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5-2021

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Differences in ED and Inpatient Utilization by Location of Primary Care: Co-location at a Head Start Center vs. Academic Primary Care Clinic Setting

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BACKGROUND

- Children <7 years old are at increased risk of emergency department (ED) and inpatient utilization.
- Co-location of a primary care clinic within a Head Start center (HSC) includes nursing surveillance of classrooms and same-day primary care access, which allows students at the HSC to be seen immediately for acute care during the day.
- Consequently, co-location of primary care within a HSC may reduce barriers to acute care for those students, thereby lowering their ED and inpatient utilization.

OBJECTIVE

- To compare ED and inpatient utilization of students from a HSC with co-located primary care to patients treated at an academic primary care clinic (APCC).

METHODS

- **Design:** Retrospective Cross-Sectional
- **Participants & Time Period:** 278 children under age 7 from the HSC with co-located primary care, as compared to a 3:1 propensity-score matched comparison group of 810 patients receiving primary care at an APCC located 1.7 miles away
 - Study Dates: July 1, 2016-June 30, 2019
 - **Propensity Score Matching:** Intervention and Comparison group were matched on age, gender, race/ethnicity, language, and insurance type, with a strict match based on home census tract (i.e., every comparison patient lived in the same census tract as the matched HSC student).
 - Inclusion criteria
 - At least 1 well child visit during the study period
 - Exclusion criteria
 - Children with complex chronic conditions as defined by Feudtner
 - Children whose insurance status was not documented
- **Main Outcome:** ED and inpatient utilization
 - ED utilization: <1 visit per year versus ≥1 visit per year
 - Inpatient utilization: 0 and ≥1 hospitalization during the study period
- **Analysis:**
 - X² test for bivariate analyses
 - Logistic regression for multivariable analyses, adjusting for age, gender, race/ethnicity, language spoken, payor, and median income by household census tract

Table 1. Characteristics of the Study Population

	Overall n (%)	Head Start with Primary Care n (%)	Academic Primary Care n (%)	p
	1088 (100%)	278 (100%)	810 (100%)	
Age, years				
<3	158 (14.5%)	38 (13.7%)	120 (14.8%)	0.23
3-4	488 (44.9%)	115 (41.4%)	373 (46.0%)	
5-6	442 (40.6%)	125 (45.0%)	317 (39.1%)	
Gender				
Male	567 (52.1%)	136 (48.9%)	431 (53.2%)	0.22
Female	521 (47.9%)	142 (51.1%)	379 (46.8%)	
Race/Ethnicity				
Non-Hispanic Black	856 (78.7%)	217 (78.1%)	639 (78.9%)	0.92
Hispanic	76 (7.0%)	18 (6.5%)	58 (7.2%)	
Multiracial	51 (4.7%)	14 (5.0%)	37 (4.6%)	
Non-Hispanic white	105 (9.7%)	29 (10.5%)	76 (9.4%)	
Language Spoken				
English	1084 (99.6%)	277 (99.6%)	807 (99.6%)	0.98
Non-English	4 (0.4%)	1 (0.4%)	3 (0.4%)	
Payor				
Commercial	30 (2.8%)	7 (2.5%)	23 (2.8%)	0.95
Public	958 (88.1%)	246 (88.5%)	712 (87.9%)	
Uninsured	100 (9.2%)	25 (9.0%)	75 (9.3%)	
Census Tract Median Household Income				
≤ \$17,500	180 (16.5%)	45 (16.2%)	135 (16.7%)	0.79
\$17,501-\$22,000	352 (32.4%)	88 (31.7%)	264 (32.6%)	
\$22,001 to \$26,500	266 (24.4%)	71 (25.5%)	195 (24.1%)	
≥\$26,500	290 (26.7%)	74 (26.6%)	216 (26.7%)	

Table 2. ED and Inpatient Utilization by Primary Care Location

	Overall n (%)	Bivariate Results			Multivariable Results
		Head Start with Primary Care n (%)	Academic Primary Care n (%)	p	aOR
Mean annual rate of ED visits					
<1	416 (38.2%)	129 (46.4%)	287 (35.4%)	<0.01	1.55 [95% CI: 1.17, 2.06], p=0.002
≥1	672 (61.8%)	149 (53.6%)	523 (64.6%)		
Hospitalizations during study period					
0	949 (87.2%)	246 (88.5%)	703 (86.8%)	0.46	1.12 [95% CI: 0.73, 1.72], p=0.59
≥1	139 (12.8%)	32 (11.5%)	107 (13.2%)		

RESULTS

- HSC and academic primary care patients had similar characteristics (Table 1).
- In our bivariate results, a lower percentage of HSC students had an average of ≥1 ED visits/year than the comparison group (53.6% vs. 64.6%, p=0.001) (Table 2).
- In comparison to having ≥1 ED visits/year, HSC students had 55% higher adjusted odds of having <1 ED visits/year compared to the academic primary care group (aOR 1.55 [95% CI: 1.17, 2.06] p=0.002).
- There were no differences in hospitalizations in either our bivariate or adjusted analyses (aOR 1.12 [95% CI: 0.73, 1.72] p=0.59).

CONCLUSION

- Students from the HSC with co-located primary care had lower odds of having ≥1 ED visit/year compared to matched controls from an academic primary care clinic. Future research should investigate cost differences, other health and developmental outcomes, and comparisons to private primary care practices.

For questions, contact the author at rcgupta@cmh.edu.