

Associations Between PDMP Strength and Prescribing Coordination

Elizabeth Nilsen, PhD(c) RN
 Kar-Hai Chu, PhD
 Paul Scott, PhD
 Julie Donohue, PhD
 Grant Martsolf, PhD MPH RN FAAN

Study Design

Social network analysis using 2017-2019 claims from Optum's de-identified Clinformatics® Data Mart Database

Sample

53,273 adult patients who underwent common surgical procedures in 2018 (list of procedures and full sample description available in supplement)

- Female: 67.9%
- White: 70.2%
- Mean age: 54.4 years

257,058 prescribers

Network Building

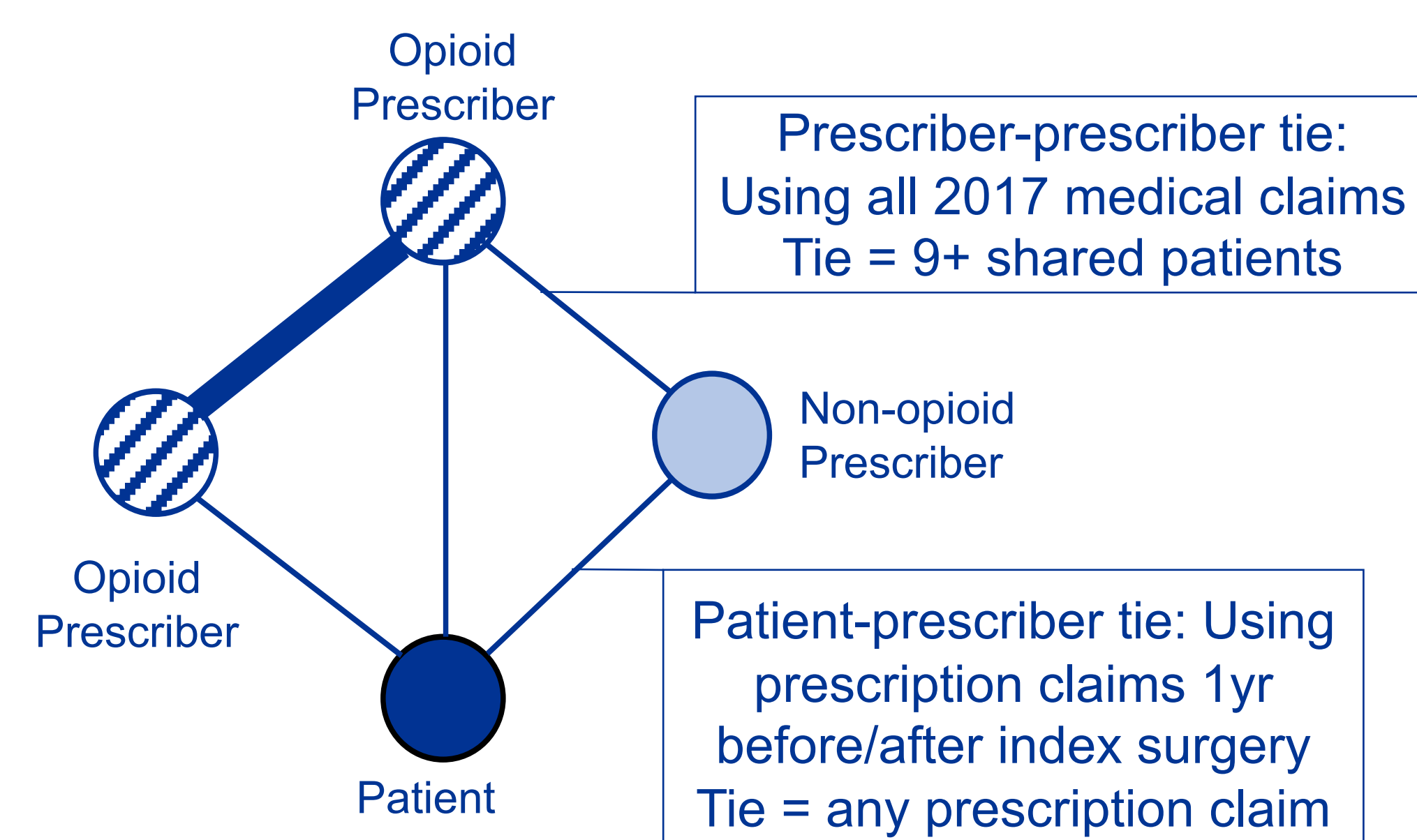


Figure 1. Example of a patient-prescriber network and methods for establishing patient- prescriber and prescriber-prescriber ties

When prescribers are disconnected, do prescription drug monitoring programs (PDMPs) improve prescribing coordination?

Findings

Patient-prescriber networks are sparsely and weakly connected

Prescribers per patient	8.59 (5.24)
Opioid prescribers per patient	1.95 (1.50)
Density	0.05 (0.11)
Prescriber tie weight	0.10 (0.27)
Opioid prescriber tie weight	0.11 (0.42)

		Strong PDMP	Weak/No PDMP
Density	0	0.90 (0.87, 0.93)	
	Tercile 1	0.95 (0.93, 0.98)	1.0 [ref.]
	Tercile 2	0.97 (0.92, 1.03)	
	Tercile 3	1.05 (0.96, 1.14)	
Prescriber Tie Weight	0	0.90 (0.87, 0.93)	
	Tercile 1	0.95 (0.92, 0.98)	1.0 [ref.]
	Tercile 2	0.93 (0.89, 0.97)	
	Tercile 3	1.08 (1.00, 1.17)	
Opioid Prescriber Tie Weight	0	0.88 (0.86, 0.90)	
	Tercile 1	1.08 (1.01, 1.16)	1.0 [ref.]
	Tercile 2	1.03 (0.96, 1.10)	
	Tercile 3	0.93 (0.81, 1.07)	

When in a disconnected network, having prescribers in a **strong PDMP state decreases the risk of prescribing discoordination by 10%.**

Conclusions

- In the absence of prescriber connections, PDMPs can help prescribers to better coordinate opioid prescriptions.
- In highly connected networks, PDMPs may have less utility as other tools (such as shared electronic health records, EHRs) provide the same, if not more, patient information.

Policy Implications

- PDMPs should be viewed as useful tools for surgeons and prescribers in providing postoperative care.
- Policies that enhance prescriber access to PDMPs, such as delegate access or integration within the EHR, could reduce prescribing discoordination

Study Variables

Network Measures (4 levels: 0, terciles 1-3)

Density

- Proportion of existing ties to possible ties, scale 0-1.

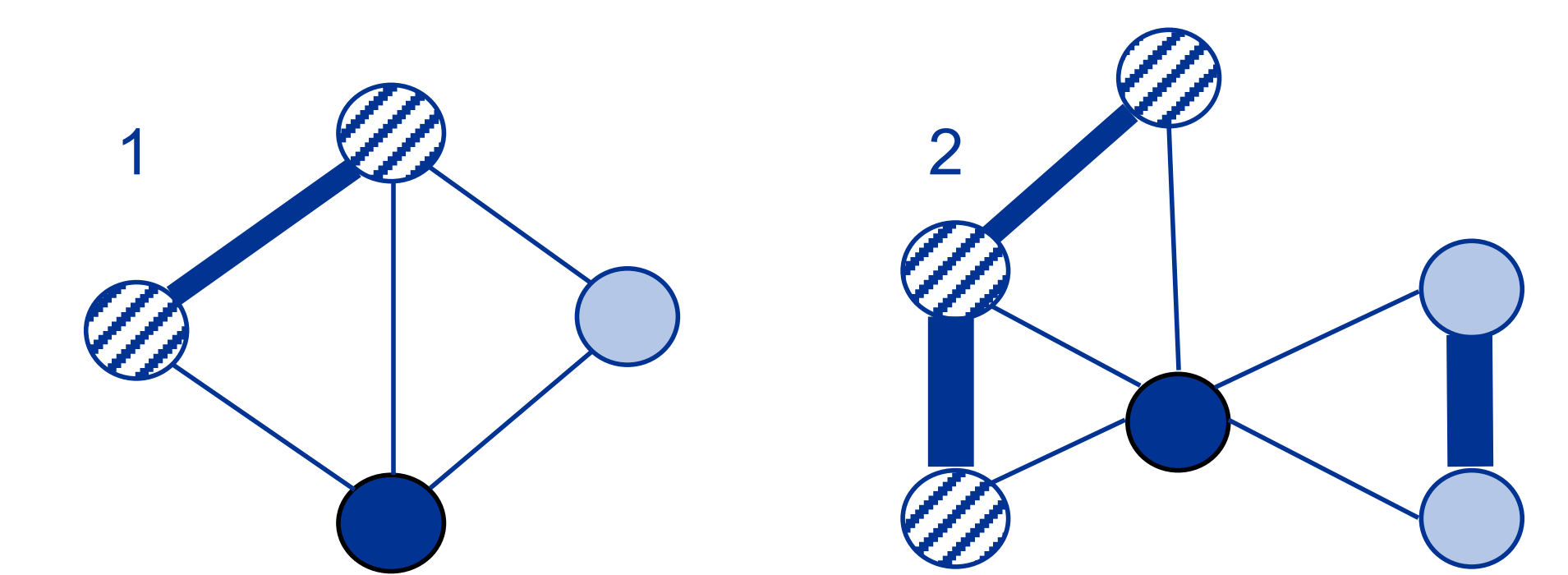
Prescriber Tie Weight

- Mean weight* of all prescriber to prescriber ties in a network, scale 0-3

Opioid Prescriber Tie Weight

- Mean weight* of all prescriber to prescriber ties in a network, scale 0-3

*Tie weight is based on number of shared patients, see supplement



	Network 1	Network 2
Density	0.66	0.30
Mean prescriber tie weight	1.00	0.80
Mean opioid prescriber tie weight	2.00	1.67

Figure 2. Exemplar networks and their network measures

Prescribing Discoordination (binary)

- >90 MMEs cumulative opioids/day OR
- >30 days of concurrent opioid and benzodiazepine prescriptions

PDMP Strength (binary)

- Using Prescription Drug Abuse Policy System, scored on features (e.g. required queries before prescribing controlled substances, the frequency of pharmacy reporting, and sharing data with Medicare/Medicaid; see supplement)
- Below the median = weak
- At or above the median = strong

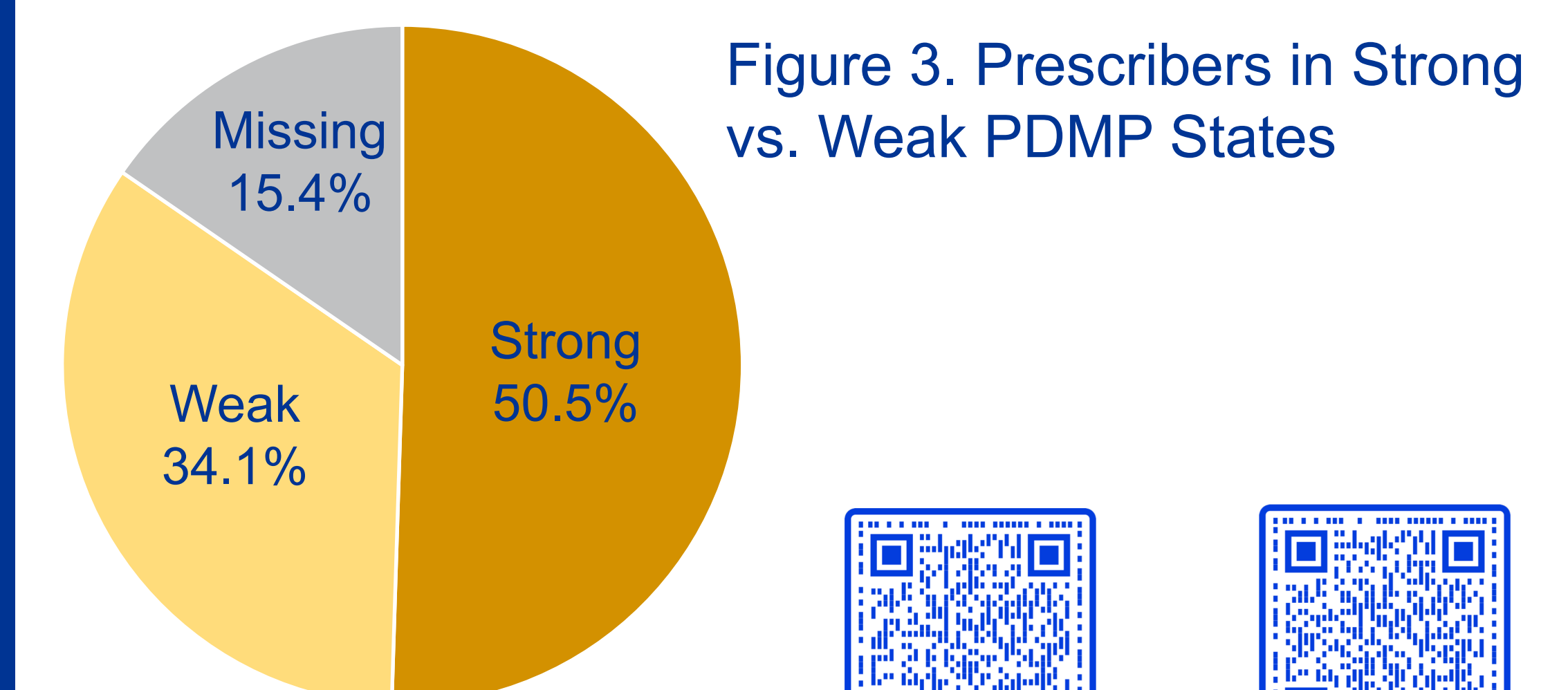
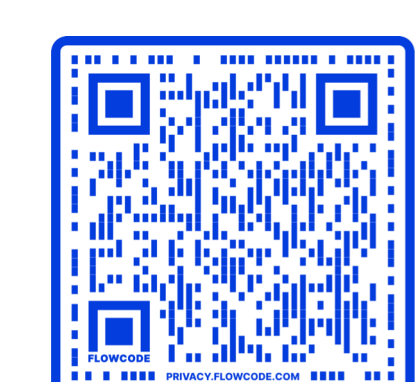


Figure 3. Prescribers in Strong vs. Weak PDMP States



Supplement



Contact