

Is aging a disease ?

In the fall, the World Health Organization will review the revisions to the eleventh “International Statistical Classification of Disease and Related Health Problems” (ICD-11), and while the title alone can lull you to sleep, it is a document that few have heard of but that carries quite a bit of weight globally, especially in the US. The ICD-11 (although we are currently on version 10) catalogs all of the known diseases of humankind and form the basis for payment for health services, subsequently underpinning 18% of our GDP. One of the questions raised was whether we should consider aging a disease and give it a code within ICD-11.

The definition of disease, per WHO is a “state of complete physical, mental and social well-being, not merely the absence of infirmity.” It is long on platitudes and ambiguity and short on objective measures that we can agree and act upon. And as one academician has written,

“This subject [disease] has been treated mostly by brilliant philosophers, yet surprisingly little by physicians. Therefore, the resulting concepts are theoretically sound, yet not always very closely related to the practice of medicine.” [1]

Disease’s definition reflects our scientific knowledge and cultural history. In 1851, slaves fleeing their masters, evidenced a mental illness, drapetomania. And before we become too complacent in our more sophisticated present, homosexuality was considered a mental disorder until 1974. Similarly, a changing understanding of physiology alters what we consider a “disease.” Alzheimer’s and osteoporosis were once considered “normal aging” and as a consequence was felt to be inevitable, a word that often is taken to mean untreatable.

Consider another definition, “any abnormality of bodily structure or function, other than those arising from physical injury; the latter may open the way for disease.” Of necessity to be abnormal there must be recognizable objective findings (signs) as well as subjective findings (symptoms); without them how do we separate disease from health, and without an underlying cause we can offer no rational basis for treatment. To a large extent, the ICDs characterize disease by these findings while categorizing them by the organ system affected (heart disease) or similar underlying processes (infectious diseases). So considering aging as another process “disease” is not so far-fetched as an initial consideration suggests.

Many of us feel aging is a natural process, after all, everyone “gets it,” and disease is more of a deviation or aberration of nature. The proponents of aging as disease point out that aging is related to the apparent random degradation of our DNA, that aging serves no evolutionary purpose, and is more a “consequence of evolutionary neglect, not evolutionary intent.” [2] And without an evolutionary role, why consider it natural? Of course, that aging serves no purpose, is a statement made by those with a stake in the outcome, us, and we may be biased in that regard. We may be unaware of aging evolutionary purpose.

From a practical clinical view, what signs and symptoms are associated with aging that differentiates it from other maladies of old age? While science has identified at least nine hallmarks of aging, [3] each with their signs and symptoms, there are no biomarkers to describe aging overall. Most studies utilize chronological age, and we all know of fit 80-year-olds and decrepit 40-year-olds, so it is too non-specific to be helpful in anything more than a general way. And even if we were to agree on a set of criteria, what is the underlying “cause” that we will want to modify – in truth, it varies for everyone, only when we aggregate do we begin to see some patterns to our declining years.

Why bother classifying aging as a disease?

The short and long answer, money. For scientists, a new disease brings the hope of new funding. In fact, one of the arguments made is that creating the diagnosis of Human Immunodeficiency Virus (HIV) was instrumental in funding research and the subsequent development of effective therapy. My remembrance is that “the gay plague” was already recognized as a disease and

monies were flowing in the direction of this newly arrived fatal medical condition long before its more accurate diagnosis was known or named. That said, money is easier to find for applied research, especially if there is a possible payoff for patients, researchers, and companies.

New diseases require specialists after all your primary care doctor is no expert. The American Academy of Anti-Aging has over 26,000 members across 120 countries. These licensed physicians have special certificates and training (although it is not recognized by the American Board of Specialties, the arbiter of legitimacy in the US) and would love a new disease code that can turn into insurance-supported billable moments. New diseases also require advocates. Proponents of the aging as disease school point out that reducing aging will increase productive longevity, another way of saying we can work longer, boosting employee productivity and general economic growth. They shake their heads in disbelief “that even pension funds lack the sense of urgency to address it [aging] as a curable disease.” Of course, no one is offering immortality, and there will come a time that we have to literally, if not figuratively pay the piper. Finally, treating the new disease requires regulation, at least as far as safety and efficacy, which, in turn, brings up to the silent elephant in the room – anti-aging products.

Anti-aging products

Currently there is a very active market in the fight against aging it includes vitamins, supplements, cosmetics and some alternative preparations. It was a \$260 billion global market in 2013, and it has grown considerably since then. But, if aging is a disease than their treatments and claims become regulated by the FDA.

Consider JK7 Rejuvenating Serum-Lotion currently the most expensive anti-aging serum in the world at \$1,800 per ounce. Described by the companies CEO as “one of the world’s most effective anti-aging serum due to its bioavailability to the skin and ability to stop the degenerative processes of the body; ”do you expect them to submit to the scientific scrutiny of the FDA? [4] And the same can be said for any number of other anti-aging products currently being marketed, Prevagen comes to mind.

For the moment, ICD-11 refers to aging and old-age as a symptom, diseasehood is not in its future, currently. But the discussion shows the changing definitions of disease, reflecting and reflected in our culture, words, and economy.

[1] Towards a dynamic definition of health and disease *Medicine, Health Care, and Philosophy* DOI: 10.1007/s1019-005-0538-y

[2] Is it Time to classify Biological Aging as a Disease? *Frontiers in Genetics* DOI: 10.3389/fgene.2015.00205

[3] Deregulated nutrient sensing, loss of protein homeostasis, epigenetic alterations, telomere attrition, mitochondrial dysfunction, cellular senescence, stem cell exhaustion, genomic instability and altered intercellular communication.

[4] [World's Most Expensive Anti-Aging Serum Costs \\$1,800 Per Ounce](#) Forbes

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