

Should We Seek the Answers from Whole-Body Scans?

The need to feel reassured about our health and longevity is common to almost all human beings. In my medical practice, as a family physician, I have observed over and over that uncertainty is harder to bear than the knowledge of certain death and suffering. Modern medical technology has been trying to step up to the difficult challenge of relieving uncertainty by an introduction of a variety of screening tools. Whole-body CT screening is one such extreme modality with an audacious aspiration to diagnose or rule out all diseases. This essay will briefly explore the facts of whole-body scanning and will touch upon the philosophical bases underlying this approach to health.

The idea that one's whole body will be scanned for disease immediately evokes a hope that all disease will be uncovered. In fact, from the moment the person sets foot into the scanning facility, they are bound to begin their journey toward disappointment. First, most facilities offering whole-body scans will present a disclaimer stating that there are many diseases that do not manifest in structural abnormalities (i.e. diabetes, hypertension, early leukemias) and therefore cannot be discovered by whole-body scans. This will usually be followed by the reassurance that nearly all tumors, if there are any, will be discovered. But what do whole-body scans really discover, and at what price?

Now there is data to answer this question. A study conducted at University of California at San Diego reports results of whole body scans of 1192 persons, average age 54. The principal finding was that 86% of patients who underwent scans had at least one abnormal finding. Only 14% enjoyed a relatively 'clean bill of health' or no abnormal findings. The described abnormalities varied from degenerating discs in the spine, to abnormal blood vessels, to cysts, to abnormal nodules and tumors that were most likely benign but could have been cancerous. CT scan usually cannot tell whether a tumor inside the body is benign (which is the usual case) or malignant (which is relatively rare). Thirty seven percent of these patients received at least one recommendation for further evaluation (Furtado 2005). These 37% have entered the

path of tests that give rise to more tests without an end. The remaining of the 86% of people with some kind of abnormality will now have to live with the new knowledge that something is indeed wrong with them and that the problem, whatever it may be, could get worse. The much hoped for reassurance and relief of uncertainty never came true for 86% of the persons who underwent the scans.

There are other 'bonuses' from the whole-body scan. Harm of radiation is one such unnecessary risk.

Committee to Assess Health Risks from Exposure to Low Levels of Ionizing Radiation, National Research Council, which is the US authority that deals with assessing the risk from environmental radiation, put out an updated 700 page document describing the extent of risk of medical radiography (BEIR VII 2005). BEIR VII is the most current, 7th update of this information. The committee confirms that X-rays do cause cancer and that there is no safe lower limit since radiation damage is additive.

BEIR VII reports that a dose of radiation from one body CT scan (1 CT scan of any one of the following regions: the chest region, the abdominal region, or the pelvic region) carries with it some risk. This risk is an additional 1 in 1000 chance of developing cancer (Semelka 2006). Thus every body CT scan that one undergoes adds an additional 1 in 1000 probability of cancer, so that after four CT scans you have an additional 1 in 250 chance of getting cancer just from the radiation of the scan.

In addition to the DNA damaging effect of radiation—the effect that leads to higher risk of cancer, another harmful effect of X-ray (which is what CT scanners use) was recently documented (Hujoel 2004). Low birth weight was found in the babies born to the mothers who underwent dental X-rays during pregnancy. The study was carefully conducted to verify that the difference in weight was not due to the differences in socioeconomic status. The amount of radiation received from dental X-rays was inversely related to baby's birth weight.

The measure most relevant for assessing the risk of cancer from a medical radiographic procedure is called "effective dose" . Effective dose is measured in units called millisieverts (abbreviated mSv; 1 mSv = 1 milligray abbreviated mGy in the case

of X-rays). Using the concept of effective dose allows comparison of the risk estimates associated with partial or whole-body radiation exposures. This quantity also incorporates the different radiation sensitivities of the various organs in the body.

The study of dental X-rays in pregnancy found that exposure to less than 0.4 millisieverts (mSv or 0.4 milligray mGy) was associated with more than doubling risk of low birth weight in a newborn, while exposure higher than 0.4 mSv was associated with more than tripling that risk. For comparison, a head CT scan exposes one to 2.0 mSv of radiation. Low birth weight is thought to be due to a disruption in the function of pituitary and thyroid glands by X-ray radiation. Both of these glands are in the immediate vicinity of the dental X-ray. In fact, it has been known for some time that X-rays disrupt the function of the thyroid gland (Chang 2001). Similarly, it would not be surprising if we found that radiation from CT scans of the body disrupts function of other important glands in the body (parathyroid, thymus, pancreas, adrenals, gonads).

There are also implications to society and the world as a whole. Health care dollars is a non-renewable resource similar to oil and other exhaustible forms of energy (Kopes-Kerr 2006). There are just so many healthcare dollars available in the world. A typical body CT scan costs about \$500 in the US. I hope that the information I presented above helps to see that it is not only useless, but a harmful attempt at obtaining reassurance. But what can \$500 healthcare dollars buy in the world? Interestingly, the answer was given by a recent British study (Bryce 2005). They calculated that it takes exactly \$887 to save the life of one child in the 42 countries that carried 90% of the world's toll of childhood mortality in the year 2000. Healthcare consumerism, like any other form of consumerism, carries a toll of unhappiness and death in other places in the world. This transfer of resources happens by a variety of direct and indirect pathways, on national and international levels.

A recent example of a "miracle drug" called Herceptin illustrates the process on a national level (Collier 2006). The drug was supposed to treat a particular type of breast cancer and seven British women who were misled into believing that the drug would provide a cure campaigned in front of Tony Blair's office demanding that the British health service would pay for the drug. Succumbing to political pressure the drug

distribution was authorized. In fact, the drug is minimally effective and very costly. If 18 women with breast cancer were to be treated for one year, only one of these women would be free of recurrence at the end of the year, all that at a cost of \$699,000. There is no evidence that any one of these women would live longer (even the one who would be free of recurrence for a year), only that one of 18 would be free of recurrence in one year. This same amount of money provides enough funds to support a fully staffed and equipped medical office with two to three physicians for a year. If this office were to implement simple, cheap and proven health interventions in a medically underserved area for a year, probably more than a dozen of lives would be saved. I can calculate that in the “undeveloped” countries such an office would save 797 lives.

On an international level, health consumerism leads to theft of doctors by the countries that want more from the countries that have too few (Bryce 2006).

Our healthcare consumerism is usually driven by fear—fear of cancer, for example, as an expression of fear of death. The advertisements for whole-body scans and other similar interventions usually either imply or openly state that the procedure will save you from disease and death. We believe this suggestion because of a widely promulgated belief that technology can relieve suffering, cure disease and postpone death. But there is no proof that this is true. As we overcome one powerful disease, another takes its place and suffering in the industrialized world has not been reduced. Basic hygiene, nutrition, and a supportive social structure account for most of the comforts of modern societies and very little of that is due to technology. Societies that have voluntarily restricted their consumption of resources and the use of technology (such as the Amish and other voluntary poverty communities throughout the world) testify to this truth. Contributions of technology, while undeniable, are also much more modest than is generally accepted. As a physician I can state with certainty that the contribution of medical technology to world health as a whole is small at best. The well-publicized cases of sophisticated surgeries that saved the life of a child gain a new perspective when one realizes that the cost of one such surgery could have bought enough oral rehydration mix to save lives of dozens of other kids. Treatments of nearly all chronic illnesses consist of slowing the progression, not the cure. This is true even

for the most up-to-date and most expensive modern treatments.

But besides this inordinate faith in technology, there is another issue that lies even deeper in the foundation of each human being. It is a question that can be answered by each human being, and the question is—what is the purpose of life? One's priorities will radically differ depending on the answer to this question. If the purpose is to make life as long and comfortable as possible, then giving the highest priority to discovering and preventing illness may be justified. But if there are other possible purposes, for example to fully express one's human possibilities. Then priorities may need to be revised. As my friend Dr. Bob Rich, who is a psychologist and writer, said, "...length of life is only one consideration. Living life popping pills and worrying about every little twinge is a lot inferior to robust activity that ignores discomfort. Life is about meaning, not illusory safety (Reznik 2006)."

And what about that troubling uncertainty that we were trying so hard to remove from our lives, did it ever go away? It never seems to disappear, definitely not in the practice of medicine; but should it be avoided in the first place? Again this brings us to our life purpose. If the purpose is to live without troubles and discomfort, then the search to relieve uncertainty is justified. If, on the other hand, one's purpose is different, the search for non-disturbed existence may be useless or even counterproductive. It is precisely this troubling uncertainty that permits us to extricate ourselves from the hold of the illusory future, and start living each present moment more fully. It is precisely this troubling uncertainty that makes risk possible. It is precisely this troubling uncertainty that, by giving us the possibility of taking risks, allows us to live more fully.

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