Letters

RESEARCH LETTER

Nurse Practitioner and Physician Assistant Waivers to Prescribe Buprenorphine and State Scope of Practice Restrictions

There is a shortage of clinicians authorized to prescribe medications to treat opioid use disorder.[1,2] Nurse practitioners (NPs) and physician assistants (PAs) were allowed to obtain waivers to prescribe buprenorphine beginning in 2016.[3,4] We investigated the proportions of NPs and PAs with waivers in 2018 and the association with state regulations that restrict their scope of practice.

Methods | We obtained state-level data on the number of Drug Addiction Treatment Act waivers for physicians, NPs, and PAs as of September 2018 from the Substance Abuse and Mental Health Services Administration. The percentages of physicians and NPs with waivers per state were calculated by dividing by the total numbers of licensed physicians and NPs reported in the Area Health Resource File (2016). The percentage of PAs with waivers was calculated by dividing by the number of certified PAs reported by the National Commission on Certification of Physician Assistants (2016).

We measured scope of practice as a binary variable. *Less restrictive* was defined as whether NPs can prescribe medications without physician oversight[5] and whether state PA regulations included at least 5 of 6 "essential elements" of practice recommended by the American Association of Physician Assistants (listed in footnote "d" in the **Table**), which primarily recommend that scope of practice be defined at the practice level rather than being restricted at the state level.[6]

We compared mean proportions of clinicians with waivers per state by clinician type and scope of practice category and computed Pearson correlations of these proportions, weighted by the total numbers of NPs/PAs in the state. Because the percentages of NPs and PAs with waivers were correlated with that of physicians, we estimated weighted least squares regression equations for the proportions of waivered NPs and PAs per state, with scope of practice as the independent variable and the percentage of physicians with waivers as the control variable. Analyses were conducted using Stata-MP (version 15.1; StataCorp), with 2-group T^2 tests for means and 2-sided *t* tests for regressions, with significance at $P < .05$. The study was determined exempt by the University of California, San Francisco Committee for Human Research.

Results | Less restrictive regulations occurred in 27 states for NPs and 23 states for PAs. There were 44 916 physicians (5.57% of all physicians), 7280 NPs (3.17% of NPs), and 1913 PAs (1.66% of PAs) with waivers to prescribe buprenorphine. The correlation between the state-level percentages of physician and NP waivers was 0.8 ($P < .001$) and between physician and PA waivers was 0.63 ($P < .001$). The mean percentage of NPs with waivers was 5.58% in less restrictive states and 2.44% in more restrictive states, with a mean difference of 3.14 percentage points (95% CI, 2.05-4.23 percentage points) (Table). Physician assistant scope of practice was not significantly associated with the percentages of PAs and physicians with waivers.

Table. Mean Percentage of Clinicians per State With Waivers to Prescribe Buprenorphine in Office Settings as of September 2018[a]

	Mean (95% CI)	
	Unadjusted	Adjusted[b]
Nurse Practitioners		
State does not require physician oversight of NPs, % (n = 27)	5.58 (4.68 to 6.48)	4.73 (4.72 to 4.74)
State requires physician oversight of NPs, % (n = 24)	2.44 (1.78 to 3.10)	2.70 (2.69 to 2.70)
Difference	3.14 (2.05 to 4.23)	2.03 (2.02 to 2.04)
P value	<.001[c]	<.001
Physician Assistants		
State has 5-6 essential elements of PA practice, % (n = 23)[d]	1.74 (1.36 to 2.12)	1.76 (1.44 to 2.08)
State has <5 essential elements of PA practice, % (n = 28)	1.59 (1.16 to 2.02)	1.58 (1.28 to 1.88)
Difference	0.15 (−0.41 to 0.71)	0.18 (−0.26 to 0.62)
P value	.60[c]	.42

Abbreviations: NP, nurse practitioner; PA, physician assistant.

[a] Data are for 50 states and the District of Columbia. Data are weighted by the number of the type of clinician in the state (eg, number of NPs for the mean of NPs). Data on the number of Drug Addiction Treatment Act waivers held by all physicians, NPs, and PAs for each state as of September 26, 2018, were provided by the Substance Abuse and Mental Health Services Administration. These data included the count of all clinicians, regardless of whether they chose to be publicly listed. The percentage of each type of clinician per state was calculated by dividing the number of waivered clinicians by the total number of clinicians. Data on licensed physicians and NPs were from the Area Health Resource File and data on certified PAs were from the National Commission on Certification of Physician Assistants.

[b] Adjusted means calculated from weighted least squares regressions. The dependent variables were the percentages of NPs and PAs with waivers. The independent variables of interest were binary indicators for whether NPs can prescribe without physician oversight (for NP regression) and whether the state has at least 5 of the essential elements of PA practice (for PA regression). The control variable was the percentage of physicians in the state with a waiver. The NP regression was weighted by the number of NPs in the state; the PA regression was weighted by the number of PAs in the state.

[c] *P* values are from 2-group Hotelling T^2 tests of whether the means are different for states with scope of practice restrictions vs less/no restriction.

[d] The 6 "essential elements" are (1) licensure as the regulatory term (rather than certification); (2) authority to prescribe all legal medications; (3) scope of practice is determined at the practice level rather than by state regulation; (4) collaboration requirements can be adapted for the physician-PA relationship and practice setting; (5) co-signature requirements are determined at the practice level rather than by state regulation; and (6) the number of PAs a physician may collaborate with is determined at the practice level.[6]

After controlling for the percentage of physicians with waivers using multivariate regression, the adjusted percentage of NPs with waivers was 4.73% in less restrictive states and 2.70% in more restrictive states, with a mean difference of 2.03 percentage points (95% CI, 2.02-2.04 percentage points) (Table). There remained no significant association between less restrictive PA scope of practice and the percentage of PAs with waivers.

Discussion | Greater practice restrictions were associated with a lower percentage of NPs, but not PAs, with waivers. The difference in NPs with waivers was modest in terms of percentage points, but was more than 75% larger in less restrictive states compared with more restrictive states. Differences in characteristics between NP and PA scope of practice restrictions, such as PA regulations in all states requiring collaboration with a physician, unlike NPs, may explain the result.

Limitations of this study include that the denominators may include nonpracticing clinicians, leading to underestimation of clinicians with waivers, and that NPs and PAs have been able to obtain waivers for only 2 years.

The results of this study suggest that states in which NP practice is restricted may be less able to expand the opioid treatment workforce.

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COMMENT & RESPONSE

Decontamination Strategies for Critically Ill Patients

To the Editor Dr Wittekamp and colleagues concluded that the use of selective digestive tract decontamination (SDD), compared with standard care, did not lead to a reduction in bloodstream infections acquired in the intensive care unit (ICU) caused by multidrug-resistant gram-negative bacteria.[1] Their conclusion is misleading because they studied only the effect of topically administered antimicrobials and not the effect of the full SDD strategy, which is based on 4 components.[2]

The authors omitted an important component of SDD; ie, the administration of parenteral antibiotics. A 3- to 4-day course of parenteral antibiotics is required to prevent or control primary endogenous infections.[3] Approximately 55% of all infections in critically ill patients are of primary endogenous pathogenesis.

Another potential explanation for the negative results of the study is that patients who were carriers of antibiotic-resistant gram-negative bacteria in the SDD group were not decontaminated (eFigure in Supplement 2 of the article[1]). The authors did not adjust the SDD medication based on the results of the susceptibility tests of the isolated microorganisms. Depending on the antimicrobial susceptibility of the isolated microorganisms, the enteral antimicrobials should be adjusted.[4,5] Part of the SDD strategy is not the administration of topical antimicrobials but the administration of appropriate antimicrobials resulting in successful decontamination. Successful decontamination reduces bloodstream infections and mortality in critically ill patients.[2]

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