

## Anti-Aging Medicine: The History

# Life Extension and History: The Continual Search for the Fountain of Youth

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The search for longevity is hardly new. Before recent times, advocates for longevity fell into two general time periods. From the 16th century to the 18th century, individuals worked to extend the lives and vitality of elderly people; they believed senescence was a time of considerable worth. From the 19th century through the early 20th century, however, anti-age advocates generally depicted old age as a time to be feared and despised, devising myriad procedures in order to eliminate it entirely. While sharing little with the advocates of the early modern period, the recent anti-age movement clearly mirrors many of the beliefs of the longevity advocates of a century ago. Both groups not only see old age as a disease to be eradicated through injections and operations, but also argue that the old constitute an enormous economic burden. These beliefs reveal that the new anti-age movement, like its early 20th century precursor, is based on more than simple hair dyes, hormones, or diet. Rather, their ideas and actions ultimately serve to marginalize the very process of growing old.

ACCORDING to anti-age advocates, the fountain of youth has finally been discovered. Rather than drinking from the mythical well, however, those who search for endless youth and vitality are urged to send in their \$60 and receive the wonder formula of the “ingestible growth hormone.” *Grow Young with HGH, the Amazing Medical Plan to Reverse Aging* declares the title of Ronald Klatz and Carol Kahn’s 1998 book (1). The human growth hormone, claims the book’s advertisement, is a medically proven plan “to lose fat, gain muscle, enhance your sex life, decrease wrinkles, prevent disease, and reverse the aging process.” Once the hormone is consumed, the anti-age enthusiasts declare, age itself will no longer be *an inevitable disease* accompanied by disability and illness. Instead they promise, “new” and “revolutionary” advances that will “usher in a new modern age for humanity: the Ageless Society” (2, p. 3). The future of anti-aging medicine,” writes Ronald Klatz and Robert Goldman, “promises the elimination of the disability, deformity, pain, disease, suffering and sorrow of old age. In a few decades, the traditional enfeebled, ailing elderly person will be but a grotesque memory of a barbaric past . . .” (3, p. 13).

From the perspective of a historian, however, such claims do not really appear “new” or “revolutionary.” Rather, both in the categorization of old age as a disease, and in the hope of eradicating the last stage of life, these declarations clearly echo well-enunciated ideas of the past. As this article will show, such pronouncements are hardly novel; rather, they reflect the medical, social, and economic attitudes of those who search for endless youth and vitality. By attempting to extend the life cycle, or to eliminate old age

entirely, anti-age advocates reflect important beliefs about elderly persons and their role in society. As revealed through earlier attempts at prolongevity, behind the modern-day promise of renewal through hormones, hair dyes, and plastic surgery lies a vision of what it means to be old, and an understanding of the impact of elderly people on American society.

Before the recent decade, the literature on attaining great age generally fell into two major periods: the first ranged from the 16th century through the 18th century; the second, from the 19th century through the early 20th century. While advocates in both these time periods saw the elimination of the diseases in old age as an admirable goal, their characterization of the stage of life, as well as their ultimate aims, differed considerably.

With the Renaissance, the idea of prolongevity developed out of the belief that individuals could control both the length of their time on earth and the quality of their existence. One of the most influential of these advocates was Luigi Cornaro, an Italian nobleman who in 1550 wrote *The Art of Living Long* (4). Translated into English, French, Dutch, and German, the book became the bible of prolongevity advocates who asserted that a long and healthy life was a very real possibility. By the 19th century, the English version of Cornaro’s book had gone through more than 50 editions (5). In his study, the author argued that individuals were not destined to die at 60 or 70, but with care and a good constitution, could live extremely long lives. The key to this survival, he believed, lay in a simple life based on the principle of moderation in all things. His own life served as an ideal illustration of his philosophy.

Suffering at age 35 from a variety of illnesses including gout, fever, and dehydration, he reformed his behavior and lived happily and healthily until his death at 98.

In formulating his philosophy, Cornaro espoused a widely shared idea that old age was caused by a significant decline in vital energy. The force supposedly supplied the necessary vitality for growth in childhood and stability in middle age. By senescence, however, the reserve was gone; it left most individuals depleted and debilitated. Those able to maintain their vital energy—whether through diet, moderation, or simple good luck—were apt to experience a healthy and active old age. With the proper conservation of this vitality, the diseases that accompanied old age would disappear, leaving individuals happy and productive until their final days. The secret, then, to a long life was simple: The fountain of youth was available to all who controlled the means to retain their vital energy.

Significantly, in advocating the new regimen, Cornaro and his followers did not see old age itself as an enemy to be vanished, but as a stage of life possessing its own riches and rewards. “I had never known,” Cornaro wrote, “that the world was beautiful until I reached old age. Indeed,” he added, “old age is the time to be most coveted, as it is then that prudence is best exercised, and the fruits of all the other virtues are enjoyed with the least opposition; because by that time, the passions are subdued, and man gives himself up wholly to reason” (4, p. 43). Cornaro, in fact, gave four reasons for approaching a healthy old age with great expectations. First, he noted that by reaching an advanced age, an individual might come to understand the worthiness of a long life; second, he believed that old age could be a “happy place of life” where individuals could enjoy the results of their youthful endeavors; third, he depicted the final stage of life as characterized by learning and virtue, assets that would have great benefit to the community; and finally, he believed that, with the elimination of disease, an individual’s end would come with a peaceful “natural death,” rather than in pain and suffering (4). In this portrayal, Cornaro envisioned eliminating the diseases that often accompanied old age—not old age itself. For him, the stage was one that offered both great promise and fulfillment.

With the Enlightenment, this philosophy of life extension was espoused by a number of the *philosophes*. From Condorcet to Benjamin Franklin, leading thinkers believed that, in the centuries ahead, science would solve the problem of debility in old age. Individuals who followed the simple rules of nature could then exist until their deaths with the vitality of adulthood and the wisdom of their advanced years. Most notably, many of these rationalist thinkers did not believe that the decreasing strength of the aging body implied an equal weakness of the mind. Benjamin Rush, for example, was convinced that most aged individuals—and especially those who were temperate in their daily habits—would retain full use of their mental powers until they reached the grave. In 1797, in a study of a group of octogenarians, he found that, although some elderly individuals had faulty memories of the recent past, their intellectual, moral, and religious powers were completely unimpaired. His recommendation for a happy old age, therefore, was not to overcome the laws of nature, but to

understand them in order that the aging individuals remain productive members of society (6).

Throughout the 19th century, however, this notion of a vital and meaningful senescence was challenged by scientific discoveries that defined old age as a disease to be hated and feared. Based on studies first done at the hospitals in Paris, elite physicians began to link old age to specific physiological changes in the body. By tracing lesions in the tissues, and later changes in the cell, they concluded that old age was not simply a decline in vitality that could easily be controlled through a regime of diet or exercise. Examining the aging eye, the loss of hearing, or the development of arteriosclerosis, they asserted that aging, like many disease entities, appeared to cause numerous pathological transformations that were both progressive and inevitable. As a result, clinicians agreed that illness and old age were inseparably intertwined, if not quite synonymous. “It is impossible,” wrote the ‘father’ of geriatrics, I. L. Nascher: “to draw a sharp line between health and disease in old age. With every organ and tissue undergoing a degenerative change which affects the physiological functions, it is a matter for personal opinion to determine at what point the changes in the anatomical features and physiological functions depart from the normal changes of senility and to what degree” (7, p. 94).

By the early 20th century, to most authorities, aging was a disease that destroyed both the body and the mind. Previous beliefs that physical debility or mental decay could be avoided seemed overly optimistic and completely unscientific. “The weight of evidence,” wrote Dr. W. H. Curtis, “seems to establish the fact that old is never physiological, but pathological, at least its visible and appreciable evidences are pathological ones” (8, p. 401). Early signs of aging, such as a loss of short-term memory or a slowing of the step, only foretold the horrors that were inevitably to come. “From the beginning to the end,” explained Dr. Charles Mercier, “the process is a continuous, gradually progressive loss. Conduct, intelligence, feeling, and self-consciousness gradually diminish, and at last cease to exist . . . The decadence of old age is, in fact, a *dementia*, a deprivation of mind” (9, p. 305).

While many physicians argued that this conception of old age called for the establishment of a special study of growing old, few devoted themselves to “senile” therapeutics. The theoretical construct that defined aging as a progressive disease seemed to limit both research and optimism. The majority agreed that, not only was it as difficult to separate normal old age from its pathological state, but they also lacked the knowledge to stop the inevitable decline that led to debility and death. Not surprisingly, then, few chose to specialize in the diseases of old age (10).

For a very small number of physicians, however, this conceptual understanding of aging served as a call for action. If old age was a hated disease, why not simply attack and destroy it? Could not the same scientific construct that traced the decaying cell be used to inhibit its deterioration or return it to its youthful state? Several scientists answered this question with a resounding “yes!” They believed, as Eugen Steinach would argue, that their research into the aging process definitively proved that “the senile process is reversible,” if doctors were simply willing to intervene (11, p. 123). Unlike the *philosophes*, they no longer believed that

the key lay in working with nature. Rather, they argued, seemingly immutable natural laws could be overcome if they took immediate action.

For many in this group, the cause of the “disease of old age” was rooted in the process of cell growth and nutrition. The cell, they asserted, was immortal; only its development within the body caused its degeneration and death. One of the first to advocate this position in relationship to old age was Elie Metchnikoff in the late 1800s. Focusing on cells termed phagocytes, he contended that they poisoned the body and led to decline. In response, he advocated a diet rich in lactic acid, which, he declared, would lead to the eradication of intestinal putrefaction and the destruction of microbes that caused the body to decay (12). Following a similar logic, Charles A. Stephens argued that the road to longevity and the elimination of death lay in the perfection of cell nutrition. Believing that he could retain the youthfulness of tissues through proper nutrition and stimulation, he envisioned a time when cells would never age. There would be, according to Stephens, no senescence or death, but simply everlasting youth. “Immortal life will be achieved by the aid of applied science;” he declared, “it is what the whole scheme of evolution moves forward to” (13, p. 178).

While these physicians looked to diet and hygiene to unravel the mysteries of growing old, others took a more experimental and invasive approach. A small—though well publicized—group was convinced that the fountain of youth lay deep within the endocrine system. Focusing particularly upon the testicles and ovaries, they were adamant that natural debility and decline of old age could be overcome. Characterizing their doubters as “lack[ing] scientific objectivity and sufficient experience” or “unjust, biased, and unscientific” (14, pp. 8 and 10), they actively pursued operations and experiments that, they were convinced, would lead to countless years of youthful activity.

One of the first to perform such experiments was C. E. Brown-Sequard. Linking the aging of the body to a weakening of the sexual function, he argued in 1889 that science—and radical intervention—could return these key sex glands to their adolescent state. At age 72, he claimed he had proved the validity of his thesis on his own body. Injecting himself with a mixture of animal sex glands, he asserted that he had restored his own vitality to its youthful state. “The physiological effects of the extract will appear to you,” he wrote “as they appeared to me, most surprising. It is sufficient to state that everything I had not been able to do or had done badly for several years on account of my advanced age I am today able to perform most admirably” (15, p. 12).

Spread by both scientific and lay journals, the news of his work led to great public and commercial interest. In August 26, 1889, *The Medical News* announced that a firm of druggists “claims to have discovered and to furnish for use the active principle contained in ‘testicular fluid.’” According to the company, the new compound, *Spermine*, was composed of “semen, calf’s heart, calf’s liver, bull’s testicles, and also from the surface of anatomical specimens kept under alcohol.” The success of the drug could not be doubted. “Physiological experiments,” the company declared, “have established the fact that in the salts of the alkaloid *Spermine*, we have the cause for the stimulant

effects observed by Dr. Brown-Sequard.” With its use, the weakness of old age was simply a remnant of the unscientific past (16, p. 58). Although patients lined up for injections, the initial popularity of the product and Brown-Sequard’s approach failed to produce long-term success. Other companies found themselves charged with fraud for swindling a gullible public (13).

Nonetheless, throughout the early 20th century, an increasing number of physicians argued that their experimental procedures had indeed overcome nature by eliminating old age and restoring vigor. In 1914, Dr. Frank Lydston of Chicago performed human testis transplants on several patients, including one on himself. Claiming to be one of the first to experiment with this technique, he argued that the grafting process slowed down the onset of senility. Not only did it improve his sexual performance, but even turned his gray hair back to its original color. (17).

While Lydston believed he never obtained the attention or credit he deserved, the work of L. L. Stanley almost immediately received widespread scientific notice. In 1919, Stanley, a physician at San Quentin prison, removed the testicles of a recently executed murderer and transplanted them into a 60-year-old inmate deemed “prematurely” senile (15, p. 26). In the pages of *Endocrinology*, he later reported that he had performed the operation on 643 inmates as well as 13 physicians, all with outstanding results. According to Stanley, not only had the gland-grafting operation “rejuvenated” the participants, but eliminated a variety of symptoms, ranging from acne to asthma (18). By 1928, one researcher estimated that the Stanley procedure had been performed effectively with over 50,000 patients (13).

Although later studies revealed that such operations could not possibly have been successful, throughout the 1920s, several physicians became international celebrities by performing these grafts. While Stanley’s unique position as a prison surgeon provided testicles from human participants, others experimented—successfully they claimed—with a variety of animal gland grafts. Dr. Serge Voronoff, probably the most well known for this technique, turned to monkey gland grafts to rejuvenate his patients. Beginning first with operations using the glands of chimpanzees, and then later with baboons, he traveled the globe, performing operations, giving scientific papers, and exhibiting his star patient, Edward Liadet, a 76-year-old London businessman who, after receiving his monkey gland transplant, claimed to look and feel as if he were no more than 45. Although Liadet died within 2 years of the operation, Voronoff was convinced that his method was a success (18).

The response from more orthodox medical professionals ranged from polite hearings to direct attacks. While the journal *Endocrinology* originally published some of the papers, many authorities directly challenged the idea of transplanting animal glands onto humans. Immediately following the announcement of Brown-Sequard’s experiments, Dr. Allen McLane Hamilton argued, “The theory is opposed to all the laws of physiology and chemistry. Further than that, I believe it is a very dangerous proceeding, and that it is time for reputable physicians to express their disapproval of the experiments. There is great danger of introducing a violent poison into the system” (16, p. 102). By 1920,

Dr. Arthur Dean Bevan, the President of the American Medical Association, discussed the issue in his presidential address, "It is a scientific fact," he stated, "that any foreign gland introduced into the human body must disappear within a short time. This is as elementary and incontrovertible as that two and two are four" (15, p. 49). Editorials in the *Journal of the American Medical Association* called for more studies, and noted "the ease at which fragmentary data are woven into a story of technical success" (15 p. 41), while in France, the French Surgical Congress and Academy of Medicine refused to support Voronoff's ideas or provide a platform for his research. Voronoff, however, simply characterized these associations as "decaying, rundown organizations who opposed all change and innovation" (15, p. 54). Despite increasing doubts about the efficacy of his operation, he continued to perform both human and animal operations to popular acclaim.

Not surprisingly, many of these gland-transplanting physicians portrayed their operations as benevolent acts in which they alone were eliminating the "grotesque" disease of old age. They were, however, not unaware of the financial benefit they could gain. Voronoff, for example, charged between £500 and £1000 for each operation. Probably no "doctor" profited more from the search for the glandular fountain of youth, however, than "Dr." John R. Brinkley. Having studied 3 months at the Eclectic Medical University of Kansas, Brinkley received a medical diploma that he later used to become licensed in Kansas and Arkansas. Upon settling in Milford, Kansas, he began grafting goat glands onto individual seeking cures ranging from impotence to insanity, as well as hoping that they might obtain the secrets to eternal youth. Arguing that "you are only as old as your glands," Brinkley built his own hospital in which he charged \$750 for a goat gland transplant and \$2000 for a human one (19). By 1923, he had established one of the nation's largest radio stations, KFKB, in Kansas. Along with music, religion, and his attack on traditional medicine, he advertised his operations and pharmaceuticals. By the end of the decade, he had become a millionaire, complete with several homes, two airplanes, a yacht, and numerous cars. Eventually, however, he found himself attacked by orthodox medicine. In 1930, the Kansas Board of Medical Registration and Examination revoked his license, while in the pages of the *Journal of the American Medical Association*, Morris Fishbein labeled Brinkley "a blatant quack," challenging his educational qualifications and procedures (19). After a failed campaign for the governor of Kansas, the "goat gland doctor" moved to Mexico, where he once again advertised his beliefs on a powerful radio station.

Gland grafting, however, was not the only operation early 20th century physicians used to extend middle age. Eugen Steinach attained international acclaim through the procedure he termed "vasoligation" that cut the vas deferens and directed the sperm from the testicles back into the body. Contending that sperm held great reinvigorating powers, he detailed numerous case studies in which the operation restored youth and vigor to both animals and men. In 80% of his cases, he argued, senility disappeared; both mentally and physically, the patients returned to their "presenile" state. "The harmonic restoration of so many failing

capacities," he argued, proves that reactivation is not confined to single organs and certainly not merely to sexual functions, but, as already insisted upon, that it embraces the substance of the whole organism and extends into each individual cell structure. In questioning this fact, we have also answered our principal question, which was whether the senile process is "reversible" (11 p. 151).

Although most doctors generally directed their operations to men, physicians such as Voronoff, Steinach, and others came to believe that women could be "rejuvenated" as well through surgical intervention (20). While Steinach preferred injections of the "follicular hormone" and radiation of the ovaries, others began to transplant ovaries into menopausal patients. The outcome, rejuvenation advocate Norman Haire declared, was almost always outstanding. In the senile female, he wrote, in 1924: "[T]he implantation of an ovary has very striking results. If an ovary is transplanted from a young into an ageing female it ceases to produce ova, but continues to secrete hormones which circulate in the blood of its new host and produce great improvement in mental, physical and sexual health, and stimulate the host's own ovaries to renewed activity of both its functions. The senile female becomes more vigorous, shows renewed sexual desire, exerts a renewed attraction over the male, and after a longer period of sterility is once more capable of becoming pregnant and producing offspring" (21, p. 32). Numerous case studies from these doctors testified to outstanding results as aged, haggard old women suddenly became sexually alluring and attractive.

Despite the differences in approach and types of operations, all these researchers shared one clear belief: Aging was an enemy to be attacked at all costs. Without question, to grow old was to become impotent and useless. Old age, according to Stephens, was a period of "grossness, coarseness, and ugliness" (13, p. 177). The body weakened, the mind grew dim. In this characterization, senescence was hardly linked to wisdom or experience. Rather, nothing in the last stage of life was worthy of maintaining. "The alleged joys of old age," wrote Voronoff in 1928, "have been imagined to console us in our downfall, which is considered as inevitable and irremediable" (18, p. 73). The only hope was to eradicate it entirely through a direct attack, in the form of laboratory research, invasive operations, or a myriad of foods and prescriptions.

Embedded in this medical view of old age was the belief that not only were elderly people nonproductive and obsolescent, but they also represented a severe economic challenge to modern society. For many commentators, turn-of-the-century western industrial societies were facing a crisis of aging. Believing that the old held power and respect in agricultural societies, they bemoaned what they perceived to be the declining status of elderly people in the modern world. In their eyes, to be old was to be poor; modernization, for the old, meant dependence rather than respect. "The socioeconomic problem of the old man or woman," wrote aging expert Isaac Rubinow, "is specifically a problem of modern society, a result of the rapid industrialization" (22, p. 302). Assuming that the old could no longer compete in a world that idolized the young and relied on new technological skills, aging experts asserted

that elderly people had been discarded on the “industrial scrap heap” only to face inevitable impoverishment (23). “For the great mass of wage-earners,” pension-advocate Abraham Epstein explained, “inability to maintain their regular employment makes dependency in old age inescapable and inevitable” (24, p. 60). As old age was an incurable disease, and with no hope of maintaining their health, elderly persons would have little choice but to seek refuge in the poorhouse or depend on their children or the state for support in their inevitable dotage.

The weakness of the old, therefore, was not simply an individual medical problem but seemed to challenge the prosperity and progress of the nation. Social as well as medical experts on aging utilized a wide array of data to prove the negative impact of the old on modern-day society. Elie Metchnikoff, for example, noted that France spent huge sums maintaining 2 million people aged 70 years and older. “Already it is complained,” he wrote, “that the burden of supporting old people is too heavy and statesmen are perturbed by the enormous expense which will be entailed by State support of the aged” (12, p. 134). Even the new film industry of the early 20th century delivered this message to its mass audience. In a short silent film, D. W. Griffith pictured the horrible plight of the aged, and asked, in his title, “What Shall we do with our Aged?” as his elderly protagonist hobbled off to the almshouse. Those who had already succumbed to the ravages of old age were clearly pictured as the *marginalized other*—they had become little more than a problem for themselves and a useless drain on society. The only hope, longevity advocates proclaimed, was to use science and technology to eliminate the stage entirely.

To support this contention, many aging advocates pointed with statistical inaccuracy to the seemingly growing proportion of aged individuals who filled the almshouse. In 1880, they argued, only 33% of the nation’s residents of the poorhouses had been old; by 1904 the proportion had risen to 53%, and by 1923, to an astonishing 67% (25). These numbers, they asserted, proved that old age was an appalling stage of existence. By the 1930s, the federal government accepted these statistics as one of the rationales for adopting federal pensions. “The predominance of the aged in the almshouses,” wrote the Committee on Economic Security, “is a sign of their increasing dependency” (26). What few advocates acknowledged, however, was that the growing proportion of aged inmates *within* the asylum was not due to the increasing impoverishment of the old but to the removal of other, often younger inmates. Nationally, in fact, the percentage of all elderly persons who became almshouse residents remained rather constant at 2% (27). Nonetheless, aging advocates repeatedly claimed that the almshouse demonstrated the horror of old age. Unless extreme action was taken, the government would be overwhelmed with the cost of their care.

For physicians such as Elie Metchnikoff, the only hope for solving this seemingly ever-growing problem was to look to the discoveries and procedures of medical science. “When we have reduced or abolished such causes of precocious senility as intemperance and disease,” he wrote in 1908, “it will no longer be necessary to give pensions at the age of sixty or seventy years. The cost of supporting the old, instead

of increasing, will diminish progressively” (12, p. 134). Although Metchnikoff looked to future research, many of the anti-age surgeons argued that the pending crisis had been solved. Touting their operations, they declared that they had already discovered how to stop the inevitable poverty of the old. With surgical transplants, they contended, the old would no longer suffer debility or disease; they would remain productive and self-sufficient indefinitely. In 1926, in fact, Voronoff proclaimed that his procedure would empty old age asylums and allow the inmates “to resume for a few years an active mode of life, instead of remaining a burden to the community.” Convinced of the efficacy of the procedure, he recommended that such operations should immediately take place “on a large scale” in all institutions that housed the old (20, p. 110). Two years later, he noted the economic impact of his operation on a 64-year-old widow whose “earnings were diminishing, poverty was facing her, and she came to me with a cry of distress, asking me to restore her strength and her energy for work, in order that she might be saved from definitely shrinking and being thenceforth unable to support her son.” After he grafted an ovary from a female chimpanzee, he reported that the operation “... literally transformed this poor woman ... Her figure had again become erect, her movements alert; her face no longer wore the expression of pain that made it look so old; the wrinkles, further, were much less marked, as a result evidently of the better tone of the muscles which is always to be observed after grafting. But what rejoiced the worthy woman more was that she was again able to climb lightly her six flights of steps, work twelve hours a day, and feel herself a renewed strength which restored her moral courage to face the struggle for life” (18, p. 186).

In the 1920s, such pronouncements were taken quite seriously. Following one of Voronoff’s testis graft operations, a Hungarian insurance company refused to pay an old age pension to a patient. With the monkey gland attached to his body, the man, the company asserted, could no longer claim the annuity that had been intended for the debilitated old (15). Other insurance companies hoped that Steinach’s vasoligation procedure would save them from the increasing high cost of annuities. “Recently,” reported Steinach-enthusiast George F. Corners, in 1923, “at a meeting of underwriters in New York, the effect of Steinach’s discovery on life insurance, disability clauses, etc., was discussed with much animation. Provisions for old age, pensions, etc., will be subjected to substantial modifications, if the Steinach operation becomes universal” (28, pp. 49–50). Here, it seemed was an answer to the growing financial burden of the elderly population. Extreme medical actions could “cure” the disease of old age and impede the seemingly imminent economic crisis.

Beginning in the 1940s, this message was conveyed with decreasing frequency. The failure of many of these miracle treatments to deliver endless youth, along with the establishment of Social Security and the growing number of private pension plans, all served to diminish the promises of longevity advocates and the harsh descriptions of aging. Instead of categorizing the entire stage as a disease, newly formed organizations such as the American Geriatrics Society and The Gerontological Society of America sought

to separate normal old age from treatable, pathological conditions. Authorities who had once emphasized the incapacity of the old now spoke of the last stage of life as a time of independence and autonomy. In newspapers and magazines, images of decrepit elderly couples in the almshouse were often replaced by happy pictures of newly retired “seniors” who spent their final years on the golf course in pension-supported leisure. Information on planning for retirement, tips on autonomous living, and advice on sexuality after menopause filled the pages of literature directed to the aging community and their families (27).

In the early 1990s, however, beliefs about the uselessness of old age and the need to eliminate the aging process have reappeared, espoused by the founders of the American Academy of Anti-Age Medicine (A4M). Established in 1993 by 12 practitioners, the A4M has dedicated itself to “addressing the phenomenon of aging as a treatable disease.” In books, web sites, and television infomercials, leaders of the A4M again picture old age as the ultimate enemy, a deplorable state that requires eradication. “Once aging is viewed as a disease,” proclaims Dr. Ronald Klatz, one of the founders of the anti-age movement, “then it becomes a treatable condition.” According to the anti-age literature, with proper hormone treatment, exercise, plastic surgery, and nutritional supplements, individuals can then look forward to the “END OF AGING” and anticipate countless years endowed with the vitality and appearance of the middle aged (2, pp. 3–4).

In their approach and their attitudes, this movement obviously shares little with the first wave of longevity advocates. Unlike Cornaro, Condorcet, or Rush, the anti-age advocates see nothing of value in old age itself. Few in the A4M would endorse Cornaro’s notion that “old age is the time to be most coveted” (4, p. 43). Hardly a period of wisdom, or contemplation, the last stage of life is characterized only as a time of weakness and disease. According to the founders of the movement, old age is simply a “constellation of degenerative disorders which lead ultimately to disability and death” (2, p. 4). As the final stage of life is clearly a time of “prolonged suffering and decrepitude” (29, p. ix), those who have succumbed to its ravages are portrayed as the most marginal of individuals.

But if the new anti-age advocates repeat few of the ideas of their 16th century, 17th century, and 18th century precursors, they clearly mirror many of the attitudes and practices of a century ago. Although they depict their philosophy and practices as marking a new and revolutionary approach to the eradication of old age, their view of the aging process, as well as their methods of “curing” it, vividly echo the approaches, beliefs, and actions of the late 19th and 20th centuries’ longevity experts.

To the members of A4M, as to the advocates of the early 20th century, old age is not simply a life stage, but a disease that brings illness, poverty, and decrepitude. The culprit, both groups would agree, is the cell whose aging transformation within the body stands in the way of immortality. And, like the interventionist doctors of a century ago, the new anti-age experts argue that this process can be “cured” through direct action. Although doctors such as Steinach and Voronoff had identified the sex glands as key to the process, the members

of the A4M now pin their hopes on what they term “multi-hormone optimization” and especially note the importance of the human growth hormone. “By replenishing your supply of growth hormone,” write Ronald Klatz and Carol Kahn in *Grow Young with HGH*, “you can recover your vigor, health, looks, and sexuality. For the first time in human history, we can intervene in the aging process, restore many aspects of youth, resist disease, substantially improve the quality of life, perhaps even extend the life span itself. The ‘Fountain of Youth’ lies within the cells of each of us. All you need to do is release it” (1, p. 15).

Steinach and Voronoff, of course, would have argued vociferously that this was not “the first time in human history.” They, too, had contended that they had “intervened in the aging process.” And, like the present-day testimonies from happy patients, the turn-of-the century physicians had displayed “before” and “after” photographs and case studies. In words and images, they, like their modern-day counterparts, had argued that such indisputable pictures proved that they had stopped the cell from aging and successfully returned their participants to blissful middle age. For Steinach and Voronoff, as for the members of the A4M, old age was a “grotesque” disease that could be scientifically eradicated through the correct combination of hormones, diet, and surgery.

Moreover, despite warnings that such treatments may have little effect, or in fact, may be dangerous (30, p. 29 and 31), both groups eschew the traditional medical establishment, finding their methods and approaches to be elitist and obsolete. In the early 20th century, aging interventionists criticized the medical establishment that questioned their operations and demanded further studies. The traditional academies, they contended, were “outdated” or “decaying”; the time for action was now. A similar attitude is expressed by the A4M. According to Klatz and Kahn: “It took forty years before the medical establishment gave its nod for routine replacement of estrogen and progesterone in post-menopausal women and it might take another forty years before it gives the nod to growth hormone replacement. We believe the consequences of *not acting* are far worse than the consequences of acting” (1, p. 28).

Not surprisingly, like the gland doctors before them, the leaders of the A4M have had their practices and credentials assailed by the medical and legal communities. In 2000, the State of Illinois Department of Professional Regulations challenged A4M founders Ronald Klatz, DO, and Robert Goldman, DO, who, in numerous books, had identified themselves as MDs. Although both men had acquired an MD degree from the Central America Health Sciences University School of Medicine in Belize, the state ruled that they were not licensed to use this credential in Illinois. As a result, on December 6, 2000, Klatz and Goldman agreed to pay \$5000 apiece and “cease and desist” from identifying themselves as MDs (32). Much like Brinkley, the goat gland doctor who had battled with the American Medical Association and the Kansas Medical Board, the leaders of the A4M have had to revise their credentials according to professional standards.

But the similarities to their precursors go well beyond these conflicts with orthodox medicine or even their shared definition of aging. In justifying their beliefs, both groups

also repeatedly point to statistical “proof” to support their contentions. Almost every work of the A4M begins with a discussion of the demographic revolution that has occurred in the life cycle—seeming indisputable confirmation that we are now witnessing the exponential growth in the years at the end of the life cycle. In *Brain Power*, Bob Goldman, Ronald Klatz, and Lisa Berger typically note, “In 1799, the average life span was 25 years—as it had been for centuries. But today we age very differently. By 1899, just a century ago, the average life span had reached 48 years. Now it is almost 80 years, and scientists are predicting that average life spans will reach 120 to 150 by the year 2049” (33, p. 7). Relying on graphs and bars that suggest that science had added more than 30 years to the lives of the old, they argue that the future implications are clear. As Mary Ann Liebert declares in *Advances in Anti-Aging Medicine*, “the A4M maintains a belief and expectation that human longevity can be increased to as much as 250 years, which may be considered “human immortality.” We can, she asserts, “be able to live virtually forever” (34, p. xvii).

Like the aging advocates who employed statistic “proof” from the almshouse, however, the demographic figures from the life cycle hardly demonstrate what the authors contend. The dramatic change in mortality rates seen in the 20th century is not primarily due to an expansion in the last years of the life cycle. Rather, it is largely the result of the elimination of childhood mortality that once served to depress average life expectancy. Even in colonial America, 70% of all individuals who reached age 25 survived to 60. And, while the 20th century has experienced the first increase in the years at the end of the life cycle, this increase has been far slower than implied: In 1900, individuals who attained their 65th birthday could expect an additional 11.9 years of life; by 1950, it has risen to 13.9 years, and by 1978, 16.1 years (35). Several geriatricians argue, in fact, that even if cancer and heart disease were completely eliminated, life expectancy would only increase 7 years for women and 8 for men—hardly the unlimited life span envisioned by some anti-aging experts (36).

Finally, and most troubling perhaps, not only do these promises hark back to hopes of the longevity advocates of the 19th and early 20th centuries, but the founders of the A4M have once again characterized those who have experienced old age or any age-related diseases as the enemy depleting the country of its wealth and prosperity. “As we all know,” writes Dr. Klatz, “America is in deep trouble. Our nation faces the most perilous threat to our social stability since the Civil War. . . . America now stands at ground zero, facing financial and sociological destruction, burning in the flashpoint of a 76-megaton age bomb. Over the next 25–30 years, the fallout from this bomb will begin its slow wind-drift over the American landscape, as 76 million aging baby boomers cause an unprecedented crisis in geriatric medicine and in our social and economic support system. The largest generation ever born on earth will require medical and economic resources unmatched in history as they enter their twilight years. . . . Treating their degenerative diseases and, in many cases, supporting them through 30 or 40 years of retirement will place unmatched demands on this nation’s economic resources. . . . Who will pay for these increased

services? The answer, of course, is the younger generations. They will pay. And pay. And pay, even more” (2, p. 1).

According to Klatz, the only solution to this crisis is to follow the prescriptions of the anti-age movement. “Those of us here today,” he writes, “know a HIGHER truth . . . And the truth is mankind is poised at the edge of an advance of epic proportions. We the leaders of the Anti-Aging movement will help to usher in a new modern age for humanity: The Ageless Society. There is a remedy for this apocalypse of aging, and this remedy comes just in time to save America. This remedy is the new science of Anti-Aging Medicine represented by the American Academy of Anti-Aging Medicine” (2, p. 3). “In order to avert the financially, socially, and medically burdensome task of caring for the swelling aged population,” Klatz argues elsewhere, his program *must* be widely adopted. It is, he declares, “a critical imperative to maintain the well-being of society in the twenty-second century” (37, p. 59).

The *apocalypse of aging*, the *disease of old age*, the horror of wrinkles, and the loss sexuality, as well as the “burdensome task” of supporting the old, all reflect beliefs that go beyond simple hair dye or exercise programs. They reveal the return of disturbing ideas about the nature of elderly people and their place in society. As in the campaign of the longevity advocates 100 years earlier, and in contrast to the sentiments of individuals such as Cornaro, those who have selfishly succumbed to the ravages of age have once again become the enemy ready to challenge and destroy the nation’s economic growth and prosperity. From the perspective of history, then, the new fountain of youth may not simply be offering its supplicants the hope of fewer wrinkles and a more active sex life. In both its formula for continued youth and its contempt for elderly people, the anti-age movement, like its late 19th century and early 20th century counterparts, tends to demean and marginalize the very process of growing old.

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