Comparing Clinical Quality Measures for Appalachian and Non-Appalachian Health Centers

Key Takeaways/Policy Implications

- **Health centers within the Appalachian region exhibit clinical quality measures that are on par, and in some instances better, when compared to non-Appalachian health centers**
- **Health center clinical quality measures can vary significantly within the Appalachian region**
- **Health centers in North Central Appalachia perform better on hypertension and diabetes outcome measures but worse on most process measures**

The 420-county U.S. Appalachian region has larger numbers of vulnerable populations, higher rates of diabetes and cardiovascular disease, and poorer health outcomes than non-Appalachian counties.[1] Further, significant disparities exist within the Appalachian region, where central and southern Appalachian counties have poorer health outcomes.[2] Health centers funded by the Health Resources and Services Administration play an important role in serving vulnerable populations in the Appalachian region,[3] with previous research finding health center patients in Appalachia more likely to receive preventive care services compared to those not in Appalachia.[4] The main objectives of this research are (1) to explore differences in quality measures between Appalachian health centers and health centers outside of Appalachia and (2) to explore differences in quality measures between health centers within the Appalachian region.

Data & Methods

Using 2018 Uniform Data System (UDS) data from 1,362 Health Center Program awardees serving more than 28 million patients, we explored performance in clinical quality measures including five process measures (adult weight screening, tobacco screening and cessation, appropriate asthma medications, lipid therapy, and appropriate use of aspirin) and two outcome measures (blood pressure control and uncontrolled diabetes).[4] Quality measures were adjusted based on patient demographics (number of patients below 100% Federal Poverty Guidelines, uninsured, and with hypertension) and organizational characteristics (Patient-Centered Medical Home (PCMH) accreditation and urban/rural status). We also adjusted for service area social deprivation, which is an index measure created using multiple community characteristics (such as poverty, race, education, and housing)[5] weighted by the number of patients in each health center's service area. Figure 1 displays the location of Health Center Program awardees, where Appalachian and non-Appalachian are defined based on the awardee's administrative location. We conducted t-tests to compare differences between Appalachian and non-Appalachian health centers and analysis of variance (ANOVA) to compare differences across each of the five Appalachian regions.

Figure 1. Health Center Locations

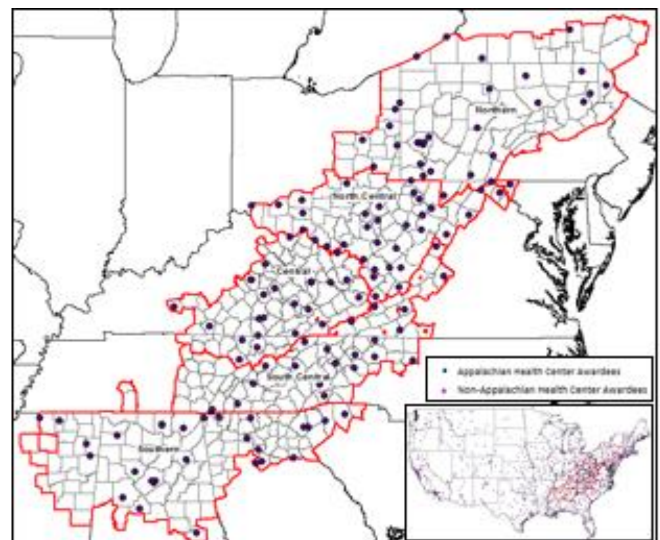

Table 1. Adjusted Quality Measures by Region

	All	Appalachia	Non-Appalachian
# Health Centers	1324	127	1197
% Body Mass Index (BMI) Screening and Follow-Up Plan (Adults)**	68.1	66.9	68.2
Diabetes: % Hemoglobin HbA1c Poor Control (HbA1c > 9)***	33.3	31.2	33.5
% Tobacco Use Screening and Cessation Intervention	86.3	86.5	86.2
% Use of Appropriate Medications for Asthma*	85.9	85.6	85.9
Coronary Artery Disease (CAD): % Lipid Therapy***	80.7	80.1	80.7
Ischemic Vascular Disease (IVD): % Use of Aspirin or Other Antiplatelet	80.5	80.3	80.6
% Controlling High Blood Pressure (BP < 140/90 mmHg)**	62.5	63.1	62.4

**p<.05; **p<.01; ***p<.001

Results

Non-Appalachian health centers serve higher percentages of patients who are below 100% poverty (65% vs. 59%), racial/ethnic minority (58% vs. 19%), and insured via Medicaid/CHIP (39% vs. 30%). Appalachian health centers serve higher percentages of older patients (14% vs. 10%) and those on Medicare (16% vs. 10%), and patients have higher rates of diabetes (16% vs. 15%) and hypertension (35% vs. 28%) than non-Appalachian health centers. Table 1 shows that non-Appalachian health centers perform better than Appalachian health centers for most adjusted clinical quality measures, while Appalachian health centers perform significantly better for the two outcome measures (blood pressure and HbA1c control). Table 2 focuses on the significant differences that exist within the Appalachia region. Health centers located in the Southern Region (which includes parts of MS, AL, GA, and SC) perform significantly worse for adjusted HbA1c and blood pressure control compared to health centers located elsewhere in Appalachia. North Central Region (which includes most of West Virginia and SE Ohio) health centers have significantly lower quality scores for process measures, but significantly higher scores for outcome measures.

Table 2. Adjusted Health Center Quality Measures by Appalachian Region

	Central	North Central	South Central	Northern	Southern
# Health Centers	21	29	23	31	23
% Body Mass Index (BMI) Screening and Follow-Up Plan (Adults)***	67.7	64.5	71.4	63.7	71.4
Diabetes: % Hemoglobin A1c Poor Control (HbA1c > 9%)***	31.0	28.8	32.1	30.7	34.0
% Tobacco Use Screening and Cessation Intervention***	85.4	86.5	87.2	86.1	87.2
% Use of Appropriate Medications for Asthma***	85.1	85.1	86.5	84.6	87.0
Coronary Artery Disease (CAD): % Lipid Therapy***	79.1	79.0	81.6	79.2	82.2
Ischemic Vascular Disease (IVD): % Use of Aspirin or Another Antiplatelet***	79.0	80.3	80.8	80.3	80.9
% Controlling High Blood Pressure (BP < 140/90 mmHg)***	63.3	65.3	61.6	64.2	60.4

***p<.001; statistical significance across all regions

Conclusions

Health centers in Appalachia perform significantly better than non-Appalachian health centers for the two outcome measures examined. There was also notable performance variability among health centers in Appalachia. Health centers in the North Central region performed significantly better for the two outcome measures, but worse for the process measures. These findings highlight the importance of not treating residents and communities in the Appalachian region monolithically, and offer opportunities for more in-depth research to explore promising practices that can lead to more tailored care delivery and improved health outcomes. Health policies must address characteristics of local health care delivery systems as well as characteristics of the population, including differences in age, race, education, and social connectivity.

References

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