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The Need for Effective Cancer Screening

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For years cancer death rates in industrialized countries showed no improvement whatsoever. Between 1991 and 2006, however, the death rate from various cancers has decreased by 17%, a striking improvement, after years in the doldrums (2009 American Cancer Society data, from their website). There are a number of possible causes to which this improvement has been attributed, but the most commonly cited are improved treatment, improved diagnosis and improved lifestyles, most importantly smoking cessation. At this point these discussions are more guesses than scientific discourse, except for smoking, which even today is responsible for almost a third of all cancer deaths.

A recent article by Nastasha Singer (July 17, New York Times) discusses the push toward more and more screening for cancer, the assumption being that it will lower mortality and morbidity. Quite the contrary Ms. Singer asserts, stating that most tests are either too non specific, too invasive or too outright dangerous to be of benefit to the patient. She cites x-rays to detect early breast cancer, mass screening for thyroid cancer, and screening of young men for prostate cancer or young women for breast cancer. In fact, her thesis is that these tests drive up the cost of medical care because of their high rate of false positives, which then requires extensive followup including costly and risky biopsies.

Yet early detection of cancer probably represents the only possible for elimination of the disease. Most cancers are treatable in their early stages and untreatable in their late progressions. So clearly, simple, cheap and

accurate diagnostic tests would be the answer. As I and many others have commented (see enclosed files) blood-borne biomarkers would be the obvious candidate. If one could withdrawal blood from a potential cancer patient, and screen it using microarray technology, it might be possible to evaluate the patient simultaneously for an extensive panel of biomarkers.

Unfortunately, it is becoming increasingly evident that there are few if any specific proteins that define the cancer cell, but rather quantitative differences in protein expression for a number of markers transform a normal cell into a malignant marauder. This means that an effective test kit would have to have antibodies for a whole group of serum proteins, and it would have to be precisely quantifiable. While not outside the realm of possibility, this is a tall and challenging order, and will not be easily met.

These considerations explain why the number of FDA-approved cancer diagnostics on the market is so miniscule. These include Ca-125 for ovarian cancer, Her-2 for Herceptin responsive breast cancer and prostate specific antigen (PSA) the old standby, whose value is still questioned after so many years in the market.

While we can hope for rapid progress in this area, even a most optimistic forecast would place the availability of such technology a decade in the future. Since futile treatments for cancer are one of the largest and most difficult to control expenditures of the American health care system, this could represent a major stumbling block on the way to the goal of health care coverage for all Americans at an affordable price.

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