Modern medical care is increasingly dependent on the application of science to clinical practice, which occurs through clinical or translational research. We propose the concept of translational ethics, which incorporates the contributions of research codes of ethics that involve the protection of human subjects into the ethics of clinical practice. The modern research environment, which has contributed the scientific tools of modern medicine, has also framed the ethical environment in which medicine is practiced. The single most important contribution of research codes for protection of human research subjects to clinical practice is the doctrine of informed consent. Translational ethics, based on autonomy and informed consent, progresses beyond the narrow interpretation of those 2 concepts. It requires consensual understanding of a spectrum of clinical interventions that are increasingly complicated. Translational ethics helps navigate the ethical ramifications of technological and scientific advances that will increasingly challenge the corporate-oriented health system in the new millennium.

The Nuremberg Trials (1946-1947), were held in Nuremberg, Germany, after World War II to prosecute Nazi officials for a variety of war crimes. The second Nuremberg Trial, the so-called Doctor's Trial, concluded after 7 months of testimony on August 19, 1947. Twenty-three physicians and health officials were charged with crimes involving experiments on human subjects, mostly prisoners. Nine of the defendants were sentenced to long prison terms, 7 were sentenced to death by hanging, and 7 were acquitted. The Nuremberg Code, which came from the trial, established consent as the first and most important principle.

After the Nuremberg trials, in 1947, 10 principles of conduct expected of physicians in the conduct of research on human subjects were described in the Nuremberg Code on the Ethics of Human Research: voluntary consent; an expected beneficial outcome; prior experimentation on animals; avoidance of unnecessary pain and horror; avoidance of risk or disablement; risk taking not to exceed expected advantages; protection against the possibility, however slight, of injury, disablement, or death; scientifically and technically qualified experimenters; the subject's freedom to retract consent; and the experimenter's obligation to stop the experiment (Table 1).
The Nuremberg Code on the Ethics of Human Research and the eventual Human Rights Movement were strongly influenced by the Chief of Counsel for War Crimes, Brigadier General Telford Taylor (1908-1998), the principal prosecutor (Figure 1). In his opening statement at the second Nuremberg trial, Taylor held physician behavior to a higher standard than the behavior of the general citizenry. He opined that the fatal experiments on human subjects were especially evil since they were performed by physicians who pledged by the Hippocratic oath to do no harm. Much of the legal foundation for the Human Rights Movement, especially as it has influenced medical ethics, is due to Taylor. His affirmation of the principle of self-determination is the starting point in medical decision making and represents the evolution and amalgamation of other ethical concepts, such as human rights and autonomy, into medical ethics and practice.

Arising from revulsion to the experiments conducted by Nazi physicians during World War II, the Nuremberg Code assimilated the legal and ethical conclusions of the deliberations of the Nuremberg trials. It exerted seemingly little impact on research practices until an adaptation of it was applied by decree of the US secretary of defense in 1953 to policy governing scientific investigation involving human subjects. It was 1954 before the World Medical Organization addressed the issue of experimentation involving human subjects, which had been the original setting and stimulus from which the Nuremberg codes were written.

Similarly, in the period immediately following the publication of the Nuremberg Code, from 1947 to 1975, national and international medical organizations demonstrated relatively little interest in applying its principles to research. Two updates to medical ethics in the post–World War II period that did reflect some influence of the Nuremberg Code were the Declaration of Geneva and the International Code of Medical Ethics.

In 1948, the World Medical Organization, 2 years old at the time, formulated the Declaration of Geneva, an ethical code written in English and French. It was based on the Hippocratic oath but contained some elements of the Nuremberg Code. It was directed toward physician professionalism rather than toward experimentation on human subjects, which had been the focus of the Nuremberg trials and the Nuremberg Code. The Declaration of Geneva was formulated with the belief that professional ethical codes and guidelines were needed because of the participation of Nazi physicians in the implementation of state policy.

In 1949, the International Code of Medical Ethics was developed. Directed toward clinical practice while retaining the ethical orientation of the Hippocratic oath,
it also was influenced by the Nuremberg Code. This code stated that a physician shall act only in the patient’s interest when providing medical care that might have the effect of weakening the physical and mental condition of the patient.

After 1975, a renewed interest in the Nuremberg Code occurred, and more of the code’s content became apparent in medical codes and practice. The Declaration of Helsinki of 1975 found its way into modern medical ethics by stressing the Nuremberg concepts related to scientific standards governing proper research. In the United States, an important turning point in congressional regulation of clinical research occurred with the National Research Act of 1974 because it resulted in the formation of the National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research. This commission produced the Belmont Report, a highly influential embodiment of research ethics involving human subjects that laid the foundation for many of the changes in federal regulations that took effect in the 1980s and remain in effect today. A study of informed consent performed by the commission noted, “The most complete and authoritative statement of the law of informed consent to human experimentation is the Nuremberg Code.”

The modern institutional review board resulted from the Belmont Report. Recently, a renewed focus by the Office for Protection Against Research Risk (OPPRA) on protection of human subjects has occurred. Subsequently, the office, with newly elevated stature, moved from its historical home at the National Institutes of Health, Bethesda, Md, to a separate agency.

The first and most important principle of the Nuremberg Code, informed consent, has become the cornerstone for the ethical practice of medicine and for the conduct of research involving human subjects. In research and the clinical setting, the goal is a relation of shared information and trust between physician and patient. Translational ethics, like translational research, uses the research codes for protection of human subjects as behavior norms for clinical practice. Other important concepts of translational ethics include autonomy and the capacity to withdraw from treatment or from the research protocol.

The mission of research differs from the mission of clinical medicine. Research aims to gain new knowledge, while clinical medicine strives to benefit the individual patient at hand. An elaborate process has been designed to protect human subjects involved in clinical trials beyond that which applies to patients under the care of physicians. In both instances, the doctrine of informed consent provides a “golden rule” to address the challenges of the clinical, scientific, and corporate changes transforming medicine.

Philosophers have long attempted to reconcile scientific and ethical thought. Ethics is as old as human thought, the moral and intellectual base being grounded in ancient cultures. In the western world, the work of Plato and Aristotle blended with the medieval church and its great thinkers to form the basis of modern thought. The ancient and medieval worlds combined the concepts of Aristotle and Saint Thomas Aquinas to explain science and the universe. When physics appeared, traditional explanations were adapted and the belief emerged that the world through faith serves human purposes. As noted by Randall, the balance of science and ethics is constantly changing, “Modern medicine is science, while medieval medicine was less powerful but more important, ethics.”

Expressed as a code, ethics implies morality. The code, spoken or unspoken, is modified and influenced by social change but retains a constant force. Professional codes are an evolutionary amalgam of ethical theory, etiquette, law, and professional socialization. They are influenced by religion, social mores, corporate culture, and the societies in which they are practiced. Because medical ethics involves a relation between laypeople and health professionals, the foundation must be built on loyalty, fidelity, respect, and trust (Figure 2).

Ethics is defined as the disciplined study of morality. Morality comprises good and bad character, right and wrong behavior. Ethics identifies the characteristics of virtues and vices and analyzes issues about right and wrong actions to develop arguments about which actions are ethically defensible and which actions are ethnically indefensible. Ethics refers not only to the rules, customs, and beliefs of a society but also to its scholarly effort to articulate and analyze those rules, customs, and beliefs.
The word ethics is used in many ways. It may designate the moral beliefs and behaviors of individuals, the rules devised to prevent political conflict of interest, the customs of a society, or, as stated in the Oxford English Dictionary, “the department of study concerned with the principles of human duty.” Medical ethics, a specialty of ethics that is more than 25 centuries old, is rooted in the works of the ancient philosophers and expressed, in part, in the Hippocratic Corpus. Medical ethics deals with the morality of medicine. Its central concept is that the physician serves as the moral fiduciary of the patient. While medical ethics has often included bioethical concepts, bioethics developed as its own separate subspecialty following World War II. Maturing in the turbulence of the 1960s and Vatican II, bioethics is defined as “the systematic study of the moral dimensions—including moral vision, decisions, conduct and policies—of the life sciences and health care, employing a variety of ethical methodologies in an interdisciplinary setting.” Some have credited the new field of bioethics to the founding of the National Commission for the Protection of Human Subjects of Biomedical and Behavior Research. This commission had been created, in part, in response to the notorious Tuskegee Syphilis Study, in which southern blacks with syphilis were left untreated so that the natural history of the disease could be studied. The human rights principles that evolved from the Doctors’ Trial irrevocably altered Hippocratic ethics, which had traditionally allowed the physician alone to determine what was in the subject’s best interest. By mandating the doctrine of informed consent, the Nuremberg Code provided the human research subject with as much control as the physician.

THE UNITED NATIONS

Another product of World War II with implications for medical ethics was the principled idealism that led to the founding of the United Nations in 1945. Its charter, declarations, and works incorporated codes to protect individuals. Like the Nuremberg Code, these United Nations’ codes were reactions to the Axis governments that had subjected citizens to state tyranny that involved the use of unwilling human subjects for research and that practiced the eutanaziation of “undesirable” citizens.

The committee that crafted the United Nations’ Universal Declaration of Human Rights was chaired by Eleanor Roosevelt (Figure 3). In a sense, the declaration is analogous to the addition of the Bill of Rights to the Constitution of the United States, since it was to be attached to the United Nations charter. Endorsed by the General Assembly of the United Nations with no dissenting vote on December 10, 1948, the declaration defines responsibilities and features of health care that, when absent, violate human rights.

The Universal Declaration of Human Rights consists of 4 tenets: (1) the basic right to human dignity; (2) civil and political rights; (3) economic, social, and cultural rights; and (4) solidarity rights. Human dignity, emphasized in article 1, is a historical right derived from many religions, philosophies, and traditions, including Judaism-Christianity, the Koran, and the Talmud. It is the most ancient of the ethical tenets and includes the right to basic health care.

The second tenet, known as civil and political rights, emphasized primarily in articles 2 through 21, refers to the liberty to pursue human dignity against the abuse of political authority. These concepts were originated by theorists during the Enlightenment and have also been embodied in the Declaration of Independence, the US constitutional amendments, and the Bill of Rights. Known as first-generation or negative rights, they limit and restrict government and include the freedoms of speech, the press, and religion.

Second-generation rights, called positive rights, are those that hold the government responsible for the provision of societal needs such as health care, education, employment, and protection for aged and vulnerable populations. Found primarily in articles 22 through 27, these rights are largely an outgrowth of the industrial world of the 18th and 19th centuries and have philosophical advocates such as Karl Marx (1818-1883) and Thomas Paine (1737-1809).

Solidarity rights, articles 28 through 30, represent the last crucial notion in the United Nations’ declaration. These address the failure of domestic sovereignty that was prevalent during the last part of the 20th century when pollution, environmental protection, war, and international distributive justice came to the forefront. International cooperation to distribute food, meet basic needs, and provide for justice on a global scale illustrates applications of solidarity rights.

Figure 3. Eleanor Roosevelt (1884-1962) holding the Universal Declaration of Human Rights, which she called a “Magna Carta for mankind.” Elected chair of the United Nations’ 18-member commission, she incorporated elements of many cultures in the declaration. There are many aspects of the declaration that address health care. The “rights” movement has become an important part of daily life, extending to recent debate about various patients’ rights. Photograph provided courtesy of the United Nations, New York, NY.
Health security is a notion which encompasses many of the rights enlisted in the Declaration. It means universal access to adequate health care, access to education and information, the right to food in sufficient quantity and of good quality, but also the right to decent housing and to live and work in an environment where known health risks are controlled.13(p3)

She articulated a commitment to a renewed focus on the relation between the political and legal links between health and human rights and acknowledged the challenge of the men and women who drafted the Universal Declaration of Human Rights, the challenge to secure human rights for all people and to provide universal access to health care.13

**INFORMED CONSENT**

The evolution of informed consent and its application to medical care redefined the essence of the physician-patient relationship. Consistent with Hippocratic tradition, the physician alone used to decide what was best for the patient.

This notion of consent being in the hands of the physician and not the patient has radically changed over time. Through the influence of the Nuremberg Code and the Human Rights Movement, patient care is based on mutual consent and informed consent (Table 2). This evolution in the physician-patient relationship can also be seen in various other contractual and human relations characteristic of the late 20th century.

Paternalism, the traditional Hippocratic approach, contained the concept of primum non nocere (first, do no harm), which continues to govern the physician's approach to the patient. It also recognized that there is a point beyond which aggressive maintenance of life provides no benefit and serves only to prolong dying and increase suffering. Hippocrates himself emphasized, "Do not seek to cure patients who are overmastered by disease" (Figure 4).13(p33)

Informed consent includes a strong emphasis on patient autonomy that replaces all forms of Hippocratic paternalism for competent patients and provides the patient the right to refuse or withdraw from treatment. In the past, the image of the wise, trusted, adored, and
beneficent physician predominated. The new ethos is medicine as an enterprise pursued within a pluralistic, secular society in which physicians and patients may be moral strangers. This ethos makes patient autonomy and informed consent necessities since no longer can anyone speak for the patient but the patient.15(p10) The decisions of the American courts recognize informed consent and res ipsa loquitur (the thing speaks for itself) as 2 favorite plaintiff tactics in courtroom strategy.

The doctrine of informed consent consists in legal terms of instructing the patient regarding (1) the diagnosis for which intervention is proposed, (2) the recommended intervention with attendant risks and benefits, (3) the anticipated results or prognosis if no intervention is attempted, and (4) any significant alternatives and their attendant risks and benefits.

Therapeutic exceptions to informed consent cover situations when (1) interventions need to be provided immediately to prevent serious harm or death (the emergency exception), (2) the patient voluntarily gives up the right to be informed (the waiver exception), (3) the physician has sufficient reason to believe that disclosure would result in physical or psychological harm to the patient (the therapeutic privilege exception), and (4) the patient is deemed incompetent.15(p12-15) The freedom of self-determination is emphasized; a person is free to make many decisions, even unwise ones, without competence being questioned unless sufficient reasons to the contrary are identified.15(p12-15)

In the past, therapeutic exception existed under the concept of usual and customary practice. The legal origin is concern for the bodily integrity of the individual. If self-determination is not allowed and informed consent is absent, intervention could be considered battery or unauthorized touching. In practice, battery is seldom used as a medicolegal charge.

Research ethics that address autonomy also translate to medical practice. Research practices in the Jewish Clinic Disease Hospital, Willowbrook, Staten Island, NY, led to patient exploitation when developmentally disabled patients were intentionally infected with hepatitis, as did the Tuskegee syphilis experiment when patients were left untreated for research purposes. Issues of autonomy have been associated with 2 significant court decisions having to do with reproductive biology: Eisenstadt v Beard [405 US 438, 92 SCt 1029 (1972)] determined that the distribution of contraceptives to unmarried persons was permissible; and Roe v Wade [410 US 113, 93 SCt 705 (1973)] determined that patients’ rights take precedence.

American courts began to reference the Nuremberg Code in the 1980s. Most cases of medical ethics translated to law involved reproductive rights or issues of patient autonomy in hospital care for individuals unable to give informed consent. The President’s Commission for the Study of Ethical Problems in Medicine and Biomedical and Behavioral Research was authorized in 1978. Its first working meeting was held on May 13, 1980. The Nuremberg Code was cited in Whitlock v Duke University [637 FSupp 1463 (MDNC 1986)], a tort action suit for inadequate disclosure to the research subject. In 1987, the supreme court case United States v Stanley [107 SCt 3054 (1987)] referenced the Nuremberg Code. James Stanley was a soldier who had been secretly administered lysergide (LSD).

**TRANSLATIONAL ETHICS**

Translational ethics is based on autonomy and informed consent but progresses beyond the narrow interpretation of those 2 concepts. It requires consensual understanding of a spectrum of clinical interventions that are increasingly complicated. The complexity of modern medical science increases the difficulty of obtaining and providing informed consent because many of the situations confronted are new to the experience of patient and physician.

The corporate-oriented health system is challenged by new technology and its ethical ramifications. Several contemporary clinical topics reside on the fringe of ethics and law. Technological and scientific advances pose unfamiliar challenges that strain professional ethical codes and that may pose different resolutions in a corporate vs a professional culture. Among these topics are transplantation, reproductive rights, genetic testing, cloning, euthanasia, and physician-assisted suicide.

Transplantation ethics did not exist before the technology of transplantation and organ donation. The ethical and legal dimensions of transplantation have become increasingly codified in law. The Seattle, Wash, group on selection of transplant recipients was formed in the 1960s. Two years after Medicare became law to provide health insurance for the elderly, it was expanded to include any patient with end-stage renal disease. The patients with end-stage renal disease thus became the first population group with a specific disease to be government funded for health care with no age limitations. In England, the Human Organs Transplant Act of 1989 prohibited commercial dealings in human organs. A recent report16 of the Institute of Medicine of the National Academy of Sciences responded to ethical concerns regarding fairness in the distribution of organs. It is likely that law will be codified to follow these ethical considerations.

The Genome Project, which is well advanced, allows uncommon monogenic diseases to be predicted and thereby raises ethical questions of yet unknown dimensions. The complexities in these cases of assuring informed consent and consensual planning between patient and physician are extensive. Screening for Huntington chorea exemplifies the almost unlimited potential for genetic screening of the population. The genetic test for familial adenomyosis polyposis, which can predictably detect a family that will develop colon cancer by the sixth decade of life, invokes such issues as how widely to screen, how to fund screening, and how the families identified will be assisted in using the information from the screening to make autonomous decisions.17

Reproductive rights evoke complicated cultural, ethical, and legal conflicts involving religion, politics, and sometimes violence.19 The legal resolution to abortion remains inconclusive, having resorted to privacy issues cov-
ved by Roe v Wade in 1976. Human cloning research, or its application, has abruptly surfaced new ethical issues that legislators have rushed to proscribe by law. Since Scottish scientists announced the birth of a lamb named Dolly that was cloned by combining the nucleus of an adult mammary egg and an enucleated sheep egg, people have been concerned about visions of human cloning factories. Most European countries have banned human cloning research, and such a ban is being discussed in the United States by the Presidential Council on Medical Ethics. The ethical debates surrounding reproductive technology bring to mind Aldous Huxley’s 1932 novel, Brave New World, in which all newborns are produced in state hatcheries.

One of the most immediate and complicated subjects facing medical ethics deals with end-of-life issues and specifically with the question of entitlement as a constitutional right in cases of euthanasia or physician-assisted suicide. Unfortunately, these issues are most commonly encountered in the vulnerable and elderly populations, often the same populations receiving the end-of-life care that is increasingly being implicated as a source of rising health care costs.

In the Netherlands, physician-assisted suicide and euthanasia represent 2.3% and 0.4% of all deaths, respectively.21 In the United States, the states of Oregon and Washington legally permit physician-assisted suicide. Nevertheless, the US Supreme Court in Washington v Glucksburg [521 US 702, 117 SCt 2258 (1997)] and in Quill [65 USLW 3218 (US Oct 1, 1996) (No. 95-1858)] rejected the premise of a constitutional right to physician-assisted suicide.20 The court in the Quill case opted for liberalizing the laws governing the prescription of narcotics for terminally ill patients.21 The Cruzan v Missouri Department of Health [497 US 261, 110 SCt 2841 (1990)] case involved a patient in a vegetative state whose parents petitioned the hospital to discontinue artificial hydration and nutrition. The court ruled otherwise.

With increasingly complex technologies available and anticipated, the concept of translational ethics embodied in the doctrine of informed consent takes on new importance. In addition to providing routine education and information to patients about medical alternatives, the new health care order calls for an initial and ongoing dialogue that will require new competencies of physicians and other health care providers.

Reconciling medical ethics, business ethics, professional ethics, and human rights with the physician’s fundamental fiduciary responsibility to the patient in the context of a secular, libertarian tradition will demand a fundamental reorientation.22 In the context of balancing Hippocratic medicine (doctor-patient) with the corporate dominance of health care in its current state of development, the patient’s rights of autonomy and informed consent must dominate.7

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