

Thousands are currently engaged in solving the problem of death. Maybe they'll succeed, and out of sheer boredom I'll reread this sentence when I'm 900 years old, reflecting fondly on the first wasted century of my life. In the meantime, billions are going to die—some from disease, some in freak accidents, and a substantial number from what we generally call “old age.” That last sounds like a pleasant way to go, comparatively—a peaceful winding-down. But what exactly does it look like? What does it really mean to die from old age? For this week's Giz Asks, we reached out to a number of experts to find out.

Assistant Professor, Medicine, University of California, San Francisco

It's common, in our society, to say that someone “died of old age.” But nobody ever actually dies of “old age.” There are always other pre-existing diseases—or new diseases—that cause the deaths in question. “Old age” isn't something you'd put on a death certificate—most likely, it would be something like cardiac arrest, which occurs due to some underlying issue such as an infection, heart attack, or cancer. For example, a clot could go into the lungs which prevents somebody from oxygenating their brain or their body, and which then causes the heart to stop. When somebody dies, whether or not they're young or old, some disease or disease-process has caused their body to stop working. Illness can present in different ways in older people. As we age, there is a normal wear and tear of the body, and we don't respond as resiliently to health problems. Younger people can and do die from the same things as older people—heart attacks, lung clots—but older people might react in different ways to these diseases. With pneumonia, for instance, they may not show the normal signs of infection—they may instead present with high blood sugar, if they're diabetic, or if they have dementia, they may just present with changes in their mental status: heightened confusion, an inability to do the things they would normally do. When we're older, and that sort of thing happens, we may not pin it on the underlying disease process. People always talk about wanting to “die in their sleep,” but this isn't a specific phenomenon: someone who dies in their sleep might just have had an undetected cancer or infection that happened to occur when they were asleep rather than during waking hours. It's important to note, too, that sometimes when people have a serious illness, like end-stage congestive heart failure or terminal cancer, they might opt to “allow natural death”—focusing on alleviating symptoms and being comfortable rather than going into the hospital and getting aggressive treatment.

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Assistant Professor, Medicine, University of California, San Francisco, who specializes in palliative care

People often say: I want to die in my sleep, at an old age. But everyone dies

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the same way: their heart stops. Thatâ€™s the last step. When you fill out a death certificate, you have to input causes of deathâ€”working back from cardiopulmonary arrest to, say, a clot that came into their lungs, to a cancer they got diagnosed with, and so on. I train my students to think: whatâ€™s the cause before that? Whatâ€™s the cause before that? And so on. As a palliative care doctor, I take care of critically ill people, many of whom are dying. My job is first to sit with people and talk to them about the dying process, and then to help them live through it. The word â€œnaturalâ€”to me suggests a sort of gentlenessâ€”you wonâ€™t be aware of whatâ€™s happening, you wonâ€™t have to think about it. But the reality of our dying process is that it almost never happens that way. It very rarely happens, these days, that someone in perfect health with no medical issues goes to sleep one night and has a heart attack. (And by the way, despite the common phrase â€œdied in his sleep,â€”we very rarely know whether the person in question actually died while sleeping, unless we were there to observe themâ€”they mightâ€™ve been awake.) A â€œnatural deathâ€”in the US typically looks like this: we find something wrong with someone, we try to treat themâ€”to alleviate their suffering, to prolong their lifeâ€”and then we start losing that battle. Then we think about how to transition our focus to improving their life as much as possible until the end. A caveat: I do a lot of work in Uganda and India, and will say that a â€œnatural deathâ€”in most of the world actually involves quite a lot more suffering and quite a lot more pain. We just donâ€™t really have access to opioids in most of the world. In some ways, the most â€œnaturalâ€”way to die is in horrible amounts of pain. Our goal, then, should be to alleviate suffering as much as possible.

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â€œEveryone dies the same way: their heart stops. Thatâ€™s the last step.â€•

Professor of Medicine and Section Chief of Palliative Care at Duke University School of Medicine, and the author of *Shocked: Adventures in Bringing Back the Recently Dead*, among other books

Do you want to die of old age? Wellâ€¦ you canâ€™t. Thatâ€™s a picturesque notion, and indeed thereâ€™s plenty of conventional wisdom out there about â€œdying of old age.â€• Itâ€™s what many people want to do, and what many of my patients try to do. They dodge one life-threatening illness after another like a skier on a slalom course, weaving their way between heart failure, prostate cancer, pneumonia, and now covid, all with the hope of dying peacefullyâ€”one would hopeâ€”of â€œold age.â€• But thereâ€™s really no such thing as dying of old age. Itâ€™s not like as you get older your heart beats more slowly until, finally, late one night, it just doesnâ€™t give another squeeze. Aging puts you at risk of a variety of illnesses from cancer to dementia, any of which may end your life. But donâ€™t blame old age. My grandmother, for instance, died at the ripe old age of 103. (No one in my family worried about whether weâ€™d inherit her china collectionâ€”we just hoped weâ€™d inherit her longevity genes). She was increasingly frail, but alert and perfectly mentally intact up until the end, reading as much as a book a day, including my novels, one of which she actually finished. But she didnâ€™t die of old age. Her age and frailty put her at increased risk of a hip fracture, which she had. Followed by a high-risk surgery, which she flew through with flying colors, only to be stopped, finally, by a stroke. She died at a very advanced ageâ€”and with an exceptional level of mental and physical health that most of us can only hope for in our final yearsâ€”but she didnâ€™t die of old age. She died from an avalanche of bad events, to which her advanced age made her more susceptible. That raises an interesting question: what do you want to die of? If youâ€™re scrupulously watching your cholesterol so you donâ€™t die of a heart attack, and eating lots of raw kale so you donâ€™t die of colon cancer, and avoiding tobacco so you donâ€™t develop emphysema, what are you going to die from? Whatâ€™s left? (I credit my mentor Dr. Joanne Lynn for first raising that question in my mind, 20 years ago. I still donâ€™t have an answer). If you manage to dodge all of the life-threatening illnesses that the world throws at us, whatâ€™s left? Well, my grandmotherâ€™s story is one answer to that question. She did everything right, from a healthy lifestyle to (donâ€™t laugh) a relaxed, easy-going temperament that kept her preternaturally calm. She did everything right, but doing everything right only gets you so far. And then, eventually, life has the final say and steps in with a fall or a stroke or a heart attack or pneumonia. One caveat: I said thereâ€™s no such thing as dying of old age, but certainly people do die at an old age. And thatâ€™s a difference to keep in mind. Many people who live to an advanced age manage to maintain their mental acuity and much of their physical function up until the end. And manyâ€”and perhaps mostâ€”succeed in dying suddenly, in

their sleep. Granted thatâ€™s probably not the way youâ€™re in your 20s, without any warning or time to prepare. But if youâ€™ve walked on the earth for a century, and have had one or two warnings or close calls to prompt you to say your goodbyes, then dying in your sleep is probably a really good way to go. And thatâ€™s maybe the biggest difference between people who die at a very advanced age and the rest of these. Many who die in their 90s or beyond have made their peace with death. Theyâ€™ve done what they need to do and said what they need to say. Maybe theyâ€™ve been ready for years. Soâ€”in my experience as a palliative care physicianâ€”thereâ€™s often less of a struggle, and fewer attempts at last-minute rescue attempts in the form of an aggressive surgery or a protracted course of chemotherapy. They just make their peace and sign off. If â€œdying of old ageâ€• means anything at all, itâ€™s that willingness to say goodbye and move on.

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Assistant Professor, Geriatrics and Palliative Medicine, Icahn School of Medicine at Mount Sinai

The Centers for Disease Control recommends that doctors no longer use the terms â€œdied of old ageâ€• or â€œdeath from natural causesâ€• because they hold limited value for the medical community. This language was widely used when doctors were not sure about the cascade of events that led to death that are now noted on a death certificate, when unnatural causes of death such as homicide or suicide were not suspected, or in low resource settings where a coroner was not available to conduct an investigation to determine an exact cause of death. However, these terms remain popular for the public as they convey that death was not an unexpected or traumatic event, and they help avoid sensitive questions related to the cause of death. That is because we all strive to be â€œyoung and healthyâ€• as long as possible, and we all wish to avoid a debilitating protracted serious illness. Like birth, death is a sentinel event associated with intense emotion and generally a topic people tend to avoid. Interestingly, most people do not fear death itself, but rather the process of dying. People who have a natural death free of artificial life support machines such as a ventilator generally experience a similar dying process. What does determine differences in the dying process is how quickly the body shuts down. The process can range from weeks to months, days to weeks, hours to days or minutes to hours. People who have a time frame of weeks to months tend to develop a steady decline in their function and will typically spend more time sitting or lying down and depending more on others for their personal care

needs. People who have days to weeks find it more and more difficult to concentrate, become less aware of their surroundings, and have less interest in food and water. People who are actively dying in hours to days are generally unaware of their surroundings, have difficulty swallowing, develop labored breathing, and appear exhausted as if they have just completed a sprint. People who die in minutes to hours are unconscious and have erratic breathing patterns. In summary, death is a natural process and usually peaceful. Depending on the time frame and the causes contributing to death, people may exhibit symptoms such as shortness of breath, pain or delirium—a common medical condition associated with inability to concentrate and confusion, that can be managed to minimize suffering, maximizing comfort and quality of life in the time the person has remaining.

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(Updated 3/4/22 with new details)

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