A Brief Historical Exploration of the Evolution of Medical Ethics

An Honors Thesis (HONR 490)

By

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May 2014
Abstract

Ethics are an incredibly part of the practice of modern medicine. Most often, when people hear the term "medical ethics" they automatically think of the Hippocratic Oath. The Hippocratic Oath has been incredibly influential in shaping modern ethics, but it has not been the only influence on ethics. Medical ethics has to be fluid and open to change as the world they work in changes. This paper will explore the evolution of medical ethics in western medicine, starting with Hippocrates and his oath and moving through the historical eras. This paper will explore the powers and influences that shaped ethics and the various oaths and laws that came with the change.

Acknowledgements

I would like to thank Dr. Clare Chatot for advising me throughout this project, her patience, and for keeping me on track when my focus wandered. I would also like to thank Dr. Stephanie Simon-Dack for inadvertently inspiring my interest in medical ethics and this project. Finally, I would like to thank my parents for always encouraging me to pursue my interests, supporting my education, and nurturing my love for all kinds of science.
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Ethics has always been an integral part of practicing medicine throughout all of medical history. Whether through written laws of simple moral guidelines, physicians have always worked with ethics guiding their practice. Some of the basic morals have lasted throughout the millennia. Others have been added or changed over time to fit with the changing world. Much like other aspects of society, medical ethics have evolved over the years with many contributors and other influences shaping them into what they are today. This paper will follow the development of Western Medicine and ethics. It will explore how ethical codes and laws changed through over 3000 years of medicine, which powers and institutions had influence over the ethics of the time and which rules had to be changed to match the times and to see the final product, modern medical ethics. Ethics changed in step with society and as the world moved into a new era of history, medicine and science followed closely and ethics changed along with them.

Ancient Greece (500BC – 500 AD)

Hippocrates (Figure 1) is often credited as being the Father of Western Medicine. His philosophies and practices endured throughout the history of medicine. But few things from his teachings have lasted as long as his ethical oath, the Hippocratic Oath. It has endured through almost 3000 years of evolving medicine. It has acted as moral guidelines for physicians, building blocks for newer ethics to be built off of, and even
today is still relevant in modern medicine. It is of interest to note that the most
commonly quoted phrase in regards to the Hippocratic Oath, "First do no harm," is not
actually included in the Oath; though the sentiments are present in it and every other
future medical oath.

"I swear by Apollo the physician, and Asclepius, and Hygieia and
Panacea and all the gods and goddesses as my witnesses, that,
according to my ability and judgment, I will keep this Oath and this
contract: To hold him who taught me this art equally dear to me as my
parents, to be a partner in life with him, and to fulfill his needs when
required; to look upon his offspring as equals to my own siblings, and to
teach them this art, if they shall wish to learn it, without fee or contract;
and that by the set rules, lectures, and every other mode of instruction, I
will impart a knowledge of the art to my own sons, and those of my
teachers, and to students bound by this contract and having sworn this
Oath to the law of medicine, but to no others. I will use those dietary
regimens which will benefit my patients according to my greatest ability
and judgment, and I will do no harm or injustice to them. I will not give a
lethal drug to anyone if I am asked, nor will I advise such a plan; and
similarly I will not give a woman a pessary to cause an abortion. In purity
and according to divine law will I carry out my life and my art. I will not use
the knife, even upon those suffering from stones, but I will leave this to
those who are trained in this craft. Into whatever homes I go, I will enter
them for the benefit of the sick, avoiding any voluntary act of impropriety
or corruption, including the seduction of women or men, whether they are
free men or slaves. Whatever I see or hear in the lives of my patients,
whether in connection with my professional practice or not, which ought
not to be spoken of outside, I will keep secret, as considering all such
things to be private. So long as I maintain this Oath faithfully and without
corruption, may it be granted to me to partake of life fully and the practice
of my art, gaining the respect of all men for all time. However, should I
transgress this Oath and violate it, may the opposite be my fate."

--Translated by Michael North, National Library of Medicine, 2002 (1)

The Hippocratic Oath begins with a promise to the Greek gods of medicine to
abide by the oath to the best of the physician's ability. It then proceeds to lay out the
ground rules of respect towards teachers and his family and to promise to not withhold
knowledge from people who wish to learn medicine. Then it dictates that physicians will
only prescribe what would benefit patients, avoid purposefully causing them harm, and never administer a poison or drug to assist in suicide or a drug that could cause an abortion. The Oath says that physicians must not act outside of the scope of their knowledge; they should not perform surgeries they are not trained to do. It also lays out rules for how to treat patients with respect and maintain patient confidentiality. All of these rules laid out in the Hippocratic Oath persist throughout history, in one form or another, evolving over time to stay consistent with the current medical practices and abilities.

Greek physicians were not trained in schools; rather, they learned their craft through apprenticeships as craftsmen (2). This master-apprentice education gives cause for the necessity of respect toward educators in the Hippocratic Oath. Physicians garnered a great deal of respect among the community due to their work as physicians, but also faced a great deal of uncertainty. Physicians were often migratory, as their reputations often came under scrutiny if they were unable to heal a patient or were seen to do more harm than good to the people they treated (3). Failure as a physician, even once, could be professionally devastating. As such, it was necessary for the ground rules of how a physician must conduct himself professionally to be laid down in the Hippocratic Oath as well. However, the migratory lifestyle was not necessarily detrimental to the physicians. The frequent travel
far and wide allowed them to share and learn new techniques to treating injuries and illnesses and trade philosophies with other physicians (2). The Greek obsession with physical fitness allowed physicians to develop a number of techniques for treating sport related injuries and to learn a great deal about the physiology of muscles and joints (2).

Hippocratic medicine is most often associated with the development of the Humor Theory of disease, which believed that diseases were caused by an imbalance of one of the four humors in a person's body. The four humors were directly related to a fundamental element of the universe; Yellow Bile was Fire, Black Bile was Earth, Phlegm was Water, and Blood was Air (Figure 2). Each humor originated from a specific organ in the body as well; Yellow Bile from the liver, Black Bile from the spleen, Phlegm from the brain, and Blood from the heart. It was believed that illness could be cured by remedies and drugs possessing qualities opposite of that of the unbalanced humor (2). Observations of patients were often conducted using palpitation of the abdomen, inspection of symptoms, and a process of shaking the patient and listening for fluids (3). Hippocratic physicians most often focused on the diet of their patients. They only used stronger drugs if a change in diet was ineffective and aggressive treatments such as bloodletting or purging were never considered viable options (2). Diet to the Greeks did not hold the same meaning as it does today. A
person’s diet included the food they ate, but also their lifestyle, including exercise and alcohol consumption, and the effects of climate and weather (2). A physician’s goal was not to treat the disease, but rather to treat the patient. They were concerned with viewing the patient as a whole and treating their whole body, not just treating the disease (2). The concept of treating the person and not the disease has become a topic of great debate in modern medicine, where people often complain about feeling like a number or a prescription rather than an individual. One branch of modern medicine, Osteopathic Medicine, holds this concept of treating the patient, not the disease, as one of their main philosophies. In Hippocratic writings, kindness and compassion were emphasized as being equally important as the technical virtues of the work (3). However, one ethical viewpoint the Hippocratic physicians stood to was that they could refuse service if they knew they were not able to heal someone (2). It was a matter of self-preservation ethics, as a failure to heal a patient could be professionally devastating. From their craftsman point of view it was perfectly ethical for them to refuse to fix something that could not be fixed. Another point of ethical interest was that of dissection of cadavers to further medical knowledge. Throughout the long era of Ancient Greek medicine, the legality of dissection changed a number of times. Before the Roman Empire, dissection was legal, accepted, and viewed as essential to learning medicine (3). During the later years of the era, the height of the Roman Empire, dissection was forbidden and physicians had to resort to animal dissections to learn about medicine and the human body (3). Hippocratic medicine was not the only prevailing school of medicine at the time. There were a number of physicians who rejected the idea of humors. There were some
who believed in the pathology of solids and considered atoms to be the essential elements of the body that were energized by air circulating through the body (2). There were others who only based medical lore on their own observations and rejected the philosophies and experiments of earlier physicians. Some physicians were unhappy with the passive Hippocratic approach to drugs and other aggressive treatments. They embraced pharmacology and simple surgeries such as bloodletting, trepanning, and even tracheotomy (3). One factor held in common with all of the different schools of thought was that they all originated in Greece. They all fall under the title of Greek Medicine, which persisted as the dominant authority on medicine from 500 BC to 500 AD.

**Medieval Medicine (500 – 1500)**

During the Medieval era of about 500 to 1500, the dominant authority on medicine switched hands from Greek philosophers to the Church (2). Greek medicine had become stagnant, and the practice of medicine was reserved to utilizing traditional remedies and drugs. The duty of preserving medical knowledge in writing fell into the hands of monks; who were good record keepers and even practiced some of the traditional remedies but were not innovators (3). The majority of medical knowledge was based on texts that were hundreds of years old, which would be unheard of in today’s world of constantly evolving medicine. A number of factors play into the stagnation of medicine during this time. The rapidly expanding world struggling to tie in new Pagan traditions with classic Christian ones, the growing power and influence of the Church, and devastating plagues that brought society to a grinding halt all played a role in hampering medical progress (2).
Humorism and its related practices were still commonly practiced throughout the era as it was by the Greek physicians. But other schools of medicine cropped up as well. Most influential, scientifically, was that of Middle Eastern Medicine (3). While Greek medicine stagnated through a series of compilations and no innovation, the Arab medicine practices grew. It was very similar in practice to Greek medicine, but excelled in the areas of pharmacology and drug lore and the development of hospitals (3). However, a belief that trumped both medical practices came not from philosophers and scientists, but the Church. It was taught by the Church that sickness and disease were punishments for sins or demonic possessions and that cures could not be found through medicine but through prayer and saintly intervention if the sufferer was truly penitent (2). These teachings effectively pulled the way people viewed illness and medicine back thousands of years into spiritualism. In turn, the authority figures on medicine became priests and monks, who could still apply traditional treatments to the sick, but they acted under the authority of the Church and the belief that illness was indeed caused by sin (2). It was rare to find a physician who was not also a clergyman at the time. It was during this era when surgery was completely removed from the hands of physicians when the Church declared that the Church does not shed blood (2). In turn, surgery was placed in the hands of barbers, butchers, and any other layperson that had some dealing with blades (2). Surgery and medicine would not be reunited until the Nineteenth Century.

Most of the medical ethics of the era were set by the Church. It determined which practices were allowed by physicians and what a physician's authority was. As stated before, most physicians were also clergymen and bound by the laws of the church
before they were bound by medical ethics (3). It is often stated that human dissections were not allowed at all during this era, as it violated many Church laws. However, the Church never outlawed cadaver dissections in this era and there were a number of reports of dissections performed (2). Even though dissections were not outlawed, the known anatomy of the human body never changed during this time. Physicians only supervised the dissections, and during a dissection would read from the traditional medical texts and see what was described there (2). The physical task of dissecting a body was left to a layperson surgeon, thus keeping the Church from spilling any blood. Ethical oaths and laws adapted to the changing authority, and while they still reflected certain sentiments of the Hippocratic Oath they were different to match society of the time. One oath in particular is The Oath of Maimonides, which is also accompanied by the longer Prayer of Maimonides, also called the Daily Prayer of a Physician.

"The eternal providence has appointed me to watch over the life and health of Thy creatures. May the love for my art actuate me at all times; may neither avarice nor miserliness, nor thirst for glory or for a great reputation engage my mind; for the enemies of truth and philanthropy could easily deceive me and make me forgetful of my lofty aim of doing good to Thy children. May I never see in the patient anything but a fellow creature in pain. Grant me the strength, time and opportunity always to correct what I have acquired, always to extend its domain; for knowledge is immense and the spirit of man can extend indefinitely to enrich itself daily with new requirements. Today he can discover his errors of yesterday and tomorrow he can obtain a new light on what he thinks himself sure of today. Oh, God, Thou hast appointed me to watch over the life and death of Thy creatures; here am I ready for my vocation and now I turn unto my calling."

-- Translated by Harry Friedenwald, 1917 (6)
One noticeable difference between the Hippocratic Oath and the Oath of Maimonides is the movement from calling upon Greek gods to keep the physician to his oath to a much more spiritual petitioning to God to grant the necessary strength to perform his vocation. The much longer Prayer of Maimonides (Figure 3) goes into great extent of the gifts that God has provided, including the knowledge and wisdom to practice medicine, a request that the physician stay morally straight in his practice, and that his patients be protected from fraudulent physicians (6).

One of the main themes shared between the Hippocratic Oath and the Prayer and Oath of Maimonides is how the physician should conduct himself professionally. Maimonides specifically swears to avoid greed and the pursuit of fame and glory, to view patients only as such, and through these promises to not allow unethical practices dictate how he is to practice medicine (6). The Prayer also addressed how teachers and others with more knowledge should be treated with respect, just as Hippocrates vows to treat mentors (8). A new addition to ethical practice is that of the continuation of education. The Prayer ends asking that the physician would never become complacent with his current knowledge and that he always seek out new knowledge in regards to medicine (6).

One notable and very important contribution to medicine that did rise from this era was the creation of medical schools (2). It was during this era that medical education moved out of a craftsman-like system of apprentices and masters and into
structured classes. Some of the first medical schools include the University of Paris, founded in 1110; Bologna, founded in 1113; and the University of Montpellier, founded in 1181 (2). Medical schools provided a universal standard for medicine and it soon became law that a physician could not practice medicine without first being trained in a medical school (2). The schools moved the center of medical learning from practical observations and experiments into libraries and old texts (3). The founding of medical schools ushered in a more scholarly approach to medicine that strongly reflected Greek medical practices of observations and theories and high speculation (3). They adhered strictly to the traditional texts compiled by monks earlier in the era and there were no real innovations in medicine discovered in the schools (2). However, the very strong tradition of medical education, and the created requirement for a standardized education most certainly persist today.

The Renaissance (1500 – 1600)

Medical ethics, as a whole, did not change much during the Renaissance era. The Church still dominated as the ruling power over medicine and Humorism was still the dominating theory on diseases. However, a number of factors influenced a change in the way physicians approached practicing medicine. One of the most notable changes was the marriage of art and medicine, which led to a great number of advances in the understanding of human anatomy when artists were included in dissections and could make skilled illustrations of the human body (2). During this era, doctors, pharmacologists, and painters had very close professional relationships. The exploration of the New World allowed for rapid expansions in the fields of botany and pharmacology and traded diseases between Europe and the Americas (2). New
techniques in clinical observation and epidemiology allowed for better descriptions of diseases. Teaching expanded outside of the colleges and into hospitals so that medical students could learn directly through experience (3). This practice is a key part of medical education in nearly every level of medical care. One of the first germ theories was introduced in 1546 that would be confirmed in the Nineteenth century with bacteriology (2). Some of the first studies of psychology were performed (2). The introduction of gunpowder and its related injuries led to a number of advancements in surgery, which was still considered to be a separate practice from medicine (3). Also, in this time, the practice of obstetrics and gynecology was taken out of the hands of midwives and put into the hands of barber-surgeons (3). With all of these advancements and new knowledge, the invention of the printing press allowed for the easy distribution of the new information and more rapid evolution of medicine.

Enlightenment (1600 – 1700)

The Seventeenth and Eighteenth centuries thrived on the renewed vigor that the Renaissance brought to medicine. Advancements made in all disciplines of science contributed one way or another to the advancement of medicine. This era was the first to truly marry chemistry and physics to biology and medicine (2). The invention of the microscope allowed for groundbreaking discoveries and advancements in medicine. In particular were the discovery of the true nature of circulation and respiration, numerous advancements in physiology and microscopic anatomy, and the discovery of cells and microbes (3). Even with the discovery of bacteria, their association with disease was not discovered. Medical schools of the era held strictly to tradition and seemed immune to the advancements made in the field of medicine. Humorism was still the dominant
medical theory of the time and physicians still practiced the traditional treatments of bloodletting and purging when people were sick (2). However, that is not to say that they did not embrace new treatments for diseases. Advancements in other fields, such as botany, brought about the discovery of many plants and other substances that could cure certain diseases (2). Some discovered cures of the era include citrus fruits curing and preventing scurvy and quinine for treating malaria. There was also a notable increase in the study and use of folk remedies for the treatment of diseases (2). While medical schools of the era were sterile and strictly traditional, the majority of scientific and medical advancements of the era were funded and supported by scientific and academic societies (3). These societies were more open to scientific theories and speculation and they quickly became the centers of discovery for the era. Medical advancement of this time was based very strongly on theories, not so much on clinical practice (3).

The enlightenment era saw a number of medical reforms. The most important, and radical, reform of the era was the establishment of public health. They established the connection between the filthy cities, poor personal hygiene, and unclean hospitals, prisons, and military centers and the rampant diseases that killed many people (2). Reforms were made everywhere to clean up the filthy areas and social changes to hygiene were accepted. New methods of
sterilization were created to stop the spread of diseases. In particular, baking the clothing of prisoners before they were released killed the smallpox on them (3). Another important reform of the era was the implementing of vaccinations to prevent the spread of the smallpox. Vaccinations were discovered when Edward Jenner (Figure 4) observed that milkmaids who had been exposed to the non-lethal cowpox were immune to the deadly smallpox (2). While scientists still did not know why this immunization occurred, they quickly employed smallpox vaccine and for the first time in history, the idea that smallpox may be eliminated from the world became a possibility (2). The vaccination process consisted of cutting a patient and introducing liquid from a cowpox pustule into the wound (3). Other medical reforms included changes to surgery and its reclamation by science. Surgery was beginning to be viewed as a profession and not another job to be done by barbers or butchers (2). Gynecology and obstetrics were returned to the hands of physicians from midwives and barber-surgeons (2). Advances in psychology brought about a reformation of the way people in insane asylums were viewed. There was a change brought about to view the mentally ill as human beings and not as sub-humans or animals as the historical view had been (3). One of the benefits of the scientific and medical advancements of the era was that it became easier to identify fraudulent physicians and quack surgeons. As science advanced, the mysticism and superstitions of previous eras fell under scrutiny (2). The belief that disease was caused by sin or demons fell to the wayside, and it became clear that touching a monarch, being blessed by a clergyman, or touching a holy relic would not cure illness though there were many people who tried to keep these superstitions alive (2).
Ethical dilemmas of the era were centered mainly on social classes. During this time classism was highly influential in society and there arose a disturbing trend of physicians having preferential treatment of upper class patients (2). Most often a physician would build his reputation by tending to the poor, but if he was hired by a royal court or a rich family he would abandon his post and only serve the rich and powerful (10). This left the treatment of the poor to nuns and monks, barber-surgeons, midwives, and frauds. The treatment of the sick by physicians was still based highly on the Hippocratic Oath while employing new treatments to better serve the sick (10). Because the Oath does not address class discrepancies, most physicians of the day felt no qualm about serving the rich over the poor (10). During this era, two separate physicians saw the need for a change to the ethical codes. John Gregory wrote that a physician should be sympathetic to the sick and not acting in self-interest in his treatment of the sick (10). He said that the self-interest could be monetary, by overcharging patients for treatment, or the self-interest could be based on reputation, only treating the poor to establish a name for himself.

"I come now to mention the moral qualities peculiarly required in the character of a physician. The chief of these is humanity; that sensibility of heart which makes us feel for the distresses of our fellow-creatures, and which, of consequence, incites us in the most powerful manner to relieve them. Sympathy produces an anxious attention to the thousand little circumstances that may tend to relieve the patient; an attention which money can never purchase: hence the inexpressible comfort of having a friend for a physician. Sympathy naturally engages the affection and confidence of a patient, which, in many cases, is of the utmost consequence to his recovery.... Men of the most compassionate tempers, by being daily conversant with scenes of distress, acquire in process of time that composure and firmness of mind so necessary in the practice of physick. They can feel whatever is amiable in pity, without suffering it to enervate or unman them."
Thomas Percival also noted that self-interested physicians could be a danger to patients when a feud amongst physicians in a hospital caused it to close during an epidemic (10). He realized that he could not depend on physicians to behave on their own will and wrote up a book of medical ethics for his physicians, titled *Medical Ethics*. Among the ethical guidelines was emphasis on the fact that a patient’s care must always come before a physician’s self-interest (10). The addressing of social class discrepancies and physicians self-interest is a theme that persists through the future medical oaths.

**Industrial Revolution (1800 – 1900)**

The Industrial Revolution further accelerated advancements in science and medicine. Possibly the most important discovery of the era was the true origin of disease. Louis Pasteur (Figure 5) proved that microorganisms caused disease (11). This discovery heralded many changes in medicine. First and foremost, the theory of the four humors was no longer relevant, and the ancient practices of bloodletting and purging began to slowly die out (2). Diseases also began being classified on the bacteria that caused them instead of their symptoms, as had been the practice in the past (3). Pasteur’s discovery of microbes opened the door for some of the most effective treatments of diseases, vaccines. Once scientists knew what actually caused sickness, they could create more effective and safe vaccines and target specific diseases (2). Pasteur’s work also contributed to public health, as he developed the method of pasteurizing liquids to rid them of microbes (11). Hospitals became the
centers of medical practice and learning. The number of hospitals increased rapidly during this era and they became the best places for learning physicians to gain clinical experience (2). They were also a hotbed for research. As the masses of sick and poor flocked to them there was an abundance of bodies to study, both clinically and through autopsy (2). This research allowed for studies of tissues and further investigations on the pathology of diseases. Other important medical advances include the discovery of anesthetics like ether and chloroform and the discovery of antiseptic surgical techniques (3). Of note is Joseph Lister, who sprinkled carbonic acid on surgical patients to eliminate infections (2). Other antiseptic techniques include sterilizing surgical tools in superheated steam before and after surgery and the first instances of wearing gloves to keep germs from the physician’s hands out of the open wounds (2).

During this era, European physicians followed Percival’s Medical Ethics with little trouble. However, in the United States the public was going through social changes that eliminated the necessity for board certification to practice medicine and people were encouraged to act as their own doctors or to seek medical help not from physicians, but from homeopaths, botanists, and other untrained individuals (12). The security of American physicians was in danger. The quality of medical education was greatly degraded and physicians were no longer required to attend medical school for four
years and then pass a strict examination to get a license to practice medicine (12). Frauds and quacks ran rampant during this era, passing off anything from muddy water to poisonous materials as medicines and miracle cures. In an effort to protect the welfare of physicians a conference was called in 1847. This conference became the founding of the American Medical Association (6). It established the first national code of ethics and also national requirements for pre-medical and medical education. The American Medical Association Code of Ethics was the first of its kind, an ethical code that was to be implemented and enforced throughout an entire nation (8). The Code of Ethics was readily adopted by American physicians and it quickly spread overseas to be adopted by Britain, France, Germany, and other European countries (8). The American Medical Association Code of Ethics was based on Percival's ethics, particularly a physician's self-regulation. The original Code was divided into three chapters: 1. Of the Duties of Physicians to Their Patients, and of the Obligations of Patients to Their Physician, 2. Of the Duties of Physicians to Each Other and to the Profession at Large, and 3. Of the Duties of the Profession to the Public (12). Certain issues the Code touched on included forbidding physicians to consult homeopaths or botanists for medical advice, the issue of physicians promoting themselves or patented drugs to the public, adjusting prices based on a patient's means, and accepting female or African-American practitioners into local medical societies (12). Failure of an institution or individual to hold to the code resulted in their expulsion from the American Medical Association (12). The founding of the American Medical Association and the creation of the code saw a change in the social acceptance of frauds and quacks and a rise in trust of legitimate medical professionals.
Pre WWII (1900 – 1947)

The first half of the twentieth century saw great advancements in science, technology, and medicine. Perhaps the highlight of the era was the discovery of antibiotics by Alexander Fleming (Figure 6), though they were not widely used until after the Second World War (3). With all of the rapid advancements in medicine and technology, the ethics struggled to keep up. The American Medical Association Code of Ethics faced a couple revisions since its creation, but it was not fluid enough to catch all of the possible unethical practices that came with the changing world; human experimentation in particular (12). The new drugs being developed had to be tested farther than what animal tests could provide, and the era saw a huge increase in human testing (3). Prisons provided a ready population of test subjects without rights or voices. The mentally ill faced similar problems in the asylums. Historically, they had never been able to attain full human status and rights; they were always viewed as sub-humans and treated as such (3). They were victims of sadistic and cruel doctors who used them as human guinea pigs. They had new medications and experimental treatments, such as electroshock therapy, forced upon them without consent (3). Another practice of the time was the study of eugenics, or Social Darwinism, a pseudoscientific theory. Practitioners believed that humanity could reach perfection by applying Darwin’s Theory of Evolution to people though natural selection.
and selective breeding (14). Because of eugenics, many people with undesirable traits, the mentally ill, invalids, addicts, and criminals, were forcibly sterilized (15). The scientific fad of eugenics persisted strongly until World War II, when the whole world was shaken to its very core and everything changed, especially medical ethics.

**WWII Aftermath**

The Nazi concentration camps have written themselves into history as some of the most horrifying examples of how low humanity can truly fall. Very few instances in modern history show such blatant disregard for basic human rights and ethics. Hitler took advantage of the war to throw ethics to the wayside. He embraced the pseudoscience of eugenics for Aryan racial superiority and ordered the euthanasia of the mentally ill and genetically unfit even before the concentration camps were set up (15). Some of the most horrific stories to come out of the camps are those of the medical experiments performed by the camp doctors on prisoners (16). Nazi doctors took full advantage of the prisoners to perform inhumane, sadistic, and torturous medical experiments. Many of the experiments were not based in any kind of scientific fact; they were designed specifically to maim prisoners, put them through agony, and ultimately end in their death (16). The experiments singlehandedly brought about a complete reevaluation of past ethics and sparked the creation of new ethical laws.

When the war ended, there was a great outcry for justice and retribution for what the Nazis had done. During the Nuremberg Trials a special Doctor's Trial was conducted. Twenty-three people, twenty of them Nazi doctors, were put on trial and
accused of conspiracy, crimes against humanity, war crimes, and membership in
criminal organizations (17). Of the twenty-three defendants, seven were acquitted,
seven were executed, and the remainder served jail time, though a number of them
did not serve their full sentence (17). Many of the defending arguments in the
Doctor’s Trial were that the experiments done in the camps never fell outside of the
realm of acceptable ethics in similar experiments performed in the United States and
other countries (17). The trials prompted a complete reevaluation of medical and
scientific ethics and the Nuremberg Code was created in August 1947 (17). The
Nuremberg Code set down 10 strict ethical guidelines for conducting scientific or
medical experiments on human subjects. They are as follows:

“1. The voluntary consent of the human subject is absolutely essential.

2. The experiment should be such as to yield fruitful results for the good of
society, unprocurable by other methods or means of study, and not
random and unnecessary in nature.

3. The experiment should be so designed and based on the results of
animal experimentation and a knowledge of the natural history of the
disease, or other problem under study that the anticipated results will
justify the performance of the experiment.

4. The experiment should be so conducted as to avoid all unnecessary
physical and mental suffering and injury.

5. No experiment should be conducted where there is an a priori reason to
believe that death or disabling injury will occur; except, perhaps, in those
experiments where the experimental physicians also serve as subjects.

6. The degree of risk to be taken should never exceed that determined by
the humanitarian importance of the problem to be solved by the
experiment.

7. Proper preparations should be made and adequate facilities provided to
protect the experimental subject against even remote possibilities of injury,
disability, or death.

8. The experiment should be conducted only by scientifically qualified
persons. The highest degree of skill and care should be required through

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all stages of the experiment of those who conduct or engage in the experiment.

9. During the course of the experiment the human subject should be at liberty to bring the experiment to an end if he has reached the physical or mental state where continuation of the experiment seems to him to be impossible.

10. During the course of the experiment the scientist in charge must be prepared to terminate the experiment at any stage, if he has probable cause to believe, in the exercise of the good faith, superior skill and careful judgment required of him that a continuation of the experiment is likely to result in injury, disability, or death to the experimental subject" --The Nuremberg Code, 1947 (17)

The Nuremberg Code has been essential in shaping ethics since its creation. It completely rewrote the laws of what was allowable for human experimentation. It dictated new laws for medical research as well as psychological research and pharmaceutical research (18). The Nuremberg Code does not stop at research though; its guidelines have been adopted into practicing medical ethics as well. Most notable is the need for consent from patients and subjects. After the Nazi experiments, medical and scientific ethics became a subject of great importance in the rapidly advancing scientific world of the twentieth and twenty-first centuries (18). Never before had an ethical code had to specify rules for human experimentation, but afterwards there was always emphasis on treating human beings as such. Despite its importance and gravity, the Nuremberg Code was never adopted by any nation or institution as their governing ethical code (18).

Modern Day (1947 – Present)

Modern day ethical laws greatly reflect the laws that came before them. Anyone wishing to do research involving humans, from a psychological survey to a cancer drug
trial, must have a study design that strictly follows the Nuremberg Code's guidelines, along with some additional rules added over the years (18). After the Nuremberg Trials, it became apparent that ethics needed to become stricter than ever before but more fluid to change as technology and society changed (18). In America, multiple bills and codes were accepted as law in regards to patient safety as well as physician safety. Many of these codes and bills are revised every couple of decades to stay contemporary with the scientific and medical issues of the time. One of the leading medical ethical codes of today is the American Board of Internal Medicine Physician Charter. It is endorsed by a number of American and international Medical committees and organizations as the leading ethical code (19). The Physician Charter lays out three principles and a number of commitments that physicians must make in their profession. The three principals are Primacy of patient welfare, Patient Autonomy, and Social Justice. Physicians under the charter are bound to many commitments including commitments to: professional competence, honesty with patients, patient confidentiality, appropriate relationships with patients, improving quality of care, improving access to care, distribution of finite resources, scientific knowledge, maintaining trust by managing conflicts of interest, and professional responsibility (19). The American Medical Association still has its Code of Medical Ethics, which has been revised and updates a number of times since its creation in 1847. It is of interest to note that the Code of Medical Ethics had only one revision before World War II, and after the war it has undergone three separate revisions (12). Nowadays, there are a number of oaths that a physician can choose to swear by; depending on the school they go to they may not even have to swear by an oath (20). All of the oaths today still vary in small ways from
each other. For example the American Medical Association Code of Medical Ethics states that unless in an emergency a physician reserves the right about whom they choose to treat, meaning they can stand by their political, religious, and racial opinions (12). However, the Declaration of Geneva of the World Medical Association makes the physician swear to not allow opinions of religion, nationality, race, party politics, or social standing to affect how they treat a patient (20). Even today, doctors can still swear by the ancient Hippocratic Oath, despite the fact that it does not address many modern day medical ethical issues (6). There is also a modernized version of the Hippocratic Oath, which many medical schools have adopted over the archaic version.

The Modern Oath goes as follows:

"I swear to fulfill, to the best of my ability and judgment, this covenant: I will respect the hard-won scientific gains of those physicians in whose steps I walk, and gladly share such knowledge as is mine with those who are to follow. I will apply, for the benefit of the sick, all measures which are required, avoiding those twin traps of overtreatment and therapeutic nihilism. I will remember that there is art to medicine as well as science, and that warmth, sympathy, and understanding may outweigh the surgeon's knife or the chemist's drug. I will not be ashamed to say "I know not," nor will I fail to call in my colleagues when the skills of another are needed for a patient's recovery. I will respect the privacy of my patients, for their problems are not disclosed to me that the world may know. Most especially must I tread with care in matters of life and death. If it is given me to save a life, all thanks. But it may also be within my power to take a life; this awesome responsibility must be faced with great humbleness and awareness of my own frailty. Above all, I must not play at God. I will remember that I do not treat a fever chart, a cancerous growth, but a sick human being, whose illness may affect the person's family and economic stability. My responsibility includes these related problems, if I am to care adequately for the sick. I will prevent disease whenever I can, for prevention is preferable to cure. I will remember that I remain a member of society, with special obligations to all my fellow human beings, those sound of mind and body as well as the infirm. If I do not violate this oath, may I enjoy life and art, respected while I live and remembered with affection thereafter. May I always act so as to preserve the finest traditions of my calling and may I long experience the joy of healing those who seek my help."
The Modern Hippocratic Oath still holds true to the original, without swearing to the gods to hold the physician to his word. It touches on respect for physicians of the past and the willingness to pass on medical education to future physicians as well as not acting beyond the physician’s skill, respect for the privacy of patients, and to remember to treat the patients as humans and not as their illness. Additions and changes to the oath to fit with modern times include the realization that a physician may have to take a life for the sake of a patient, but that they must not play god and make the decision lightly. The new Oath also includes further clarifications on how patients should be treated, not with an overtreatment of medicines, and that the physician must always remember to be sympathetic and to treat the person, prevent disease rather than just waiting to cure it, and to care for people who are both in good and poor health.

Modern day medicine has changed drastically since the days of Hippocrates, both in practice and philosophy. Ethics as a whole has blossomed and grown numerous branches to encompass many aspects of medicine. The ethics have evolved along with science and technology, but at the root of it all sits the Hippocratic Oath. After three thousand years of history and change, the Hippocratic Oath is still as relevant today as it was in Ancient Greece.
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