



Today's fentanyl crisis: Prohibition's Iron Law, revisited

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ABSTRACT

More than a decade in the making, America's opioid crisis has morphed from being driven by prescription drugs to one fuelled by heroin and, increasingly, fentanyl. Drawing on historical lessons of the era of National Alcohol Prohibition highlights the unintended, but predictable impact of supply-side interventions on the dynamics of illicit drug markets. Under the Iron Law of Prohibition, efforts to interrupt and suppress the illicit drug supply produce economic and logistical pressures favouring ever-more compact substitutes. This iatrogenic progression towards increasingly potent illicit drugs can be curtailed only through evidence-based harm reduction and demand reduction policies that acknowledge the structural determinants of health.

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The Road to Hell is Paved with Good Intentions—Virgil

Introduction

The United States is in the midst of the worst drug-related crisis in its history. Over 52,000 Americans were killed by drug overdose in 2015, an increase of more than 300% since the turn of the century. Driven primarily by opioids that kill an average of nearly 100 Americans every day (Rudd, Puja, Felicita, & Scholl, 2016), the grim toll of overdose-related death and disability has reached levels of devastation unseen since the height of the AIDS epidemic.

Like that terrible pandemic and many other public health emergencies, the opioid overdose crisis has multiple, overlapping causes (Park & Bloch, 2016). Initially, one primary cause of the crisis was the over-prescription of opioid analgesics (OA). Most of these prescriptions were issued in good faith, but some providers prescribed (and sometimes dispensed) large amounts of opioids without regard for the patients' medical need.

In an effort to address opioid overprescribing, policymakers have mounted a series of supply-side interventions. These have included crackdowns on unscrupulous providers and facilities, prescription limits and guidelines, bolstering prescription monitoring systems, reformulation of some OAs to make them more difficult to misuse, and nudging (or threatening) prescribers to

curtail the quantity and dosage of opioid prescriptions (Alpert, Powell, & Pacula, 2017). These efforts have seen some effectiveness in reducing the volume of opioids prescribed, and some have been associated with reductions in prescription opioid overdose mortality (Patrick, Fry, Jones, & Buntin, 2016; Rutkow et al., 2015).

These supply-side strategies have seldom been balanced with concerted efforts to engage and retain people with opioid use disorder (OUD) or poorly-managed pain in a comprehensive spectrum of care (Kertesz, 2017; Gellad, Good & Shulkin, 2017). Unfortunately, opioid dependence and addiction do not simply dissipate with the contraction in the availability of OA pills or the introduction of "abuse deterrent" formulations. Instead, individuals who lost access have turned to cheaper, more accessible, and more potent black market opioid alternatives—including heroin—in unprecedented numbers (Cicero, Ellis, Surratt, & Kurtz, 2014; Alpert, Powell, 30 & Pacula, 2017; Park & Bloch, 2016). In concert, prevalence of injection drug use, and its infectious disease sequelae also saw substantial increases (Jones, Christensen, & Gladden, 2017).

Unintended but foreseeable, this transition exposed users to drastically higher risk of overdose because of the lack of regulation over the contents, quality, and dosage in black market opioid products (Alpert et al., 2017; Cicero et al., 2014). Many people with untreated pain and addiction also became shut out from the health care system and the risk-reduction interventions that it potentialled. As a result, after remaining largely stable for years, overdose deaths involving heroin spiked rapidly, tripling between 2010 and 2015 (Cicero & Ellis, 2015; Cicero et al., 2014; Rudd et al., 2016).

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As heroin began to devastate suburban and rural communities, renewed emphasis was placed on interdiction and enforcement efforts. This included major scale-up in the staffing and funding of federal agents along the US–Mexico Border, where the amount of heroin seized quintupled between 2008 and 2015 (Drug Enforcement Administration, 2016; Pew Charitable Trusts, 2016). On the domestic front, prosecutors and police reached for their toolkit of harsh criminal penalties, including high-profile prosecutions of overdose victims' dealers and fellow users. These efforts are increasingly drawing on hitherto seldom-used drug-induced homicide provisions that carry harsh mandatory minimum sentences—an intervention modality that had fuelled mass incarceration, but failed to prevent the worst drug-related crisis in US history (Davis, Green, & Beletsky, 2017; Polcyn & Davis, 2017).

Starting in 2014, the crisis began another transformation. Black market drug products – both heroin and counterfeit pills – became increasingly adulterated with illicitly-manufactured synthetic opioids, mainly fentanyl analogues (Green & Gilbert, 2016). Fentanyl can be synthesised cheaply and with relative ease, and synthesised it has been: In the US, its availability has rapidly grown sourced primarily from China and distributed by Internet cryptomarkets and Mexican drug trafficking organizations (Drug Enforcement Administration, 2016). In the span of a single year, from 2014 to 2015, deaths attributed to fentanyl analogues in America spiked by over 72% to almost 10,000 (Rudd et al., 2016). In an increasing number of locales, these clandestinely-manufactured synthetics now constitute the primary drivers of fatal opioid poisoning (Massachusetts Department of Public Health, 2017; Katz, 2017; Marshall et al., 2017). Emerging year-over-year figures and episodic outbreaks of fentanyl-related deaths paint a grim picture of an uncontained, plague-like contagion.

The Iron Law of Prohibition

These increases in harm were as predictable as they are disastrous. Opioids can be effective in treating acute pain, but they produce dependence when used beyond a limited time period, and can cause addiction in some patients (Dowell, Haegerich, & Chou, 2016). Simply removing access to OAs without replacing this therapy with other pain management modalities and delivering evidence-based opiate substitution treatment could lead only to only two outcomes: increases in untreated pain, unmanaged withdrawal or substitution with other, likely more potent, opioids. One need only look to the country's most well-known experience with massive supply reduction to see this mechanism in action.

During the period of national alcohol prohibition between 1920 and 1933, the production and sale of alcoholic beverages was outlawed, save for industrial or limited medical use. The economic, social, and health effects of national prohibition are disputed; drawing overarching conclusions about those outcomes is complicated by inconsistent and sometimes unreliable historical data (Hall, 2010).

Some facts are beyond dispute, however. The resourcing of alcohol interdiction and law enforcement during Prohibition reached unprecedented levels: The Bureau of Prohibition saw its budget increase four-fold over the 1920s; the US Coast Guard saw similar scale-up in federal investment to deter smuggled alcohol from entering US ports (Warburton, 1968). While physicians were permitted to prescribe alcohol for medicinal use, this ability was limited by regulatory barriers and high prices.

The effect of this intensive effort to decrease supply, including to those who were dependent on alcohol, should not be surprising in light of the recent opioid epidemic: soon after national Prohibition came into effect, America saw a massive shift towards black market production, supply, and distribution of alcohol (Levine & Reinerman, 2005). The application of this restrictive

regime generated a rapid transition from less potent forms of alcoholic beverages to highly-distilled spirits like gin and moonshine. Specifically, Americans' expenditure on distilled spirits as a share of total alcohol sales skyrocketed from around 40% pre-Prohibition to almost 90% directly following, as the consumption of spirits and fortified wines quintupled (Warburton, 1968).

Described as the “Iron Law of Prohibition” (Cowan, 1986), this phenomenon follows fundamental economic logic. Imposing substantial barriers and costs to the illicit drug supply chain creates direct pressure to minimise volume while maximising profit. More bulky products become more expensive relative to less bulky ones, incentivising increases in potency. Indeed, relative to products with lower alcohol content like beer (Prohibition-era cost increase: over 700%), the price of spirits rose much more slowly (Prohibition-era cost increase: 270%) (Miron & Zwiebel, 1991). While the full causal pathway behind these trends is a matter of speculation, it principally relates to the risk of more voluminous contraband being seized and destroyed.

While the overall *volume* of alcohol consumption initially decreased, Americans were consuming less of far more intoxicating products: The potency of alcohol products during Prohibition is estimated to have risen by more than 150% relative to pre-Prohibition and post-Prohibition periods (Lee, 1963). At the same time, the ability of black market traffickers to get the “biggest bang for their buck” is catalysed by reduced consumer ability to exercise preferences; in the context of scarcity, legal risk, and opacity, customers may not be able to afford their preferred libation and are less able to act on informed choices.

The Iron Law of Prohibition helps to elucidate the folly of interdiction targeting a product with inelastic demand. During the Prohibition Era, increased effort and investment in interdiction did lead to initial sharp reductions in the volume of alcohol consumed (Miron & Zwiebel, 1991). These interventions also resulted in market-driven changes in the potency of products that were made available through clandestine supply chains.

Over the course of the national alcohol prohibition experiment, the lack of quality control and regulation of these more potent black market products resulted in outbreaks of poisoning that came to characterise the era: tens of thousands were poisoned, and thousands died after drinking adulterated contraband liquor. In just one such episode, 60 people became ill and 16 died in New York City on Christmas Eve 1926 (Blum, 2010). Ultimately, the American people decided that the aggregate negative economic, social, and public security consequences of Prohibition could not be justified by dwindling returns in terms of reduced consumption, and the policy was repealed barely more than a decade after it was enacted.

The Iron Law of Prohibition revisited: the fentanyl crisis

History repeats itself, Marx wrote, “first as tragedy and then as farce.” The continued emphasis on supply-side interventions to suppress non-medical opioid use is both. As this crisis has evolved, the iatrogenic risk to the health of people who use drugs was not just foreseeable, but in some cases directly foreseen by policy-makers (Vaughn, 2016). One of the most shocking articulations of this came from Pennsylvania's former Physician General, who recently remarked, “We knew that [drug user transition to the black market] was going to be an issue, that we were going to push addicts in a direction that was going to be more deadly. But . . . you have to start somewhere” (Vaughn, 2016). This statement is emblematic of the belief that decisive action is more important than reducing overall societal harm. While seemingly widespread, this sentiment is inimical to both public health scientific and ethical norms.

In contrast to the early years of HIV/AIDS, the drivers of opioid use disorder are well-understood, and efficacious treatment already exists. Substitution therapy using methadone and buprenorphine is decisively protective against overdose and proven to reduce many of the health and societal harms associated with OUD (Capehorn, Dalton, Haldar, Petrenas, & Nisbet, 1996; Schwartz et al., 2013; Volkow, Frieden, Hyde, & Cha, 2014). Naloxone is extremely effective at preventing opioid overdoses from turning fatal. Yet, these medications are often not available to those who need them (Beletsky, Rich & Walley, 2012; Davis & Carr, 2016). The Affordable Care Act (ACA), and the recently passed Comprehensive Addiction and Recovery Act (CARA) took major steps to improve access. But these and other reforms have done little to assure that naloxone distribution is well-targeted, or that drug treatment moves away from being dominated by non-evidence-based modalities and unethical business practices (Davis & Carr, 2017). Efforts to undermine or repeal the ACA and short-sighted budgetary austerity measures threaten to further undermine access to evidence-based treatment and prevention.

Overall, little of the energy and resources dedicated to the crisis has focused on evidence-driven policies and programs (Davis et al., 2017). In health care settings, prescription drug monitoring programs have figured as one of the key answers to the opioid crisis (Gellad et al., 2017). These programs can potentially help identify individuals with OUD, untreated pain, and known overdose risk factors, connecting patients with appropriate treatment resources and other care. They are generally neither designed nor equipped to serve these clinical decision support or care coordination functions, however (Green et al., 2015; Davis et al., 2017). Similarly, health care provider education on opioid therapy and addiction management are dramatically underutilised and often compromised by industry bias (Davis & Carr, 2016).

In place of these and other common-sense efforts to improve care and prevention, the modal programmatic and policy response has had an almost singular focus on suppression of opioid access. In pursuit of that focus, the criminal justice sector has readily intensified its emphasis on arresting, prosecuting, and incarcerating drug dealers and users (Davis et al., 2017). These interventions are problematic not only because they are often counter-productive, but also because, under the semblance of decisive action, they crowd out evidence-driven measures. Every dollar spent on enforcement is a dollar not spent on treatment, harm reduction, or prevention. As we failed to invest in what works, the crisis has mutated into something far more deadly.

Conclusion

Alcohol prohibition, while well-intentioned, was undertaken without sufficient consideration of potential unintended consequences, with disastrous results. Under the Iron Law of Prohibition, the current approach to illicit opioids is likewise doomed to failure. Without serious, sustained efforts to address the direct and root causes non-medical opioid use, intensive supply suppression efforts that brought us fentanyl will continue to push the market towards deadlier alternatives. We must shift the focus from supply reduction to demand and harm reduction.

In the short term, focusing on overdose fatality prevention and education, including expanding access to naloxone is critical, especially following periods of forced abstinence or other times of special vulnerability (Beletsky et al., 2012; Beletsky et al., 2015). Broad scale-up in access to high-quality, low cost drug treatment and other physical and mental health services is also urgently needed. Ultimately, however, we must re-examine our policies through the lens of the social determinants of the opioid crisis,

such as unemployment, concentrated disadvantage, isolation, and inadequate access to physical and mental health care. Though difficult and multifaceted, structural solutions are the only way to significantly move the needle on the most formidable drug-related public health crisis of our time (Messac, Ciccarone, Draine, & Bourgois, 2013; McLean, 2016; Davis et al., 2017).

Conflict of interest

Nothing to declare.

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