

Lifelong Learning and Wellness

One Component to the Enlightened Gerosphere

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Aging in America: A National Dilemma

The United States is experiencing a demographic revolution of unprecedented proportion. Today, approximately 34 million Americans (12% of the population) are age 65 or older. This number will increase to 70 million (20% of the population) by the year 2030. Further, by 2030, one third of Americans will be over the age of 55, and the number of those living beyond age 85 will increase from 3 million to 16 million. These numbers not only reflect a demographic shift in America, but they also underscore aging as a priority issue for America in the 21st century!

Today, the United States has an extremely primitive understanding of aging. Our country maintains a negative perception about getting older, one that reflects a genuine misunderstanding of the facts regarding aging. For example, our entire social and legislative policy is based on an invalid age-threshold of 65. Clearly, we need to increase this age-threshold to reflect more accurately the expected lifespan of Americans. Most people are not aware that age 65 was employed for social benefits by Chancellor Bismarck in Germany over 100 years ago. Americans believe that advanced age leads to poverty, illness, Alzheimer's disease, nursing home placement, depression, and loneliness. These entrenched perceptions exist despite facts that nearly 70% of older adults (those living beyond 65) are independent, financially stable, happy, healthy, and productive. Further, the vast majority of older Americans do not have Alzheimer's and do not live in nursing homes.

A Need for Enlightened Change

As I have traveled the country speaking on the issue of *Aging in 21st Century America*, I have articulated aloud the need for an *intellectual enema for the United States*, one that will flush

our antiquated notions about getting older and instill the positive and productive truth that is aging in our great country! My vision for America is the creation of an Enlightened Gerosphere, a society that is both stimulating to the older adult and can be stimulated by the older adult. The Gerosphere begins by simply understanding what an older American wants. My years of listening to older adults has taught me that independence, family, love, faith in God, financial stability, health, mobility, and role/purpose are some of their needs. Rarely, have I heard older adults express a desire for more medication, longer needles, or an “all-inclusive stay” at the local hospital!

The Enlightened Gerosphere is a society that promotes independence by bridging the older adult to their expressed needs. As such, social entities such as religion, education, business, media, politics, health care, and advanced technologies become critically important and in need of integration. Presently, we approach health solely from the medical model, itself a negative and diseased-based entity. We need to begin thinking and applying existing knowledge about religion, business, education, transportation, and housing as vehicles for health and wellness across the lifespan. Media and politicians can benefit society by telling the facts about aging and by production of more enlightened legislation.

Imagine an America where health insurance companies paid for attendance at church or synagogue, enrollment in higher education, residence within technologically advanced homes (*smart homes*) which can relay health information directly to the primary care physician, and even sustained employment. This approach to wellness stands in sharp contrast to the current model that incentivizes annual, invasive procedures such as a pap smear. While these ideas may render a humorous response, we must remember that the total dollar allocation for health care in this country is approximately one trillion dollars, and that one third (33%), or 300 billion dollars,

of that total cost is for services delivered to the older adult. Despite this, Medicare and Medicaid are financially unstable. Imagine running a business in which you invest 300 billion dollars and yet the business is bankrupt! Perhaps we are not approaching the care of older Americans in a proper manner!

Older Americans do not need high technology medicine, should not be treated in acute care centers as they suffer chronic illness, should not be forced to choose a nursing home, and should not be forced to retire or withdraw from a personal role and purpose. Instead, older Americans should have access to geriatricians who are afforded the same status of primary care physician as are pediatricians, should have access to a chronic care system, should be afforded multiple long term care options which do not include institutionalization and consequent family/financial death. Further, older Americans should be incentivized (financially) to remain well by promoting the social/human factors of health listed above.

I have championed the need to end the existence of nursing homes in the United States as I believe they represent the neglect of a great country to care for a vulnerable and needy segment of our population. Nursing and other services can be delivered without the cement walls of an institution. Nursing homes were built post-World War II and represented a warehousing model of care. Think about where nursing homes are located and you can understand the resulting removal of individuals from the vitality of life. My beliefs have nothing to do with the quality care and hard work that occurs every day in most of our nursing homes. In contrast, the United States must awaken to the fact that nearly one third of Americans would rather die than enter a nursing home, and the market has demonstrated consistently that potential employees seek work elsewhere—human beings do not want to live or work in nursing homes!

Despite my passionate beliefs, I am often reminded that we have nursing homes and must deal with them. As such, imagine existing nursing homes being retrofitted with exercise rooms, clothing outlets, McDonald's, Toys-r-Us, a night club, banks, chapels, education classrooms, etc. Life must be re-integrated for residents of nursing homes. A McDonald's restaurant would encourage the resident's grandchildren to visit more regularly and make the visit easier emotionally. This is important as we have no intervention that approximates the benefit of child-older adult interaction (even an interaction of unrelated individuals). Promoting a *town atmosphere* within the institutions that house the vulnerable elderly may reduce health care utilization (cost), reduce the rate of decline and isolation, reduce depression, and increase general markers of quality of life. It also represents a real example of social integration of existing (but fragmented) resources that can spawn an Enlightened Gerosphere, even in a nursing home.

The vision of an Enlightened Gerosphere is a major area of personal interest for me and one that I believe is proper for an aging America. The remainder of this article will focus on one segment of the Gerosphere, education.

Education and Health

There is no question that education is an important part of American society. Traditionally, Americans view education as a means to improve personal marketability and employability. We define education as kindergarten through high school and perhaps college. The minority of Americans take advantage of what is thought to be the most advanced higher education system in the world. For most individuals enrolled in higher education, their purpose is to master a domain of knowledge and to fulfill requirements for a specific trade (e.g., medicine). An altruistic perspective suggests that learning facilitates an improvement of oneself without any specific job-related outcome.

Recently, I began to think about education as it relates to health and wellbeing across the lifespan. It is well known that advanced education relates to better, higher paying jobs, better socioeconomic status, better health care access, and healthier living environments. Each of these factors correlates to overall health, yet most Americans probably attend more to the financial outcome of advanced education rather than health outcome. However, *there is emerging evidence that suggests education and learning across the lifespan makes an important contribution to brain wellness and may serve to slow and even prevent neurodegenerative disorders in late life.*

Interestingly, science has demonstrated that rodents placed in a healthy environment not only have larger brains relative to rodents in isolation, but spawn new neurons (brain cells), particularly in the learning and memory region of the brain known as the hippocampus. While this information is exciting and potentially revolutionary for human beings, the findings have not been replicated to humans. Indeed, mainstream neuroscience maintains that the human brain loses neurons with advancing age, the human brain cannot replace damaged or dead neurons, and that mental and behavioral functions decline at different ages across the lifespan.

Fortunately, researchers interested in neurodegenerative disorders such as Alzheimer's disease (AD) which affects four million Americans, and costs the country 100 billion dollars annually in direct care and 30 billion dollars in indirect care related to caregiver illness, have underscored the importance of education as a potential preventative factor against AD. Multiple studies have demonstrated a reduced risk of AD for those with advanced education. The neurobiological explanation of this has been labeled *Reserve Theory*. Essentially, information which is learned must be processed by our brains, itself a physiological event. Such learning promotes development of new neurons and neural pathways. The theory advances that with

increased cell density and cell volume, a progressive disease such as AD will not impact the brain or will impact the brain at a later age because the disease will have to destroy a greater number of cells to manifest clinically. The increased volume of cells in the brain provide a reserve to fight off invading diseases such as AD. Interestingly, the Reserve Theory has been advanced for other etiologies of dementia besides AD.

Nuns and Veterans

Two major studies provide additional evidence for framing education as preventative health. The first involves the well known longitudinal investigation of nuns with the major finding being that nuns suffer AD significantly less than same aged women who are not nuns. Provided we can reasonably establish that marriage does not cause AD, there must be an explanation for this finding. The author of this research points out that nuns remain involved in cognitively complex activities across the lifespan and do not withdraw mentally with age. Such maintained cognitive exercise is consistent with the Reserve Theory and offers a strong explanation for reduced AD.

Related to the nun research findings above is an interesting study in which the diaries of nuns, written around the age of 22 and prior to their vows, were analyzed and rated for grammatical complexity and idea density. Nuns who had diaries rated with higher idea density suffered AD significantly less than nuns with low idea density ratings. Idea density correlated significantly with classic markers of AD at autopsy suggesting that language development early in life may be a predictor or risk factor for development of AD.

A second study provides additional evidence for potential of early predictors of later developing neurodegenerative disorders. This study analyzed, retrospectively, the intelligence test scores of older veterans prior to their enlistment. Hence, information pertaining to the

intelligence scores of older veterans was obtained when they were young men. Those veterans who developed AD had significantly lower intelligence scores when they were young men than did veterans without AD. This finding, together with the nun research suggests overall early intelligence and language development are useful predictive variables with regard to risk of late life neurodegenerative disorders such as AD.

The Earth is Actually Round

We can imagine the feelings of awe and excitement when we learned that the earth is actually round, not flat as was believed for so many years. Recent neuroscience research has brought us again to a potential moment of awe and excitement. Earlier in this article it was noted that the brain does not regenerate; if a brain cell dies it does not regenerate or get replaced. This is a hard and fixed rule of our understanding of human brain. It is important because it presumes that we are born with a certain fixed and limited potential which declines with advancing age and related brain cell loss. (It is hard to believe that something as miraculous as the brain cannot fix itself while a simple paper cut of the finger heals in a matter of hours or days!).

New research published in 1999 has generated the potential for an entire new mindset regarding brain development and plasticity (ability to recover from damage). The first major finding is that the human hippocampus may actually have the capacity to regenerate and develop new cells. This is important because the hippocampus is the primary area responsible for new learning and because it is the precise area that grows in rodents when exposed to a stimulating environment. A second major area of research has demonstrated that brain cells may be able to alter their function, a notion that counters our prevailing ideas. It is believed that cells maintain a certain role predetermined at birth and genetically coded in the stem of each cell. It is further believed that the role of each cell cannot be altered from its code. This new research has

demonstrated that brain cells may actually be able to make blood (i.e., carry out the function of a blood cell). If this is true, the fixed role idea, genetically predetermined, is flawed, and the potential for greater brain cell flexibility is viable. This is important because it raises the potential for cell transplantation and cell replacement in regions where the brain has been damaged.

These two major areas of research open the universe to new opportunities and understanding of brain function and brain plasticity across the lifespan. The theory that brain development and potential stops at a certain age would be wrong. Instead, brain function and capacity may be unlimited and affected only by level of mental stimulation in the environment, not age. Further, brain damage may be correctable and not permanent as we now believe. As such, these findings, if replicated, are no less significant than finding out our earth is round!

Education and Wellness for the 21st Century

These interesting findings are more than academic and with proper application can help to stimulate the type of necessary radical change in our approach to aging and health necessary for an age-enlightened society in the 21st century. I offer the following points to advance education and lifelong learning as a primary method of wellness and prevention of illness.

1. Begin to think of education and learning as a method for health, no different than exercise or nutrition. For the new millennium, learning and information (mental exercise) is the conduit to brain wellness as physical exercise is for cardiac health.
2. Our educational system should accentuate curriculum that enhances language and verbal skills. Language is highly correlated with overall intelligence, and as we learned from the veteran's study, increasing one's IQ early in life may help to prevent late life neurodegeneration. Language itself may have a prominent role in health and wellness. It

is of interest to note that research indicates AD to be more prevalent in the United States than in Europe. This is significant because the United States is the only country in the world with one language.

3. Learning must be considered a continuous process and not a fixed stage. Continuous lifelong learning must be reinforced from embryonic development to the latter stages of life.
4. Early communication, verbally and nonverbally, between mother/father and developing child in the womb is important as it may lay the foundation for human interaction and foster a stimulating environment.
5. Environments for our children must be stimulating, challenging, and nurturing. This is the case for the home and for day care centers across the country. Brain development in childhood is tremendous, and there is relatively little a child's brain cannot ascertain. These early experiences help to prepare the brain for new learning on more complex levels with advancing age. Our preparation to maximize intelligence and brain capacity is a health care issue.
6. Our educational system must be seen as a place to maximize lifelong health, not simply a time-limited place for completing a diploma. The 12 year (9 month) school experience might not be appropriate if we view the school as a wellness center. Adults and older adults must remain connected to the educational system of our country. New learning and development of new skills translates into brain development and brain health. The educational system can be the vehicle to express the reserve theory discussed above.
7. Our health insurance companies need to re-think how the money is spent for maintaining health. I would argue that education and measurable learning across the lifespan should

be incentivized financially in the same way that an exercise routine is. Imagine your health insurance provider paying for your education with the purpose of preventing a progressive disorder late in life which may cost three times as much. It is significant to note that more older Americans are returning to college than ever before!

8. Curriculum on aging should be incorporated in all school systems across the country. As aging is a national issue, we must begin teaching our children how to age successfully. Topics such as financial planning, nutrition, education, and occupation can be presented as important factors to a long and healthy life. Teachers may even be recruited from older persons who are now aging successfully as research indicates that children like to have older adults in the classroom.
9. Our school systems must begin to think beyond education and redefine their missions as health providers. A school building can literally become the wellness center for the 21st century with a focus on learning, mental stimulation, and brain health. It likely has as much to offer in maintaining health and preventing illness across the lifespan as any primary care physician's office.
10. Consumers of health services must demand more than our current options for wellness. We must encourage health insurance payors to recognize the importance of education, religion, role and purpose, housing, and transportation to our health. Payment for such social needs will demonstrate a commitment to real wellness. We can measure the impact of such an approach to health and wellness and determine the economic and quality of life outcomes compared to what we have now. I welcome that challenge and opportunity. It provides one road to an enlightened society!

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