

that door, so only Congress can restrict eligibility for premium subsidies.

The decision also relies on clear-sighted health policy analysis. It opens with a cogent summary of the ACA's "series of interlocking reforms" that others have compared to a three-legged stool<sup>2</sup>: guaranteed issue and community rating of insurance policies, the individual mandate, and premium subsidies. The opinion recites the "long history of failed health insurance reform" by states to show that all three legs are needed for these "closely intertwined" reforms to work, and it notes that the ACA "adopts a version of the three key reforms that made the Massachusetts system successful."

In emphasizing each of the ACA's core elements' support of the others, the opinion contrasts with Roberts' *NFIB* opinion, in which he focused his rhetorical attention on more abstract constitutional federalism principles rather than on Congress's concrete health policy goals. There, rather than embracing the individual mandate's reinforcement of insurance reform goals, Roberts characterized it as a measure that "forces into the insurance risk pool more healthy individuals, whose premiums on average will be higher than their health care expenses" in order "to subsidize

the costs of covering the unhealthy individuals the reforms require [insurers] to accept." In *King*, we hear nothing about involuntary cross-subsidies or social redistribution. Instead, Roberts cites solid health policy research by RAND and the Urban Institute to document that disrupting the ACA's scheme "could well push a State's individual insurance market into a death spiral."

Additional court challenges to other ACA provisions are still possible, but *King*'s six-member majority shows little appetite for challenges threatening the Act's core structure. Even Scalia's dissent recognizes that the ACA may one day "attain the enduring status of the Social Security Act." Thus, the decision may usher in a new era of policy maturity, in which efforts to undermine the ACA diminish, as focus shifts to efforts to implement and improve it.

One key question is how states will respond. Some states that refused to create their own exchanges for conservative political reasons could conceivably reconsider, now that rejecting state-based exchanges does not mean declining a core portion of the ACA. Other states that have recently proposed or struggled to maintain their own exchanges so as not to risk losing premium sub-

sidies may now decide it's best to use the federal exchange or to partner with another state's successful exchange. At the federal level, major changes to the ACA are unlikely before the next presidential election. Still, congressional thought preceding *King* about how to respond if the decision went the other way produced ideas that might lay the groundwork for future legislative action, such as scaling back the effect on employers or increasing flexibility for states to adopt alternative approaches. Whatever the course of political and policy debate, *King v. Burwell* removes the largest remaining cloud of judicial uncertainty hanging over the ACA.

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## Public Health in the Precision-Medicine Era

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That clinical medicine has contributed enormously to our ability to treat and cure sick people is beyond contention. But whether and to what extent medical care has transformed mor-

bidity and mortality patterns at a population level and what contribution, if any, it has made to the well-being and life expectancy of the least-advantaged people have been matters of conten-

tion for more than a century. This debate has taken on renewed importance as the scientific leadership at the National Institutes of Health (NIH), National Academy of Medicine, and U.S.

universities have taken up the challenge of personalized or precision medicine. It is a challenge given all the more salience by President Barack Obama's announcement in his State of the Union address that his administration would seek to fund a major new initiative. Responding to the President's words, Harold Varmus, director of the National Cancer Institute, and Francis Collins, director of the NIH, have written that "What is needed now is a broad research program to build the evidence base needed to guide clinical practice."<sup>1</sup>

The enthusiasm for this initiative derives from the assumption that precision medicine will contribute to clinical practice and thereby advance the health of the public. We suggest, however, that this enthusiasm is premature. "What is needed now" is quite different if one views the world from the perspective of the broad pattern of morbidity and mortality, if one is concerned about why the United States has sunk to the bottom of the list of comparable countries in terms of disease experience and life expectancy, or if one is troubled by the steep social gradient that characterizes who becomes sick and who dies. The burgeoning precision-medicine agenda is largely silent on these issues, focusing instead on detecting and curing disease at the individual level.

So is this approach indeed "What is needed now"? Our skepticism about what precision medicine has to offer is predicated on both a reading of the evidence regarding social determinants of population health and recognition of what that evidence means for the priorities that should guide our investments

to advance public health and reduce health inequities.

There are many frameworks that recognize multiple contributors to the production of population health. In a 2008 report, the World Health Organization Commission on Social Determinants of Health articulated the importance to population health of improving daily living conditions and tackling the inequitable distribution of money, power, and resources. The centrality of social policy and public health approaches to improving population health and reducing health inequities is emphasized in several publications from the Centers for Disease Control and Prevention (CDC),<sup>2</sup> and these aims were recognized as critical twin goals in the Healthy People 2010 and 2020 plans.

The evidence that clinical intervention, however important, cannot remedy health inequalities emerges from a broad range of empirical studies. Perhaps most convincingly, the Whitehall Studies of the British Civil Service in the United Kingdom revealed that even when health care services were provided as a matter of right and the cost of care was no longer a barrier to treatment, a marked social gradient persisted, as a substantial proportion of the population fared poorly on health indicators. Moreover, the inequity did not manifest simply as a gap between the rich and privileged and the poor and disenfranchised: people at every income level did better than those at the level just below them. In 1980, the Black Report on health inequality concluded that "Thirty years of the welfare state and the National Health Service have achieved little in reducing social inequality in health." In sum,

there is now broad consensus that health differences between groups and within groups are not driven by clinical care but by social-structural factors that shape our lives.

Yet seemingly willfully blind to this evidence, the United States continues to spend its health dollars overwhelmingly on clinical care. It is therefore not surprising that even as we far outpace all other countries in spending on health, we have poorer health indicators than many countries, some of them far less wealthy than ours. In 2013, the National Research Council (NRC) and the Institute of Medicine (IOM) issued a bleak report on life expectancy and well-being in the United States. *Shorter Lives, Poorer Health* documented the extent to which Americans were at a disadvantage at every stage of the life cycle as compared with their counterparts in peer countries. In terms of birth outcomes, heart disease, motor vehicle accidents and violence, sexually transmitted disease, and chronic lung disease, Americans fared worse than residents of all other high-income countries. Only for people over 75 years of age was the story better.

In attempting to explain this state of affairs, the NRC-IOM report considered the problematic question of access to health care services for the uninsured and poorly insured in the United States — but then dismissed those gross inequities as a possible explanation for the U.S. disadvantage. "Even if health care plays some role," said the report, "decades of research have documented that health is determined by far more than health care." Amplifying this message, a recent analysis concluded that "In many ways the American health care

system is the most advanced in the world. But whiz-bang technology just cannot fix what ails us.”<sup>3</sup>

It is against this backdrop that the claims of the most ardent defenders of precision medicine must be read. Francis Collins has written that “the 21st century is the century of biology. The nation that invests in biomedical research will reap untold rewards in its economy and the health of its people.”<sup>4</sup> Research undertaken in the name of precision medicine may well open new vistas of science, and precision medicine itself may ultimately make critical contributions to a narrow set of conditions that are primarily genetically determined. But the challenge we face to improve population health does not involve the frontiers of science and molecular biology. It entails de-

 An audio interview with Dr. Bayer is available at NEJM.org

velopment of the vision and willingness to address certain persistent social realities, and it requires an unstinting focus on the factors that matter most to the production of population health.

Unfortunately, all the evidence suggests that we, as a country, are far from recognizing that our collective health is shaped by factors well beyond clinical care or our genes. The NIH’s most recent Estimates of Funding for Vari-

ous Research, Condition, and Disease Categories report ([www.report.nih.gov/categorical\\_spending.aspx](http://www.report.nih.gov/categorical_spending.aspx)) shows, for example, that total support in fiscal year 2014 for research areas including the words “gene,” “genome,” or “genetic” was about 50% greater than funding for areas including the word “prevention.” Our investment in public health infrastructure, including local health departments, lags substantially behind that of other high-income countries, and the CDC’s annual budget is dwarfed (by a factor of about five) by investment in the NIH, even as the latter pursues an approach increasingly focused on science and treatments that aim to promote individual health. The proportion of NIH-funded projects with the words “public” or “population” in their title, for example, has dropped by 90% over the past 10 years, according to the NIH Reporter.

Our public investments in broad, cross-sectoral efforts to minimize the potential effect of such foundational drivers of poor health as poverty and racial residential segregation are pitifully few in comparison with those of other countries. Perhaps unsurprisingly, recent high-profile police shootings of minority men have triggered civil rights pro-

tests across the United States, reflecting widespread dissatisfaction with unequal distribution of resources within a deeply divided society.<sup>5</sup>

Without minimizing the possible gains to clinical care from greater realization of precision medicine’s promise, we worry that an unstinting focus on precision medicine by trusted spokespeople for health is a mistake — and a distraction from the goal of producing a healthier population.

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