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Health Insurance Coverage and Health — What the Recent Evidence Tells Us

Benjamin D. Sommers, M.D., Ph.D., Atul A. Gawande, M.D., M.P.H., and Katherine Baicker, Ph.D.

The national debate over the Affordable Care Act (ACA) has involved substantial discussion about what effects — if any — insurance coverage has on health and mortality. The prospect that the law's replacement might lead to millions of Americans losing coverage has brought this empirical question into sharp focus. For instance, politicians have recently argued that the number of people with health insurance is not a useful policy metric[1] and that no one dies from a lack of access to health care.[2] However, assessing the impact of insurance coverage on health is complex: health effects may take a long time to appear, can vary according to insurance benefit design, and are often clouded by confounding factors, since insurance changes usually correlate with other circumstances that also affect health care use and outcomes.

Nonetheless, over the past decade, high-quality studies have shed light on the effects of coverage on care and health. Here, we review and synthesize this evidence, focusing on the most rigorous studies from the past decade on the effects of coverage for nonelderly adults. Previous reviews have provided a thorough discussion of older studies.[3] We concentrate on more recent experimental and quasi-experimental studies of the ACA and other expansions of public or private insurance. The effects of coverage probably vary among people, types of plans, and settings, and these studies may not all directly apply to the current policy debate. But as a whole, this body of research (Table 1) offers important insights into how coverage affects health care utilization, disease treatment and outcomes, self-reported health, and mortality.

FINANCIAL PROTECTION AND THE ROLE OF INSURANCE

Before we assess these effects, it is worth recognizing the role of insurance as a tool for managing financial risk. There is abundant evidence that having health insurance improves financial security. The strongest evidence comes from the Oregon Health Insurance Experiment, a rare randomized, controlled trial of health insurance coverage.[31] In that study, people selected by lottery from a Medicaid waiting list experienced major gains in financial well-being as compared with those who were not selected: a $390 average decrease in the amount of medical bills sent to collection and a virtual elimination of catastrophic out-of-pocket expenses.[4,8] Studies of other insurance expansions, such as Massachusetts' 2006 health care reform,[7] the ACA's 2010 "dependent-coverage provision" enabling young adults to stay on a parent's plan until age 26,[6] and the ACA's 2014 Medicaid expansion,[5] have all revealed similar changes, including reduced bill collections and bankruptcies, confirming that insurance coverage reduces the risk of large unpredictable medical costs.

But from a policy perspective, health insurance is viewed differently from most other types of insurance: there is no push, for example, for universal homeowners' or renters' insurance subsidized by the federal government. We contend that there are two reasons for this difference. First, policymakers may value publicly subsidized health insurance as an important part of the social safety net that broadly redistributes resources to lower-income populations. Second, policymakers may view health insur-

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Table 1. Evidence on the Effects of Health Insurance on Health Care and Health Outcomes, 2007–2017.

Domain and Findings	Insurance or Policy Examined*	Studies
Financial security		
Reduction in medical bills sent to collection and in catastrophic medical spending	Medicaid	Baicker et al. 2013[4]; Hu et al. 2016[5]
Reduced out-of-pocket medical spending	DCP, Medicaid	Chua and Sommers 2014[6]; Baicker et al. 2013[4]
Reduced personal bankruptcies and improved credit scores	MA	Mazumder and Miller 2016[7]
Access to care and utilization		
Increased outpatient utilization and rates of having a usual source of care/personal physician	Medicaid, MA	Finkelstein et al. 2012[8]; Sommers et al. 2014[9]; Simon et al. 2017[10]
Increased preventive visits and some preventive services including cancer screening and lab tests	Medicaid, MA	Baicker et al. 2013[4]; Sommers et al. 2014 and 2016[9,11]; Simon et al. 2017[10]
Increased prescription drug utilization and adherence	Medicaid	Ghosh et al. 2017[12]; Sommers et al. 2016[11]
Mixed evidence on emergency department use, with some studies showing an increase and others a decrease	Medicaid, DCP, MA	Taubman et al. 2014[13]; Akosa Antwi et al. 2015[14]; Miller 2012[15]; Sommers et al. 2016[11]
Improved access to surgical care	DCP, MA	Scott et al. 2016[16]; Loehrer et al. 2016[17]
Chronic disease care and outcomes		
Increased rates of diagnosing chronic conditions	Medicaid	Baicker et al. 2013[4]; Wherry and Miller 2016[18]
Increased treatment for chronic conditions	Medicaid	Baicker et al. 2013[4]; Sommers et al. 2017[19]
Improved depression outcomes	Medicaid	Baicker et al. 2013[4]
No significant change in blood pressure, cholesterol, or glycated hemoglobin	Medicaid	Baicker et al. 2013[4]
Mixed evidence on cancer stage at time of diagnosis	MA, DCP	Keating et al. 2013[20]; Robbins et al. 2015[21]; Loehrer et al. 2016[17]
Well-being and self-reported health		
Improved self-reported health in most studies	Medicaid, MA, DCP, ACA	Baicker et al. 2013[4]; Sommers et al. 2012[22]; Van Der Wees et al. 2013[23]; Chua and Sommers 2014[6]; Sommers et al. 2015[24]; Simon et al. 2017[10]; Sommers et al. 2017[19]
Some ACA-specific studies have shown limited or nonsignificant changes	Medicaid, ACA	Courtemanche et al. 2017[25]; Miller and Wherry 2017[26]
Mortality		
Conflicting observational studies on whether lack of insurance is an independent predictor of mortality	Private insurance	Kronick 2009[27]; Wilper et al. 2009[28]
Highly imprecise estimates in randomized trial, unable to rule out large mortality increases or decreases	Medicaid	Finkelstein et al. 2012[8]
Significant reductions in mortality in quasi-experimental analyses, particularly for health care–amenable causes of death	Medicaid, MA	Sommers et al. 2012[22]; Sommers et al. 2014[9]; Sommers 2017[29]

* "Medicaid" includes pre-ACA expansions of Medicaid in selected states and the ACA's 2014 Medicaid expansion. ACA denotes Affordable Care Act (specifically applies here to the 2014 coverage expansions including Medicaid and subsidized marketplace coverage), DCP dependent-coverage provision (the ACA policy enacted in 2010 that allows young adults to remain on their parents' plan until the age of 26 years), and MA Massachusetts statewide health care reform (enacted 2006).

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ance as a tool for achieving the specific policy priority of improved medical care and public health. Evaluating the impact of insurance coverage on health outcomes — and whether these benefits justify the costs of expanding coverage — is our focus.

ACCESS TO CARE AND UTILIZATION

For coverage to improve health, insurance must improve people's care, not just change how it's paid for. Several observational studies have found that the ACA's coverage expansion was associated with higher rates of having a usual source of care and being able to afford needed care,[32,33] factors typically associated with better health outcomes.[34] Stronger experimental and quasi-experimental evidence shows that coverage expansions similarly lead to greater access to primary care,[11,24] more ambulatory care visits,[8] increased use of prescription medications,[4,12] and better medication adherence.[11]

There is also strong evidence that coverage expansion increases access to preventive services, which can directly maintain or improve health. Studies of Massachusetts' health care reform[9] and the ACA's Medicaid expansion found higher rates of preventive health care visits,[11] and although the utility of the "annual exam" is uncertain, such visits may facilitate more specific evidence-based screening. For instance, the ACA Medicaid expansion has led to significant increases in testing for diabetes,[11] hypercholesterolemia,[18] and HIV,[10] and the Oregon study revealed a 15-percentage-point increase in the rate of cholesterol screening and 15- to 30-percentage-point increases in rates of screening for cervical, prostate, and breast cancer.[4]

The connection between health outcomes and use of other services, such as surgery, emergency-department (ED) care, and hospitalizations, tends to be more complicated. Much of this utilization serves critical health needs, though some may represent low-value care or reflect poor outpatient care. Thus, it is perhaps not surprising that the evidence on the effects of coverage on ED use and hospitalizations is mixed.[35] Both types of utilization went up in the Oregon study,[8,13] whereas studies of other coverage expansions found reductions in ED use,[11,14,15] and changes in hospital use have not been significant in several ACA studies[11,26] — though these studies may not have had an adequate sample size to examine this less common outcome. Meanwhile, studies of Massachusetts' reform and the ACA's dependent-coverage provision indicate that insurance improves access to some high-value types of surgical care.[16,17]

CHRONIC DISEASE CARE AND OUTCOMES

The effects of coverage are particularly important for people with chronic conditions, a vulnerable high-cost population. Here, the Oregon experiment found nuanced effects. After 2 years of coverage, there were no statistically significant changes in glycated hemoglobin, blood pressure, or cholesterol levels.[4] On the basis of these results, some observers have argued that expanding Medicaid does not improve health and is thus inadvisable.[36] However, the study revealed significant increases in the rate of diagnosis of diabetes that were consistent with findings in two recent post-ACA studies,[18,37] along with a near-doubling of use of diabetes medications,[4] again consistent with more recent data on the ACA's Medicaid expansion.[12] Glycated hemoglobin levels did not improve, but, as the authors note, the confidence intervals are potentially consistent with these medications' working as expected.[4] The investigators did not detect significant changes in diagnosis of or treatment for high cholesterol or hypertension. One recent quasi-experimental study, however, showed that the ACA's Medicaid expansion was associated with better blood-pressure control among community health center patients.[38]

Meanwhile, the Oregon study found substantial improvements in depression, one of the leading causes of disability in the United States.[39] It also found an increased rate of diagnosis, a borderline-significant increase in the rate of treatment with antidepressant medication, and a 30% relative reduction in rates of depressive symptoms.[4]

Other studies have assessed the effects of insurance coverage on cancer, the leading cause of death among nonelderly adults in the United States.[40] Though not all cancer results in chronic illness, most cancer diagnoses necessitate a period of ongoing care, and approximately 8 million U.S. adults under age 70 are currently living with cancer.[41] Beyond increases in cancer screening, health insurance may also facilitate more

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timely or effective cancer care. However, evidence on this front is mixed. A study of Massachusetts' reform did not find any changes in breast-cancer stage at diagnosis,[20] whereas the ACA's dependent-coverage provision was associated with earlier-stage diagnosis and treatment of cervical cancer among young women.[21] Another Massachusetts study revealed an increase in rates of potentially curative surgery for colon cancer among low-income patients after coverage expansion, with fewer patients waiting until the emergency stage for treatment.[17]

Coverage implications for many other illnesses such as asthma, kidney disease, and heart failure require additional research. Studies do show that for persons reporting any chronic condition, gaining coverage increases access to regular care for those conditions.[19,30] Overall, the picture for managing chronic physical conditions is thus not straightforward, with coverage effects potentially varying among diseases, populations, and delivery systems.

WELL-BEING AND SELF-REPORTED HEALTH

Although the evidence on outcomes for some conditions varies, evidence from multiple studies indicates that coverage substantially improves patients' perceptions of their health. At 1 year, the Oregon study found a 25% increase in the likelihood of patients reporting "good, very good, or excellent" health, and more days in good physical and mental health.[8] Evidence from quasi-experimental studies indicates that self-reported health and functional status improved after Massachusetts' reform[23] and after several pre-ACA state Medicaid expansions,[22] and that self-reported physical and mental health improved after the ACA's dependent-coverage provision went into effect.[6]

Recent studies of the ACA's 2014 coverage expansion provide more mixed evidence. Multiple analyses have found improved self-reported health after the ACA's coverage expansion, either in broad national trends[24] or Medicaid expansion studies,[10,11] whereas one found significant changes only for select subpopulations[25] and another not at all.[26] Larger coverage gains have generally been associated with more consistent findings of improved self-reported health.[19]

Does self-reported health even matter? It squarely fits within the World Health Organization's definition of health as "a state of complete physical, mental, and social well-being," and improved subjective well-being (i.e., feeling better) is also a primary goal for much of the medical care delivered by health care professionals. In addition, self-reported health is a validated measure of the risk of death. People who describe their health as poor have mortality rates 2 to 10 times as high as those who report being in the healthiest category.[42,43]

MORTALITY

Perhaps no research question better encapsulates this policy debate than, "Does coverage save lives?" Beginning with the Institute of Medicine's 2002 report *Care without Coverage*, some analyses have suggested that lack of insurance causes tens of thousands of deaths each year in the United States.[44] Subsequent observational studies had conflicting findings. One concluded that lacking coverage was a strong independent risk factor for death,[28] whereas another found that coverage was only a proxy for risk factors such as socioeconomic status and health-related behaviors.[27] More recently, several studies have been conducted with stronger research designs better suited to answering this question.

The Oregon study assessed mortality but was limited by the infrequency of deaths in the sample. The estimated 1-year mortality change was a nonsignificant 16% reduction, but with a confidence interval of −82% to +50%, meaning that the study could not rule out large reductions — or increases — in mortality. As the authors note, the study sample and duration were not well suited to evaluating mortality.

Several quasi-experimental studies using population-level data and longer follow-up offer more precise estimates of coverage's effect on mortality. One study compared three states implementing large Medicaid expansions in the early 2000s to neighboring states that didn't expand Medicaid, finding a significant 6% decrease in mortality over 5 years of follow-up.[22] A subsequent analysis showed the largest decreases were for deaths from "health-care–amenable" conditions such as heart disease, infections, and cancer, which are more plausibly affected by access to medical care.[29] Meanwhile, a study of Massachusetts' 2006 reform found significant reductions

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in all-cause mortality and health-care–amenable mortality as compared with mortality in demographically similar counties nationally, particularly those with lower pre-expansion rates of insurance coverage.[9] Overall, the study identified a "number needed to treat" of 830 adults gaining coverage to prevent one death a year. The comparable estimate in a more recent analysis of Medicaid's mortality effects was one life saved for every 239 to 316 adults gaining coverage.[29]

How can one reconcile these mortality findings with the nonsignificant cardiovascular and diabetes findings in the Oregon study? Research design could account for the difference: the Oregon experiment was a randomized trial and the quasi-experimental studies were not, so the latter are susceptible to unmeasured confounding despite attempts to rule out alternative explanations, such as economic factors, demographic shifts, and secular trends in medical technology. But — as coauthors of several of these articles — we believe that other explanations better account for this pattern of results.

First, mortality is a composite outcome of many conditions and factors. Hypertension, dyslipidemia, and elevated glycated hemoglobin levels are important clinical measures but do not capture numerous other causes of increased risk of death. Second, the studies vary substantially in their timing and sample sizes. The Massachusetts and Medicaid mortality studies examined hundreds of thousands of people gaining coverage over 4 to 5 years of follow-up, as compared with roughly 10,000 Oregonians gaining coverage and being assessed after less than 2 years. It may take years for important effects of insurance coverage — such as increased use of primary and preventive care, or treatment for life-threatening conditions such as cancer, HIV–AIDS, or liver or kidney disease — to manifest in reduced mortality, given that mortality changes in the other studies increased over time.[9,22]

Third, the effects on self-reported health — so clearly seen in the Oregon study and other research — are themselves predictive of reduced mortality over a 5- to 10-year period.[42,43] Studies suggest that a 25% reduction in self-reported poor health could plausibly cut mortality rates in half (or further) for the sickest members of society, who have disproportionately high rates of death. Finally, the links among mental health, financial stress, and physical health are numerous,[45] suggesting additional pathways for coverage to produce long-term health effects.

DIFFERENT TYPES OF COVERAGE

In light of recent evidence on the benefits of health insurance coverage, some ACA critics have argued that private insurance is beneficial but Medicaid is ineffective or even harmful.[46] Is there evidence for this view? There is a greater body of rigorous evidence on Medicaid's effects — from studies of pre-ACA expansions, from the Oregon study, and from analyses of the ACA itself — than there is on the effects of private coverage. The latter includes studies of the ACA's dependent-coverage provision, which expanded only private insurance, and of Massachusetts' reform, which featured a combination of Medicaid expansion, subsidies for private insurance through Medicaid managed care insurers, and some increase in employer coverage. But there is no large quasi-experimental or randomized trial demonstrating unique health benefits of private insurance. One head-to-head quasi-experimental study of Medicaid versus private insurance, based on Arkansas's decision to use ACA dollars to buy private coverage for low-income adults, found minimal differences.[11,19] Overall, the evidence indicates that having health insurance is quite beneficial, but from patients' perspectives it does not seem to matter much whether it is public or private.[47] Further research is needed to assess the relative effects of various insurance providers and plan designs.

Finally, though it is outside the focus of our discussion, there is also quasi-experimental evidence that Medicare improves self-reported health[48] and reduces in-hospital mortality among the elderly,[49] though a study of older data from Medicare's 1965 implementation did not find a survival benefit.[50] However, since universal coverage by Medicare for elderly Americans is well entrenched, both the policy debate and opportunities for future research on this front are much more limited.

IMPLICATIONS AND CONCLUSIONS

One question experts are commonly asked is how the ACA — or its repeal — will affect health and mortality. The body of evidence summarized here indicates that coverage expansions

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significantly increase patients' access to care and use of preventive care, primary care, chronic illness treatment, medications, and surgery. These increases appear to produce significant, multifaceted, and nuanced benefits to health. Some benefits may manifest in earlier detection of disease, some in better medication adherence and management of chronic conditions, and some in the psychological well-being born of knowing one can afford care when one gets sick. Such modest but cumulative changes — which one of us has called "the heroism of incremental care"[51] — may not occur for everyone and may not happen quickly. But the evidence suggests that they do occur, and that some of these changes will ultimately help tens of thousands of people live longer lives. Conversely, the data suggest that policies that reduce coverage will produce significant harms to health, particularly among people with lower incomes and chronic conditions.

Do these findings apply to the ACA? Drawing on evidence from recent coverage expansions is, in our view, the most reasonable way to estimate future effects of policy, but this sort of extrapolation is not an exact science. The ACA shares many features with prior expansions, in particular the Massachusetts reform on which it was modeled. But it is a complex law implemented in a highly contentious and uncertain policy environment, and its effects may have been limited by policies in some states that reduced take-up,[52] Congress's partial defunding of the provisions for stabilizing the ACA's insurance marketplaces,[53] and plan offerings with high patient cost sharing. Furthermore, every state's Medicaid program has unique features, which makes direct comparisons difficult. Finally, coverage expansions and contractions will not necessarily produce mirror-image effects. For these reasons, no study can offer a precise prediction for the current policy debate. But our assessment, in short, is that these studies provide the best evidence we have for projecting the impact of the ACA or its repeal.

The many benefits of coverage, though, come at a real cost. Given the increases in most types of utilization, expanding coverage leads to an increase in societal resources devoted to health care.[8] There are key policy questions about how to control costs, how much redistribution across socioeconomic groups is optimal, and how tradeoffs among federal, state, local, and private spending should be managed. In none of these scenarios, however, is there evidence that covering more people in the United States will ultimately save society money.

Are the benefits of publicly subsidized coverage worth the cost? An analysis of mortality changes after Medicaid expansion suggests that expanding Medicaid saves lives at a societal cost of $327,000 to $867,000 per life saved.[29] By comparison, other public policies that reduce mortality have been found to average $7.6 million per life saved, suggesting that expanding health insurance is a more cost-effective investment than many others we currently make in areas such as workplace safety and environmental protections.[29,54] Factoring in enhanced well-being, mental health, and other outcomes would only further improve the cost–benefit ratio. But ultimately, policymakers and other stakeholders must decide how much they value these improvements in health, relative to other uses of public resources — from spending them on education and other social services to reducing taxes.

There remain many unanswered questions about U.S. health insurance policy, including how to best structure coverage to maximize health and value and how much public spending we want to devote to subsidizing coverage for people who cannot afford it. But whether enrollees benefit from that coverage is not one of the unanswered questions. Insurance coverage increases access to care and improves a wide range of health outcomes. Arguing that health insurance coverage doesn't improve health is simply inconsistent with the evidence.

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From the Department of Health Policy and Management, Harvard T.H. Chan School of Public Health (B.D.S., A.A.G., K.B.), and the Departments of Medicine (B.D.S.) and Surgery (A.A.G.), Harvard Medical School and Brigham and Women's Hospital — all in Boston.

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