WASHINGTON STATE HEALTH SERVICES RESEARCH PROJECT

Pharmacy Quality Alliance Opioid Prescribing Measurers in Washington State, 2010-17

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Dennis McDermot
OFM Health Care Research Center

Introduction

In light of the current opioid crisis and ongoing debate regarding prescribing guidelines,[1] it is important to monitor opioid use and prescribing practices using reliable performance measures. Measures used should accurately identify patients at high risk for opioid abuse or overdose, such as those with high-dose opioid prescriptions, while allowing for cases where such use is appropriate, as in cancer or hospice patients. Measures should allow for meaningful comparisons over time, among subpopulations within Washington state, and against chosen benchmarks or target values.

The following opioid prescribing measures were developed by the Pharmacy Quality Alliance[2] and are endorsed by the National Quality Forum.[3]

- Concurrent use of opioids and benzodiazepines among opioid patients without cancer (COB)
- Opioid use at high dosage among opioid patients without cancer (OHD)
- Opioids from multiple providers among opioid patients without cancer (OMP)
- Opioids at high dosage and from multiple providers among opioid patients without cancer (OMPHD)

Technical details for these measures are provided in the appendix.

Results

Washington state OHD and OMP rates have remained fairly constant from 2014 through 2017. COB rates appear to have declined slightly, though more years of data will be needed to determine if this is the start of a long term trend. The combination OMPHD was rare (Table 1).

Table 1. Pharmacy Quality Alliance Opioid Prescribing Measures in Washington State, 2014-2017

	2014	2015	2016	2017
Opioid Patients	158,641	168,944	142,748	141,207
OHD Count	4,257	4,645	4,152	3,643
(Percent)	(2.7)	(2.7)	(2.9)	(2.6)
OMP Count	6,577	8,948	6,473	6,182
(Percent)	(4.1)	(5.3)	(4.5)	(4.4)
COB Count	24,736	26,283	21,773	19,512
(Percent)	(15.6)	(15.6)	(15.3)	(13.8)
OMPHD Count	262	303	222	198
(Percent)	(0.17)	(0.18)	(0.16)	(0.14)

[1] Rubin, R. Limits on opioid prescribing leave patients with chronic pain vulnerable. *JAMA* 2019; JAMA. 2019; 321(21):2059-2062.
[2] Pharmacy Quality Alliance. 5911 Kingstowne Village Parkway, Suite 130, Alexandria, VA, USA 22315, 703.347.7963, www.pqaalliance.org.
[3] National Quality Forum. 1030 15th St NW Suite 800, Washington DC, 20005, USA. 202-783-1300. http://www.qualityforum.org.

The Pharmacy Quality Alliance opioid measures are relatively new, and national benchmarks for all payers that have not yet been established. However, Pharmacy Quality Alliance (PQA) provided national estimates for Medicare and Medicaid against which we can compare our results (Table 2).

Additional comparison may be made with Pennsylvania Medicaid patients in 2014, where the rates for opioids at high dose (OHD), opioids from multiple providers (OMP), and concurrent opioids and benzodiazepines (COB) were 5.4 percent, 5.2 percent and 30.0 percent respectively.[4] Washington state OHD, OMP and OHDMP (multiple providers and high dose) rates were comparable to or lower than national averages, while COB rates were higher. It should be noted that Medicare Advantage and Medicare fee-for-service populations may not be fully comparable.

Table 2. Comparison of Washington All-Payer Claims Database measures with national estimates provided by Pharmacy Quality Alliance

	WA-APCD		National	
	Medicaid (2014)	Medicare Advantage (2015)	Medicaid (2014)	Medicare Fee-For-Service (2015)
OHD Percent	2.1	3.6	4.2	6.1
OMP Percent	7.2	3.2	7.4	13.3
COB Percent	16.5	29.4 (2016)	4.9	20.9 (2016)
OHDMP Percent	1.5 per 1000	2.1 per 1000	2.1 per 1000	6.5 per 1000

Demographic Variation

Overall, 7.6 percent of adults without cancer in 2017 were opioid patients. The prevalence of opioid patients was higher among females (8.7 percent) than males (6.3 percent), and increased with age to a maximum of 13.0 percent for ages 55-64. Opioid use was most prevalent among Medicare advantage beneficiaries (16.1 percent) and least prevalent among commercial members (4.4 percent). In most cases, the prevalence of PQA opioid measures among opioid patients followed a similar demographic pattern – higher for males, and peaking at ages 55-64. The only exception was OHD, which was slightly higher among males (2.7 percent) than females (2.4 percent). Although opioid use was most prevalent among Medicare Advantage beneficiaries, OHD, OMP and COB were all higher among Medicaid recipients. The prevalence of all PQA opioid measures was lowest among commercial members (Table 3).

[4] Cochran, G, W. Lo-Ciganic, W. F. Gellad, A. J. Gordon, E. Cole, C. Lobo, W Frazier, P. Zheng, C. Chang, D. Kelly and J. Donohue. Prescription opioid quality measures applied among Pennsylvania Medicaid enrollees. *J Manag Care Spec Pharm*. 2018; 24(9):875-85.

Table 3. Pharmacy Quality Alliance Opioid Measures in Washington State, 2017. Percentages for opioid patients are among adults without cancer. Percentages for OHD, OMP and COB are among opioid patients. Only members with complete information on age, sex, primary payer and health status were included.

	Adults without cancer	Opioid patients	OHD	OMP	COB
Total count (percent)	1,969,289	138,516 (7.6)	3,470 (2.5)	6,054 (4.6)	18,457 (13.3)
Female count (percent)	1,080,835	86,118 (8.7)	2,063 (2.4)	3,935 (4.6)	13,305 (15.4)
Male count (percent)	888,449	52,398 (6.3)	1,409 (2.7)	2,132 (4.1)	5,162 (9.9)
Age 18-34 count (percent)	687,936	17,706 (2.6)	217 (1.2)	1,484 (8.4)	1,501 (8.5)
Age 35-54 count (percent)	644,723	48,239 (8.1)	1,477 (3.1)	2,757 (5.7)	7,277 (15.1)
Age 55-64 count (percent	316,178	36,357 (13.0)	1,210 (3.3)	1,205 (3.8)	5,674 (16.2)
Age 65+ count (percent)	320,452	36,214 (12.7)	566 (1.6)	608 (1.7)	4,005 (11.1)
Commercial count (percent)	885,737	37,272 (4.4)	734 (2.0)	1,122 (3.0)	4,038 (10.8)
Medicaid Fee-For-Svc. count Percent	212,167	15,733 (8.0)	527 (3.3)	591 (3.8)	2,556 (16.2)
Medicaid Managed Care count (percent)	627,953	51,748 (9.0)	1,354 (2.6)	3,557 (6.9)	7,287 (14.1)
Medicare Advantage count (percent)	243,432	33,763 (16.1)	857 (2.5)	797 (2.4)	4,586 (13.6)

Geographic Variation

Figures 1-3 display opioids at high dose (OHD), opioids from multiple providers (OMP) and concurrent opioids and benzodiazepines (COB) rates by Washington state legislative district in 2017. OHD rates ranged between 1.1 percent and 4.0 percent and COB rates between 9.9 percent and 17.8 percent. No obvious spatial pattern can be seen for these measures. OMP rates (Figure 2) were higher in urban areas, particularly in southern King County and the city of Spokane. In sparsely populated rural areas where there are fewer providers and pharmacies, OMP rates were low. OMP rates ranged from 2.1-7.4 percent. Larger versions of these maps may be viewed in the appendix.

Health Status

We examined the prevalence of six health conditions among adults without cancer by opioid status. We used the Center for Medicare and Medicaid Services Chronic Conditions Warehouse definitions[5] to identify members with depression and those with multiple chronic conditions. Substance use disorder, overdose, anxiety and chronic pain were defined using International Classification of Diseases, Tenth Revision (ICD 10) diagnosis codes (see Appendix, Table 1).

In all cases, the prevalence of poor health outcomes was higher among opioid patients than non-opioid patients, and higher still among high-risk opioid patients (Figure 4). The prevalence of substance use disorder was highest among OMP patients (52 percent), chronic pain was most prevalent among OHD patients (71 percent) and anxiety was most prevalent among COB patients (61 percent). Overdose prevalence was roughly equal among OHD (2.5 percent) and OMP (2.7 percent) while depression was roughly equal among OMP (24 percent) and COB (25 percent) patients. Multiple chronic conditions were seen at comparable levels (12-15 percent) among all opioid use categories. Patterns in health status remained consistent after controlling for age, sex and Medicaid status (Appendix, Table 2).

Figure 1. Opioids at High Dose by Legislative District in Washington State, 2017

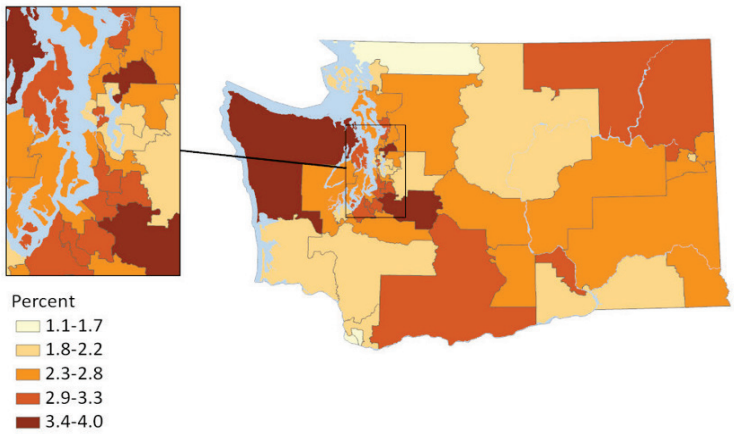


Figure 2. Opioids from Multiple Providers by Legislative District in Washington State, 2017

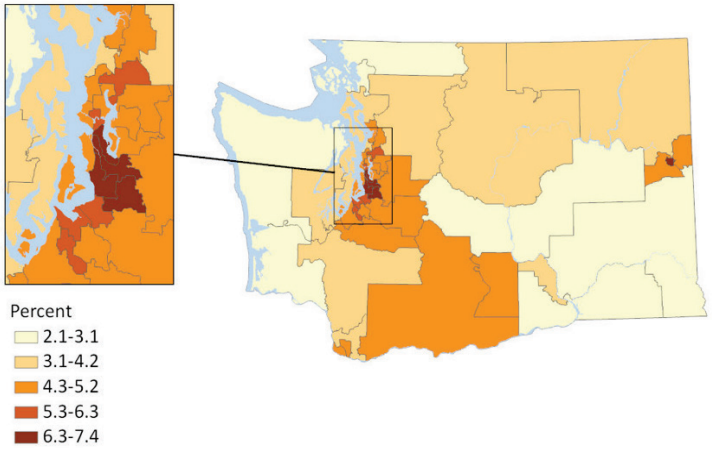
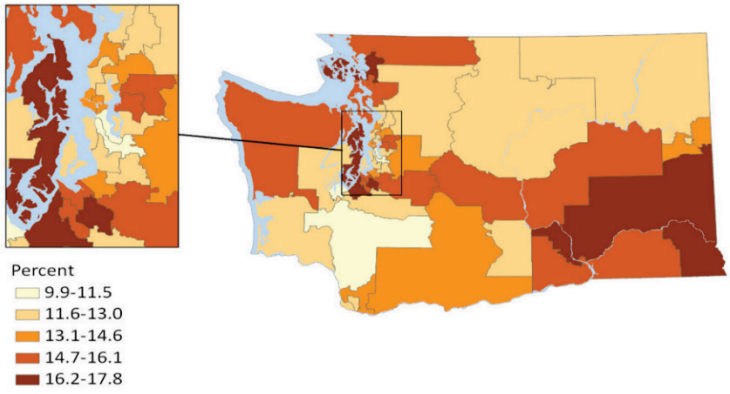
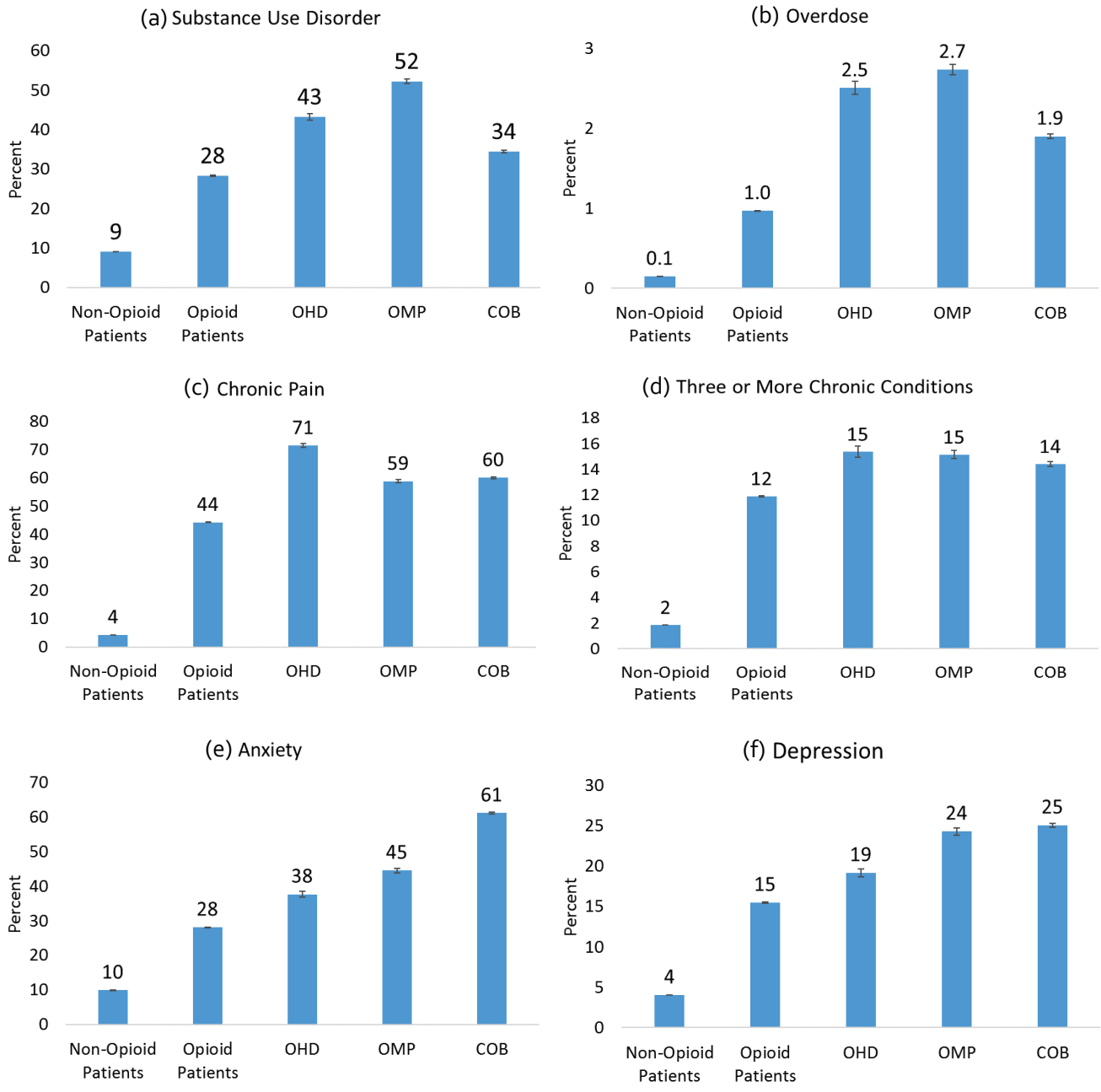


Figure 3. Concurrent Opioids and Benzodiazepines by Legislative District in Washington State, 2017



[5] Center for Medicare and Medicaid Services, Chronic Conditions Data warehouse. https://www.ccwdata.org/web/guest/condition-categories Accessed Jun 5, 2019

Figure 4. Prevalence of Selected Health Conditions by Opioid Status in Washington State, 2017



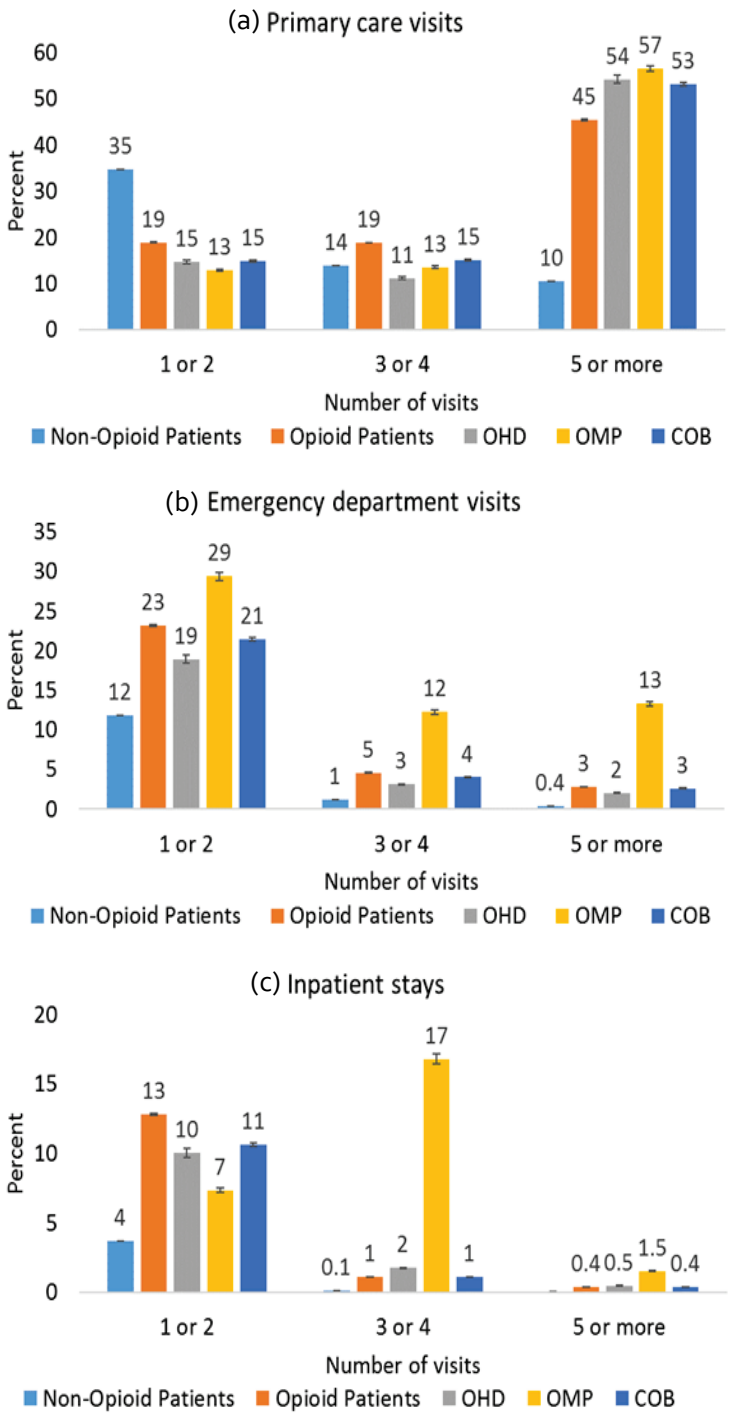
Health Care Utilization

Medical care utilization was measured as the number of primary care visits, emergency department visits and inpatient discharges that occurred during the year (Figure 5). Pharmacy utilization was measured as the number of distinct prescription drug products received during the year (Figure 6). Distinct drug products were determined using Food and Drug Administration drug proprietary names.

Primary care utilization was higher among all opioid use categories compared to non-opioid adults without cancer. Emergency department and inpatient utilization was higher among all opioid use categories, though opioids from multiple provider (OMP) patients were substantially more likely to have had multiple visits than any other group. Patients with multiple inpatient stays are likely to encounter and potentially receive prescriptions from many distinct providers. Coordination of care for these patients could be challenging.

Polypharmacy – defined here as 10 or more distinct prescription drug products in a year (Figure 6) – was common among all opioid patients (77 percent) and predominant among opioid at high dose (OHD, 87 percent), opioid from multiple provider (OMP, 93 percent) and concurrent opioid and benzodiazepine (COB, 91 percent) patients. Many opioid patients experience multiple comorbid health conditions (Figure 4). Careful monitoring by the patient's pharmacist and primary care provider would be necessary to avoid adverse effects. Such coordination of care may be particularly difficult to achieve among OMP patients. Patterns in medical and pharmacy utilization remained consistent after controlling for age, sex and Medicaid status (Appendix, Table 2).

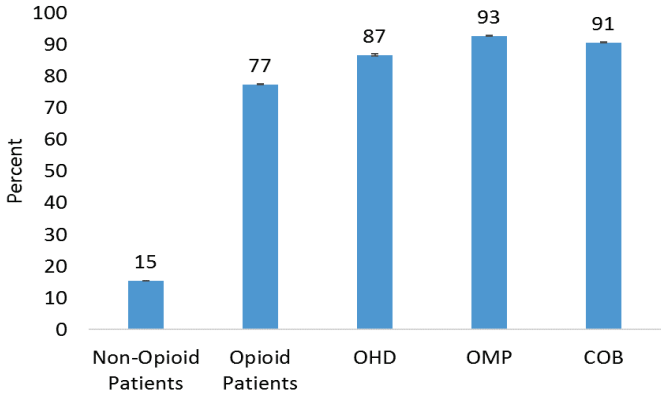
Figure 5. Health care utilization by opioid status in Washington State, 2017



Cost

Cost (Figure 7) was measured as the insurance paid amount for all medical and pharmacy claims for the year, expressed in terms of average cost per-member-per-month (PMPM). Cost was highest ($3,280 PMPM) for opioids from multiple providers (OMP) patients, who also had the highest level of inpatient and emergency department utilization (Figure 5). Cost among opioid at high dose (OHD) ($2,121 PMPM), concurrent opioids and benzodiazepines (COB) ($1,849 PMPM) and opioid patients ($1,668 PMPM) in turn were substantially higher than among non-opioid using adults without cancer ($383 PMPM) reflecting differences in both medical and pharmacy utilization (Figures 5, 6).

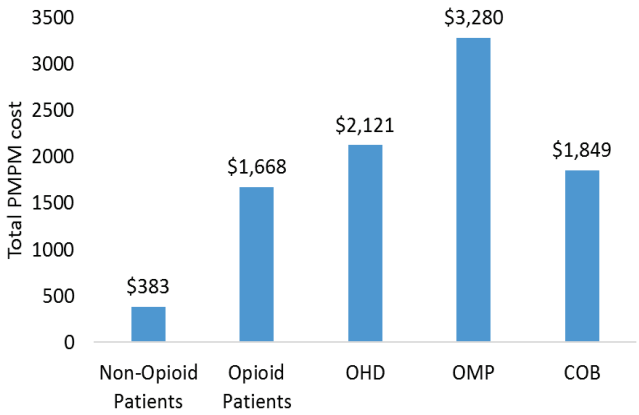
Figure 6. Polypharmacy – 10 or more Distinct Prescription Products during the Year by Opioid Status in Washington State, 2017



Discussion

The Pharmacy Quality Alliance opioid prescribing measures were designed to identify segments of the opioid patient population who are at higher risk for adverse outcomes such as overdose or dependency. Higher dosages, patients shopping from multiple sources and interactions with other drugs, particularly benzodiazepine sedatives, are all recognized indicators of overdose risk.[6,7] Indeed, opioids at high dose (OHD) and opioids from multiple provider (OMP) patients had 2.7 times higher odds of overdose and concurrent opioids and benzodiazepines (COB) patients had 2.3 times higher odds of overdose compared to other opioid patients (Appendix, Table 2). Substance use disorder was also seen with higher prevalence among these high risk groups, particularly OMP.

Figure 7. Total Medical and Pharmacy, Per-Member-Per-Month (PMPM) Insurance Paid Amount by Opioid Status in Washington State, 2017



The OMP population presents significant challenges. These patients are receiving opioid prescriptions from multiple sources, indicating a lack of coordination among providers. The high rate of diagnosed substance use disorder (52 percent) in this group suggests that many may indeed have been "doctor shopping" for opioids, and so actively resisting coordination of care. High utilization among this group suggests two possibilities. High primary care and emergency department utilization is consistent with the idea of doctor shopping. However, the high percent with multiple inpatient stays may also represent a distinct sub-population where complex treatment needs has led to dis-coordinated care. The Washington State Prescription Monitoring Program (PMP)[8] tracks dispensing records for schedule II, III, IV and V drugs in Washington state. Providers and pharmacists should consult the PMP before prescribing or dispensing opioids.

[6] Nabarun, D, J. J. Funk, S. Proescholdbell, A. Hirshc, K. M. Ribisl, and S. Marshall. Cohort study of the impact of high dose opioid analgesics on overdose mortality. *Pain Medicine* 2016; 17:85-98.
[7] Baumblatt, J. A., C. Wiedemann, J. R. Dunn, W. Schaffner, L. J. Paulozzi, and T. F. Jones. High-risk use by patients prescribed opioids for pain and its role in overdose deaths. *JAMA Intern Med.* 2014;174(5):796-801.
[8] Washington State Department of Health Prescription Monitoring Program. P.O. Box 47852, Olympia WA 98504-7852, 360-236-2901. https://www.doh.wa.gov/ForPublicHealthandHealthcareProviders/HealthcareProfessionsandFacilities/PrescriptionMonitoringProgramPMP

The high prevalence of chronic pain (71 percent) among OHD patients suggests that many in this group were in legitimate need of relief. However, the high prevalence of diagnosed substance use disorder (43 percent) shows that desired pain relief can come with a cost. These patients highlight the need for caution and flexibility in designing policies aimed at reducing opioid use. For them, a rigid policy suddenly restricting their opioid prescriptions, without simultaneously providing addiction treatment options, could result in unmanageable pain compounded by withdrawal symptoms.[1] In such circumstances, some may turn to illicit sources. Others may become shoppers. The opioids from multiple providers and high dose population was small, but it is important to monitor it for this reason.

The COB population exhibited both a high prevalence of chronic pain (60 percent) and a high prevalence of anxiety (61 percent) suggesting that some may have legitimate need for both treatments. However, research indicates that, among opioid abusers benzodiazepines are generally used recreationally to enhance the opioid high.[9] Given the increased risk of overdose when opioids and benzodiazepines are combined, extremely careful management by the patient's primary care provider is essential.

Limitations

A key limitation of this study is the absence of Medicare fee-for-service data at the time of analysis, and the incomplete representation of commercial plans. The study population therefore over-represents the Medicaid population, while under-representing Medicare. No information was available regarding drug rebates, which could lead to overestimation of total cost. Claims data are primarily used for billing purposes, and so may not reflect the patient's full medical status or health history. For example, though a diagnosis code exists for chronic pain, there may be other diagnoses by which a provider may be reimbursed (e.g. arthritis) and so the code may not be universally applied. Prevalence of diagnosis codes in claims data may sometimes reflect billing practices among providers, partially obscuring the health status of the underlying population.

[9] Jones, J.D. S. Mogali, and S. D. Comer. Polydrug abuse: A review of opioid and benzodiazepine combination use. *Drug Alcohol Depend*. 2012, 125(1-2): 8-18.

Appendix

Methods

The Washington All-Payer Claims Database contains pharmacy and medical claims to Washington state insurers from 2014 through 2017. In 2017, 66 percent of Washington state covered lives were included in the database (All Medicaid, 80 percent of Medicare Advantage and 53 percent of commercial payer covered lives). At the time of analysis, Medicare fee-for-service, Veterans Administration and out of state plans were not included. Washington State Public Employee Benefits Board claims are included, but other self-insured plans are not.

Opioid prescribing measures were produced for each year using the proprietary methodology provided by the Pharmacy Quality Alliance. The eligible population included Washington All-Payer Claims Database members age 18 or older residing in Washington state, having at least 11 months of prescription drug coverage. Members with a cancer diagnosis or hospice indicator during the measurement year were excluded. The denominator for all measures included eligible members with two or more opioid prescriptions on distinct dates during the reference year for a cumulative supply of 15 days or more. For brevity, the denominator population are referred to simply as "opioid patients," and the eligible population are referred to as "adults without cancer." Concurrent opioids and benzodiazepines (COB) members were identified having two or more benzodiazepine claims on distinct dates, with 30 or more cumulative days of concurrent use of opioids and benzodiazepine. Opioids at high dose (OHD) members were those with a cumulative daily dosage of 120 morphine milligram equivalents or more for 90 or more days during the reference year. Opioids from multiple providers (OMP) members received opioid prescriptions from four or more distinct prescribers and from four or more distinct pharmacies. Statewide rates for all four measures were produced for years 2014 through 2017, and local OHD, OMP and COB rates by legislative district for 2017. For 2017, we produced OHD, OMP and COB measures by age, sex and primary payer, and we examined associations between OHD, OMP and COB with health status, health care utilization, and health care spending.

Table 1. ICD10 Codes Used to Define Selected Health Conditions

	International Classification of Diseases, Tenth Revision (ICD10) codes
Substance use disorder	F1
Overdose	T400, T401, T402, T403, T404, T406
Anxiety	F40, F41
Chronic pain	G892, G894

Table 2. Logistic Regression Odds-Ratios for Health Status and Health Care Utilization with Opioid Status Controlling for Age, Sex and Medicaid Status

	Odds ratio [95 percent CI]			
	Opioid patient*	OHD**	OMP**	COB**
Substance use disorder diagnosis	3.89 [3.83-3.94]	1.95 [1.81-2.10]	2.32 [2.19-2.45]	1.40 [1.35-14.5]
Overdose diagnosis	5.86 [5.46-6.28]	2.70 [2.15-3.35]	2.71 [2.29-3.20]	2.31 [2.03-2.61]
Chronic pain diagnosis	12.4 [12.3-12.6]	3.51 [3.16-3.92]	1.85 [1.75-1.65]	2.01 [1.95-2.08]
Anxiety diagnosis	1.66 [1.63-1.68]	1.57 [1.46-1.69]	1.79 [1.70-1.89]	5.43 [5.25-5.62]
Depression diagnosis	3.71 [3.65-3.77]	1.29 [1.18-1.41]	1.75 [1.65-1.86]	1.96 [1.88-2.03]
3 or more chronic conditions	4.37 [4.29-4.46]	1.37 [1.24-1.50]	1.89 [1.75-1.95]	1.29 [1.23-1.35]
1 or more ED visits	2.83 [2.80-2.87]	0.74 [0.68-0.80]	2.51 [2.38-2.65]	0.89 [0.86-0.92]
3 or more ED visits	5.09 [4.97-5.22]	0.71 [0.60-0.82]	3.89 [3.65-4.15]	0.89 [0.84-0.95]
1 or more inpatient stay	3.93 [3.86-4.00]	0.86 [0.78-0.96]	2.41 [2.26-2.55]	0.82 [0.79-0.86]
3 or more inpatient stays	8.19 [7.70-8.72]	1.53 [1.20-1.92]	3.95 [3.46-4.50]	1.04 [0.91-1.18]
1 or more primary care visit	2.72 [2.68-2.76]	0.79 [0.73-0.87]	1.06 [0.99-1.14]	1.04 [0.99-1.08]
5 or more primary care visits	5.80 [5.73-5.87]	1.40 [1.30-1.50]	1.57 [1.49-1.65]	1.38 [1.34-1.43]
10 or more distinct prescription medications	13.4 [13.3-13.6]	1.88 [1.59-2.21]	13.2 [12.2-14.3]	2.13 [1.96-2.31]

*Opioid patients vs. non-opioid patients among adults without cancer.
**OHD (OMP, COB) vs. non-OHD (OMP, COB) among opioid patients.

Figure 1. Opioids at high dose by Legislative District in Washington State, 2017

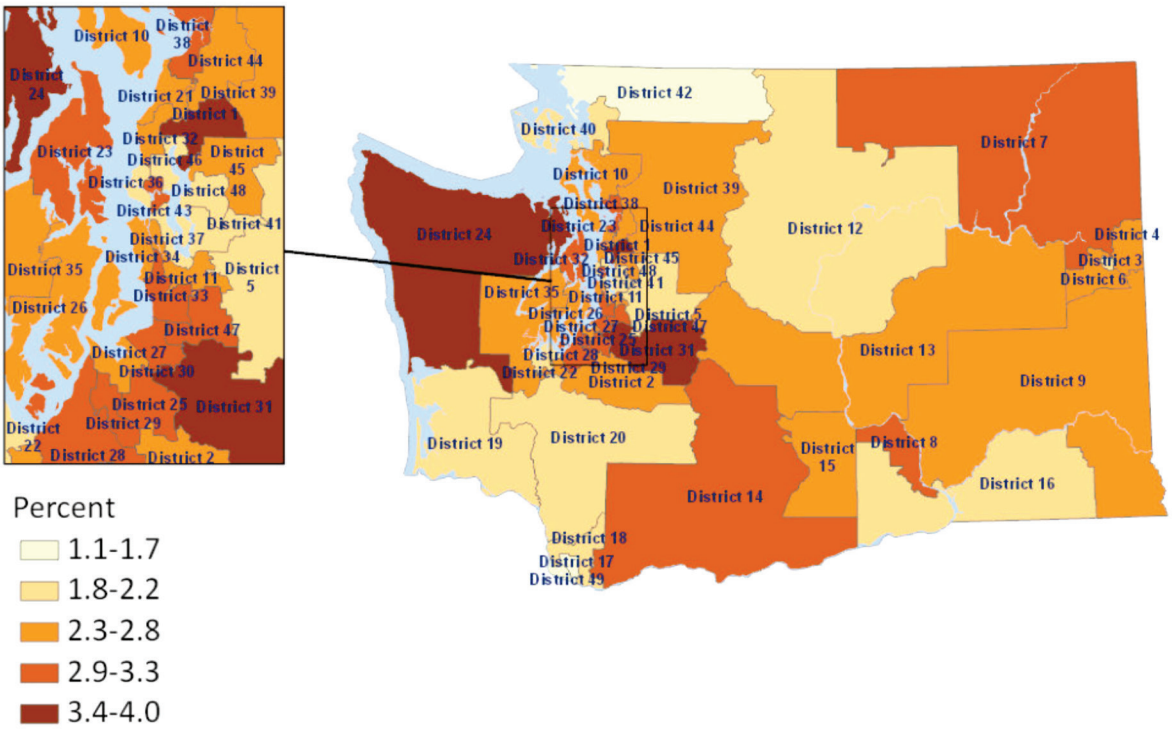


Figure 2. OMP by Legislative District in Washington State, 2017

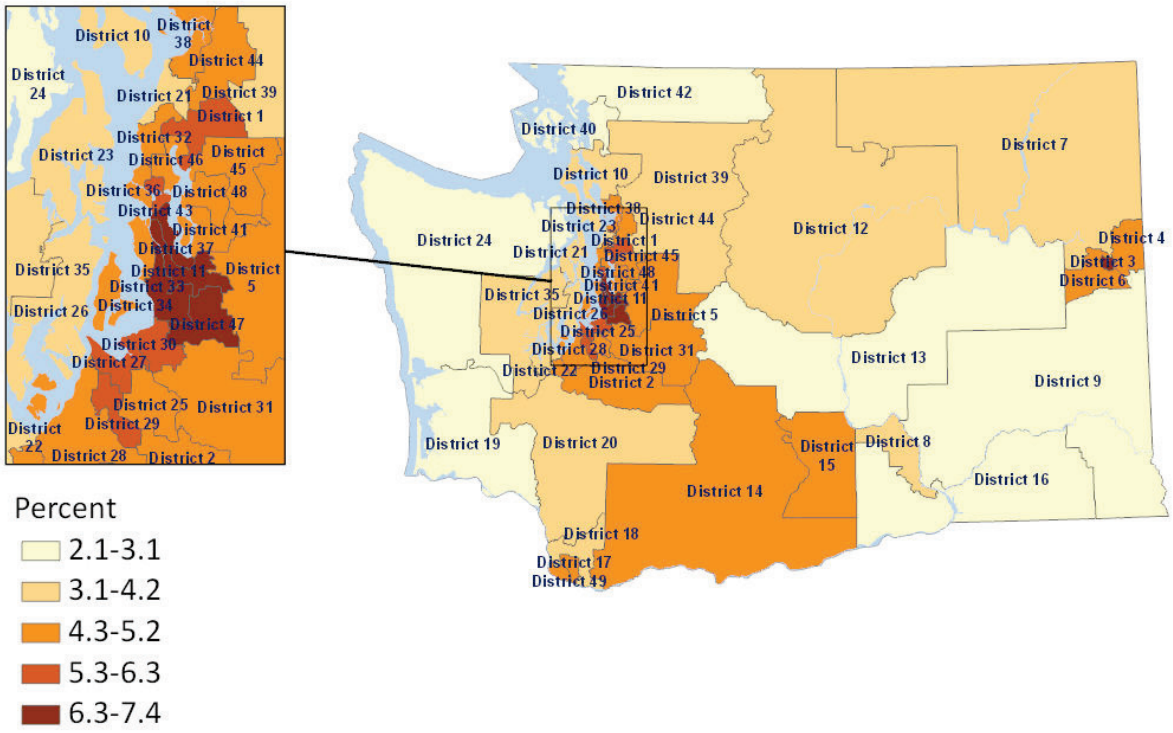


Figure 3. COB by Legislative District in Washington State, 2017