Editorial

Compression of Morbidity: The Hype and the Reality, Part 1

This issue of Rejuvenation Research and the next form a pair, jointly devoted to the proceedings of the second Strategies for Engineered Negligible Senescence (SENS) conference that was held in September 2005 in Cambridge, United Kingdom. Accordingly, it seems fitting that my editorials for these two issues also should form a pair. Here I will outline my low opinion of the idea that biomedical gerontology is about compressing morbidity, and in issue 9(2) I shall describe my preferred alternative.

I must begin by ensuring that readers know precisely what “compression of morbidity” means. The term was introduced by James Fries in the New England Journal of Medicine a quarter of a century ago; it is defined as a reduction in the period of diminished physical and/or cognitive function at the end of life. Importantly, it refers specifically to loss of function that has the same underlying causes as, and thus presages, death from age-related causes. Conventionally it is restricted to the case where healthy lifespan (i.e., the age at which decline in function begins) is increased but total lifespan is not (or is increased by a smaller amount), because this is more or less universally regarded as desirable, whereas the alternative of shortening the total lifespan without shortening the healthy lifespan (for example, by denying medical care) is, to say the least, more controversial. It can refer either to individuals or populations; when applied to populations it can describe either the effect of a specific intervention or the possibly unexplained changes with time in a given population.

I am not going to challenge the view that compression of morbidity would be desirable. Rather, I will challenge the view that it is appropriate for biologists who study aging to describe compression of morbidity as a key ultimate goal of their work. They are extremely inclined to do so: Indeed, it is at present (and has been for some decades) almost mandatory to recite this mantra prominently in requests for public funds. In describing this as “hype,” I am thus inviting considerable opprobrium from my biogerontological colleagues; but I am convinced not only that I am right, but also that an abandonment of that tactic will quite rapidly benefit the funding of biogerontology research in general and life extension research in particular.

The main reason my colleagues are so fond of promoting compression of morbidity is obvious: Compressing morbidity is the opposite of extending it, and extending it is not an attractive prospect at all. Although we certainly find the predicament of those in a severely and permanently diminished physical and/or mental condition (e.g., to take the extreme case, those in a persistent vegetative state) ethically and emotionally problematic, there is essentially complete consensus that life in such a state is a mixed blessing both for the individual and society, and thus that biomedical advances that would enlarge the frail population (creating, in Fukuyama’s memorable words, a “global nursing home”), are not high-priority research quests. Therefore, attempts to do the opposite must be attractive and thus appropriate to highlight.

There is only one thing wrong with applying this reasoning to biogerontology’s funds-seeking lobbying effort, but it is a very big thing. To be legitimate, an argument that public funds should be spent on trying to achieve a particular goal must consist of two parts: an argument that the goal is desirable and an ar-
gment that it is feasible in the foreseeable future by the method being advocated.\textsuperscript{3–5} So far I have addressed the desirability issue and have wholeheartedly declared that right is on mainstream biogerontologists’ side. Concerning feasibility, however, I contend that they are dead wrong—and moreover, that by persisting in this agenda they are actively diminishing biogerontology research funding, possibly even more powerfully than is the inadequate debate over what future therapies may achieve,\textsuperscript{6–8} which I will address in Rejuvenation Research 9(2).

Why is compressing morbidity infeasible? Actually it is not; what is infeasible is compressing morbidity by postponing aging. Fries has maintained a strong interest in compression of morbidity ever since his seminal paper, and quite recently published a thorough study showing that the average amount of life spent in a state of inability to perform key activities of daily living (ADLs)—the commonest measure of morbidity—had indeed diminished in the United States during the past two decades.\textsuperscript{9} Unfortunately for biogerontologists, however, every scrap of this compression fell into the “mild” or “moderate” categories of morbidity: “Severe” morbidity was absolutely unaffected. Mild and moderate morbidity are highly amenable to compression by interventions that leave aging wholly unaltered, such as education and prosperity, so no effect of biomedical progress is demonstrated.

Accordingly, why is it infeasible to compress morbidity by postponing aging? Simply because death from age-related causes is, statistically, the consequence of morbidity, just as morbidity is the consequence of aging. Morbidity must be defined in a piecemeal fashion when one needs an operational, measurable definition; that is why multiple ADLs are used to measure it. However, an equally valid, although less practical, definition would be a physical and/or mental state that confers an increased risk of death from age-related causes. The upshot of this for interventions is simple: The more you postpone (severe, biologically based) morbidity, the more you will postpone death. Compression of severe morbidity is thus a pipe dream. This concludes my case that talking it up as a realistic consequence of biogerontological progress is irresponsible; it engenders optimism that has no basis in scientific fact, and distracts us from the essential task of challenging the unfounded societal and ethical fears so prevalent in society concerning the world that biomedical gerontology actually will bring about.\textsuperscript{10–12}

REFERENCES


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