slow age-related increases in blood pressure and favorably affect other cardiovascular risk factors, efforts to induce such changes on a population-wide basis have been disappointing. Deeply ingrained behaviors are difficult — but not impossible — to change, as evidenced by some highly successful tobacco-avoidance programs. Success can be achieved in hypertension prevention, but it will require a broad-based national effort with strong political support.

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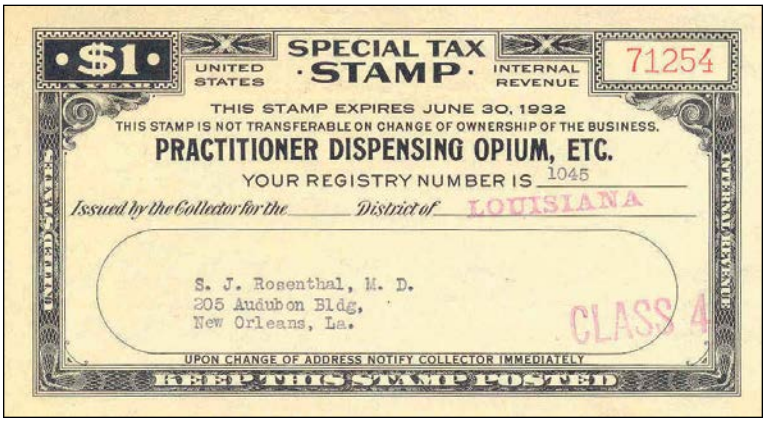
HISTORY OF MEDICINE

Preventing and Treating Narcotic Addiction — A Century of Federal Drug Control

David T. Courtwright, Ph.D.

Just over a century ago, in March 1915, the Harrison Narcotic Act took effect, requiring anyone who imported, produced, sold, or dispensed "narcotics" (at that time meaning coca- as well as opium-based drugs) to register, pay a nominal tax, and keep detailed records (see figure). With such records, officials could better enforce existing laws, such as those requiring sale by prescription only. They could also prosecute unregistered narcotics distributors such as saloonkeepers and street peddlers. The intent was to keep narcotic transactions within legitimate medical channels. For more than a decade, U.S. reformers and diplomats had been urging this course on other nations. In 1915, they belatedly put their own house in order.

Or so runs the textbook version of the origins of federal narcotic control. What actually happened was more interesting and more pertinent to the current opioid crisis. Then as now, sharply rising narcotic consumption sparked a reform response. The 19th-century increase in consumption had multiple causes, among them self-medication, narcotic-laced patent medicines, disease and trauma resulting from the Civil War, the spread of opium smoking, and aggressive promotion of potent new drugs. One 1892 publication devoted 240 pages to the therapeutic virtues of coca and cocaine but only 3 pages to cocaine's well-documented dangers — a print version of the rushed side-effects voiceover of today's television commercials. The worst offenders, though, were physicians. With few effective therapeutic alternatives, they often resorted to morphine injections to treat chronic, painful conditions — the most important driver of the addiction epidemic of the 1870s and 1880s, when Americans' per capita consumption of opiates approximately tripled.



Harrison Narcotic Act Tax Stamp.

The Harrison Narcotic Act required physicians to register and purchase an annual tax stamp. However, enforcement policies made it risky for them to regularly supply narcotics to addicts, giving the law its reputation as a prohibition measure.

Library of Congress.

Then the tide turned. In 1889, James F.A. Adams, writing in the *Journal*, reminded his colleagues that opiates were highly toxic, that their benefits were offset by side effects ranging from constipation to depression, and that they often led to addiction. Adams judged that 150,000 Americans had fallen victim to the "opium-habit," not counting those who had brought it on themselves by smoking the drug. Why not, Adams urged, use newer, nonopiate analgesics and hypnotics to treat symptoms that commonly motivated patients to seek out physicians?[1]

Over the next 20 years, Adams's implicit criticism — that doctors who unthinkingly resorted to opiates to treat pain were behind the times — found increasingly explicit expression in journal articles and medical school instruction. Progressive physicians and pharmacists lobbied, with growing success, for local and state laws to control narcotic sales and shunned colleagues who disregarded them. One New York pharmacist wrote that every drugstore should post a sign: "A greedy criminal druggist will sell you morphine or cocaine; we are not of that kind."[2]

The combination of pressure within the professions and the exercise of state police power made a measurable difference. Per capita consumption of medicinal opiates had been falling for 20 years, and of cocaine for 10 years, before the Harrison Act. Physicians and police officials familiar with addicts' backgrounds reported that iatrogenic addiction had been declining well before 1915, claims borne out by independent studies of prescription records. In 1888, 14.5% of prescriptions filled in Boston drugstores contained opiates. In 1908, the comparable figure for California was 3.6%. A decade later, Pennsylvania investigators discovered that one third of the state's physicians wrote 90% of opiate prescriptions. Most were older practitioners trained before the dangers of narcotics were stressed.

The Harrison Act closed the barn door after the horse was back in. A generation before its passage, progressive physicians and pharmacists had managed to contain the first major U.S. epidemic of iatrogenic opiate addiction. They had succeeded through primary prevention, creating fewer new addicts as existing addicts began quitting or died of old age, chronic disease, or overdose. The decline in prevalence had a demographic tailwind, at least for medical addicts who were older and sicker than the increasingly conspicuous young "pleasure users."

The Harrison Act closed the barn door after the horse was back in. Progressive physicians and pharmacists had already managed to contain the first major U.S. epidemic of iatrogenic opiate addiction.

Today the profession faces an even more widespread epidemic of iatrogenic addiction to opioids, the now-favored term that acknowledges the role synthetic and semisynthetic prescription opioid analgesics played in igniting and sustaining the crisis. In some respects, the current situation is even more daunting, given the potency of prescription opioids, the more diverse demographics of addicted patients, and the widespread availability of cheap nonprescription alternatives, such as heroin spiked with fentanyl.

Yet history offers grounds for optimism, insofar as earlier self-education and self-reform movements measurably slowed an addiction epidemic that was also driven by a medical innovation, the hypodermic administration of alkaloidal narcotics. By 1910, the decline in consumption was sufficiently marked that Dr. Hamilton Wright, the Harrison Act's chief architect and advocate, had to resort to statistical obfuscation to marshal support for early drafts of his bill. Wright finally got his legislation, but it essentially affirmed changes that were under way well before its passage.[3,4]

To the extent that Americans remember the Harrison Act, they recall it as a prohibition law rather than a redundant regulatory measure. This impression grew out of two crucial lacunae: the legislation mentioned neither addiction nor the legality of supplying addicts with narcotics for gradual withdrawal or indefinite maintenance of their accustomed use. Treasury Department officials, who administered the law (see photo), nevertheless assumed an aggressive antimaintenance stance, which the Supreme Court at first rejected but then narrowly upheld in 1919. Most physicians, including *Journal* editorialists, had no sympathy for doctors who made a business of supplying addicts. Yet federal harassment and prosecution of physicians deemed too liberal with their prescription pads, together

Federal Agents Destroying Narcotics, 1920.

Federal narcotic agents were originally part of the Internal Revenue Service. Because the Harrison Act was a revenue law, its enforcement fell to the Treasury Department, which prosecuted unregistered distributors as well as registered practitioners who openly maintained addicts.

with the shuttering of narcotic clinics (short-lived municipal alternatives to physician maintenance), stimulated the black market and triggered a prolonged debate over the legal and medical propriety of maintenance.

The emergence of methadone maintenance in the late 1960s and early 1970s, and its validation by double-blind trials, seemed to resolve the debate in favor of supplying addicts with long-acting opioid agonists. But treatment providers in abstinence-oriented programs and their government allies never accepted indefinite maintenance, and their moral and political reservations kept the issue simmering. It simmers still, despite the 2002 approval by the Food and Drug Administration of new products containing buprenorphine, a partial opioid agonist.

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

The lack of resolution has hindered another important medical task — tertiary prevention by minimizing harm in cases of firmly established opioid addiction. The key objectives — reducing fatal overdoses, medical and social complications, and injection-drug use and related infections — are difficult to achieve if abstinence-oriented treatment is the only option available. Yet that remains the situation in many places, particularly in rural locales, where officials dismiss methadone and buprenorphine as unacceptable substitute addictions. "IF YOU WANT PROBATION OR DIVERSION AND YOUR ON SUBOXIN," declared an erratically spelled sign outside a Kentucky courtroom, "YOU MUST BE WEENED OFF BY THE TIME OF YOUR SENTENCING DATE."[5]

Such policies defy the logic of longitudinal studies that consistently show recent abstinence to be a major risk factor for fatal opioid overdose. Loss of tolerance and overconfident judgments about dosage often kill relapsing opioid addicts, though not relapsing alcoholics or marijuana users who detoxify in similar fashion. Indifference to this fact has contributed to the rise of fatal prescription opioid and heroin overdoses, which together claimed more than 24,000 lives in the United States in 2013.

The Harrison Act is no more, having been replaced by the 1970 Controlled Substances Act. Yet the Harrison Act's aggressive enforcement set in motion a public health catastrophe by creating durable precedents against maintenance. Those precedents were subsequently reinforced by the proliferation of 12-step and other abstinence-oriented treatment programs and by a zero-tolerance drug war colored by cultural politics. By the late 1980s, what had begun as a bad idea had turned into a terrible one: an over-your-dead-body bias against agonist treatment as well as access to sterile injection equipment and reasonable prison terms for drug offenders. Despite recent uneven progress in harm reduction, that deeply rooted bias continues to hinder medical efforts to ameliorate the effects of our country's latest narcotic-addiction epidemic.

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