

In Sickness and in Health: The Interrelations of Spousal Illness and Death

Nicholas A. Christakis, M.D., Ph.D.

Dying of a broken heart is not a romantic fiction. The so-called “bereavement effect”—in which the death of one spouse is followed quickly by the death of the other—has been well-documented. But research by Nicholas A. Christakis, M.D., Ph.D., a professor at Harvard Medical School and the Harvard Faculty of Arts and Sciences, shows that serious illness in a husband or wife can also affect the health of their spouses, increasing their risk of death.

Christakis and his colleagues have conducted a series of studies funded by a Robert Wood Johnson Foundation Investigator Award in Health Policy Research that illustrate the inter-relatedness of health, illness, and death in married couples. Among their findings:

- Married people show different patterns of health care use from those who are widowed, with married people consistently using higher-quality hospitals and having shorter stays in the hospital. However, once in the hospital, the married and the widowed appear to receive the same quality of care.
- Hospitalization of a husband or wife for a serious illness increases the overall risk of spousal death by about 20 percent. Certain conditions—such as dementia, psychiatric disease, hip fracture, chronic lung disease, and stroke—carry higher risks than others.
- The use of hospice care mitigates the burden of caregiving and reduces the risk of premature death in husbands and wives whose partners are terminally ill.

Taken together, Christakis’ findings suggest that health, illness, and death do not develop in isolation. The findings suggest strategies for policymakers to increase support for caregiving spouses by making counseling, home health services, and respite care more easily available.

Christakis’ work on the health of married couples has helped him develop a new line of speculative but important research on the cascading health effects of people who are connected through broader social networks: family members, friends, colleagues, neighbors—perhaps even fans of a particular celebrity who falls ill. “Because people are interconnected, their health is interconnected,” Christakis maintains.

Focusing on Health, Illness, and Death in the Married

Several years ago, Christakis says he became interested in how illness, disability, health behavior, health care, and death in one person could have health consequences for other people with whom that person is connected in a social network. He decided to focus on how such effects play out in the most basic of social networks: marriage.

Using Medicare claims data, Christakis and his colleagues built a huge data set called COSI—for Care after the Onset of Serious Illness—that contains clinical, demographic, and other information on more than 1.2 million elderly patients initially diagnosed in 1993 with one of 13 life-threatening conditions. The researchers then identified these patients’ spouses and assembled the same information for them.

Thus, the smallest of Christakis’ studies, on hospice care, is based on data concerning nearly 200,000 married couples, a subset of the COSI cohort. His studies on health care use among the

A National Program of
the Robert Wood Johnson Foundation

National Program Office:
Rutgers, The State University
of New Jersey

Institute for Health, Health Care Policy,
and Aging Research

55 Commercial Avenue, Third Floor
New Brunswick, NJ 08901

phone: 732.932.3817
fax: 732.932.3819

email: depdir@ifh.rutgers.edu
www.ihhpcpar.rutgers.edu/rwjf

married and the widowed and on death following hospitalization of a spouse each involve data on more than 500,000 couples, making them the largest studies of their kind.

Early in his research, Christakis explored the impact of “good deaths” on spouses and other family members, and whether hospice care is linked with better survival rates among recent widows. Christakis defined a “good death” as “painless, anticipated, and not too burdensome” on family members.

His study, published in *Social Science & Medicine* in 2003, found that 5.4 percent of bereaved wives died within 18 months of the death of their husband when he did not use hospice services, but that only 4.9 percent died when the husband did use hospice services. Christakis notes that the impact of end-of-life care on a bereaved woman’s health is similar to that from improvements in diet and exercise. For bereaved husbands, the benefit was not statistically significant: Whereas 13.7 percent died by 18 months after the death of a wife who did not receive hospice care, 13.2 percent died when their wife did use hospice care.

“Christakis believes that the health care given to one person can affect not only a spouse, but also have a cascading effect on friends, neighbors, or others within an entire social network.”

The hospice study illustrates what Christakis calls the “collateral effects” of health care on family members. Another study, also published in *Social Science & Medicine*, suggests that marriage provides certain interpersonal resources—such as health-related information and referral networks—that aren’t always available to people who are widowed. As a result, married people seem better equipped than widowed people to navigate the health care system and seek out high-quality care.

In February 2006, the *New England Journal of Medicine* published Christakis’ study on the mortality risks of elderly men and women whose spouses were hospitalized for serious illness. In addition to showing that caregiving spouses faced a higher risk of dying in the face of their partners’ illness, the study results revealed a trajectory of risk, with the first 30 days following hospitalization being the most dangerous. Wives faced a 44 percent higher risk of dying during that first month than they would have if their husbands were healthy, and husbands carried a 35 percent higher risk of dying. These risks subsequently eased up for about three months, but then increased again and remained elevated for up to two years, regardless of whether the hospitalized spouse lived or died.

The study also found that different medical conditions affected caregiving spouses differently. Cancer, for example, generally did not result in higher death risks for caregiving spouses, although dementia, psychiatric disease, congestive heart failure, chronic lung disease, hip fracture, and stroke all had marked impacts. Christakis believes that’s because those conditions increase the burden of caregiving on healthy spouses more so than cancer. Across the board, risk of death increased more for men than it did for women after their spouses fell ill.

Christakis suggests that when people fall seriously ill or die, their partners may neglect their health by eating poorly, smoking more, or increasing their alcohol consumption. Stress and lack of social support also can lead to increased risk of illness or death, he notes.

The Broader Health Implications of Social Networks

Based on this body of research, Christakis believes that the health care given to one person can affect not only a spouse, but also have a cascading effect on friends, neighbors, or others within an entire social network. Examples of “collateral” health benefits that can occur unintentionally within social networks include the following:

- A husband’s weight and cholesterol levels improve because his wife decided to eat more nutritiously and prepare healthier meals.
- A mother who is treated for post-partum depression is more attentive to the health needs of her children and ensures that they are vaccinated properly, preventing illness or death.

■ A husband who undergoes knee replacement surgery is better able to care for his sick wife, thus improving her health.

Although these collateral effects tend to be more significant among spouses, they can extend deeply into a person's social network. For example, breast cancer in one woman might motivate her family members or friends to schedule a screening mammogram for themselves. One person's successful efforts to lose weight or quit smoking might prompt his colleagues or friends to follow suit. Christakis suggests that there may even be a social "multiplier" effect in health, health behaviors, or health care delivery that results when a person has a high number of social connections. So, for example, the CEO of a highly successful *Fortune* 500 company who has lost 50 pounds through diet and exercise and now runs in marathons may have an impact not only on his employees but also on others in the business community who admire his accomplishments.

Christakis urges physicians to be mindful of these potential effects. "Physicians should realize that the impact of care they provide transcends the patient sitting before them." He argues that physicians should consider not only the costs and health benefits of a particular treatment, but also how the decision to use that treatment may unintentionally affect their patients' family members or friends. "By ignoring social networks, physicians are missing opportunities to have greater impact," he cautions.

Policymakers too should consider the cascading effects of health care within social networks, Christakis says. A particular intervention may be more cost-effective than it first appears, once its collateral effects on a patient's family members, colleagues, or friends are taken into account. Thus, the case for certain supportive health services, preventive care, and patient education may be much stronger than policymakers might think.

"Physicians should realize that the impact of care they provide transcends the patient sitting before them."

Can Social Networks Help Spread Good Health?

In his current research, Christakis and his research group are studying how epidemics of disorders such as obesity, alcoholism, diabetes, or depression can spread in a peer-to-peer fashion. He wants to explore whether and how social networks might be used to reduce these epidemics by spreading positive health behaviors. For example, 12-step programs such as Alcoholics Anonymous typically rely on peer support and reinforcement to help people stay sober.

Even loose social connections, Christakis notes, may have an impact. For example, when a celebrity is diagnosed with cancer, fans may take heed and request cancer screening. Indeed, famous people such as Christopher Reeve, Magic Johnson, Lance Armstrong, and Brooke Shields have raised public awareness of the health problems with which they have struggled: spinal injury, HIV, testicular cancer, and post-partum depression. Their public experiences may have had many effects on screening, prevention, treatment-seeking, and even research funding for these conditions.

Although the impact of spousal health effects is well-documented, few data are available on the broader effects of personal health and health behavior. To address this issue, Christakis and his colleagues are creating a social network map of more than 12,000 people who participated in the Framingham Heart Study from 1971 to the present in order to learn more about the impact of social networks on health and disease, including the differences between networks and neighborhoods, and how each affects health outcomes.

At its core, Christakis' work is helping to expand our understanding of why people become sick and how they may use medical care to become well. If his new research succeeds in identifying ways to leverage the power of social networks, ultimately we may all be beneficiaries of cascading health effects.

About the Investigator

Nicholas A. Christakis, M.D., Ph.D., is an internist and sociologist who conducts research on socio-cultural factors that affect the supply, demand, and outcomes of medical care. He uses primarily quantitative methods to examine the determinants of health at individual and population levels. He is a professor of sociology in the Harvard University Faculty of Arts and Sciences and professor of medical sociology in the Department of Health Care Policy at Harvard Medical School. He is also an attending physician, with an emphasis on palliative medicine, at Harvard's Mt. Auburn Hospital. Until 2005, Dr. Christakis was the director of the Robert Wood Johnson Scholars in Health Policy Research program at Harvard.



Dr. Christakis' past work has examined the accuracy and role of prognosis in medicine, ways of improving end-of-life care, and neighborhood effects on health care and illness course. His book on prognosis, *Death Foretold: Prophecy and Prognosis in Medical Care*, was published by the University of Chicago Press in 1999, and was translated into Japanese in 2006.

Dr. Christakis received his B.S. degree from Yale University, his M.D. and M.P.H. degrees from Harvard University, and his Ph.D. from the University of Pennsylvania. Dr. Christakis has served on the editorial boards of the *British Medical Journal*, the *Journal of Palliative Medicine*, *Palliative Medicine* (UK), and the *American Journal of Sociology*. He teaches quantitative research design, medical sociology, health services research, clinical epidemiology, and palliative medicine. He was elected a member of the Institute of Medicine in 2006.

Publications

- Christakis NA and Allison PD. Mortality after the Hospitalization of a Spouse. *New England Journal of Medicine*, Feb. 16, 2006; 354: 719-30.
- Christakis NA. Social Networks and Collateral Health Effects. *British Medical Journal*, July 24, 2004; 329: 184-5.
- Iwashyna TJ and Christakis NA. Marriage, Widowhood, and Health-Care Use. *Social Science & Medicine*, 2003; 57: 2137-47.
- Christakis NA and Iwashyna TJ. The Health Impact of Health Care on Families: A Matched Cohort Study of Hospice Use by Decedents and Mortality Outcomes in Surviving, Widowed Spouses. *Social Science & Medicine*, 2003; 57: 465-75.
- Christakis NA. *Death Foretold: Prophecy and Prognosis in Medical Care*. (Chicago: University of Chicago Press), 1999.

To order additional copies of *In Sickness and in Health: The Interrelations of Spousal Illness and Death*, contact the National Program Office of the RWJF Investigator Awards in Health Policy Research at 732.932.3817, or depdir@ifh.rutgers.edu.