of a millimeter."

I do not for one minute dismiss the potential of new treatments that are based on nanotechnology. There have been at least two clinical trials of great interest in this field (Yang 2003; Feder 2004). But it must be understood that nanotechnology is a branch of science that is still very much in its infancy. The term is not even found in NCI's own Cancer Dictionary (www.nci.nih.gov).

Dr. von Eschenbach states that in the future "changes in gene expression and cell physiology will herald clinically overt disease; and molecular profiles of tumor will determine recipes for targeted therapies." Again, we have heard such predictions before. Many readers will remember how discovery of the BRCA1 and BRCA2 genes gave rise to similar predictions of mass screenings and automatically generated formulas for treatment. But, except in rare cases, cancer has proven to be far too complex a disease to yield to cookbook-style recipes.

It is one thing to speculate on the distant potential of innovative approaches still in their earliest stages of development. It is another thing entirely for the director of the National Cancer Institute to claim that these techniques will conquer cancer in just 11 years! I tried to follow his thinking on this, but (in addition to the inaccuracies noted last month) his projections read like a buzzword-peppered business school presentation. For example: "The NCI has

adopted strategic initiatives in bioinformatics, development of innovative cancer interventions, clinical trial implementation, elimination of cancer health disparities, early detection, prevention and prediction of cancer risk, molecular epidemiological and integrative cancer biology. In each of these areas, we plan to increase and focus resources to integrate infrastructure and foster collaboration through networks and consortia."

This sort of jargon may impress committee members on Capitol Hill, but it will leave the average person completely confused. How is NCI going to rapidly accomplish any one of these tasks? Take early detection, for example. Safe and reliable tests for common cancers such as prostate or lung cancer have eluded the scientific community for decades. Even the use of the Prostate Specific Antigen (PSA) test to screen for prostate cancer, long a mainstay of preventive strategies, seems to be heading for oblivion. Technology assessment agencies in Canada, England, Sweden, and Australia have all recommended against the routine screening of the male population for prostate cancer. In fact, in October 2004, even Thomas A. Stamey, MD, the Stanford University professor who invented the PSA test, admitted that "the prostate specific antigen era in the United States is over for prostate cancer" (Stamey 2004).

What exactly does Dr. von Eschenbach mean when he promises to "integrate infrastructure," to "foster collaboration through consortia," and so forth? Whether these business concepts can be applied successfully to the taming of cancer is extremely doubtful. But one thing is certain: such an approach is bound to involve the formation of yet more committees and layers of bureaucracy, all of which will not only slow things down immensely but will also come at a steep price in terms of public money.

Cost of Treatment

And what are we to make of Dr. von Eschenbach's promises to eliminate "cancer health disparities"? Are we to believe that the NCI will somehow find a way, at last, to bring these hypothetical new cancer treatments to *all* Americans, if not the entire world? Here is where the rubber hits the road. Dr. von Eschenbach, with no documentation, claims that his new strategy will result in cost savings. Yet many experts say that even at this early stage of development, far from widening access to the best treatments, targeted drugs are already bankrupting many individuals, and have the potential to add immeasurably to the nation's financial woes.

In the last several years we have seen the introduction of the first generation of targeted therapies. What has been most

startling about them is not their medical utility but their price: Avastin, for example, costs \$4,400, Erbitux \$17,000, and Zevalin \$24,000 – and that's per patient, per *month*! (For an analysis of these new drugs' costs go to: <http://slate.msn.com/id/2102844/>)

It bears emphasizing that at present there are no targeted drugs that look likely to rid us of even a fraction of the suffering and death caused by advanced cases of the statistically major forms of cancer. But let us assume for the moment that Dr. von Eschenbach's "challenge vision" is basically on target, and that effective new drugs are indeed in the offing. What would be the cost of an effective combination of new patented drugs that could rid the US alone of all suffering and death from cancer?

The US government has so far shown little inclination to negotiate with Big Pharma to lower the price of drugs. In fact, it has explicitly prevented state agencies from doing so. As things currently stand, therefore, the drug companies charge whatever the market will bear for FDA-approved treatments. If it costs a patient \$17,000 per month for Erbitux, a minimally effective treatment, how much will these hypothetical new and supposedly really effective treatments cost? No one knows, of course. But given past history, it will be multiples of current costs. People may have to liquidate their life savings, mortgage their homes, hold fund-raising suppers, and generally impoverish themselves, their families and friends just to afford one year of such treatment. And what will happen to them then? After all, Dr. von Eschenbach is talking about controlling, not curing, cancer, and so the costs will continue indefinitely.

Like many scientists, Dr. von Eschenbach ignores the economic dimensions of his treatment proposals. Does he really believe that insurance companies will simply write a check for the cost of such new treatments? But even if we assumed for the sake of argument that NCI could get the drug companies to limit the total cost of these blockbuster treatments to, say, \$8,500 per month, that would still work out to \$100,000 per person per year. And if only one year's tally of 1.3 million cancer patients were treated that would come to \$130 billion per year in the US alone. Each new year would bring another phalanx of cancer patients needing these new treatments in order to stay alive. In this case, we will soon be pushing a trillion dollars just for the new cancer drugs alone. As the late Sen. Everett Dirksen once said, "A billion here, a billion there. Pretty soon it adds up to real money."

Integrative Biology or Integrative Oncology?

Dr. von Eschenbach talks at length about NCI's "integrative cancer biology program." But he says nothing at all about "integrative oncology," which aims to combine the best of complementary and alternative medicine (CAM) and conventional treatments for the benefit of all patients.


This is more than an accidental oversight. CAM offers the potential of not just more effective, but profoundly more economical, treatments. That is because most of the tools in the CAM armamentarium are non-patented, natural substances. But ignoring CAM is a stubborn blind spot that greatly narrows the scope of the Director's whole report. Like his predecessors, Dr. von Eschenbach has 'bet the store' on blue-sky technology that has a very uncertain future, while ignoring the many useful CAM treatments that are better established and much more economically feasible.

And what about the great hope of primary prevention of this awful disease? The prevention of cancer has formed the lifework of many fine scientists, such as University of Illinois Professor Emeritus Samuel S. Epstein, MD. Dr. von Eschenbach gives a few glancing references to prevention, but has nothing to say about the essential task of decreasing exposure to carcinogens in the air, food, water and workplace, which are ultimately responsible for initiating many cases of cancers.

Dr. von Eschenbach's stirring manifesto may temporarily silence those on Capitol Hill who are restive over the unsuccessful war on cancer. But this Utopian "challenge vision" is unlikely to lead to the control, much less the cure, of many cancers, especially within a single decade. Instead, it will once again divert attention away from more promising approaches of primary prevention and low-cost alternatives, which continue to languish in the netherworld of cancer medicine.

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