



Pharmaceutical Marketing

Report on Education on
Pharmaceutical Promotion in
Medical Training



Written by:
Ance.la Santos
Senior Policy Advisor,
Health Action International

For correspondence, please email
ancel.la@haiweb.org.

Pharmaceutical Marketing

Education on Pharmaceutical Promotion in Medical Training

Published by:

Health Action International
Overtoom 60 (2) | 1054 HK Amsterdam |
The Netherlands | +31 20 412 4523 | www.haiweb.org

Licensing:

This report is licensed under the Creative Commons
Attribution-NonCommercial 4.0 International Licence.

To view a copy of this licence, visit
<http://creativecommons.org/licenses/by-nc/4.0/>.

I. Introduction

The content of this report has been informed, *inter alia*, by the workshop 'Education on pharmaceutical promotion in medical training', organised by Health Action International (HAI), which took place in Amsterdam on 7 September 2017.

Medicines are intended to prevent or cure medical conditions, or positively contribute to treatment, but it is important that they are used rationally. It has been estimated, however, that globally more than half of all medicines are prescribed, dispensed or sold inappropriately, and that half of all patients do not take them correctly.¹

According to the World Health Organization (WHO) the Rational Use of Medicines requires that:

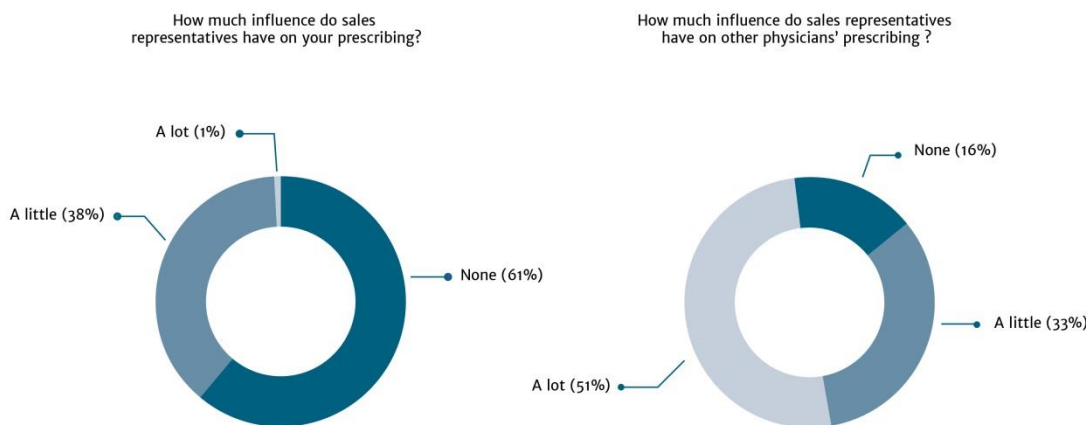
"patients receive medications appropriate to their clinical needs, in doses that meet their own individual requirements, for an adequate period of time, and at the lowest cost to them and their community".²

Healthcare professionals play a key role in ensuring the rational use of medicines. But often they are the target of promotional activities by the pharmaceutical industry, which has been shown to influence professional judgement. Some of the tactics used by companies to nurture their relationship with healthcare professionals involve the provision of hospitality to attend events, offering speaking fees and free gifts. Companies also use sales representatives to build personal relationships and distribute free samples to healthcare professionals. These activities can stimulate demand for new, expensive products which are not always the best or the most affordable treatment option available.

A systematic review (2010) which looked at the impact of physicians' exposure to information provided by pharmaceutical companies found no evidence of net improvements in prescribing.³ However, associations were found between exposure to information from sales representatives, journal advertisements and other company sources of information and higher prescribing rates, higher costs and lower prescribing quality. The authors of the review recommended that practitioners follow the precautionary principle and avoid exposure to promotional information. A previous review, published in 2000, concluded that most studies found negative outcomes linked to interactions between physicians and the pharmaceutical industry. These included an impact on knowledge (inability to identify incorrect claims about medicines), attitude (e.g. rapid prescription of a new drug), and behaviour (e.g. increasing prescription rate; prescribing fewer generic but more expensive, newer medicines with no demonstrated advantage).⁴

The success of promotional strategies may be due, in part, to healthcare professionals' lack of awareness about tactics used by companies and their effects, as well as to their

personal belief that they are immune to influence. Whilst the industry uses principles of social psychology to manipulate prescribing behaviour, physicians who are not aware of such subtle influences will not try to avoid the resulting conflicts of interest.⁵ A 2001 survey amongst internal medicine residents in the US (n=102) revealed that whilst 61 percent of respondents believed that sales representatives had no influence on their own prescribing, more than 50 percent thought that sales representatives had a lot of influence on their peers.⁶



From Steinman et al (2001)

Other studies have also found that medical students are more likely to believe that other students or doctors are more susceptible to influence by the industry than they are themselves.^{7 8 9} Psychologists refer to the common belief that only others are misled by marketing techniques as the illusion of 'unique invulnerability'.¹⁰ A first step to increase healthcare professionals' resistance to industry influence would involve that they understand and accept vulnerability to subconscious bias.¹¹

II. The Role of Education in Pharmaceutical Promotion

One way to limit the influence of pharmaceutical companies on healthcare professionals is through regulation limiting companies' promotional activities. But often, legal frameworks on advertising of medicines fail to be strict enough. In addition, governments tend to 'delegate' to some extent the control of pharmaceutical promotion to self-regulatory bodies (e.g. pharmaceutical industry associations).¹² The rationale behind this approach is that competing companies will keep each other in line. However, there is an inherent conflict of interest in reliance on self-regulation of promotional activities by the industry, because all companies can benefit from a less stringent approach.

Besides regulation, education is another means to counter-act industry's influence on healthcare professionals. Several studies that have measured the impact of education on

pharmaceutical promotion show that teaching can affect trainee's awareness, attitudes, and improve their skills for example at assessing advertisements on medicines.^{13 14}

In general, however, the issue of pharmaceutical promotion has received little attention in the medical curriculum. In 2005, HAI and WHO published the results of an international survey, conducted by B. Mintzes, which explored the extent of educational initiatives on drug promotion in medical and pharmacy faculties.¹⁵ Survey results were based on the responses of faculty members involved in education on promotion in 64 countries from all WHO regions (including 92 respondents from the European region). Whilst about 75 percent of respondents reported that education on drug promotion is part of the required curriculum at their medical faculty, in nearly one-third of cases faculties devoted only 1 to 2 hours of training, often within a broader course on pharmacology, clinical pharmacology or therapeutics.

Even when electives and other types of courses were taken into account (e.g. specialty/residency training), in most cases medical students received only half a day or less of education on promotion. Education on this topic in pharmacy training did somewhat better, with students receiving, in most cases, 10 or more hours of education throughout their professional training.

The large majority of courses on pharmaceutical promotion discussed advertisements, sales representatives, sponsored conferences and seminars, promotional 'research', gifts and industry funded journals. Three-quarters of educators reported that they also covered the issue of regulation and/or ethics of drug promotion, and the most frequent educational techniques were lectures and small group discussions in tutorials/workshops.

It is interesting to note that those respondents that reported less time spent on the topic, were less likely to include questions on drug promotion in examinations or to judge the education to be successful. Most common barriers to success mentioned were lack of integration into the curriculum, inadequate time allocation, lack of continuation during clinical training, and lack of interest from other faculty members. In several cases, the influence of the pharmaceutical industry on educational facilities was reported.

III. Training on Pharmaceutical Promotion in Dutch Medical and Pharmacy Faculties

A systematic review of medical students' exposure to and attitudes about the pharmaceutical industry, published in 2011, found that most medical students reported not feeling adequately educated on interactions with the industry, with 63 percent-86 percent requesting more education in this area.¹⁶ Most studies were from the U.S. and Canada, but European studies were also included. The findings of this systematic review are in line with the international survey published by HAI and WHO in 2005. In addition, the review reaffirmed that medical students are frequently exposed to pharmaceutical marketing,

even in the preclinical years. Common types of interactions mentioned in the assessed studies involved gifts, industry-sponsored education and direct communication with sales representatives. Early exposure to such interactions makes the integration in the curriculum of education on promotion and conflicts of interest even more necessary.

To contribute knowledge to the extent of education on pharmaceutical promotion, HAI supported research conducted by B Tielrooij, a Master's student in *Management, Policy Analysis and Entrepreneurship in the Health and Life Sciences* at the VU University in Amsterdam. The outcome report was the result of his graduate internship for his Master's.

The study was aimed at identifying the extent of education on pharmaceutical promotion in Dutch medical and pharmacy faculties either explicitly or implicitly.¹⁷ The readiness of faculty members to integrate education on pharmaceutical promotion in the formal curriculum and aspects that facilitate or impede change were also explored. Results were based on interviews with deans, education coordinators, and faculty in pharmacology/pharmacotherapy from all Dutch medical faculties (N=8) and pharmacist trainings (N=2). A total of 18 interviews were conducted.

The study found that education on pharmaceutical promotion—and how to respond to it—was largely covered in the curricula of pharmacy training through explicit and implicit education, as well as faculty members, who function as role models. One university, for example, reported providing a five week course specifically on medication policy which focused on pharmacoepidemiology and pharmacoconomics. In addition, students received a course on evidence-based medicine, which covered regulatory affairs, and another in which they received lectures on industry initiatives linked to drug promotion and independent drug research.

In medical education, however, education on pharmaceutical promotion was found—in general—to be barely, if at all, addressed explicitly in the formal curriculum. Nonetheless, important variations were observed across the eight medical faculties, which was at least partially due to the commitment of individual educators. Some interesting practices were identified across faculties. However, education on drug promotion was not structurally embedded in the curriculum, it was often provided only to a small group of students through elective courses—and did not appear to be included in final examinations.

According to respondents, the key barrier for integration of explicit education on promotion in the curriculum was lack of prioritisation. Identified motivational factors that impede readiness to change included lack of time, naivety of faculty, and simply forgetting the issue because it is not a formal learning outcome. The study found, however, that much more was achieved through implicit education on pharmaceutical promotion, which includes teaching on pharmacotherapy and evidence based medicine to ensure good prescribing practice.

Regarding the so-called ‘hidden’ curriculum and values transmitted through institutional policies, several respondents indicated that they were unaware whether their faculty had in place a policy on conflicts of interest. Such responses imply that policies might be largely lacking or not actively enforced. Whilst respondents acknowledged that educators can play an important role model in shaping students’ attitudes, there was often considerable ambiguity as to faculty members’ attitudes and the messages and values conveyed to students.

IV. Examples of Explicit Education on Pharmaceutical Promotion in Dutch Medical Facilities

In one medical school, a one day symposium was organised for students. Different stakeholders, including the pharmaceutical industry, were invited to participate in the plenary program and workshops. Each student attended the plenary morning program with speakers and enrolled in two of the available afternoon workshops. There were workshops on the following topics: ‘Ethical criteria of medicine promotion’, ‘Laws and regulations of drug promotion’, ‘Awareness about influence techniques of the industry’, ‘Role playing: Doctor and industry representatives’, ‘The impact of gifts’, and ‘Neglected diseases’.

This kind of symposium on pharmaceutical promotion takes place every three years within the specialisation in Global Health, which students can choose during their Bachelor degree. The specialisation in Global Health is followed by about a quarter of all medical students.

At another faculty, in the third year of the Bachelor degree medical students follow a 4-week minor on Curricular Practical Training which, amongst other topics, touches upon the issue of pharmaceutical promotion (one week). During the other weeks students learn about basic pharmacotherapy, polypharmacy and toxicology. The course is elective and comprises of about 20-40 students. External stakeholders, such as NGOs that raise awareness about the effects of drug promotion and the pharmaceutical industry, have been invited to discuss with students the effects of drug promotion/codes regulating advertising.

The second part of the course consists of working groups and assignments. Here students can learn about the history of medical advertising and do practical exercises to help identify misleading information in drug advertisements. A typical written test would contain an advertisement that students have to assess taking into account the Dutch context and regulations. During the Master’s phase, medical students follow a symposium which discusses conflicts of interest and promotional strategies. This course is also elective and comprises around 25 percent of the students. Lectures are followed by working group sessions. A practical exercise would be the design of a promotional strategy for a new drug.

Although interesting initiatives on education on pharmaceutical promotion exist, these are often linked to individual commitments from faculty members. To ensure that medical students receive adequate education on pharmaceutical promotion, this subject needs to be formally embedded in the required curriculum and mainstreamed throughout professional training. Education on promotional strategies and their effects must be aligned with education on interactions between healthcare professionals and the industry more generally, conflicts of interests, and critical appraisal of information on medicines.

V. A Student Led Model for Education on Pharmaceutical Promotion and Conflicts of Interest

According to the Institute of Medicine in the US, conflicts of interest in the healthcare sector threaten the integrity of research, the objectivity of professional education, the quality of patient care and the public's trust in medicine.¹⁸ As the exposure of healthcare professionals to the industry usually starts during their studies, it is important that they receive adequate education early on about how to respond to such interactions in ways that avoid undue influence and promote public health.

Students themselves can instigate change by demanding their right to better education. In 2002, the American Medical Students Association (AMSA) launched the PharmFree Campaign—now called Just Medicine—, which raises awareness about the effect of promotion, promotes evidence-based prescribing and affordable healthcare for patients.¹⁹

The campaign developed a model for teaching physicians about drug development, marketing and conflicts of interest within the medical school curriculum, the '[PharmFree Curriculum](#)'.ⁱ This curriculum aims to provide students with the skills to: 1) Understand the nature of conflicts of interest—and how they pertain to the practice of medicine; 2) Recognise how industry can affect clinical care and develop strategies to mitigate the negative influences; and 3) Properly manage industry relations to maximise patient and societal benefit.²⁰

To meet these objectives, AMSA proposes five core curricular competencies for medical students, which build upon topics that, in general, are already included in curriculums:

- Professionalism and Conflict of Interest (COI): e.g. understand what constitutes a COI, how these influence clinical care and research and how to avoid, manage or minimise COI in physician-industry relationships.

ⁱ The 'PharmFree curriculum' builds on recommendations from the American Association of Medical Colleges' (AAMC) Task Force and advocacy organisations such as Healthy Skepticism, No Free Lunch and PharmAware.

- Drug and Device Development: e.g. understand the stages of drug and device R&D, including incentives such as patents and how these affect the research agenda and the affordability of medicines.
- Determining Drug and Device Safety and Efficacy: e.g. acquire critical appraisal skills, understand how publication bias and COI can influence the publicly accessible pool of evidence, and know how to find independent sources of information.
- Marketing and physician practice: understand the relationship between influence and reciprocity and identify the ways by which marketing attempts to influence physician behaviour.
- Continuing Medical Education (CME): understand how CME courses are developed, identify sources of bias and how to find independent CME courses and reliable sources of medical knowledge.

Recommended educational techniques include lectures, workshops, role-play sessions, research essays, workshop-discussion, critical appraisal of ads. and case studies of high profile scandal (e.g. promotion, reporting bias and subsequent withdrawal of Vioxx). The 'PharmFree Curriculum' model also makes a concrete proposal on how to embed these various subjects in the curriculum. AMSA recommends introducing them at different stages, in ways that generate incremental knowledge by building upon existing related topics.

There are national differences in the design of medical education, and the 'PharmFree Curriculum' was developed in a US setting, and would therefore likely need to be adapted for different settings. However, it can serve as a model on how to design a curriculum that better prepares healthcare professionals to avoid undue influence, and practice evidence-based medicine, that can be adapted by universities worldwide. This model can be coordinated with other guides, such as the 'Conflict of Interest Policy Guide for Academic Medical Centres and Medical Schools', developed by Community Catalyst, a US based, non-profit consumer organisation that advocates for quality affordable healthcare.²¹ Whilst different views may exist about at what point in the curriculum teaching on promotion should start, our recommendation would be to start introducing the subject sometime before students enter clinical practice, and deepen education on this subject from then onwards.

Concrete proposals on student exercises can be found, for example, in the manual 'Understanding and Responding to Pharmaceutical Promotion' published by Health Action International and the World Health Organization.²² More information sharing about existing educational activities, and about ways to evaluate required knowledge/skills, would help to identify best practices and facilitate the implementation of educational activities in other settings.

VI. Institutional Policies on Conflicts of Interest

Institutional policies that regulate and limit the interactions with the pharmaceutical industry can help to instil critical attitudes and shape behaviour in ways that safeguards good clinical practice.^{23 24}

As part of their PharmFree campaign, AMSA released in 2007—for the first time—a Scorecard grading medical schools on the presence or absence of a policy regulating the interactions between their students, faculty members, and the pharmaceutical and device industries.²⁵ Since 2008, AMSA assesses the content of policies and has been continuously refining the methodology. In 2016, AMSA published the latest version of the [Scorecard](#), which rates faculties according to 14 policy domains. These include: rules which avoid or limit gift giving, meals from industry, industry-sponsored promotional speaking, sponsored scholarships and awards, access of sales representatives, conflict of interest disclosure, teaching on pharmaceutical promotion and industry influence, and enforcement measures. Certainly, this public rating has created an additional incentive to medical schools to improve their policies, but there remains room for improvement. The latest rating [information updated on October 24, 2016] shows that out of the 173 US medical schools, 24 percent receive “A”s (Excellent or model policies), 44 percent “B”s (Good or solid policies) and 16 percent “C”s (Poor or deficient policies). 16 percent of schools either did not submit policies, and for which AMSA’s web search yielded incomplete policies, or submitted policies that do not cover all the domains under evaluation. Nonetheless, these scores indicate an enormous improvement since 2008 when only about 5% received “A”s.

In 2017, a similar exercise was carried out in France by the non-profit organisation Formindep with the support of the National Association of French Medical Students (ANEMF).²⁶ A total of 37 French faculties of medicine were evaluated according to thirteen criteria, such as their policy on gifts, visits by sales representatives, disclosure of conflicts, on-site education activities sponsored by the industry, industry funding of medical schools and medical school curriculum. Each criterion was graded with either 0 points (no policy or permissive policy), 1 (moderate policy) or 2 (restrictive). The overall score for each faculty could range from 0 to 26 points. The study found that only 9 medical schools (24 percent) had introduced some policies to avoid or manage conflicts of interest (2/9) or had included the issue of COI in the curriculum (9/9)- albeit in a limited way. Only one faculty, Lyon Est, had restrictive policies for some categories (on-site education, and funding by pharmaceutical industry). This medical school achieved the best score (only 5 points out of 26) and twenty-eight medical schools (75 percent) scored 0. According to the authors, these results are at odds with the fact that France has adopted national legislation requiring transparency of industry funding of health professionals and limits on gifts.

Following the publication of the French study—which received important media attention—ANEMF proposed two policy charters regulating interactions with the pharmaceutical industry at medical schools and teaching hospitals. The charters were sent to the President of the Conference of Deans. ANEMF recommended, for example, that a committee be set-up to develop policies on conflicts of interest, that education on drug promotion be a mandatory part of the curriculum, and the prohibition of contacts between industry representatives and students until the end of study year 6. Following all these developments, in November 2017, the Deans of medical faculties adopted the [‘Ethical and Deontological Charter of the Faculties of Medicine and Dentistry’](#). This Charter includes some of ANEMF’s proposals and touches upon the broader issue of scientific integrity. The French medical student’s association has welcomed the initiative,²⁷ in particular the provisions to better regulate interactions with the industry and protect students from conflicts of interest (the Charter says, for example, that students have the right to refuse to participate in activities organised by pharmaceutical companies in teaching hospitals). ANEMF also welcomes the provisions regarding disclosure of conflicts of interest. In addition, the Deans recommend the creation of committees with student participation in each medical school, which would have the mandate to verify compliance with the Charter. Both ANEMF and Formindep encourage medical schools to adopt this Charter fully and will closely monitor its enforcement.

The initiatives in France and in the US show that student-led movements can be effective in instigating change. Initiatives by student associations to limit industry influence in medical education should be supported. Closer collaboration between student groups, sensitised faculty members and advocacy groups can help advance a reforming agenda that addresses the problems of undue influence in medical education and practice.

VII. Recommendations on the Way Forward

The pharmaceutical industry’s influence in medical practice is widespread. Healthcare professionals are often exposed to promotional practices and conflicting situations early in their studies, and exposure grows incrementally thereafter. Policies on conflicts of interest in faculties and teaching hospitals can certainly help to protect students and other healthcare professionals from undue influence, transmit values and shape behaviour. Much can also be achieved through education on pharmaceutical promotion, conflicts of interests and critical appraisal of information on medicines. It is crucial though that these initiatives are accompanied by robust legislative frameworks on pharmaceutical promotion and independent continued medical education. Obligatory public disclosure of financial links between the industry and healthcare professionals/organisations (‘sunshine acts’) can also help raise awareness and deter health practitioners from entering into conflicted situations. More awareness about the effects of industry influence in clinical practice, and critical attitude amongst healthcare professionals and faculty members alike would most likely help to overcome the barriers that are often reported to prevent the uptake of education on an issue as important a pharmaceutical promotion.

Take away messages and recommendations:

- Pharmaceutical promotion has been associated with prescribing patterns more aligned with commercial interests rather than patients' best interests;
- Educational activities on pharmaceutical promotion can affect trainee's awareness, attitudes and skills. However, medical students often receive little education on this issue;
- Education on pharmaceutical promotion must be embedded in the required curriculum and mainstreamed throughout professional training. It should be aligned with education about interactions between healthcare professionals and the industry more generally speaking, conflicts of interests, critical appraisal of information on medicines;
- Interesting proposals exist on how to integrate education on promotion and conflicts of interest in the medical curriculum. AMSA's 'PharmFree Curriculum' can serve as reference model with the relevant adaptation where needed, including in pharmacy training;
- More information sharing on existing educational initiatives is encouraged and can help identify best practices and facilitate implementation in other settings;
- Institutional policies on conflicts of interest protect students and help instigate critical attitude; medical and pharmacy faculties should adopt restrictive policies that limit interactions with the industry;
- Medical student-led movements have shown to be effective in instigating change. Greater collaboration between students, sensitised faculty and advocacy groups can help to consolidate a reforming agenda;
- Continuing medical education plays an important role in healthcare professionals' life-long learning. CME courses must be independent from industry influence;
- Stricter legislation that limits pharmaceutical promotion is needed to better protect healthcare professionals. Stricter vetting and monitoring activities must be put in place, and dissuasive sanctions applied when companies breach the law.
- Governments must mandate the public disclosure of financial relationships between healthcare professionals and the industry.

References

- ¹ Holloway K, van Dijk L (2011). The World Medicines Situation 2011. Rational Use of Medicines. World Health Organization, Geneva
- ² World Health Organization. *Essential medicines and health products* (http://www.who.int/medicines/areas/rational_use/en/ accessed November 2017).
- ³ Spurling GK, Mansfield PR, Montgomery BD, Lexchin J, Doust J, Othman N & Vitry AI (2010). Information from pharmaceutical companies and the quality, quantity, and cost of physicians' prescribing: a systematic review. *PLOS Medicine*, 7(10):e1000352.
- ⁴ Wazana A (2000) Physicians and the pharmaceutical industry: is a gift ever just a gift?. *JAMA*, 283: 373–380.
- ⁵ Sah S & Fugh- Berman A (2013). Physicians under the Influence: Social Psychology and Industry Marketing Strategies. *Journal of Law, Medicine and Ethics*, 41(3): 665-672.
- ⁶ Steinman MA, Shiplak MG & McPhee SJ (2001). Of principles and pens: attitudes and practices of medicine housestaff toward pharmaceutical industry promotions. *The American Journal of Medicine*, 110(7):551-557.
- ⁷ Austad, K. E., Avorn, J., & Kesselheim, A. S. (2011). Medical Students' Exposure to and Attitudes about the Pharmaceutical Industry : A Systematic Review. *PLOS Medicine*, 8(5), 1–12. <http://doi.org/10.1371/journal.pmed.1001037>
- ⁸ Lieb, K., & Koch, C. (2013). Medical Students' Attitudes to and Contact With the Pharmaceutical Industry. *Deutsches Ärzteblatt International*, 110(35), 584–590. <http://doi.org/10.3238/arztebl.2013.0584>
- ⁹ Etain, B., Guittet, L., Weiss, N., Gajdos, V., & Katsahian, S. (2014). Attitudes of Medical Students towards Conflict of Interest : A National Survey in France. *PLOS One*, 9(3), 1–4. <http://doi.org/10.1371/journal.pone.0092858>
- ¹⁰ Sagarin, BJ Cialdini RB, Rice, WE & Serna SB (2002). Dispelling the illusion of invulnerability: motivations and mechanisms of resistance to persuasion. *Journal of Personality and Social Psychology*, 83(3):526-41.
- ¹¹ Sah S & Fugh- Berman A (2013). Physicians under the Influence: Social Psychology and Industry Marketing Strategies. *Journal of Law, Medicine and Ethics*, 41(3): 665-672.
- ¹² Zetterqvist AV, Merlo J & Mulinari S (2015). Complaints, complainants, and rulings regarding drug promotion in the United Kingdom and Sweden 2004-2012: A quantitative and qualitative study of pharmaceutical industry self-regulation. *PLOS Medicine*, 12(2):e1001785.
- ¹³ Norris P, Herxheimer A, Lexchin J & Mansfield P (2005). *Drug promotion: What we know, what we have yet to learn*. World Health Organization and Health Action International, Geneva.
- ¹⁴ Carroll AE, Vreeman RC, Buddenbaum T & Inui TS (2007). To what extent do educational interventions impact medical trainees' attitudes and behaviors regarding industry-trainee and industry-physician relationships?. *Pediatrics*, 120(6):e1528-e1535.
- ¹⁵ Mintzes B (2005). Educational initiatives for medical and pharmacy students about drug promotion. An international cross-sectional survey. World Health Organization and Health Action International, Geneva
- ¹⁶ Austad, K. E., Avorn, J., & Kesselheim, A. S. (2011). Medical Students' Exposure to and Attitudes about the Pharmaceutical Industry : A Systematic Review. *PLOS Medicine*, 8(5), 1–12. <http://doi.org/10.1371/journal.pmed.1001037>
- ¹⁷ Tielrooij, B., Regeer, E., & Reed, T. (2016). *Pharmaceutical Promotion in Dutch Medical and Pharmacy Education: Readiness for Curriculum Change*. Health Action International and VU University Amsterdam, Amsterdam.
- ¹⁸ Institute of Medicine (2009). *Conflict of Interest in Medical Research, Education, and Practice*. Washington, DC: The National Academies Press. <https://doi.org/10.17226/12598>.
- ¹⁹ American Medical Student Association. Just Medicine (<https://www.amsa.org/advocacy/just-medicine-campaign/> accessed 4 December 2017)
- ²⁰ American Medical Student Association. PharmFree. Evidence and Recommendations for a Model PharmFree Curriculum. <https://www.amsa.org/wp-content/uploads/2015/03/ModelPharmFreeCurriculum.pdf> (accessed November 6, 2017)
- ²¹ Community Catalyst (2013). *Conflict of Interest Policy Guide for Academic Medical Centers and Medical Schools. Conflict of Interest Curriculum*, Community Catalyst
- ²² World Health Organization & Health Action International (2009). *Understanding and responding to pharmaceutical promotion: A practical guide*. Health Action International, Amsterdam.
- ²³ King M, Bearman P (2013). Medical school gift restriction policies and physician prescribing of newly marketed psychotropic medications: difference-in-differences analysis. *BMJ*, 346:f264
- ²⁴ Grande D1, Frosch DL, Perkins AW, Kahn BE (2009). Effect of exposure to small pharmaceutical promotional items on treatment preferences. *Arch Intern Med*, 169(9):887-93.

²⁵ Americal Medical Student Association. About the AMSA Scorecard (<http://amsascorecard.org/about/> accessed November, 2017)

²⁶ Scheffer P et al. (2017). Conflict of interest policies at French medical schools: starting from the bottom. *PloS One*, 12 (1): e0168258.

²⁷ Association Nationale des Étudiants en Médecine de France (2017). Communiqué de presse. Les facultés de médecine peuvent désormais adopter une charte éthique, ANEMF, Novembre 16, 2017 <http://www.anemf.org/blog/2017/11/16/cdp-les-facultes-de-medecine-peuvent-desormais-adopter-une-charte-ethique/>