The Law of Unintended Consequences: Illicit for Licit Narcotic Substitution

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The dealers will not use it. Heroin dealers have explicit knowledge of the addictive properties of their product. The heroin addict is no longer the desperate character living under a bridge. She is a 17-year-old high school senior who runs out of her grandmother's oxycodone. He is the stockbroker who weighs the economics of purchasing one oxymorphone on the street for $100 or ten doses of heroin for $200. Because these people are ingesting and injecting products of unknown composition and unfamiliar potency, they can potentially overdose. If lucky, they end up in the emergency department rather than the morgue.

Kentucky ranks third in the nation in drug overdose mortality rate per 100,000 persons, with opioid pills making up the majority.[1] In response to these statistics, the State of Kentucky passed House Bill One (HB1) in April 2012, effective October 2012. Also known as "the pill mill bill," HB1 contains provisions intended to limit opioid prescriptions by pain management physicians and by other acute care providers such as emergency physicians. To prescribe narcotic pain medications, physicians must perform a full history and physical, prescribe only a short course, educate the patient on risks of controlled substances, and obtain a report from a statewide prescription monitoring program (PMP) (Kentucky All Schedule Prescription Electronic Reporting [KASPER]).[2]

As a result, the number of registered KASPER users in Kentucky has gone from 7500 to 23,000 from December, 2011 to November, 2012. Reports are up from 3300 to 17000 in the same time frame.[3] According to the same press release, Kentucky witnessed a decrease of 10.4% total prescriptions in the first six months since HB1 was enacted.[3]

Mandating PMP reports, as sixteen states currently do, leads to an increase in reports, but so far no statistical difference in opioid overdose mortality.[1,4,5,6] In fact, this legislation may not even lower the rate of opioid consumption, rather may shift which opioids are being prescribed.[6]

Researchers in Ohio looked at the impact of real time PMP information on opioid prescriptions. With PMP data, providers changed prescriptions in 41% of cases; 61% giving fewer opioids but 39% prescribing more opioids.[7]

House Bill One was intended to and has reduced opioid prescriptions in Kentucky. Forty-four pain clinics in Kentucky closed overnight.[8] Preliminary analysis at a large, metropolitan emergency department has shown a decrease in prescriptions for hydrocodone and oxycodone, along with a decrease in ED administration of these medications. This type of "pill mill" legislation has been passed in Louisiana, Florida, Texas and California with varying results.[9]

Florida had a sharp decrease in opioid prescriptions after similar legislation. Having 90 of the top 100 physicians on the Drug Enforcement Agency (DEA) 2010 list of top opioid purchasers, Florida saw the number decrease to 13 in 2011, and zero as of April 2013.[10] In 2011, Ohio passed a "pill mill bill" to crack down on pain management clinics.[11] This legislation led to seizing of 91,000 prescription pills with 38 doctors and 13 pharmacists losing their medical licenses. In the end, 15 medical professionals were convicted on diversion charges.[11] With all of this, pill overdose deaths began to decline, but heroin overdoses "skyrocketed."[11]

The unintended but foreseeable consequence of such measures has been increase in distribution, abuse, and overdose of heroin. Heroin has gained market share in a similar way in the past. In 2010, Purdue Pharma began manufacturing a reformulated OxyContin after a $600 million fine for misrepresentation.[12] Endo Pharmaceuticals Inc. followed in 2011 with an Opana ER reformulation. This resulted in making the pills harder to crush into powder for snorting or injecting.[13,14] States such as Florida, Ohio, Minnesota, and Utah have seen patients turn to heroin after crackdown on prescription opioid availability.[11,14]

The *New England Journal of Medicine* warned us of what would be a two-fold increase in heroin use after the reformulation of Oxycontin.[15] In the 2010 ODLL report, the United States DEA also attempted to warn health care organizations that Oxycontin users might switch to heroin.[16,17]

The first paper we know of to report this warning was published 3 years later in 2013.[16] This paper, a qualitative study of the transition of opioid pill users to heroin users, provides insight into the economic and convenience factors associated with the switch. The researchers interviewed a small sample of heroin users, forty-one in all. All but one of the 19 heroin users aged 20-29 started with pills and progressed to heroin – "termed pill initiates."[16]

Numerous popular news reports directly implicate decreased opioid pill availability in the rise of heroin abuse and overdose.[16] However, very little discussion of this phenomenon has entered the emergency medicine literature.

The drug cartels have capitalized on the United States opioid appetite and now decreased supply of pills. The route from Mexico to Detroit, then south through Ohio, ends up in northern and central Kentucky. The Kentucky State Police recovered 433 samples of heroin in 2010. In 2012 the number was 1349.[13] In Lexington, KY, the eight total heroin arrests in 2011 exploded into 160 in the first 6 months of 2013.[18,19] Undercover narcotics officers in Lexington find it easier to buy heroin than marijuana.

Heroin-related overdoses in Kentucky increased from 22 cases in 2011 to 143 cases in 2012, and 170 in the first 9 months of 2013.[8,20,21] Kentucky's percentage of overdose deaths involving heroin went from 3.2 in 2011 to 19.5 in 2012 and up to 26 in 2013.[8,21] This phenomenon has occurred in Florida, California, Massachusetts, New York, Oregon, Washington and Ohio.[11,22-24]

The emergency medicine literature has minimal recent discussion of heroin overdose management in the ED; nor have we discussed secondary prevention. Supportive therapy suffices in the ED, with liberal naloxone use and airway protection. State and federal actions to curb heroin deaths can be effective. Good Samaritan laws, present in only one third of states, protect from prosecution those lay individuals attempting to help themselves or companions in overdose situations.

Also present in only one third of states are laws to expand community access to reversal agents such as naloxone. Twenty-two states have laws requiring or recommending education for opioid prescribers. Medicaid expansion to cover substance abuse treatment has occurred thus far in less than half (24) of states.[1]

As more states enact measures intended to reduce total opioid prescriptions, legislators and healthcare providers alike must be aware of the predictable and devastating rise in heroin sales, abuse, and overdose. Funding for this legislation should include monies allocated toward substance abuse treatment programs and availability of naloxone. Similarly, pill mill bills could universally be coupled with Good Samaritan laws in anticipation of the increase in parenteral opioid overdoses. Funds could be allocated to lay population education via public service announcements. Stricter punishments for drug traffickers could accompany such legislative changes. Many of these measures have been presented as interventions to combat prescription opioid abuse and can now be applied to the subsequent heroin abuse and overdose dilemma.[9]

At the first line of medical care, emergency physicians must be involved in efforts to minimize collateral damage in this long-term process of curing America's addiction to opioid drugs and their horrible consequences.

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