Quackery and Fraud: Understanding the Ethical Issues and Responding

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Abstract
A small number of dentists abuse their patients and the public trust in the profession by practicing quackery or fraudulent or questionable dentistry. Such practitioners can be classified as incompetent, as treating their patients as a means to personal fulfillment, as operating beyond their legal qualifications, or as being quacks, charlatans, or frauds. Ethical practice requires all five of these characteristics: informed consent, high benefit to risk ratio, competence, professional integrity, and reasoned scientific basis for care. Quacks and frauds place their own interests and judgment above those of their patients and the profession. Ethical dentists have obligations to act to protect their patients and the profession in their relationships with patients and with colleagues, as a profession in dealing with the public, and as a research community.

The American College of Dentists encourages ethical dental practice and actively opposes quackery, charlatanism, fraud, incompetence, and any other form of oral health care that places patients at risk and threatens the integrity of the profession. The College also supports the advancement of the profession, especially continuous growth in the capacity of individual practitioners to provide effective, predictable outcomes deemed desirable by patients and the public.

In the minutes of the founding meeting of the College in 1920, John V. Conzett, President of the National Dental Association (forerunner of the ADA) observed “Fellowship (in the College) would be a stimulus to men who have graduated to do research work and bring things out for the advancement of the profession and the betterment of humanity.” In the objectives of the College, published quarterly in the journal, the following phrases may be found: “In order to promote the highest ideals in health care, advance the standards and efficiency of dentistry, develop good human relations and understanding, and extend the benefits of dental health to the greatest numbers... Encourage qualified persons to consider a career in dentistry... Encourage graduate studies and continuing education... Encourage, stimulate, and promote research... Improve the public understanding and appreciation of oral health... Encourage the free exchange of ideas and experiences... Cooperate with other groups for the advancement of interprofessional relations in the interest of the public... To make visible to professional persons the extent of their responsibilities to the community as well as to the field of health service and to urge the acceptance of them.”

The vast majority of oral health care is of high quality, appropriately personalized to individual patients, of excellent value, free of unnecessary risk, and responsive to patients’ long-term oral and general health and values. Individual practitioners work, through the American Dental Association, education institutions, the licensure community, politicians, industry, and public institutions to extend the benefits of oral health to all Americans. The result has been a dramatic improvement in oral health and related personal benefits that is dramatic in terms of public health gains, cost-benefit outcomes, and respect.

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Under this umbrella of improved oral health and public trust, there have been pockets of abuse. Some individuals have used the name of dentistry to advance their personal interests by placing patients at unacceptable risk. These practices range from billing for procedures that are not performed, and gross, habitual unnecessary treatment, to use of procedures that have no merit, practicing medicine on a dental license, and incompetence due to failure to keep up with advances in the profession. Less obvious ethical violations include giving selective informed consent, overtreatment, and viewing the patient as a means for advancing the dentist’s income or reputation. All of these abuses have the characteristics of harming patients and damaging the profession generally. They violate the basic ethical standards of informed consent, placing the patients’ interests first, being competent, respecting the integrity of the profession, and practice based on reasonable standards of evidence. These abuses take many forms, which can be named individually, but they will be labeled collectively in this report as quackery and fraud.

Understanding Quackery and Fraud

The table below provides an overview of the problem of quackery and fraud. Dental practice is described in three broad categories: ethical practice, questionable practice, and quackery and fraud. This is a schematic representation of the issue. It might not be possible to unambiguously place practices in the three categories. Practices may be mixed, with aspects that are questionable in an otherwise exemplary ethical office. Some outrageously fraudulent or misleading activities could be combined with ethical characteristics in order to create the appearance of legitimacy. The category of questionable practice is especially difficult to define because the standards at issue are often matters of interpretation and matters of degree.

Crosseed with the three categories of ethical, questionable, and quackery or fraudulent practice are dimensions that help characterize these types. First, quackery and fraud and questionable practice are distinguished from ethical practice based on their consequences to patients, the profession, and society. As practices deviate from the ethical norm, patients, the integrity of the profession, and social values are put at unacceptable risk. In quackery and fraud, actual damage occurs.

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The characteristics section of the table is meant to define the most prominent features of practices that fall into the categories of ethical and questionable practice, and quackery and fraud. There are also examples of these types.

Types of Unethical Practice

The following typology is offered to provide better understanding of the range of unethical practice characteristics. While labels are commonly used to describe the practitioner as “incompetent” or a “fraud,” for example, it should be borne in mind that it is the behavior that is incompetent or fraudulent. Thus mixed types, and marginal or ambiguous examples of undesirable practice, are possible. These types are not mutually exclusive—a particular act or pattern might represent several of these categories simultaneously. (When the terms quackery and fraud are used, it is understood that any of these types of unethical behavior are being considered.)

1. Incompetence: There are a very few dentists who are unable to provide care for their patients at an acceptable level of risk. Typically, they are unaware that they are not practicing at a competent level. The full concept of competency includes both the capacity to identify what care is needed and the professional values of ensuring that this level of care is provided. There are three types of incompetence. Sometimes a dentist will attempt to perform procedures that are inappropriate for the patient or which the dentist is incapable of completing at predictably satisfactory levels of quality. The second type of incompetence is failure to recognize that a particular type of care is required or of continuing to offer only familiar alternatives (of acceptable technical performance) when better choices are part of the standard of care. Finally, dentists may perform work at quality levels below the standard of care or offer treatment plans that contain unnecessary procedures or those whose value has been overstated. The first two types of incompetent practitioners distort the level of risk to which a patient is exposed; the third type exaggerates the benefit.

2. Patient as a means rather than an end: In most circumstances, the best interests of the patient, the dentist, the profession, and society are congruent. When discrepancies arise, the avowed ethical position of the profession is that the patients’ interests are primary. In a word, the patients’ oral health and well-being are the end of practice, and patients are not to be used as a means for dentists achieving personal goals. On occasion, practice patterns might sacrifice patients’ concerns for dentists’ income, for dentists’ reputations as performing procedures that earn prestige among colleagues, or to avoid “hassle” and challenges to the dentist’s authority (paternalism). Making the patient a means instead of an end is likely to lead to patterns of overtreatment or
undertreatment. It can also support unjustifiable experimentation with procedures that lack scientific foundation, or use of generally acceptable practices by practitioners who are not qualified by training or similar experiences to use them.

3. **Unqualified practice**: Practicing dentistry without a current and valid license is both unethical and illegal. Licensees may be discriminated for unethical and dangerous practice with regard to procedures requiring special certification that has not been obtained, as for example with conscious sedation, OSHA and other licensure renewal requirements in various states, or HIPPA compliance. Some dentists attempt to practice contrary to restrictions placed on their licenses. A major concern is practicing medicine or other health professions on a dental license.

4. **Quackery**: Quackery involves misleading patients about the needs for care, its benefits, and its risks and, in the process, exposing them to unnecessary risk. In such cases society and the professional community do not endorse the choice of treatment being offered, and presumably, fully informed patients would not authorize such treatment. Quacks believe in the value of these services they offer and reject either the contrary evidence provided by society, science, or the professional community or they reject the authority of these communities to influence their behavior.

5. **Charlatanism**: Charlatans expose patients to unnecessary risk and unsubstantiated benefits, and they reject scientific evidence or external authority just as quacks do. The difference is that charlatans are aware that they are taking advantage of patients. Both quacks and charlatans make unsubstantiated claims and perform tricks that depend on apparent changes in symptoms that have unknown or short-term relationships with underlying conditions. (The technical term for creating an illusion of treatment without materially improving the underlying condition is a fakir. In some communities, there are laws against fakiry.)

6. **Fraud**: Fraud is purposeful and knowing misrepresentation, withholding of information or material, selective reporting for personal gain. Fraud violates others' right to autonomy by attempting to get them to behave in ways they would not rationally choose to behave if they had accurate information. Examples of fraud include withholding or distorting information given to patients, misreporting work done (in order to get unwarranted insurance or other financial benefits or to comply with terms of a contract), and selective or distorted reporting of outcomes of treatment (in research or as justification for program support).

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**Categorizing Ethical Practice, Questionable Practice, and Quackery and Fraud**

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<thead>
<tr>
<th>Ethical Practice</th>
<th>Questionable Practice</th>
<th>Quackery and Fraud</th>
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<tbody>
<tr>
<td><strong>Consequences</strong></td>
<td>Placing the patient at risk for decreased overall oral health and well-being for the dentist’s benefit</td>
<td>Damaging the patient’s overall oral health and well-being, undermining the public’s trust in dentistry as a profession, or breaking applicable laws</td>
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<tr>
<td>Improving the patient’s overall oral health and well-being through means understood and approved by the patient, other dentists, and society</td>
<td>Performing procedures that the patient, other dentists, or society would not choose if well informed</td>
<td>Withholding or distorting relevant information about treatment options, probable outcomes, or history of previous outcomes from patients, colleagues, or society for personal gain</td>
</tr>
<tr>
<td><strong>Characteristics</strong></td>
<td>Performing procedures at marginal levels of quality or failing to provide necessary treatment</td>
<td>Knowingly performing procedures that do not meet the standard of care</td>
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<td>Quality, patient-centered treatment within standard of care</td>
<td>Failure to take reasonable steps to remain current in knowledge and skill and awareness of prevailing standards of care</td>
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<td>Innovative aspects of practice that meet the five standards of ethical practice</td>
<td>Over-treatment, undertreatment, poor quality care, lack of comprehensive care, failure to diagnose, misrepresentation of patient benefits, failure to refer when case exceeds skill</td>
<td>Practicing without a license, practicing medicine or other health profession on a dental license, billing for procedures not performed, gross and continuous substandard care, misrepresentation of one’s qualifications, distorting the scientific basis of dentistry</td>
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<tr>
<td>Experimental practice (research) that meets Institutional Review Board standards</td>
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Quackery and Fraud

Society has a right to expect that oral health care will evolve to provide continuously improved outcomes, including better function, improved esthetics, longer service life, reduced cost, greater accessibility, less invasive intervention, increasing numbers of choices, greater predictability, and prevention of unwanted future events. As dentistry continuously experiments with care that provides such enhanced benefits and as individual practitioners update their profiles of services, some level of risk is inescapable. It is expected that this risk will be managed for the benefit of patients and society.

Standards for Ethical Practice
It is possible to better understand the nature of quackery and fraud in dental practice by contrasting them with ethical practice on five critical dimensions. All five of the following standards must be met for practice to be regarded as ethical. Where one or two of the standards are imperfectly met, the practice is ethically questionable. Quackery and fraud are marked by clear and regular failure to meet any of these standards.

Understanding these dimensions helps prepare for those actions that should be taken by ethical practitioners in the face of quackery and fraud.

1. Informed consent: patients make free choices from among alternatives that are explained impartially in language they understand.

The patient must give permission for his or her oral health care. Because patients do not possess the technical knowledge required to make choices in their best interests, health care providers are required to educate them about available alternatives and their likely benefits, costs, and undesirable consequences.

When informed consent is technical, general, abbreviated, or slanted toward procedures preferred by dentists there is danger of questionably ethical practice. When it is absent or intentionally distorted to gain permission that a fully informed patient would not give, or when it suggests that the patient cooperate in an illegal act, the dentist is engaging in quackery or fraud.

2. Benefit and risk: net expected benefit to patients must outweigh anticipated risks.

Expected benefit and expected risk are determined by considering both the value (to the patient) of the outcomes and the likelihood of the outcomes. This is part of informed consent. Typically, dentistry involves benefits of appreciable value that can be anticipated with great confidence compared to risks that are extremely unlikely. Patients have difficulty making decisions about improbable events or outcomes that are momentous or poorly defined. In presenting prognoses and treatment alternatives involving life-threatening matters, care must be taken to promote patients’ accurate understanding of expected outcomes.

It is quackery to mislead patients regarding potential outcomes, especially by exaggerating the danger of certain events or their likelihood or by minimizing the importance or probability of available alternatives. It is questionable practice to reduce these patient calculations to policy for the convenience of the dentist or to attempt to make the patients’ calculations of expected benefits and risks match the dentists’.

3. Competence: practitioners have the knowledge and skill expected by patients and the public to be able to produce results that meet the standard of care and the expectations created by the dentists.

The standard of care is defined locally in terms of what a reasonable person might expect as the outcomes of treatment. Untoward outcomes may not represent a failure of standard of care if the practitioner exercised appropriate and reasonable procedures. There are four obligations associated with competency regarding the standard of care. The practitioner must know what the standard of care is, must be appropriately trained and equipped to practice to this level, and must refrain from practicing beyond his or her level while assuring, through appropriate consultation and referral, that the patient receives appropriate care. Because dentistry is a dynamic profession, the four obligations under the heading of competence include an obligation to engage in professional development to maintain currency.

This standard goes beyond merely meeting the standard of care. Patients and society have a right to expect that practitioners are competent to consistently meet the standard of care. If there are doubts on this score, the practice is ethically questionable. If the practice regularly fails to meet the standard of care (because of incompetence or disregard for the generally prevailing standard), this is quackery or fraud.

4. Professional integrity: practitioners maintain the trust patients and society have placed in the profession.

Patients and the public place trust in dentists based on their knowledge, skill, and concern for the good of the patient. This trust is part of the therapeutic alliance and contributes to access, conformance with professional suggestions, healing, nature and frequency of care seeking, and other results that are beneficial to the patient. This trust is also “a good” that is shared among all recognized as members of the profession.

Quacks and frauds take advantage of the public’s trust in the profession for their own personal gain. Even when individual patients mistakenly believe that they are receiving acceptable care from quacks or frauds, the public at large looses respect for the dental profession. To the extent that a practitioner holds himself or herself out as being
entitled to the benefits of the trust given the profession, they are liable for any damage caused by abuse of that trust.

Quacks and frauds represent themselves as dentists entitled to the trust the public places in all members of the profession while failing to justify that trust by their actions and damaging the reputations of dentistry.

**Quacks and frauds are mistaken in their belief that they know better than others what is in their patients’ best interest. They disregard the collective wisdom of society, science, and the profession, and in that they are wrong—regardless of their professed motives.**

5. **Reasonable scientific base:** practitioners should be able to give reasons for their actions that are acceptable to their peers.

It is not possible to find a rigorous research scientific rationale for everything dentists do. Nevertheless, dentists should not practice contrary to scientific evidence. There are also standards for reasonable grounding of practice in evidence. Procedures must be safe. This means that the side effects should be known, disclosed, and minimal relative to the anticipated benefits. Procedures should also be efficacious; they should predictably produce the benefits expected of them. Efficacy is normally established in one or more of three ways: results of rigorous research studies, reasonable similarity between new procedures (or new practitioners using established procedures) and those already proven effective, and those generally regarded as effective based on a history or extensive, general use. These are exactly the standards currently used by the Food and Drug Administration in its regulation of devices and therapies. Cosmetic claims and the use of naturally occurring elements used as supplements are not regulated for efficacy, but they are regulated for safety.

By definition, experimental research performed by schools, research centers, and industry to develop new technologies and procedures does not enjoy the same status as established practices with regard to evidence, known benefits, or standard of care. In recognition of this fact, institutional review boards (IRBs) are established, with lay and professional experts to ensure appropriate protections. This includes elaborate informed consent, assessment of research design and analysis, and balancing of risk and benefit.

Procedures that are not customary carry the added burden of needing to provide proof based on evidence collected and reported in ways that safeguard patients and ensure peer acceptance of publicly reported results. Quackery and fraud cannot be justified based on private evidence, and exposing patients to substantial risk without the protections afforded by IRB practices is by definition unethical. A common form of questionable practice is to use evidence-based technologies and procedures in situations or for uses other than those in which they have been shown to be safe and effective.

**Motives**

Risk always accompanies the discussion of motives, especially other’s motives. A single action can be undertaken for various motives. The treatment chosen for a particular patient might simultaneously provide the best overall long-term benefit to the patient and the greatest net profit to the dentist. A single motive might manifest itself in various forms. For example, an ethical dentist who wants patients to receive the best care in implants may take courses to develop skills in this area or may refer patients to those who specialize in this discipline.

A superficial criticism of quackery and fraud is that those who perpetrate them fail to place the patients’ interests first. Quacks in particular would challenge this criticism. “I am offering my patients hope where organized dentistry offers none,” they might say, or alternatively, “other dentists think they know what is best for my patients, but I am certain they are mistaken. My patients tell me so.”

The view developed in this paper is that profession of motives is no way to decide what is ethical dental care. The issue turns on knowledge rather than sincerity. Quacks and frauds are mistaken in their belief that they know better than others what is in their patients’ best interest. They disregard the collective wisdom of society, science, and the profession, and in that they are wrong—regardless of their professed motives.

An approach that avoids the pitfalls of judging others’ motives is the “act as if test.” In matters of conflict of interest the standard that applies is to act so that no appearance of a conflict is created. The same logic applies with regard to ethical dentistry. The test should be to practice in such a fashion that no appearance of quackery or fraud is created. Unethical dentists leave themselves open to the criticism that they are acting in such a fashion that reasonable people could draw the conclusion that they place their own income, reputation, or other personal gain above patients’ welfare. Where the quack or fraud deviates from the ethical path is in claiming to be the sole judge of their motives.

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Addressing Quackery and Fraud

Risk in oral health care must be acceptable to patients, society, and the dental profession. All three groups are affected by the outcomes of dental treatment, and that is sufficient grounds for their concern. Incompetent practitioners damage patients and the public trust in the profession far too frequently to be allowed to continue practicing. They are liable to civil and even criminal suits as well as sanctions against their licenses by licensing authorities. Quacks and charlatans are open to similar sanctions, although these are much less common. The reason can be found in the fact that certain classes of patients agree to the claims of quacks and charlatans. The fact of informed consent between patient and provider is not sufficient grounds for exposing patients to risk. In some cases, society has a public interest in private transactions. Helmet and seat belt laws, prohibitions against assisted suicide, and required inoculations and screenings are a few such examples.

Even when society at large remains silent on some details of dental practice (due typically to the technical complexity of such issues), the profession has a legitimate interest in distinguishing between those practices that involve acceptable risk (if approved by individual patients and dentists) from those that do not. This right flows from the fact that anyone holding himself or herself out as providing dental services automatically makes use of the collective trust the profession enjoys, including patients' understandable deference to dentists and the limit that places on patient autonomy. The right of professions to establish standards in the best interests of patients that supersede individual agreements between dentists and patients is recognized in law and is a fundamental responsibility of state dental boards. While patient autonomy and informed consent, professional competence, and scientific evidence are critical components in distinguishing between acceptable and unacceptable oral health care practice, the determination is ultimately an ethical one. The principle of discursive ethics that those who are affected by decisions should have a voice in the decisions means that the profession generally and society as a whole must also decide where the boundaries of acceptable practice lie.

Responsibilities of Individual Dentists to Patients

1. Ethical dentists should practice at an ever-advancing but acceptable level of risk and benefit to their patients. The care provided should meet the expectations of the individual dentist, his or her patients, society at large, and the dental profession. Practice must be avoided that does not meet standard of care and for which the dentist cannot give reasonable assurance of favorable outcomes based on evidence from science and the individual practice. Additionally, practice must be undertaken in a systematic fashion and records kept of outcomes and unusual circumstances. Patients cannot be exposed to increased risk for the financial and personal benefit of the dentist. If there is uncertainty whether the four criteria apply, the dentist's uncertainties should be discussed with colleagues and with patients in order to obtain their informed consent. If the practitioner would prefer not to disclose all he or she knows about the procedure, it should not be performed.

The language appropriate to this responsibility might be, "Now that I have explained this approach, is it acceptable to you?"

2. Ethical dentists should be familiar with popular unsubstantiated practices in order to discuss these intelligently with patients. In cases where patients inquire about approaches that the ethical dentist would not perform, the dentist should be in a position to understand the most
common benefits claimed for the procedures, those circumstances in which it has been attempted, the underlying mechanisms involved (or claimed), and the pattern of outcomes. The role of the dentist is to provide accurate information, not to determine the patient’s action.

The language appropriate to this responsibility might be, “It appears that you are looking for further information on which to base your choice. Would you like me to tell you what I know about this approach?”

3. Ethical dentists should provide positive available approaches, even when unfavorable prognoses are found. Quackery and charlatanism thrive in environments of despair. Often the last professional contact a patient experiences before consulting a quack or charlatan is an ethical dentist who told the patient that their situation was very unfavorable and that available treatments were unlikely to be effective. While such advice from ethical dentists is honest in the strictest sense, it fails to provide the supportive relationship expected of professional care. Dentists should be aware of ethical research protocols for high-risk conditions and of centers where such cases are treated. Referrals should be made to experts in high-risk care wherever they are believed to have a more realistic overall outcome than referral to quacks or charlatans.

The language appropriate to this responsibility might be, “Your case is special and I am not the most qualified person to help you. I know of several centers or professionals who specialize in cases such as yours and I would like to help you to consult one of the following…”

4. The relationship between dentists and their patients takes precedent over individual treatment choices. The ethical dentist, as the primary oral health care provider, has a responsibility to avoid damaging his or her opportunity to advise patients generally and to monitor the overall and long-term oral health of the patient. Even when a patient considers or selects alternatives that the practitioner does not approve of, the primary care provider relationship should be maintained to the maximum extent possible.

The language appropriate to this responsibility might be, “I believe you understand why I cannot support the type of treatment you are considering for this specific problem. My primary concern is for your overall oral health, and I hope you will trust me to continue to evaluate and advise you regarding your total dental health.”

2. Ethical dentist have a responsibility to discuss their concerns with practitioners they suspect as being incompetent, quacks, or charlatans. It is easy, but not morally principled to criticize or spread innuendo about another without first confronting him or her. Righteousness is not a substitute for ethical action. The intent of the communication with a colleague expected of exposing patients to unacceptable risk is not

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Responsibilities of Individual Dentists to Other Dentists

1. Ethical dentists have a responsibility to understand the approaches and capabilities of practitioners whom their patients are likely to see. The same diligence that a general practitioner would exercise with regard to specialists in the community should be extended to practitioners whose approach is questionable. It is difficult to accurately advise patients without understanding what others are doing. This may be difficult because unconventional practitioners are reluctant to share information or where ethical practitioners are perceived as being judgmental. It may be necessary to learn about alternative practices indirectly, through patients, literature, or other sources. It is important to refrain from judging what is not understood. Although it is always appropriate to report, when appropriate, that information is not available.

The language appropriate to this responsibility might be, “I do not want to say anything disparaging about your approach because I lack all the relevant information. I feel I have an obligation to my patients to provide accurate counsel and I would like to understand your views.”

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Responsibilities of the Profession

1. The profession has a responsibility to take action against the licenses of practitioners whose habitual mode of practice damages patients. State dental boards are legally bound to do this, in cooperation with other agencies and organizations. The actions of boards should be as transparent and as widely publicized as is consistent with legal rights of practitioners. Boards are involved with matters of fraud, illegal practice, substance and patient abuse, and other failings in addition to incompetence, quackery, and charlatanism. The focus of boards should be prioritized based on those classes of individuals who cause the greatest damage to the public.

2. The profession has a responsibility to protect patients from unacceptable risk by encouraging understanding of risk, risk factors, and questionable practices patterns. Standards of care defined by the legal profession, guidelines developed by professional groups, protocols, and evidence-based rules have a place in promoting an understanding of acceptable care. But even taken together, they fall short of a standard that is sufficiently unambiguous, reflective of the particular nature of individual practices, and responsive to emerging trends. What is required is a system that encourages the collective evolution of the profession while encouraging both recognition of what is appropriate inadequate performance prior to excluding the practitioner from the community. Effective portfolio systems have time schedules, protocols, and due process.

3. The profession should share within dentistry information that protects patients from unacceptable risk. A strong collective awareness of which practices are effective depends on a rich exchange of experiences. Journals, meetings, web sites, conferences, etc. should be expanded in number and variety of format. It is necessary that standards for inclusion as evidence be established and that they be listed in the various media. It is also important that information sharing have as its primary goal the strengthening of the profession, and that the commercial interests of the sponsoring organization or the personal interests of presenters be subordinated at all times to information sharing.

4. The profession has a responsibility to inform the public of the benefits of good oral care, properly provided. The intent should be to create realistic expectations of what is possible and what the standards are for choosing alternative therapies. The profession should discourage unrealistic claims that dentists make to each other, that dentists make to patients, and that the profession makes to the public. In particular, it is undesirable to exaggerate the benefits of unproven approaches.

5. The profession has a responsibility to inform policy makers regarding oral health care. Relationships should be established and maintained with legislators, their staffs, and individuals responsible for executing policy based on a common interest in promoting the oral health of the public. Care should be taken not to confuse advancing the interests of the profession with advancing the interests of the public. This can best be achieved by providing policy makers with information and with assistance in interpreting scientific information
that may not be readily understood by lay individuals.

**Responsibilities of the Oral Health Care Research Community**

1. Research should be conducted in a manner that exposes subjects to an acceptable level of risk. Research conducted by organizations that receive federal funding is subject to prior evaluation and approval by institutional review boards. Such groups, composed of experts in science, research design, and community interests and trained in common ethical and scientific standards must approve the conduct of all research conducted in these organizations, whether federally funded or not. Informed consent is emphasized as is the adequacy of experimental design (an experiment that is poorly designed by definition exposes both subjects and the professional community to unacceptable risk). The use of institutional review boards should become universal practice, regardless of funding sources. At a minimum, peer review prior to research should be combined with peer review following research as essential credentials to evidence on which practice is based.

2. Research should be reported in ways that emphasize demonstrated scientific conclusions. Standards for reporting of research findings should be established that address both the internal and the external validity of conclusions. The research and journalistic communities have made significant progress in using sound research designs and statistical analysis (internal validity). Standards have not been advanced as rapidly in providing data on generalizability or limitations on generalizability to contexts that resemble but are not the same as research environments. The value of science remains compromised when it is applied selectively, misapplied, or overapplied because the research was not designed to apply to general circumstances, the circumstances were not fully described, or practitioners have not been taught to understand the limitations on drawing conclusions from science.

3. Dental journalism should avoid using the style and channels of communicating research to promote commercial interests. It is inherently unethical to mislead dentists and the public into believing that a level of scientific certainty has been achieved based primarily on the manner in which the results are presented.

4. Practitioners should be taught to combine scientific evidence with systematic outcomes data from their own practices in order to form accurate estimates of the levels of risk their patients are exposed to in individual practices. While it is true that practices differ from each other in patient profiles and expectations, dentists' skills, and other unique factors, these factors should not be regarded as being outside the realm of systematic professional observation and rational use. Dentists should be permitted flexibility in their practices, but this cannot absolve the responsibility to rationally defend, using evidence acceptable to their peers, their actions based on practice outcome data. Failure in this regard creates suspicion of incompetence, quackery, charlatanism, or worse.

**Reading**

American College of Dentists. *Ethics Handbook for Dentists.* (See especially sections on competence, professionalism, and management of ethical issues.)

American Dental Association. *Principles of Ethics and Code of Professional Conduct.* (All Fellows of the American College of Dentists subscribe to the ADA code.)


www.quackwatch.com