



# How to Live Forever: Lessons of History

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## How to live forever: lessons of history

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Living forever is much in the news these days. Scarcely a week goes by without the papers, the television, and the internet holding out new and plausible hopes that the matter is now well in hand, a technical breakthrough away. Maybe you can get your telomere shrinkage reversed.<sup>1</sup> Perhaps it's just a question of taking control of p21 gene expression.<sup>2</sup> Possibly stem cell transplantation will do the trick.<sup>3</sup> Politicians set their seal of approval on the promises of biomedical expertise. On the day that the decoding of the human genome was officially announced 85% complete, President Clinton declared "Our children's children may know cancer only as a constellation in the night sky."

But living forever has always been in the news. The expectations that we are now encouraged to have of biomedical expertise have been experienced many times before.

### Biblical longevity

Consider 17th century England. Educated Englishmen then knew for a fact, in the same way that we know for a fact that DNA is the genetic substance, that there were two trees in the centre of the Garden of Eden. The first was the tree of life, and of its fruit Adam and Eve might eat; the second was the tree of knowledge of good and evil, and of that tree they might not eat, "for in the day that thou eatest thereof thou shalt surely die."<sup>4</sup> Anyone who believed in the literal truth of Genesis, and that included most 17th century physicians, understood that the original human beings were designed for immortality and that death was artificially brought into the world through moral transgression.

Yet even after expulsion from paradise, Adam lived 930 years and his son Seth 912 years. Seth's son Enos was a peppy nonagenarian when he begat Cainan, and he lived 815 years afterwards; and so on up to Methuselah, who set the biblical record at 969 years. Then, as Noah's line shows, the vigour of the race began to diminish. Shem lived 600 years, Arphaxad 438, Salah 433, Peleg 239, Serug 237, and Abraham just 175. The decline continued, and by the 17th century, it was clear to many contemporary commentators that human beings were smaller, weaker, and shorter lived than they had ever been.

### Theories on ageing

This sad decline in longevity was widely considered to be a "disease of civilisation." It was the upshot of wickedness, an unnatural way of life, and imprudent dietetics. This meant that the decline could be reversed if only we had correct knowledge of the ageing process and the will to arrange our behaviour accordingly.<sup>5 6</sup> Historically, ageing theories fell into two related categories. Firstly, ageing was the progressive loss of body heat. Getting old was getting cold. It's obvious that living things are warmer than non-living things—the warmer you are, the more full of vitality you are. What kept you going was an innate vital heat, a flameless flame. As you aged, so that heat diminished;

### Summary points

Promises have been made about living forever since ancient times

Most historical theories of ageing were based on loss of heat and loss of moisture

Dietary restriction has been a constant theme in recipes for longevity, although the underlying rationale has changed

Do not try to live forever; you will not succeed

the life course took you from the warmth of youth to the cold of the grave. Secondly, ageing was the gradual loss of bodily moisture. Dying was drying. That was pretty obvious too: compare the moist and supple flesh of a baby to the wrinkled leathery skin and brittle bones of an old person. Virtually every theory about ageing from the ancient Greeks to the 19th century was a version of cooling or drying or a combination of the two.<sup>7</sup>

To live a long time, you had to find a way of preserving innate heat and moisture. Again, from antiquity to modern times the most popular expert answer was to limit the intake of food. Mortals have to eat to keep up their vital heat, but the clever strategy was to prevent that heat from flaming too high. The fuel for the body's vital heat wasn't food and drink itself; rather, food and drink required more of this innate heat to be consumed. A rich diet was a bit like turning up the knob on your camping stove when you have only one canister of propane—you run out of fuel quicker. So the secret of extending human life was an ascetic way of life. Don't eat very much, and especially don't eat a lot of rich foods. The so called Pythagorean diet consisted of fruit, acorns, vegetables, and grains—no meat, no wine, and, incidentally, no beans—and it was to this diet that the longevity of ancient philosophers and hermits was widely attributed.

From Pythagoras to the latest report of the Committee on Medical Aspects of Food and Nutrition Policy (COMA),<sup>8</sup> there is scarcely any expert medical advice on how to extend human life that does not point to the necessity of limiting the consumption of food and drink. The stability of this advice is remarkable, although the rationale offered for it varies enormously. For example, the consumption of roasted meats is now bad for you because of the artery clogging effects of cholesterol and the carcinogenic qualities of nitrosamines in the charred bits, while in the past it was bad for you because it turned the innate heat up too high, because it obstructed the free flow of juices in the body, or because it imbalanced the humours.

In the early 17th century, Francis Bacon wrote a lot about extending human life. Like many of the great modernisers of the scientific revolution, he considered

that the medicine of the time wasn't much good.<sup>9</sup> But if it were refounded on the best factual and philosophical grounds, Bacon thought that the result ought to be a vast extension of human life. Bacon's theories about how and why we died are complex and sometimes confused, but he put great importance on preserving bodily moisture. Above all, you should prevent moisture from escaping through the skin through a generous dressing of ointments, oils, and pomades. When an old man who lived to 300 years was asked his secret, he answered, "Oil without, honey within." Olive oil was the original antiwrinkle cream.<sup>10</sup> Keeping the body supple enhanced its softness, and the moisture theorists also emphasised the benefits of massage and light exercise to get the juices flowing around. Dancing and riding on horseback were good, although they didn't mention jogging.

From biblical times to the 19th century one medically approved measure for rejuvenating the old and the cold enjoyed special favour. In case your religious studies instructor bawled the passage, we refer you to I Kings 1:1.

Now king David was old and stricken in years; and they covered him with clothes, but he gat no heat. Wherefore his servants said unto him, Let there be sought for my lord the king a young virgin . . . and let her lie in thy bosom, that my lord the king may get heat.

The young virgin's name was Abishag the Shunammite, and the practice of restoring heat and moisture to old men by close contact with young women became known as shunamitism. The contact was supposed to rejuvenate old people by transferring to them the warmth and juices of youth—although what happened to the young person is not usually described. Shunamitism was prescribed by scientific physicians, including Thomas Sydenham and Hermann Boerhaave, in the 17th and 18th centuries, and it remained popular, among old men at least, much longer than that.<sup>7 11</sup>

## Role of philosophical and medical expertise

No canonical figure of the scientific revolution devoted more time and energy to the extension of human life than the great rationalist philosopher, René Descartes. In 1645 he told an English nobleman that "The preservation of health has always been the principal end of my studies." And, indeed, Descartes devoted an enormous amount of attention to the medical prolongation of life, periodically announcing that he was well on the way to cracking its secret. Descartes's new science and his promises of personal longevity were so closely associated that some of his friends were shocked when he died aged 54. Descartes enlisted natural philosophy—what we would now call science—in a search for new and more powerful medical technologies, and that is a role for expert knowledge with which we are now familiar. But even Descartes had his darker moods, sometimes confessing that there might be limits to his ability to achieve such a goal. Then he appealed to a conception of philosophy that drew on stoic and epicurean traditions of what rational and reflective knowledge was for.<sup>12</sup> As the proverb has it, what can't be cured must be endured.



SUE SHARPLES

Michel de Montaigne, one of Descartes's immediate philosophical predecessors, was sceptical about the promises of philosophical and medical expertise. His library was stuffed with medical texts that pledged to cure disease and to extend life if only you would submit to the dietetic and therapeutic disciplines of medical expertise. Give up wine; give up meat; avoid chills; sleep only on your right side; take rhubarb pills three times a day. Montaigne would have none of it.<sup>13</sup>

It wasn't just that he doubted whether such nostrums would deliver the promised effects—although he did doubt this very much. It was that the purpose of extending life, even if it could be so extended, was not worth the price asked for. If you put the conduct of your life under the care of physicians, Montaigne thought they would make you miserable: "If they do no other good they do at least this, that they prepare their patients early for death, undermining little by little and cutting off their enjoyment of life." By all means, listen to those who may have authentic medical expertise, but do not give up your freedom of action in so doing. Montaigne said that he knew of, and pitied, "several gentlemen who, by the stupidity of their doctors, have made prisoners of themselves, though still young and sound in health . . . We should conform to the best rules, but not enslave ourselves to them." As another proverb has it, to live physically (that is, according to the dictates of doctors) is to live miserably. Don't be like those people who, in order to extend life, never actually live it. Life is not just about avoiding death; it's about the active use of our powers while we are alive. To live like a human being, you must do all the things that human beings are capable of doing and should do; you must learn to suffer like a human being, and, finally, to die like a human being: "We must meekly suffer the laws of our condition. We are born to grow old, to grow weak, to be sick, in spite of all medicine. . . . We must learn to endure what we cannot avoid."

## Do we want to live forever?

In the early 21st century it is hard to hear voices like Montaigne's. One reason, perhaps, is that the split between what used to be called philosophy and what is now called science has become almost absolute. The enterprise of finding out how the human body works, and what to do about it when it doesn't work, has become quite separate from the enterprise of saying

how you ought to live your life—except, of course, in the trivial and restricted sense that you should eat this and not eat that if you want to avoid a specific disease. Another reason is a common expert presumption that everybody wants to live as long as possible. What physicians, biomedical scientists, and health educationalists say can be done comes to count as defining what people ought to do. Any debate over goals, values, and the point of human life in relation to what is biomedically possible takes place, if at all, at the margins of biomedical science and medical practice.<sup>14</sup>

No one wishes biomedical researchers anything but speed and fortune in bringing about a state of affairs in which fewer of us will have to experience disease. But since hopes and expectations like these have been around a long time, the lessons of history caution us against excessive optimism. We may be stuck with disease and death for some time yet. The trouble with our current single mindedness about seeking technological solutions to the age old problems of suffering and death is that it impoverishes both our resolution and fortitude as individuals and the collective resources that underpin them. We're much better than our ancestors at curing, but we're much worse at enduring. Feudtner would seem to be right in pointing out that "we are pursuing a goal that guarantees frustration, as technology shifts but never eradicates the predicaments of our mortality. If so, our fundamental perspective on health needs to change, accommodating the inescapable threats of illness and death into the concept of a well-lived life."<sup>15</sup>

Our suggested remedies are not so much medical as moral, not the products of special expertise but a

retrieval of robust common sense. Take a dose of Montaigne, or, if you prefer something more up to date, a draught of his 20th century successor, George Bernard Shaw, writing in his preface to *The Doctor's Dilemma*: "use your health, even to the point of wearing it out. That is what it is for. Spend all you have before you die; and do not outlive yourself. Do not try to live forever. You will not succeed."<sup>16</sup>

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- 1 Life and death in the 21st century: living forever. [www.bbc.co.uk/horizon/living\\_forever.shtml](http://www.bbc.co.uk/horizon/living_forever.shtml) (accessed 17 Oct 2000).
- 2 Hawkes N. Gene discovery may reduce diseases linked to old age. *Times* 11 April 2000.
- 3 Martyn C. Curing the incurable. *BMJ* 1999;319:1012.
- 4 *Holy Bible*. Genesis 2:17. (King James version.)
- 5 Grmek MD. On ageing and old age: basic problems and historic aspects of gerontology and geriatrics. *Monographiae Biologicae* 1958;5(2).
- 6 Almond PC. *Adam and Eve in seventeenth century thought*. Cambridge: Cambridge University Press, 1999:19-27, 118-26, 190-2.
- 7 Gruman GJ. A history of ideas about the prolongation of life: the evolution of longevity hypotheses to 1800. *Trans Am Phil Soc* 1966;56(9).
- 8 Calman K, Jackson AA. *Nutritional aspects of the development of cancer*. London: Stationery Office, 1998.
- 9 Webster C. *The great instauration: science, medicine, and reform 1626-1660*. London: Duckworth, 1975:246-323.
- 10 Bacon F. *The historie of life and death*. London: Humphrey Mosley, 1638:188.
- 11 Trimmer EJ. *Rejuvenation: the history of an idea*. London: Robert Hale, 1967.
- 12 Shapin S. Descartes the doctor: rationalism and its therapies. *Br J Hist Sci* 2000;33:131-54.
- 13 Montaigne M. Of experience. In: Frame DM, translator. *The complete essays of Montaigne*. Stanford, CA: Stanford University Press, 1965:815-57.
- 14 Schneiderman LJ, Jecker NS. *Wrong medicine: doctors, patients, and futile treatment*. Baltimore: Johns Hopkins University Press, 1995.
- 15 Feudtner, C. The predicaments of "dangerous safety": living with juvenile diabetes in 20th century America. *West J Med* 2000;173:64-7.
- 16 Shaw GB. *The doctor's dilemma*. London: Penguin, 1957:86-7.

## Three lessons for a better cycling future

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Cyclists were the only group of road users in Britain whose death rate increased sharply during the 1990s,<sup>1</sup> yet cycling was in decline throughout the decade.<sup>2</sup> How could this happen, when attention on casualties was the most intense in the history of the bicycle? Perhaps a vision of the near future will be instructive ...

### Safe walking

It began in America, as so many trends do, but for years no one in Europe took any notice. American tourists wearing helmets around the streets of London first drew media attention. And although public response to walking helmets was initially amusement, the appeal of extra safety drew some pioneers to the habit, especially academics and competitive walkers.

The first case-control study of about 2000 injuries to pedestrians in Britain (180 of whom had worn helmets) concluded that the risk of serious head injury was reduced by 75% when a good walking helmet was worn. Safety campaigners used the slogan "walkers need helmets" to encourage parents to send their children to school in helmets. Several high profile accidents focused public attention on the dangers of walk-

### Summary points

Recent safety campaigns have destroyed faith in the bicycle as a safe means of transport, reducing participation, compromising public health, increasing the risks, and decreasing road skills

Deaths of cyclists have increased since the introduction of helmets

Cyclists fare best when they act and are treated as drivers of vehicles

Promote cycling for a safer road environment

ing. A well known television presenter was severely head injured by a police van answering an emergency call. Doctors concluded that her injuries would have been "substantially reduced" had she worn a helmet.

Walking helmets became widely available. The entire cabinet posed in their helmets outside Number



A figure giving details of accident rates is available on the BMJ's website