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Is There a Medical Cure for



With older Americans at higher risk for social isolation, scienc



by Lynn Darling, **AARP** (<https://www.aarp.org>), December 11, 2019 | Com



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[En español \(/espanol/hogar-familia/familia-bienestar/info-2019/tratamiento-medico-para-soledad.html?intcmp=AE-HOME-TOESP-TOGL\)](#) | Genomics Researcher Steve Cole had never really thought much about loneliness and the pain it causes until he looked into a molecular

microscope at a small sample of white blood cells. What he saw there changed his life.

The sample was one of several that had been taken from a handful of very lonely men and women and Cole's observations were startling: In each of the samples, the blood cells appeared to be in a state of high alert, responding the way they would to a bacterial infection. It was as though the subjects were under mortal assault by a disease — the disease of loneliness.

But even more surprising to Cole, a professor of medicine, psychiatry and biobehavioral sciences at the UCLA School of Medicine, was the public reaction to the subsequent study he coauthored when it was published in 2007.

"The impact at the societal level — it really kind of shocked me," he says. As an academic, he "used to publishing findings that interest scientists but not the general public." Now he was receiving a steady stream of emails from ordinary people telling him how grateful they were for the work he was doing, and sharing stories of loved ones whose lives had been devoured by loneliness. "So that led me to respect loneliness as a topic and a foe," Cole adds. "And that really did set me on a kind of different journey than I had been on at the time."

Many of the women and men studying loneliness express a similar sense of mission about their research. Loneliness, says Louise Hawkley, a senior research scientist at the University of Chicago, "is a universal human experience, and being the social animals that we are, there must be implications when those social connections are not satisfied." There is a human need to be embedded, connected, integrated in a social network (</health/healthy-living/info-2018/loneliness-isolation-social-network.html>), she notes. When that social network is missing, "the consequences are very real in terms of mental and physical health."

The true cost of loneliness

According to a study by researchers at the AARP Public Policy Institute and at Stanford and Harvard universities, the impacts of people living in social isolation add almost \$7 billion a year to the cost of Medicare (<https://www.aarp.org/ppi/info-2017/medicare-spends-more-on-social-isolation-isolated-older-adults.html>), mostly because of longer hospital stays — a result, researchers hypothesize, of not having community support at home.

"Studies continue to show that the negative health effects of loneliness and isolation are especially harmful for older adults," says Lisa Marsh Ryerson, president of AARP Foundation. "Moreover, our own research (<https://nam05.safelinks.protection.outlook.com/?url=https%3A%2F%2Fconnect2affect.org%2Fwp-content%2Fuploads%2F2018%2F09%2FAARP-740C-Loneliness-Report-v3-with-LOGO-TAG.pdf&data=02%7C01%7Cccarson%40aarp.org%7Cbbb54a41b40449f2e5ec08d77d98>) found that people with lower income are often at greater risk of isolation.."

The research into those impacts has produced a wave of headlines. Every day it seems science discover more ways in which loneliness can attack our bodies and shorten our lives. Loneliness is a killer — an array of studies have found that it leaves us more likely to die from heart disease (</health/conditions-treatments/info-2018/loneliness-risk-death.html>) and is a contributing factor in other fatal conditions. It makes us more vulnerable to Alzheimer's disease, high blood pressure, suicide, even the common cold. It's more dangerous to our health, researchers tell us, than obesity, and it's the equivalent of smoking 15 cigarettes a day.

Fighting social isolation

Connect2Affect (<https://nam05.safelinks.protection.outlook.com/?url=https%3A%2F%2Fconnect2affect.org%2F&data=02%7C01%7Cccarson%40aarp.org>) is the AARP Foundation's long-term effort to end isolation and build the social connections old adults need to thrive. Connect2Affect.org features tools and resources to help individuals evaluate their isolation risk, reach out to others who may be feeling lonely and disengaged and find practical ways to reconnect to the community.

The Research is alarming, but for most of us, it is also confusing. How do scientists take a ubiquitous, enduring and universal feeling and turn it into a set of scary statistics? How can an abstract emotion shorten a life? How do we even define a word that provokes so many meanings in so many different circumstances?

Most of us are intimately familiar with only one kind of loneliness: our own. For the men and women studying it, however, loneliness is a multiheaded mystery, a shape-shifter whose appearance changes in every mirror held up to it. Some experts find its face in statistics; others in brain scans. Still others see it in the behavioral patterns of the people who suffer from it.

Together, those in the field deploy a complex battery of methods. Researchers have infected volunteers with cold viruses, have measured the physical distance that married lonely people maintain from their loved ones, have deprived college students of their sleep and have hurt the feelings of subjects playing games against a computer. Scientists have studied body language, eye movements, have built sophisticated statistical structures and have tracked their subjects over years to determine which ones die younger, get sicker, contract dementia and suffer from depression. And yet the attempt to take the measure of such an essentially amorphous concept can be something like drawing a map to a country that can be seen only in the dark.

What does it mean to be lonely?

Many of the alarming statistics about loneliness come from studies that don't look solely at the way it feels but also examine clues to its presence provided by other, more quantifiable, factors: physical isolation, marital status, the number of close friends and family members, and the amount of television being watched.

"We need to define what exactly the issue is," says Julianne Holt-Lunstad, a professor of psychology and neuroscience at Brigham Young University. "Is it loneliness specifically, or is it people becoming more socially disconnected in a variety of ways?" Until recently, she adds, the concept of loneliness in and of itself was scarce. "But there are other kinds of indicators that are routinely collected that would suggest we are becoming less socially connected. We have evidence from census data that there has been an increase in the number of people who are living alone, a decline in marriage rates and increasing rates of childlessness. We know that lack of social connection puts us at greater health risk."

Loneliness carries a stigma that hampers efforts to help sufferers. It implies that one is a social failure.

Holt-Lunstad acknowledges that people who live alone aren't necessarily lonely and that there are many who may be nested within a close-knit family

and still feel disconnected. Yet a subjective feeling of loneliness, she says, is not the only way to measure a person's vulnerability to health risks. Objective factors, such as living arrangements, may be equally important. Simply living alone or in an isolated place may be just as harmful to your health as feeling lonely (</home-family/friends-family/info-2018/loneliness-survey.html>)

Loneliness illustration concept

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Holt-Lunstad is the coauthor of an often-cited landmark study that looked at three groups of people who might be seen as lacking sufficient social connection: those who were socially isolated from other people, those who described themselves as very lonely and those who lived alone. The study pooled the evidence collected from 70 studies that followed a total of 3.4 million participants for an average of seven years and came up with a startling conclusion. Each of the three groups faced roughly the same increased risk of an early death—32 percent for those living alone, 29 percent for those who were socially isolated from others and 26 percent for those who described themselves as very lonely.

The study found that it didn't matter whether the participants were healthy at the time of the study. "People say all the time, 'Is it that being lonely makes you unhealthy, or is it because you're unhealthy that you withdraw from others or they withdraw from you?'" Holt-Lunstad notes. "Certainly, physical and mental health issues can put you at risk for loneliness and isolation, but the evidence we have is independent of health status. Whether or not you are healthy, those who are more socially connected live longer."

Conclusions like Holt-Lunstad's are drawn by analyzing dozens of longitudinal studies — elegantly designed research projects that follow groups of individuals over long periods and track the development of, or changes in, the subject under study. Such analyses help to determine, for instance, whether loneliness can lead to dementia or is the result of it, by tracking which condition appeared first.

But whether scientists are examining loneliness through a statistical lens, under a microscope or via behavioral studies, they need a more quantifiable definition of their subject than the one found in sad songs or advice columns. Researchers require a way to measure loneliness, to distinguish between the feelings summoned by a failed romance or strange faces in an unfamiliar city and those that reflect a chronic, intractable longing for a connection that isn't there.

"That's one of the first issues we run into when scientists talk about loneliness," Hawkley says. "What point do you say that somebody's lonely?" A teenage boy alone on a Saturday night experiences a very different kind of loneliness than does an elderly man who lives in a bare apartment and hasn't spoken to anyone for days.

Because loneliness can mean different things to different people, Hawkley says, scientists now measure the condition in a "more finely grained fashion, a continuum on which one can define an individual as being slightly, moderately or extremely lonely."

That continuum is found in the UCLA Loneliness Scale, the gold standard for defining loneliness for research purposes. There are now several shortened versions of the scale, but the original is a 20-item questionnaire that asks about feelings associated with loneliness but never inquires about loneliness per se. The questions include statements such as, "I am unhappy doing so many things alone," and "There is no one I can turn to." The way in which the questions are worded and the choice of answers, means that those who are fleetingly lonely or perfectly content in their solitude will end up with scores at the low end of the scale, whereas the chronically lonely, a group to whom much of the research is aimed, will have scores putting them at the top.

How being lonely affects your brain

Not all scientists are studying loneliness as a complex matrix of contributing factors. A growing number are focusing on the feeling itself, the intensely personal experience of rejection, disconnection and longing that some researchers believe produces a pain as real as any caused by a physical injury, one that has little to do with living arrangements or social networks.

These researchers are looking at loneliness as the nexus where molecular biology and psychology intersect, creating an intricate dance in which body and mind take their cues from each other to produce a highly personal, private and prolonged kind of hell. Research along these lines stems from very basic questions: What's the point of loneliness? What purpose could it possibly serve?

Well, for one thing, it protects us from saber-toothed cats.

Our earliest ancestors were sociable creatures — they had to be. Those on their own were vulnerable to attack, easy pickings for hungry predators. According to this evolutionary model, loneliness may have evolved as a kind of early-warning system, a signal that something isn't right which prompted us to get back to the safety of the group and put the body in a stressful state of high alert until we did so.

The sense of threat that would accompany such a feeling found its way deep into our cellular makeup — inflammation like what geneticist Steve Cole found in the blood cells of the lonely people he studied. On a temporary basis, inflammation is a good thing; it's the body's first system of defense, helping to combat an infection or repair a wound. But what works as a short-term response can be deadly when it's ongoing. [Inflammation \(/health/conditions-treatments/inflammation-2019/lowering-inflammation-to-improve-health.html\)](#) amps up biological processes leading to tissue breakdown and impairment of the immune system, which, in turn, increases our susceptibility to conditions ranging from heart disease to Alzheimer's.

"We think that human psychology interprets loneliness as a kind of threat, and that this kind of inflammatory response is a biological reflex that gets triggered whenever we experience that uncertainty," Cole explains.

Could the end of loneliness be found at the drugstore?
It's become clear that the pain of loneliness is real. If that's the case, could the pain be treated?

Inflammation then sets up a vicious cycle. “When you feel lonely, your brain activates inflammation in the white blood cells,” he says. “Well, one of the weird things we've discovered that inflammation talks back to the brain and changes the way it works.” What appears to happen? “After loneliness stimulates that white blood cell inflammatory response, the response feeds back to the brain and makes it irritable, suspicious, prone to negative emotions and fearful of meeting new people and making new friends.”

Those negative emotions set up an intricate loop of psychological responses, says Stephanie Cacioppo, director of the Brain Dynamics Laboratory at the University of Chicago Pritzker School of Medicine. What's happening, she observes, amounts to a kind of duel between body and brain. The body, responding to millions of years of evolutionary conditioning, wants to be with other people, but the modern, lonely brain, under the influence of the inflammatory response and heightened levels of stress, senses a threat in its encounters with others and chooses to isolate further.

“Your body has a different survival mode than your brain has,” notes Cacioppo. “While the body has a long-term self-preservation mode and wants to approach others to survive, the lonely brain has a short-term self-defense mode and sees, erroneously, more foes than friends.” In the lonely state, “the brain is misreading social signals that it should read normally; suddenly it doesn't give the correct translation. You put someone who is lonely into a room alone and every person who comes there will be perceived as a threat.” Lonely people, she continues, often misread a facial expression or tone of voice — characterizing curiosity as hostility, for instance — and gradually develop a distorted reality about the social world around them. That unconscious sense of threat can lead to an endless behavioral cycle in which a lonely person, in a mistaken attempt at self-protection, sends out signals of disinterest or even hostility, which then causes others to withdraw.

Those who are lonely live at such a heightened level of alarm that they lose sleep. Their brains respond with greater alarm to words such as “reject” and “bully” than they do to other negative words, like “vomit.” And in one of the lab's recent behavioral studies, married lonely people slept farther away from loved ones, reflecting their preference for greater interpersonal distance.

The search for a loneliness “cure”

Answering the question of what strategies might ease the loneliness crisis is one of the biggest challenges researchers in the field now face. “Because there is no single cause, loneliness treatments require very different approaches,” Holt-Lunstad says. She compares the challenge to the one posed by obesity, a condition that also springs from multiple sources, including nutrition, genetics, and family environment.

And, like obesity, she observes, loneliness carries a stigma that hampers efforts to help those suffer from it. It's another reason why she prefers to talk about [social connection \(/research/topics/life/info-2018/loneliness-social-connections.html\)](/research/topics/life/info-2018/loneliness-social-connections.html), rather than loneliness confronting the problem.

"It helps to remove some of the stigma. Because loneliness implies in some way that one is a social failure," she says. "But if we talk about social connection, that's something that applies to all of us and that we all have to work on. It's not necessarily pointing the finger at any one individual or group. It's a continuum, and every one of us is on that continuum." In fact, Holt-Lunstad would like the relative health of our social connections to be considered in the same terms as other elements of a healthy lifestyle, such as diet and exercise.

Research on ways to help lonely people has been decidedly mixed, the experts say. One of the most effective methods seems to be [cognitive behavioral therapy \(CBT\) \(/health/conditions/treatments/info-2019/chronic-pain-depression.html\)](/health/conditions/treatments/info-2019/chronic-pain-depression.html), which can help a lonely individual better understand how his or her assumptions and behavior might be working against the desire to connect with others. The late neuroscientist John Cacioppo — who was married to and worked with Stephanie Cacioppo — and his colleagues engaged soldiers returning from Iraq and Afghanistan in a series of "social fitness exercises"; they taught the soldiers, for example, to step away from their cellphones and talk with the people around them.

CBT usually takes place one-on-one in a professional's office. However, such a highly personalized form of help may be impractical when it comes to treating the growing ranks of the lonely. At the same time, more-easily achieved approaches, such as encouraging lonely people to find one another at the local senior center, can backfire. "Putting lonely people together to make new friends doesn't work, for two reasons," Cacioppo says. "First, loneliness increases self-centeredness. And second, loneliness makes people more irritable and defensive. If you put lonely people together, they're going to hate each other after two minutes."

That's in part because the lonely can't get what they need simply from the mere presence of other people; what they crave is "core values and shared life experiences," she adds. "We all need witnesses to our lives and people to look after. Our survival and well-being depend on our collective well-being, not our individual might. Which is why something like [volunteering \(/health/healthy-living/info-2018/loneliness-isolation-personal-stories.html\)](/health/healthy-living/info-2018/loneliness-isolation-personal-stories.html) — helping others — really helps."

Rural communities may be one laboratory in which to explore solutions that meet the need for human contact and the kind of intimacy that makes that contact meaningful. The state of Maine, for example, with its scattered aging population, is at the forefront of an approach that relies on community outreach to identify the lonely and keep them connected. "We're proud of the inclination of folks in Maine to watch out and care for their local communities," says Lenard

director of the Center on Aging at the University of Maine. “These are your friends and neighbors looking out for you. It's the meter reader and the postal carrier and your hairdresser all keep eye out for their fellow man or woman.”

Could the end of loneliness eventually be found at the local drugstore? That loneliness causes pain comes as no surprise to its sufferers, but it has become increasingly clear to medical professionals that the pain is real, notes UCLA professor of psychology Naomi Eisenberger. If that's the case, could the pain be treated?

Illustration of loneliness concept.

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In one experiment, Eisenberger monitored the brain activity of volunteers while they played an online computer game, tossing a ball to other “players” that were, in fact, computers. When the computers stopped tossing the ball to a volunteer, Eisenberger found increased activity in the regions of the brain involved with physical pain. The more rejected the volunteer players felt, the more “social pain” their brains registered. The brains of the subjects who took acetaminophen (Tylenol) before the game, though, showed less activity in the pain centers.

Eisenberger is now planning to study whether reducing the body's inflammatory response might turn down the loneliness one feels. Participants in the study will be given a standard dose of naproxen (Aleve), a common over-the-counter anti-inflammatory drug, for four weeks, during which researchers will test their levels of loneliness.

“Maybe Aleve can break that feedback loop where loneliness can heighten inflammation and inflammation can heighten loneliness, and seems to increase our sensitivity to negative social experiences,” Eisenberger says. “If we give people Aleve and maybe it helps to reduce the inflammation, maybe it will change how people see the social world — so instead of interpreting every little comment as something negative, maybe slowly, over time, people will feel a bit less disconnected from others, a bit less lonely.”

The hope is that people wouldn't have to take naproxen forever, she adds. “They could take it short term, break this loop and then go out in the world and be less likely to interpret the social environment in negative ways.”

Research suggests that some antidepressants — those classified as selective serotonin reuptake inhibitors, or SSRIs — may help reduce the sense of social threat that underlies long-term loneliness. Cacioppo's team is testing a neuroactive steroid derived from progesterone. But “as a magic cure for loneliness,” she says. “It's to help silence the mind that sees threat everywhere, so therapy can work with a malleable and open mind.”

“The consequences of isolation and loneliness are severe: negative health outcomes, higher health care costs and even death,” said Senator Susan Collins (R-Maine), chairman of the Senate Special Committee on Aging, at a hearing in 2017. “Just as we did when we made a national

commitment to cut smoking rates in this country,” Collins went on, “we should explore approaches to reducing isolation and loneliness.”

"Loneliness," Cacioppo observes, "is the discrepancy between what you want from your relationships and what you actually have." For those on the front lines of loneliness research upsurge in public awareness and interest is the most hopeful sign that this distance can be bridged.

Lynn Darling is the author of Out of the Woods: A Memoir of Wayfinding. She has written for Esquire, the Washington Post and Harper's Bazaar.

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