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Legal Interventions to Address US Reductions in Life Expectancy

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According to a 2019 report by Woolf and Schoomaker,¹ average life expectancy in the US began to level off in 2010 and then declined from 2014 to 2017. Although life expectancy increased slightly in 2018, concerted actions to address the “cumulative insults to the nation’s health” are warranted,² especially considering the increase in mortality in 2020 due to the coronavirus disease 2019 (COVID-19) pandemic. Among many potential solutions, “legal determinants of health,” namely how law can address underlying causes of premature mortality,³ merit examination and consideration. Cost-effective evidence-based laws can safeguard the public’s health, reduce disparities, and extend life expectancy across socioeconomic groups, especially in disproportionately affected regions of the US. Despite their promise, public health laws are underutilized.

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Causes of Reduced Life Expectancies

Age-based, geographic, and socioeconomic status disparities collectively diminish average life expectancy.¹ Midlife “diseases of despair” (eg, suicides, drug overdoses, and alcohol-related conditions), firearm violence, and obesity also are contributing factors for reduced life expectancy, especially in rural counties, the industrial Midwest, and Appalachia.¹ Life expectancy gaps among the richest and poorest 1% of the population are estimated to exceed 10 years for women and 14 years for

men.⁴ Stated simply, poorer, less-educated individuals in the US live considerably shorter lives. This pattern of inequality has been highlighted further during the COVID-19 pandemic.

Among multiple causes, weak laws at all levels (federal, state/tribal, local) contribute to regional differences in life expectancy,¹ suggesting a need for responsive legal reforms. Universal health coverage is vital, but “upstream” prevention aimed at known risk factors undergirded by law also contribute to increased life expectancy. Post-COVID-19 public health laws can address specific social determinants beyond the health sector—such as by focusing on connectedness, education, environment, housing, food, income, and transportation—and potentially narrow vast health equity gaps among underserved at-risk populations.

Prescription for Effective Public Health Laws

Legal reform is not a panacea, but can be an important component for increasing the quality and duration of life, provided that laws are effective in ameliorating known risk factors. Empirical research has demonstrated the value of law as a prevention tool through direct regulation of hazardous products (eg, opioids, alcohol, tobacco, firearms, medications), harm reduction (eg, naloxone, supervised injection facilities), education/information (eg, labeling, warnings), behavioral incentives (eg, taxes on sugar-sweetened beverages, alcohol, and tobacco), and social determinants (eg, minimum wage increases, public benefits). Many preventive legal interventions are also cost-effective (eTable in the [Supplement](#)).

Hazardous Products

Regulating products that reduce life expectancy, such as opioids, alcohol, tobacco, and sugar-sweetened beverages, is vital for advancing health equity. Laws that authorize pharmacist dispensing of naloxone, coupled with liability protections, have been associated with significantly fewer opioid overdose deaths, especially among Black individuals. Removing legal barriers to opioid agonist therapies and expanding access through Medicaid were associated with reductions in overdose deaths and reduced mortality risks related to treatment with methadone and buprenorphine.

Taxes on alcohol, tobacco, and sugar-sweetened beverages may not be politically popular, but have been consistently linked with decreased consumption of these products and some reductions in morbidity and mortality. In Berkeley, California, implementation of an excise tax of \$0.01 per ounce on distributors of sugar-sweetened beverages in 2014 was associated with a 52% reduction in residents' consumption (from 1.25 to 0.70 average servings consumed per person per day) from 2014 to 2017. Although life expectancy was not measured in any of the studies of taxes and sugar-sweetened beverages, the decline in intake is encouraging. In Maryland, a 1-time 50% increase in alcohol sales tax from 6% to 9% on July 1, 2011, was followed by a gradual 6% annual reduction of alcohol-related vehicular collisions (from 228 drivers per month from January 2001 to July 2011 to 179 drivers per month from August 2011 to December 2013).

Tobacco control illustrates perhaps the clearest benefits of law reform. A combination of legal interventions (eg, marketing restrictions, use limits, taxes, age restrictions) was associated with a 67% decline in long-term smoking rates (from 42.4% to 14%) among adult smokers from 1965 and 2017 as well as a 68% decline (from 27.5% to 8.8%) among youth smokers from 1991 to 2017.⁵ Higher federal cigarette taxes alone were related to reduced smoking initiation and past-month smoking among individuals aged 12 to 17 years.

Firearms

A wide array of firearms regulations is both constitutional and effective. State laws requiring universal background checks for firearm purchases were associated with a 14.9% (95% CI, 5.2%-23.6%) reduction in homicide rates in 2016. Firearm possession limits for individuals convicted of violent crimes were associated with lower homicides rates by 18.1% (95% CI, 8.1%-27.1%) over the same period. Indiana's extreme risk protection orders (allowing temporary firearm seizure from individuals at risk to themselves or others) have been associated with preventing an estimated 1 firearm-related fatality for every 10.1 gun removals, principally through suicide prevention.

Natural and Built Environments

Environmental laws designed to reduce air pollution have been linked with reductions in cardiovascular and respiratory diseases. Studies estimate that fine particulate matter may contribute to up to 100 000 US deaths each year.⁶ Similarly, secondhand tobacco smoke is associated with increased risk of cancer and heart disease. Wisconsin's 2010 law prohibiting smoking in enclosed places of employment was directly related to improvements in short-term respiratory health outcomes among bartenders. Laws supporting parks and recreational facilities promote physical activity. Zoning ordinances can expand access to healthy foods in underserved neighborhoods while lowering density of fast food or alcohol retailers with corollary health benefits.

Health Coverage/Services

Universal access to high-quality health services helps reduce health disparities and health care-related injuries. Coverage under the Affordable Care Act, for example, has been associated with reducing racial differences in access to care, especially within 37 states participating in Medicaid expansion, coupled with numerous other benefits.^{7,8} For example, patients with kidney failure who lived in states that expanded Medicaid under the Affordable Care Act, compared with those living in states that did not, had a greater decline in 1-year mortality (change in mortality in the period before and after expansion from 6.9% to 6.1% vs from 7.0% to 6.8%).⁹ Quality control regulations of health professionals and institutions have been associated with reductions in rates of medical errors and lower hospital-acquired infections.

Laws that increase health service capacities can address high-priority health challenges. Federal law designed to detect and treat young people (aged 16-23 y) at heightened risk of self-harm was

associated with a significant reduction in suicide attempts from 2006 to 2009. Regulations involving school nutrition were associated with lower consumption of sugar-sweetened beverages and reduced body mass index among adolescents.

Social Determinants

Addressing social determinants correlates with improved socioeconomic status and health improvements. Access to public housing, social support, unemployment compensation, and other public assistance programs are related to health benefits for participants and society. Income support can tangentially improve health. Raising the minimum wage in New York State between 2003 and 2015 was associated with lower rates of sexually transmitted infections among metropolitan women by 8.5% for gonorrhea (resulting in 11 fewer cases per 100 000) and 19.7% for syphilis (from 0.30 cases/100 000 to 0.27 cases/100 000).

Advancing the Legal Determinants of Health

Greater uptake and uniformity of effective legal measures across the US could likely reduce morbidity, promote health equity, and increase life expectancy. These benefits, moreover, are often achievable without substantial increases in public sector funding. Given the effectiveness and potential cost savings of these legal measures, legislators and policy makers should consider evidence-based laws to ameliorate population health and social justice, especially in regions where life expectancies have declined significantly. Yet, substantial challenges remain.

In a federalist society, states and localities can be incubators for progressive laws with corresponding benefits. Yet, variations in legal innovations lead to uneven applications of evidence-based laws and geographic disparities in key health indicators, as seen in varying state and local responses to COVID-19. Federal inaction can perpetuate legal inconsistencies in socially controversial spheres, including firearms, reproductive health, and commercial taxation and regulation (eg, alcohol, tobacco, vapes, opioids).

Worse still, federal and state authorities increasingly preempt lower-level public health laws, sometimes penalizing noncompliant officials. Such measures impede grassroots initiatives in food and nutrition, environment, or consumer litigation, essentially cutting off legal options in states most adversely affected by diseases of despair. Corresponding legal voids may go unfilled (eg, national firearm background checks). Core public health funding is also incommensurate with population health needs. Even as life expectancy decreases, support for public health systems and the role of law are undervalued by some policy makers and citizens.

Previous findings on declining life expectancy in the US¹ should reset national health priorities warranting concerted responses. This requires private sector responsibility (concerning food, alcohol, tobacco, pharmaceuticals, and health care), social mobilization for a healthy life span, and public health

legal interventions. Evidence-based cost-effective laws can improve social determinants and help reverse ongoing declines in health and longevity.

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