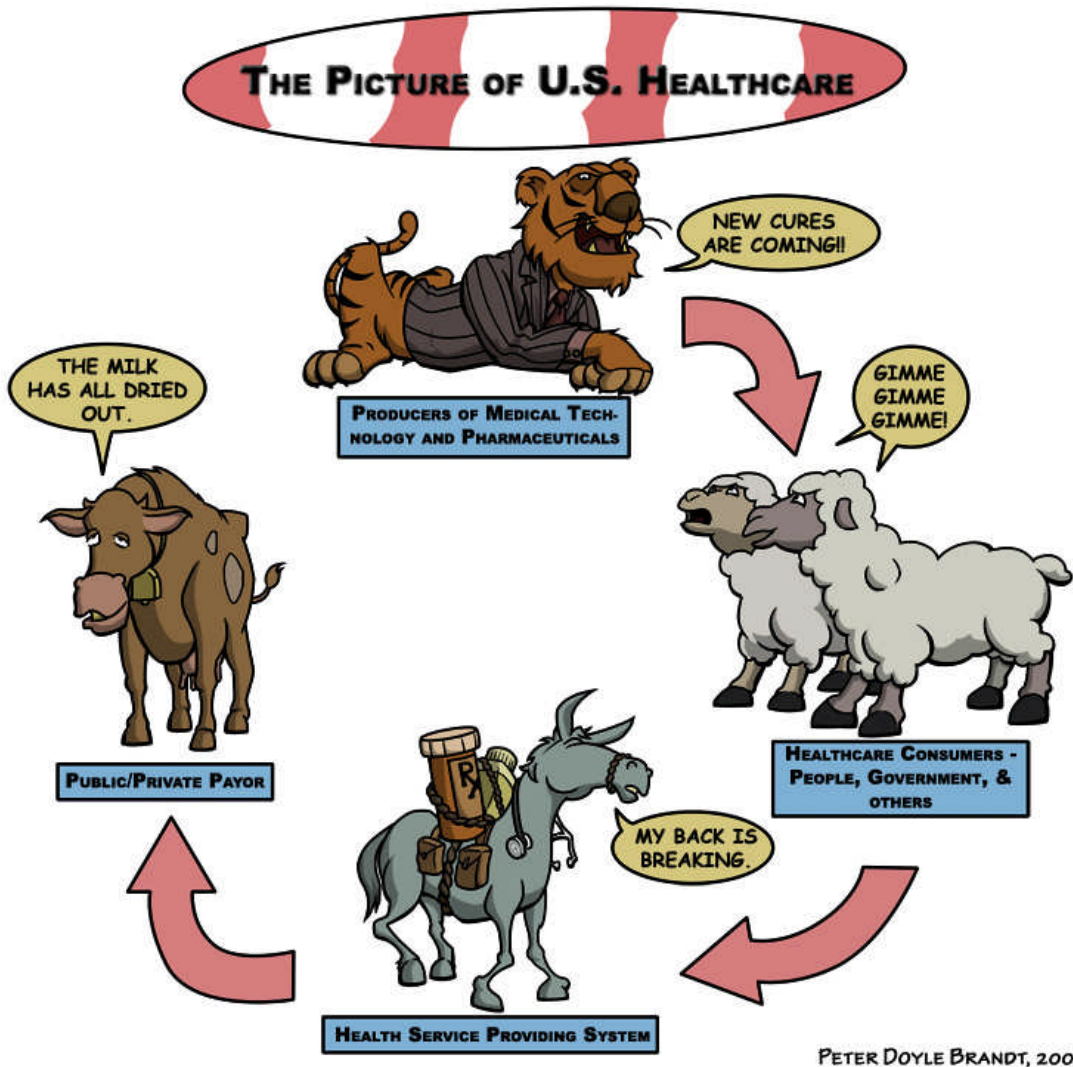


What Should We Expect From the Latest Medical Advances?  
A Look at Cancer Treatments.



The messages most of us receive from the media seem to suggest that there is a constant and rapid progress in the field of medical technology and pharmacotherapy. We see examples of miraculous-appearing surgeries and hear of new treatments for

diseases that were untreatable in the past. At the same time, the suffering in the Western world has not diminished. Growing rates of chronic pain conditions and an onslaught of other chronic diseases testifies to that. In addition, when we find a treatment for one disease, another one takes its place and human suffering has not been reduced.

What can we really expect from medical technology? How much benefit can we hope for, and how soon? With these questions in mind I decided to look again at the progress of cancer treatments, something I had done two years ago when writing my book (Reznik, 2005) and contributing a chapter to another book (Rich et. al., 2005). The rhetoric has not changed much over at least the past 35 years.

Cancer treatment was mainly in the domain of surgeons until the 1950s. Tumors were resected whenever possible, and radiation was also used. The first chemotherapeutic agents were developed around 1940 from mustard gas, which had been used as a chemical weapon in the First World War. The hope has always been to kill the tumor but not the patient, although the margin between these two outcomes has always been very narrow.

Many advances have indeed been made. Nearly all successes are applicable only to few relatively rare cancers. Effective treatments have been developed for six types of cancers, none of which are among most common. Fred Hutchinson Cancer Research Center (2006) lists the following cancers as being curable even after they have spread:

Childhood Acute lymphoid leukemia (ALL)

Hodgkin's disease

Large cell lymphoma

APL (acute promyelocytic leukemia)

Testicular cancer

Choriocarcinoma (rare cancer resulting from an abnormal pregnancy)

Even for these cancers the treatments are laden with numerous severe side-effects,

and cure is not guaranteed, though its likelihood is very high. All other cancers are discussed in terms of survival (5, 10, 15 year survival). This is not to say that cure is not possible, but that most of the cures one may hear about are not due to treatment, but to other reasons. These other reasons aren't well understood by biomedical sciences, but probably have to do with the individual's inherent capacity to resist and overcome this disease. In fact, while interest in researching spontaneous cures of cancer has disappeared in today's scientific community, a scientific publication dedicated to this very topic was published in 1976 by The National Cancer Institute. It is a compendium of dozens of well documented spontaneous cancer cures (NCI Monograph, 1976).

The National Cancer Institute (NCI Cancer Rates, 2006) makes the following conclusions after analyzing trends in cancer survival from the early 1970s to the late 1980s. "The overall 5-year relative survival rate for all cancer sites combined increased slightly from 49.3 percent in 1974-76 to 53.9 percent in 1983-90." Relative survival rate is one of the ways of assessing cancer survival. Fifty percent 5-year relative survival rate means that compared to persons without cancer, 5 years after diagnosis only 50% of persons with cancer will still be alive.

NCI also explains that we cannot take the full credit even for this modest increase in survival. "Part of the recent increase in breast cancer survival may be due to early detection; a higher percentage of the more recent cases were diagnosed with smaller tumors. Survival increases for prostate cancer may also in part be the result of early detection and the inclusion of occult disease in asymptomatic men." This means that screening will detect cancers that cause no symptoms, and that may otherwise be undetected until the person dies years later from other causes. A table listing all cancer types with their corresponding relative survival rates is provided by the NCI.

Things haven't gotten much better since the 1990s. Researchers who looked at the trends in cancer mortality in the US since 1990 found decreases in mortality from breast and prostate cancer: "Statistically significant decreases in mortality among all races combined occurred with lung and bronchus cancer among men (-1.7%/year); colorectal cancer among men and women (-2.0%/year and -1.7%/year, respectively); prostate cancer (-2.6%/year); and female breast cancer (-2.3%/year). For 1990-2000, cancer

mortality remained stable among American Indian/Alaskan Native populations. Statistically significant increases in lung and bronchus cancer mortality occurred among women of all racial/ethnic backgrounds, except among Asian/Pacific Islanders. Interpretation: Although cancer remains the second leading cause of death in the United States, the overall declining trend in cancer mortality demonstrates considerable progress in cancer prevention, early detection, and treatment.”(Stewart et. al., 2004)

As we can see, the greatest decreases in mortality are observed in breast and prostate cancer, followed by colon cancer. These are the three cancers affected by the **screening effect** (earlier detection of cancers creates a false impression of people living longer). While it is possible that cancer mortality truly decreased, one needs to note that there may be several explanations for that. As mentioned in the quote, **prevention** accounts for some of the decrease (i.e., quitting smoking prevents lung cancer). Another aspect not accounted for is that **cancer-specific mortality** and total mortality aren't the same thing. Do treated patients live longer because of the treatment? The currently available data say that, if there is such a benefit, it is very small, except with a few rare cancers.

Dr. Jerome E. Groopman in his essay in *The New Yorker* magazine (*The Thirty Years' War* Groopman, 2001) gives a perspective of thirty years of cancer research. Dr. Groopman holds the Dina and Raphael Recanati Chair of Medicine at the Harvard Medical School and is Chief of Experimental Medicine at the Beth Israel Deaconess Medical Center. When he wrote his essay in 2001, the current issue of *Barron's*, entitled "Investing in Health: Curing Cancer," ended by saying that "we are finally winning the war," and predicted that for our children cancer will be just another chronic illness, for which they will simply "pop a few pills every day."

He describes how "...oncologists and cancer patients have been caught in a cycle of euphoria and despair as the prospect of new treatments has given way to their sober realities..."

A government-guided anti-cancer campaign was started by Mary Lasker, who was a prominent and influential cancer activist of the 60s and 70s. She persuaded the

Congress and President Nixon to pass the National Cancer Act, which was signed into law in December of 1971. The President would now appoint the director of the National Cancer Institute. Nixon declared, "This legislation—perhaps more than any legislation I have signed as President of the United States—can mean new hope and comfort in the years ahead for millions of people in this country and around the world..."

In the 1970s, no single chemotherapeutic agent was effective. One of the first effective combinations of chemotherapeutic drugs was developed by Dr. Vincent DeVita for a cancer called large-cell lymphoma. Numerous studies then followed to compare it to other known ineffective treatments. This resulted in a great deal of patient suffering and the expenditure of millions of dollars.

Dr. Groopman quotes the statistician John Bailar, who said: "In the nineteen-fifties, there was huge excitement about laboratory programs to screen for chemotherapy drugs...We found a few drugs, but not many. Then, in the nineteen-seventies, there were cancer viruses. In the eighties, it was immunotherapy, with biologics like interferon and interleukin-2 as the model magic bullets. Now it's cancer genetics. The rhetoric today sounds just the way it did forty years ago. I have no doubt that there has been a huge increase in knowledge about cancer. The problem is to translate it into public benefits we can measure. I want to see an impact on population mortality rates. If the treatments are really that good, then we'll see it."

Dr. Groopman also quotes Fran Visco, who is the president of the National Breast Cancer Coalition. She was dismayed at the way researchers interacted with members of the press. "These clinical scientists receive media training and are scripted by their hospitals... There are so many agendas here: fame, patient referrals, fund-raising, pharmaceutical grants, academic advancement." He also quotes Ellen Stovall, the president of the National Coalition for Cancer Survivorship, who agreed: "The headlines are dreadful." She referred to the sensationalism surrounding the disease as "the pornography of cancer," adding, "I am excited by the new science, but show me hard data. We need to raise the skepticism barometer."

In a more recent article in *The Economist* magazine, one can see that story we are told

is not changing. In 2004, the cover page of the October 16<sup>th</sup> issue read: *Beating cancer*. If you continued to believe that title, you had to believe that for the thirty-third year in a row, we continued to be on a verge of a major breakthrough. *The Economist* also offered pertinent statistical and financial information. "Going by the numbers, humanity seems to be losing the war on cancer. According to the most recent data from the World Health Organisation, 10m people around the planet were diagnosed with the disease in 2000, and 6m died from it. And these numbers are growing. With an ageing population, the spread of western-style diets, and increasing tobacco consumption, cancer is on the rise around the globe. In America, for example, projections suggest that 40% of those alive today will be diagnosed with some form of cancer at some point in their lives. By 2010, that number will have climbed to 50%.

"All this is despite the fact that, since then-president Richard Nixon's famous speech in 1971, launching what became known as the war on cancer, America has given nearly \$70 billion (in actual, not inflation-adjusted, dollars) to its National Cancer Institute (NCI). And that is not to mention the money spent by drug companies and charities—nor, indeed, the research budgets of other countries. Despite these billions, the rate of death from cancer in the United States has increased from 163 per 100,000 individuals in 1971 to 194 per 100,000 in 2001."

The article ends on an optimistic note, promising huge success in the next decade: "Luckily, these numbers do not tell the whole story. In fact, scientists are optimistic about the future of cancer treatment. Very optimistic. As Paul Workman, director of the Cancer Research UK Centre for Cancer Therapeutics, a charity, puts it, 'This is the second golden era of cancer research.' While no one expects a cure for cancer in the next decade, many think it could be demoted to the status of a chronic disease that people can live with—in other words, something more like diabetes."

Another British cancer researcher, Professor Charles Coombes (Cancer Research, UK), is also optimistic but asks for another 20 to 30 years. "The more we understand about how these cells behave, the more likely we are to understand what happens with breast cancer... That revolution is ongoing. We are going, I think, to be looking at improved results over the next 20 or 30 years." (BBC NEWS 2004)

One of the most recent articles by Reuters (Hirschler, 2006) is more realistic "We are suddenly seeing things that make a real difference... but adding to the complexity of cancer treatment for relatively short-term outcomes isn't necessarily in patients' best interests and can certainly wreck fragile budgets ..." Indeed, seeing an improvement in survival on the order of several weeks does not translate into a true benefit for the patient, as the patient may have to live these additional weeks in the hospital, experiencing the side-effects of the treatments. All this comes at an enormous dollar price as well.

Here are a couple of examples of drugs for the treatment of pancreatic cancer. A new combination chemotherapy—Xeloda-Gemzar (presented in November of 2005), for advanced pancreatic cancer, increased survival from six months to a median survival of 7.4 months. This was achieved at a price of increasing the side-effect of neutropenia (lowering of white blood cell count, which predisposes one to overwhelming and deadly infections) from 11% to 17%. The rest of the side-effects are similar to the usual chemotherapy (Cunningham 2005). So, there is apparently a very modest improvement in survival (increase by an average of 1.4 months) at a high price, both in terms of dollars and in terms of human suffering. Nothing as impressive as television ads might lead one to believe.

Another example is a drug called Tarceva, which was just approved by the FDA for treatment of pancreatic cancer (November, 2005). A combination therapy that includes this drug increased survival by an average of 12.8 **days**; this was achieved at the price of increased number of strokes in patients receiving the new drug. A report reads "Mace Rothenberg, M.D., an oncologist at Vanderbilt Ingram Cancer Center in Nashville, said that improvements in cancer treatment are usually incremental. But that said, Tarceva's survival advantage is the first time in almost a decade that any drug has been shown to let pancreatic cancer patients live longer." One can decide for oneself whether the treatment with all of its side-effects plus an additional side-effect of strokes, is worth the average additional 12.8 days that it may gain (MedPage Today 2005). In addition, it is not clear from this report whether the author is speaking of cancer-specific survival or absolute survival. This statistical terminology may often give a false impression of a

success. Cancer-specific survival indicates the likelihood that the patient will not die of cancer, but it doesn't take into account the patients who die for other reasons (i.e., side-effects of chemotherapy) without any prolongation of life. Absolute survival takes into account all causes of death and is the only statistical measure (not counting its inverse—absolute mortality or all cause mortality) that can indicate whether the patients actually live longer due to treatment. The numbers of absolute survival are always less impressive than those of cancer specific, or relative survival.

The producers of medical technology and pharmacotherapy are in constant competition for increased profits. In their unrestrained zeal for winning business wars they promise us major breakthroughs in the near future. This helps to sustain a variety of funding sources and investment interest. Only from a perspective of the last half of century one can see how little of what was promised is actually achieved. In the mean time, in this race for an illusory carrot, our health care resources have been depleted and health care has become unaffordable to greater proportion of the uninsured population. Increasing numbers of American people do not have access to the most basic health care. Political appeals for increased funding for programs like screening mammography result in shifting of money from basic social programs to funding of an illusion.

I think that today's medical treatments of most cancers offer, at best, a very modest improvement in survival. A cancer sufferer would be much better served by not putting all of their hopes in the medical technology, but in remaining actively in charge of their treatment and using oncology specialists as consultants on their journey toward health. To put it more simply, I think that a cancer sufferer must not take the oncologist too seriously. I mean this not as a process of denial, but rather, as a process of greater awareness, awareness that permits one to recognize the extent of the problem, the usefulness of the offered therapies and their limitations. With an understanding of these limitations, a cancer sufferer can assess the advice of a professional who has been trained to take into account only a very limited spectrum of human reality—the measurable and calculable aspects of a human being.

So, instead of frantically running to 'the best cancer center' to get 'the latest treatment', and instead of believing the doctor who tells you that you have 'X number of months to

live', consider looking into alternative therapies. When doing so, evaluate their likelihood of causing you suffering (physical, mental, financial), and their potential for helping you, based on your own gut feeling. While this subjective approach is not valued by the conventional biomedical sciences, it has never been proven to be ineffective. Instead, it can harness our own human potential for self-cure.

#### References:

BBC NEWS: [http://news.bbc.co.uk/go/pr/fr/-/2/hi/health/medical\\_notes/3244315.stm](http://news.bbc.co.uk/go/pr/fr/-/2/hi/health/medical_notes/3244315.stm)

Published: 2004/01/30 11:04:30 GMT © BBC MMVI

Cunningham D et al. *Phase III randomised comparison of gemcitabine (GEM) versus gemcitabine plus capecitabine (GEM-CAP) in patients with advanced pancreatic cancer*. ECCO 13, Abstract PS11, presented Nov. 2, 2005. Abstracted in Medpage Today, ECCO: Xeloda-Gemzar Duo Extends Pancreatic Cancer Survival.

Fred Hutchinson Cancer Research Center. *Curable Cancers*. Accessible at the time of publication at

[http://www.fhcrc.org/science/education/courses/cancer\\_course/clinical/treatment/curable.html](http://www.fhcrc.org/science/education/courses/cancer_course/clinical/treatment/curable.html) )

Groopman, Jerome E, MD., *The Thirty Years' War*. The New Yorker, June 4, 2001, p.32.

Hirschler, B. *Counting the high cost of cancer drugs*. Thursday May 4, 2006 1:10 PM BST, European Pharmaceuticals Correspondent – Analysis, accessible at the time of publication at

[http://today.reuters.co.uk/news/newsArticle.aspx?type=topNews&storyID=2006-05-04T121013Z\\_01\\_L28306303\\_RTRUKOC\\_0\\_UK-CANCER-COST.xml](http://today.reuters.co.uk/news/newsArticle.aspx?type=topNews&storyID=2006-05-04T121013Z_01_L28306303_RTRUKOC_0_UK-CANCER-COST.xml)

MedPage Today. *Tarceva Approved for Treatment of Pancreatic Cancer*. Abstracted in Medpage Today, South San Francisco, Nov., 2, 2005.

NCI Cancer Rates. Data accessible at the time of publication at

[http://rex.nci.nih.gov/NCI\\_Pub\\_Interface/raterisk/rates28.html](http://rex.nci.nih.gov/NCI_Pub_Interface/raterisk/rates28.html).

NCI Monograph. *Conference on Spontaneous Regression of Cancer*. National Cancer Institute Monograph 44, November 1976. DHEW Publication No. (NIH) 76-1038.

Reznik, O. *The Secrets of Medical Decision Making: How to Avoid Becoming a Victim of the Health Care Machine*. LHP 2005.

Rich, R. (ed.) *Cancer: A Personal Challenge*. Anina's Book Company 2005.

Stewart SL; King JB; Thompson TD; Friedman C; Wingo PA, *Cancer mortality surveillance—United States, 1990-2000*. MMWR. Surveillance summaries : Morbidity and mortality weekly report. Surveillance summaries [MMWR Surveill Summ] 2004 Jun 4; 53 (3), pp. 1-108.

The Economist., *Molecular Medicine*. Oct 16, 2004

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