Descriptive Analysis of Opioid Data Sharing Practices as a Network in the United States from 2012 to 2018

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Abstract

Prescription drug monitoring programs (PDMPs) have been established as a cornerstone of the effort to curb poor and illicit prescribing practices for the past two decades. However, their impact is undermined by various factors limiting their functionality, notably the underwhelming amount of state-to-state data sharing practices. By characterizing the growth and current state of the United States (US) PDMP as a network, we were able to describe data sharing in a new way for policy and research.

Introduction and Methods

PDMPs keep track of all narcotic prescriptions made by medical providers and are an essential tool in addressing the US opioid epidemic. However, their design is highly varied by state and their overall impact has been questionable.\textsuperscript{1} Data sharing is a key feature in their functionality and effectiveness but has yet to be quantified or explored in the literature. We used network analysis to describe PDMPs data sharing behavior in the US to generate descriptive information that can be used to improve practice, policy and research regarding their implementation. Each node was defined as a state or territory. Sharing data with another state was considered an out-degree and receiving data was an in-degree. Each edge represents a continual communication between PDMPs that may be uni- or bi-directional. Primary outcomes of interest were features associated with network size, connectedness, and clustering characteristics.

Results and Discussion

State PDMP sharing practices were captured in two-year intervals beginning in 2012 (2012, 2014, 2016, and 2018). Through that time, the number of states and territories sharing data increased steadily from 11 to 47, with 876 associated edges between them in 2018. The network was found to have an average of 18.638 degrees per node and a graph density of 0.405 in 2018 (table 1). Data sharing behaviors remained largely consistent over the last several years with clustering patterns showing preferences strongly associated with geographical regions within the US (Figure 1).

Conclusion

States have clear geographic preferences and possible prejudices with PDMP data sharing. This has clear implications on policy and future research is intended to correlate network features with state-level opioid outcomes.

References