

WHY STUDY PUBLIC HEALTH HISTORY?

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Chapter Overview

The history and philosophy of Public Health are a valuable framework for the evolution of an optometrist's thinking about how to interact with the rest of the health care system in the care of the health and welfare of people.

Objectives

1. Recognize the importance of the historical basis of public health for the development of current health care practices.
2. Recognize the difference between the philosophy of population medicine and preventive care, and the acute care of an individual.
3. Provide the background and framework of developing a philosophy of practice that incorporates population medicine and prevention for practitioners.
4. Measure "health" by more than the absence of disease and incorporate additional factors in the quest for health.
5. Identify the key public health philosophies that relate to optometry's development

Why Study Public Health History?

To understand anything in a society, it is beneficial to know something about its history. Any situation that we examine is always the result of definite historical developments and trends. An examination of the historical development of our present health care delivery system will allow us to create future possibilities.

To study medical science and health care we must examine several different perspectives. Medical science has roots in a number of different disciplines: Political institutions, economic organization, and disease are so related that developments in any of them create changes in health. All of these areas and their origins need examination if we are to fully understand public health today. Knowledge of past development may aid in current understanding and future problem solving involving the health care system.

What is Public Health?

"Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity."¹ This definition of *health* by the World Health Organization is a base from which public health policies and issues can be developed.

Historically, people have been concerned with the health problems of group living. Community action in the promotion of health and the prevention and treatment of disease is the basis of public health and its early roots. Public health history is the story

of man's attempt to protect himself and his fellows against the health hazards of communal living.²

Today, public health is the organized effort by society to protect, promote, and restore the health of its citizens. Public health activities emphasize the prevention of disease and disability and concentrate on the health and well-being of groups of people. The goal of public health is to reduce discomfort, disability, and disease in society and promote the quality of life³ as well as attaining the highest level of physical, mental, and social well-being utilizing available knowledge and resources at a given time and place. As a result of these goals, public health professionals are typically idealistic with a strong sense of social responsibility.¹ Fundamental to the overall philosophy is the accessibility of health care for all segments of the population.

Public Health Optometry has been defined as "the use of the full scope of optometric knowledge, skills, and services to prevent disease, to prolong life, and to promote health and the efficiency of groups of people, particularly at the community level."³ This is, of course, a very specific application of the more general philosophy of public health that infers involvement with the entire health system.

Prehistoric, Greek, and Roman Worlds

Public health has roots in the rituals and incantations against pestilence of ancient Mesopotamia.² Almost all primitive people recognize the existence of disease and engage in forms of voodoo or tribal dancing, temporary banishment or smoke and noise to drive away the evil spirits of disease.

Records show that the Minoans (3000-1430 B.C.) and the Myceneans (1430-1150 B.C.) built drainage systems, water closets, and water flushing systems. The Athenian civilization of 1000-400 B.C. had well-developed personal hygiene practices that sometimes resulted in the ill and crippled populations being ignored or destroyed. The Romans had periodic census counts, elimination of dangerous animals and foul smells, provision of public sanitary services, garbage removal, a public water supply and sewerage systems.¹

The Hebrews dealt with a wide variety of community responsibilities in Leviticus, about 1500 B.C. These included cleanliness of the body, protection against the spread of contagious diseases, isolation of lepers, disinfection of dwellings after illness, sanitation of campsites, disposal of excreta and refuse, protection of water and food supplies, and the hygiene of maternity. For thousands of years epidemics were looked upon as divine judgments of the wickedness of mankind, and it was thought that the gods must be satisfied to avoid these punishments.²

Middle Ages A.D. 500-1500

The Middle Ages was characterized by the belittlement of worldly things, which resulted in people not bathing, using perfume instead, and wearing dirty garments. Refuse and body wastes accumulated due to the avoidance of the sanitation principles of the Roman Empire. Pandemics of cholera and bubonic plague were spread by pilgrims to Mecca from Asia, the wanderings of Christian crusaders, military activities, and trade. Asia was the endemic center of cholera. Bubonic plague, which was known as the Black

Death, resulted in over 60 million deaths, with 25 million lives lost in Europe. In 1377 the first quarantine measure was the rule that travelers from plague areas stop outside the port of Ragusa (now Dubrovnik) and remain disease free for two months.

Mercantilism and Colonialization A.D. 1500-1700s

Leprosy, an acute and disfiguring disease, spread from Egypt to Asia Minor and eventually to Europe. Laws that isolated the disease and regulated the afflicted resulted in the eradication of the disease in Europe by the sixteenth century.¹ Other epidemic pestilences of Europe, such as smallpox, appeared only occasionally in the colonies-leading the average colonist to expect better health and higher economic status without the diseases of the Old World. Americans have traditionally gloried in the seemingly boundless resources of their country. During this period, the colonial towns were generally quiet and clean.

There was a rapid recovery from the Revolutionary War years, with the major cities experiencing a large measure of prosperity and expansion. The resulting influx into the cities resulted in inadequate sewerage and water provisions in New York City. Other major towns, such as Philadelphia and Boston, had similar problems, although Boston construction kept pace with the expansion in total population from 16,000 before the war to 25,000 by 1800. Although nature's resources seemed to take care of human sewage, newcomers to the cities strained these resources to the point that the slums became severely polluted. Mortality rates began rising in American towns and cities during the first half of the nineteenth century and reached a peak around the Civil War.⁴

History of Medicine

The type of medicine practiced by the seventeenth-century colonists was an amalgam of barbering and alchemy with a strong dash of plain luck. People were attacked by smallpox, malarial fever, tetanus, typhus, and the diseases of childhood.⁵ As early as 1639, an act was passed by the Massachusetts colony ordering that each birth and death be recorded.¹ Medical practice was relatively primitive, and physicians were rare in the colonies from 1670 to 1730. American medicine of this era was an offshoot of what was practiced in Europe, where medicine was just emerging from the Middle Ages.

Early medical schools were established in the colonies in the 1760s in Philadelphia and New York but were disrupted by the Revolutionary War. Due to the inadequacy of the supply of physicians trained in medical schools, apprenticeship continued to be the most important mode of producing doctors.⁶

Important changes in the medical profession occurred about 1800 when state legislatures were convinced to pass laws limiting the practice of medicine to practitioners of a certain training and class. Most of these laws were repealed as too elitist in the Jacksonian period (1828-36), which resulted in the emergence of medical sects of physicians who used such treatments as bloodletting, vomiting, blistering, and purging. Homeopathic and botanical physicians trace their origins to this period.⁷ Marked progress was made in surgery during the first half of the nineteenth century, possibly due to the isolation of practitioners who developed their own resources.⁸ The American Medical Association (AMA) was founded in 1847 "to promote the science and art of medicine and the betterment of public health" as well as to set and enforce

standards and ethics of "regular" medical practice and medical turf.⁷ Despite all these developments, medicine did not receive much popular support in the mid-1800s. New developments in photography, bridge-building, electricity, steam engines, and so on attracted more interest.⁵ Public health has been very closely linked with medicine, which is barely a century old. Yet, medicine had to put its own house in order before it could assume the leadership of a comprehensive public health program.⁹ Medicine has been concerned with the diagnosis and treatment of damage already done; yet, it was only in 1910 that the average patient in the United States had a fifty-fifty chance of being diagnosed correctly. ¹ Until the twentieth century, medicine attempted to treat communicable diseases, and public health was concerned with dealing with major epidemics.⁶

In 1910, the Flexnor Report, *Medical Education in the U.S and Canada*, appeared and created a sensation in its time. It criticized the poor quality of medical education and the poor quality of the teachers and practitioners. Following the report, medicine began to develop to the form we know today. By the 1920s the hundreds of medical schools had been reduced to only fifty and the number of annual graduates from 7,500 to 2,500. Medical schools attempted to establish themselves as centers of clinical excellence and to attract foundation money and high-quality students.⁶

Organized medicine, which had strongly supported all public health measures earlier, began to oppose many of them after World War I. This shift may be due to the reorganization of the AMA in 1901 that made it more responsive to general practitioners and less reactive to public health departments and medical schools. More socially conscious physicians were drawn out of private practice at a time when the AMA was successful in raising the standards and economic status of physicians in private practice. Public health's concern with preventable disorders forced attention back toward health care, creating periodic conflict with the AMA.⁴

Enlightenment and Evolution 1790-1840

The loss of 30 to 50 percent of children below age 5 from summer fluxes, teething, convulsions, and related disorders as well as the many fatalities among adults from fevers, fluxes, pleurisies, pneumonias, and cancers were casually accepted. Diseases of the period also included syphilis, diphtheria, streptococcal infections, dysentery, typhoid, typhus, and others. The highly fatal killer diseases-such as yellow fever, smallpox, diphtheria, and Asiatic cholera-were responsible for the early quarantine measures, and the first comprehensive sanitary programs. Temporary health boards dealt with earlier colonial epidemics, but the yellow fever epidemic that ravaged American ports from Boston to New Orleans in the years from 1793 to 1822 created the need for more permanent city health agencies to deal with epidemics.⁴ England, with its manufacturing cities typical of advanced industrialization, led the way in the public health reform by attracting the eye of reformers to the squalid living conditions.⁹ The public health measures that resulted created public discussion about the freedom-loving Englishman's "right" to be dirty. There was discussion about whether to let disorder and disease continue as before or to suffer the monster of a centralized state.¹⁰

It was during this period that the *Report of the Sanitary Commission of Massachusetts* by Lemuel Shattuck was prepared. It began with a review of public

health progress in Europe inspired by Chadwick as well as a record of major health programs by discussing the decrease in the mean life expectation in Boston, Philadelphia, and New York of about four to six years in the first four decades of the 1800s. Specific recommendations of the report include such items as creation of Boards of Health, vital statistics reporting, sanitary improvement, health promotion, and prevention activities as well as health education programs.^{1, 11}

Industrial and Sanitary Movement, and John Snow's contribution 1840-1890
One of the classics of epidemiology is the story of John Snow, the Broadstreet pump, and the prevention of cholera in London. In 1850, it was generally believed that the cholera agent was inhaled from the air. Laboratory experiments with white mice conducted in Germany and confirmed in England were, we now know, incorrectly interpreted. Through an elaborate statistical analysis of age, sex, poverty, density per acre, and density per home, William Farr uncovered an inverse statistical association between cholera mortality and the elevation of the ground above the mean level of the Thames. His findings were statistically significant and mathematically correct, but they did not promote understanding or aid appreciably in the control of the disease. Snow, having carefully observed cholera patients, recognized that later. He deduced that the agent must be in the water, food or carried by the hands.¹²

In searching for a common denominator to explain why some persons got cholera and others did not, Snow took advantage of an experiment of society. It seems that in those days, London water was available either from local wells or from private water companies. During one epidemic, Snow counted fatal cholera cases and calculated the number of deaths per 10,000 persons. Death occurred six times more frequently among those using water from one company than from the other. Not everyone consuming contaminated water died. In fact, even during the worst period, no more than two out of every 100 persons drinking this water became sick. By observing a large group (using some of the data used by Farr) Snow was able to show the connection between water and cholera. More striking evidence supporting Snow's idea came during a sudden outbreak of cholera in the vicinity of Broadstreet. Within ten days, more than 500 people died. Only persons drinking water from the well in Broadstreet were infected. Snow had authorities remove the pump handle and the epidemic ceased. Thus, effective control of cholera was possible almost two decades before the germ theory or laboratory identification of the microbiological agent.¹³

Sanitation of the physical environment became the focus of public health activities for the next fifty years and more. The miasmatic theory that noxious or poisonous gases emanating from sewage were the root of all contagious diseases was expressed repeatedly.¹⁴ Public health pioneers realized that environmental sanitation would reduce the slums, dirt, overcrowded conditions, and disease-bearing sewage and wastes that caused major health problems.¹⁵ New York City set the pattern for municipal health reform throughout the United States. The Metropolitan Board of health was created by an act that gave exceedingly broad authority to the health officers, and it gained a reputation for honesty and efficiency. Throughout the late 1800s the health department was more concerned with the quantity of water than with the quality, although there was a question of pollution by human and industrial wastes as early as 1868.¹⁶

Vision screening of school children began in Europe during this time in the city of Dresden in 1867. The practice spread through Germany and was brought to Boston in 1894.¹⁷

The great yellow fever epidemic of 1878 attacked 75,000, causing 15,000 mortalities. This epidemic prompted the passage of the National Quarantine Act in 1878, which gave the Surgeon General of the Marine Hospital the authority to enforce quarantines not limited to state lines.¹⁹ In 1893 this responsibility was transferred to the Marine Hospital Service. Other than the quarantine actions, the federal government's contribution to public health in this era consisted mainly of the care of seamen and those in the armed forces.¹⁴

Bacteriological Era, 1890-1910

By the 1890s, public health was beginning to emerge as a separate professional field, although medicine, with its improved professional standards was beginning to insist upon professional control.¹⁴ Although public health has origins as far back as prehistoric times, the public health movement dates back only about a century. This period, beginning in the 1800s, was the time of great bacteriologic and immunologic discoveries and development of techniques for their application. Public health became the integration of sanitary science and medical science and more recently, as social science.¹ The first bacteriological laboratory for the routine diagnosis of disease was established during this period. School children began to be examined for contagious disorders, which developed into comprehensive health programs. For every child who had an acute communicable disease, these examinations yielded scores of children suffering from defective teeth, vision, hearing and enlarged tonsils and adenoids. School nurses were instituted in the early 1900s to carry the message of hygiene into the home and follow up on the physical defects uncovered during the examinations.¹⁶ Public health's acquisition of a new body of knowledge allowed it to shift to preventive personal medicine as well as precise attacks against environmental hazards. Quarantine and disinfection, the principal measures for limiting the spread of contagion, were updated with immunization and serums effective against certain diseases. A good definition of public health in this era of mass immunizations would be "epidemic disease prevention and treatment by government medicine."¹⁸

Public health agencies stimulated new programs to prevent and control epidemics of such diseases as diphtheria, smallpox, and typhoid fever, which met the major needs of the times.¹⁵

About three-quarters of the decline in mortality in the early twentieth century was associated with the control of infectious diseases; the remainder, with conditions not attributable to microorganisms. The introduction of specific medical measures and the expansion of medical services are generally not responsible for most of its modern decline in mortality. The beginning of the steep and as yet unrestrained rise in medical care expenditures began when nearly all (92 percent) of the modern decline in mortality in this century had already occurred.⁷

The Evolution of Modern Public Health 1910-1960

The focus of public health activities by the American Public Health Association and the American public was changed from promoting the survival of the weakest to improving the working and living conditions of everyone. General concerns of the period included women's suffrage, the temperance movement, maternal and child care, drug and tobacco abuse, industrial hygiene, medicinal fraud, and venereal disease. Occupational and social diseases accompanying industrialization did not receive health resources.¹⁷ The beginnings of consumerism were evident in the Pure Food and Drug Act, state licensing laws and the American Medical Association's attempts to eliminate inadequate practitioners.⁶

The first significant move by the federal government into the health care field came with the Sheppard-Towner Act of 1921, which provided grants-in-aid to states instituting maternal and child care programs. In part due to opposition from the American Medical Association, this program was allowed to lapse in 1929.⁵ The first attempts to provide a national health program were part of the New Deal agencies, most of which made some contribution to health. In 1933 the Federal Emergency Relief Administration authorized funds for medical care, nursing, and emergency dental work, and in 1935 Titles V and VI of the Social Security Act authorized the use of federal funds for health purposes. The only significant federal health program during World War II era was the Hill-Burton Act of 1946 that promoted the construction of hospitals. The 1950s saw the federal government support the construction of medical and public health schools, appropriate large sums for health research, and in 1953 establish a Department of Health, Education and Welfare.¹⁴

Modern Federal Incentives

Because the government already provided free health care to merchant seamen, there evolved a government commitment to provide adequate health care services to those who were denied access.¹⁹ During the 1960s, the federal government began financing the delivery of health services with Medicare and Medicaid through privately practicing physicians. At this point, the definition of public health evolved to include disease prevention and treatment by a broader group of private as well as government practitioners to meet the needs of the underserved populations.¹⁸

There was much legislation concerning health care during the Johnson administration. Medicare and Medicaid were created by Congress to provide health services to the indigent and aging populations as part of the "War on Poverty." In all, twenty-nine important laws relating to health, education, and welfare were passed by the Eighty-ninth Congress. In addition, enactments of state legislatures and decisions of federal and state courts defined the status of health-related activities in relation to new technologies and changing socioeconomic conditions. Preventive and curative health services were vastly increased. Protection of fundamental personal freedoms was also outlined by the courts.¹⁹ Many other programs with optometric components added were started over the following fifteen years to include Vocational Rehabilitation, Crippled Children's Services for Independent Living, Education of the Handicapped, Crippled

Children's Services, Developmental Disabilities, Early and Periodic Screening, Diagnosis and Treatment, and CHAMPUS to name a few.¹⁹

Early in the 1970s public health leaders shifted their concepts of health from medicine to a more inclusive "health equals total wellness" objective. This move opened opportunities for the nonmedical professions, including optometry, to interact more with others in the health care system.²⁰ Major actions in health planning included the inception of Certificates of Need for new facilities and services, the setting of performance criteria for meeting State Health Planning Agency Standards in an attempt at cost containment, and the subsidy of Health Maintenance Organizations.²¹ Congress during this period had a commitment to assure health care for all Americans. From 1980-1988, there was a reduction in government funding and the elimination of numerous community health programs, many of which had been supported by optometrists in development or by volunteering professional services due to the large federal deficit.¹⁹

Cost containment has been very much a concern of the government in the 1980s. From 1960 to 1978 our total expenditures as a nation mushroomed from \$27 billion to \$192 billion, yet our 700 percent increase in health spending has not yielded equally striking improvements in health. Most of this spending went toward the treatment of disease and disability rather than toward prevention. Unfortunately, we still lag behind several other industrial nations in the health status of our citizens. Fourteen other countries have a higher life expectancy for men, six others for women.

Recent gains in health care are due to lifestyle changes made by individuals, such as the reduction of cigarette smoking, increased exercise, and improved nutrition as well as environmental health and occupational safety. Avoidance of alcohol, drugs and injuries, and the use of seatbelts in automobiles are examples of current prevention activities. Periodic screening for major disorders, such as high blood pressure, and certain cancers, also enhance the prospect for good health.²²

Another current example of public health interest is the AIDS - Acquired Immune Deficiency Syndrome epidemic. This disease, like other epidemic diseases of the past, causes concern because it is mysterious, induces intense suffering among its victims, and is almost uniformly fatal. When the syndrome was first recognized, it was largely confined to four "high risk" groups (male homosexuals, intravenous drug users, Haitians, and hemophiliacs), yet it spurred a major public health effort.²³ This is further proof that as far as we have come in public health and preventive medicine, basic public health principles such as early intervention and control of contagious disease still have a place in current activity.

History of Optometry and Public Health

Optometry and public health share the goal of preventing and reducing discomfort, disability and disease in society and promoting the quality of life.¹⁸ However, just as public health and medicine evolved from simpler roots, optometry had its start in the distant past. The earliest reference to the human eye is found in the code of Hamurabi in Babylon in approximately 2000 B.C. The code was formulated from the standardization of judgments handed down by judges and to encourage the skillful

treatment of patients. Three precepts refer to the loss of vision, including the statement "If a man destroy the eye of another man, they will destroy his eye." ²⁴

Vision needs of workers in an agricultural economy were different from those required in an industrial economy. As scientific knowledge and education became more important, visual efficiency and comfort became more important. The earliest optical shop was opened by optician John McAllister in Philadelphia in 1783. In this shop customers used trial and error to select prefabricated spectacles. Charles Prentice, considered the father of optometry, was a refracting optician who was unusual because he charged a fee for his services. In 1898 the American Association of Opticians, renamed the American Optometric Association in 1910, was founded. By 1900 the membership was limited to those opticians who provided refraction as one of their services. The first optometry law was enacted in 1901 in Minnesota, and the last, in 1924, in the District of Columbia. Optometrists in practice prior to the enactment of these laws (grandfather clause) and licensed medical doctors were the only ones allowed to practice optometry without an optometry license. In 1922 an accrediting agency for optometry schools was established that produced results similar to those of the Flexnor report on medical schools. It resulted in the closure of more than half of the existing schools.

Physicians entered into limited competition with many opticians in prescribing spectacles after the development of ophthalmology. Ophthalmology developed as a distinct branch of medical practice in 1884 with the organization of the American Ophthalmological Society. Thomas Shastid, a well-known ophthalmologist at the turn of the century, is quoted as saying that "the M.D.'s generally would not recognize even the existence of such a thing as eyestrain and for the resulting headaches morphine was given producing drug habituates." ²⁵

Optometry has evolved from the provision of eyeglasses and refraction to many other primary eyecare activities: fitting contact lenses, vision training, treating low vision, disease detection and treatment, multidisciplinary practice, diagnostic and therapeutic drugs, and preventive services as well as other services. ¹⁸ The practice of Optometry evolved into a primary care profession over a long period of time, and involved the change of many state laws governing this practice, legal challenges, and the inclusion of the responsibility for the diagnosis of conditions of the human eye. The first state which granted the use of diagnostic pharmaceutical utilization was Indiana in 1946, and this was by Attorney General Opinion. Rhode Island was the first state to pass legislation to approve the use of diagnostic pharmaceuticals in 1971, and the last state, Maryland, acquired the ability to use diagnostic pharmaceutical agents in 1989. Therapeutic pharmaceutical legislation was first enacted in West Virginia in 1976, and the last state to pass legislation was Massachusetts in 1997, followed by the District of Columbia in 1998. This evolution is chronicled by Melvin Wolfberg in an article for the *Journal of the American Optometric Association* in 1999. ²⁶

Optometry's role in the field of Public Health has also become more important as the main concerns of eliminating contagious diseases, improving our drinking water, eliminating bacteria from food, and waste disposal have changed to the elimination of chronic disease. The detection, prevention and treatment of such chronic disease such as diabetes and glaucoma are important public health concepts. The allocation of community and governmental resources are discussed by public health professionals

and impact upon the provision of care by health care providers.²⁷ Initiatives by optometrists that can improve the health of populations include continuing to participate in disease prevention, health promotion, communicating, building alliances and linkages, and think global and act local.²⁸ Optometry is an important health care provider in public health efforts.²⁹

The public health movement in optometry had its earliest beginnings in New York City with the extraordinary success of a new free standing public clinic, the Optometric Center of New York. Established in 1956, the clinic brought community outreach, charity care and optometric professional concerns to a variety of [public] health issues. Clearly and seriously lacking in the mid 1950's were optometrists who had formal graduate education and training in public and community health and in public administration of health services. Alden N. Haffner, O.D., M.P.A., Ph.D., President Emeritus State University of New York, State College of Optometry, at Academy, ASCO and AOA sponsored meetings, called for and strongly advocated the pursuit of formal graduate studies in public and community health and in public administration of health. Moreover, advocacy to join the American Public Health Association [APHA], as well as state and local public health associations was stressed at AOA, Academy and ASCO sponsored meetings. The great optometric educator, Dr. Henry B. Peters, joined this important movement and was an early and ardent spokesman. The movement took on new momentum when Dr. Haffner was elected President of the oldest and largest APHA affiliate, the Public Health Association of New York City [in 1973-1974]. It was, indeed, an exciting time.³⁰

The relationship between medicine and optometry has been strained at times. However, the emerging trends of changes to the health care system driven by both corporate funding agencies and the federal government may provide common issues that provide a market driven alliance between ophthalmology and optometry.³¹ These opportunities may provide opportunities for joint cooperation in providing health care to populations. Another opportunity for practice growth is the adoption of the principles of public health outreach program sponsored by AOA's Healthy Eyes, Healthy People. This initiative was designed to complement the U.S. Department of Health and Human Service's (HHS) Healthy People 2010.³²

Certainly, a public health optometrist would also need to be educated on the vocabulary and concepts of public health, but they also need to stay current on the science of clinical practice. Treatment decisions need to be supported by high-quality clinical evidence leading to evidence based practice.³³ Studies supporting health promotion and practice of preventive care can be scientifically documented to improve health outcomes.³⁴ The public health perspective provides insights on why certain changes in health care delivery have occurred, and are used predict the structure of future eye and vision care in America. The public health perspective underscores the need for proactive, collaborative involvement by optometrists and ophthalmologists to ensure some semblance of rational change in the health care delivery in the current health reform environment.

Summary

In 1987 our nation celebrated the two-hundredth anniversary of its Constitution, one of whose declared purposes was to "promote the general welfare." As part of this objective, public health in the United States has developed over the years as a governmental response to the physical, mental, and social needs of the American citizenry. As we begin the third century of our Constitution, we can expect the leaders of public health, including public health optometrists, to continue to identify health concerns, and work diligently toward their resolution to ensure that people remain happy, healthy, and fully contributing members of society.

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