

labeled as the “most far-reaching development in 20th-century agriculture,” but McGee only devotes a page to it. A more elaborate discussion of the significant potential of the technology to improve nutritional status as well as more specific allusions to concerns such as producing herbicide-resistant weeds would have been welcome.

But this is minor bickering. The revised version of *On Food and Cooking* is an encyclopedic, relevant, well-written book, destined to be a classic like its predecessor. It should be on the bookshelf of anyone who eats. And, oh yes, McGee has no doubt that the egg came before the chicken. If you would like to know why, the answer can be found on page 69.

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## MEDICINE

# Sharp Critique of Industry's Influence

Eric G. Campbell

One of the most contentious topics in current medicine and science revolves around the nature, extent, and consequences of the relationships for-profit companies have with researchers and physicians in academia and government and with physicians in private practice. In recent months, a steady stream of newspaper articles, editorials in journals, books, and government reports have raised allegations of conflicts of interest, bias in scientific research, and inappropriate medical practices that result from links to industry.

Jerome P. Kassirer's *On the Take: How Medicine's Complicity with Big Business Can Endanger Your Health* further fuels this debate. Building on extensive evidence derived from empirical research, anecdotes, and inside information he obtained as a result of his tenure as the editor of the *New England Journal of Medicine*, Kassirer describes in detail the complex web of influence the pharmaceutical industry wields over biomedical research, medical education, and health care in the United States.

The author's account clearly shows that the pharmaceutical industry has developed deep inroads of influence into the research

and health care communities. Through funding of research and perks such as paid consultancy positions (often for surprisingly little or no work), speaking engagements, and seats on corporate advisory boards, companies have established relationships with many, if not the majority, of the leading members of the research community—including scientists in U.S. government agencies such as the National Institutes of Health and the Food and Drug Administration. Similarly, industry has built extensive ties to physicians through low-value gifts (such as pens, coffee mugs, mouse pads, and pizza) and more lavish enticements (such as free dinners at expensive restaurants, trips to exotic locations, and support for continuing medical education). At the institutional level, connections also link industry to physician associations, entire universities, and the leaders of prestigious government agencies.

The book casts a spotlight on the negative effects that relationships with industry sometimes have on the professional activities of those involved. In regard to researchers, empirical evidence suggests that ties to pharmaceutical companies are associated with greater chances of

biased research, increased secrecy, inappropriate publication practices, and heightened risk for human subjects involved in clinical research. Considering physicians, Kassirer presents data suggesting that their prescription habits are influenced by relationships with industry, which sometimes lead doctors to prescribe drugs that are unnecessary, are more expensive but not more effective than readily available alternatives, or pose greater risks to patients without offering commensurate increases in efficacy.

Whereas Kassirer relentlessly pursues these various potential negative effects, he does not substantively discuss what many consider the possible benefits of relationships with industry. For example, through such arrangements scientists obtain resources to conduct research, write papers, attend conferences, sponsor students, and develop new products and services that likely would not be supported from non-industrial sources. There can be little doubt that these activities lead to scientific advances and innovations in health care. Further, some believe that the personal compensation academic and government researchers receive as a result of their collaborations with industry acts to offset the salary differential between the public and private sectors, and thus that it helps academia and government recruit and retain star

scientists. At the same time, relations between industry and physicians likely have some educational benefit—for example, through defraying the costs of continuing medical education for doctors (many of whom carry substantial debt as a result of their medical training).

The key question from a policy perspective is, what is the overall net effect of the relationships between the medical profession and industry? To what extent do the benefits outweigh the risks or vice versa? At present, the empirical data necessary to answer this question are not available—primarily because current, comprehensive data on the extent and influence of industry's ties to physicians have not been col-



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lected. As a result, for the near future at least, the debate is likely to be based primarily on ethical principles. Along such lines, Kassirer suggests a comprehensive set of policy and management recommendations that seek to promote patient safety, integrity of scientific information, physician accountability, and the full disclosure of industry relationships. It is difficult to assess—but extraordinarily relevant to the discussion—whether or not his suggestions would lead to the optimal balance of risks and benefits.

*On the Take* should be required reading for politicians, policy analysts, administrators, and members of the research and health care communities. Kassirer provides an invaluable resource for those seeking a complete survey of the literature along with previously untold examples of questionable behavior on the part of individual scientists and organizations. Although the book is likely to upset many readers, it highlights the need for additional debate, data, and perhaps policies regarding industry's influence on medical research and practice.

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# Science

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