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Who prescribes buprenorphine for rural patients? The impact of specialty, location and practice type in Washington State^{☆,☆☆}

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Abstract

We determined the specialty, geographic location, practice type and treatment capacity of waived clinicians in Washington State. We utilized the April 2011 Drug Enforcement Agency roster of all waived buprenorphine prescribers and cross-referenced the data with information from the American Medical Association and online resources. Waivered physicians, as compared to Washington State physicians overall, are more likely to be primary care providers, be older, less likely to be younger than 35 years, and more likely to be female. Isolated rural areas have the lowest provider to population ratios. Ten counties lack either a buprenorphine provider or a methadone clinic. In rural areas, waived physicians work predominately in federally-subsidized safety-net settings, which underscores the need for continued governmental support of primary care and mental health in these settings.

Keywords

Buprenorphine; Rural; Washington; Opioid abuse treatment

1. Introduction

The dramatic increase in the prescription of opioids for chronic pain in the last two decades has left in its wake an increased number of patients who are opioid tolerant, addicted or dead. Between 1997 and 2005, the number of methadone doses prescribed for pain increased by 1042% and the number of doses of oxycodone increased by 500% (Drug Enforcement Administration, 2007). From 1999 to 2007, unintentional drug overdose deaths associated with prescription opioids rose by 395% (Centers for Disease Control, Prevention [CDC], 2010). Disturbingly, opioid misuse is now common among adolescents, including those in rural areas (Lambert, Gale, & Hartley, 2008). The 2010 Washington State Healthy Youth Survey found 8% of 10th graders reported using prescription opioids to “get high” in the last

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30 days after obtaining the medications from a friend, a family member or misusing their own prescription (Banta-Green, 2011).

Prolonged use of prescription opioids in high doses for chronic pain can lead to other adverse health effects including general pain sensitization and an increase in falls. These adverse outcomes have a high and rising societal cost: The CDC estimated that costs associated with prescription opioid abuse in the United States were \$9.5 billion in 2005 (CDC, 2010). By 2010 the estimates of the societal costs of prescription drug abuse had increased to more than \$55 billion (Birnbaum, White, Schiller, Waldman, Cleveland, & Roland, 2011).

Current treatment approaches are based on the evidence that demonstrates that opioid dependence is a chronic, relapsing disease (Leshner, 1997). Clinical treatment goals are to eliminate the use of illicit opioids, to reduce the dose of prescribed opioids to safe levels, to promote mental health and to prevent relapses. The most effective therapy in achieving these goals is opioid replacement therapy (ORT) (National Institutes of Health, 1998), which typically combines a maintenance medication of methadone or buprenorphine with supportive counseling services. In contrast to ORT success rates of about 50%, treatment with detoxification alone is likely to be ineffective in preventing relapse (O'Connor, 2005). Weiss et al. (2011) found that 49.2% of his 360 patients had successful outcomes during extended buprenorphine-naloxone treatment in contrast to 8.6% (31 of 360) for those who were tapered. Interestingly, counseling did not improve treatment success beyond biweekly standard medical care visits.

Buprenorphine/naloxone has several advantages over methadone in the treatment of addiction to prescription opioids. As a partial opioid agonist, buprenorphine is less likely to contribute to unintentional overdoses than methadone, and when combined with naloxone does not result in a "high" if used parenterally.

Another major advantage of buprenorphine/naloxone is that waived physicians can prescribe this form of ORT in their offices. This waiver allows them to treat up to 30 patients in the first year, with the option to treat up to 100 patients in subsequent years. In contrast, physicians cannot prescribe methadone for the treatment of addiction. Methadone can only be dispensed in federally regulated opioid treatment programs, which are primarily in urban areas. As a consequence, methadone maintenance treatment (MMT) is virtually unavailable in most rural areas. Those relatively few rural patients who do travel to urban methadone clinics often have their lives disrupted given the need for observed dosing several times a week. In the state of Washington the absence of rural access to MMT is also a financial burden for payers: the State of Washington Medicaid program currently spends \$3 million a year to transport rural patients to urban methadone clinics (J. Thompson, Chief Medical Officer, Health Care Authority of Washington, personal communication, August 15, 2011).

For rural patients who do not need the structure of daily observed methadone clinics, office based buprenorphine treatment is a promising option for treatment. However, rural residents are more likely to be uninsured than their urban counterparts (Department of Health [DOH], 2008) and may rely heavily on primary care providers in safety net facilities such as federally qualified health centers (FQHCs), community health centers (CHCs), rural health clinics (RHCs), and critical access hospitals (CAHs). However, little is known about the availability of buprenorphine treatment in these rural safety-net settings.

The purpose of this study was to determine the availability of buprenorphine treatment in Washington State by characterizing the geographic location, specialty, practitioner's age, number of treatment slots and organizational status of the practices of waived physicians.

Washington State is a large western state that sponsors a five-state regional medical school (the WWAMI program) and thus has a major influence on patterns of practice throughout the region. We sought to answer four questions of interest:

1. What are the predominant specialties of waived physicians in urban and rural areas?
2. In what type of clinics do waived physicians practice?
3. Is there a relative shortage of buprenorphine-waived physicians in rural areas, as measured by provider to population ratios, and population to treatment slot ratios?
4. Are waived physicians different in age and sex from the overall physician population age in Washington State?

2. Materials and methods

The University of Washington Institutional Review Board approved the conduct of this study. We purchased the April 2011 Drug Enforcement Agency (DEA, US Department of Justice, 2011) roster of all buprenorphine-waived physicians from the federal government. This roster includes the number of treatment slots (either 30 or 100) and an address for each provider.

2.1. Name of facility

We used the DEA list to obtain addresses of waived providers. Of the addresses of waived physicians on the DEA list, 136 either stated the name of the facility (102) or listed a Seattle address of a known teaching or public hospital (34). If a facility name was not listed, we used googlemaps.com to confirm that the address was a hospital or clinic for an additional 210 addresses. We looked up the practice locations of the remaining 81 physician names on Healthgrades.com and phoned providers' offices to confirm that the facility corresponded to the waived physician. Nine of the physicians had no facility data available and no working phone number on Healthgrades.com.

2.2. Medical specialty

We obtained the medical specialty for 307 of the 427 waived providers by matching the DEA file with the 2004 American Medical Association (AMA) Masterfile. For the remaining 120 providers, we found specialty information on the AMA Doctorfinder, (2011) For Patients (108) and the Healthgrades.com (12) Web sites.

2.3. Age and sex

Provider age and sex were obtained from the AMA Masterfile (307) or from Healthgrades.com (48 for age, 102 for sex). No age could be found on 72 providers, and no sex could be confirmed for 18 providers. The age distribution of the Washington State providers was obtained from the annual publication of the AMA (Smart, 2011).

2.4. Specialty assignment

We were able to assign 417 of the 427 waived physicians to a specific specialty, using the AMA Masterfile. We further aggregated the specialties into four clinically relevant groups, as shown in Table 1. "Primary care" was defined to include family medicine and internal medicine; "specialty care" included psychiatry, physical medicine and rehabilitation, anesthesiology, emergency medicine, addiction medicine, and an additional 18 "other"

specialties with fewer than five waived physicians. We were unable to identify a specialty for 10 physicians and classified their specialty as “unknown.”

2.5. Rural or urban practice status

We used rural–urban commuting area (RUCA) codes 2.0 developed by the United States Department of Agriculture and the WWAMI Rural Health Research Center to characterize the rural or urban nature of the practices (Rural Health Research Center, 2005). The RUCA codes enabled us to characterize each waived prescriber's practice location as reflected in their zip codes as urban, large rural, small rural or isolated rural.

2.6. Practice organizational type

We matched the facility names with the 2011 Washington State DOH lists of safety net facilities and residency clinics to categorize the practices as a “private,” “safety net,” “other,” or “unknown” practice type. Practices named after the active physicians were assumed to be private practices. Practices of retired physicians and practices in correctional or military clinics were listed as “other.” We listed the status of 21 clinics as “unknown.” These clinics were not listed as a residency or safety net clinic, were unreachable by telephone, or had staff that did not know their clinic's status. Information summarizing the type of practice is found in Table 2.

2.7. Data analysis

We report descriptive statistics for physician specialty, practice, number of treatment slots, age, geographic setting and sex. We categorized the age ranges of waived physicians (<35 years, 35–44, 45–54, 55–64, >65 and unknown) to match age groupings of the Washington State licensed physicians printed yearly by the AMA (Smart, 2011). When appropriate, we performed chi-square tests to determine if the characteristics and settings of the population of waived providers differed significantly from those of all physician providers.

3. Results

There are 427 waived physicians in Washington State listed on the April 2011 list.

3.1. The majority of waived physicians are primary care physicians (family practice and internal medicine physicians)

As shown in Table 1, primary care physicians make up 49.9% of all buprenorphine-waived providers in the state, while specialists constitute 47.8% of waived physicians. Family medicine is the most common specialty (40.1%) followed by psychiatry (29.5%).

3.2. Primary care physicians are virtually the only waived providers in rural parts of the state; almost all waived specialists are located in urban areas

As seen in Table 2, family medicine physicians represent the largest single specialty group in each type of geographic area, and constitute the majority of the waived providers in rural portions of the state. The portions of buprenorphine prescribers who are primary care physicians show striking variation across the urban–rural continuum. Family medicine clinicians make up 36% of all buprenorphine-waived providers in urban areas, but are the majority in rural areas. The proportion of waived physicians who are family medicine providers increases with rurality: 52% in large rural areas, 76% in small rural areas, and 89% in isolated rural areas. Psychiatrists—the second largest group of waived physicians—show the opposite pattern, representing 31% of waived physicians in urban areas, 24% in large rural, 14% in small rural, and 0% of providers in isolated rural areas. All other

specialists constitute 20% of waived physicians in urban areas, but are non-existent in the small rural and isolated rural communities.

3.3. Is there a relative shortage of buprenorphine-waivered physicians in rural areas compared to urban areas?

Fig. 1 maps the distribution of MMT and buprenorphine maintenance therapy (BMT) by county. At the time of the study, 32 of the 39 counties lacked methadone maintenance programs and 11 counties lacked providers who could prescribe buprenorphine for addiction. Some 28.1% of the population lacked MMT in their county and 7.0% lacked both MMT and BMT. The counties lacking these services were all rural counties.

Table 3 shows the geographic distribution of waived physicians and potential treatment slots, compared to the distribution of the population in the state. We use the presence of a provider and the number of slots as surrogate indicators for access to buprenorphine treatment. The overall distribution of waived physicians and treatment slots was not statistically different than the distribution of the general population in Washington State in urban, large rural, small rural or isolated rural settings ($p = .762$, Pearson's $\chi^2 = 1.163$, $df = 3$). However, the ratios of buprenorphine providers to the total population in each setting differed ($p = .012$, Pearson's $\chi^2 = 10.92$, $df = 3$). Surprisingly, small rural areas had the largest number of treatment slots per population, and the isolated rural areas had the fewest number of treatment slots.

3.4. Waivered physicians were disproportionately located in private settings in urban areas and in safety net settings in isolated rural areas

In urban areas, buprenorphine-waivered physicians were predominately in private practices as seen in Table 4. However, in isolated rural areas, waived physicians were predominately in safety net settings. The distribution of provider types differed significantly by location type ($p < .0001$, $\chi^2 = 70.4$, $df = 6$). The ratio of waived physicians in safety net settings to those in private practices was roughly 1:4 in the urban category, to 1:1 in large rural, 3:1 in small rural, and 8:1 in the isolated rural category. Facilities classified as “other” practice, made up 8% (36/427) of practices in urban areas and were present in insignificant numbers in the rural landscape. Residency clinics, a subset of “other” practices in Table 2, have 7% (31/427) of all waived physicians. Of those 31 physicians, 21 were in family medicine residencies, 6 in psychiatry residencies, 1 in an internal medicine residency, and 4 in unspecified residencies. The practice status of 21 other providers (5%) was unknown. Overall, 88% (376/427) of practices with at least one buprenorphine provider were located in urban areas, which in turn had about 86% of the population. There were 21 large rural, 21 small rural and 9 isolated rural practices with a waived provider (Fig. 2).

3.5. Buprenorphine-waivered physicians were predominately male and may be older, and less likely to be under 35 years of age

Buprenorphine providers are predominantly male (68%). The age distribution is shown below in Table 5. The distribution of buprenorphine-waivered physicians differs from the overall physician population in Washington State. However because the age of 72 (16.9%) of the waived providers is unknown, we must be cautious in making definitive conclusions about age distribution.

4. Discussion

The DEA list lags behind the current number of persons who have completed their training for a waiver, so we may slightly underestimate the number of waived providers in Washington State. The presence of a waived physician and the number of potential

treatment slots represent the upper limit of the possible number of persons who can be treated, and in reality, the number of patients treated will be considerable fewer. Some waived physicians choose not to prescribe buprenorphine, and if they do prescribe, most treat fewer patients than their limit. In the only national survey on the subject, even those with a waiver to treat 100 patients served an average of only 39 patients (Arfken, Johanson, di Menza, & Schuster, 2010).

We may underestimate the availability of providers in some counties because the DEA list provides only one practice address, while some providers work in multiple settings. We based the clinic's rural-urban status on the zip code in the DEA list, and if the provider works at multiple sites, some counties could actually have services of a physician offering BMT where none was reported in this paper. Some providers on the DEA list were not found on the 2004 AMA Masterfile we used or on the AMA Doctorfinder for patients or Healthgrades.com Web sites. The lack of an age for 17% of the waived physicians weakens our ability to contrast the ages of buprenorphine providers with the ages of the non-waived physicians in Washington State.

RUCA status of some zip codes may have changed in the last 5 years. We used latest population data that had RUCA codes available to us, and applied this distribution to the 2010 census data. The classification of clinic status within the safety net providers may be imprecise. The source used from the DOH did not differentiate between locally funded and federally funded tribal clinics or provide information on "FQHC-look alikes," organizations that meet the eligibility for PHS Section 330 grants, but which do not receive these funds; this lack of specificity does not affect the overall conclusions as all types of clinics are considered to be safety net facilities.

As of April 2011 Washington has 427 physicians waived to offer BMT in their clinics. In contrast to national surveys from 2004 to 2008 (Arfken et al., 2010) in which 40% of waived physicians were psychiatrists and 32% were in family or internal medicine, in Washington State 49.9% of waived physicians were in family or internal medicine. Grouped together as primary care providers, they make up almost half of buprenorphine-waived physicians in the state and are the plurality or majority in every geographic setting (47% of urban, 52% of large rural, 86% of small rural, and 100% of isolated rural providers).

The potential availability of treatment slots, i.e. the number of providers multiplied by the number of patients the physicians are waived to treat, is 18,760. These data suggest that in addition to the treatment of addiction in methadone clinics, a substantial proportion of addiction treatment can now take place in physicians' offices. Prior to the passage of DATA 2000, only 7 of Washington's 39 counties had ORT programs within their boundaries, while 26 had BMT programs in 2011. A number of studies have demonstrated that office-based BMT is efficacious and acceptable, and this study demonstrates that it has vastly broadened potential access, especially in rural areas (Sullivan, Chawarski, O'Connor, Schottenfeld, & Fiellin, 2005).

Primary care physicians are not alone in expanding access, as psychiatrists make up 29.5% of buprenorphine-waived providers. Unlike primary care providers, however, psychiatrists are mainly located in urban and large rural areas. Since many patients with substance abuse have concomitant psychiatric problems (Nunes, Liu, Samet, Matseoane, & Hasin, 2006), the paucity of psychiatrists in rural areas creates an additional difficulty for the treatment of complex patients with dual diagnoses (Bohnert et al., 2011).

As one moves from urban to isolated rural areas, buprenorphine-waived physicians, like their non-waived peers, practice less often in private clinics and more often in publicly

supported safety net settings. While this was our hypothesis, the degree to which it was true was surprising, and highlights the reliance of rural access to opioid treatment on a continuation of governmentally subsidized programs for the uninsured.

The knowledge that safety net settings are major employers of buprenorphine-waivered physicians in rural areas complicates the debate over treatment expansion. Rural safety nets already struggle with survival and staffing; more than one third of rural community health clinics have had a physician opening for more than 7 months (Rosenblatt, Andrilla, Curtin, & Hart, 2006). One possible way to address this provider gap is to expand the use of this drug to mid-level practitioners, either through giving them the right to become waived, or via supervision by remote physician prescribers.

If younger providers are truly under-represented, training of future medical graduates may be another way to expand treatment. Currently, however, there are only 31 waived physicians working in Washington residency clinics, which means few mentors exist in these settings. Of note, 20 of the 31 physicians in residency clinics are at family medicine residencies. If these few are early indicators of future residency training, we may see the number of family medicine providers offering BMT continue to rise.

We speculate that in our rural areas the unmet need can be addressed in three ways: by increasing the number of providers eligible for waiver by conducting training programs, by increasing the number of waived providers who actually go on to prescribe buprenorphine; and by encouraging active prescribers to increase their treatment slots from 30 to 100. However, it is not known which step will result in the largest increase in treatment slots. More work still needs to be done, especially documenting the impact of BMT in rural areas on individuals and communities, as well as assessing what helps rural physicians manage opioid dependent patients. National findings indicate that patients' financial barriers were the physicians' most common concern (Arfken et al., 2010). A study of residency programs and their use of BMT would also help illuminate physician attitudes to the field of addiction medicine, and whether inclusion of buprenorphine in training would be an important way to create new cadres for treatment.

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Opioid Related Deaths (per 100,000 population) and Number of Buprenorphine Providers, by County

April 2011 DEA List

Source: April 2011 DEA List, DOH

Fig. 1.

Washington State counties with ORT options as of April 2011. In Washington State, 28% of the population lives in a county without MMT and 7% of the population lives in a county without MMT or BMT.

Fig. 2.

Percentage distribution of buprenorphine-waivered providers in four geographic settings by practice type, $n = 406$. Information was unknown for an additional 21 or 5% of the 427 practices.

Table 1

Primary specialty listings of waived providers and potential treatment slots available by specialty in Washington State.

Total = 427 % of waived providers	Primary specialty and number of specialists	Adjusted specialty	Providers (N = 427), n (%)	Tx slots (N = 18,760), n (%) ^a
Primary care (n = 213, 49.9%)	Family medicine, 149	Family medicine	171 (40.1)	7790 (41.7)
	Family practice, 16			
	General practice, 6			
	Int. medicine, geriatrics, 1	Internal medicine	42 (9.8)	1750 (9.4)
	Internal medicine, 41			
Specialty care (n = 204, 47.8%)	Psychiatry, 103	Psychiatry	126 (29.5)	5390 (28.9)
	Child and adolescent, 16			
	Addiction and other psychiatry, 10			
	Anesthesiology, pain, 1	Anesthesiology	16 (3.8)	620 (3.3)
	Management anesthesiology, 15			
	Physical medicine and rehabilitation, 21	Physical medicine and rehabilitation	21 (4.9)	980 (5.2)
	Emergency medicine, 8	Emergency medicine	8 (1.9)	380 (2.0)
	Addiction medicine, 5	Addiction medicine	5 (1.2)	290 (1.6)
	Other specialties, 18	Other	28 (6.6)	1120 (6.0)
	Unknown, 10	Unknown	10 (2.3)	440 (2.4)

Providers can have a maximum of 30 or 100 patients.

^a Greater than 100% due to rounding.

Number and percentage of buprenorphine-waivered physicians, by RUCA geographic code, specialty and residency program status.

Table 2

Specialty codes	RUCA code				Total n (%)	Subset within residency programs n (%)
	Urban n (%)	Large rural n (%)	Small rural n (%)	Isolated rural n (%)		
Number and % of waived providers	376 (88.1)	21 (4.9)	21 (4.9)	9 (2.1)	427 (100)	31
FM	136 (36.2)	11 (52.4)	16 (76.2)	8 (88.9)	171 (40.1)	20 (65)
IM	39 (10.4)	–	2 (9.5)	1 (11.1)	42 (9.8)	1 (3)
PSY	118 (31.4)	5 (23.8)	3 (14.3)	–	126 (29.5)	6 (19)
PM&R	21 (5.6)	–	–	–	21 (4.9)	–
AN	16 (4.3)	–	–	–	16 (3.8)	–
EM	6 (1.6)	2 (9.5)	–	–	8 (1.9)	–
ADM	5 (1.3)	–	–	–	5 (1.2)	–
Other specialty	25 (7.5)	3 (14.3)	–	–	28 (6.6)	3 (10)
Unknown	10 (2.7)	–	–	–	10 (2.3)	1 (3)
Total	376 (100)	21 (100)	21 (100)	9 (100)	427 (100)	31

FM- Family Medicine, IM- Internal Medicine, PSY- Psychiatry, PM&R- Physical Medicine and Rehabilitation, AN- Anesthesiology, EM- Emergency Medicine, ADM- Addiction Medicine.

Table 3

Washington State population, waived providers and treatment slots by 2005 RUCA 2.0 geographic code.

Variable	Urban	Urban Large rural	Small rural	Isolated rural	Total
Washington State Population 2010 ^a	5,756,206 (85.6%)	511,065 (7.6%)	215,185 (3.2%)	242,083 (3.6%)	6,724,540 (100%)
Buprenorphine-waivered providers	376 (88.1%)	21 (4.9%)	21 (4.9%)	9 (2.1%)	427
Treatment slots April 2011 DEA list	16,810 (89.6%)	840 (4.5%)	770 (4.1%)	340 (1.8%)	18,760
Population to buprenorphine/provider ratios	15,309:1	24,336:1	10,247:1	26,898:1	15,748:1
Population to treatment slot ratio	342:1	608:1	279:1	712:1	358:1

^aPopulation source: <http://quickfacts.census.gov/qfd/states/53000.html>.

Table 4

Classification of facilities of buprenorphine-waiver ed physicians.

Variable	Type of clinic	<i>N</i> = 427, <i>n</i> (%)	Classification assumptions
Safety-net (<i>n</i> = 96, 22%)	FQHC	24 (6)	CHCs ^a
	RHC	25 (6)	RHCs ^a
	CAH	7 (2)	CAHs ^a
	Tribal	13 (3)	Tribal Clinics, including Indian Health Service clinics and tribally-owned clinics
	Government-owned hospital	15 (4)	—
	Non-profit safety net	12 (3)	Any not-for-profit, non-governmental entity with a stated goal to serve the entire population
Private (<i>n</i> = 274, 64%)	Private	181 (42)	Proprietary clinics in urban areas, polyclinics, and specialty clinics
	Other hospital	93 (22)	Either the hospital or hospital owned, non-governmental clinic
Other (<i>n</i> = 36, 8%)	Residency clinic	31 (7)	Address at known residency clinic or self-defined “residency program” in DEA address
	Other	6 (1)	Military clinics, jails, or known retirees
Unknown (<i>n</i> = 21, 5%)	Unknown	20 (5)	Unreachable

Note: <100% due to rounding.

^aSource for facility types: Washington State DOH.

Table 5

Age of buprenorphine-waivered physicians in Washington, April 2011.

Age ^a ranges	Buprenorphine providers (%)	Non-waivered providers (%)	Total patient care providers (%)
<35	16 (3.7)	2307 (11.0)	2323 (10.9)
35–44	78 (18.3)	4670 (22.3)	4748 (22.3)
45–54	79 (18.5)	4787 (22.8)	4865 (22.8)
55–64	128 (30)	4613 (22.0)	4741 (22.2)
>65	54 (12.6)	4606 (22.0)	4660 (21.8)
Unknown	72 (16.9)	0	0
Total	427	20,982	21,337

^aChi-squared goodness of fit test, $n = 355$. χ^2 51.98, 4 df, $p < .001$.