How Is Health Coverage Related to Mortality?

Linda Gorman, Ph.D.

It is commonly claimed that requiring health insurance coverage for all is good because people without coverage are more likely to die due to "lack of access" to medical care. As this article will show, there is surprisingly little evidence to support this claim, at least for the U.S. healthcare system as it existed before the passage of the 2010 Patient Protection and Affordable Care Act (PPACA). In general, studies that suggest important mortality improvements from coverage expansion have more methodological problems than those that show negligible improvements.

Some History

In its modern form, the claim that lack of health coverage kills rose to prominence with the publication of the 2002 Institute of Medicine (IOM) report *Care Without Coverage: Too Little, Too Late*.[1] The report asserted that 18,000 Americans died each year because they lacked health coverage. The report did not discuss whether mortality rate differences were caused by a lack of health insurance or by behaviors known to damage health and more likely to occur in groups of people who are uninsured.

The assumption that for every 100 deaths in the insured group there were 125 deaths in the uninsured group was crucial to the IOM calculation. As Appendix D explained, "by applying the mortality hazard ratio of 1.25 to the uninsured population estimate for each age group, the number of excess deaths among the uninsured population can be calculated." The hazard ratio of 1.25 for people lacking insurance was apparently drawn from a single comparative mortality estimate contained in a 1993 paper by Franks et al.[2] The paper compared cumulative mortality through 1987 for people who reported being either uninsured or privately insured in a survey done between 1971 and 1975.

IOM did not consider whether the Franks estimate was robust. A hazard ratio of 1.00 suggests that there is no difference in mortality between the two groups. The Franks paper reported that the 95% confidence interval for the 1.25 hazard ratio estimate was 1.00 to 1.55. Its authors assumed that the insured and uninsured people in the survey did not change their status for 19 years. Though they concluded that their findings supported "universal health insurance to reduce… financial barriers to care," their study provided little information on the effects of "universal coverage" because it excluded "adults with Medicaid, Veterans Administration insurance, or Medicare." A year later, a paper by Sorlie et al.[3] reported that people on Medicaid and Medicare had higher mortality rates than both the uninsured and those with private insurance.

The authors of *Care Without Coverage* were apparently well aware that people in the U.S. cycled in and out of coverage and that few people were likely to have been continuously uninsured for 19 years. On page 4 of *Care Without Coverage* they emphasize that "the health benefits of having insurance are even stronger when continuity of coverage is taken into account." On page 27, they write that "several factors mediate the relationship between health insurance and health-related outcomes. These include…having continuity of coverage, and the duration of periods without health insurance."

In 2008, the Urban Institute published a report by Dorn[4] that "updated" the IOM estimates. That report simply applied the IOM methodology to the latest Census Bureau estimates of the uninsured. It did not address the limitations of the original Franks estimate.

In 2009, Wilper et al.[5] found that the uninsured were 40 percent more likely to have died, an estimate that almost doubled the IOM number. They compared cumulative deaths through 2000 for groups of covered and uncovered people surveyed in the third National Health and Nutrition Examination Survey by the Centers for Disease Control and Prevention between 1988 and 1994. Assuming that coverage status remained unchanged, they found that the uninsured were 40 percent more likely to have died. The 95 percent confidence interval for their estimate was 1.06 to 1.80. Unfortunately, this result is compromised because almost 30 percent of the original sample was excluded due to missing data, 7 to 11 percent of the uninsured may have been incorrectly classified, and no attempt was made to adjust for differences in demographics, health status, or health risk characteristics in the two groups.

After a more in-depth study that did attempt to correct for demographic, health status, and health behavior differences between the insured and uninsured, Kronick[6] concluded that the original IOM estimate was "almost certainly incorrect." He compared cumulative death rates through 2002 for the insured and uninsured who had been interviewed for the National Health Interview Survey between 1986 and 2000. Those who said that they were uninsured were in higher risk groups by almost every characteristic that was measured. He concluded that after adjusting for differences in risk profiles unrelated to insurance coverage, "the risk of subsequent mortality is no different for uninsured respondents than for those covered by employer-sponsored group insurance at base line."

The same year, Card et al.[7] measured whether attaining Medicare coverage produced differences in mortality for all patients aged 60 to 70 who were discharged from California hospitals from 1992 to 2002. They concluded that "[a]ny plausible effect of insurance on health status in the general population will likely be small and easily confounded by selection effects in observational settings." Polsky et al.[8] agreed, concluding that

"Medicare coverage at age 65 for the previously uninsured is not linked to improvements in overall health status."

More Recent Results

More recently, results from the Oregon Health Experiment suggest that although coverage increases utilization, it does little to improve selected measures of clinical health. The Oregon Health Experiment examined whether obtaining Medicaid coverage improved the health of low-income adults by comparing selected health of people who won a lottery for Medicaid coverage with those who had lost.

After two years of follow-up, Baicker et al.[9] concluded that obtaining Medicaid coverage had no statistically significant effect on measured blood pressure or cholesterol levels. Although obtaining coverage increased the probability of being diagnosed with diabetes, and overall use of diabetes medication, it did not lower HbA1c levels. Obtaining coverage did reduce observed rates of depression, but it did not increase the use of medication for depression. Obtaining coverage almost doubled the percentage of women who received a mammogram in the last 12 months. It also increased office visits, non-urgent emergency department visits, and hospital admissions by 30 to 40 percent.

In 2012, Sommers et al.[10] published results supporting the IOM conclusions. Using state mortality rates rather than mortality rates from individual survey data, they concluded that Medicaid expansion significantly reduced all-cause mortality for nonelderly adults by 19.6 deaths per 100,000 from a baseline of 320 deaths per 100,000. These results were frequently cited in the debate over state Medicaid expansions.

The Sommers paper compared county-level all-cause mortality for adults 19 to 64 years old in three states that did expand Medicaid coverage in the early 2000s (New York, Maine, and Arizona) with mortality rates in the neighboring "control" states that did not (Pennsylvania, New Hampshire, and Nevada plus New Mexico). The comparisons were done for each state pair, and for the whole sample, for 5 years before Medicaid expansion and 5 years afterwards.

Five years after Medicaid was expanded, Sommers et al. found that unadjusted all-cause mortality was slightly higher in the "control" states. In the expansion states, Medicaid expansion decreased mortality by 25.4 deaths per 100,000 and increased Medicaid coverage by 2.2 percent. When statistically adjusted for county-level differences in age, race, and poverty status, all-cause mortality in the expansion states was still lower by 19.6 deaths per 100,000. County-level data were used for mortality comparisons and for statistical adjustments. In at least some cases, the county-level data were themselves estimated.

The first year of Medicaid expansion for Arizona and New York began in January 2002. For Maine, expansion began in January 2003. New York State's population was large enough to account for about 45 percent of the total sample. Maine's made up about 5 percent. Sommers et al. note that the positive results for Medicaid expansion were "largely driven" by New York State.

Unfortunately, New York State's mortality profile may have differed from that of the other states for reasons that have little to do with Medicaid expansion. The deaths from the terrorist attack on New York's World Trade Center occurred in 2001, the year before New York's Medicaid expansion. They would have inflated its mortality rate for the five years before expansion, 1997 through 2001.

Data from CDC Wonder and New York State vital statistics suggest that excluding the World Trade Center deaths would have lowered New York State's 2001 mortality by about 12 deaths per 100,000, from 326 per 100,000 to about 314 per 100,000. If accurate, this suggests that the effect of the World Trade Center deaths was large enough to create an increase in the expansion states' mortality rates in the year before Medicaid expansion. It would also have artificially increased the measured mortality reduction after Medicaid expansion in the "expansion" states.

There is no indication that Sommers et al. correct for this. In their article, Figure 1A shows a one-year increase in mortality of about 14 deaths per 100,000 in 2001, the year before Medicaid was expanded. This shows up as a clear bump in the -1 to 0 year in the Figure. It is close to the 12 deaths per 100,000 reportedly due to terrorist attack in 2001, and is roughly 70 percent of the 19.6 deaths per 100,000 that the authors concluded were prevented by Medicaid expansion.[10]

In addition, the decline in mortality after Medicaid expansion may have been influenced by the fact that at a time when death from HIV infection was a leading cause of death for nonelderly adults, New York State had one of the highest human immunodeficiency virus (HIV) infection rates in the U.S.

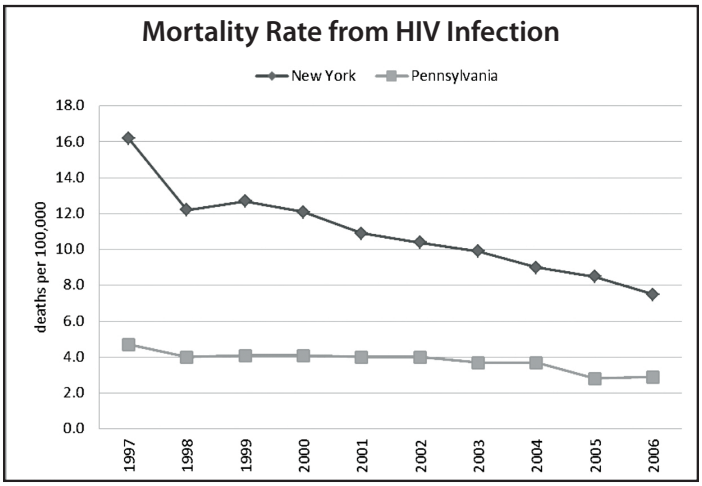

Figure 1. Mortality Rates from HIV Infection

Source: New York and Pennsylvania vital statistics reports.

As Figure 1 shows, the five years before New York's Medicaid expansion occurred shortly after the combination drug therapy for HIV was introduced. Thanks to the combination therapies, mortality rates from HIV declined from a high of more than 16 deaths per 100,000 in 1997 to slightly more than 10 per 100,000 in 2001. They continued to decline steadily from 2002 through 2006, falling by more than 2 deaths per 100,000 in the five years after Medicaid expansion. In the five years before Medicaid expansion they were roughly 8 deaths per 100,000. With far fewer HIV cases, Pennsylvania's deaths from HIV fell by 1 death

per 100,000 after 2002, down from 2 deaths per 100,000 in the five years before. Before assuming that Medicaid expansion was responsible for mortality improvements, it is necessary to explore the role of differences in the geographic distribution of people infected with HIV and the timing of the improved therapies that were successful in treating it.

Conclusion

Studies that correct for possible behavioral and demographic differences between the insured and uninsured are less likely to show that health coverage reduces mortality. Those that do show mortality reduction have been more likely to make unrealistic assumptions about the underlying data or to ignore significant differences in the groups being compared.

Before passage of PPACA, the U.S. devoted significant resources to charitable care for people who were medically indigent, and more than 80 percent of the population had health coverage. Given this, it makes sense that expanding health coverage further might have a relatively small effect on mortality, one that might be mostly attributable to differences in the groups under study.

Linda Gorman, Ph.D., is director of the Health Care Policy Center at the Independence Institute in Denver, Colo. Contact: linda@i2i.org.

REFERENCES

1. Institute of Medicine (U.S.). *Care Without Coverage: Too Little, Too Late*. Washington, D.C.: National Academy Press; 2002.
2. Franks P, Clancy CM, Gold MR. Health insurance and mortality. Evidence from a national cohort. *JAMA* 1993;270:737-741.
3. Sorlie PD, Johnson NJ, Backlund E, Bradham DD. Mortality in the uninsured compared with that in persons with public and private health insurance. *Arch Intern Med* 1994;154:2409-2416. doi:10.1001/archinte.1994.00420210037005.
4. Dorn S. *Uninsured and Dying Because of It: Updating the Institute of Medicine Analysis on the Impact of Uninsurance on Mortality.* Urban Institute; January 2008.
5. Wilper AP, Woolhandler S, Lasser KE, et al. Health insurance and mortality in US adults. *Am J Public Health* 2009;99:2289-2295. doi: 10.2105/AJPH.2008.157685.
6. Kronick R. Health insurance coverage and mortality revisited. *Health Serv Res* 2009;44:1211-1231. doi: 10.1111/j.1475-6773.2009.00973.x.
7. Card D, Dobkin C, Maestas N. Does Medicare save lives? *Q J Econ* 2009;124:597-636.
8. Polsky D, Doshi JA, Escarce J, et al. The health effects of Medicare for the near-elderly uninsured. *Health Serv Res* 2009;44:926-945. doi: 10.1111/j.1475-6773.2009.00964.x.
9. Baicker K, Taubman SL, Allen HL, et al. The Oregon experiment—effects of Medicaid on clinical outcomes. *N Engl J Med* 2013;368:1713-1722. doi: 10.1056/NEJMsa1212321.
10. Sommers BD, Baicker K, Epstein AM. Mortality and access to care among adults after state Medicaid expansions. *N Engl J Med* 2012;367:1025-1034. doi: 10.1056/NEJMsa1202099.