

# Medical Milestones of

by Carol Lewis

*The history of medicine has never been a particularly attractive subject in medical education and one reason for this is that it is so unbelievably deplorable ... bleeding, purging, cupping and the administration of infusions of every known plant, solutions of every known metal, every conceivable diet including total fasting, most of them based on the weirdest imaginings about the cause of disease, concocted out of nothing but thin air—this was the heritage of medicine until a little over a century ago.*

—Lewis Thomas  
American physician  
1913-1993

A young boy chants rhythmically over a medallion hanging from his neck to ward off sickness. A man gets a haircut and a cyst removed—both by his barber. Roses and mustard pounded together and mixed with purified oil—a small portion placed on the tongue, the remainder blown through the nostrils—soothes a chronic cough and controls wheezing.

It matters not that the boy may be an Indian, the man a medieval prince, or that there was no scientific approach to this 11th century cure for bronchitis. Every culture has its folklore about health and medicine, whether material or magical, depending on the particular stage of human evolution.

Historians say it seems probable that as soon as humans were able to reason, they discovered by trial and error which plants might be used as foods, which of them were poisonous, and which had some medicinal value. People found herbal remedies to deal with common discomforts, such as colds or constipation. In fact, almost all the laxatives that appear on our pharmacists' shelves today, according to John M. Riddle, alumni distinguished professor of history at North Carolina

State University, were used by ancient societies. And it was discovered thousands of years ago that willow bark, which contains *salicin*, a substance related to the salicylates used to make aspirin, relieves pain.

Primitive physicians showed their wisdom by treating the whole person—soul as well as body. At times, treatments and medicines that produced no physical effects, nevertheless, could make a patient feel better. Ironically, this so-called "placebo effect" remains applicable even in clinical medicine today. (See "The Healing Power of Placebos," January-February 2000 *FDA Consumer*.)

Other cultures made medicines from parts of animals and minerals, which were especially favored as antiseptics. Selecting the appropriate remedy was often guided by either the principle of "opposites" or "similars." For example, if the roasted brains of a fearful rabbit failed to cure excessive timidity, courage might be found in the blood of a ferocious animal. But while ancient Egyptian medical treatments were said to include ox spleen, pig's brain, and tortoise gall, historians be-

# the Last Millennium



The doctor making a house call in the early 1900s had very little available to treat this family's flu symptoms. (Source: FDA History Office)

lieve that "ass's heads" and "pig's teeth" may have been no more what they seemed than are "buttercups" cups of butter or "foxgloves" gloves worn by foxes.

Accounts of miraculous healing indicate that saints and their relics stood alongside home remedies and local medical practitioners to treat the ill. Sometimes prayer and anointing with oil in the name of the Lord was the extent of treatment. Diet, baths and exercises all have played their part in treating illness, as well as drinkable gold and "temple sleep." Attempts by the Chinese to understand a complex world by simple principles led to the notions of *yin* and *yang*—two complementary life forces considered to be balanced in health but disturbed in sickness.

Because early civilizations had a high rate of infant death and an even higher rate of illness, life expectancy was appallingly short. Many of today's common cancers rarely occurred simply because most people didn't live long enough for the diseases to emerge. And the gnarled hands and painful joints associated with old age were not thought of as a disease

but as the natural condition of those who were blessed to have survived the major epidemics of their times.

## Magic and Faith (A.D. 1000 to 1492)

The medical system of the early part of the millennium lacked experts trained in healing, as well as specialized medical institutions, because the institutions that trained or employed practitioners—the monasteries or courts—were not exclusively or even primarily medically knowledgeable themselves. Virtually anyone could be a healer. There was no licensing, and some patients drew on the services of practitioners holding radically different and contradictory beliefs. Self-help was widespread, and often illness was treated at home.

Medicine was still dominated by the ideas of Galen, an ancient Greek physician whose theoretical principles were based on notions that human functioning was composed of mixed and blended elements (fire, water, air, and earth) and humors (blood, phlegm, yellow bile, and black bile), each with particular qualities, and all vital for life.

## *Every culture has its folklore about health and medicine.*

When someone fell ill without obvious cause, especially with such symptoms as fits, vomiting, confused speech, or delirium, there were three possible explanations: disease, fraud, or demonic possession. Along with animal remedies—including blood, bile, bone, and even excrement—magic symbols, faith healing, and sacred amulets became widely used to combat disease.

Drugs used were very simple, and most were extractions from plants such as thyme, dandelion, St. John's wort, lavender, and poppy. The entire plant or just roots, leaves, or seeds, were used in the preparation. No precise details have survived as to quantities or weights of such preparations, but instructions such as "a handful, a bundle, a cup" were recorded, and wafers were the preferred dosage form.

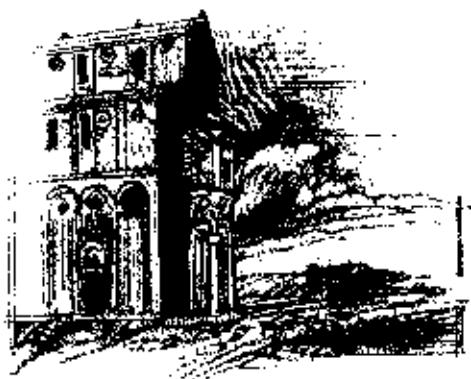
In the midst of a belief in magical powers to afflict and to heal, events of medical enormity began raging in the form of epidemics. Lice and ticks carried typhus and other diseases associated with poor hygiene. Bacteria, mold and other contaminants in spoiled foods could cause convulsions or gangrene. Poor diet resulted in scurvy and other deficiency diseases.

While it was unthinkable that invisible parasites, transported by fleas to rats and then to humans, could be responsible for ravaging whole populations, some did recognize the link between hygiene and health.

"Thou must not put either thy fingers into thine ears, or thy hands to thy head," wrote Fra Bonvicino da Riva in 1290, a time when hands, not forks, were the utensils of choice. "The man who is eating must not be cleaning by scraping with his fingers at any foul part." Although Brother Bonvicino failed to define "foul part" in his courtesy books, later less-inhibited writers instructed their readers not to blow their noses with



A urine flask was the trademark of the physician during the early centuries of the last millennium. In later years, urine-gazing to identify the source of an illness became the mark of the quack. (Source: NIH National Library of Medicine)



### **1000s**

First school of medicine established in Salerno, Italy

### **1200s**

First strict measures for control of public hygiene instituted

### **1300s**

First dissection of human corpse

### **1400s**

First recorded regulations for midwives

### **1500s**

First scientific study of human anatomy published

### **1600s**

Blood circulation first described  
Bacteria discovered



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their fingers and not to scratch at that segment of the male anatomy generally known as the "codware."

But a 14th century German writer later recommended, "If it happens that you cannot help scratching, then courteously take a portion of your dress and scratch with that. That is more befitting than that your skin should become soiled." The scratcher's dinner partner, as it happened, was not as concerned with smudges on the scratcher's face as he was with the possibility of having a louse transferred back to the bowl from which he ate.

#### **Surgery and a Shave (1492 to 1776)**

As the Renaissance emerged out of the Middle Ages, a new scientific spirit developed. The next few centuries showed an eagerness for discovery and a desire to escape from the limitations of tradition and explore new fields of thought and action. Even so, a layer of superstition still remained.

The physician prescribed and the apothecary dispensed. Before the 18th century, doctors were rarely present at childbirth. This was left to midwives, who relied on folklore and tradition. Giving birth was not a private event—rather, it was a long, drawn-out public ritual.

Lower in status than the "physician" was the surgeon. His was a craft, not a science, involving the hand not the head. Dubbed "Mr. Sawbones," the surgeon was likened to a butcher—because of his direct association with cutting and bleeding—but lumped together with barbering because both professions involved arts of the knife. Barber-surgeons had their own books on abdominal injuries, anal fistulae, bladder stones, and cataracts, and their treatments involved primarily cauterizing (burning) and bloodletting, a means of ridding the

body of poisons by opening a vein. (Some critics of this technique believed that George Washington was bled to death in his last illness on Friday, Dec. 13, 1799.)

Laws against dissecting human corpses also began to relax during the Renaissance. As a result, the first truly scientific studies of the human body began. Surgery rose in quality (and surgeons in status) by the 18th century, largely due to this new outlook towards anatomy. The painful practice of cautery to stop bleeding, for example, was replaced by ligatures and dressings.

While the 18th century witnessed advances in medicine, more importantly, it began to transform perceptions of medicine's place in society.

#### **Addiction and Antitoxin (1800 to 1900)**

The industrial revolution created conditions for an explosion in both population and illness, including some new diseases brought on by filth, such as tuberculosis. Injectable opioids, such as opium, morphine, heroin, and cocaine,

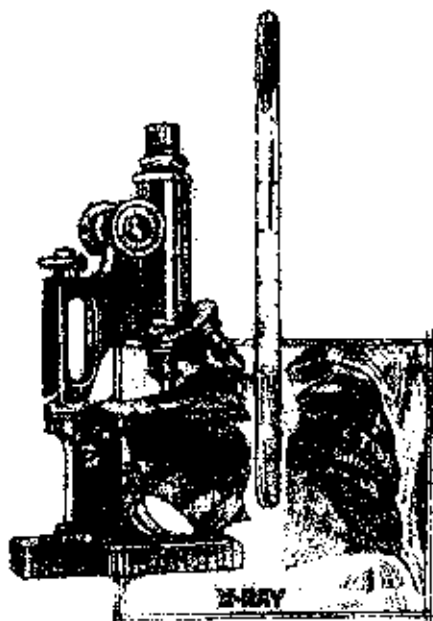


The U.S. Postal Service issued this stamp, showing a late 19th century medicine label, in February 1998 to commemorate the Pure Food and Drugs Act of 1906.

(Source: FDA History Office)

#### **1700s**

First law requiring licensed medical practitioners  
Obstetrics established as a separate branch of medicine  
Vaccination against smallpox developed (1796)



#### **1800s**

First practical anesthetic, ether, introduced (1842)  
Diagnostic tools, such as microscope, thermometer and x-rays, invented  
Germ theory introduced (1879)  
Rabies vaccine discovered (1885)

*Since its introduction in 1899, aspirin has been the most popular drug of all time.*

brought addiction along with pain relief. The old family doctors gave morphine at the drop of a hat, and tales are rampant of patients whom these physicians casually addicted.

Opioids were sold without restriction, and labels on bottles of elixirs and 'snake oil' gave no hint of addictive ingredients. At the same time, harmless and almost always useless preparations were touted for the cure of every disease and symptom. For example, typical products claimed to "renovate" the stomach, liver and kidneys, and to cure diabetes, gallstones, and weak hearts. According to the *1859 Family Medical Almanac*, one medicine that was hailed as a cure-all for as many as eight different illnesses in fact hurried thousands to a premature grave. Without lists of ingredients and warnings against misuse, what little information the public received came mostly from bitter experience.

Federal controls over the drug supply didn't begin until 1848, when Congress required the U.S. Customs Service to stop entry of adulterated drugs from overseas.

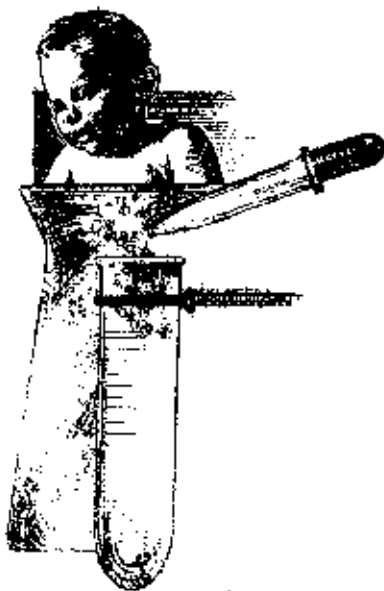
A sensation occurred in the late 19th century when an anti-toxin for diphtheria was developed from the blood serum of animals injected with diphtheria toxin. Its introduction sharply upgraded the doctor's image in the eyes of the public, because for the first time medicine was truly capable of curing an infectious disease that threatened the children of every home in the nation.

#### **Aspirin and Vaccines (1900 to 2000)**

Emil Corwin was one such child. Though his memory of suffering from diphtheria in 1910 as a boy of about 7 is scanty at best, the now 96-year-old public affairs specialist, who re-



Emil Corwin reflects on some medical milestones in his childhood.



#### **1900s**

- Major blood types (O, A, B, and AB) identified
- First antibiotic drug, penicillin, discovered (1928)
- First successful polio vaccine (1950s)
- Birth control pill introduced (1960)
- First successful heart transplant (1967)
- First test-tube baby born (1978)
- AIDS first recognized by the Centers for Disease Control and Prevention (1981) (*The first AIDS-like cases were identified more than a century earlier, in 1872*)
- Scientists clone sheep (1997)



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tired at the end of 1999 after nearly 30 years with the Food and Drug Administration, is grateful to have survived the horrors of a once-raging epidemic.

"Lucky for me they had a vaccine when I got diphtheria," Corwin reflects. "The number of deaths from this and other epidemics, including the flu, was evident by the wreaths hanging on our neighbors' doors, and most of them had one." Of that experience, Corwin remembers only how sick he was at the time, and the image of his doctor arriving at the house by horse and buggy to administer his shot.

Corwin also remembers the relief stations that predated hospitals, a time when balanced diets were of no concern, and pharmacies of long ago, when "the guy behind the counter would come around to the other side and take something from your eye, if you had a problem." The pharmacist, he says, thought nothing of providing these extra services at no extra fees.

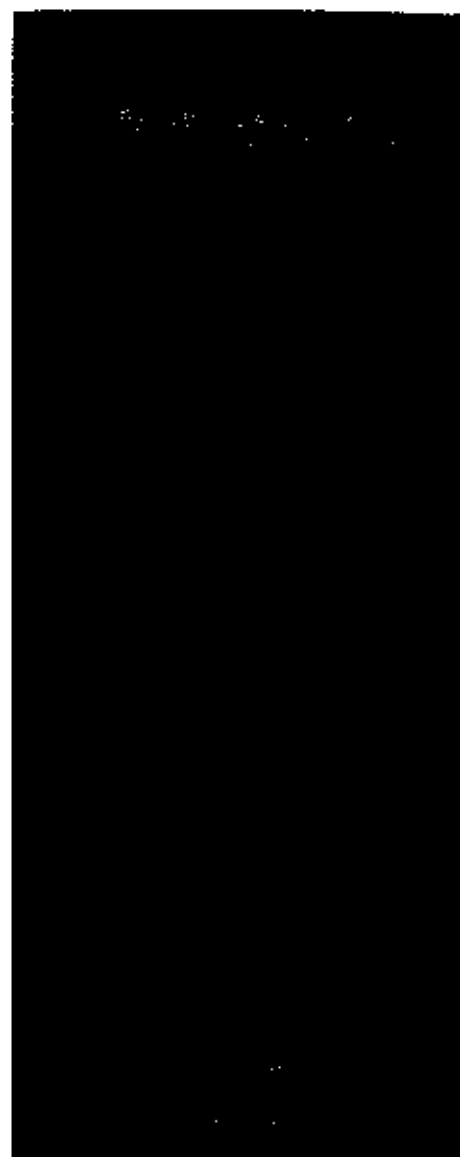
The American doctor of the early 1900s carried few drugs when he made housecalls, but according to the American Medical Association, he knew the quality of each one of them. Calomel, opium, quinine, buchu (a diuretic to stimulate the kidneys), ipecac (an emetic), and Dover's powder (a laxative) made up his supply. At this time, medical therapeutics had not experienced the same level of scientific revolution as medical diagnostics.

Since its introduction in 1899, aspirin (acetylsalicylic acid) has been the most popular drug of all time. By 1909, it ranked among the 10 items most prescribed by American physicians, and the aspirin family had come to symbolize medicine's new therapeutic accomplishments. (See "An Aspirin a Day... Just Another Cliché?" in the March-April 1999 issue of *FDA Consumer*.)

"In this century, medicine has seen the biggest change," says John P. Swann, Ph.D., an FDA historian. "The history of drugs in the 20th century has completely changed the face of therapeutics." Swann attributes the increase in overall life expectancy to improvements in surgery and medical technology, changes in nutrition and lifestyle, dedicated researchers, evolving sciences, committed institutions, economic and political circumstances, and courageous practitioners and patients—all social, intellectual and technical links, he says, to good public health.

In 1906, Congress passed the Food and Drugs Act in an effort to stop food adulteration and quack remedies—the two major evils and targets of a 25-year crusade for federal regulation of food and drugs. And the 1938 Federal Food, Drug, and Cosmetic Act expanded the government's power to fight problems such as an upsurge of cheap, easy-to-get medical devices, which were promoted at the expense of reputable medicine.

The magnitude of changes that have occurred in the human race's relationship to infectious diseases during the 20th century is, according to historians, one of our biggest health successes. Vaccinations have essentially eradicated infectious childhood diseases in industrialized countries. As a result of improved health conditions, and particularly as a result of re-



The Electrot Mechanical Heart (shown at left) was the first medical device seized under the 1938 Food, Drug, and Cosmetic Act. (Source: FDA History Office)

duced infantile mortality, the average life expectancy, according to the national Centers for Disease Control and Prevention, increased in 1900 from 47 years to 67 years in 1950. And the U.S. Bureau of the Census projects that people born today can expect to live well into their 70s.

Current advances in modern medicine may, to the later skeptic, seem obsolete in the next millennium. Historian Riddle, however, believes that medicine of the future will be an outgrowth of past and present medicine, but with the promise of even more effective remedies gleaned from new observations and experimentation.

"In the end," Riddle says, "we shall learn and marvel that our ancestors were as intelligent and clever as we are." ■

*Carol Lewis is a staff writer for FDA Consumer.*