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Longevity Medicine: Ethical Considerations

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Abstract

Longevity medicine raises an important ethical question: although advances in medical science may make it increasingly possible to extend human life, should interventions whose primary purpose is prolongation of life be pursued? This narrative ethical analysis examines longevity medicine through several established approaches to medical ethics, including deontology, consequentialism, practical wisdom, and the four commonly applied principles of autonomy, beneficence, nonmaleficence, and social justice. The discussion distinguishes the increase in longevity that has unintentionally accompanied disease prevention and treatment from interventions whose primary intent is to prolong life. Particular attention is given to informed consent and uncertainty, the relationship between quantity and quality of life, potential harms associated with extending life, and the possibility that expensive longevity interventions could widen existing health inequities. The analysis also considers whether aging should be understood as a natural and inevitable process or as a condition to be treated. Ethical oversight and careful consideration of societal consequences are warranted as geroscience advances. Living longer has been among the enduring goals of medicine, but ethical evaluation should ensure that living better remains central to the pursuit of longevity.

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Editorial

Introduction and background

Longevity medicine raises an important ethical question: although advances in medical science may make it increasingly possible to extend human life, should interventions whose primary purpose is prolongation of life be pursued? This ethical opinion examines longevity medicine, defined as the clinical discipline that treats aging as a modifiable biological process, through several established approaches to medical ethics, including deontology, consequentialism, practical wisdom, and the four commonly applied principles of autonomy, beneficence, nonmaleficence, and social justice. The analysis focuses on interventions aimed at extending lifespan, the number of years lived, and compares them to interventions focused on healthspan, the number of years lived in good health. The discussion distinguishes the increase in longevity that has unintentionally accompanied disease prevention and treatment from interventions whose primary intent is to prolong life. Particular attention is given to informed consent and uncertainty, the relationship between quantity and quality of life, potential harms associated with extending life, and the possibility that expensive longevity interventions could widen existing health inequities. The analysis also considers whether aging should be understood as a natural and inevitable process or as a condition to be treated.

Humans have long sought to advance the medical field with the goals of preventing and treating disease. As medical technology has progressed, our ambitions have expanded beyond the treatment of disease and toward extending the length of human life. With anti-aging cosmetic products being advertised on social media and tabloid covers promoting new methods of maintaining youth, aging is increasingly viewed as a disease to be prevented and treated rather than a natural and inevitable process. From this shift, the field of longevity medicine has emerged, which is a clinical discipline that treats aging as a modifiable biological process, using advanced diagnostics, lifestyle interventions, and personalized therapies to extend healthspan, the years lived in good health, rather than extending lifespan [1].

Interventions such as cholesterol management and vaccinations have certainly increased the human lifespan over the course of history. However, the fields of longevity, medicine, and geroscience are distinctly different from these traditional interventions. Geroscience proposes that targeting the biological mechanisms of aging could delay the onset of multiple chronic diseases at once, extending healthspan, rather than lifespan alone. This distinction can be framed as one between intended and foreseen outcomes. Traditional public health interventions intend to prevent or treat disease, and longer life follows as a foreseen but secondary benefit. Longevity interventions, by contrast, take the prolongation of life as their primary intent.

This framing blurs the line between longevity medicine and disease prevention. The ethical concerns discussed here therefore apply most strongly to interventions whose primary intent is to extend lifespan

without demonstrated gains in healthspan, and to the growing commercial market in which unproven longevity interventions are offered directly to consumers outside of clinical trials. This analysis will focus on circumstances when the primary intent of a scientific intervention is to prolong life.

As the goals of medicine evolve, the ethical questions surrounding intervention must evolve with them. Medical ethics provides a framework involving the specification of obligations for those in the profession to reason through issues using both medical facts and traditional models of reasoning [2]. It has long provided moral guidance and is forced to adapt alongside modern technologies. As new technology is developed to modify the aging process, it is necessary to consider the ethical implications and moral consequences that may accompany these advances. Ethical theories, that is, theories about the characteristics of human activity, can be grouped in many ways. This analysis will look at how consequentialism, Kantian deontology, and practical wisdom approaches can be applied to geroscience. As in philosophy itself, in ethics, theories state ways of evaluating actions that cannot be reduced to one another.

Application of ethical theories

Deontology and utilitarianism are both normative ethical theories - branches of moral philosophy that study how people ought to act. Together with virtue ethics, they form the three primary frameworks used to evaluate right and wrong in human actions.

Kantian deontology considers the rightness or wrongness of at least some acts to be independent of their consequences; that is, some acts are inherently good or evil. This last statement Kant called the categorical imperative: “Act in such a way that you always treat humanity, whether in your own person or in the person of any other, never simply as a means, but always at the same time as an end.” Can life ever be considered wrong? Can an intervention that prolongs life ever be considered wrong? When is it appropriate to intervene and slow scientific developments that violate a fundamental moral duty or right? The application of Kantian deontology is vividly illustrated by the case surrounding the cloned sheep, Dolly, who was “born” on July 5, 1996, at the Roslin Institute in Scotland. This event sparked major ethical discussion. It was assumed that cloning a human would be next. In 1997, US President Bill Clinton banned federal funding for human cloning research, setting a precedent followed by many nations and international bodies. The decision was made that cloning a human was ethically unjustifiable due to its potential complications and the ethical concerns arising from the slippery slope it could create. This is one example of an agreement by the scientific community and society that not all scientific advances are to be embraced. We feel that treating life as a disease and any efforts to prolong years lived as the sole intent without regard for the consequences of the additional years is wrong.

Actions based solely on the prolongation of a human life have major implications not only for the individual but for the world in which that person lives. Decisions need to be made surrounding whether further science aimed solely at prolonging life should move forward. Perhaps a deontological approach might be considered in geroscience as it was in human cloning. Similar to human cloning, geroscience presents uncertainties regarding potential complications and raises concerns about a slippery slope in which interventions initially intended to treat aging-related diseases could eventually lead to radical life extension.

Consequentialism sees the rightness or wrongness of an action in terms of the consequences brought about by that action. These consequences are generally evaluated according to the extent to which they serve some intrinsic good. That is, an intrinsic good has value in and of itself, independent of any further consequences. Thus, the value lies in the outcome produced by the action, rather than the action itself. According to consequentialism, Dolly produced intrinsically good consequences. She lived for six years and gave birth to six lambs naturally. However, these consequences were not enough to outweigh the deontological concerns of human cloning.

Practical wisdom is an approach to ethical reasoning that not only examines actions and their consequences but also questions why we understand particular events to be significant at all. This raises the question of why this action or result is important for us as humans. The statement of humans as plural is important in that we must examine how our race may be impacted, more than just the effect on a single person. This theory allows for the incorporation of other approaches and demands that we must weigh for a given issue.

A key issue in longevity medicine using the practical wisdom approach is whether efforts to extend human life genuinely improve well-being or merely prolong the inevitable deterioration associated with aging. Dr. Ezekiel J. Emanuel argues that longevity is not a competition to live as long as possible, but rather about maintaining a high quality of life, meaningful social connections, and purpose without falling for extreme wellness fads [3]. Interventions aimed solely at prolonging lifespan that cannot encompass the possible deleterious effects on health in those added years could be a disservice to humanity. What follows is an exploration of how longevity medicine can be judged from a practical wisdom approach.

The pillars

In the evaluation of a dilemma in medical ethics, the use of the “pillars” is standard. They provide a mechanism to approach issues that are not clear.

Autonomy

We have become increasingly aware that respect for the dignity of individuals involves allowing them to make their own choices and develop their own life plans, all in the context of their particular societal culture. Autonomy has become the norm in America and has replaced paternalism, where the physician would often make unilateral decisions. The right to choose is not absolute and the effect on others as well as the wisdom of the choice must be considered. An individual has the right to pursue research in longevity medicine. The same holds true for the individual who decides to seek out tests and treatments related to the prolongation of their life. It is important that one examine the short- and long-term consequences of these actions. Choices are made based upon capacity and informed consent. Assuring that individuals have the capacity to understand the science is key to ensure they be informed of all the consequences of the choice they are making. Much of the science aimed at prolonging life is new, and we cannot yet completely understand what might happen as a result of this. To respect the autonomy of a human being is to ensure that they are fully informed of any decision that they are about to make. When we are unable to provide data surrounding the risk and the benefits of an action, this uncertainty must be made clear. In such circumstances, as is done in scientific trials, control groups and the other rigid research mandates must be employed to reduce the amount of uncertainties.

Beneficence

In its most general form, the principle of beneficence says no more than “do good.” The interests of the individual person define what is good; all other things are to be judged by their effect on the individual. In practice, some things are necessary for the dignity of humans, such as respect for autonomy and individual values. Other things, such as height or hair color, may be desirable but not necessary. It would be easy to argue that life is intrinsically good. Therefore, prolonging life would also be good. Until we can be sure of the possible side effects of interventions to prolong life as well as what those extra years might bring to an individual and a society, we cannot say that actions to increase longevity are intrinsically good.

Nonmaleficence

Nonmaleficence tells us to “avoid evil.” This basic expression of nonmaleficence enjoins the professional to at least not make the patient worse off than before they came for help. The problem is recognizing what exactly is harm. This is part of the reason for requiring discussion between patient and provider, since they may have differing opinions on what is harmful in the immediate situation. The human body fails over time. Actions to extend life are likely to delay the inevitable. In the case of arthritis, extending life may mean an individual may be faced with more years of pain and disability. It would be impossible to list all the inevitabilities of aging with respect to the deterioration of bodily functions, but time has proven these to be the rule rather than the exception. This all mandates that quality of life must be part of every discussion when discussing quantity of life. The decision of quality rests on the patient and should not be that of the provider.

Social Justice

Social justice in medical ethics is the moral rule that all people deserve fair treatment and equal access to healthcare, regardless of their background or wealth. Scientific efforts aimed at adding years to the life of an individual have immense social justice implications. Healthcare is expensive. There are already staggering inequalities in healthcare access in the United States. New tests and new treatments are inherently costly. Wohns explores whether it is ethical to prioritize the money and time on developing new treatments to improve longevity when there are more pressing issues in healthcare to dedicate these resources to. We must consider how much of a “legitimate enterprise” longevity medicine is before dedicating our time and resources to it [4]. It is likely that outside of research trials, implementation of longevity science will be very costly to the individual. This will lead to a further widening of the divide between people who can afford treatment and those who cannot. Should insurance companies agree to assume the cost, then that is transferred to everyone who buys insurance. Many individuals are uninsured or underinsured because of the current cost of healthcare, and anything that will further escalate those costs will increase the number of individuals who cannot afford health insurance. Congdon acknowledges that these inequities exist, as well as the high disease burden among people in lower socioeconomic groups. Is it just that those with the most disease burden may have the least access to longevity medicine that may improve lifespan and healthspan? He argues that the success of longevity medicine should be measured not just by how efficacious the intervention is, but by how these interventions may work in lower socioeconomic communities [5]. The argument of the optimal use of health care spending is beyond the scope of this discussion.

It has been well shown over time that the funding of vitamins, immunizations, and lifestyle management is a wise financial choice in terms of health care spending. Should people live longer and develop more maladies, that also will result in the need for more physicians, more tests, more hospital beds, and all that goes with providing a reasonable lifestyle for those who are aging. The resource implications depend on whether added years are lived in health or in illness. If longevity interventions compress morbidity into a shorter period at the end of life, then hospital-related costs may decrease. However, if they extend lifespan

without extending healthspan, the burden on the healthcare system would increase. Ethical evaluation should therefore require evidence of healthspan benefit, not lifespan extension alone. We are already facing significant shortages. In medical ethics, we tend not to put the cost as a major deciding factor, but the reality of life is that considerations of social justice require it. Guidelines and oversight are needed if we choose to move forward with the exploration of ways to extend years lived. This begs the question of what we label as illness or disease. Is aging a natural part of life, or are we calling it disease?

The authors embrace the ongoing success of medicine in preventing disease, treating illness, and focusing on comfort and human dignity. This approach has dramatically prolonged life both in terms of quality and quantity. We argue that longevity medicine aimed solely at prolonging years lived is wrong from a practical wisdom view. Our stated concerns must be carefully considered if we decide to move forward in the exploration of geroscience. The tools of medical ethics can and should be employed at every step. Living longer has always been a goal of healthcare, but living better should be the means to that goal.

Additional Information

Author Contributions

All authors have reviewed the final version to be published and agreed to be accountable for all aspects of the work.

Concept and design: John McGeehan, Rachel Blumberg

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Drafting of the manuscript: John McGeehan, Rachel Blumberg

Critical review of the manuscript for important intellectual content: John McGeehan, Rachel Blumberg

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