of medical oncology. Identification of people with inherited or familial risks for cancer will show us those who are likely to benefit from preventive interventions, including screening to identify tumors at an early stage.

Advances in genomic technology will improve our ability to predict when a tumor is likely to metastasize to other parts of the body—and when the patient might, accordingly, benefit from a more aggressive therapy. It will aid us in understanding which types of treatments will be beneficial to a specific patient and which will not.

New biologic therapeutic treatments for cancer promise to be more effective—and to have fewer toxic side effects—than currently available treatments. The biggest challenge will likely be incorporating this wealth of new information into clinical practice. ■

NOTES

1. M. Che, M. DeSilvio, A. Pollack, et al., "Prognostic Value of Abnormal P53 Expression in Locally Advanced Prostate Cancer Treated with Androgen Deprivation and Radiotherapy: A Study Based on RTOG 9202" (paper presented at the American Society of Clinical Oncology's 2005 Prostate Cancer Symposium, Orlando, FL, February 19, 2005); abstract at www.asco.org/ac/1,1003_12-002643-00_18-0037-00_19-0020372,00.asp.
2. P. P. Pandolfi, "Breast Cancer—Loss of PTEN Often Predicts Resistance to Treatment," *New England Journal of Medicine*, November 25, 2004, pp. 2,337-2,338.
3. G. MacPherson, C. S. Healey, M. D. Teare, et al., "Association of a Common Variant of the CASP8 Gene with a Reduced Risk of Breast Cancer," *Journal of the National Cancer Institute*, vol. 96, no. 24, December 15, 2004, pp. 1,866-1,869.

AN ETHICAL VIEW

BY CAROL BAYLEY, PhD

Dr. Bayley is vice president, ethics and social justice education, Catholic Healthcare West, San Francisco.

Jeffrey Shaw's introduction to cancer genetics (p. 31) describes a future in which advances in genomics make possible new diagnostic tools and therapeutic agents and vectors. But the ethical issues it raises are familiar ones, even if set into a new context. What is the right relationship between efforts to improve individuals' health and efforts to improve the health of a population as a whole? How will physicians learn the skills needed to educate patients in a way that secures truly informed consent? How will insurance plans fairly meet their obligations to their shareholders to circumvent avoidable risk, as well as their obligations to those they insure to help them escape financial disaster if they get sick? Many of these questions puzzle us right now. But let's look at how the same questions may puzzle us in new ways in light of Shaw's descriptions.

Old Issues, New Questions

Someone famous said, "To a hammer, the world looks like a nail." When you have only one solution, the temptation is to frame every problem as one amenable to that solution. The hammer here is genetic testing, and the information it may yield about an individual's cancer risk. The temptation may be to focus attention and direct resources to risk identification and reduction in certain individuals at the expense of attention and resources that might be devoted to environmental contributions to cancer risk. These latter interventions may be larger, slower, and more diffuse opportunities. But, as Shaw points out, most cancers are sporadic (not inherited) and most genetic mutations result from repeated exposures to carcinogens in the environment. At a time when resources are limited, we should carefully consider whether individual or population screening for certain cancers is a better or worse use of our money than is cleaning up our air and water, or figuring out politically and economically workable solutions to industrial wastes that we already know contribute to cancer.

Of course, the challenge here is to configure our finances and accounting so that the relationship Shaw describes between environmental carcinogenic exposure and increased cancer risk is clearer, in economic terms, than it is at present. Otherwise, we will continue to hit the nail of cancer with the only hammer we have.

Another old ethical issue in new genetics clothing is that of informed consent. This issue has at least two facets. First, as Shaw points out, we are beginning to differentiate cancers not just on the basis of where in the body they occur, or by cell

type, but also by aggressiveness or risk of metastasis. This means that there is another layer of information that both patients and the public in general will need so that their choices for testing and treatment are as informed as possible. As Shaw notes, most cancers, because of the nature of repeated carcinogenic exposure over a lifetime, tend to occur in people over 50. For obvious reasons—wear and tear and the nature of aging—this is also the time when other ills strike, such as heart disease, diabetes, stroke, and dementing illnesses such as Alzheimer's and Parkinson's. Some cancers, although easily treatable with genetically targeted pharmaceuticals, may become the next generation's "old man's friend," as pneumonia once was. We will need to remember that the human condition is eventually 100 percent fatal, making our choice not whether to die, but of what. Even when cancer therapies become as simple as antibiotics are now, we will still need to decide, on the basis of solid information about the risks of treatment and potential alternatives, whether to undergo it. Information sufficient to make that informed choice will be provided by physicians, whose skills in facilitating decision making on the part of patients may need a new level of sophistication.

We will need to remember that the human condition is eventually 100 percent fatal.

Privacy and Insurance Issues

A second issue in informed consent concerns the subject(s) of what was once understood to be a purely individual process. When my gallbladder is acting up yet again, my physician may recommend its removal. Under some circumstances, I may consider the effect of having surgery on those around me—can I miss work right now? who will look after my kids?—but I may not.

But with many kinds of genetic testing for familial predisposition toward cancer, my decision to be tested actually involves either the testing of other individuals in my family, or the gaining of knowledge that doesn't apply to me alone but to my parents, siblings, and children as well. This is not just a question for physicians to comprehend, obviously; genetics counselors and the test-seeking public should understand it, too. We may also need some public deliberation and the establishment of standards—standards perhaps similar to those for the old-fashioned kind of informed consent—that will more adequately meet the challenge of informed consent to genetic tests.

Concerning therapies, Shaw also points out the difference between new, focused pharmaceuticals, on one hand, and the scattershot approach that is currently the norm, on the other. Right now, for most cancer treatment, all patients with a particular cancer get a particular protocol, even though it helps only a certain percentage of them. As genetic assessments become more precise and pharmaceuticals are tailored more for subgroups of cancer patients, this blanket approach will likely change to a more targeted one.

Such a shift already allows the 20 percent of children with acute lymphoblastic leukemia who will not benefit from the standard therapy to be spared its burdens. The ethical challenge will be to try to make certain that financing and reimbursement keep up with the complexity of therapeutic options. If a low-cost standard therapy helps most people, but an expensive therapy, targeted for the small percentage of cancer patients with a particular genetic mutation, is extremely effective for this smaller number of patients, will health insurers be allowed to deny payment for the expensive therapy based on the aggregate calculation?

Predisposition and Disease

Another insurance-related issue is the transformation of the very concept of disease, traditionally indicating a sick person exhibiting signs and symptoms of a certain constellation, but which, thanks to the new medicine, will come to signify presymptomatic, non-sick people who happen to have a certain genetic profile. To a degree, we are already functioning in this new paradigm of disease. Patients are started on statins because of a certain lipid profile, not because they have symptoms of heart disease. People with a particularly low T-cell count and high viral load begin HIV cocktails, staving off, rather than waiting for, an opportunistic infection. "Early intervention" is earlier than even a single symptom.

In this new paradigm, the knowledge of impending doom is accompanied by an effective intervention. If the time comes that people with a particular genetic profile are thought of as actually having the particular disease, it will not necessarily be because an early intervention can prevent sickness. It may just be a designation that may

then morph into that dreaded label "preexisting condition," which, in the present system, can prevent a person from qualifying for health insurance or may discourage a person from switching insurance (or, in some cases, jobs).

Such a person can be found to be uninsurable by a company understandably seeking to reduce its liability for likely health care costs. I can imagine an ironic twist on this situation: A person who, because of a particular genetic makeup, is insured against everything except the one thing for which he or she is most at risk.

There Is No Such Thing as Normal

Clearly, this issue is most pronounced in the arena of genetic testing. Testing represents a question, the answer to which is often presumed: Is more knowledge always better? Many physicians and genetics counselors and some patients think so. Even if no therapeutic choice can be made on the basis of it, some people will want a cancer genetic test "just to know" and to plan their lives accordingly. Others will find an excess of knowledge paralyzing and burdensome. Often the test is performed without adequate informed consent, and with no attention given to the possibility that the person tested will be burdened—not empowered—by the particular knowledge the test yields. The question should be asked: "What will you do differently on the basis of the knowledge you gain from this test?" If the answer is "Not much," patients will need stronger protection from the "Let's just find out first, and decide that later" mentality. Such protection is both an issue for individual physicians and counselors in relationships with patients and a policy issue for government and commercial insurers recommending tests and footing the bills.

One final ethical opportunity in the insurance realm is brought to us by these advances in genetics—which, although they do not concern cancer only, are perhaps especially apropos here because so many people are affected by some form of cancer. If there is one thing we have learned more or less conclusively from the Human Genome Project, it is that no one of us is "normal." We are all so slightly different that the "standard" genome had to be a composite. Nor is any one of us "perfect," genetically speaking. It is estimated that, in each of us, somewhere around eight percent of genes are deleterious. *All* of us are genetically flawed. This simple fact should, besides engendering humility in us, also persuasively make the case that we need a medical care plan or insurance scheme that works for everyone, since everyone is at risk and none of us is at fault.

The advances in cancer genetics are not on the way; they are here. Much of the impulse to study ethics comes from an awareness that technological progress often outstrips our ability to ask the right moral questions about the direction of progress and its implications for human flourishing. The ethical questions raised belong to all of us and bring us new responsibilities.

Both patients and *potential* patients (that is, all of us) must develop a kind of genetic literacy, so that we understand the difference between likelihoods and certainties, predispositions and clear diagnoses. Doctors need the knowledge and skills to recommend tests wisely and interpret them accurately; these skills are necessary not just for those who are specialists but also for the primary care physicians who will deal with the "worried well." Insurance companies need to wrestle with their (possibly conflicting) responsibilities to stockholders and to patients, in order to be fair to both. Both the medical community and the insurance industry need to guard against a tendency to designate people possessing a particular genetic makeup as already diseased, since doing so will be neither accurate nor therapeutically helpful.

Finally, as citizens we should call upon our leaders to design a health care system in which our genetic profiles and other accidents of our birth do not determine our access to health care or the quality of care we receive. ■

JOURNAL OF THE CATHOLIC HEALTH ASSOCIATION OF THE UNITED STATES www.chausa.org

HEALTH PROGRESS®

Reprinted from *Health Progress*, September-October 2005