Educating Health Professionals about Drug and Device Promotion: Advocates’ Recommendations
Peter R. Mansfield*, Joel Lexchin, Leana S. Wen, Luisella Grandori, Christopher P. McCoy, Jerome R. Hoffman, Joana Ramos, Jon N. Jureidini

This Health in Action provides recommendations for improving education for health professionals about pharmaceutical and device promotion, which includes any activity that can increase sales of pharmaceuticals or devices. The recommendations were produced by an iterative E-mail discussion among representatives of four organizations: the American Medical Student Association, Healthy Skepticism Inc., No Free Lunch, and PharmAware (Box 1). We hope these recommendations will inform, stimulate, and support educators of health professionals to develop improved education about pharmaceutical and device promotion. We will survey educators to seek their views on these recommendations.

Background
In the promotion of rofecoxib (Vioxx), “drug marketing got well ahead of the science” [1]. The successful hormone-replacement-therapy marketing campaign “convinced physicians that so called HRT [hormone-replacement therapy] prevented cardiovascular disease before one single clinical trial with cardiovascular disease end points had ever been done” [2]. These are just two examples of how misleading promotion can be a major threat to health [1,2].

There were an estimated 88,000–140,000 excess cases of serious coronary artery disease attributable to rofecoxib in the United States alone [3]. The number of women harmed by severe adverse effects of hormone-replacement therapy, including breast cancer, may have been even larger because hormone-replacement therapy was used for longer, but we are not aware of any reliable estimate. Reforms are needed to reduce the risk of similar events occurring again [4].

The US Accreditation Council for Continuing Medical Education states that “residents must learn how promotional activities can influence judgment in prescribing decisions and research activities through specific instructional activities” [5]. World Health Assembly resolution 52.19 urges member states to “integrate the rational use of drugs and information on commercial marketing strategies into training for health practitioners at all levels.” However, a recent worldwide survey of education about pharmaceutical promotion in medical and pharmacy schools found that “in most cases … students devoted one half day or less to this topic during their professional training; in nearly one third of cases, medical faculties devoted only 1–2 hours” [6]. That survey also found wide variations in objectives.

Box 1. The Four Organizations Calling for Action

American Medical Student Association (http://www.amsa.org)
An association of nearly 60,000 doctors-in-training with aims including: improving health care and healthcare delivery to all people and promoting active improvement in medical education.

Healthy Skepticism Inc. (http://www.healthyskepticism.org)
An international organization aiming to improve health by reducing harm from misleading pharmaceutical promotion.

No Free Lunch (http://www.nofreelunch.org, http://www.nofreelunch.uk, http://www.nograziepagio.it)
An international network aiming to improve patient care by encouraging healthcare providers to practice medicine on the basis of scientific evidence rather than on the basis of pharmaceutical promotion.

PharmAware (http://www.pharmaware.co.uk)
A group of British medical students who aim to change doctors’ relationships with the pharmaceutical industry.

Funding: The authors received no specific funding for this article.

Competing Interests: Each author is a member of one or more of the following organizations: Healthy Skepticism Inc., American Medical Student Association, and No Free Lunch, all of which campaign to raise awareness of the influence of the pharmaceutical industry upon clinical practice. Healthy Skepticism Inc. and No Free Lunch could benefit indirectly from implementation of these recommendations.

Citation: Mansfield PR, Lexchin J, Wen LS, Grandori L, McCoy CP, et al. (2006) Educating health professionals about drug and device promotion: Advocates’ recommendations. PLoS Med 3(11): e451. doi:10.1371/journal.pmed.0040451

Copyright: © 2006 Mansfield et al. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

Peter R. Mansfield is Director of Healthy Skepticism Inc., Willunga, Australia and Research Fellow in the Discipline of General Practice, University of Adelaide, Australia. Joel Lexchin is Associate Professor at the School of Health Policy and Management, York University, Toronto, Canada. Leana S. Wen was National President (2005–2006) of the American Medical Student Association, Reston, Virginia, United States of America. Luisella Grandori is Coordinator of No grazie pago io, Modena, Italy. Christopher P. McCoy was Legislative Affairs Director (2005–2006) of the American Medical Student Association, Reston, Virginia, United States of America. Jerome R. Hoffman is Professor of Medicine and Emergency Medicine, University of California at Los Angeles, Los Angeles, California, United States of America. Joana Ramos is an independent consultant at Cancer Resources & Advocacy, Seattle, Washington, United States of America. Jon N. Jureidini is Chair of Healthy Skepticism Inc., and Head of the Department of Psychological Medicine, Women’s and Children’s Hospital, North Adelaide, Australia.

* To whom correspondence should be addressed. E-mail: peter@healthyskepticism.org
and statistics that are relevant to psychology, logic, economics, ethics, the quality of decision making.

Recommendations

The American Medical Student Association, Healthy Skepticism, Inc., No Free Lunch, and PharmAware recommend four objectives for education about pharmaceutical and device promotion (Box 2). We recommend that all four objectives should be pursued throughout all health professionals’ careers: during every year of initial professional education, specialist training, and continuing professional education. Education should use methods that are effective for changing behavior, including interactive experiences and involvement of opinion leaders [7]. Education for health professionals should never, we believe, be funded by companies promoting drugs or devices [8–12].

Our recommendations are based mostly on studies of psychology students’ responses to persuasion, and medical students’ and physicians’ responses to pharmaceutical promotion. There is little relevant published evidence on the effects of promotion on other kinds of health professionals or on the promotion of devices. These research gaps deserve priority. However, the available evidence [13–16] leads us to believe that our recommendations are appropriate for all health professionals and are relevant to promotion of all therapeutic and diagnostic devices.

Our recommended objectives challenge widely held beliefs. Consequently, we believe that educators should assess and address students’ and professionals’ initial beliefs about drug and device promotion, so as to maximize progress toward the beliefs required for appropriate use of drugs and devices reflected in our recommendations below.

All health professionals should be educated explicitly about decision making and evaluation of evidence and promotion. Education for health professionals should aim to improve the quality of decision making. This includes studying the areas of psychology, logic, economics, ethics, and statistics that are relevant to making good decisions, evaluating evidence, and evaluating the promotion of drugs and devices. For example, insights from all those disciplines are integrated in an interactive educational Web-site module produced by Healthy Skepticism Inc., for the Royal Australasian College of Physicians (http://www.racp.edu.au). This Web site introduces the topics of human decision making and vulnerability to persuasion [17–21], pharmacoeconomics [22], ethical problems arising from gift taking [11], and common misunderstandings of statistics [23–25].

**Health professionals should be helped to understand that there is no proven method for enabling them to gain more benefit than harm from promotion.** There is strong evidence that exposure to pharmaceutical promotion correlates with medically inappropriate and wasteful use of pharmaceuticals [26]. However, there is a wide range of opinions among health professionals about the benefit-to-harm ratio of promotion, and their own susceptibility to it. Many believe they are capable of distinguishing between justified and unjustified promotional messages. However, few health professionals have much knowledge of misleading promotional techniques, and such knowledge does not reliably protect people from being misled [18,27].

Resistance to misleading promotion can be increased somewhat by helping people move from overconfidence in their abilities to understanding that they are vulnerable. [27–29]. Consequently, education for health professionals should explain that while knowledge of misleading promotional techniques may help them avoid being misled sometimes, there is no proven method for enabling them to gain more benefit than harm from exposure to pharmaceutical promotion. People who are confident in their ability to distinguish justified from unjustified promotional messages may be operating under an illusion, as many influence techniques are very difficult for humans to evaluate and there are no proven methods for sorting them.

One method for reducing such overconfidence is to first expose participants to a single example of misleading drug or device promotion, allow them to express unjustified beliefs, debunk those beliefs, and then finally explain the misleading techniques that were used. This method enables participants to understand that they are personally vulnerable to being misled by promotion [18,27]. The aim of this method is to decrease confidence as opposed to the common educational objective of increasing confidence.

One example of such a strategy for reducing confidence is an educational session held at the University of California, Los Angeles, in which a university pharmacist was introduced to medical students as “a pharmaceutical sales representative.” The “representative” proceeded to mimic standard sales techniques with regard to a given drug, while offering the students a “free” breakfast. The “representative” was then asked to leave the room for 20 minutes, to allow students to discuss the presentation. The “representative” then returned to reveal herself as a university pharmacist, and to explain and critique the techniques that had been used. This session was shown to be effective in reducing students’ overconfidence in their “skills” at critical appraisal of sales representatives [29].

**Health professionals should be helped to understand their responsibility to avoid pharmaceutical and device promotion.** Because all health professionals are vulnerable to being misled, we believe that they have a professional, ethical, and fiduciary responsibility to patients to take all
practical steps to avoid drug and device promotion [30–32]. This responsibility includes a personal policy of refusing to accept personal gifts and one-to-one visits from sales representatives, and supporting organizational policies against such practices [33]. Meetings of groups of health professionals with sales representatives may be less harmful than one-to-one meetings, but it is unlikely that this type of activity will be found to do more good than harm compared with no such meetings. Education for health professionals should not include exposure to pharmaceutical or device promotion [8,30], except for educational examples that are immediately debunked (as discussed above).

There is observational evidence of benefits from limiting contact between pharmaceutical company sales representatives and doctors in training. In 1992, McMaster University implemented a policy that restricted interactions between internal medicine residents and sales representatives during daytime hospital activities. This policy included bans on sales representatives attending educational meetings and a ban on drug company–funded lunches. Three years after training under that policy, interns were more skeptical of, and had less contact with, sales representatives than interns trained before that policy or trained at the nearby University of Toronto, where there was no policy [34]. Other observational studies have found that doctors who are more skeptical of sales representatives and/or have less frequent contact with them tend to be more judicious prescribers. [35–39]

Education about the professional responsibility to avoid promotion should be integrated with hands-on education about how to interact with others who have different views. This is addressed by the American Medical Student Association’s PharmFree Campaign stepwise module that begins in the first year of medical school and continues through residency training. This module promotes the vision that “all medical students will learn about the ethics of drug company interaction with health professionals and make the rational, informed decision to eschew “free” gifts from the pharmaceutical industry throughout the training career” (http://www.amsa.org/prof/pharmfree.cfm).

Health professionals should be educated explicitly about the most reliable sources of information. Health professionals should receive explicit education about the availability, strengths and weaknesses of the least-biased, clinically useful sources of information, and the need to keep themselves up to date with the best information sources available. This should include use of such information as part of routine patient care by themselves and by role models. Professional associations and governments should actively develop programs to ensure that these sources are readily available to health professionals. Health professionals should be educated on how to convey reliable information to other health professionals and to the public, so as to provide a superior alternative to information from pharmaceutical and device companies.

Conclusion

Our recommendations are necessary but not sufficient for removing the adverse influence of promotion on health professionals. Improved regulation and redesigned incentive systems are also needed [4,40]. Our recommendations challenge deeply held beliefs, so implementation will be difficult. However, pharmaceutical and device promotion causes much more harm than is generally realized [26], so significant reforms deserve priority. Our hypothesis—that implementing our recommendations will lead to improved health-care outcomes and earn increased public trust in the ability of health professionals to provide optimal treatment—deserves to be tested.

Acknowledgments

We thank the following people for contributing to the discussion on the No Free Lunch E-mail list that inspired and informed these recommendations: Simon Ahtaridis, Amy Brodkey, Bob Goodman, Carol Kushner, Mark McConnell, Jen Edelman, David Neely, Allen F. Shaughnessy, Leonore Tiefere, and Michael Wilkes. We also thank Merav Kliner for being our contact for PharmAware.

References

1. Almasi EA, Stafford RS, Kravitz RL, Mansfield PR (2006) What are the public health effects of direct-to-consumer advertising? PLoS Med 3: e145. doi:10.1371/journal.pmed.0030145
2. Fugh-Berman A, Pearson C (2002) The overselling of hormone replacement therapy. Pharmacotherapy 22: 1205–1208.
3. Graham DJ, Campen D, Hui R, Spence M, Cheetham C, et al. (2005) Risk of acute myocardial infarction and sudden cardiac death in patients treated with cyclo-oxygenase 2 selective and non-selective non-steroidal anti-inflammatory drugs: nested case-control study. Lancet 365: 475–481.
4. Mansfield PR (2005) Banning all drug promotion is the best option pending major reforms. J Bioeth Inq 2: 16–22.
5. Accreditation Council for Continuing Medical Education (2002) Principles to guide the relationship between graduate medical education and industry. Chicago: Accreditation Council for Continuing Medical Education. Available: http://www.amsa.org/academic/positionPapers/pp_GMEGuide.pdf. Accessed 22 September 2006.
6. Mintzes B (2005) Educational initiatives for medical and pharmaceutical drug promotion: An international cross-sectional survey. Geneva: World Health Organization and Health Action International. Available: http://www.haiweb.org/26012006/MR49promosurveyFINAL06.pdf. Accessed 22 September 2006.
7. Lomas J, Enkin M, Anderson GM, Hannah WJ, Voyda E, et al. (1991) Opinion leaders vs audit and feedback to implement practice guidelines. Delivery after previous cesarean section. JAMA 265: 2292–2297.
8. Rogers WA, Mansfield PR, Braunack-Mayer AJ, Jurcicini JN (2004) The ethics of pharmaceutical industry relationships with medical students. Med J Aust 180: 411–414.
9. Steinbrook R (2005) Commercial support and continuing medical education. N Engl J Med 352: 554–555.
10. Schafer A (2004) Biomedical conflicts of interest: A defense of the sequestration thesis—learning from the cases of Nancy Olivieri and David Healy. J Med Ethics 30: 8–24.
11. Katz D, Mansfield P, Goodman R, Tiefere L, Merz J (2005) Psychological aspects of gifts from drug companies. JAMA 294: 2404–2405.
12. Brodkey AC (2005) The role of the pharmaceutical industry in teaching psychopharmacology: A growing problem. Acad Psychiatry 29: 222–229.
13. Farthing-Papeuaus EC, Peak AS (2005) Pharmacists’ perceptions of the pharmaceutical industry. Am J Health Syst Pharm 62: 2401–2409.
14. Viale PH (2005) What nurse practitioners should know about direct-to-consumer advertising of prescription medications. J Am Acad Nurse Pract 15: 297–304.
15. Kumar CJ, Deoker A, Kumar A, Hegde BM (2006) Awareness and attitudes about disease mongering among medical and pharmaceutical students. PLoS Med 3: e213. doi:10.1371/journal.pmed.0030213
16. Grant DC, Iserson KV (2005) Who’s buying lunch: Are gifts to surgeons from industry bad for patients? Thorac Surg Clin 15: 535–542.
17. Barlow J (2000) Thinking and deciding. 3rd ed. Cambridge: Cambridge University Press. 576 p.
18. Mansfield PR (2003) Healthy Skepticism’s new AdWatch: Understanding drug promotion. Med J Aust 179: 644–645.
19. Scott DK, Ferner RE (1994) “The strategy of desire” and rational prescribing. Br J Clin Pharmacol 37: 217–219.
20. Shaughnessy AF, Skatrud DC, Bennett JH (1994) Separating the wheat from the chaff: Identifying fallacies in pharmaceutical promotion. J Gen Intern Med 9: 563–568.
21. Caildin RB (2000) Influence: Science and practice. 4th Ed. New York: Allen & Bacon. 262 p.
22. Drummond MF, O’Brien BJ, Stoddart GL, Torrance GW (1997) Methods for the economic evaluation of health care programs. Oxford: Oxford University Press. 305 p.
23. Sackett DL (2001) Why randomized controlled trials fail but needn’t c. 2. Failure to employ
physiological statistics, or the only formula a clinician-trialist is ever likely to need (or understand!). CMAJ 165: 702–707.

24. Naimark D, Naglie G, Detsky AS (1994) The meaning of life expectancy: What is a clinically significant gain? J Gen Intern Med 9: 702–707.

25. Gilovich T, Griffin D, Kahneman D, editors (2003) Heuristics and biases: The psychology of intuitive judgment. Cambridge: Cambridge University Press. 874 p.

26. Norris P, Herxheimer A, Lexchin J, Mansfield P (2005) Drug promotion: What we know, what we have yet to learn. Geneva: World Health Organization. Available: http://www.who.int/entity/medicines/areas/rational_use/drugPromodhai.pdf. Accessed 22 September 2006.

27. Sagarin BJ, Gialdini RB, Rice WE, Serna SB (2002) Dispelling the illusion of invulnerability: The motivations and mechanisms of resistance to persuasion. J Pers Soc Psychol 83: 526–541.

28. Mansfield P (2004) Accepting what we can learn from advertising’s mirror of desire. BMJ 329: 1487–1488.

29. Wilkes MS, Hoffman JR (2001) An innovative approach to educating medical students about pharmaceutical promotion. Acad Med 76: 1271–1277.

30. Sierles FS, Brodkey AC, Cleary LM, McCurdy FA, Mintz M, et al. (2005) Medical students’ exposure to and attitudes about drug company interactions: a national survey. JAMA 294: 1034–1042.

31. Mansfield PR, Henry D (2004) Misleading drug promotion-no sign of improvements. Pharmacoepidemiol Drug Saf 13: 707–709.

32. Brody H (2005) The company we keep: Why physicians should refuse to see pharmaceutical representatives. Ann Fam Med 3: 82–85.

33. Brennan TA, Rothman DJ, Blank L, Blumenthal D, Chimonas SC, et al. (2006) Health industry practices that create conflicts of interest: A policy proposal for academic medical centers. JAMA 295: 429–433.

34. McCormick BB, Tomlinson G, Brill-Edwards P, Detsky AS (2001) Effect of restricting contact between pharmaceutical company representatives and internal medicine residents on posttraining attitudes and behavior. JAMA 286: 1994–1999.

35. Caamano F, Figueiras A, Gestal-Otero JJ (2002) Influence of commercial information on prescription quantity in primary care. Eur J Public Health 12: 187–191.

36. Watkins C, Harvey I, Cathy P, Moore L, Robinson E, et al. (2005) Attitudes and behaviour of general practitioners and their prescribing costs: A national cross sectional survey. Qual Saf Health Care 12: 29–34.

37. Verdoux H, Couguaud A, Grolleau S, Begaud B (2005) Impact of visits from pharmaceutical company representatives on antipsychotic prescription in primary care. Schizophr Res 77: 107–109.

38. Rosenthal M (2003) Demand effects of recent changes in prescription drug promotion. Menlo Park (California): Kaiser Family Foundation. Available: http://www.kff.org/rxdrugs/upload/Demand-Effects-of-Recent-Changes-in-Prescription-Drug-Promotion-Report.pdf. Accessed 22 September 2006.

39. Shorr RI, Greene WL (1995) A food-borne outbreak of expensive antibiotic use in a community teaching hospital. JAMA 273: 1908.

40. Mansfield P, Rogers W, Jureidini J (2005) Submission from Healthy Skepticism re RACP ethical guidelines. Healthy Skepticism International News 23: 9. Available: http://www.healthyskepticism.org/news/issue.php?id=15. Accessed 22 September 2006.