



Challenges to neurosurgical professionalism

Ayhan Kanat^{a,*}, Clara Raquel Epstein^b

^a Rize University Medical School, Department of Neurosurgery, 53100 Rize, Turkey

^b Boulder Neurosurgery Center, LLC., 1320 Pearl Street, Suite #240, Boulder, Colorado, USA

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ABSTRACT

At present, neurosurgical practice is confronted by an explosion of technology. Rapid advances in neurosurgical knowledge and technology are putting increased pressure on neurosurgeons to process huge quantities of information, with requirements for continuous learning and updating scientific knowledge and skills which are time consuming but essential. Changes to the venerated status quo of neurosurgical practice have created an environment that may have a negative impact upon neurosurgical professional behavior. As a result, neurosurgeons may find it increasingly difficult to meet their moral and ethical responsibilities to patients, trainees and colleagues, and society. In these circumstances, reaffirming the fundamental and universal principles and values of neurosurgical professionalism, which remain the ideals to be pursued by all neurosurgeons, becomes all the more important.

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1. Introduction

The subject of professionalism is often referred to in the medical literature, but the word itself is rarely defined—and it is assumed that physicians understand what it means to be professional and use this understanding as they make decisions in their private and professional lives [1].

1.1. Evolution of neurosurgery

The practice of surgical manipulation of the nervous system and its coverings has been evident for more than 12,000 years, and the settings in which these practices have been conducted have reflected the state of the art, science, and, indeed, purpose of these endeavors. Although neurosurgery may be one of the younger surgical specialties, having Sir Victor Horsley among its most celebrated fathers, it may also be one of the most rapidly changing. There are several reasons that drive this evolution, including technological advances, socio-economic factors and expectations of patients [2]. There have been major changes in the practice of neurosurgery in the last decade [3]. Subsequent advances in microsurgical techniques, non-invasive neuroimaging, neuroanaesthesia, intensive care, image-guided surgery, and the introduction of sophisticated radiosurgical, neuro-oncological and interventional radiologic treatments have changed and widened the scope of neurosurgical practice. The most striking changes are in three subgroups—stereotactic and functional neurosurgery, vas-

cular and spinal surgery. Each have undergone major advances over the past decade. Stereotactic and functional neurosurgery has evolved with scientific applications and technological advances, with more universal acceptance and with incremental use. Development and implementation of stereotactic radiosurgery has resulted in a reduction in the total number of brain and spine lesions. Advances in functional neurosurgery have led to greater indications and procedures performed, particularly with implantation of neurostimulators. This is fuelled by: (i) improved imaging; (ii) advances in scientific knowledge and progression of technology enabling enhanced placement of deep brain electrodes and implantable pulse generators; and (iii) safety and public acceptability factors which favor a nondestructive, reversible technique (such as neuromodulation) to lesioning.

Neurosurgery is a rapidly evolving speciality. The progress, previously long and laborious in emergence, is currently undergoing rapid evolution. There have been great changes in the previous decades and it is likely that the rate of change will increase further, given that the speed of technological advancement and modernization of surgical training is increasing rapidly [4]. While scientific knowledge and technical skills are crucial in all areas of medicine, they are particularly critical in neurosurgery, and the manner in which they are applied is equally important. It has also become common place to argue that increasing resources will not necessarily produce any good if not spent effectively. Thus, when more money is promised for health care, it is done under the condition that it can be proven that the money will be and has been spent on effective interventions. This trend has created an unprecedented need for the neurosurgical profession to explicitly justify its actions in both medical and economic terms. It is clear that neurosurgeons have felt discomfort as the neurosurgical health care system is

* Corresponding author. Tel.: +90 535 3906975.

E-mail address: ayhankanat@yahoo.com (A. Kanat).

driven by the corporate model. It is clear that many neurosurgeons are challenged and unhappy with the current situation.

Despite its singular importance, little attention has been given to neurosurgical professionalism in the scientific and medical literature. Utilization of services presents a potential conflict of interest because the patient must rely on a neurosurgeon's professionalism in order to recommend only the quantity and quality of care and procedures that are deemed medically necessary and appropriate. Inappropriate treatments, overcharging, and incrementing patient contacts (for example, by repeated office and hospital visits) when it is no longer necessary for the management of the patient's symptoms or disorders result in a conflict of interest which is not within the practice of neurosurgical professionalism. The extreme example of this situation is that of prolonging life with inappropriate labor and cost-intensive therapy despite a patient's or family's wishes and despite better clinical judgment. Achieving the optimum level of neurosurgical care requires ongoing and rigorous self-assessment as to the motivation and likely outcomes of projected procedures and treatments. This issue is a difficult one, encompassing and balancing such factors as the availability of technology, the fear of giving up too early, consideration of personal ethics, the wishes of patients and their families, and the underlying tendency to practice what one knows how to do best (familiarity). Nevertheless, accountability to the patient demands that the neurosurgeon use neurosurgical knowledge, expertise and good judgment in order to place the patient's welfare, while respecting the patient's wishes above and beyond all other motives. Conversely, patients can be neglected by the underutilization of resources, knowledge and technology available for appropriate diagnosis and treatment. This compromise of optimal patient care can arise out of the conflict of interest created when neurosurgeons' bonuses and salaries are linked directly to reducing patient care expenditures by limiting access to subspecialty consultation and expensive treatment options. In other salaried situations, disincentives to optimal care can occur through conflicting demands on the neurosurgeon's time and attention and the "disincentive to work." In general, the inability of a patient to pay should never affect decisions as to the provision of care or as to what level of care should be provided.

1.2. The challenges of neurosurgical professionalism

In *The Nichomachean Ethics*, Aristotle presented a catalogue of virtues. The Medical Professionalism Project and its principal product, the Charter on Medical Professionalism [5], and one recent and authoritative essay on medical professionalism [6] testify the sustained influence from Aristotle up through today. As authors of this paper, we have used the opposite method, supplying a "catalogue of vices"; 1: abuse of power; 2: arrogance; 3: greed; 4: misrepresentation; 5: the impaired neurosurgeon; 6: lack of conscientiousness; 7: conflicts of interest; 8: acceptance of gifts. These are some of the issues that challenge or diminish the fundamental elements of neurosurgical professionalism.

1.2.1. Abuse of power

The abuse of power may be enacted by one person or by a group of individuals who insidiously set a deviant norm of behavior and an unhealthy code of conduct. The neurosurgical profession has a responsibility to ensure an environment in which all colleagues enjoy respect for their contributions and where they can advance to their full potential, irrespective of disability, ethnicity, gender, race, or religion. The neurosurgical profession has enjoyed a high level of respect. It is clear that this respect offers tremendous power to neurosurgeons. When used appropriately; this power can accomplish enormous good and can establish a norm for behavior that is in society's best interest. The respect and trust placed in neurosur-

geons by their patients and professional colleagues are something to be cherished and promoted and not abused. When abused, this power can establish a norm for deviant behavior. These abuses can be insidious. Abuse of power can take many forms: not allowing patients to contribute to decision making in their own care; allowing:

- 1a: financial and academic competitiveness to affect judgment, including the honest evaluation of peers and trainees;
- 1b: using the work of junior colleagues to enhance one's own academic career;
- 1c: deliberately retarding the academic development of junior colleagues;
- 1d: the unwarranted undermining of junior colleagues;
- 1e: medical student abuse,
- 1f: and abusive behavior towards colleagues.

1.2.2. Arrogance

Arrogance leads to abuse of power, among other things. Feeling superior lowers the threshold for power abuse and is an obstacle to inquisitive reflection over one's own attitudes and demeanors (the beneficial role of self-doubt). Arrogance violates at least three fundamental elements of professionalism: empathy, attitudes towards intra- and interprofessional collaboration and teamwork with nurses and other health professionals, and a physicians' pursuit of lifelong learning. Arrogance is defined as an offensive display of superiority and self-importance. Arrogance denotes haughtiness, vanity, insolence and disdain. All of these qualities run counter to the demeanor of the neurosurgical professional. The ultimate result is the pretension of the arrogant individual to one of superior importance or rights. Neurosurgery itself, and the process of neurosurgical training, can foster the development of arrogance in the neurosurgeon. The training is long, arguably inhumane and arduous with a seemingly endless mass of knowledge, which at times feels impossible to master. Neurosurgeons in training are thus prone to assume an air of self-importance, having survived such an initiation. Arrogance destroys professionalism by reducing the individual's ability to think for himself or herself, making empathy for others difficult and removing the checks and balances of self-doubt. Arrogance destroys neurosurgical professionalism in three ways; first, it reduces the neurosurgeon's ability to think for him or herself. Second, it makes empathy for the patient difficult. Third, arrogance destroys neurosurgical professionalism by removing the beneficial role of self-doubt and a need or desire to pursue ongoing knowledge and technical skills training.

1.2.3. Greed

Greed is related to perceived power: social, economy, cultural and/or symbolic. It can be defined as the inappropriate aspiration of fame, power or money. When money becomes a driving force, greed predominates and neurosurgical professionalism is eroded. If neurosurgeons are greedy, there is no room for understanding, compassion or other qualities necessary for the healing profession. When greed exists, altruism, caring, generosity and integrity are compromised significantly [7]. The treatment of greed requires its recognition. It is clear that neurosurgeons must continually ask themselves whether their actions are guided by the best interests of their patients or their own financial interests. Curing greed requires constant vigilance and a questioning of one's motives to ensure that one's actions are not based on personal financial gain.

1.2.4. Misrepresentation

Misrepresentation has many forms, it works insidiously and erodes integrity on the personal and the organizational level. So-called "creative coding" of patients' diagnosis is one example.

“Doctoring” of scientific data is another. In the context of unprofessional behavior, misrepresentation consists of lying and fraud [7]. Lying is consciously failing to tell the truth. Lying is not simply relating an untruth, otherwise any erroneous statement is lying. Lying requires a conscious effort. Lying about class assignments or experiments, or misrepresenting patient related data because of failure to complete an assignment or find the correct information, are serious breaches in professionalism, which raise the specter of overall dishonesty in the individual responsible. Fraud is a conscious misrepresentation of material fact with the intent to mislead. Lying may be a borderline matter, but generally is not in the best interest of the patient even when the lie is intended to help the patient. For example, conjuring up a diagnosis so that a patient’s hospital admission or length of stay can be justified is a lie which insidiously undermines the patient/physician relationship. While the intent may seem to be in the best interest of the patient, the act is not. Fraud occurs in both medical practice and research. Lying about which services are performed in order to obtain payments from insurance companies is an example of fraud. Misrepresentations of laboratory data or lying about experiments or studies at neurosurgical meetings that have been performed are other examples of fraud. It is clear that neurosurgical progress and improved patient care depend on innovative and vigorous research. The basic principle of research is honesty, which must be assured by institutional protocols. Fraud in research must be condemned and punished. Honesty and integrity must govern all stages of research, from the initial grant application to publication of the results. Neurosurgeons have a responsibility to gather data meticulously; to keep impeccable records of work done; to interpret results objectively, not force them into preconceived molds or models; to submit their work to peer review; and to report new knowledge. Reviewers of grant applications and journal articles must respect the confidentiality of new ideas and information; they must not use what they learn from the peer review process for their own purposes, and they should not misrepresent the ideas of others as their own [7].

Plagiarism is the use of others’ published and unpublished ideas or words without attribution or permission, and presenting them as new and original rather than derived from an existing source. The intent and effect of plagiarism is to mislead the reader as to the contributions or the plagiarizer. Plagiarism is serious scientific misconduct and unethical. Incorporating the words of others or one’s own published words, either verbatim or by paraphrasing without appropriate attribution may also have legal consequences [7].

Paternalism is the interference of an individual by another person, against their will, while denying their rights and responsibilities, and justified by a claim that the person interfered with will be better off or protected from harm. The issue of paternalism arises with respect to restrictions by the law such as anti-drug legislation, the compulsory wearing of seatbelts, and in medical contexts by the withholding of relevant information concerning a patient’s condition and/or prescribing diagnostic testing, treatment, procedures or application of restraints by physicians or other healthcare providers. At the theoretical level it raises questions of how persons should be treated when they are less than fully rational or deemed incompetent.

1.2.5. *The impaired neurosurgeon*

Impaired neurosurgeons lack the ability to discharge their professional neurosurgical obligations and must relinquish their responsibility in caring for patients. Professional colleagues must see to it that this standard is maintained. Impairment is, of course, not an all-or nothing phenomenon. Impairment may result from use of habit-forming agents (alcohol or other substances) or from psychiatric, physiologic, or behavioral disorders [7].

Impairment may also be caused by diseases that affect the cognitive or motor skills necessary to provide adequate care. Extreme

degrees of impairment may be easy to recognize, but marginal or slight impairments may not be readily detectable and honest disagreement may exist about whether or not it is even present. Impaired neurosurgeons frequently cannot recognize their limitations and may not be able to acknowledge the existence of their impairment although others can see it clearly. There is a clear ethical responsibility to report a neurosurgeon that seems to be impaired to an appropriate authority (such as a chief of service, chief of staff, institutional committee). Whenever there is doubt, one should seek assistance in caring for their patients. Neurosurgeons should aid their impaired colleagues in identifying appropriate resources for help, because every neurosurgeon is responsible for protecting patients from an impaired neurosurgeon and for assisting an impaired colleague. Fear of being wrong, embarrassment, or possible litigation should not deter or delay identification of an impaired colleague [8]. It is unethical for a neurosurgeon to disparage the professional neurosurgical competence, knowledge, qualifications, or services of another neurosurgeon or physician to a patient or a third party or to state or imply that a patient has been poorly managed or mistreated by a colleague without substantial evidence, especially when such behavior is used to recruit patients. Of equal importance, a neurosurgeon is ethically obligated to report fraud, professional misconduct, incompetence, or abandonment of patients by another neurosurgeon.

1.2.6. *Lack of conscientiousness*

A lack of conscientiousness conflicts with a neurosurgeon’s professionalism and commitment to pursuing excellence. Neurosurgery is admittedly an elitist activity, meaning that being conscientious is a 24/7 obligation, and so is lifelong learning in the steady pursuit of excellence. As it is apparent, the “Lack of conscientiousness” also has strong ties to “Arrogance”. This is a failure to fulfill responsibilities, and is incompatible with the essence of neurosurgical professionalism. The physician who is too busy, whose research is too important to commit the time and effort required for teaching responsibilities, who comes late to rounds, who misses preceptors’ meetings with students, and who shifts care of patients to trainees not yet prepared for unsupervised responsibility also exemplifies a lack of conscientiousness, a loss of neurosurgical professionalism and deviation from expected standards. Quality of care provided is contingent upon a conscientious neurosurgeon.

1.2.7. *Conflicts of interest*

More blatant conflicts of interest include various forms of professional self-referral and financial relationships or incentives derived from research project sponsorship by manufacturers of instruments, implants, devices, and drugs. It is of interest that anthropological studies have shown that rituals of presenting and receiving gifts are deeply embedded in most cultures. There is an accumulating body of studies indicating that when physicians accept even a “token gift”, their attitude towards the products or services of the gift presenter become influenced in a positive direction. Reports on studies wholly or partially paid for by commercial companies with an interest in a favorable outcome may have a similar influence.

Inherent conflicts between neurosurgical professionalism and the remunerative and non-remunerative incentives used by neurosurgical health care organizations in quality management may undermine the effectiveness of quality improvement initiatives. There is a rising demand for quality improvement and quality control in neurosurgical health care. Understanding the role and limitations of technology and its integration in care may contribute to appropriate selection and utilization of technology, better decision making, prioritizing its acquisition, and clinical cost assessment and efficiency. The costs of neurosurgical health care

have been escalating for decades. There are a growing number of issues concerning conflicts of interest because the practice of neurosurgery inherently presents potential conflicts of interest. Potential influences on clinical judgment cover a wide range and include financial incentives inherent in the practice environment (such as incentives to over utilize in the fee-for-service setting or underutilize in the managed care setting) [9] drug industry gifts, and business arrangements involving referrals. Neurosurgeons must be conscious of all potential influences and their actions should be guided by appropriate utilization, while considering optimal patient care and not by other factors. A fee paid to one physician by another for the referral of a patient, historically known as fee-splitting, is unethical. It is also unethical for a neurosurgeon to receive a commission or a kickback from anyone, including a company that manufactures or sells medical instruments or medications that are used in the care of the neurosurgeon's patients. Recognition and avoidance of conflicts of interest represent a core component of neurosurgical professionalism. The neurosurgeon must avoid situations in which the interests of the neurosurgeon are placed above that of the patient. The following examples of conflicts of interest can occur and must be avoided in neurosurgical practice: self-referral by ordering unnecessary laboratory tests and diagnostic procedures such as neuroimaging studies or additional treatments for patients from businesses in which the neurosurgeon has a financial interest should be avoided. Many neurosurgeons who have such financial interests contend that their participation improves access or quality of care. Unfortunately, it is not always the case and self-referral to neurosurgeon-owned enterprises promotes excessive use of diagnostic tests and treatments for financial gain. This damages the professional reputation of the neurosurgeon. A well trained neurosurgeon that performs an adequate history and physical will often be able to selectively order the appropriate diagnostic studies. For example, a cranial MRI is not always the first study of choice for a headache. The neurosurgeon should exercise good judgment based on his experience, his knowledge base and skill set to assess each individual patient and ensure that all reasonable alternatives are considered for diagnosis and treatment. It is the neurosurgeon's professional responsibility to ensure that the most appropriate care is provided to each patient. Patients may not understand or may fear conflicts of interests by physicians and the multiple commitments that can arise from cost-containment under managed care. Neurosurgeons should avoid unnecessary diagnostic testing, medications, surgery, and consultations.

Clinical investigation is fraught with opportunities for conflicts to arise. Fraud in research must be condemned and punished [7]. Neurosurgeons should avoid situations in which they are rewarded for particular outcomes. Reviewers of grant applications and journal articles must respect the confidentiality of new ideas and information; they must not use what they learn from the review process for their own purposes, and they should not misrepresent the ideas of others as their own [7]. Neurosurgeons have a responsibility to gather data meticulously; to keep impeccable records of work done; to interpret results objectively, to not force outcomes into preconceived molds or models, to submit their work ethically to peer review, and to report new knowledge. Adverse outcomes and complications should be accurately reported as well. Self-aggrandizement, public acclaim, recognition by professional peers, or financial gain should never be primary motivations in scientific research. Authors of research reports must be sufficiently acquainted with the work being reported that they can take public responsibility for the integrity of the study and the validity of the findings, and they must have substantially contributed to the research itself [7]. The following are examples of conflicts of interest that can occur in the academic neurosurgical environment, particularly including unethical collaboration with industry, which

has raised a number of concerns. Potential conflicts of interest are broad-ranging and affect the conduct of research, peer review of research, and the dissemination of the results of research. This issue is a particularly important one for investigators in biomedical research because of the loss of public trust and confidence when economic self-interest appears to replace scientific integrity. There are many ways in which potential issues of conflicts of interest can appear to compromise the integrity of an investigator. Bias in research can be introduced when the investigator or his or her immediate family has a financial interest in the sponsoring company or the product being investigated. The financial interest can take the form of a direct equity relationship, or acceptance of gifts and favors, or consulting positions from the company. When results of research are being reported or reviews of other investigators' work are being undertaken, potential conflicts of interest must be fully disclosed. Although intellectual biases and rivalries are often readily apparent to scientists in peer review settings, information regarding potential financial conflicts of interest cannot be identified without full and specific disclosure. Neurosurgeons with ties to a particular company should disclose their interests when speaking or writing about a company product.

1.2.8. *Acceptance of gifts*

Is it ethical to be sponsored for a national or international neurosurgical meeting by a corporate entity? Whether or not neurosurgeons should accept gifts from manufacturers of drugs and devices that are being prescribed by the neurosurgeon is also an important issue. Although the neurosurgeon may profess that the gifts are of minor value and play no role in influencing his or her prescription practices, the potential for undue influence is clear. As a result of the outcome of previously mentioned studies, many corporate entities now voluntarily adopt AdvaMed policies. "AdvaMed advocates for a legal, regulatory and economic environment that advances global health care by assuring worldwide patient access to the benefits of medical technology. We promote policies that foster the highest ethical standards, rapid product approvals, appropriate reimbursement, and access to international markets" [10].

The acceptance of individual gifts, hospitality, trips, and subsidies of all types from the health care industry by an individual neurosurgeon is strongly discouraged. It is also unethical for a neurosurgeon to receive a commission or a kickback from anyone, including a company that manufactures or sells medical instruments or medications that are used in the care of the neurosurgeon's patients. Neurosurgeons with ties to a particular company are obligated to disclose their interests when speaking or writing about a company product.

2. Conclusion

While knowledge and technical skills are crucial in medicine, science, and also in neurosurgery, the manner in which they are used is equally important, because neurosurgery is an occupation, and an occupation whose core element is work, based on the mastery of a complex body of neurosurgical knowledge and skills. It is a vocation in which the knowledge of neurosurgery, the ongoing acquisition of technical skills, and the practice of an incomparable art is founded and is used in the service of others [11]. Neurosurgical professionalism may be considered a specific subset of medical professionalism.

The neurosurgeon has the professional responsibility to improve the ongoing quality of compassionate neurosurgical care. However, that responsibility should be evolving in light of developments in both neurosurgical scientific knowledge and technology and its relationship to provision of care including neurosurgical professionalism. Acquisition of neurosurgical knowledge is simply not enough. Optimal neurosurgical practice also requires good

judgment, compassion, empathy, experience and respect for the art of neurosurgery.

We have, like many other colleagues concerned ourselves with not only the erosion of the professions from the outside [12,13], but with the erosion of professionalism from within. By focusing on vices rather than on virtues, we are reminded, somewhat harshly, that professionalism implies protecting not just vulnerable individuals, that is each patient, but also vulnerable social values. These values need to be grounded in every neurosurgeon, because to act with professionalism, is a *sine qua non* (besides technical competence) for success and is the basis for an ethical framework of professionalism. This framework includes altruism, compassion, integrity, and defines our values and rules of behavior. We thereby are able to act accordingly as an individual and as a societal body. For professionalism, the warning light has been on for some time, and we must continue and enhance our efforts to place the role of the physician–patient relationship first while we refine and fulfill our obligations to society. This is critical because of the importance of the role of the individual physician as healer in both society's view of medicine and medicine's view of itself [14]. Getting there may not be as easy as it sounds but it is rewarding; and as they say, "the road is long and in the end the journey is the destination" [15]. In an effort to forge the path and to lead the revolution, this is a call to action.

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References

- [1] Cruess SR, Cruess RL. Professionalism must be taught. *BMJ* 1997;315:1674–7.
- [2] Stone JL, Vilensky J, McCauley TS. Neurosurgery 100 years ago: the Queen Square letters of Foster Kennedy. *Neurosurgery* 2005;57:797–808.
- [3] Ratcheson RA. Fast forwarding: the evolution of neurosurgery. The 2005 Presidential Address. *J Neurosurg* 2005;103:585–90.
- [4] Tarnaris A, Arvin B, Ashkan BK. Evolution in practice: how has British neurosurgery changed in the last 10 years? *Ann R Coll Surg Engl* 2008;90(September (6)):508–12.
- [5] Project of the ABIM Foundation, ACP-ASIM Foundation, and European Federation of Internal Medicine. Medical professionalism in the new millennium: a physician charter. *Ann Intern Med* 2002;136:243–6.
- [6] Arnold L, Stern T. What is medical professionalism? In: Stern T, editor. *Measuring medical professionalism*. Oxford: Oxford University press; 2006. p. 15–38.
- [7] Kitchens LW, Brennan TA, Carroll RJ, Claget CL, Dunn Lee J, Other members of the Ethics and Human Rights Committee of American College of Physicians. *Ethics manual*, vol. 128, no. 7, 4th ed; 1998. p. 576–94.
- [8] Weiner J, Snyder L. The impaired colleague. In: Snyder L, editor. *Ethical choices: case studies in medical practice*. Philadelphia: American Coll Physicians; 1996. p. 79–84.
- [9] Snyder L, Hillman AL. Financial incentives and physician decision making. In: Snyder L, editor. *Ethical choices: case studies for medical practice*. Philadelphia: American Coll Physicians; 1996. p. 105–12.
- [10] Member Portal. Advanced Medical Technology Association. Advamed, n.d. Web [02.04.10] <<http://www.advamed.org/MemberPortal/>>.
- [11] Kanat A, Yazar U, Kazdal H, Yilmaz A, Musluman M. Neurosurgery is a profession. *Neurol Neurochir Pol* 2009;43(3):286–8.
- [12] Antunes JL. Professionalism endangered. *Acta Neurochir* 2003;145(3–4).
- [13] Rabkin MT. A paradigm shift in academic medicine? *Acad Med* 1998;73:127–31.
- [14] Cruess RL, Cruess SR, Johnston SE. Renewing professionalism: an opportunity for medicine. *Acad Med* 1999;74:878–84.
- [15] Memorable quotes for "One Tree Hill" Just Watch the Fireworks; 2006. Web [02.04.10] <<http://www.imdb.com/title/tt0762898/quotes?qt0355762>>.