MiCK assay, they changed their treatment plan 68% of the time. They achieved disease control 81% of the time when they used the assay vs. 25% when they did not, a huge 56% advantage. Overall survival was 16.8 months in the assay-guided patients vs. 13.1 months in those who did not use the assay. The median time-to-recurrence when the MiCK assay was used was 7.4 months vs. 2.2 months if the physician did not use the assay.

One interesting aspect of this study is that it did not direct oncologists in how to treat the patients. The authors thought that they would produce a more valid test of how the assay would be used in actual practice, where oncologists have complete discretion in treatment planning.

I have written a book on this general topic, called *Customized Cancer Treatment*. It is available through Amazon.

Metformin May Boost Survival in Ovarian Cancer

Metformin is a drug commonly used to treat type 2 diabetes. It decreases the amount of circulating glucose in the blood. Since cancers mainly feed on glucose, there has been some speculation that metformin may have a beneficial effect in cancer patients as well. The drug is ultimately derived from an herb called French lilac or goat's rue (*Galega officinalis*).

Metformin, a commonly prescribed oral drug for diabetes, may improve survival in women with ovarian cancer. This was the conclusion of a December 2012 study from the Mayo Clinic (Rochester, MN). The case control study was published in *Cancer* (Kumar 2012).

Women with ovarian cancer who received metformin were compared with women with ovarian cancer who did not receive the herb-derived drug.

In a preliminary analysis, patients who received metformin had a 5-year survival of 73%, vs. 44% in those who did not. Even when age, disease stage, histology, and so on, were taken into account the difference remained similar. In this more rigorous analysis, metformin patients had 5-year disease-free survival of 67% vs. 47% in those who did not get the drug, an absolute advantage of 20%!

Although not a randomized trial, this retrospective study did show an association between metformin intake and the survival of ovarian cancer patients. The Mayo Clinic authors concluded that metformin was worthy of a more rigorous clinical trial in this situation.

Dr. Shridhar Viji pointed out that although metformin is generally safe, it does have some adverse effects, including the possibility of nausea/vomiting, cramping, abdominal pain, and diarrhea. For that reason she does not recommend using it until the completion of hoped-for clinical trials.

Is Laetrile a Vitamin?

It is amazing that although the scientific community rejected the claim that laetrile (the cyanogenic glycoside, amygdalin) is a vitamin, a broad section of the public still accepts it as "vitamin B17." A Google search for vitamin B17 returns over 400,000 hits. So it is worth examining this claim in some detail. After all, it is no small matter whether such a vitamin exists and should be eaten by health-conscious people.

The idea of laetrile, or amygdalin, as an anticancer vitamin originated with Ernst T. Krebs Jr. around 1970. It then spread all over the world as the laetrile movement picked up steam.

Laetrile's use raised many scientific issues, as well as political, socioeconomic, and ethical ones. Although the movement per se is gone, and many of the key proponents have passed away, these issues remain alive. I have much to say on each of the scientific issues involved in this controversy, but right now I would like to address the question of whether laetrile can be considered a vitamin.

The essence of Krebs's claim was epidemiological in nature. He insisted that populations that consume relatively large amounts of laetrile have very little, if any, cancer, while those who had given up the habit of eating laetrile-rich foods suffered from devastating levels of the disease.

His prime examples were the Hunza people of Pakistan and the Inuit people of the Arctic. According to him, both these populations had low rates of cancer and also ate a lot of laetrile-containing foods. Krebs linked the Hunzas' supposed good health to their consumption of apricot kernels:

> Tribes in the Karakorums of West Pakistan ... rely upon a diet carrying as much as 250 to 3,000 mg [per day] of nitriloside

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