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The Development of a Taxonomy of Wrongdoing in Medical Practice and Research

James M. DuBois, PhD, DSc, Elena Yates, BS, and Meghan Vasher, JD, LL.M

Bander Center for Medical Business Ethics (DuBois, Yates), the Albert Gnaegi Center for Health Care Ethics (Vasher), St. Louis University, Saint Louis, Missouri

Abstract

“Ethical disasters” or egregious violations of professional ethics in medicine often receive substantial amounts of publicity, leading to mistrust of the medical system. Efforts to understand wrongdoing in medical practice and research are hampered by the absence of a clear taxonomy. This article describes the authors’ process of developing a taxonomy based on: (1) reviews of academic literature, ethics codes, government regulations, and cases of wrongdoing; (2) consultation with experts in health law and healthcare ethics; and (3) application of the taxonomy to published cases of wrongdoing in medical research and practice. The resulting taxonomy includes 14 categories of wrongdoing in medical practice, and 15 categories of wrongdoing in medical research. This taxonomy may be useful to oversight bodies, researchers who seek to understand and reduce the prevalence of wrongdoing in medicine, and librarians who index literature on wrongdoing.

Introduction

“Ethical disasters” or egregious violations of professional ethics in medicine often receive substantial amounts of publicity, which feeds mistrust of the medical system, which in turn discourages access to health care and participation in medical research.^{1–3} Well-known examples of ethical disasters in medical research include the Tuskegee syphilis study,⁴ the death of Jesse Gelsinger in a nontherapeutic genetic experiment,⁵ and U.S. government radiation experiments on patients.⁶ Highly publicized examples of alleged misbehavior in clinical practice include the performance of unnecessary cardiac surgeries to generate profits⁷ and trading prescription opiates for sex.⁸

In recent years, professional associations such as the American Association of Medical Colleges (AAMC),^{9–11} Senators such as Chuck Grassley of Iowa,¹² and journalists^{13–16} have taken an interest in conflicts of interest, including kickbacks, industry funding of research, and physician-owned diagnostic facilities. Drawing on social science data,¹⁷ AAMC has argued that such conflicts may compromise the care of patients and the integrity of medicine.^{9–11} In principle, they could contribute to misbehaviors such as conducting risky research with inadequate informed consent or performing unnecessary procedures.

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Address correspondence to: James M. DuBois, PhD, DSc, Hubert Mäder Chair of Health Care Ethics, Albert Gnaegi Center for Health Care Ethics, Saint Louis University, 3545 Lafayette Ave, St. Louis MO 63104-1314. duboisjm@slu.edu.

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While receiving markedly less attention, other factors have also been hypothetically linked to professional wrongdoing, such as being in a position of authority,^{18,19} oversight failures,^{20,21} and serving especially vulnerable populations.^{22,23} However, as with conflicts of interest, there are few data that demonstrate actual connections between these environmental factors and wrongdoing in medicine. In the absence of reliable data on the factors that cause or facilitate wrongdoing in medicine, it is difficult to craft appropriate prevention plans. One would risk developing plans that are overly burdensome on researchers and providers while being ineffective.

Efforts to understand wrongdoing in medicine are thwarted by the lack of a standard and appropriate framework for indexing publications (e.g., using MeSH headings), reporting instances of wrongdoing, and sampling cases of wrongdoing for inclusion in research projects. Appropriate MeSH headings, particularly within MEDLINE's hierarchic structure, are non-existent. The Federation of State Medical Boards (FSMB) labels wrongdoing as "not applicable" in 66% of cases and as "unprofessional conduct" in 34% of cases; neither refers to specific misbehaviors. This compounds other problems in assessing the frequencies of wrongdoing in medicine: legal data on cases that settle out of court are confidential; wrongdoing is frequently under-reported;²⁴⁻²⁸ and when it is reported, wrongdoing is often counted only when individuals are actually disciplined.^{24,29,30}

The UPWARD program (Understanding and Preventing Wrongdoing in American Healthcare Research and Delivery) seeks to understand the complex variables that causally contribute to wrongdoing in order to identify appropriate prevention strategies involving education, policy, and oversight. The program is currently supported by two grants, a BF Charitable Foundation seed grant and a NIH (NCRR/ORI) R21 award. These two grants will enable the analysis of cases of wrongdoing in medicine and health research. Three hundred cases have been screened for inclusion in the project. However, developing a valid and reliable taxonomy of wrongdoing in medical practice and research has proven to be a necessary first step to guide literature reviews, sampling, and statistical analyses (e.g., comparing factors predictive of fraud versus improper prescribing).

For research, oversight, and library database indexing purposes, an adequate taxonomy would have the following properties. It would be:

1. Comprehensive, enabling the categorization of all forms of wrongdoing in both medical practice and research;
2. Focused on enforceable, noncontroversial norms of professional ethics that are valid nationwide; and
3. Sufficiently clear and concise (with nonredundant categories) to support adequate inter-rater reliability.

The authors' extensive review of the literature identified several lists of wrongdoing in medical practice or research; however, none possessed all of these properties.³⁰⁻³³ For example, the Federation of State Medical Boards (FSMB), which collects reports of actions against physicians by state licensing boards, provides a list that is unclear because "not applicable" is its most commonly used category (presumably indicating no state law applied); it is redundant because it draws from the laws of 50 states and these laws overlap substantially even as they differ in name and scope; and it ignores most violations of research ethics.

Accordingly, the authors decided to develop taxonomies of wrongdoing in medical practice and research that would meet the criteria listed above. This article describes the process used to develop the taxonomies, presents results, and explores possible uses for the taxonomies.

Literature Search Methods

Conducting a literature review in a new area of inquiry is uniquely challenging. Within the MEDLINE database, MeSH headings serve to index articles using a hierarchic tree structure, thus facilitating searches. However, in a young field that lacks a clear taxonomy of topics, some relevant MeSH headings may not exist and it may be difficult to identify which existing MeSH headings are most appropriate. At the same time, it would be difficult, if not foolish, to develop a taxonomy without first consulting published papers on the subject matter. The process of conducting a literature review and a content analysis is presented below in a linear fashion in sections 1 and 2; in fact, however, it was a dialectic process. A literature review was conducted using a wide variety of keywords with intuitive appeal, preliminary analyses were performed, the results of the analyses were used to return to the literature review, and then further analyses were done.

Literature reviews were conducted using MEDLINE. Two kinds of searches were conducted, the first aimed at identifying existing taxonomies or lists of wrongdoing in medicine, the second, aimed at identifying articles describing the specific kinds of wrongdoing that would be included in a taxonomy. The authors searched for existing taxonomies using two major sources of data: (1) reports by oversight boards, watchdog groups, and agencies; and (2) studies of wrongdoing. Using material from the resulting searches and the lists of wrongdoing contained in reports by oversight boards, numerous searches for specific misbehaviors were conducted.

Reports by Oversight Boards, Watchdog Groups, and Agencies

In the realm of medical practice, this involved examining reports from the FSMB,³⁴ Public Citizens Health Research Group,³⁵ and the National Practitioners Databank.^{36–38} In the realm of research ethics, this involved reviewing guidance, reports, and data from the Office of Human Research Protections (OHRP),^{39,40} the Office of Research Integrity (ORI),⁴¹ the Office of the Inspector General (OIG),⁴² and the Office of Laboratory and Animal Welfare (OLAW).

Studies of Wrongdoing

The authors searched for review articles and studies of the kinds and frequencies of wrongdoing in medical research and practice. The authors relied on MedLine for searches, initially using combinations of very general terms. In the area of research, the following general MeSH headings were used: “Punishment,” “employee discipline,” “professional misconduct,” “clinical ethics,” and “professional ethics”; and the following general keywords: “Misbehavior,” “professional misbehavior,” “ethics violations,” “medical misbehavior,” “physician misconduct,” “wrongdoing,” “unethical behavior,” and “discipline.” When results were too unfocused, search terms were then combined with terms such as “frequency” and/or “physician.” In the area of medical research, the following general MeSH headings were used: “Research integrity,” “research ethics,” “scientific misconduct,” and several general ethical terms such as “professional ethics” and “ethics” in combination with the terms “research,” “research subjects,” “human experimentation,” and “biomedical research,” and additionally the keyword “research misconduct.”

Taxonomic Content Analysis of Literature and Cases

Using results from these searches, a taxonomic content analysis was performed by the three authors using criteria the authors developed for an ideal taxonomy.^{43,44} The criteria stipulate that an ideal list will be:

1. Comprehensive, enabling the categorization of all forms of wrongdoing in both medical practice and research;
2. Focused on noncontroversial norms of professional ethics that are valid nationwide as evidenced by laws or codes of ethics and actual cases of enforcement or disciplinary actions; and
3. Sufficiently clear and concise (with nonredundant categories) to support adequate inter-rater reliability.

To ensure comprehensiveness and validate that medical professionals unambiguously viewed the listed behaviors as wrongdoing, the authors:

1. Re-reviewed previous lists and review articles to ensure all items within their lists could be subsumed within a category of the current taxonomy;
2. Examined medical ethics and research ethics codes, considering whether violations of codes were covered in the taxonomy;
3. Interviewed experts (two ethicists and three health lawyers) who reviewed the taxonomy; and
4. Ensured that all forms of wrongdoing identified in the 300 cases of wrongdoing in medicine screened by the UPWARD Project team thus far could be subsumed under a category in the taxonomy and conversely that all taxonomic categories were represented in at least one case.

Testing Inter-rater Reliability

To ensure that the taxonomy categories were sufficiently clear to enable reliable use, the authors developed a slide show presentation with 50 excerpts from the 300 cases of wrongdoing screened for inclusion in the UPWARD study. Each slide aimed to present one discrete form of wrongdoing with one to three slides representing each of the 29 forms of wrongdoing found in the taxonomy. The slideshow was presented to three members of the UPWARD research team who were not directly involved in the development of the taxonomy; they received training on the meaning of the terms, but were not involved in the literature reviews or content analysis process.

Raters were not told whether or how often each item appeared in the slides. The raters were given a score sheet and the taxonomy and were asked to identify the category of wrongdoing in the taxonomy that was represented in the slide. Their score sheets were then used to calculate (1) a percentage correct using the responses intended by the authors as the “right” answers, and (2) inter-rater reliability scores among the three raters.

Literature Search Results

As the purpose of the literature review was not to generate a systematic review article but rather to generate a taxonomy using the dialectic approach described above, only general findings regarding MeSH headings are presented here; illustrative results are presented in the next section to justify the resulting taxonomy.

There is no overarching MeSH heading such as “wrongdoing” used to capture the general domain of wrongdoing in medical practice and research. MeSH headings for related general keywords such as “ethics violations” or “physician misbehavior” do not exist; when used as keywords, the results are extremely poor (12 articles and one article returned respectively). From an intuitive perspective, “professional misconduct” seems the most appropriate current MeSH heading. However, its use is more prominent in the UK and Commonwealth of

Nations (eight of the first ten MedLine entries are from UK or Commonwealth journals). Further, the MeSH heading does not provide specific forms of physician wrongdoing (e.g., violations of informed consent or privacy) as subheadings that a researcher could select.

Taxonomic Content Analysis

Table 1 presents a summary of the resulting taxonomies of wrongdoing in medical practice and research with examples of specific misbehaviors that fall within a general category. The authors found that all of the fundamental forms of wrongdoing described in their data sources (codes of ethics, oversight board reports, review articles, and the 300 cases of wrongdoing in the UPWARD study) could be subsumed under one of the resulting taxonomic categories. Conversely, they found that all taxonomic categories were represented in at least one published case of wrongdoing screened for the UPWARD study. The comprehensiveness and validity of the categories were further confirmed through consultation with the external experts.

Wrongdoing in medical practice—The authors identified 14 fundamental kinds of wrongdoing in medical practice. Table 2 shows a comparison of the taxonomy to existing taxonomies or lists. It is difficult to determine the degree of overlap among the taxonomies given that many categories from competing taxonomies are ambiguous or represent subcategories within the current system. Appendix A (available online at www.ajpmonline.org) presents various sources of data (the AMA code of ethics, MEDLINE search-term headings, and illustrative articles) that provide evidence that the categories include only noncontroversial norms of professional ethics that are valid nationwide.

Wrongdoing in Medical Research—Fifteen fundamental kinds of wrongdoing in medical research were identified. Table 3 contrasts the taxonomy to lists employed in two survey studies that assess the frequency of various misbehaviors. The lists of wrongdoing addressed in the two surveys included 56% and 69% of the categories in the authors' taxonomy. Appendix B (available online at www.ajpmonline.org) presents sources of data supporting the validity of the taxonomy of wrongdoing in medical research.

Inter-Rater Reliability

Using the authors' intended categorizations as normative, the three independent raters had a 92.6% (139/150) correct rate with individual scores ranging from 88% to 96%. Raters categorized behaviors differently from the authors for several reasons: Some kinds of wrongdoing typically involve other kinds of wrongdoing (e.g., procedural violations often involve some other substantive violation and fraud often involves unnecessary procedures/substandard care); oversight failures may involve "guilt by association" with the subordinate's wrongdoing; and some categories are distinct but similar and require careful determination and interpretation of facts (as often occurs in court cases), such as "boundary violations" versus "assault." In many cases, the raters noted that they were torn between their chosen response and the "correct" response suggesting that allowing raters to use more than one category to describe complex instances of wrongdoing would legitimately solve some of the encountered problems.

To determine inter-rater reliability, a free marginal Kappa score was calculated, which is appropriate for rating tasks that involve more than two raters freely choosing among a series of categoric responses. The Kappa score for the three raters was 0.85, which is considered excellent particularly with a task involving a large number of categories.

Discussion

A taxonomy was developed that is comprehensive, focused on well-recognized national professional standards, and sufficiently clear and nonredundant to support excellent inter-rater reliability. As noted above, raters disagreed in few instances, none of which indicated a need for revision of the taxonomy. Allowing raters to use more than one appropriate category to describe complex scenarios would resolve most issues.

In addition to supporting research on wrongdoing, the resulting taxonomy could be used to generate a hierarchic indexing system in MEDLINE and to improve reporting systems. As Table 2 indicates, within the sphere of medical practice, competing lists overlapped very little with the authors' taxonomy because it excludes ambiguous headings (e.g., "not applicable" and "discipline by another state") and subsumes several misbehaviors under "procedural violations" (e.g., "violations of previous agreement with board" and "CME or continuing medical education"). Eliminating vague categories from frequency data reports would yield substantially greater and more useful information (e.g., more precise frequency statistics and correlated data). This is also true in the realm of medical research. While current lists are less ambiguous, they also omit important categories of wrongdoing, including "failures to provide oversight as required" and "inappropriate use or care of animals." Reporting of wrongdoing in research—whether to bodies such as the NIH or within the scope of research projects—could be improved with the taxonomy.

One limitation of the taxonomy is that it pertains primarily to the contexts of healthcare delivery and medical research. Physicians engage in other activities, such as preventive medicine, medical education, and administration. While the taxonomy does not speak to these directly, and each of these activities will have its own unique guidelines, the current taxonomies can provide a useful starting point in developing taxonomies in these other arenas. Just as the taxonomies of wrongdoing in healthcare practice and research overlap substantially (11 categories in each are highly analogous), the taxonomies can subsume by analogy most forms of wrongdoing in other arenas of medicine.

To take the example of the American College of Preventive Medicine's Code of Ethics,⁴⁵ most violations of its 11 "Principles for the Ethical Conduct of Physicians Engaged in Preventive Medicine" fit nicely into one of the 29 categories used in the current study. Some are obvious such as "avoiding conflicts of interest," "nondiscrimination," or "privacy and confidentiality"; violations of others such as "acting based on evidence" and "complementing personal limitations" might fit within "substandard research or care."

The only principles that are not readily subsumed are those that might be described as aspirational (sincere but non-enforced guidelines for action [e.g., exhibiting "positive health behaviors so as to be health role models for their communities and colleagues" (principle L)]. However, this limitation applies to the contexts of healthcare delivery and research as well: In the current study, the focus is on only those violations of principles that are noncontroversially viewed by professional colleagues as wrongdoing and are enforced. And while habitually eating nachos in front of a ballgame during spare time may fail to meet legitimate professional aspirations, it is not clear that it rises to the level of wrongdoing that is both prohibited and enforced by the profession. However, as professional standards evolve aspirations may become strict and enforced obligations; when that happens, taxonomies of wrongdoing will need to be updated.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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References

1. Boulware LE, Ratner LE, Cooper LA, Sosa JA, LaVeist TA, Powe NR. Understanding disparities in donor behavior: Race and gender differences in willingness to donate blood and cadaveric organs. *Medical Care*. 2002; 40(2):85–95. [PubMed: 11802081]
2. Shavers V, Lynch C, Burmeister L. Knowledge of the Tuskegee study and its impact on the willingness to participate in medical research studies. *J Natl Med Assoc*. 2000; 92:563–572. [PubMed: 11202759]
3. Gamble VN. A legacy of distrust: African Americans and medical research. *Am J Prev Med*. 1993; 9:35–39. [PubMed: 8123285]
4. Jones, JH. *Bad blood: The Tuskegee syphilis experiment*. 2nd Revised ed.. New York, NY: Free Press; 1993.
5. Gelsinger, P. Jesse's intent. In: Bankert, E.; Amdur, R., editors. *Institutional Review Board: Management and function*. Sudbury, MA: Jones and Barlett; 2006. p. xi-xix.
6. Moreno, JD. *Undue risk: Secret State experiments on humans*. New York, NY: W.H. Freeman and Company; 2000.
7. Kladman, S. *Coronary: A True Story of Medicine Gone Awry*. New York: Cribner; 2007.
8. Hoffman E. Doctor pleads guilty in drugs-for-sex case. *Post-Gazette*. 2002 July 2.
9. Association of American Medical Colleges. *The Scientific Basis of Influence and Reciprocity: A Symposium*. Association of American Medical Colleges; Washington, D.C.. 2007 June 12.
10. Association of American Medical Colleges. *Protecting Patients, Preserving Integrity, Advancing Health: Accelerating the Implementation of COI Policies in Human Subjects Research*; 2008 Feb 26. p. 1-87.
11. Association of American Medical Colleges. *In the Interest of Patients: Recommendations for Physician Financial Relationships and Clinical Decision Making*; 2010 Jun 28. p. 1-46.
12. Probing doctors' ties to industry. *Washington Post*: 2009 August 18. Caputo I.
13. State legislatures, medical schools target gifts, financial conflicts. *American Medical News*. 2009 April 20. News in brief.
14. Drug firms' cash skews doctor classes. *Milwaukee Journal Sentinel*. 2009 March 29.
15. Goldstein J, Winslow R. Doctors Urge Limits on Drug Firm Money. *The Wall Street Journal*. 2009 April 1. B: 4.
16. Rabin RC. Doctors Urge End to Corporate Ties *The New York Times*. 2009 April 2.
17. Dana J, Loewenstein G. A social science perspective on gifts to physicians from industry. *JAMA*. 2003 Jul 9; 290(2):252–255. [PubMed: 12851281]
18. Milgram S. Some conditions of obedience and disobedience to authority. *Human Relations*. 1965; 18(1):57–76.
19. Trevino L, Butterfield K, McCabe D. The Ethical Context in Organizations: Influences on Employee Attitudes and Behaviors. *Business Ethics Quarterly*. 1998; 8(3):447–476.
20. Bramstedt KA, Kassimatis K. A study of warning letters to institutional review boards by the U.S. Food and Drug Administration *Clinical Investigational Medicine*. 2004; 27(6):316–323.
21. Marshall E. Clinical Research; Shutdown of research at Duke Sends a Message. *Science*. 1999; 284(5418)

22. Zimbardo, P. *The Lucifer Effect*. New York: Random House, Inc.; 2007.
23. Bandura A, Underwood B, Fromson M. Disinhibition of aggression through diffusion of responsibility and dehumanization of victims. *Journal of Research in Personality*. 1975; 9:253–269.
24. Yeon HB, Lovett DA, Zurakowski D, Herndon JH. Physician discipline. *J Bone Joint Surg Am*. 2006 Sep 1; 88(9):2091–2096. [PubMed: 16951127]
25. Titus SL, Wells JA, Rhoades LJ. Repairing research integrity. *Nature*. 2008 Jun 19; 453(7198): 980–982. [PubMed: 18563131]
26. Marshall E. Scientific misconduct. How prevalent is fraud? That's a million-dollar question. *Science*. 2000 Dec 1; 290(5497):1662–1663. [PubMed: 11186377]
27. Suchetka, D. [Accessed September 8, 2010] Despite law, many U.S. hospitals aren't reporting disciplinary action to a national database. 2010.
http://www.cleveland.com/healthfit/index.ssf/2010/04/many_us_hospitals_arent_report.html
28. DesRoches CM, Rao SR, Fromson JA, et al. Physicians' perceptions, preparedness for reporting, and experiences related to impaired and incompetent colleagues. *JAMA*. 2010 Jul 14; 304(2):187–193. [PubMed: 20628132]
29. Cardarelli R, Licciardone JC. Factors associated with high-severity disciplinary action by a state medical board: a Texas study of medical license revocation. *J Am Osteopath Assoc*. 2006 Mar 1; 106(3):153–156. [PubMed: 16585383]
30. Grant D, Alfred K. Sanctions and recidivism: An evaluation of physician discipline by state medical boards. *Journal of Health Politics, Policy, and Law*. 2007; 32(5):867–888.
31. Crites E. The regulation and discipline of physicians in Missouri. *St. Louis Metropolitan Medicine*. 2009; 31(4):18–20.
32. Swayze J, Anderson MS, Lewis KS. Ethical problems in academic research. *American Scientist*. 1993; 81:542–553.
33. Martinson B, Anderson M, DeVries R. Scientists behaving badly. *Nature*. 2005; 435:737–738. [PubMed: 15944677]
34. Federation of State Medical Boards. Summary of 2008 Board Actions. 2009
35. Wolfe, SMP.; Bame, A.; Adler, B. Washington DC: Public Citizen's Health Research Group; 2000. 20,125 questionable doctors disciplined by state and federal governments.
36. Ryzen E. The National Practitioners Databank: Problems and proposed reforms. *J Legal Med*. 1992; 13:409.
37. Walters T, Parsons J, Warnecke R, Almagor O, Budetti PP. How useful is the information provided by the National Practitioner Data Bank? Joint Commission J Quality & Patient Safety. 2003; 29(8):416–424.
38. Chandra ASN, Seabury SA. The growth of physician medical malpractice payments: Evidence from the National Practitioner Data Bank. *Health Affairs*. 2005
39. Borror K, Carome M, McNeilly P, Weil C. A review of OHRP compliance oversight letters. *IRB: Ethics & Human Research*. 2003; 25(5):1–4. [PubMed: 14870724]
40. Weil CRL, McNeilly P, Cooper K, Borror K, Andreason P. OHRP compliance oversight letters: An update. *IRB: Ethics & Human Research*. 2010; 32(2):1–6. [PubMed: 20373732]
41. Office of Research Integrity. Annual Report. 2008.
42. Office of the Inspector General. Semiannual report to Congress. 2009.
43. Ryan, GW.; Bernard, RH. Data management and analysis methods. In: Denzin, NK.; Lincoln, YS., editors. *Handbook of qualitative research*, 2nd Edition. Thousand Oaks, CA: Sage Publications; 2000. p. 769-802.
44. Baxter, LA. Chapter 13: Content analysis. In: Montgomery, BM.; Duck, S., editors. *Studying interpersonal interaction*. New York: The Guilford Press; 1991. p. 235-254.
45. American College of Preventive Medicine. Code of Ethics. Washington DC: ACPM; 2009.

Table 1

Table 1

Taxonomy of wrongdoing

I. Taxonomy of misbehavior in medical research	Taxonomy of clinical medical ethics violations by physicians
R1. Procedural violations <ul style="list-style-type: none"> - R1.0. Other procedural violations - R1.1. Failure to follow approved protocols (when this involves no further immediate ethical problems) - R1.2. Failure to maintain appropriate records (when this involves no further immediate ethical problems) - R1.3. Failure to submit proper paperwork to an oversight body (when this involves no further immediate ethical problems) 	P1. Procedural violations <ul style="list-style-type: none"> - P1.0. Other procedural violations - P1.1. Failure to follow approved protocols (when this involves no further immediate ethical problems) - P1.2. Failure to maintain appropriate records (when this involves no further immediate ethical problems)
R2. Violation of privacy or confidentiality <ul style="list-style-type: none"> - R2.0. Other violation of privacy or confidentiality - R2.1. Wrongful disclosure of health information - R2.2. Wrongfully obtaining health information - R2.3. Wrongful use of health information - R2.4. Failure to safeguard health information as required 	P2. Violation of privacy or confidentiality <ul style="list-style-type: none"> - P2.0. Other violation of privacy or confidentiality - P2.1. Wrongful disclosure of health information - P2.2. Wrongfully obtaining health information - P2.3. Wrongful use of health information - P2.4. Failure to safeguard health information as required
R3. Failure of informed consent <ul style="list-style-type: none"> - R3.0. Other failure of informed consent - R3.1. Failure to assess decisional capacity of subjects as necessary - R3.2. Failure to disclose known risks 	P3. Failure of informed consent <ul style="list-style-type: none"> - P3.0. Other failure of informed consent - P3.1. Failure to disclose alternative treatments as appropriate - P3.2. Failure to disclose known risks
R4. Failure to provide oversight as required <ul style="list-style-type: none"> - R4.0. Other failure to provide oversight as required - R4.1. Failure to report violations - R4.2. Failure to mentor responsibly - R4.3. Failure to monitor safety within units as required - R4.4. Inappropriate delegation of authority 	P4. Failure to provide oversight as required <ul style="list-style-type: none"> - P4.0. Other failure to provide oversight as required - P4.1. Failure to report violations - P4.2. Failure to mentor responsibly - P4.3. Failure to monitor safety within units as required - P4.4. Inappropriate delegation of authority
R5. Financial fraud or theft <ul style="list-style-type: none"> - R5.0. Other financial fraud or theft - R5.1. Theft of research materials, data, or funds - R5.2. Misappropriation of research materials, data, or funds 	P5. Financial fraud or theft <ul style="list-style-type: none"> - P5.0. Other financial fraud or theft - P5.1. Violation of federal fraud and abuse laws - P5.2. Improper billing of patients or insurers - P5.3. Receiving kickbacks
R6. Conflict of interest violation <ul style="list-style-type: none"> - R6.0. Other conflict of interest violation - R6.1. Failure to disclose financial ties to industry - R6.2. Failure to adhere to conflict management plan 	P6. Conflict of interest violation <ul style="list-style-type: none"> - P6.0. Other conflict of interest violation - P6.1. Failure to disclose financial ties to industry - P6.2. Failure to adhere to conflict management plan
R7. Assault of participants	P7. Assault of patients

I. Taxonomy of misbehavior in medical research	Taxonomy of clinical medical ethics violations by physicians
<ul style="list-style-type: none"> - R7.0. Other assault of participants - R7.1. Sexual assault - R7.2. Physical assault - R7.3. Psychological assault 	<ul style="list-style-type: none"> - P7.0. Other assault of participants - P7.1. Sexual assault - P7.2. Physical assault - P7.3. Psychological assault
R8. Professional boundary violations <ul style="list-style-type: none"> - R8.0. Other professional boundary violations - R8.1. Consensual sex with subject - R8.2. Asking subjects for professional favors 	P8. Professional boundary violations <ul style="list-style-type: none"> - P8.0. Other professional boundary violations - P8.1. Consensual sex with patient - P8.2. Asking patients for professional favors
R9. Inappropriate interprofessional relationships <ul style="list-style-type: none"> - R9.0. Other inappropriate interprofessional relationships - R9.1. Sexual harassment - R9.2. Creating a hostile work environment 	P9. Inappropriate interprofessional relationships <ul style="list-style-type: none"> - P9.0. Other inappropriate interprofessional relationships - P9.1. Sexual harassment - P9.2. Creating a hostile work environment
R10. Unjust or inappropriate participant recruitment, exclusion, or inclusion <ul style="list-style-type: none"> - R10.0. Other unjust or inappropriate participant recruitment, exclusion, or inclusion - R10.1. Inappropriately targeting minority communities - R10.2. Inappropriate inclusion of children or prisoners 	P10. Unjust treatment of patients <ul style="list-style-type: none"> - P10.0. Other unjust treatment of patients - P10.1. Refusing to treat a patient on the basis of race or ethnicity - P10.2. Exploitation of vulnerable patient populations
R11. Substandard research or peer review <ul style="list-style-type: none"> - R11.0. Other substandard research or peer review - R11.1. Violating noncontroversial standard practices - R11.2. Conducting scientifically unsound research or research that lacks value - R11.3. Failure to provide objective peer review 	P11. Substandard or inappropriate patient care <ul style="list-style-type: none"> - P11.0. Other substandard or inappropriate patient care - P11.1. Failure to comport with the standard of care - P11.2. Negligence, gross negligence, or reckless endangerment - P11.3. Performing unnecessary medical procedures - P11.4. Failure to adequately treat pain
R12. Inappropriate exposure to or management of the risks <ul style="list-style-type: none"> - R12.0. Other inappropriate exposure to or management of the risks - R12.1. Needlessly exposing research subjects to dangerous treatment or procedures - R12.2. Failure to consider underlying medical conditions of individual subjects 	P12. Practice of medicine while impaired or incompetent <ul style="list-style-type: none"> - P12.0. Other practice of medicine while impaired or incompetent - P12.1. Substance abuse - P12.2. Serious medical impairment - P12.3. Failure to obtain or maintain credentials, skills, or qualifications
R13. Inappropriate publication practice <ul style="list-style-type: none"> - R13.0. Other inappropriate publication practice - R13.1. Courtesy authorship - R13.2. Ghost authorship - R13.3. Salami publication 	P13. Abuse of prescribing privileges/ violation of drug statutes <ul style="list-style-type: none"> - P13.0. Other abuse of prescribing privileges/violation of drug statutes - P13.1. Diverting drugs - P13.2. Selling or trading prescription drugs for money or services - P13.3. Prescribing drugs without medical justification

I. Taxonomy of misbehavior in medical research	Taxonomy of clinical medical ethics violations by physicians
R14. Research misconduct (FFP) <ul style="list-style-type: none"> - R14.0. Other research misconduct - R14.1. Falsification - R14.2. Fabrication - R14.3. Plagiarism 	P14. Illegal conduct indicating unfit character (not covered in the categories above) <ul style="list-style-type: none"> - P14.0. Other illegal conduct indicating unfit character - P14.1. DUI - P14.2. Assault and battery (nonpatient victim) - P14.3. Rape (nonpatient victim)
R15. Inappropriate use, care, and maintenance of animals <ul style="list-style-type: none"> - R15.0. Other inappropriate use, care, and maintenance of animals - R15.1. Inappropriate inclusion - R15.2. Using more animals than necessary - R15.3. Inappropriate exposure to pain or distress 	

Table 2

Taxonomy of wrongdoing in medical practice compared to alternative lists

Taxonomy of clinical medical ethics violations by physicians^a	Federation of state medical boards (percentage of sanctions 1994–2002)^b	Public citizen health research group (percentage of sanctions 1990–1999)^b	Categories of the bases for physician discipline in Missouri^c
P1. Procedural violations	- Failure to maintain adequate records (10.8)	- Noncompliance with a professional rule (12.2) - Noncompliance with a board order (7.5)	- CME (continuing medical education)
P2. Violation of privacy or confidentiality			
P3. Failure of informed consent			
P4. Failure to provide oversight as required			
P5. Financial fraud or theft			- Fraud
P6. Conflict of interest violation			
P7. Assault of patients	- Sexual misconduct (7.1)	- Sexual abuse, sexual misconduct (3.1)	
P8. Professional boundary violations			- Sex with patient
P9. Inappropriate interpersonal relationships	- Unprofessional conduct (33.4)	- Professional misconduct (12.9)	
P10. Unjust treatment of patients			
P11. Substandard or inappropriate patient care	- Failure to conform to minimal standards of acceptable medical practice (12.2) - Negligence (14.5) - Gross negligence (7.0)	- Substandard care, incompetence, negligence (18.8)	- Inadequate patient care
P12. Practicing while impaired or incompetent - substance abuse - serious medical impairment - failure to obtain or maintain credentials, skills, or qualifications	- Substance abuse (9.5) - Chemical dependency (6.5)	- Substance abuse (10.0) - Physical or mental impairment (2.8) - Practicing without a license (2.4)	- Personal chemical/drug/mental health issues - Failure of qualifications
P13. Improper prescribing/violation of drug statutes		- Misprescribing or overprescribing drugs(7.7)	- Mishandling prescription drugs

Taxonomy of clinical medical ethics violations by physicians ^a	Federation of state medical boards (percentage of sanctions 1994–2002) ^b	Public citizen health research group (percentage of sanctions 1990–1999) ^b	Categories of the bases for physician discipline in Missouri ^c
			- Discipline by drug licensing authority
P14. Illegal behavior indicating unfit character	<ul style="list-style-type: none"> - Not applicable (65.6) - Not reported (6.9) 	<ul style="list-style-type: none"> - Criminal conviction (17.2) 	<ul style="list-style-type: none"> - Criminal conviction - Discipline by medical society/hospital - Discipline by another state - Violations of probation/previous agreement with board - Relations with board

^a Examples of subcategories are meant to be illustrative, not exhaustive.

^b From Grant and Alfred's examination of the most common bases for sanctions by state medical boards.³⁰

^c From Crites' categories of statutory bases for physician discipline in Missouri.³¹

Table 3

Taxonomy of Wrongdoing in Research Compared to Alternative Lists

I. Taxonomy of Wrongdoing in Medical Research^a	II. Ethical Problems in Academic Research^b	III. Questionable Behaviors in Research^c
R1. Procedural violations	- Other: ignoring research policies (3a)	- Circumventing certain minor aspects of human-subject requirements (8) - Inadequate record-keeping related to research projects (16)
R2. Violation of privacy or confidentiality	- Other: unauthorized use of privileged information in connection with one's research (3g)	- Unauthorized use of confidential information in connection with one's own research (6)
R3. Failure of informed consent		- Ignoring major aspects of human-subjects requirements (2)
R4. Failure to provide oversight as required		
R5. Financial fraud or theft	- Questionable research practice: using university resources for outside consulting work or other inappropriate personal purposes (2c) - Other: misusing research funds (3e)	
R6. Conflict-of-interest violation	- Other: not properly disclosing involvement in firms whose products are based on a faculty member's own research (3h)	- Not properly disclosing involvement in firms whose products are based on one's own research (3)
R7. Assault of participants		
R8. Professional boundary violations		- Relationships with students, research subjects, or clients that may be interpreted as questionable (4)
R9. Inappropriate interprofessional relationships	- Other: trying to get by on the work of others (3b) - Other: sexually harassing another person (3c) - Other: using one's position to exploit or manipulate others (3f)	
R10. Unjust or inappropriate participant recruitment, exclusion, or inclusion	- Other: discriminating against others on the basis of race, gender, ethnicity, etc. (3d)	- Ignoring major aspects of human-subjects requirements (2)
R11. Substandard research or peer review	- Questionable research practice: overlooking others' use of flawed research data or the questionable interpretation of data (2b)	- Overlooking others' use of flawed data or questionable interpretation of data (9) - Dropping observations or data points from analyses (15)

I. Taxonomy of Wrongdoing in Medical Research^a	II. Ethical Problems in Academic Research^b	III. Questionable Behaviors in Research^c
		<ul style="list-style-type: none"> - Changing the design, methodology or results of a study in response to pressure from a funding source (10) - Using inadequate or inappropriate research designs (14)
R12. Inappropriate exposure to or management of the risks		<ul style="list-style-type: none"> - Ignoring major aspects of human-subjects requirements (2)
R13. Inappropriate publication practice	<ul style="list-style-type: none"> - Questionable research practice: inappropriately assigning authorship credit (2a) - Questionable research practice: failing to present data that contradict one's previous research (2d) 	<ul style="list-style-type: none"> - Failing to present data that contradict one's own previous research (7) - Publishing the same data or results in two or more publications (11) - Inappropriately assigning authorship credit (12) - Withholding details of methodology or results in papers or proposals (13)
R14. Research misconduct	<ul style="list-style-type: none"> - Scientific misconduct: plagiarizing (1a) - Scientific misconduct: falsifying or "cooking" research data (1b) 	<ul style="list-style-type: none"> - Falsifying or "cooking" research data (1) - Using another's ideas without obtaining permission or giving due credit (5)
R15. Inappropriate use, care and maintenance of animals		

^a Examples of subcategories are meant to be illustrative, not exhaustive.

^b From a survey by Swayze et al.³² The survey clustered behaviors into three categories used by the National Academy of Sciences to delineate problematic behaviors in academic research. Their behaviors also included "Other: cheating in coursework," which was excluded here because this appears to fall outside the scope of research; to the extent it occurs in research in the classroom, it would likely be redundant with other categories (e.g., plagiarism or fabrication).

^c From Martinson et al.'s survey of scientists' behaviors in research.³³