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A CONVERSATION WITH STEPHEN SCHNEIDER

## Lessons of Climatology Apply as a Vicious Front Moves In

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**W**ASHINGTON - When Dr. Stephen H. Schneider began his career as a climatologist in the 1970's, his goal was to save the planet.

Four years ago, Dr. Schneider, a professor at Stanford, discovered he had an exceedingly lethal form of cancer, and quickly saving his own life became his goal.

To increase the odds against the disease, mantle cell lymphoma, Dr. Schneider, 60, involved himself in every aspect of his treatment.

How he pushed his doctors to experiment with new techniques to control the cancer is the subject of a book he has just completed, tentatively titled "The Patient From Hell: Getting the Best That Modern Medicine Can Offer." Da Capo Press/Perseus is to publish it in the fall.

"In my work on climate, I have one client, the earth," Dr. Schneider, a winner of a 1992 MacArthur "genius" grant, said in a recent interview during a scientific conference here. "It was the same with the cancer. In both cases, there was no room to be wrong."

Q. In the debate on global warming, where do you place yourself?

A. I'm often described as a skeptic because I tell environmentalists they don't need to cite the worst-case scenarios to describe the dangers of human-induced climate change. The mainstream evidence is bad enough.

I started out in climatology in the early 1970's, looking at atmospheric warming and cooling. I didn't know which was going to win. By the late 1970's, the data suggested it's a bad idea to threaten the planet's life-support system without trying to slow the rate we were dumping greenhouse gases into the atmosphere. The models showed that if we continued as we were, we were likely to cause significant climate change.

Q. What has climatology taught you about being a cancer patient?

A. It helped my wife, my doctor and I redesign the protocol to save my life. With upcoming global warming, you can't have all the facts because the future hasn't happened yet. You feed the information you do have into a computer and make subjective judgments based on it.

Four years ago, I found I had an enlarged lymph node. For a few months, I suspected cancer, but the early tests were negative. Months later, I was diagnosed with mantle cell lymphoma, M.C.L. It's around

5 percent of lymphomas. Because it's relatively rare, there'd been very little observation of survival probabilities with a range of different treatments. My doctor, Sandra Horning, had helped to devise the protocols to treat it. Yet because M.C.L. is rare, she'd seen only about 20 patients.

She'd managed to at least double their life span - way up from two years after diagnosis. But this wasn't a situation where researchers had followed 1,000 people for 15 years to learn what worked best. So I decided to use the techniques of climate prediction to increase my survival odds.

Q. How does a person use a climate model to predict his own survival?

A. To start with, my wife, Terry Root, a biologist, and I went to the Internet for information. There's a lot of nonsense there, but it gave us a starting point.

We then had meetings with my doctor where we'd discuss various treatment options. We used math models to argue for unusual therapies. When you're looking at global warming, climatologists don't have all the facts because certain things haven't yet occurred.

You feed information into a computer, you look to what you know and extrapolate: subjective probability analysis. For years, I have been advising governments to use it for climate change policy. That's safer than waiting for the climate system to perform the experiment on us.

Similarly, I wasn't going to wait 15 years for researchers to gather the data. I'd be dead by then.

Q. Can you give us an example of how your use of probability worked to your benefit?

A. O.K. I received a chemotherapy cocktail called CHOP, and Dr. Horning added something relatively new, Rituxan, a monoclonal antibody treatment. With my cancer, the immune system's B cells are dividing out of control. Rituxan has these nanotechnology proteins that dock with the B cells. This then causes the immune system's T cells to kill them off.

Till now, Rituxan has only been used on acutely sick people. But I had this idea to take it in maintenance doses whenever there were signs my cancer was coming back. I said to the doctors: "If you never cure me, that's O.K. But maybe Rituxan can get the cancer down to a level where it doesn't kill me." They answered, "Sorry, there have been no clinical trials, and we don't have data to prove this works."

So I used probability models to argue there was little downside to trying it: "Odds are the cancer is going to come back in three to five years, and once it does, it's hard to get rid of. Why don't we prevent that by doing routine maintenance with Rituxan?" I eventually won that round.

Q. Did some of your doctors really consider you the patient from hell? How did this happen?

A. Some felt that way. Sandra Horning was supportive, and whenever Terry and I convinced her of an idea, she tried to help. For instance, we argued very strenuously that they should use a modern microbiological technique, P.C.R., polymerase chain reaction, to keep track of the number of cancer cells in my blood.

With P.C.R., diagnosticians can detect when cancer cells are increasing. What they normally use is CT scans, which detect problems much later on. P.C.R. is far more sensitive.

My doctors initially disagreed. P.C.R. costs thousands for every test. We won that one, too. We now test my blood with P.C.R. every other month and go back to Rituxan, when it finds cancer cells are increasing.

Q. Did you have radiation therapy?

A. At first, I didn't want to. Who wants a Hiroshima dose of radiation? Sandra Horning countered, "If a few cancer cells have survived everything else we've done, radiation will be an alternative kill mechanism."

So we did what scientists call decision analysis. You ask, What can happen and what are the survival odds? I'd ask her questions and she'd give me her best information. At the end of the calculations, we figured that radiation boosted my survival chances by about 20 percent versus the side effect of a 5 to 7 percent chance of leukemia, delayed 5 to 10 years. This was a no-brainer. Once I understood the odds, I was willing to stand in front of a cyclotron, smile and welcome every killing ray.

Q. How's your health today?

A. I'm four years out and still kicking. Not long ago, we celebrated my 60th birthday. At Stanford, they've modified some of the protocols that Sandra Horning, Terry and I designed for my case.

What I've learned is that cancer shouldn't be treated with a one-size-fits-all protocol. You need to be able to negotiate and individualize. Now, I was lucky. I had good health insurance and access to Stanford University Hospital, the exact right place for this lymphoma. Also, I was a Stanford professor. I could approach the docs and say, "Professor to professor, this is what I think we should consider."

I think my doctors gave me the best treatment they knew. It certainly got the cancer under control. Whether I would be in remission for as long without the modifications, I don't know.

I believe that modifying the protocols, in negotiation with good doctors, increased my survival chances. But we need a bunch of other patients to prove that for a fact. I'm pleased it's going to happen.