



Ethics for Medical Physicists and Biomedical Engineers

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Bill of Rights for Scientists and Engineers

Preamble

A scientist or engineer (S/E) uses understanding, insight and ingenuity to discover new knowledge and to create new technologies that benefit individuals and societies. In pursuing these goals, a S/E must be free to theorize and experiment unimpeded by political pressures, religious dogma or fear of reprisal. Preservation of this freedom is the purpose of the Bill of Rights for Scientists and Engineers. The Bill of Rights is consistent with the Statement on the Universality of Science of the International Council for Science (ICSU).



Bill of Rights for Scientists and Engineers

Article 1

A S/E is an individual who uses a scientific approach in the pursuit of new knowledge and technologies. A S/E is not required to possess any specific credential such as appointment in an institution, funding by an agency, or membership in an organization.



Bill of Rights for Scientists and Engineers

Article 2

Science and engineering may be practiced in any location; they are not confined to academic institutions, government facilities, or industrial settings. An individual using a scientific approach in a home laboratory is pursuing science or engineering just as is a S/E employed by an institution, industry or government agency. No prejudice towards the work of a S/E shall be exercised based on an individual's affiliation or lack thereof with a particular institution, organization or agency.



Bill of Rights for Scientists and Engineers

Article 3

A S/E shall not be dissuaded from pursuing scientific inquiry because of political or religious concerns, or because the inquiry deviates from a conventional perspective.



Bill of Rights for Scientists and Engineers

Article 4

A S/E shall be able to use any approach to new knowledge and technologies, limited only by the restrictions that the approach follows sound scientific principles and does not violate societal ethical precepts.



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Article 5

A S/E shall be free to collaborate with other individuals in the same or other locations, with the understanding that collaboration may require covenants protecting confidentiality and intellectual property.



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Article 6

A S/E shall not be subject to restraints in the presentation and publication of results that are imposed by political or religious entities or because the findings conflict with traditional knowledge. Scientific and engineering results should always be evaluated on their merits and not because of preconceived notions of "truth".



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Article 7

A S/E shall decide who should coauthor scientific publications based on well-established guidelines for co-authorship. Courtesy authorship to senior personnel in a S/E's laboratory or institution is unacceptable.



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Article 8

A S/E shall strive to ensure that scientific results are widely accessible to the scientific community.



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Article 9

A S/E should object to misuse of research findings for political, ideological or financial purposes.



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Article 10

At all times a S/E shall adhere to universal ethical and moral standards.



Requisite Attributes of Healthcare Professionals

- n Honesty
- n Forthrightness
- n Diligence
- n Respect for persons
- n Service to others
- n Continuous self-improvement
- n Patients come first (primacy of patient welfare)



Requisite Attributes of a Healthcare Profession

- n Establish standards of conduct for members
- n Enforce compliance with standards of conduct
- n Encourage members to function above minimum legal standards of conduct
- n Provide educational opportunities for members self-improvement



Requisite Attributes of a Healthcare Profession

- n Acknowledge obligations of the profession to serve patients
- n Recognize responsibilities of the profession to the public
- n Engender the public's trust



Patient Privacy and Confidentiality of Patient Information

- n Philosophical principles (Kant, Mill, etc. – brief)
- n Autonomy of the individual
- n Privileged position of the professional
- n Belmont principles
 - n Respect for persons
 - n Beneficence
 - n Justice



Patient Privacy and Confidentiality of Patient Information

- n HIPAA – origin and status
- n Confidentiality of patient information
- n Protection of patient records
- n Methods for ensuring security
- n Penalties



Behaviors of Others

- n What constitutes unethical conduct
 - n Incompetent performance
 - n Mental impairment
 - n Fraudulent or deceptive practice
 - n Substance abuse
 - n Moral turpitude
 - n Criminal activity



Behaviors of Others

- n Reporting unethical conduct
 - n Sensitivity of the issue
 - n Responsibility of the observer
 - n Protection of the observer (whistleblower)
 - n Imperfect nature of whistleblower protection



Behaviors of Others

- n Appropriate recipients of reported behaviors
 - n Superiors
 - n Hospital board
 - n Licensing board
 - n Certification board
 - n Regulatory authorities



Peer Review of a Professional

- n Review by a qualified professional(s) with appropriate expertise
- n Reviewed professional should know of review
- n Unrelated others should not know of review
- n Reviewing professional should be independent of reviewed professional or institution



Peer Review of a Professional

- n Copy of review report provided to reviewed professional
- n Review should not be shared with those without a need to know
- n Review should not unnecessarily jeopardize reviewed professional's position



Conflicts of Interest

- n Financial

- n NIH guidelines

- n FDA guidelines

- n Institutional guidelines

- n Other guidelines



Conflicts of Interest

- n Professional

- n Stature (reputation)

- n Inclusion in peer group

- n Educational

- n Relationship with mentors

- n Relationship with students



Conflicts of Interest

- n Professional
 - n Service in societies, boards, leadership roles
- n Research
 - n Study objectives vs. patient interests
 - n Belmont principles
- n Personal
 - n Personal vs. patient welfare
 - n Compassion vs. objectivity



Conflicts of Interest

- n Voluntary disclosure of conflict of interest
- n Required disclosure of conflict of interest
 - n Publications
 - n Talks
 - n Clinical trials
 - n Experimental therapies
- n Sarbanes-Oxley review/update



Research Principles

- n Data accuracy
 - n Systematic errors
 - n Random errors
 - n Statistical analyses
 - n Deletion of outlier data



Research Principles

- n Data confidentiality
 - n Patient data
 - n Laboratory data
 - n Permission to publish



Research Principles

- n Data ownership
 - n Research team
 - n Institutional claims
 - n Publication copyrights



Research Principles

- n Data management
 - n Record keeping
 - n Maintaining security
 - n Transferring institutions



Research Misconduct

- n Data fabrication
- n Data falsification
- n Plagiarism
- n Redundant Publication (self-plagiarism)



Research with Human Participants

- n Belmont principles
 - n Respect for persons – example
 - n Beneficence – example
 - n Justice – example



Research with Human Participants

- n Institutional Review Board (IRB)
 - n Composition
 - n Responsibilities
 - n Approvals
 - n Waivers



Research with Human Participants

- n USDHHS Office of Research Protections
 - n Responsibilities
 - n Enforcement
- n FDA
 - n General Rule
 - n Institutional certification
 - n Penalties for noncompliance



Research with Animals

- n Philosophical principles (Rosseau, Bentham, Shopenhauer, Singer, et al)
- n Ethical foundations
 - n Animals in the service of humans
 - n Animals with rights
 - n Animals as sentient beings equal to humans



Research with Animals

- n Protection of research animals
 - n USDA
 - n AAALAC
- n Animal rights organizations
 - n SPCA
 - n PETA
 - n ALF
- n Current controversies



Vendor-Sponsored Activities

- n Organizations
 - n Conflict of Interest
 - n Guidelines
 - n Reporting
 - n Abuses



Vendor-Sponsored Activities

- n Individuals
 - n Conflict of Interest
 - n Guidelines
 - n Reporting
 - n Abuses
 - n Case studies
- n PharMA guidelines and participants



Vendor-Sponsored Research

- n Legitimate and illegitimate research
- n Research disconnected from sales
- n Appropriate and inappropriate expenditures
- n Guidelines
 - n Milestones
 - n Reports
 - n Office of Inspector General Compliance Guidance for Pharmaceutical Manufacturers



Vendor-Sponsored Research

- n Restrictions on publication
- n Indemnification issues
- n Ghost-written articles
- n Conflict of Interest reporting



Publication - Authors

- n Types of authors (first, senior, corresponding, co-authors)
- n Authorship requirements – substantial contribution to
 - n Conception and design
 - n Data acquisition
 - n Data analysis/interpretation
- n Draft/revise manuscript
- n Final manuscript approval



Publication – Reviewers

- n Reviewer requirements
 - n Objective/fair
 - n Expertise
 - n Knowledge and experience
 - n Maturity
 - n Responsiveness
 - n Helpfulness



Publication - Reviewers

- n Conflict of interest (disclosure)
- n Confidentiality of manuscript
- n Confidentiality of review
- n Blinded vs. unblinded reviews – arguments



Education – Teacher Responsibilities

- n Respect for students
- n Program completion by students
- n Safe and supportive environment
- n Intellectual/academic freedom
- n Recognition of student work



Education – Teacher Responsibilities

- n Fair evaluation
- n Nondiscrimination
- n Equal opportunity
- n Confidentiality
- n Consensual relationships



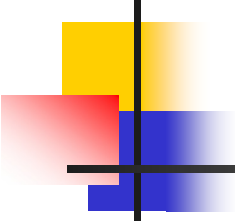
Education- Student Responsibilities

- n Adherence to policies/procedures
- n Attendance
- n Academic integrity
- n Acknowledge others' work



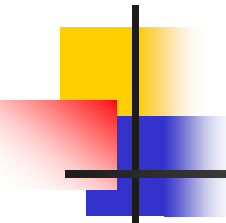
Education- Student Responsibilities

- n Respect for freedom of expression
- n Confidentiality
- n Respect for others
- n Respect institutional property



Employer-Employee Responsibilities

- n Contract negotiations
 - n Transparency
 - n Completeness
 - n Timeliness



Employer-Employee Responsibilities

- n Honesty
- n Responsiveness
- n Forthrightness
- n Respect for others affected
- n Obligations in vacating a position



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