Nurse Practitioner Independent Practice Authority and Mental Health Service Delivery in U.S. Community Health Centers

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Objective: Little is known about how nurse practitioner independent practice authority (NP-IPA) influences patient care. This study examined the effect of NP-IPA on patterns of mental health–related visits provided by NPs in U.S. community health centers (CHCs).

Methods: State NP regulatory information was linked to National Ambulatory Medical Care Survey data on NP- and physician-provided visits (N=61,457) in CHCs from 2006 through 2011. The proportion of NP-provided versus physician-provided mental health–related visits in states with NP-IPA was compared with the proportion in states without NP-IPA. The adjusted odds of mental health–related visits in CHCs provided by NPs in states with and without NP-IPA were compared by using multiple logistic regression models while accounting for the complex survey design.

Results: Between 2006 and 2011, the odds of NP- versus physician-provided mental health–related visits in CHCs were more than two times greater in states with NP-IPA than in states with no NP-IPA (adjusted odds ratio [OR]= 2.43, 95% confidence interval [CI]=1.12–4.60). In contrast, no significant difference between states with and without NP-IPA was noted in non–mental health–related CHC visits provided by NPs. Among all mental health–related visits, the odds of visits in which psychotropic medications were prescribed by an NP were more than three times higher in states with NP-IPA than in those without NP-IPA (adjusted OR=3.14, CI=1.50–6.54).

Conclusions: Compared with physicians, NPs provided proportionally more CHC mental health–related visits in states with NP-IPA than in states without NP-IPA.

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Unmet mental health needs disproportionately affect disadvantaged communities and underserved populations. Needy patients generally receive their health care in community health centers (CHCs) (1). CHCs, also known as federally qualified health centers, are an important component of the primary health care safety net that promotes integrated care for both general medical and mental health conditions regardless of the patient's ability to pay (2,3). The major role of CHCs is delivering comprehensive primary care that includes diagnostic screening, health education, and medication prescribing, although distinctions between mental health and general medical services are limited (4). In recent years, considerable effort has focused on assessing and improving access to behavioral health services in these disadvantaged communities (3,5). Achieving this laudable goal, however, with relatively few mental health specialty providers in CHCs is challenging.

Medical staff who can diagnose, treat, and prescribe medications for mental health conditions in CHCs include physicians and advanced practice clinicians, such as nurse practitioners (NPs). NPs are a fast-growing group of health care professionals who are extensively employed in CHCs at twice the rate of their employment in private offices (6–8). Generally, NPs in CHCs are more involved than are other medical providers in patient health education, counseling, and preventive care (9). NPs' involvement in other types of services in CHCs, such as diagnosing illness or prescribing medications, will also likely be enhanced under the current regulatory trend toward the least restricted practice environment with independent practice authority (IPA) (10). As of 2015, NPs in 17 states, including the District of Columbia, had NP-IPA, which allows them to independently diagnose, treat, and prescribe without any physician involvement. In the remaining 33 states, some level of physician involvement is required in NPs' practice (11).

Given the growing shortage of psychiatrists in the U.S. health care system, NPs may play a critical role in identifying and treating psychiatric symptoms of needy individuals in CHCs. However, studies comparing patterns of NP-provided mental health services according to level of state NP scope of practice are few. In one cross-sectional study of how the scope of practice influences NP labor markets, researchers

found that states with a more restrictive scope of practice employed fewer NPs (12). Another study found that Medicare patients in states with the least restrictive NP practice were 2.5 times more likely to receive primary care from NPs (13). The least restrictive state NP regulations also were associated with increased NP staffing (14), increased patient access to primary care services (15), and more cost-effective treatment (16). However, it is unclear whether the expanded NP scope of practice also affects the use of mental health services provided by NPs in CHCs.

The purpose of this study was to examine whether the expanded NP scope of practice is associated with the frequency of mental health visits to NPs in CHCs. It was hypothesized that CHCs in states with NP-IPA would likely have higher proportions of NP-related mental health service visits, compared with states without NP-IPA.

METHODS

Data Source

The National Ambulatory Medical Care Survey (NAMCS) is conducted annually by the National Center for Health Statistics (NCHS) to inform ambulatory care delivered by office-based physicians who provide direct patient care (17). The survey utilizes a multistage probability design accounting for primary sampling units (PSUs), provider practices within PSUs, and patient visits within the practices (18). This cross-sectional study used data from a restricted access file of the NAMCS CHC stratum for calendar years 2006 through 2011. Annual survey response rate ranged from approximately 75% to 90% (18). Typically, NAMCS includes too few CHC providers for reliable estimates to be obtained, but this restricted version of the NAMCS CHC stratum from 2006 to 2011 oversampled both advanced practice clinician and physician visits to improve the precision of CHC visit estimates, particularly estimates of visits provided by advance practice clinicians (17).

According to the NCHS guidelines, estimates based on fewer than 30 observations are considered unreliable (19). Thus we combined data across years (2006–2011) to ensure sufficient sample size within each provider subgroup. The study sample focused on 61,457 CHC visits, including NP visits (N=8,214) and physician-related visits (N=53,243). The excluded visits (N=4,408) were physician assistant–related visits that had too few visits in certain categories (below 30 observations) and visits in which the patient was seen only by other types of direct care providers (for example, registered nurses or licensed practical nurses). This study was deemed exempt from review by the University of Maryland Institutional Review Board.

Measures

Mental health–related visits. CHC visits were divided into mental health–related visits and those not related to mental health. The visits with a mental health reason or a clinical diagnosis of a mental disorder were classified as mental health–related visits (20). Other visits were grouped as non–mental health–related visits. Clinical diagnoses of mental disorders were identified by using the *ICD-9-CM*. Visits with a clinical diagnosis of a mental disorder were grouped by the presence of mood, anxiety, disruptive behavior, substance use, schizophrenia, and other mental disorder diagnoses (20). These were further divided into visits with and without recorded psychotropic medications. Psychotropic medication visits were identified according to the psychotropic drug classification adapted from Zito et al. (21). Medication visits were grouped into the following categories: antidepressants, antipsychotics, anxiolytics-hypnotics, mood stabilizers (anticonvulsants and lithium), and other psychotropic medications (21).

Provider type. The type of health care provider was identified from two survey items in the NAMCS data: "What is the provider's highest medical degree?" (provider level) and "Indicate all of the providers seen at this visit" (visit level). Medical doctors (M.D.s) and doctors of osteopathy (D.O.s) were categorized as physicians. The data included the provider weight to produce a national estimate by providers who saw patients during their reporting week (17). We used the provider weight and the highest medical degree item to estimate the proportion of NPs and physicians in CHCs. The second item, covering all providers seen at the visit, was used to identify visits to NPs or physicians. Approximately 2% (N=143) of visits were provided by both an NP and a physician. We classified these into the NP group because the visits were assigned to patients whose main provider was an NP.

State NP regulation. State NP practice regulations during the study period were obtained from previous reports: the Pearson report (22–24) and the annual legislative update (25–30). This information was merged with NAMCS CHC data. First, the state NP scope of practice was determined for each year between 2006 and 2011 as NP-IPA (defined as no physician involvement required for all three major activities: diagnosis, treatment, and prescribing) or no NP-IPA (meaning that some form of physician involvement was required for at least one of the three activities). Physician involvement included any legal requirement for physician supervision, collaboration, delegation, or consultation. The classification of the scope of NP practice was adapted from previous studies examining the impact of NP scope of practice (12–14). In this study, the classification used in previous studies was slightly modified by combining states with partial NP-IPA and states with no NP-IPA, because previous studies showed no substantial difference between partial and no NP-IPA (12,14). On the basis of this classification, 50 states and the District of Columbia were divided into three groups: states with consistent NP-IPA status throughout the study period (N=14; 13 states plus D.C.), states with no NP-IPA status throughout the study period (N=32), and states where NP regulations changed from no

TABLE 1. Level of nurse practitioner scope of practice, 2006–2011, by state

Level[a]	State
Full NP-IPA	AK, AZ, DC, IA, ID, ME, MT, NH, NM, OR, UT, WA, WI, WY
No or partial NP-IPA	AL, AR, CA, CT, DE, FL, IL, IN, GA, KS, KY, LA, MA, MI, MN, MO, MS, NC, NE, NJ, NV, NY, OH, OK, PA, RI, SC, SD, TN, TX, VA, WV
Change in NP-IPA, 2006–2011[b]	CO (2010), HI (2011), MD (2010), ND (2011), VT (2011)

[a] NP-IPA, nurse practitioner independent practice authority. In states with full NP-IPA (N=13 plus D.C.), NPs can diagnose, treat, and prescribe without any physician involvement. In other states (N=32), some level of physician involvement is required.

[b] In five states, NP regulations changed from no NP-IPA to NP-IPA during the period (indicated by the year in parentheses).

NP-IPA to NP-IPA status during the study period (N=5) (Table 1).

Study Covariates

Patient demographic characteristics (age group, gender, race-ethnicity, and payment source), service type (new problem, chronic illness, or preventive service) and metropolitan statistical area were included in analytic models as covariates. The survey used the NCHS six urbanization categories based on the population density in the providers' practice locations. Those include four metropolitan and two nonmetropolitan categories. The two nonmetropolitan categories were combined into one category labeled "nonmetro" in this study.

Analysis

Descriptive statistics and chi-square analysis were used to compare the sociodemographic characteristics of NP versus physician visits with any mental disorder diagnoses. We also analyzed the provider-level descriptive statistics (provider as the unit of analysis) to estimate the proportion of the CHC provider type that served as the main provider for patients with mental disorders according to NP-IPA status. The same descriptive analysis was performed to compare the proportion of NP versus physician visits with mental disorders and with psychotropic medications (visit as the unit of analysis).

To examine the association between NP scope of practice and CHC visits (mental health and non–mental health) by provider type, sets of multivariable logistic regressions were performed to estimate the odds of having NP-related visits in states with and without NP-IPA, with adjustment for age, gender, race-ethnicity, payment source, service type, and metropolitan statistical area. In these regression analyses, we excluded the five states in which state NP practice regulations changed from no NP-IPA to NP-IPA during the study period (N=3,261 visits). In all models, the dependent variable was visits by provider type (NP versus physician) and the main independent variable was NP-IPA status, with no NP-IPA as the reference group. Sampling design effects built on county, state, and region were incorporated into all of the analyses by using Taylor-series approximation with SAS-callable SUDAAN (version 10.0.1).

RESULTS

Mental Health Visit Characteristics by Provider Type

Approximately 11% of the CHC visits were mental health related. Most mental health visits (90%) were provided by physicians. Among all physician-provided mental health visits, 92.6% were provided by primary care physicians and 5.4% were provided by psychiatrists. As shown in Table 2, the characteristics of patients with mental disorders seen by NPs were significantly different from those of patients seen by physicians. A larger proportion of patients seen by NPs were female, from racial-ethnic minority groups, and between the ages of 18 and 64. NPs provided more visits related to new problems or preventive care, and physicians dealt with more chronic illness–related visits. NPs were more involved in visits covered by Medicaid, in self-pay visits, and in no-payment visits, and physicians handled a greater proportion of visits covered by private insurance. NP visits were clustered in nonmetropolitan areas compared with physician visits. No significant differences by region were found.

A higher proportion of NP visits were for substance use disorders (29.6% for NPs versus 11.0% for physicians; $p<.001$). Compared with physicians, NPs handled a smaller proportion of visits for disruptive behavior disorder (19.1% versus 9.3%; p=.03) and for anxiety disorders (24.6% versus 16.3%; p=.02). No significant differences between NP and physician visits were noted by psychotropic drug class, except for antidepressants. Antidepressants were provided by NPs at a greater proportion of visits, compared with physicians (70.4% versus 61.6%; p=.03). [These and other findings by disorder and by medication class are presented in an online supplement to this article.]

CHC Visits by NP-IPA Status

As shown in Table 3, the odds that a mental health-related visit was provided by an NP were more than two times greater in CHCs located in states with NP-IPA, compared with states with no NP-IPA (adjusted odds ratio [OR]= 2.43, 95% confidence interval [CI]=1.12–4.60). In contrast, non–mental health–related visits provided by NPs did not significantly differ by states' NP-IPA status (adjusted OR=1.45, CI=.87–2.34).

Among all mental health–related visits in CHCs, the odds of visits with psychotropic medications prescribed by an NP were more than three times greater in states with NP-IPA status than in states without NP-IPA status (adjusted OR=3.14) (Table 4). Consistent with the visit-level estimation (Tables 3 and 4), the provider-level estimation indicated that the proportion of NPs who treated patients with mental disorders was significantly greater in states with NP-IPA

compared with states with no NP-IPA (12% versus 4%, respectively) (Figure 1).

DISCUSSION

This study provides new information on the growing role of NPs in providing mental health services in CHCs, specifically in states with NP-IPA. The study found that the proportion of mental health–related visits provided by NPs in CHCs was more than two times greater in CHCs located in states with NP-IPA, compared with states with no NP-IPA. Specifically, psychotropic medication–related visits provided by NPs for patients with mental disorders were more than three times greater in states with NP-IPA than in those with no NP-IPA. Compared with physicians, NPs who provided visits for mental disorders in CHCs had a proportionally greater involvement in visits covered by Medicaid, involving new problems and preventive care, made by patients from racial-ethnic minority groups, and occurring in nonmetropolitan areas. NPs were also more involved than were physicians in visits by patients with substance use disorders and in visits at which antidepressants were prescribed. NP involvement in visits involving anxiety disorder or disruptive behavior disorder was proportionally lower than that of physicians.

TABLE 2. Characteristics of mental health–related visits in community health center visits, 2006–2011, by provider type[a]

Characteristic	Nurse practitioners (N=920) N	Nurse practitioners (N=920) Weighted %	Physicians (N=5,373) N	Physicians (N=5,373) Weighted %	p
Patient demographic					
Age					<.001
0–17	80	9.8	814	17.9	
18–64	797	84.9	4,022	67.8	
≥65	43	5.3	537	14.3	
Gender					.002
Male	343	38.1	2,351	42.3	
Female	577	61.9	3,022	57.7	
Race-ethnicity					.003
White	625	77.2	4,246	85.8	
Black or African American	157	17.6	739	10.8	
Other	138	5.3	388	3.5	
Payment source[b]					<.001
Private insurance	88	12.7	1,569	43.2	
Medicare	71	9.2	714	17.4	
Medicaid	305	41	1,441	20.4	
Self-pay	195	23.2	841	12.5	
No pay or charity	105	7.0	183	2.1	
Other	82	7.0	331	4.3	
Patient clinical					
Service type[b]					<.001
New problem	229	23.6	1,068	19.4	
Chronic illness care	500	52.5	3,552	68.9	
Preventive care	175	23.9	648	11.7	
Regional					
Metropolitan status[b]					<.001
Large central metro	241	16.8	1,712	24.6	
Large fringe metro	138	11.1	1,229	27.1	
Medium metro	182	31.4	1,261	28.2	
Small metro	172	18.1	428	7	
Nonmetro (micropolitan and noncore)	147	22.6	574	13.2	
Region					.44
Northeast	169	21.6	1,216	16.8	
Midwest	171	17.5	1,378	21.1	
South	213	30.3	1,635	39.9	
West	367	30.6	1,642	22.3	

[a] Data source: National Ambulatory Medical Care Survey community health center stratum
[b] Missing values were excluded from the analysis.

Characteristics of Mental Health–Related Visits Provided by NPs Versus Physicians

Compared with physicians, NPs provided proportionally more mental health–related visits for patients from racial-ethnic minority groups and for Medicaid enrollees. Similarly, Buerhaus and colleagues (31) reported that compared with primary care physicians, primary care NPs were more likely to serve underserved populations, particularly Medicaid enrollees, in a wide range of community settings. An increased reliance on NP-provided services in rural areas has also been well documented in previous reports (32,33). Given persistent problems with the availability of accessible and efficient mental health care in rural areas, granting NP-IPA may be one of the solutions to accommodate unmet mental health care needs among persons residing in these communities. We also found that NPs provided a higher proportion of new or preventive care visits, compared with physicians, and that physicians provided more visits for chronic illness care. This could indicate that visits provided by NPs were more common for new patients as a way to shorten their waiting time to see a physician. NPs may then have referred patients with more complex problems (such as chronic mental disorders) to physicians.

One significant finding concerns NPs' greater involvement in treating substance use disorders in CHCs. A national survey noted that a risk assessment, including substance use behaviors and life-threatening physical conditions, was the second most critical work activity of NPs (34).

Effect of NP-IPA in Mental Health Services

The adoption of NP-IPA had a significant positive association with the proportion of NP-provided mental health–related visits but not with the proportion of NP-provided

TABLE 3. Odds of community health center visits to nurse practitioners (NPs) and physicians in states with and without nurse practitioner independent practice authority (NP-IPA), by type of visit[a]

	NPs		Physicians				
Type of visit	N	Weighted %	N	Weighted %	p	OR[b]	95% CI
Mental health–related visits (N=7,441)[c]					.012		
States with NP-IPA	296	8.5	985	91.5		2.43	1.12–4.60
States with no NP-IPA (reference)	721	3.4	5,439	96.6			
Non–mental health–related visits (N=50,755)					.159		
States with NP-IPA	1,109	6.1	5,930	93.9		1.45	.87–2.34
States with no NP-IPA (reference)	5,036	3.9	38,680	96.1			

[a] Data source: National Ambulatory Medical Care Survey community health center stratum, 2006–2011. CHC visits in five states where NP-IPA status changed during the study period were excluded from this analysis.
[b] Odds ratios adjusted for age, gender, race-ethnicity, payment source, service type, and metropolitan statistical area
[c] Defined as visits with *ICD-9-CM* diagnosis or with a mental health reason

nonmental health–related visits. This finding suggests that the role of NP-IPA during the study period (2006–2011) may have been specific to a particular practice area in which NPs' scope of practice had been most restricted, such as in prescribing controlled psychotropic medications—for example, benzodiazepines or stimulants. This could presumably be related to concerns about access to substances with a potential for abuse. A possible factor influencing NP-IPA status is the geographic maldistribution of psychiatrists across the United States, particularly in states with NP-IPA. According to a map that shows where shortages of mental health specialists exist (35), states in which there is more unmet need for mental health care greatly overlap states with NP-IPA. In states with NP-IPA, patients with unmet need for mental health care in areas with limited mental health care resources (for example, few psychiatrists) may utilize CHCs for initial or ongoing mental health treatments provided by NPs. In addition, patients with limited income or no insurance may prefer access to treatments in CHCs because of possible stigma related to using a community mental health center or simply because the patients do not recognize their need for mental health services. Thus the need for mental health services may be identified in the course of medical care.

Among visits involving patients with mental disorders, a strong association between a state's NP-IPA status and NP-prescribed psychotropic medication–related visits was particularly notable. In states with NP-IPA, the odds of NP-prescribed psychotropic medication–related visits were significantly higher than in states with no NP-IPA, which may be a result of NPs' ability to practice independently or of the increased number of NPs in the workforce. When this finding was examined further by using provider-level estimation, a greater number of NPs provided visits related to mental disorders in states with NP-IPA than in states without NP-IPA (Figure 1). Indeed, the scope of practice affected both the practice ability of NPs and the supply of NPs (12).

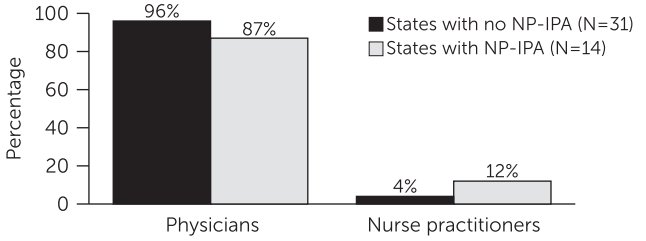
CHC patients, who are mostly from medically underserved communities, may have substantially more mental health care needs than patients in other low-income U.S. populations (36). It appears that NPs in CHCs are in a critical position to identify mental health problems and help patients with unmet mental health care needs initiate and participate in mental health services. This role will likely be enhanced in practice environments where NP-IPA is granted. NP-IPA competency in psychotropic medication prescribing, their use of referral sources, and their educational needs should be periodically examined (37). Although psychiatric NPs receive specialty training in mental health, the current nonpsychiatric NP educational curriculum does not include comprehensive mental health specialty training. If possible, continuing education focusing on mental health and substance abuse treatments, psychopharmacology guidelines, and monitoring should be offered to both psychiatric NPs and

TABLE 4. Odds of community health center mental health–related visits to nurse practitioners (NPs) and physicians in states with and without nurse practitioner independent practice authority (NP-IPA), by visit characteristic[a]

	NPs		Physicians				
Characteristic	N	Weighted %	N	Weighted %	p	OR[b]	95% CI
Any mental health–related reason (N=3,455)					.011		
States with NP-IPA	136	8.1	520	91.9		2.49	1.18–5.25
States with no NP-IPA (reference)	263	3.1	2,536	96.9			
Any mental disorder diagnosis (N=5,984)					.028		
States with NP-IPA	255	10.6	834	89.4		2.49	1.20–5.16
States with no NP-IPA (reference)	618	4.8	4,277	95.2			
Any psychotropic medication prescribed (N=3,965)					.018		
States with NP-IPA	163	9.9	557	90.1		3.14	1.50–6.54
States with no NP-IPA (reference)	346	3.5	2,899	96.5			

[a] Data source: National Ambulatory Medical Care Survey community health center stratum, 2006–2011. CHC visits in five states where NP-IPA status changed during the study period were excluded from this analysis. The three groups of mental health–related visits are not mutually exclusive.
[b] Odds ratios adjusted for age, gender, race-ethnicity, payment source, service type, and metropolitan statistical area

FIGURE 1. Percentage of physicians and nurse practitioners who treated patients with mental disorders in community health centers in states with and without nurse practitioner independent practice authority (NP-IPA)



nonpsychiatric NPs working in CHCs, so that all NPs will be optimally prepared to address this growing health care service need.

Study Limitations

The findings should be interpreted in the context of limitations. Findings are limited to visits in U.S. CHCs and thus may not be applicable to other ambulatory care settings, such as private offices. Second, because the NAMCS data were structured to produce visit-level estimation, it is possible that some patient duplication occurred, making it difficult to estimate the number of people with various mental disorders who were treated in CHCs. Third, the provider specialty of both NPs and physicians could not be identified because of unstable estimates of psychiatrist-provided visits (too few psychiatrists in CHCs) and missing information on NP specialty in the data. Fourth, unknown state variations and secular trends related to provider practice and psychotropic medication prescribing during the study period could have confounded the NP comparison between states with and without NP-IPA. Despite these limitations, our findings provide valuable insight into the role of state NP regulations from a national perspective. Use of the NAMCS CHC stratum data is the greatest strength of this study, because, to our knowledge, this is the only database in which the practice of NPs and physicians in CHCs can be compared at a national level. The NAMCS data are also known to have high accuracy in terms of clinician-reported diagnosis and linkage to the prescribed medication data (17).

CONCLUSIONS

This study provides new evidence about the role of state NP-IPA in relation to expanded mental health services delivered by NPs in CHCs. The findings highlight NPs' contribution to mental health service delivery according to NP-IPA status. The profound growth in the number of NPs in the United States (38) and their increasing professional autonomy document major ongoing changes for mental health service delivery in CHCs. Additional studies focusing on the quality of mental health care provided by NPs under NP-IPA in community health care settings are warranted.

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REFERENCES

1. Roll JM, Kennedy J, Tran M, et al: Disparities in unmet need for mental health services in the United States, 1997–2010. Psychiatric Services 64:80–82, 2013
2. Staffing the Safety Net: Building the Primary Care Workforce at American' Health Centers. Bethesda, MD, National Association of Community Health Centers, 2016. http://nachc.org/wp-content/uploads/2015/10/NACHC_Workforce_Report_2016.pdf
3. Physical and Mental Health Integration. Baltimore, Center for Medicare and Medicaid Services, 2016. https://www.medicaid.gov/state-resource-center/innovation-accelerator-program/physical-and-mental-health-integration/physical-and-mental-health-integration.html
4. Hing E, Hooker RS, Ashman JJ: Primary health care in community health centers and comparison with office-based practice. Journal of Community Health 36:406–413, 2011
5. Jones E, Lebrun-Harris LA, Sripipatana A, et al: Access to mental health services among patients at health centers and factors associated with unmet needs. Journal of Health Care for the Poor and Underserved 25:425–436, 2014
6. Hing E, Hooker RS: Community health centers: providers, patients, and content of care. NCHS Data Brief 65:1–8, 2011
7. Morgan P, Everett C, Hing E: Nurse practitioners, physician assistants, and physicians in community health centers, 2006–2010. Health Care 3:102–107, 2015
8. Morgan P, Everett CM, Hing E: Time spent with patients by physicians, nurse practitioners, and physician assistants in community health centers, 2006–2010. Health Care 2:232–237, 2014
9. Hing E, Hooker RS: Community health centers: providers, patients, and content of care. NCHS Data Brief 65:1–8, 2011
10. Gadbois EA, Miller EA, Tyler D, et al: Trends in state regulation of nurse practitioners and physician assistants, 2001 to 2010. Medical Care Research and Review 72:200–219, 2015
11. Pearson L: Navigate Companion Website: The Pearson Report. Burlington, MA, Jones and Bartlett Learning, 2015. http://www.jblearning.com/catalog/9781284050714/
12. Reagan PB, Salsberry PJ: The effects of state-level scope-of-practice regulations on the number and growth of nurse practitioners. Nursing Outlook 61:392–399, 2013
13. Kuo YF, Loresto FL Jr, Rounds LR, et al: States with the least restrictive regulations experienced the largest increase in patients seen by nurse practitioners. Health Affairs 32:1236–1243, 2013
14. Ku L, Frogner BK, Steinmetz E, et al: Community health centers employ diverse staffing patterns, which can provide productivity lessons for medical practices. Health Affairs 34:95–103, 2015
15. Stange K: How does provider supply and regulation influence health care markets? Evidence from nurse practitioners and physician assistants. Journal of Health Economics 33:1e27, 2014

16. Conover C, Richards R: Economic benefits of less restrictive regulation of advanced practice nurses in North Carolina. Nursing Outlook 63:585–592, 2015
17. Ambulatory Health Care Data: What Is NAMCS. Atlanta, Centers for Disease Control and Prevention, 2016. https://www.cdc.gov/nchs/ahcd/namcs_participant.htm
18. Questionnaires, Datasets, and Related Documentation: Downloadable Documentation. Atlanta, Centers for Disease Control and Prevention, 2016. http://www.cdc.gov/nchs/ahcd/ahcd_questionnaires.htm
19. Ambulatory Health Care Data: Reliability of Estimates. Atlanta, Centers for Disease Control and Prevention, 2015. http://www.cdc.gov/nchs/ahcd/ahcd_estimation_reliability.htm
20. Olfson M, Kroenke K, Wang S, et al: Trends in office-based mental health care provided by psychiatrists and primary care physicians. Journal of Clinical Psychiatry 75:247–253, 2014
21. Zito JM, Safer DJ, Sai D, et al: Psychotropic medication patterns among youth in foster care. Pediatrics 121:e157–63, 2008
22. Pearson L: The Pearson Report. American Journal for Nurse Practitioners 11:10–101, 2007
23. Pearson L: The Pearson Report. American Journal for Nurse Practitioners 12:9–80, 2008
24. Pearson L: The Pearson Report. American Journal for Nurse Practitioners 13:8–82, 2009
25. Phillips SJ: Twenty-third annual legislative update. Nurse Practitioner 36:30–52, 2007
26. Phillips SJ: Nineteenth annual legislative update. Nurse Practitioner 32:8–42, 2008
27. Phillips SJ: Legislative update. Twentieth anniversary. After 20 Years, APNs Are Still Standing Together. Nurse Practitioner 33:10–34, 2008
28. Phillips SJ: Legislative update 2009: despite legal issues, APNs are still standing strong. Nurse Practitioner 34:19–41, 2009
29. Phillips SJ: 22nd Annual Legislative Update: Regulatory and legislative successes for APNs. Nurse Practitioner 35:24–47, 2010
30. Phillips SJ: Twenty-fourth annual legislative update. Nurse Practitioner 37:18–42, 2012
31. Buerhaus PI, DesRoches CM, Dittus R, et al: Practice characteristics of primary care nurse practitioners and physicians. Nursing Outlook 63:144–153, 2015
32. Graves JA, Mishra P, Dittus RS, et al: Role of geography and nurse practitioner scope-of-practice in efforts to expand primary care system capacity: health reform and the primary care workforce. Medical Care 54:81–89, 2016
33. Doescher MP, Andrilla CH, Skillman SM, et al: The contribution of physicians, physician assistants, and nurse practitioners toward rural primary care: findings from a 13-state survey. Medical Care 52:549–556, 2014
34. 2009 Role Delineation Study: Clinical Nurse Specialist in Adult Psychiatric and Mental Health Nursing: National Survey. Silver Spring, MD, American Nurse Credentialing Center, 2009. http://www.nursecredentialing.org/Certification/NurseSpecialties/AdultPsychiatricMentalHealthCNS/RELATED-LINKS/AdultPsychCNS-2009RDS.pdf
35. Thomas KC, Ellis AR, Konrad TR, et al: County-level estimates of mental health professional shortage in the United States. Psychiatric Services 60:1323–1328, 2009
36. Shin P, Alvares C, Sharac J, et al: A Profile of Community Health Center Patients: Implications for Policy. Menlo Park, CA, Kaiser Family Foundation, 2013. http://kff.org/medicaid/issue-brief/a-profile-of-community-health-center-patients-implications-for-policy
37. Klein TA, Panther S, Woo T, et al: Childhood attention-deficit/hyperactivity disorder prescribing by prescriber type and specialty in Oregon Medicaid. Journal of Child and Adolescent Psychopharmacology 26:548–554, 2016
38. Bodenheimer T, Bauer L: Rethinking the primary care workforce: an expanded role for nurses. New England Journal of Medicine 375:1015–1017, 2016