

[The Current Prospects of Extending Lifespan](#)

I've written extensively on anti-aging and life extension, and I've put into practice many of the methods I've written about. Yet, what are the current prospects of extending lifespan? Will any interventions substantially lengthen our lives, or is all or much of it an exercise in futility?

The current limit to human lifespan

Aubrey de Grey, the well-known life-extension advocate and researcher, recently gave [an interesting talk to a group of demographers on the limits to human longevity](#), as they currently stand. De Grey points out that Jeanne Calment, the world record holder in lifespan, died at age 122 some 20 years ago, and despite there being far more centenarians alive now, no one has come close to her record. The current world's oldest person is 117 years old.

Why, despite better health care, living conditions, advanced technology, or whatever makes people healthier and longer-lived, has no one breached the world record of 122 years?

We know that mortality rises with aging at an exponential rate. De Grey

shows, through demographic analysis, that at about the age of 114, the death rate rises at something like a super-exponential rate, and therefore it's extremely difficult to get past that mark.

There's some difficulty in the analysis, as de Grey acknowledges, simply because there are so few people alive at that age. That being said, it looks like the age of around 115 years marks the current upper limit of human lifespan. A few people with the right genes and/or lifestyle, like Calment, may live a few years longer.

Why 115?

What is so critical about the age of 115? It could be [the loss of dopamine neurons](#). The chart below shows the loss of dopamine neurons in aging; the decline occurs at a steady rate in most people, but when they decline and die at a faster rate, so that someone has only 30% of these neurons left, Parkinson's disease exists. At the level of 10% left, death occurs.

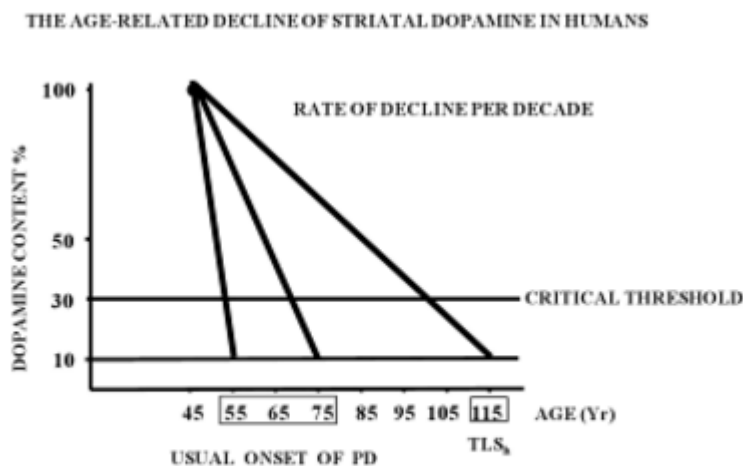


Figure 17: Visualization of the concept that PD is the premature rapid aging of the striatal dopaminergic machinery. T.L.S._h: technical lifespan in humans.

In normal people, that is, those without Parkinson's, the loss of dopamine neurons reaches the life-critical 10% threshold at about the age of 115.

The analysis that reached this conclusion comes from the scientist Joseph Knoll, who developed the drug deprenyl. Deprenyl has extended the lifespans of rats dramatically, and while it's available by prescription, it seems to be under-utilized and, in any case, we don't know much about its prospects in human life extension.

I've suggested that [the loss of dopamine neurons could be due to iron](#), and if – and it may be a big if – the connection of dopamine neurons with the human lifespan limit of 115 years is true, either deprenyl or control of body iron could be ways to get past that limit.

Other interventions

Aspirin may be a cheap, easy way to get significant lifespan extension. Based on a 13% lower mortality rate in aspirin users, [Josh Mitteldorf calculated](#)

[that aspirin might add 2 years to life expectancy](#). That's a surprisingly low amount of life extension, but the exponential mathematics of aging make it so. In essence, interventions need to be increasingly effective just to stay up with rising rates of death.

Metformin is another drug advocated for life extension. A recent [review and meta-analysis](#) found that metformin was associated with 7% lower all-cause mortality in diabetics vs non-diabetics. That number could vary, since non-diabetics taking metformin might have a lower death rate, but there's no data on that, or, metformin could have less effect on non-diabetics.

Nonetheless, a 7% lower mortality rate isn't even as good as aspirin, and would get us less than 2 years of extra life.

Rapamycin is another anti-aging drug, which has had good results in animal experiments. Its most notable proponent, Mikhail Blagosklonny, [believes that combinations of rapamycin with metformin, aspirin, and others, could get us past the current limit to human longevity](#). But even he says that, because modern medicine has already extended human lifespan, we can't expect the amount of extension seen in animal studies. It would be less.

My point here is that current prospects for lifespan extension don't seem terribly impressive. They probably won't get masses of people to 120, and probably won't get anyone to, say, 150.

Overlapping mechanisms

If some of these anti-aging interventions work through overlapping mechanisms, then we can't expect simple additive effects.

For example, if metformin and aspirin both work through activating [AMPK](#) – and of course they both surely have other mechanisms – then we can't expect that taking both metformin and aspirin together will simply give us a 20% (13% + 7%) decrease in mortality.

Or, if someone practices calorie restriction, currently the most robust anti-aging intervention known, and he takes metformin (or aspirin), that he will get additional benefit from the drugs.

What about genetics?

I'll use myself as an example.

My late father lived to be 87 years old, and he did not take care of himself. He smoked until his early 50s, when persistent chest pain from coronary artery disease compelled him to quit. In older age, he became overweight and drank more than he should have, and did no exercise but golf. Yet through modern medicine, he made it to 87, and he seemed to enjoy life doing so. His lifespan was well beyond that of the average male, which is currently around 80, which he achieved by doing precisely nothing in the way of what we would consider life extension.

My mother is still alive at age 95. She's lived a more sober life, has never been overweight, and used to walk a good deal but no longer does.

I've inherited genes from both of them. I'm going to take a wild guess and say that even if I did nothing in the way of anti-aging, I could probably live into my 90s.

Of course, I exercise, eat right, and practice other good health habits. But how much more lifespan will those get me? If I'm already "scheduled" to live into my 90s, other interventions may not do a lot more.

Likewise, if I take both [fish oil](#) and [aspirin](#), which I do, maybe one or the other is superfluous. Maybe both. Maybe little can get me past my 90s, since I may already be "programmed" to live that long by my genes.

I don't know. I'll continue to practice good health habits along with interventions that hopefully will extend my lifespan, but one needs to be realistic about how effective they may be.

What is needed is a thorough understanding of aging along with the technology to change it. Many discoveries have been made, and technology breakthroughs may be on the horizon, but to my knowledge there isn't yet any technology that will extend human lifespan.

Life extension is about better health

Anything that improves health and prevents chronic disease, such as heart disease and cancer, should extend lifespan.

Aging massively increases the risk of chronic disease; indeed it could be said that massively increased health risk is the very definition of aging.

So if you can prevent or delay chronic disease, you are delaying aging and extending lifespan.

Yet, if you don't get one disease, you live long enough to get another. Think about it: if you lower the death rate from heart disease, you're going to increase the death rate from cancer. (After having heart disease much of his adult life, my father died of cancer.) A true anti-aging intervention will prevent or delay the appearance of all diseases of aging.

For myself, I have to say that the prospect of extending my life beyond what may be my "natural" lifespan, perhaps in the 90s, seems, well, not much to count on.

Yet I don't want to get the chronic diseases of aging. I'd like to be healthy until the end.

So for me, practicing life extension and remaining healthy (and hopefully happy) are one and the same.

At this moment in history, that's perhaps all one can ask.

PS: I believe one of the most important ways to delay aging is by controlling body iron, as I discuss in my book, [Dumping Iron](#).



PPS: [Check out my Supplements Buying Guide for Men.](#)