

THE IMPACT OF ANTI-AGING TECHNOLOGY
LIVING LONGER IS NOT WITHOUT CONSEQUENCE

by

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March, 2011

COMMAND COLLEGE CLASS 148

The Command College Futures Study Project is a FUTURES study of a particular emerging issue of relevance to law enforcement. Its purpose is NOT to predict the future; rather, to project a variety of possible scenarios useful for strategic planning in anticipation of the emerging landscape facing policing organizations.

This journal article was created using the futures forecasting process of Command College and its outcomes. Defining the future differs from analyzing the past, because it has not yet happened. In this article, methodologies have been used to discern useful alternatives to enhance the success of planners and leaders in their response to a range of possible future environments.

Managing the future means influencing it—creating, constraining and adapting to emerging trends and events in a way that optimizes the opportunities and minimizes the threats of relevance to the profession.

The views and conclusions expressed in the Command College Futures Project and journal article are those of the author, and are not necessarily those of the CA Commission on Peace Officer Standards and Training (POST).

The proverbial fountain of youth has long been a dream of many seeking everlasting life. For over a thousand years, Romans, Greeks, and Europeans sailing and exploring the globe have all searched for magical flowing rivers believed to give eternal life or for some kind of mythical life-extending drink or other concoction. At the turn of the century, multiple tonics and creams were developed by early entrepreneurs, none of which lived up to the promise of extending one's life.

Over the past century, society as a whole has seen great technological advances in medicine, manufacturing, weapons development, but nothing is more intriguing than the prospect of improved mortality. Our bodies are designed to last a limited number of years. In our 30's, the human body starts to change and noticeable aging begins to occur. Hormone levels decline, a person's outer skin becomes thinner, muscle tone decreases tremendously, gray hair becomes more prevalent, facial wrinkles around the facial wrinkles become pronounced, and most importantly, brain cells begin to die. (Sue V. Saxon, 2010)

Modern medications seem to help improve overall longevity, but they do not stop the aging process, they just manage the effects. What if science could slow this aging process or somehow notably improve mortality? What could it have for policing, especially in areas such as hiring practices, health benefits and retirement plans? Of course, we all want to live long, and to stay young. The truth is, though, these dreams come with a price.

Scientific Anti-Aging Advancement

What is the definition of anti-aging, and what does it really mean? “Anti-aging medicine is a euphemism for the application of advanced biomedical technologies focused on the early detection, prevention, and treatment of aging related diseases, including the degenerative diseases of aging.” (Elsevier, 2009) Some biomedical technologies include, but are not limited to, molecular nanotechnology (MNT), Human Growth Hormone (HGH) therapy, and cellular manipulation.

Anti-aging technologies have made noteworthy gains over recent years. For the first time, mortality may extend beyond the average life expectancy of 77.7 years of age. (Center of Disease Control and Prevention May 15, 2009) At a cellular level, many scientists are studying ways to extend cell life through the telomerase enzyme. In fact, in 2009 the Nobel Prize in Physiology or Medicine was awarded to Elizabeth H. Blackburn, Carol W. Greider and Jack W. Szostak for determining how chromosomes are protected by telomeres and the enzyme telomerase. (Nobelforsamlingen, The Nobel Assembly at Karolinska Institutet, 2009) Although phrases including the words “telomeres” may sound confusing, they really are quite simple.

Each human cell is comprised of chromosomes with the ends of each chromosome protected by telomere DNA. As time progresses and cells divide, the telomere end caps, much like the ends of a shoelace, shrink and shorten. Eventually, the telomere completely degenerates and, as a result, the cell dies. As the human body matures, cells naturally die as part of the human aging process. This can be directly linked to the degradation of telomere DNA. Immortal cells, such as cancer cells, possess the enzyme

telomerase. By introducing telomerase into a healthy cell, the telomere can be regenerated and, in theory, the cell's aging process can be frozen or stopped.

Once this process is perfected in the not-too-distant future, the next logical and likely step will be to clone and manufacture telomerase into a drug to help stop or slow the aging process. According to author and anti-aging expert Michael Fossel, "The telomerase analog could be given by injection and would last long enough to enter your cells and reset their telomeres before finally being broken down. A single course of treatment would lengthen your telomeres and start reversing the effects of aging on your body." (Michael Fossel, 1996) The Dana-Farber Cancer Institute located in Boston, MA, a teaching affiliate of Harvard Medical School, published a study in the peer reviewed journal Nature in November 2010, where mice were injected with the protein telomerase. According to Naik, (2010) "By tweaking a gene, the researches reversed brain disease and restored the sense of smell and fertility in prematurely aged mice. This appears to be the first time that some age related problems in animals have actually been reversed." There is a risk involved for humans, though, because certain levels of telomerase can trigger cancer due to the accelerated process of cell replication.

Cell manipulation appears to have the most theoretical promise in work to slow or reverse the aging process. Could this be the mythical fountain of youth? Has science taken the first step to notably extending mortality? According to many experts, including Dr. Ronald M. Klatz of the American Academy of Anti-Aging Medicine, medical science is on the brink of considerable breakthroughs relating to aging. "Stem cell therapies are among the world's greatest collective scientific breakthrough, possessing the clear

potential to revolutionize the practice of medicine and improve the quality and length of life.” (Klatz, 2005)

Negative Consequences

In the foreseeable future, California law enforcement could begin to see harmful impacts associated with advances in the movement of anti-aging technology. One of the most critical impacts would be to the forty individual state, county and municipal retirement systems throughout the State of California (California Association of Public Retirement Systems, 2010). With defined benefit plans already in place, nearly all law enforcement pension systems in California are already incapable of sustaining benefits for its member agencies. If future retirees live well beyond current mortality rates, the systems are not yet designed to keep pace with significant gains in mortality. The increase in longevity as a result of using new anti-aging medicines will undoubtedly entice most of us to at least strongly consider their use. An illustration of the impact on retiree payouts comes from a recent Rand Corporation study.

The Rand Corporation conducted a study for Time Magazine using an algorithm called the Future Elderly Model (FEM). (Goldman, 2008) First, the FEM started with today’s population and simulated a magic pill developed to increase the life expectancy of every American over fifty years of age by ten years. Quoting the study’s conclusion, “According to the FEM model, the very year the imaginary long-life pill appeared, the over-65 population would jump 7% more than it otherwise would have, reaching 44 million. In 2014, it would be up 13% to 49 million. By 2030, after the last boomer arrived in the senior set, the aged population would have swelled by almost a third more than it would have without the pill, hitting 85 million. If life expectancy increases ten

years in 2012 and later, by 2028, annual Medicare expenditures alone would more than double relative to current levels, reaching \$1 trillion. They'd double again to \$2 trillion by 2050 and top out at \$3 trillion in 2080.” (Kluger, 2010)

Current advocacy by Governor Brown to enact pension reform legislation to require new state employees to pay a larger contribution toward their retirement is gaining momentum. This would save California millions of dollars annually and help prepare for the longer lives of future retirees. The California Public Employees Retirement System (CalPERS) has more than \$185 billion in assets to meet their yearly pension and health benefit obligations. According to CalPERS representative Ed Fong, 75% of retirement disbursements are generated from CalPERS investments, and the other 25% come from public agency contributions. CalPERS estimates the life spans/mortality for its retired members, including safety personnel (police and fire) are higher by two years than the national average of 77 years of age for women and 72 years of age for men (Fong, 2010). As mortality rates rise, however, the cost for providing retirement benefits is passed down to the public employers.

Given current state law and contractual obligations to safety employees, municipal and county organizations are already forecasting insolvency due to rising costs. If anti-aging drugs are widely used and are effective, police officers may live well beyond current mortality estimates, resulting in unsustainable retirement liability. Fong notes that all costs associated with increases in longevity are passed down to member organizations and public agencies (Fong, 2010).

What Can be Done?

A panel of experts was convened to make recommendations regarding the issue of anti-aging technology and the impact on the tenure of California law enforcement (Garcia, 2010). Amongst the most significant conclusions of this panel were:

Change benefits for newly hired officers: Eliminate the 3% at 50 formula and replace it with a 2% at 60 formula with an 80% cap. This keeps police personnel in the work force longer, drops the retirement cost to a more reasonable amount and is much more sustainable if mortality increases as expected. Employees should also pay at least a 15% contribution into the retirement system. Significant and innovative pension reform can conceivably be completely absorbed throughout a police organization within 15 to 20 years. This would leave very few personnel under old and costly systems, and effectively draw down the unfunded liabilities we now face.

Change hiring criteria for police recruits: Currently, the minimum age for police applicants is 21 years old, which is the generally accepted standard for many California law enforcement agencies. There is a constant need for new officers and replenishing the police ranks is paramount in terms of importance and public safety is vital. Raising the age of eligibility by even 2-5 years, coupled with a two-tier retirement system (2% at 60 with an 80% cap) for new hires will save significant funds now used to meet pension obligations and their liabilities.

Put key stakeholders to work: Negotiating the negative impacts related to increased longevity through anti-aging technologies is the responsibility of those directly affected by the pension system. They need to work together to chart a course to accommodate the

longevity of our next generations for the benefit of those employees and their cities. This includes:

- Elected officials (local and state) – Generate long term revenue sources (User Utility Tax, Business License Tax, Transient Occupancy Tax, etc.)
- Police union representatives – Initiate negotiations for two-tier retirement system
- Police management representatives – Develop in-depth policy and procedures
- City or Municipal administration representative – Negotiate or implement employer paid PERS contribution of 9% for current employees and 15% for newly hired employees
- CalPERS or other pension administrators – Provide actuarials for 2% at 60 formula to member organizations

Civilianize as many police functions as possible: Every police organization fills positions with sworn personnel that otherwise can be carried out by a non-sworn civilian employee at half the retirement cost. Some of these include parking enforcement, training, hiring/backgrounds, traffic investigation, misdemeanor crime reporting and crime prevention, to name a few. There are many arguments made to keeping sworn personnel, which include having the ability to respond to critical incidents regardless of non-traditional police assignments. However, this seldom occurs and during most emergencies, agencies typically rely on their available field personnel or mutual aid to handle critical incidents. A solution for agencies to consider is to implement a multi-phased plan to civilianize many police positions. Non-safety employees provide tremendous savings in terms of unfunded retirement costs, which is beneficial to the overall survivability pension programs impacted by improved mortality.

Conclusion

The idea of immortality or just extending life by a small percentage is thought provoking to say the least. The technology is no longer a pipe dream, but instead is real science and the scientific community is committed to extending mortality through various methods.

The dream of living longer and the advances toward this effort must be tempered with the knowledge of all potential consequences. For this reason, action must be taken as quickly as possible with pension reform, police civilianization, hiring criteria for new officers and the institution of a two tiered benefits package. Systems currently in place are unsustainable and can become exponentially impacted as anti-aging technology becomes more common place in our daily lives. However anti-aging technology is implemented, there is a natural order of human existence that is vast and complex. There are numerous benefits of extended life, but it does not diminish the negative consequences that would surely follow.

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