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Brief Report

Increased access to urgent care centers decreases low acuity diagnoses in a nearby hospital emergency department

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ABSTRACT

Objective: We studied the impact four new urgent care centers (UCCs) had on a hospital emergency department (ED) in terms of overall census and proportion of low acuity diagnoses from 2009 to 2016. We hypothesized that low acuity medical problems frequently seen in UCCs would decrease in the ED population. Since Medicaid was not accepted at these UCCs, we also studied the Medicaid vs non-Medicaid discharged populations to see if there were some differences related to access to urgent care.

Methods: We conducted a retrospective review of computerized billing data. We included all patients from 2009 to 2016 who were seen in the ED. We used the Cochran-Armitage Trend Test to examine trends over time.

Results: As hypothesized, the proportion of ED patients with a diagnosis of pharyngitis decreased significantly over this time period from 1% to 0.6% ($p < 0.0001$). The rate of bronchitis in the total ED population also decreased significantly (0.5% to 0.13%, $p < 0.0001$).When we looked at the discharged patients with and without Medicaid, we found that significantly more Medicaid than non-Medicaid patients presented with pharyngitis to the ED with an increasing trend from 2009 to 2016: OR = 2.33, $p < 0.0001$. The overall census of the ED rose over the period 2009 to 2016 (80,478 to 85,278/year). Overall admission rates decreased significantly: 36.9% to 34.5% ($p < 0.0001$).

Conclusion: With the introduction of four new urgent care centers (UCCs) within 5 miles of the hospital, the ED diagnoses of pharyngitis and bronchitis, two of the most common diagnoses seen in UCCs, decreased significantly. Significantly more Medicaid discharged patients presented to the ED with pharyngitis than in the non-Medicaid discharged group, likely because Medicaid patients had no access to UCCs.

1. Introduction

Urgent care centers provide immediate care for many medical problems in adults and children that traditionally went to the ED for care. Since 2009, many UCCs have opened around our hospital. This has changed the options for patients to receive medical care in the community. In 2009, there was only one urgent care center within a 5 mile radius of our hospital ED. In 2016 there were four UCCs within this 5 mile radius.

Our study examined the effect of multiple new UCCs located within a 5-mile radius of our hospital on ED census, hospital ED admission rates, and proportion of low acuity diagnoses. We were also interested in studying a discharged subset of ED patients, who we felt should be going to urgent care centers where medical treatment is less costly. We compared data from 2009 (pre-urgent care expansion) through 2016 data (post-urgent care expansion).

Our review of the literature found only a few other studies that have documented the impact of UCCs on EDs and these studies focused on different issues: increased patient satisfaction in UCCs, lower cost in UCCs, and greater convenience with UCCs [1-10]. Our study focused on how UCCs impact the number of ED patients presenting with low acuity diagnoses. The creation of urgent care centers is a trend that is spreading rapidly across the country [3,6,7]. These changes may have significant effects on the location of low acuity health care in the future.

2. Methods

We conducted a retrospective review of computerized billing data of all emergency department patients from 2009 to 2016 who registered in our ED. We calculated total census for each year from 2009 to 2016 and subsequently for 2017 and the first part of 2018. We obtained demographic information including age, sex, race and insurance status. We defined higher acuity patients as those who were admitted and we calculated the proportion admitted from the ED in all the years from 2009 to 2016. We calculated the proportion of particular low

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acuity diagnoses seen in the ED, specifically-pharyngitis and bronchitis, in each year from 2009 to 2016. We only used the principle diagnosis on the billing chart. We used Cochran-Armitage Trend Tests to assess trends over time from 2009 to 2016 in terms of total census, proportion of admissions from the ED, and proportion of low acuity diagnoses seen. We looked at the proportion of low acuity diagnoses and insurance status (Medicaid vs Non-Medicaid insurance) from 2009 to 2016. To determine which diagnoses to include in our study, we asked the director of one of the largest UC networks in our area, to calculate the most common presenting urgent care diagnoses in his network. Our health system's Institutional Review Board approved this study.

3. Results

A total of 677,995 patients were seen in the ED between January 2009 and December 2016. The overall census of the ED rose over the period 2009 to 2016 period from 80,478/year in 2009 to 85,278/year in 2016 and then decreased in the first part of 2018 from 51,442 in 2017 (January to July) to 50,328 in 2018 (January to July). Overall admission rates decreased significantly across the years: 36.9% to 34.5% ($p < 0.0001$). Mean age increased significantly over the time period from 46 to 51 from 2009 to 2016 ($p < 0.0001$). The overall population was 55% female and did not change significantly over the period 2009 to 2016. Race information was missing from 66% of the billing data so we could not report on race distribution. ED patient payer groups for all the years combined were 42.3% private commercial insurance, 30.7% Medicare, 16.0% Medicaid, and 11.0% Self Pay/Other. Medicaid as a payer group increased from 12.6% in 2009 to 21.0% in 2016 (Table 1).

The proportion of patients with a principle diagnosis of pharyngitis seen in the ED decreased significantly over the study period from 1% to 0.6% ($p < 0.0001$). The proportion of patients with a principle diagnosis of pharyngitis in the discharged patient subset also decreased from 1.67% to 0.97% ($p < 0.0001$) (Fig. 1). The proportion of bronchitis patients seen in the ED also decreased significantly (0.5% to 0.13%, $p < 0.0001$) and in the discharged patient subset it decreased by more than half from 0.17% to 0.08% ($p < 0.0001$) (Fig. 1).

When we compared discharged Medicaid with non-Medicaid patients, we found that significantly more Medicaid than non-Medicaid patients presented with pharyngitis to the ED with an increasing trend from 2009 to 2016: OR = 2.33, $p < 0.0001$.

We chose pharyngitis and bronchitis to represent our low acuity diagnoses after we asked the director of one of the largest urgent care networks in our area to survey their most common urgent care diagnoses. His survey found the most common diagnoses presenting to their urgent care centers included sore throat (22%), cough (19%), and bronchitis (5%). These diagnoses accounted for 46% of all diagnoses presenting to their urgent care network.

4. Discussion

Our study focused on how UCCs impact the number of ED patients presenting with low acuity diagnoses. In particular, we determined the proportions of the low acuity diagnoses, pharyngitis and bronchitis, over the time period 2009 to 2016. As we expected, our study found that after the introduction of four new urgent care centers within 5 miles of the hospital, the ED diagnoses of pharyngitis and bronchitis, two of the most common diagnoses seen in urgent care centers, decreased significantly. We also looked specifically at the discharged ED cases of bronchitis and pharyngitis, which we felt were the patients who should be going to urgent care centers that provide more cost effective treatment for these medical problems. As expected, the proportions of discharged ED patients with bronchitis and pharyngitis also significantly decreased.

We then evaluated whether Medicaid patients were following the same trend as non-Medicaid patients, in terms of their use of EDs for lower acuity problems. Since UCCs in our area were not accepting Medicaid insurance during the 2009 to 2016 time period, we predicted no decline in lower acuity diagnoses among Medicaid patients presenting to the ED. As expected, we did not see a decline and actually saw a significant increase from 2009 to 2016 in Medicaid discharged patients presenting to the ED with pharyngitis (OR = 2.33) compared with the non-Medicaid discharged group. We believe this is because Medicaid insurance did not cover visits to urgent care centers. We chose to look at pharyngitis in particular since it is such a common diagnosis in UCCs and a diagnosis that should be seen in UCCs because it is more cost effective and generally very low acuity. Yee et al. in 2013 found that UCCs tend not to participate in Medicaid because of low reimbursement [8]. According to Yee et al., it makes sense to make UCCs more accessible to low income patients, many of whom currently have no viable alternative to EDs [8]. If Medicaid managed care plans can justify higher payment rates for UCCs as a way to control ED use, independent UCCs may be more willing to participate in Medicaid, which was the case in Arizona [8]. Another study from 2016 came to a similar conclusion after they studied the difference in cost for pediatric Medicaid patients seen in the ED versus UCCs for similar medical problems [6]. They found, by extrapolation, that the savings in cost was more than $50 million if all lowest severity level visits were seen in UCCs instead of EDs [6]. Recently, in the area around our hospital, many UCCs have started accepting Medicaid in 2017 and 2018. Another option to care for patients with lower acuity conditions is for hospitals to add their own UCCs as a way to decrease ED use and reduce costs [8].

We hypothesized that the acuity of conditions seen in the ED is greater now than in 2009 since lower acuity problems would preferentially go to UCCs. We, therefore, expected the percent of admissions from the ED to be greater in 2016 than in 2009. Surprisingly, we got the opposite result: significantly lower acuity in 2016 than in 2009. Other factors like the Affordable Care Act, signed in 2010, that increased access to medical care for previously uninsured people likely had a greater effect on our hospital acuity. We also did not expect the ED census to increase since we expected low acuity patients to go to UCCs

Table 1
Emergency department characteristics across study period.

	Year							
	2009	2010	2011	2012	2013	2014	2015	2016
Number of ED patients	80,478	80,665	83,336	88,100	86,247	86,958	86,933	85,278
Mean age, years	46	47	48	48	49	50	51	51
Female	54.2%	54.4%	54.4%	55.0%	55.2%	55.5%	55.5%	55.4%
Male	45.8%	45.6%	45.6%	45.0%	44.8%	44.5%	44.5%	44.7%
Medicaid	12.6%	13.4%	15.2%	15.3%	16.5%	17.9%	19.3%	21.0%
Pharyngitis diagnosis	1.1%	0.7%	0.7%	0.7%	0.6%	0.6%	0.6%	0.6%
Pharyngitis diagnosis (discharged only)	1.67%	1.08%	0.99%	1.06%	0.81%	0.84%	0.81%	0.97%
Bronchitis diagnosis	0.5%	0.6%	0.6%	0.5%	0.5%	0.5%	0.3%	0.1%
Bronchitis diagnosis (discharged only)	0.17%	0.28%	0.26%	0.07%	0.06%	0.09%	0.08%	0.08%
Admitted	36.9%	37.31%	35.9%	32.6%	31.4%	31.1%	32.6%	34.5%

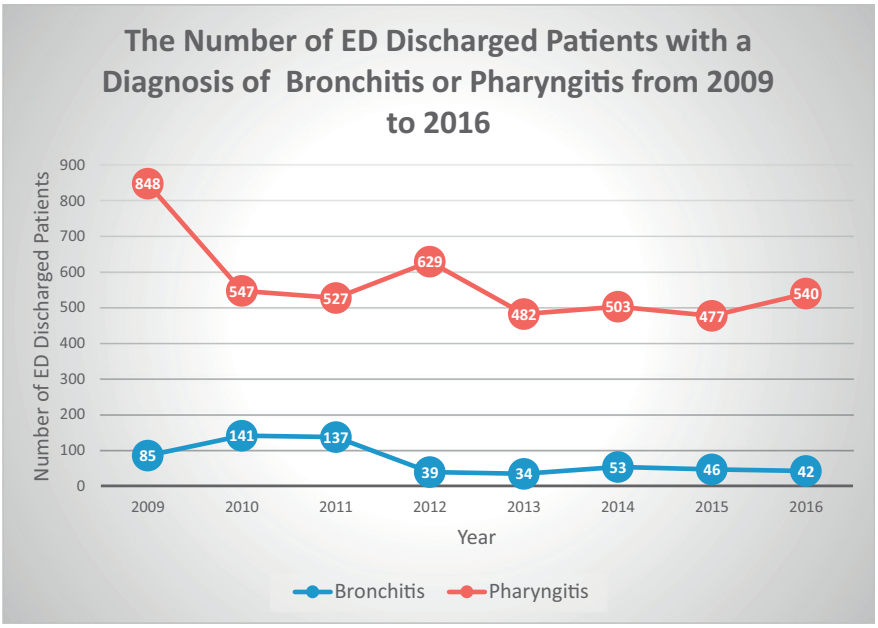

Fig. 1. The number of ED discharged patients with a diagnosis of bronchitis or pharyngitis from 2009 to 2016.

preferentially; however, the Affordable Care Act likely affected our ED census as well, increasing our census through 2016. Other studies have also reported an increased ED census after the introduction of the Affordable Care Act [7,9]. Interestingly, when we looked at our ED census after the study period in 2017 through 2018, we did see a decrease in ED census in the first half of 2018: 51,442 in 2017 (January to July) to 50,328 in 2018(January to July). Perhaps the effect of UCCs on hospital ED census will be delayed.

5. Limitations

There are some limitations of this study to acknowledge. First, due to the retrospective nature of this study, there is potential for confounding or factors that may have changed throughout the study period that may have affected our study results. The Affordable Care Act, passed at the beginning of our study in 2010, may have been a confounding variable that contributed to our increased census through 2016. The Affordable Care Act may have impacted the ED admission rates, as well, by increasing the overall number of ED patients with non-emergent conditions presenting to EDs. This may have contributed to our lower ED admission rates. Second, data for our study only came from one hospital ED. Therefore, results of our study may not be generalizable to other hospital EDs that differ in geographical, demographic, or clinical characteristics. Lastly, although our pediatric ED remains open, pediatric inhouse services were closed at our hospital in 2013 and all pediatric admissions were transferred out to our affiliated children's hospital. This may have shifted sicker pediatric patients away from our hospital and, therefore, may have impacted our overall admissions rates.

6. Conclusion

With the introduction of four new urgent care centers within 5 miles of the hospital, the ED diagnoses of pharyngitis and bronchitis, two of the most common diagnoses seen in urgent care centers, decreased significantly. Significantly more Medicaid discharged patients presented to the ED with pharyngitis (OR = 2.33) than in the non-Medicaid discharged group, perhaps because Medicaid patients had no access to urgent care centers. Future studies should evaluate whether increased access to urgent care centers may be impacting EDs in other ways as well.

Presentation

Oral presentation at Society for Academic Emergency Medicine National Meeting in May 2018 in Indianapolis, IN.

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Declaration of interest

None.

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