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Advancing Legal Epidemiology: An Introduction

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Chronic and noncommunicable health conditions, including heart disease, stroke, diabetes, hypertension, cancer, and asthma, are leading causes of death and disability in the United States, with 2 in 5 adults afflicted with multiple conditions.^{1,2} Deaths from heart disease are increasing in the majority of counties.³ While deaths from stroke had been declining for decades, decreases in stroke deaths have stalled in the majority of states since 2013.⁴ In addition, individuals with lower socioeconomic status and those who identify as members of racial and ethnic minority groups experience higher rates of chronic diseases, less access to quality health care, and worse health outcomes.^{5–7} The effects of chronic and noncommunicable conditions also extend far beyond health outcomes. Direct costs of treating chronic conditions and indirect costs including loss of productivity amount to an estimated \$3.7 trillion.⁸

Legal and public health experts recognize that law functions as a key determinant of public health. Legal frameworks and interventions can be used to address the increasing population health burden from chronic diseases and the associated risk factors, as the Centers for Disease Control and Prevention (CDC) has long recognized.⁹ However, law must be both quantified and measured in terms of outcomes to understand its impact.¹⁰ As the field of legal epidemiology—the scientific study and deployment of law as a factor in the cause, distribution, and prevention of disease and injury in a population¹¹—has matured, its application has become more widespread. Researchers have developed methods and tools necessary to turn the text of the law into empirical data to measure the effects of law on public health outcomes.¹²

The CDC’s Division for Heart Disease and Stroke Prevention (DHDSPP), in collaboration with Temple University’s Center for Public Health Law Research (CPHLR), cosponsored this special supplement, *Advancing Legal Epidemiology*, to introduce the broader public

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health practice community to the field and its principles and to demonstrate its application to study and evaluate chronic and noncommunicable disease-related policies. The articles that follow illustrate a compelling and diverse body of research that exemplifies how legal epidemiology can help public health practitioners and policy makers recognize opportunities for achieving better health outcomes through law and policy.

Burris et al lay the foundation of this special supplement by describing the evolution of legal epidemiology, its theoretical framework, methods, and application in public health practice. Fulmer et al provide an overview of DHDSPP's application of legal epidemiology methods across a policy research continuum. The research continuum examines the evidence base for policy interventions and uses policy surveillance to identify trends in uptake of evidence-informed laws. Their analysis demonstrates how such laws are being implemented through case studies of community health worker workforce development polices.

After establishing the history, framework, and application of legal epidemiology, this special supplement highlights the breadth of its methods in practice. Authors from CPHLR utilize policy surveillance, a legal epidemiology method that involves the ongoing, systematic collection, analysis, and dissemination of policies across jurisdictions and over time.¹³ Their analysis describes geographic and temporal trends in 3 housing-related domains: state fair housing protections, state laws that govern the landlord-tenant relationship, and city-level nuisance property ordinances. Given the relationship between indoor air quality, lead and mold exposure, housing affordability, and health, their analysis identifies solutions to address the adverse short- and long-term health effects from poor-quality rental housing and substandard neighborhoods experienced by low-income residents.¹⁴

Policy surveillance can also be used to determine the extent to which insurance covers recommended treatments of chronic conditions. Carr et al analyze patterns of insurance coverage requirements for diabetes self-management education and training for private insurers, Medicaid programs, and Medicare across the states. Their findings have important implications for addressing the substantial and growing burden of diabetes, particularly as it relates to equitable access to health care.

Chronic disease risk factors have negative economic and social impacts across the life span, influencing the quality of life for those affected, their families, and communities.¹⁵ A policy surveillance study by Sloan et al examines the prevalence of state and local laws intended to encourage population access to reduced sodium food products, a step toward lowering population hypertension rates. Alcohol consumption is a risk factor for cancer, and fetal exposure to alcohol can result in long-term cognitive and other health issues, including heart and kidney diseases.^{16,17} Despite the known risks, binge drinking during early pregnancy is an ongoing public health concern.¹⁸ Thomas et al apply empirical research to examine the association between state alcohol laws and alcohol use during pregnancy and birth. Their findings provide important insights into the role of educational status in relation to policy approaches that address the risks associated with alcohol use, particularly among reproductive-age women.

A longitudinal policy surveillance study by Robinson et al describes variations in the approaches states use to implement and administer Supplemental Security Income benefits through State Supplemental Programs to support families of children with disabilities. This study has implications for states to address disparities in health and access to care for families of children with mental, emotional, and behavioral disorders.

Yang et al apply a mixed-methods approach to compare the content of school-written concussion policies with state laws that govern sports-related concussions. They examine school policy compliance with implementation of the 3 core tenets of concussion laws—removal from play, return to play, and concussion education. This study demonstrates how a mixed-methods approach can be applied within a legal epidemiology framework to study both institutional change and health effects as a result of state law.

The CDC has reported a slowing of the long-standing trend toward reduced exposure to secondhand smoke among nonsmokers since 2011, while state-level actions to encourage comprehensive tobacco control policies have also slowed.¹⁹ This trend highlights the need to empower local public health authorities to protect community members from secondhand smoke and other risk factors.¹⁹ Using policy surveillance methods, Kang et al describe state comprehensive indoor air smoking laws, outline the challenges created when state law sets a ceiling preempting local communities from adopting ordinances that are more protective, and provide examples where states have reconsidered local preemption.

Building on a DHDSP evidence assessment, Gilchrist et al analyzed state laws that address prehospital and hospital aspects of the stroke system of care to determine if state laws are supported by best available evidence. Given that stroke is a leading cause of death and disability, this effort supports future opportunities to study the effectiveness of public health laws in linking emergency medical services and advanced stroke care with stroke outcomes across the United States.

Gable describes how the innovative models developed through legal epidemiology provide an opportunity to rethink legal and public health education and training to incorporate a transdisciplinary model. Public health students and practitioners can benefit greatly from understanding the role of law in improving health outcomes. Likewise, lawyers should receive training and education on how evidence-based methods allow for the development and implementation of laws that can support better health outcomes.

Finally, Benjamin puts the use of legal epidemiology research into perspective for public health practitioners and provides guidance on how they can contribute to the field.

Readers of this special supplement of the *Journal of Public Health Management and Practice* will come away with a new appreciation of the impact of laws on public health. As chronic and noncommunicable health conditions continue to imperil the health of many in our communities, legal epidemiology provides a powerful tool to gain greater insights and pursue more effective public health strategies that will benefit us all.

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