1984. No progress there, either.

■ The 5-year *relative case survival rate* ("relative" means adjusted for mortality in the general population) was 48.6% in 1974–1976 and 48.7% in 1977–1983. Rates for single years of diagnosis show no essential change since 1975.

■ These figures are as up-to-date as anything one could reasonably expect. Most cancer deaths occur within 2 years of diagnosis (although breast cancer is a notable exception). Had there been any substantial change by (say) mid-1983, it should be apparent in the 1985 rates. It is not there.

■ NCI points, correctly, to progress at younger ages, but does not seem to understand that large percentage improvements in the uncommon cancers at ages from infancy through the early middle years do not offset smaller percentage increases in the much more common cancers at older ages. From 1975 to 1984, the death rate for persons under 20 went from 4.9 per 100,000 to 3.7 (a 20% decline), and for those over 75 it went from 1212 to 1351 (a 9% increase). Which change is larger, in terms that matter most?

These points clearly show a failure to control cancer overall, despite undoubted successes in treating some uncommon forms of cancer, mitigating the harsh effects of treatment, and improving the quality of life of patients not cured. The implications are large, including those for research initiatives, demonstration programs, medical training, and clinical practice.

Our cancer program is in big trouble, and headed for bigger, when its most senior program officials themselves do not recognize reality. For the leader of a major public research agency to ignore such data, and instead to say that it is the skeptics who have "departed with reality," is more than a blatant attempt to deny the legitimacy of criticism. It is the ultimate self-indictment.

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I appreciate the coverage given GAO's report *Cancer Patient Survival: What Progress Has Been Made?* in the 24 April issue of *Science*, but feel that a number of clarifications should be made to place both the report and reactions to it in perspective.

My first concern relates to the objective of GAO's analysis and the research design we employed to achieve that objective. The article implies that our objective was to determine whether progress had been made against cancer *in general* and then incorrectly states that "GAO's evaluation is based solely on survival data." This characterization gives the impression that a single measure was examined to reach conclusions about a broad issue. In fact, the opposite is true: we were asked to examine what progress had been made in the particular area of cancer patient *survival*, and our evaluation involved consideration of statistical bias through a systematic examination of data on cancer incidence, mortality, survival, detection, and treatment, as well as disease symptomology and progression. We used *all* of these data to reach conclusions on real changes in cancer patient survival.

Later in the article is the statement that GAO's methodology "relied heavily on the opinions of groups of research physicians." This gives the impression that opinions of research physicians constituted the central focus of the study, when in fact they were a validation mechanism. While we did conduct sessions at comprehensive cancer centers, this does not mean that the information provided by the cancer experts carried more weight than any other data we collected. Instead, these sessions were conducted to validate or refine initial conclusions that were based entirely on our own research. By emphasizing these validation efforts and omitting discussion of our basic statistical work, the article could confuse readers with respect to the design of GAO's study and the extensiveness of our data collection efforts.

Selectivity of presentation is again the issue in another area. The article states: NCI "scientists protest charges that data on cancer survival rates are overstated." In fact, GAO's argument is that NCI has not drawn enough attention to the types of statistical bias inherent in survival rate measurement. The important point here is that NCI has *concurred* with this argument, but the article makes no mention of that fact. I think a balanced picture of NCI's reaction of GAO's report would have included the fact that, whatever its "anger," NCI has accepted GAO's recommendation.

In summary, then, I make four points of clarification. The GAO did not base its evaluation exclusively on survival rates, did not rely on expert opinion except as validation, did not take as its subject "the war on cancer," and received explicit, formal agreement from NCI to its recommendation.

Why is it important to be clear about matters such as these? Because GAO's study takes its place in the normal process of science by which data and their interpretations are independently scrutinized and rescrutinized. What we did was to objectively examine NCI's use of data. In our turn, we expect and hope that independent researchers will examine our report in the same manner. It is in this way that progress may be made, not only in the "war on cancer" and in the use of statistics, but also in the accountability of agencies (including GAO) to the public, and in the acceptance by agencies of the legitimacy, propriety, and usefulness of this normal scientific process.

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Foreign Engineering Students

The article by Elinor G. Barber and Robert P. Morgan on the "Impact of foreign graduate students on engineering education in the United States" (3 Apr., p. 33) is a valuable complement to the studies of U.S. engineering faculty and graduate students conducted by the American Society for Engineering Education (ASEE). Results of the latter series of studies have been reported in 1982, 1983, 1984, 1986, and 1987 (*1*).

Where dealing with percentages of foreign citizens in the U.S. engineering graduate school population, ASEE data generally agree with those reported by Barber and Morgan. ASEE percentages of foreign citizens are consistently lower because our definition of "other" includes graduate students who are nonrecipients of financial aid. Moreover, the ASEE survey population embraced all engineering disciplines, rather than Barber and Morgan's four disciplines.

When our data are adjusted to exclude students who have not been aided financially, the comparisons made in Barber and Morgan's table 1 are generally confirmed. Readers of the *Science* article may be interested in noting that the ASEE data also are grouped to show regional differences as well as 4-year projections. We found that the percentage of foreign students enrolled for the first time in full-time graduate study in engineering had risen from 38% to 44% from 1983 to 1985. The projected percentage of foreign citizens among Ph.D. candidates is expected remain just above 50% through 1988–1989.

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