Explained in the Editorial of the last issue of Rejuvenation Research that substantial compression of severe morbidity\textsuperscript{1,2} is just as implausible a consequence of progress in biomedical gerontology as its converse, the “global nursing home” scenario;\textsuperscript{3} thus, biogerontologists should stop touting it as the goal of biomedical gerontology. Here I will describe what I think we should be saying (and doing) instead.

One might retort that it does not matter whether an argument is logically sound if it works—in this case, if the focus on compressing morbidity seduces policy makers into raising the budget for research into aging. Some would claim that it has indeed done so, but I disagree. For example, the National Institute on Aging has not seen its share of total National Institutes of Health (NIH) funding rise at all in the past decade.\textsuperscript{4} Considering the public’s utterly insatiable appetite for information on the progress of aging research, this cannot honestly be deemed a success.

What, you may ask (and my colleagues certainly ask), is then the alternative? I feel it is clear, and arises from a further consideration of the opposite of compressing morbidity, namely expansion of morbidity. For just the same reason that compression of morbidity is not a feasible consequence of postponing aging, nor is its expansion: Being frail is risky, and will remain so whatever we do to aging.

This has four implications, each of which is of considerable rhetorical value. The first is that it is just as hyperbolic for bioconservatives such as Fukuyama to oppose life extension research on the basis that morbidity would thereby expand as it is for biogerontologists to play the converse card. This should be shouted from the rooftops whenever the “global nursing home” scenario is invoked. The second is that postponement of morbidity without its compression (i.e., accompanied by an equal postponement of mortality) is still a clear and unalloyed good thing, both because healthy lifespan is increased and because the proportion of life that is spent frail is reduced. The third is that society has a rather consistent track record of spending enormous sums keeping people alive even when their health has become very compromised; thus, it is by no means clear that compression of severe morbidity has any votes in it even if it were feasible, and politicians do not tend to fund causes in which there are no votes.

It is the fourth implication of an honest appraisal of what life extension research could and could not deliver that is the most profound, however—not only rhetorically, but also societally. Thus far I have spoken of life extension as if it were a single, instantaneous future event: I have compared the situation before this event with that after it. Of course, the reality will be otherwise: There will be a succession of advances, each postponing aging somewhat and being differentially effective on people of different ages. This means that the lifespan of a given individual aged $N$ in a given year will on average exceed the “life expectancy at age $N$” provided in that year’s official statistics. Unnervingly, it also means that (in a scenario of continuously postponed morbidity and equally postponed mortality) the average individual will actually spend longer in a frail state, once he or she becomes...
frail, than those statistics predict. So far, so rhetorically unpromising; but there’s a happy ending: If the rate of progress is rapid enough, people who are not yet frail will never become frail at all! All that is needed for this is a rate of postponement of aging that exceeds one year per year and works on everyone, or at least on those who are not yet frail. (Of course, once these therapies become powerful enough to restore the already frail to greater vigor, the situation is even better.) That may sound implausible, but perhaps less so if you consider that it only means a rate of reduction in the death rate at any given age of just 10% per year. I have termed this threshold “longevity escape velocity” (LEV) and I predict that, with suitable funding, we have a 50% chance of achieving it within 25 years. Because you have to be frail to have a high risk of death, this means that many of those young enough to benefit from the first such therapies, and thus to be able to avoid frailty indefinitely, will have lifespans in four digits. That may be scary to politicians and ethicists (although rather strong arguments exist that might change that); however, because it can by definition only come about in hundreds of years from now, and the abolition of age-related frailty would be a much more immediate consequence of reaching LEV, I feel sure that the latter point will rapidly come to dominate any political debate on the issue. Therefore, I urge my colleagues to promote such a debate without delay, at the expense of the failed promotion of compressed morbidity that so dominates their thinking and rhetoric at present.

REFERENCES


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