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What will you die from?

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This year, for the first time, more than 1000 people in Norway have passed the age of 100 years . Our life expectancy is constantly increasing. For the time being, however, we will all die – from something.

Photo: Einar Nilsen

In the latter half of the 19th century, life expectancy in Norway was approximately 50 years (1). In 2016 it amounted to 84.2 years for women and 80.6 years for men (1), an increase of nearly 65 per cent. This first health revolution, which has benefited most high-income and middle-income countries, is considered one of the greatest achievements of humankind (2).

Will this trend continue? The increase in life expectancy first came as a result of preventing and curing diseases that afflict children and adolescents, and later – from the 1960s onwards – similar advances for diseases that affect adults (2). A further increase in life expectancy will depend on our ability to prevent or cure diseases in the elderly population. This will provide a relatively small gain in terms of years of life, when compared to equivalent interventions for younger populations. Cancer and cardiovascular diseases are the most common causes of death. Should we miraculously become able to cure or prevent all forms of cancer, estimates made in the United States indicate that our life expectancy would increase by approximately three years (3). If cardiovascular diseases could be eliminated, we may add another five years or so. Life expectancy would approach 90 years. This comes at a price: many more people than today would become frail and live to develop geriatric illnesses such as osteoporosis, osteoarthritis and not least dementia (2).

In statistics, this phenomenon is referred to as 'competing risk' (4). The statistician Sander Greenland uses the following example: A 51-year-old heavy-smoking man develops lung cancer and dies from it three years later. If he could have been cured of his cancer, his smoking might have caused him to die from myocardial infarction at age 55. In other words, he would have gained only one year of life. If he had never smoked, he might have lived for another 30 years (5). Competing risk increases in importance with more advanced age, because age is the greatest risk factor for most diseases (2). If one disease is cured, another one is ready to take its place. The incidence of multimorbidity is five times higher among 80-year-olds than among 50-year-olds (6).

Smoking is a prime example of a modifiable risk factor, something that we can influence. Age is the opposite. This view is changing, however. The real risk factor is not chronological age, but *ageing*, a complicated biological process that most likely involves programmed events in the cells, inflammation and accumulated damage (7, 8). If this process can be prevented or slowed down, many age-related diseases can be delayed or prevented simultaneously – similar to the effect of quitting smoking. Research on drug-based prevention and cure is well underway. Some drugs seek to eradicate old cells, while others work according to the principle of calorie restriction (7, 8). So far, only animal studies have been published. We have no knowledge of what effect such treatment will have on people, nor of any possible adverse effects (8).

While we are waiting for the breakthrough, a continuing increase in life expectancy cannot be taken for granted, not even in our part of the world. On the contrary, there is a tendency towards a decrease (9). Both globally and nationally, life expectancy often depends on socioeconomic status, gender and ethnicity (10).

What we die from is perhaps less important, given that we reach a certain age; the number of good years of life we enjoy before we die is the crucial factor. The goal for a new health revolution should not be to produce as many centenarians as possible, but to compress the part of life that needs to be lived with serious disease and functional impairment (10). Here, further gains can probably still be made.

LITERATURE

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