

Big Pharma and Health Care: Unsolvable Conflict of Interests between Private Enterprise and Public Health

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Abstract: A landmark paper on Game Theory showed that individual maximization of profit necessarily endangers the public good, and since the problem has no technical solution, “it requires a fundamental extension in morality” (1). We propose here that public health, as a public good, now emerges as a grave example of this problem. Recent events and reports increasingly suggest misalignment between the interests of the pharmaceutical industry and those of public health. Johnson & Johnson illegally and effectively promoted Propulsid off-label for children despite internal company documents raising safety concerns. Death in drug trial has been described as a “trade secret.” On Vioxx, Topol wrote: “Sadly, it is clear that Merck’s commercial interest exceeded its concern about the drug’s toxicity” (2). More and more concerns are raised by scholars and major journal editors about the type and the quality of published evidence, often biased towards efficacy of new products. The industry, funding over 80% of trials, sets up a research agenda guided more by marketing than by clinical considerations. Smart statistical and epidemiological tactics help obtain the desired results. Budget for marketing is by far greater than for research. Massive advertising to physicians and to the public gets increasingly sophisticated: ghost writing, professional guidelines, targeting of consumer groups and manipulating media for disease mongering. Pervasive lobbying and political ties limit the independence of regulatory bodies. Obligation to shareholders overriding public health considerations is not unique to the pharmaceutical industry. The chemical, tobacco and food industries share similar tactics: proclaiming doubts about safety issues, buying researchers, infiltrating universities, boards, media and legislative agencies. By contrast, powerful and cheap health promoting activities, poorly supported by industry because they are too cheap and not patented, are markedly underutilized: technologies for changing behavior (e.g., cardiac rehabilitation), palliative care and use of old, effective and safe drugs — all could benefit from industry’s tools of marketing and quality. As those most affected are the sick, the poor and the least educated, free market successes appear to pose unsolvable challenges to social justice in public health.

Social Justice in Health Care

In recent consensus papers on modern physicians’ ethics, social justice appears as a fundamental novel principle, not present in the classical Hippocratic Oath. The *Ethics Manual*, published by the American College of Physicians, declares (3): “Physicians (...) should promote justice in the health care system and should base allocations on medical need, efficacy, cost-effectiveness and proper distribution of benefits and burdens in society.”

While the pharmaceutical industry has significantly contributed to therapeutic advances, in recent years the exponential rising cost for medicine (4) is not necessarily translated into far better health care or into increase in longevity. Investing this money in

health promotion, clinical quality and safety, or palliative care could in fact be more cost-effective.

Given the profit motive that underlies industry’s activities, a general question that emerges is: How solvable is the conflict of interests between private enterprise and public health? Adam Smith, who presciently viewed the modern free-market, claimed: “by pursuing his own interest he frequently promotes that of the society...” (5). More recently, however, a landmark paper on Game Theory described “the Tragedy of the Commons” and showed that individual maximization of profit necessarily endangers the public good, and since the problem has no technical solution, “it requires a fundamental extension in morality” (1). Health care is a public good that induces market failure as it differs from other

merchandise such as cars or food: in health care, there is a large information gap between consumers and vendors, there are many uncertainties related to diagnosis or outcomes, the system is complicated by insurance and indirect payments that allow gaming, and, finally, when life itself is at stake, framing of issues is often more emotional than rational. For these reasons, the health market is greatly susceptible to corruption, as recently reviewed by the organization Transparency International (6). We propose here that public health now emerges as a grave example of conflict of interests with private enterprise.

Safety Concerns Dwarfed by Industry

Recent events and reports increasingly suggest misalignment between the interests of the pharmaceutical industry and those of public health. Attempts by companies to minimize, deny or hide adverse effects by COX-2 inhibitors have shed an important light on what may be in fact common tactics (7–9). In 2000, *JAMA* published the information that Celebrex when used for six months is associated with lower incidence of gastro-intestinal complications. In the unreported second six months of the study, nearly all serious complications occurred in people taking Celebrex, negating the original conclusion (7). The *JAMA* editor said: “I am disheartened to hear that they had those data at the time that they submitted [the manuscript] to us... We are functioning on a level of trust that was, perhaps, broken” (7).

This year, similar concerns have been expressed by the editors of *The New England Journal of Medicine*, commenting that an original article on Vioxx did not accurately represent the safety data available to the authors. Since 2001 Merck has been denying the risk of myocardial infarction, spending around \$160 million/year in advertising Vioxx. Merck sent a note to its sales representatives, ordering: “Do not initiate discussions on [this topic]” and instructing them to show doctors asking about Vioxx and myocardial infarction a pamphlet prepared by its marketing department, indicating that Vioxx was associated with *reduced* cardiovascular mortality (10). Topol concluded: “Sadly, it is clear to me that Merck’s commercial interest (...) exceeded its concern about the drug’s (...) toxicity” (2). When fighting a pharmaceutical giant, it may not be wise to be so outspoken:

While Merck’s CEO received over \$30 million in bonus and stock options in 2004, Topol was recently fired from his position at the Cleveland Clinic.

According to an inquiry by the U.S. Senate, Johnson & Johnson had illegally promoted for children the “off-label” use of Propulsid (a medication for gastro-esophageal reflux — now removed from the market because it may induce serious heart arrhythmias) at a time when internal company documents were already raising safety concerns (11). After dozens had died taking the medicine, sales continued to surpass \$1 billion per year with continued promotion of use in infants: 20% in neonatal intensive care units were given it, while physicians were never made aware of concerns about a drug which had never been approved by the FDA for this age group.

During a trial on duloxetine (an SSRI tested for use in stress incontinence), a young volunteer with no depression committed suicide. The FDA investigation of the death was reported as a “trade secret” (protected even under the Freedom of Information Act). After medical investigative journalist Jeanne Lenzer published the story (12), the FDA revealed that the rate of suicide attempts with duloxetine in trials of stress urinary incontinence was double that of a placebo. Lenzer concluded: “The use of trade-secret laws to conceal deaths and serious side effects linked to drugs has the obvious flaw of putting profits before public health.” It appears as if the interests behind attempts to clear safety issues are by far stronger than the data. Altogether, the events reported above suggest, at the very least, that the systems in place provide the industry more incentives to hide safety concerns than to genuinely protect public health.

Evidence B(i)ased Medicine

More and more concerns are raised by scholars and major journal editors about the type and quality of published evidence, often biased towards efficacy of new products as systematic publication bias favors the industry: Repeated analyses have shown that trials funded by the industry are 2 to 5 times more likely to recommend an experimental drug compared with trials funded by nonprofit organizations (13–15).

The industry, funding over 80% of trials, now sets up most of the research agenda, which is guided more by marketing than by clinical considerations. For instance, very few if any new antibiotic agents are produced to treat short-term bacterial infections induced by emerging resistant bugs, while dozens of antiviral agents are available (or in the pipeline) to treat chronic viral infections, such as hepatitis B, because profits from life-long therapy are by far higher than those from one- or two-week courses of treatment. The money of the industry buys the best statisticians and epidemiologists, who can design the smartest ways to help obtain results desired, as recently reviewed by Richard Smith, former editor of *The British Medical Journal* (16). A systematic review indicates that randomized trials stopped early (for possible benefit) often show implausibly large treatment effects and recommends viewing with skepticism the conclusions of such trials because they may be biased (17). Cost-effectiveness analyses also show consistent bias favoring the industry in studies funded by for-profit institutions (18).

In view of all these problems, how can a genuine reader draw the correct conclusions from reading the literature? Evidence-based medicine has given way to evidence-biased medicine (13). As a result, not surprisingly, many examples exist of therapeutic failures for drugs believed for years to be safe and effective, only later to be shown as dangerous and/or ineffective (19–21). Indeed, it often takes years to achieve a balanced view about widely used medications, often to realize with disappointment their poor performance, such as what happened to hormone replacement therapies, weight-reduction agents, antidepressant and antipsychotic drugs (19–22). In fact, as Deyo and Patrick reflect, our obsession with medical advances bears a high cost of false promises by the industry (21).

Former editors of *The New England Journal of Medicine*, Kassirer and Angell, have each described in great detail (23, 24) how the drug companies have become powerful and sophisticated in the way they deceive us with frequent ghost writing in scientific journals (legitimizing claims from the industry under cover of paid experts) and pervasive involvement in the formulation of professional guidelines (25). The proportion of the budget spent on marketing is estimated at 36%, by far higher than the 11%

devoted to research — allowing massive advertising to physicians at a yearly cost of \$5.5 billion in the U.S. alone, an amount greater than the entire budget of medical schools to train physicians in the U.S.A. (10). Harvard Professor Arnold Relman, also former Chief Editor at *The New England Journal of Medicine*, says the drug corporations have changed their role from “developing the drugs that society really needs to trying to extract as much money as they possibly can from the health care system” (26). It is interesting to note that these judgements by former editors of prestigious medical journals were made public *after* they had left their positions at editorial boards, suggesting that they perhaps felt not so free to speak while still working at their journals. Since revenue from advertising is substantial (27), companies may refuse to advertise in journals that publish opinions critical of the drug industry (28).

Advertising Drugs and Selling Sickness

Public advertising gets increasingly powerful using aggressive direct-to-consumer marketing, payments to celebrities for appearing on TV shows and telling about their illnesses and cures, and sophisticated targeting of consumer groups that will then effectively lobby insurers and regulators for the industry's causes (23, 24).

A most remarkable tactic for expanding drug markets is “disease mongering,” i.e., trying to convince essentially well people that they are sick by medicalization of trivial conditions: for instance, defining abdominal discomfort as irritable bowel syndrome or normal aging as menopause and osteoporosis, inducing people to believe they need treatment (29). Psychosocial conditions are especially susceptible to framing by experts as medical conditions: attention deficit hyperactivity disorder (ADHD), depression, social anxiety disorder, sexual dysfunction, and premenstrual “dysphoria.” Pharmaceutical companies use the Internet to access teachers and to influence their brokerage role to increase ADHD diagnosis and Ritalin usage (30). For concerned parents, a suggested response by Novartis to teachers is: “Make it clear to them that it is important for them — and their child — to understand and follow the doctor's medical advice about medication and other therapies for ADHD. ADHD is a serious

condition that may require the child to be on medication and undergo counseling for a long duration” (30). Big Pharma has taken an aggressive marketing interest in sex, using public relations, advertising, and a variety of tactics to create a sense of widespread sexual inadequacy and interest in drug treatments, both for women and men. People are often enchanted by simple solutions, fitting a cultural overinvestment in biological explanations, to bypass sexual embarrassment, ignorance, and anxiety (31). Pfizer hired a former baseball player as spokesman, teaming up with *Sports Illustrated* magazine, in an attempt to convince men to enhance normal sexual function with Viagra, as a lifestyle drug. Because of public pressure on insurers, an important concern is that paying for lifestyle drugs will limit resources for other health care (32). A collection of articles on disease mongering and how to counteract the problem was recently published in the 2006 April issue of *Public Library of Science Medicine*.

Similar Problems in Psychiatry

Mental health presents remarkable examples of economic pressures hampering the process of discovering true evidence on drugs and cautious use in practice. For instance, the safety problems and the limited efficacy of atypical antipsychotic agents are only recently becoming realized, many years after their original approval by the FDA (22, 33). Professor David Healy lost a job offer by the University of Toronto after he publicly raised the question of whether Prozac might increase the risk of suicide (34). Prior to Healy’s lecture, Eli Lilly, manufacturer of Prozac, had donated 1.5 million dollars to this institution, which apparently became worried about the risk to further financial inflows from pharmaceutical company sources (35). As recently discussed by Healy (36), the approval of SSRIs suggests that current regulatory practice overstates the benefits and underestimates the risks of drugs. A review showing excess of suicides on SSRIs suggests prior manipulation of data (stepping-up suicides on placebo by inclusion of the wash-out period) to support a null hypothesis (37). An observational study denying an increase in risk of suicide after starting treatment with newer antidepressant drugs (38) allows an inverse conclusion: peak incidence of suicides before

discharge could derive from those having just started the medication. A letter we wrote to the Editor discussing this issue did not get published for “lack of space” — space for advertising antidepressants being perhaps more lucrative (27, 28). Manipulation of data by the industry has biased the estimates for suicide risk while rigid interpretation of confidence intervals for each trial has delayed our appreciation of the potential danger of suicide as a class effect of SSRIs (36). Recent meta-analyses now suggest that these medications may in fact have no clinically meaningful advantage over placebos and that antidepressants have not been convincingly shown to affect the long-term outcome of depression (39). Since antidepressants have become society’s main response to distress expectations may be false, and the guidelines for their appropriate use need to be reconsidered (39). In a recent discussion, Moncrieff proposes that the pharmaceutical industry has popularized the idea of “imbalances in brain chemicals,” a message that has helped neoliberal economic policies increase consumption of drugs rather than finding political responses to social challenges and maladjustments (40).

Pervasive Lobbying and Political Ties

Conflicts of interest among senior scientists are pervasive in prominent agencies such as the National Institutes of Health, and many top paid scientists fail to report their financial deals with pharmaceutical companies. The implications are far-reaching and, although solutions have been proposed, to clear concerns about the integrity of the biomedical research enterprise will be daunting (41). An example of a potentially corrupting influence of industry on policy was recently seen when an FDA’s advisory panel recommended Vioxx and other COX-2 inhibitors to continue to be sold, despite their clear cardiovascular toxicity, only with black-box warnings: The decision was swung by 10 of the 17 panelists who had ties with drugs’ manufacturers (42).

Constant pressure of the industry on regulatory agencies also manifests as relentless attempts by manufacturers to extend patents, in one way or another, such as modification of the formulation or isomer production of the same molecule — allowing AstraZeneca to renew an expiring patent on Prilosec

to a new one for Nexium, despite the two drugs having essentially the same active molecule: omeprazole (26). With FDA approval Pfizer will study a new promising HDL-cholesterol raising drug only in combination with the company's best-selling Lipitor, although antitrust laws would normally prohibit a manufacturer from offering a drug only when "bundled" with another one of its products (43).

President Bush's federal action agenda for mental health has met criticism because it promotes unproven screening examinations and a controversial treatment algorithm with use of newer, more expensive antidepressants and antipsychotic drugs (44). Allen Jones, an employee of the Pennsylvania Office of the Inspector General, revealed that key officials with influence over the medication plan in his state received money from companies with a stake in this medication algorithm (45). As it turns out, one of them, Eli Lilly, has multiple ties to the Bush administration: George Bush Sr. was a member of Lilly's board of directors and Bush Jr. appointed Lilly's chief executive officer to a seat on the Homeland Security Council. Lilly made \$1.6m in political contributions in 2000 — 82% of which went to Bush and the Republican Party (44).

While traditionally opposed to regulation, in recent times, more and more corporations wish to be closely involved in the enacting of new laws, in a clever strategy of "if you can't beat them, join them." Indeed, Congressmen and Senators are constantly exposed to lobby from the industry, including from drug companies, which have become deeply involved in the formulation of new regulations, to make sure to protect the manufacturers' interests, such as those related to patents. This area is worth research to examine to what extent public or private interest is being protected in this game. At this point, it appears as if political ties with the industry limit the independence of regulatory bodies, such as the FDA, and jeopardize critical democratic functions designed to protect public health.

Shared Strategy with Other Industries

The problematic stratagems described above are by no means unique to the pharmaceutical industry and have been used by others, such as the tobacco, the chemical, and the food industries: proclaiming

doubts about safety issues, buying researchers, infiltrating universities, boards, media and legislative agencies (46 — 48). An executive of a tobacco company described the slogan for his industry's disinformation campaign: "doubt is our product," i.e., to promote the impression of considerable uncertainty and scientific controversy about the damage from smoking. A remarkable review in *The Scientific American* describes how, in recent years, many other industries have adopted a similar strategy (47): Corporations have mounted campaigns to question the adverse health effects of exposure to beryllium, lead, mercury, vinyl chloride and a long list of other toxic chemicals and medications. In fact, Congress and President Bush's administration have encouraged such tactics by making it easier for private groups to challenge government-funded research (47). An enlightening book entitled "Deceit and Denial" details the attempts by the chemical and lead industries to mislead Americans about the dangers that their products present to workers, to consumers and to the public at large (49). The authors, scholars of public health and history, carefully describe the public relations campaigns and the manipulations of regulatory bodies by the lead and the polyvinyl industries to market their products even after they had realized their potential risks. For instance, advertising lead to paint walls, toys and furniture continued even after a wealth of information was available that children were at risk for serious brain damage and death from ingesting this poison (49). Similarly, the food and drink industries, like the tobacco industry, lobby officials, co-opt experts and expand sales by marketing to children, members of minority groups, and people in developing countries (48).

In all these instances, the obligations to shareholders appear to override considerations about public health. But corporate CEOs are not the ones likely to pay the price of environmental pollution or poor health care. Those most affected are the sick, the poor and the least educated, and, therefore, free market successes appear to pose unsolvable challenges to social justice in public health. Thus, the model of the Game Theory mentioned earlier, the Tragedy of the Commons (1), does not accurately depict the problem, since the price of individual maximization of profit does not affect public health uniformly: it falls predominantly on the have-nots.

By contrast to the overuse of marginally effective emerging health technologies, major, powerful and cheap health promoting activities, poorly supported by industry because they are too cheap and therefore not patented, are markedly underutilized: technologies for changing behavior (e.g., cardiac rehabilitation), palliative care and use of old, effective and safe drugs — all could benefit from industry's tools of marketing and quality.

Potential Solutions

Many scholars have proposed technical solutions to the problems posed by the pharmaceutical industry (19–21, 23, 24, 26). Voluntary ethical guidelines have been shown to fail (50). A reform in drug approval should include that manufacturers should produce, not evaluate new drugs and that the comparison should be with existing drugs and not with placebo. The independence of regulatory bodies should be strengthened and patent protection should be reduced. The industry should be excluded from medical education and direct-to-consumer advertising totally banned. Evaluation of new treatments needs a radical, in-depth revolution (51).

The industry will oppose these changes, and with its current power and ties to political forces, a significant move towards correct directions is unlikely. Awareness, research and public education about the problem are necessary to foment sufficient political will for change. Transparency about potential risk of products should be an integral part of an ethical code of conduct in the industry. On the other hand, public health activists should learn from the industry the valuable techniques of marketing and quality control to better achieve an effective and just utilization of limited health care resources (52).

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References

1. Hardin G. The tragedy of the commons. *Science* 1968; 162:1243–1248.
2. Topol EJ. Failing the public health — rofecoxib, Merck, and the FDA. *N Engl J Med* 2004;351:1707–1709.
3. Snyder L, Leffler C. Ethics manual (5th edition). *Ann Intern Med* 2005;142:560–582.
4. Editorial. Prescription drug expenditures rising — too fast? *CMAJ* 2005;172:1261, 1263.
5. Smith A. An inquiry into the nature and causes of the wealth of nations. Dublin: Whitestone, 1776.
6. Transparency International. Corruption and Health. 2006 http://www.transparency.org/publications/gcr/download_gcr.
7. Abramson J, Starfield B. The effect of conflict of interest on biomedical research and clinical practice guidelines: Can we trust the evidence in evidence-based medicine? *J Am Board Fam Pract* 2005;18:414–418.
8. Curfman GD, Morrissey S, Drazen JM. Expression of concern reaffirmed. *N Engl J Med* 2006;354:1193.
9. Juni P, Reichenbach S, Egger M. COX 2 inhibitors, traditional NSAIDs, and the heart. *BMJ* 2005;330:1342–1343.
10. Waxman HA. The lessons of Vioxx — drug safety and sales. *N Engl J Med* 2005;352:2576–2578.
11. Saul S. Senators ask drug giant to explain grants to doctors. *New York Times*, July 6, 2005; C p. 3.
12. Lenzer J. Drug secrets. What the FDA isn't telling. *Slate*. Sept. 27, 2005 <http://www.slate.com/id/2126918/>.
13. Melander H, Ahlqvist-Rastad J, Meijer G, Beermann B. Evidence b(i)ased medicine — selective reporting from studies sponsored by pharmaceutical industry: Review of studies in new drug applications. *BMJ* 2003;326: 1171–1173.
14. Djulbegovic B, Lacevic M, Cantor A, Fields KK, Bennett CL, Adams JR, Kuderer NM, Lyman GH. The uncertainty principle and industry-sponsored research. *Lancet* 2000;356:635–638.
15. Als-Nielsen B, Chen W, Glud C, Kjaergard LL. Association of funding and conclusions in randomized drug trials: A reflection of treatment effect or adverse events? *JAMA* 2003;290:921–928.
16. Smith R. Medical journals are an extension of the marketing arm of pharmaceutical companies. *Public Library of Science Medicine* 2005;2:e138.
17. Montori VM, Devereaux PJ, Adhikari NK, Burns KE, Eggert CH, Briel M, Lacchetti C, Leung TW, Darling E, Bryant DM, Bucher HC, Schunemann HJ, Meade MO, Cook DJ, Erwin PJ, Sood A, Sood R, Lo B, Thompson CA, Zhou Q, Mills E, Guyatt GH. Randomized trials stopped early for benefit: A systematic review. *JAMA* 2005;294:2203–2209.
18. Bell CM, Urbach DR, Ray JG, Bayoumi A, Rosen AB, Greenberg D, Neumann PJ. Bias in published cost effectiveness studies: Systematic review. *BMJ* 2006;332: 699–703.

19. Abramson J. *Overdosed America: The broken promise of American medicine*. New York: Harper Collins, 2004.
20. Avorn J. *Powerful medicines: The benefits, risks, and costs of prescription drugs*. New York: Knopf, 2004.
21. Deyo RA, Patrick DL. *Hope or hype: The obsession with medical advances and the high cost of false promises*. New York: AMACOM, American Management Association, 2005.
22. Lieberman JA, Stroup TS, McEvoy JP, Swartz MS, Rosenheck RA, Perkins DO, Keefe RS, Davis SM, Davis CE, Lebowitz BD, Severe J, Hsiao JK. Effectiveness of antipsychotic drugs in patients with chronic schizophrenia. *N Engl J Med* 2005;353:1209–1223.
23. Angell M. *The truth about the drug companies: How they deceive us and what to do about it*. New York: Random House, 2004.
24. Kassirer JP. *On the take: How America's complicity with big business can endanger your health*. New York: Oxford University, 2005.
25. Choudhry NK, Stelfox HT, Detsky AS. Relationships between authors of clinical practice guidelines and the pharmaceutical industry. *JAMA* 2002;287:612–617.
26. Law J. *Big Pharma. Exposing the global healthcare agenda*. New York: Carroll & Graf, 2006. Public Health/Politics.
27. Friedman LS, Richter ED. Excessive and disproportionate advertising in peer-reviewed journals. *Int J Occup Environ Health* 2006;12:59–64.
28. Lexchin J, Light DW. Commercial influence and the content of medical journals. *BMJ* 2006;332:1444–1447.
29. Moynihan R, Cassels A. *Selling sickness: How the world's biggest pharmaceutical companies are turning us all into patients*. New York, NY: Nation Books, 2005.
30. Phillips CB. *Medicine goes to school: Teachers as sickness brokers for ADHD*. Public Library of Science Medicine 2006;3:e182.
31. Tiefer L. Female sexual dysfunction: A case study of disease mongering and activist resistance. *Public Library of Science Medicine* 2006;3:e178.
32. Lexchin J. Bigger and better: How Pfizer redefined erectile dysfunction. *Public Library of Science Medicine* 2006;3:e132.
33. Lamberti JS, Olson D, Crilly JF, Olivares T, Williams GC, Tu X, Tang W, Wiener K, Dvorin S, Dietz MB. Prevalence of the metabolic syndrome among patients receiving clozapine. *Am J Psychiatry* 2006;163:1273–1276.
34. Schafer A. Biomedical conflicts of interest: A defence of the sequestration thesis — learning from the cases of Nancy Olivieri and David Healy. *J Med Ethics* 2004;30:8–24.
35. Healy D. Good science or good business? *Hastings Cent Rep* 2000;30:19–22.
36. Healy D. Did regulators fail over selective serotonin reuptake inhibitors? *BMJ* 2006;333:92–95.
37. Healy D, Whitaker C. Antidepressants and suicide: Risk-benefit conundrums. *J Psychiatry Neurosci* 2003;28:331–337.
38. Simon GE, Savarino J, Operskalski B, Wang PS. Suicide risk during antidepressant treatment. *Am J Psychiatry* 2006;163:41–47.
39. Moncrieff J, Kirsch I. Efficacy of antidepressants in adults. *BMJ* 2005;331:155–157.
40. Moncrieff J. Psychiatric drug promotion and the politics of neoliberalism. *Br J Psychiatry* 2006;188:301–302.
41. Steinbrook R. Standards of ethics at the National Institutes of Health. *N Engl J Med* 2005;352:1290–1292.
42. Okie S. Raising the safety bar — the FDA's coxib meeting. *N Engl J Med* 2005;352:1283–1285.
43. Avorn J. Torcetrapib and atorvastatin — should marketing drive the research agenda? *N Engl J Med* 2005;352:2573–2576.
44. Lenzer J. Bush plans to screen whole US population for mental illness. *BMJ* 2004;328:1458.
45. Lenzer J. Whistleblower removed from job for talking to the press. *BMJ* 2004;328:1153.
46. Cohen JE, Ashley MJ, Ferrence R, Brewster JM, Goldstein AO. Institutional addiction to tobacco. *Tob Control* 1999;8:70–74.
47. Michaels D. Doubt is their product. *Sci Am* 2005;292:96–101.
48. Nestle M. *Food politics: How the food industry influences nutrition and health*. Berkeley: University of California, 2002. California Studies in Food and Culture: 3.
49. Markowitz GE, Rosner D. *Deceit and denial: The deadly politics of industrial pollution*. Berkeley: University of California, 2002.
50. Chalmers I. From optimism to disillusion about commitment to transparency in the medico-industrial complex. *J R Soc Med* 2006;99:337–341.
51. Evans I, Thornton H, Chalmers I. *Testing treatments. Better research for better healthcare*. London: British Library, 2006.
52. Siegel M, Doner L. *Marketing public health: Strategies to promote social change*. Gaithersburg, Maryland: Aspen, 1998.