



# PUGET SOUND QUARTERLY

## INSIDE

President's Message	2
Calendar of Events	7
PSONS Profile	11
Community Crossings	12
Treasurer's Report	15

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## CANCER CHEMOPREVENTION: THE FUTURE IS NOW

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Chemoprevention as a concept has been around for centuries. Vitamin supplementation to prevent diseases caused by dietary deficiencies is an example of an effective enactment of the concept. As the scope and pace of technological achievements in the second half of the 20th century expanded on a seemingly daily basis, it was assumed that this concept would be easily used to eradicate cancer. Systematic research, which had conquered so many other problems, would be the method by which this would be accomplished. Observations from epidemiological data, case studies, animal models, and biochemical lab findings gave clues to what agents might be helpful to try.

Such preliminary evidence is like the assessment of an elephant made by blind men. Since only a small part of the whole was experienced by each individual, none of them could accurately describe it. Beta carotene as anti-cancer agent was one such compound. Epidemiologists found that people who ate diets rich in this nutrient had lower cancer rates than those who didn't. It had antioxidant biochemical properties. Small studies in humans gave promising results, especially in lung cancer. It was heavily marketed and purchased on the basis of these initial findings. Unfortunately, the stringent

test of a large, prospective, randomized, double-blinded, placebo controlled trial did not confirm its cancer preventative powers. On the contrary, for individuals who continued to smoke during the trial, it actually appeared to increase cancer incidence.

### Breast Cancer as a prevention paradigm

By contrast, the landmark Breast Cancer Prevention Trial stands as an example where things worked out better than expected. Preliminary evidence supported tamoxifen ("Nolvadex") as a chemopreventative agent. In the laboratory it had shown antiestrogen biological activity in vitro. Effectiveness in animal studies had been demonstrated; it could decrease induced tumors. In humans, women treated for breast cancer with



tamoxifen had 50% decreased incidence in contralateral new primary tumors. Surprisingly women treated with tamoxifen for breast cancer also seemed to have less cardiac events. There was also evidence that tamoxifen would provide an estrogenic-type bone preservation.

In order to show benefit in a convincing way, only women who were at high risk to develop breast cancer were

Continued on page 3