

## Effect of the National Health Service Corps on Clinician Staffing and Patient Visits in Federally Qualified Health Centers

Xinxin Han, Patricia Pittman, Clese Erikson, Fitzhugh Mullan, and Leighton Ku

### BACKGROUND

The National Health Service Corps (NHSC) is a principal federal program to increase the supply of primary care medical, dental and mental health clinicians in underserved areas.<sup>1,2</sup> There has been little research examining the extent to which NHSC clinicians expand patient care capacity of federally qualified health centers. This study examines whether NHSC clinicians substitute for non-NHSC clinicians and to estimate the extent to which they increase clinic visit volumes at health centers.

### METHODS

Retrospective analysis of longitudinal administrative data for 1,023 federally qualified health centers from 2013-2016. Multivariate linear regression models were used to examine how changes in the number of NHSC primary care medical, dental and mental health clinicians affected the number of non-NHSC staff and patient visits. Our study outcomes are the number of non-NHSC clinicians (full-time equivalents) and clinic visits in health centers by primary care medical, dental, and mental health services in 2013-2016 health centers.

### FINDINGS

After controlling for facility characteristics and local clinician supply, the number of NHSC clinicians was not significantly associated with reductions in the number of non-NHSC clinicians in primary care medical, dental, or mental health disciplines at health centers during our study period. On average, every additional NHSC clinician full-time equivalent was associated with 2,321 more medical visits, 2,828 more dental visits, and 1,364 more mental health visits per year. NHSC clinicians contributed 2% more medical visits, 9% more dental visits and 7% more mental health visits per year. The numbers of medical visits per clinician were not significantly different for NHSC and non-NHSC clinicians, but NHSC dental clinicians produced about 1,000 more dental visits per clinician and NHSC mental health clinicians produced about 500 more mental visits per clinician than non-NHSC staff.

### CONCLUSION

Clinicians fulfilling their NHSC obligations are not associated with use of fewer non-NHSC clinicians. They substantially bolster patient care capacity at health centers.

### POLICY IMPLICATIONS

### KEY FINDINGS

1. In this observational study, the use of NHSC clinicians are not significantly associated with reductions in the use of non-NHSC clinicians.
2. NHSC clinicians substantially increase clinic visit volumes for primary care medical, dental and mental health services.
3. The adjusted visits per additional FTE is significantly larger for NHSC clinicians in dental care and mental health services, when compared to non-NHSC clinicians.
4. Continued funding is important to support care for vulnerable patients in medically underserved areas.

As the growth of NHSC and health centers is interconnected, maintaining a steady and reliable flow of funding is vital to the future success of both NHSC and health centers, and to ensuring access to primary care for rural and urban patients in need.

**Table 1. Adjusted Marginal Change in Non-NHSC Clinician for Each Additional NHSC Clinician, by Clinical Discipline**

	Additional Non-NHSC Clinician FTEs		
	Adjusted Estimate <sup>a</sup>	(95 CI)	P Value
<b>All Disciplines</b>	0.48	(-0.14 to 1.10)	.13
<b>Primary Care Medical</b>	-0.02	(-0.70 to 0.67)	.99
<b>Dental Care</b>	-0.26	(-0.58 to 0.06)	.11
<b>Mental Health</b>	0.38	(-0.43 to 1.20)	.36

Abbreviation: NHSC, National Health Service Corps; FTE, full time equivalent

<sup>a</sup> Regression analysis were limited in health centers staffed by NHSC clinicians. Multivariate generalized estimating equation models were controlled for health center characteristics, patient profiles, county poverty rates and uninsured rates, county- and state-level provider-to-population ratios, and year dummy variables. See the Supplement for full regression results.

**Table 2. Adjusted Additional Clinic Visits in FQHCs for Each Additional NHSC and Non-NHSC Clinician, by Clinical Discipline**

	Additional Clinic Visits per:				Difference in Visits	
	NHSC Clinician FTE		Non-NHSC Clinician FTE		Adjusted Estimate <sup>a</sup>	P Value
	Adjusted Estimate <sup>a</sup>	P Value	Adjusted Estimate <sup>a</sup>	P Value	(95 CI)	P Value
<b>All Disciplines</b>	1,942 (644 to 3,240)	.003	2,051 (1,718 to 2,384)	<.001	-109 (-1397 to 1179)	0.87
<b>Primary Care Medical</b>	2,321 (893 to 3,748)	.001	2,395 (1,872 to 2,917)	<.001	-74 (-1236 to 1071)	0.91
<b>Dental Care</b>	2,828 (2,153 to 3,503)	<.001	1,940 (1,541 to 2,339)	<.001	888 (100 to 1676)	0.03
<b>Mental Health</b>	1,364 (1,046 to 1,681)	<.001	916 (787 to 1,045)	<.001	448 (63 to 832)	0.02

Abbreviation: NHSC, National Health Service Corps; FTE, full time equivalent

<sup>a</sup> Regression analysis were limited in health centers staffed by NHSC clinicians. Multivariate generalized estimating equation models were controlled for health center characteristics, patient profiles, county poverty rates and uninsured rates, and year dummy variables. See the Supplement for full regression results.

**Table 3. Proportional Change in Clinic Visits per Additional NHSC and Non-NHSC Clinician, by Clinical Discipline**

Proportional Change <sup>a</sup> in Clinic Visits per:	
NHSC Clinician FTE	Non-NHSC Clinician FTE

	Percent (95 CI)	Percent (95 CI)
<b>All Disciplines</b>	1.2 (0.4 to 2.0)	1.3 (1.1 to 1.5)
<b>Primary Care Medical</b>	1.8 (0.7 to 2.9)	1.9 (1.5 to 2.3)
<b>Dental Care</b>	9.4 (7.4 to 11.5)	6.5 (5.3 to 7.7)
<b>Mental Health</b>	7.4 (5.6 to 9.2)	5.0 (4.4 to 5.6)

Abbreviation: NHSC, National Health Service Corps; FTE, full time equivalent

<sup>a</sup> Proportional change represents the semi-elasticity of staffing FTEs, estimated with the post-estimation margins command for regression coefficients in Table 4.

*End notes:*

1. Heisler EJ. The National Health Service Corps. Congressional Research Service. <https://fas.org/sgp/crs/misc/R44970.pdf>. Published April 26, 2018. Accessed July 13, 2018.
2. Health Resources and Services Administration Bureau of Health Workforce. National Health Service Corps. <https://bhw.hrsa.gov/loansscholarships/nhsc>. Accessed July 13, 2018.