

Is aging a disease? Treating it like one could be worth trillions, study says

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We're living longer, but not necessarily better. As the population over 65 in the United States is projected to double by 2060—with one in five residents in retirement age—so will the number of Americans needing

long-term care services.

A new study suggests targeting aging itself—rather than individual diseases associated with it—could be the secret to combatting many [health care costs](#) traditionally associated with getting older.

"People don't think about aging as something that is treatable or should be treated like a [disease](#)," said David Sinclair, co-director of the Paul F. Glenn Center for Biology of Aging Research at Harvard Medical School and one of the authors of the study. "But it is a disease. It's just a very common one."

As we get older, there are certain complications we're more likely to develop as a result of senescence—the process of deterioration with age—itsself.

Aging—biological changes over time that lead to decay and eventually death—increases the risk of chronic ailments like Type 2 diabetes, heart disease, cancer and Alzheimer's disease. As [average life expectancy](#) increased throughout the 20th century—and is slated to rise another six years by 2060—the impact of these age-associated diseases has become more pronounced.

The traditional medical approach has been to treat diseases as they appear. A rising field known as "geroscience" instead asks the question: What if we could extend the number of years we're healthy, rather than simply expand our number of years?

"Instead of practicing health care in this country, we're practicing sick care—or what I call 'whack-a-mole medicine,'" said Sinclair, a biologist who focuses on epigenetics, which studies how behaviors and environments impact a person's gene expression. "Medical research is moving towards not just putting Band-Aids on the symptom of disease,

but getting at the major root cause of all major diseases—which is aging itself."

By focusing on [health interventions](#) that aim to delay the frailty and disability that comes with age, experts in the field attempt to slow—and in the future, even reverse—the biological realities of aging.

The new research, published on July 5 in *Nature Aging*, looked at the potential economic impact of such an approach.

The study compared current disease-based interventions to a test scenario using Metformin—a diabetes drug that appears to protect against age-related diseases, but is currently not approved for over-the-counter use—as a hypothetical aging intervention that would increase the "healthspan" as well as the lifespan.

Researchers used the "Value of Statistical Life" model, a methodology popular among government agencies and economists, to place a monetary value on improvements in health and aging.

The results were hard to overlook.

Researchers found that increasing "healthy" life expectancy by just 2.6 years could result in a \$83 trillion value to the economy.

"It would reduce the incidents of cancer, dementia, cardiovascular disease and frailty," Sinclair said. "In total, we're spending 17 percent of everything we generate on [health care](#) – and largely that's spent in the last year of life."

Currently, a person who turns 65 in the next few years will spend anywhere from \$142,000 to \$176,000 on average on long-term care during their lifetime, according to a recent report commissioned by the

U.S. Department of Health & Human Services.

Fifteen percent of Americans over 65 will live with at least two disabilities by 2065, the same report found, further increasing the need for assistance in daily living.

Most of this will be paid out-of-pocket by family members or seniors themselves—Medicare doesn't cover long-term care, and Medicaid only kicks in when a person becomes impoverished.

Interventions designed to create slower, healthier aging could have large benefits because there's a [feedback loop](#), authors of the new study argue: The more successful a society is in ensuring its residents can stay healthy as they grow old, the greater the demand for—and economic payoff from—subsequent age-related innovations.

"People have an interest in spending whatever they have to spend a few more years with their family," Sinclair said. "And that will only increase the longer we live."

Sinclair has become a polarizing figure in the scientific community for his tendency to hype his own work publicly and make grand promises about the potential rosy future such research can bring about. The founder of eight biotech companies and longtime champion of a controversial red wine drug resveratrol in an ongoing debate over its possible anti-aging effects, he's been called as good a salesman as a scientist. At the same time, his work continues to be published in world renowned academic journals, and research on longevity is considered an increasingly legitimate field—largely thanks to his pioneering contributions.

Florida is no stranger to the search of the fountain of youth—it led to Ponce de Leon's exploration of the state in 1513, after all. And while the concept of "curing aging" might seem lofty, recent advances suggest the

power to curtail some of its negative effects on our biology may be within reach.

Researchers at the Mayo Clinic have shown that a certain drug cocktail can remove senescent cells in older mice, increasing their lifespan and delaying a cluster of age-related diseases by over a month. Early studies on humans have shown similar tentative promise.

Metformin is also about to undergo a series of clinical trials to study its efficacy as an anti-aging treatment in humans.

In December of last year, Sinclair's lab at Harvard published a study in which they partially restored vision in aging mice by reprogramming their gene expression. More radical and hailed as a possible way to reverse one of the more painful side effects of aging—vision loss—the researcher said they will begin similar trials on primates this fall, and humans the following year.

For some, these developments hint at larger aspirational goals: Scientists who study biology have yet to discover proof that death is inevitable. How long can we live, should age-related advances continue? And ethically, should 'curing' aging really be the aim? Isn't growing older and dying a normal part of life?

When asked if a limit exists, Sinclair was coy.

"I don't know," he said. "But what I do know is that young people don't get sick as often. If we could literally stay as fit as a 30-year-old forever, what would go wrong?"

"We said that cancer and heart disease were 'natural' 100 years ago," Sinclair added. "Now, would you accept if a doctor said you had a lump in your throat and dismissed it as natural? So why do we accept it for

aging?"

More information: Andrew J. Scott et al, The economic value of targeting aging, *Nature Aging* (2021). [DOI: 10.1038/s43587-021-00080-0](https://doi.org/10.1038/s43587-021-00080-0)

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