

The radiologist versus commercial medicine and potential ethical conflicts

El radiólogo frente a la medicina mercantil y potenciales conflictos éticos

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Abstract

The medical profession has, as its primary interest, the well-being of the patient over economic, prestige, or any other interests, so the latter always correspond to secondary interests. However, we frequently see that the physicians' financial relationships with the pharmaceutical and medical device industries constitute genuine conflict of interest that may jeopardize the health and well-being of the population, as well as the trust that society has in the medical profession. Given this scenario, in this article we will update the definitions for conflict of interest in clinical practice in general and in the field of radiology and imaging in particular; we will identify those areas where this is most likely to occur, such as requesting unnecessary examinations or carrying out management not based on the best evidence, those related to the way in which professional practice is organized, and also those related to clinical research. We will conclude with some recommendations for eliminating conflict of interest, or at least to managing them in a better way, thus preserving the autonomy and professional integrity of radiology specialists.

Keywords: Ethics. Conflict of interest. Radiology. Medical self-referral. Authorship.

Resumen

La profesión médica tiene como interés primordial el bienestar del paciente por sobre el interés económico, de prestigio o cualquier otro, de modo que estos últimos siempre corresponden a intereses secundarios. No obstante, con cierta frecuencia vemos que las relaciones financieras de los médicos con la industria farmacéutica y de dispositivos médicos constituyen reales conflictos de intereses que pueden poner en riesgo la salud y el bienestar de la población, así como también la confianza que la sociedad tiene en la profesión médica. Dado este escenario, en el presente artículo actualizaremos las definiciones sobre conflicto de intereses en la práctica clínica en general y en particular en el ámbito de la especialidad de radiología e imágenes, e identificaremos aquellas áreas en las que es más posible que esto ocurra, como por ejemplo al solicitar exámenes innecesarios o realizar una gestión no basada en la mejor evidencia, aquellos relacionados con la forma en que se organiza la práctica profesional y también los relacionados con la investigación clínica. Finalizaremos con algunas recomendaciones para eliminar los conflictos de intereses o, al menos, poder manejarlos de mejor manera para así preservar la autonomía y la integridad profesional de los especialistas en radiología.

Palabras clave: Ética. Conflicto de intereses. Radiología. Autorreferencia médica. Autoría.

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Introduction

Conflict of interest in the medical profession has existed since the time of Hippocrates, although its role in the pharmaceutical, medical device, food, and, in this case, medical imaging equipment industries dates back only a few decades, as a result of social, economic, and political changes¹. In public opinion, this relationship has generated controversies that have impacted the way the medical profession is practiced and, therefore, in the purposes of medicine. In 1993, in the *New England Journal of Medicine*, Thompson² defined conflicts of interest in biomedical research funded by the pharmaceutical industry, in relation to the bias they introduce into their interpretation. Since then, scientific literature has focused on the study of the relationship between the medical profession and the pharmaceutical industry, exposing and analyzing the social, economic, political, and ethical aspects involved. While the services provided by the medical profession and the products manufactured by the pharmaceutical industry are geared toward protecting and restoring people's health, responsibilities for this same purpose determine different behaviors^{3,4}. Hence, for the pharmaceutical industry, through the development of medicines, although it allows for improved health and quality of life, its primary interest is to increase the profitability of its investment. On the contrary, the medical profession's primary interest is the well-being of the patient over economic, status, or any other interests, so the latter always correspond to secondary interests⁵.

In the United States of America, it is estimated that nearly 80% of physicians have financial relationships with the healthcare industry, so this relationship is normalised, disregarding the harm it causes to patients and healthcare systems. Therefore, through bioethical reflection, professional associations, scientific associations, universities, and public policies in the developed world have been making progress in implementing standards to regulate the industry's relationship with the medical profession⁴. Meanwhile, in Chile, professional associations, pharmaceutical industry organizations, and government entities have promoted initiatives that follow the same path as those in more advanced countries.

In previous publications of the *Austral Journal of Imaging-Revista Chilena de Radiología*, various experts have given their opinions regarding the presence of conflict of interest in this specialty, analyzing their definitions and most relevant aspects in the practice of medicine in general, and for the professional

dedicated to radiology in particular⁶⁻⁸. Internationally, it has been documented that the presence of conflicts of interest within this specialty contributes to increased healthcare spending when referring physicians have ownership interests in these services⁹.

Although the topic has been widely studied, certain worrying practices persist. For this reason, in this article, we will update the current definitions for conflict of interest, with the aim to identify those areas where they are most likely to occur in the field of radiology, thereby helping professionals to be mindful of their duty to preserve the fiduciary role of the profession. Finally, we will make some recommendations aimed at eliminating conflicts of interest, or at least managing them better to preserve the autonomy and professional integrity of radiology specialists.

Concept of conflict of interest in medicine

As stated by the American Academy of Sciences in its 2009 Institute of Medicine Report, conflicts of interest are understood to be those circumstances which create a risk wherein professional judgment, or actions based on a primary interest, could be influenced by a secondary interest¹⁰. In the field of medicine, primary interests can include the integrity of research, the quality of medical education and, above all, the well-being of patients. Secondary interests are not only financial but also include professional and academic development, and family or friendship relationships, although the most obvious are economic. Along these same lines, the World Medical Association defines a conflict of interest as "a situation in which professional judgment related to direct patient care could be unduly influenced by a secondary interest"¹¹. It is important to note that the definition of a conflict of interest includes a risk situation, and therefore it is not appropriate to speak of "potential conflicts of interest", as this definition attempts to separate the risk situation from the recognition of harm, and often, if the impact is unknown or no harm is perceived, the risk situation is dismissed. This is so because the risk situation arises from the biases that occur, which are unconscious and therefore, very difficult to identify in each of us¹¹.

Shafer A.¹² offers a more precise definition for conflicts of interest in the healthcare field. This author argues that there is no simple conflict of interest for the physician, since on the one hand he has a moral obligation to exercise his judgment in the service of another person and, on the other, there is an interest that tends to interfere with the proper exercise of his judgment in

that relationship. In his analysis, he points out that physicians do not have a simple interest in caring for their patients, but rather have a strictly professional duty, since people who go to the doctor need to restore their health and trust that medical opinion puts this need first; and institutions have equal responsibilities, as he clearly illustrates in his description of the well-known “Oliveri case”¹². MacIntyre A.¹³, taking up Aristotle’s theory, had already defined the internal good of the profession as being able to restore health, differentiating between intrinsic and extrinsic purposes. He explained that when a person inverts the hierarchy of purposes, the activity is perverted. The great asymmetry in the relationship makes it particularly delicate to speak of conflicts of interest in the healthcare field, since it jeopardizes the role of trust in the profession.

Regarding trust, it should be noted that there is a distinction between general trust in a profession or institution and interpersonal trust. Trust in the profession has been shown to decline in recent years¹⁴. Studies conducted in the United States have established some relationships between trust and healthcare outcomes; although no causal relationship has been proven, it was found that greater distrust leads to lower use of preventive care, greater use of unnecessary and risky services, and worse healthcare outcomes¹⁵.

The Association of Scientific-Medical Societies of Chile, in its statement on the subject, considers a conflict of interest to exist when a judgment or action that should be determined by a primary value, defined for professional or ethical reasons, could be or appear to be influenced by a secondary interest¹⁶, this “appear influenced” refers to what any layperson could estimate. The Code of Ethics of the *Colegio Médico de Chile* has also pointed out the need to maintain a “relationship of professional independence” with the “healthcare companies, producers or distributors of pharmaceutical products, medical or food devices, or healthcare applications or APPs”¹⁷, emphasizing that only “modest donations” or invitations to meetings or conferences can be accepted to the extent that these do not “limit or restrict” professional independence.

From a legal perspective, our Healthcare Code (*Código Sanitario*), which governs all matters related to the promotion, protection, and restoration of people’s health in Chile, contains several articles that specifically regulate physicians’ activities with regard to conflicts of interest and their relationship with the pharmaceutical industry¹⁸. Article 114 establishes the impossibility of practicing as a physician and a pharmacist or biochemist, based on the difficulty of

performing two functions with different purposes. Article 120 states that physicians “may not practice their profession and have commercial interests directly related to their activity, in establishments dedicated to the importation, production, distribution, and sale of pharmaceutical products, orthopedic devices, prostheses, and optical articles, unless the respective College issues a report in each case establishing that professional ethics are not violated.” These articles are closely related to the conflicts of interest that should be avoided in the medical profession and have been, in our opinion, systematically dismissed.

The general recommendations in the Institute of Medicine report state that institutions that conduct medical research, medical education, clinical care, or develop clinical guidelines should adopt, implement, and publicly disclose conflict of interest policies consistent with the report; and additionally, institutions are urged to establish a conflict of interest management committee empowered to use various management tools, including eliminating the conflicting financial interest, prohibiting or restricting the individual with a conflict of interest from participating in the activity related to the conflict, and providing additional disclosure of conflicts of interest (Table 1). In this regard, institutions should demand that the individuals covered by their policies, including senior institutional officials, annually disclose to the institution their financial relationships with pharmaceutical, medical device, and biotechnology companies. These disclosures should be sufficiently specific and comprehensive (without a minimum monetary threshold) to allow others to assess the seriousness of the conflicts, avoiding unnecessary administrative burdens for the individuals making these disclosures¹⁰. Despite the call to declare conflicts of interest, studies reveal that 43-69% of publications in the United States of America and Denmark fail to disclose them¹⁹. Furthermore, relying solely on transparency regarding conflicts of interest is considered insufficient, as it tends to be equated with conflict of interest resolution, and this is not eliminated.

Conflict of interest in clinical radiology

The exceptional story of Charles Dotter, known as the father of interventional radiology, who teamed up with Bill Cook, of Cook Medical, to design the first angioplasty in 1964, serves as an example to justify the relationship between physicians and industry to the point of considering it a “natural” situation in the specialty. For some authors, what is considered

Table 1. Institute of Medicine recommendations for managing conflicts of interest¹⁰

Scope of application	Recommendation
Clinical practice	Do not accept items of material value from pharmaceutical, medical device, and biotechnology companies, except when the transaction is payment at fair market value for a legitimate service.
	Do not give educational presentations or publish scientific articles that are industry-controlled or that contain substantial portions written by someone not identified as the author or that is not duly acknowledged.
	Do not enter into consulting agreements, unless based on written contracts for expert services to be paid at fair market value.
	Do not meet with pharmaceutical and medical device sales representatives except by documented appointment and at the express invitation of the physician.
Clinical research	Academic medical centers and other research institutions should establish a policy that, in general, individuals may not conduct research involving human participants if they have a significant financial interest in an existing or potential product, or in a company that could be affected by the outcome of the research. Exceptions to this policy should be made public and should only be permitted if the conflict of interest committee (a) determines that an individual's participation is essential to the realization of the research and (b) establishes an effective mechanism to manage the conflict and protect the integrity of the research.
Medical education	Prohibit the acceptance of items of material value from pharmaceutical, medical device, and biotechnology companies, except in specific situations.
	Do not allow consulting agreements that are not based on written contracts for expert services to be paid at fair market value.
	Do not allow access to drug and medical device sales representatives, except by invitation from faculty, in accordance with institutional policies, in certain specific situations for training, patient safety, or medical device evaluation.

problematic is the bias that is intentionally established by the relationship, and therefore this is what should be managed and not the conflict of interest; and that this is the focus of attention and, therefore, susceptible to be managed²⁰.

In the field of clinical radiology, there are various conflicts of interest, including the request for unnecessary examinations, management not based on the best available evidence, conflicts related to the way clinical practice is organized, and conflicts related to research. It should be noted that most radiology societies have their own guidelines and recommendations for identifying and managing potential conflicts of interest. An example of this is the Society of Interventional Radiology's recommendations for its members to participate in the development of clinical guidelines, which categorize conflicts of interest as permissible, manageable, or clearly disqualifying²¹. Likewise, the American College of Radiology also has its conflict of interest management policy, which has a fiduciary responsibility to maintain public trust in the fulfillment of its charitable mission; to this end, it demonstrates its commitment to these values by disclosing, managing, and, in some cases, restricting relationships that might appear to compromise its objective voice²².

Requesting unnecessary examinations

One of the reasons for the sustained increase in the number of imaging studies is the existence of conflicts of interest, either because the referring physician receives a financial incentive from the provider or because it is the radiologist himself who, at the time of performing the first examination, deems it necessary to request additional images, in what is considered a "self-referral"^{7,23}. If the person ordering these examinations has commercial interests in the center where they are to be performed, it is a difficult conflict of interest to avoid. The examinations may be well indicated according to available clinical guidelines, but if a conflict of interest exists, patients may feel that their best interests are not being prioritized. It is important to note that the indiscriminate use of imaging not only increases the cost of healthcare, but can also have harmful effects on the patient.

Another critical aspect in the specialty of radiology relates to requests for additional examinations, particularly when these decisions are not supported by solid clinical evidence. This phenomenon becomes even more complex when the radiologist holds ownership or partnership roles with the medical center

where these procedures are performed. The duality of interests between clinical and financial aspects can lead to pressure to perform unnecessary studies, affecting the quality of patient care. Decision-making based on commercial motivations, rather than on real clinical needs, raises ethical dilemmas and questions the integrity of the diagnostic process. These scenarios highlight the need to establish clear protocols and ethical safeguards to guarantee that decisions regarding radiological examinations are guided solely for the best interests of the patient, not for financial interests.

Management not based on the best evidence

The acquisition of X-ray machines, MRI scanners, and other devices essential to radiology practice not only involves technical and clinical considerations but can also be influenced by commercial and economic factors. This phenomenon raises ethical questions about the objectivity of decision-making, as radiology professionals may find themselves in situations where their clinical choices are intertwined with commercial agreements or relationships with equipment manufacturers. For example, if the salesperson of an expensive MRI scanner invites potential buyers to visit the factory where they produce or sell their equipment, with all expenses paid, or if they finance a trip to a specialty congress, and the purchase is ultimately finalized, the conflict of interest is more than evident.

Organization of the professional practice

It is beyond the scope of this paper to address the multiple ways in which imaging specialty practice is being organized internationally. For interested readers, it is worthwhile to consult a series of articles published in 2020 on this topic²⁴. In one of them, the authors mention that certain medical practices are too focused on financial performance, thus losing sight of the profession's inherent goals, such as providing high-quality, patient-centered care, optimal customer service, and physician well-being²⁵. While these authors recognize that productivity and efficiency are necessary in the current environment, some organizations appear to focus excessively on "speed" and "volume" in pursuit of financial rewards. Such a focus would harm not only patient care, but also the organization itself in the long term, due to physician burnout and client dissatisfaction.

It is important to emphasize that this excessive focus on revenue-generating productivity constitutes a clear conflict of interest.

Scope of research

In radiology research, conflicts of interest may arise in connection with industry-funded studies. Projects supported by imaging technology manufacturers raise the question of the extent to which external funding can influence study design, interpretation of results, and presentation of findings. These factors underscore the critical need to establish clear measures for managing and disclosing conflicts of interest in radiology practice and medical imaging research. Transparency and the ethical management of these dilemmas are essential to safeguarding the integrity and trust in the specialty.

Recently, journals that publish work in the imaging field (grouped within the Radiological Society of North America) updated their editorial policies regarding the declaration of conflict of interest, particularly in light of a substantial increase in industry-sponsored work, particularly in the field of artificial intelligence²⁶. In particular, a clause was considered specifying that investigators of industry-supported trials should not have fiduciary responsibilities (e.g., being a corporate officer or director) to the company that manufactures or markets a product centrally related to the research subject matter. In turn, authors with fiduciary responsibilities should not have primary responsibility for study design, analysis, or interpretation of data²⁶.

Another aspect of interest in the research field is the criteria for authorship of a work, which has been partly controlled by requiring all authors to make a declaration regarding their actual contribution to the development of the study²⁷. Many journals have implemented an automated system, through which each author is sent an email requesting confirmation that they have significantly participated in the intellectual design and writing of the study, that they accept responsibility for the content of the manuscript, and that they declare any financial relationships that could have influenced the writing of the article. A brief report from a group of journals that implemented this system notes that several authors discovered they were listed on articles they were not co-authors of, and some oversights were detected in the reporting of conflicts of interest²⁷.

Recommendations

The most effective way to address conflicts of interest in medical practice in general, and in radiology in

particular is, without a doubt, to avoid having ownership interests with medical equipment and services companies. This protects medical judgment regarding indications for radiological examinations, which, in addition to benefiting patients, makes the healthcare system more efficient. Unfortunately, the healthcare market has already burst onto the scene in our country, and physicians have also become an active part of this landscape; therefore, most of the recommendations in the literature focus on measures to “manage” conflicts of interest rather than eliminating them, which would be the ideal scenario.

In the field of imaging and other medical specialties, the existence of clinical guidelines and a decision based on the best available evidence contribute to promoting a judicious choice of imaging procedures²³. In this regard, the Institute of Medicine has issued specific recommendations for the management of conflicts of interest, both in the clinical setting and in clinical research, and in medical education, which are detailed in [table 1](#).

Finally, we must remember that fidelity to trust is one of the virtues that Edmund Pellegrino established to be a professional of excellence and to fulfil the specific *telos* of the medical profession²⁸. The origin of the word trust (*fides*) has to do with a request not to harm; trust means to have the hope that someone will not do harm, and that they will care for, respect, and protect what has been entrusted to them, in this case, healthcare. Trust is necessary where there is vulnerability, and this is what we should aspire to²⁹.

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Ethical considerations

Protection of people and animals. The authors declare that no experiments were performed on humans or animals for this research.

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Declaration on the use of artificial intelligence. The authors declare that they did not use any type of generative artificial intelligence in the writing of this manuscript.

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