Implementation of Prescription Drug Monitoring Programs Associated With Reductions in Opioid-Related Death Rates

Take Away Points

- The implementation of state-level Prescription Drug Monitoring Programs (PDMPs) is associated with significant reductions in opioid-related overdose deaths in the year following implementation.
- States with PDMPs that have robust characteristics (including monitoring four or more federal controlled substances schedules, and updating data on a weekly basis) demonstrate significantly lower opioid-related overdose death rates, compared to states whose programs lack these features.
- An estimated 600 overdose deaths could be avoided annually through universal adoption of robust PDMPs in all states.

The Issue

Opioid analgesic prescribing rose dramatically in the U.S. in recent years, accompanied by increases in misuse and medical complications, including overdose deaths. In 2014, a total of 47,055 deaths in the United States were attributed to drug overdose; sixty-one percent of these were related to opioids. In an effort to reduce high-risk patient and prescriber behaviors associated with opioids and other controlled substances, all fifty states (with the exception of Missouri) have implemented Prescription Drug Monitoring Programs. These programs involve: 1) the systematic mandatory collection of data from pharmacies on dispensing of controlled substances; 2) review and analysis of data; and 3) reports to prescribers. Such procedures can assist in detecting potentially aberrant behavior patterns among patients (e.g. obtaining prescriptions from multiple providers, known as "doctor shopping") and providers (e.g. prescribing abnormally high doses of controlled substances).

The primary objective of this study was to examine the effects of PDMP implementation and specific PDMP characteristics on reductions in opioid-related overdose deaths post-implementation.

Study Methods and Design

The associations between PDMP implementation, program characteristics, and opioid-related overdose death rates were examined from 1999 to 2013 using multiple data sources. The primary outcome of interest was the annual rate of opioid-related overdose deaths per 100,000 population in each state. Overdose data for each state and year of interest were obtained from the Wide-Ranging Online Data for Epidemiologic Research (WONDER) database of multiple causes of death maintained by the Centers for Disease Control and Prevention (CDC).

PDMP enactment and implementation data were acquired from LawAtlas, as well as the National Alliance for State Model Drug Laws.   The study analyses focused on the thirty-five states that implemented a PDMP during the active study period.   Time series regression analysis was the primary statistical method for examining the study associations. Regression analyses controlled for other potential explanatory variables at the state-level, including unemployment and educational attainment.

Key Findings
- The overall rate of opioid-related overdose deaths increased significantly across the United States from 1999 to 2013, with great variability between states. The average opioid-related overdose death rate rose from 1.4 per 100,000 population in 1999 to 6.2 per 100,000 population in 2013.
- By 2013, states that had implemented a PDMP had a significantly lower opioid-related overdose death rate (6.19 per 100,000 population) compared to states that had not (6.50 per 100,000 population).
- States whose PDMPs had robust characteristics (including monitoring four or more federal controlled substances schedules and updating their data at least weekly) had greater reductions in overdose deaths, compared to states whose programs did not have these characteristics. The study predicted 1.55 fewer opioid-related overdose deaths per 100,000 population annually for a state newly implementing a PDMP with robust characteristics.

Limitations
Study data sources had inherent limitations and measurement error. In particular, WONDER data does not contain information about how individuals obtained opioids (through prescribed or illicit channels), and low numbers of overdose deaths in some states caused suppression of data in particular years. Because the study is a retrospective implementation study, many state-level environmental factors and additional intervention and policy initiatives that could have affected the outcome of interest were not controlled.

Final Thoughts
Implementation of a state-level PDMP, particularly one with robust features, is associated with reductions in subsequent opioid-related overdose deaths. These findings add to the body of evidence supporting the importance of PDMPs in reducing adverse consequences of opioid analgesic misuse and abuse. States should consider enhancing their existing PDMPs to incorporate robust features, including more frequent data updates, and examining other best practices, such as mandating provider participation in PDMPs.