



Childhood Asthma in Riverside County, 2009

Introduction

Asthma affects Riverside County children of all backgrounds, but particularly those children living in relative poverty. Asthma is triggered by a variety of factors including dust, pollen, smoke, smog, and cockroaches. The most recent data available from the 2009 California Health Interview Survey indicates that the number of Riverside County children (0-17 years) who have ever been diagnosed with asthma is 13.8%, or roughly 85,000.¹ Among these children, 56.3% (48,000) still had asthma symptoms after receiving their initial asthma diagnosis.¹ Many of these children suffer from uncontrolled asthma that results in trips to the emergency department (ED) or hospitalization. In 2009, asthma was ranked 16th on the list of most common ED visits for youth aged 0-17 years.² Asthma is a significant problem for children and their families and this brief will examine the impact of asthma on health care utilization in Riverside County.

Key Findings

In Riverside County...

- The pediatric asthma hospitalization rate has been cut in half since the year 2000.
- ED visits for asthma among children are elevated in mid/pass regions.

Emergency Department Visits

In order to gauge the severity of childhood asthma and its impact on health care utilization across the county, hospital emergency department (ED) data was reviewed over a three year time period. Asthma visits were identified using ICD-9 codes reported as the primary diagnosis during the ED visit. Asthma rates were calculated by averaging the number of visits from each zip code over three years (2007-2009), and then dividing that number by the population (2009) of 0-17 year olds for each zip code in the county. The resulting rate shows the number of ED visits for asthma for every 10,000 children in the population; the detailed data is summarized in Exhibit 2 (page 2).

The map below uses patient zip code of residence to display the areas of the county with the highest rate of ED visitation for asthma.² While rates were calculated for the entire county, only the ten zip codes with the highest rates are shown below to focus on areas of great need. It should be noted that many areas of high need are *not* urban centers where the highest childhood asthma rates are usually expected according to previous research.³ However, because this

Exhibit 1. Top Ten Highest Rates of Emergency Department (ED) Visits for Asthma, Children Aged 0-17 years, 2007-09 Average.

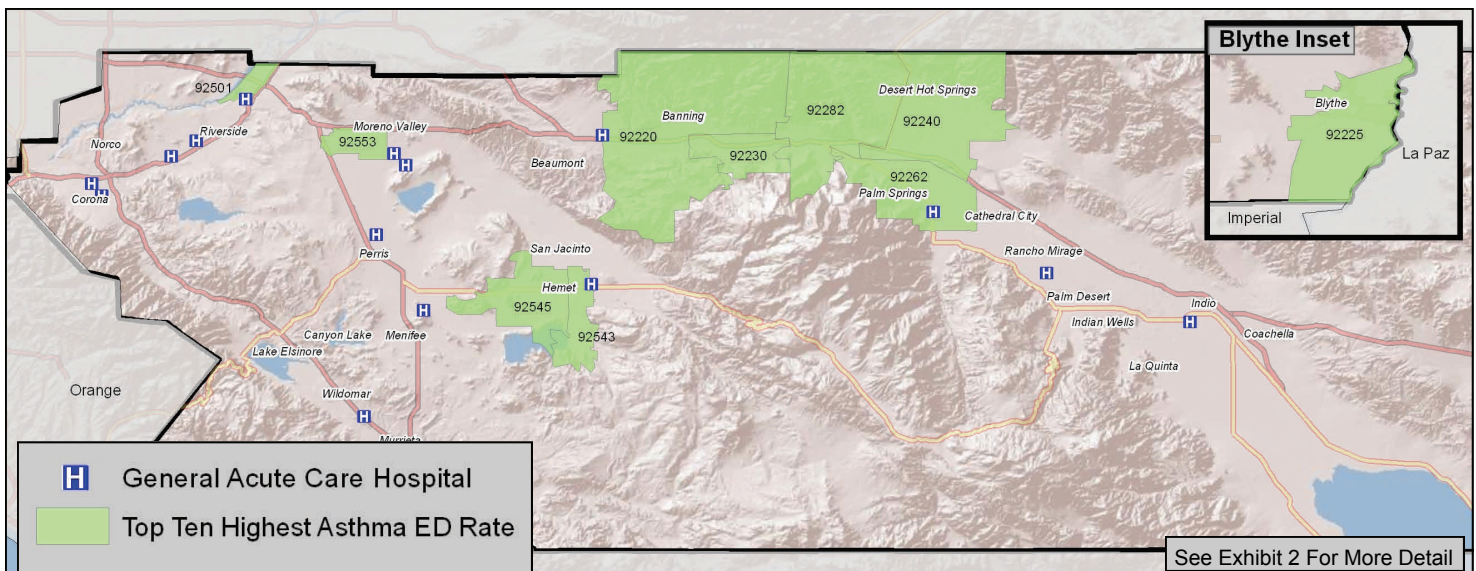




Exhibit 2. Top Ten Highest Rates of Emergency Department (ED) Visits for Asthma by Zip Code, Children Aged 0-17 years, 2007-09 Average

Rank (1=Highest Rate)	Zip Code	City	Asthma: Rate of Emergency Department Visits per 10,000 Population, 0-17 years, 2007-09	Population of Children Age 0-17 yrs, 2009	Asthma: Average Number of Emergency Department Visits, 0-17 years, 2007-09	Number of Primary Care Providers, 2007	Total Population, 2009	Ratio of Population to Provider
10	92262	Palm Springs	81.59	5,883	48.0	69	28,258	405
9	92543	Hemet	82.42	8,614	71.0	45	33,349	743
8	92220	Banning	83.02	8,472	70.3	25	32,550	1,320
7	92240	Desert Hot Springs	83.94	11,278	94.7	2	35,436	15,226
6	92545	Hemet	88.96	5,808	51.7	5	32,688	6,444
5	92553	Moreno Valley	99.52	18,858	187.7	39	48,546	1,910
4	92501	Riverside	107.37	6,085	65.3	29	21,016	741
3	92230	Cabazon	138.57	866	12.0	0	2,808	--
2	92225	Blythe	166.09	3,733	62.0	9	17,020	2,892
1	92282	White Water	212.94	407	8.7	0	1,152	--

Source: OSHPD, 2007-09

(Continued from page 1)

data is taken from emergency department visits and is not an indicator of asthma prevalence; therefore, it should not be assumed that the highlighted areas have the highest number of children with asthma. Rather, the map and table highlight areas of the county where childhood asthma is uncontrolled (Exhibit 1 and 2).

The reasons for this lack of asthma control may vary from zip code to zip code. For example, although the population in zip code 92282 is small, with roughly 400 children, there were an average of nearly 9 visits to the emergency department per year. The lack of primary care providers (PCPs) in this zip code (Exhibit 2) may help explain why uncontrolled asthma is resulting in ED usage for this area, but the same cannot be said of specific zip codes in Palm Springs and Riverside, where population to provider ratios are lower than the state average of 1 provider per 847 people.⁴

While having a PCP near their home is important, families of children with asthma need to be able to 1) access the PCP, 2) afford medications, 3) understand and comply with prescriptions, and 4) successfully identify and avoid triggers. Although indoor and outdoor air quality is a key factor in exacerbating symptoms, research also indicates that many PCPs do not provide treatment that adheres to national guidelines and that when the PCPs do, area ED visits and hospitalizations are significantly reduced.³

When children with asthma have health insurance and access to primary care to help them understand their asthma triggers and controller medication, their asthma can be controlled in an outpatient setting in all but the most extreme circumstances.³

Hospitalizations

The hospitalization of a child for asthma is categorized as a preventable hospitalization by national and state agencies that monitor health care quality indicators. In a recent report, Riverside County ranked among the worst, 37th out of 41 areas across California, for the number of pediatric asthma hospitalizations per 100,000 people.⁵ As of 2008, there were 97.2 asthma hospitalizations per 100,000 children aged 2 to 17 as compared to 77.6 hospitalizations statewide.⁶ While the hospitalization rate has improved from a high of 182.6 in the year 2000, the gap between Riverside County, the State and other counties remains substantial.⁶

The impact of asthma on the healthcare system is evaluated in a variety of ways but most directly by looking at the cost of an admission. A very recent study conducted by the Centers for Disease Control and Prevention looked at costs of asthma treatment from 2002 through 2007 and found that the average cost, in 2009 dollars, of a hospitalization was \$4,767.⁷ Meanwhile, the cost of an office visit was \$123 and an ED visit was \$638.⁷ The cost of treating asthma in the hospital is almost 40 times greater than an outpatient visit.

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Exhibit 3. Asthma Hospitalizations Among Children (0-17 yrs), Riverside County Residents, 2007- 2009

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The unadjusted cost hospitals charged for asthma hospitalizations among Riverside County children was calculated by analyzing three years of admissions data and is displayed in Exhibit 3. The total number of visits was aggregated and averaged over three years, along with the total cost per hospital for treating all Riverside County children admitted with asthma as the primary diagnosis.⁸ Although there were fluctuations across hospitals, the average cost for treating Riverside children was roughly \$4,500. While this is an unadjusted estimate, the value is similar to the results reported in the aforementioned national study, suggesting that treating asthma in Riverside County hospitals is comparable to national estimates.

It should also be noted that nearly 40 percent of the cost of hospitalizing Riverside County children for asthma was incurred at hospitals outside of the county borders. Loma Linda University Medical Center, with its specialized treatment facilities for children, accounted for the largest share with an annual charge of more than \$2 million (not shown)—more than 60% of the total out of county charges.

Hospital	Patients			Total Patients		Annual Cost (3 Yr Avg)
	2007	2008	2009	3 Yrs	3 Yr Avg	
Menifee Valley Medical Center	*	*	*	*	*	--
San Geronio Memorial Hospital	*	*	*	*	*	--
Rancho Springs Medical Center	*	*	*	16	5.3	\$67,043
Palo Verde Hospital	*	*	*	18	6.0	\$80,325
Eisenhower Memorial Hospital	18	19	22	59	19.7	\$376,785
Moreno Valley Community Hospital	25	25	15	65	21.7	\$142,400
Desert Regional Medical Center	22	29	28	79	26.3	\$458,437
Corona Regional Medical Center	34	25	35	94	31.3	\$287,397
Parkview Community Hosp./Med. Ctr	34	29	49	112	37.3	\$421,989
Riverside Community Hospital	44	40	38	122	40.7	\$446,527
Hemet Valley Medical Center	51	55	28	134	44.7	\$461,517
Kaiser Hospital, Riverside	66	54	56	176	58.7	--
John F Kennedy Memorial Hospital	58	76	95	229	76.3	\$1,197,162
Riverside County Regional Med. Ctr.	66	83	113	262	87.3	\$1,083,307
<i>In County Hospitals</i>	429	452	489	1370	456.7	\$5,033,101
<i>Out of County Hospitals</i>	152	141	139	432	144.0	\$3,241,567
Grand Total	581	593	628	1802	600.7	\$8,274,668

*Less Than 15, Cell Suppressed to Protect Patient Confidentiality

Source: OSHPD, 2007-09

The hospitals in Exhibit 3 are sorted by increasing number of average annual admissions for asthma, showing that Riverside County Regional Medical Center (RCRMC) and JFK Memorial Hospital had the highest average number of annual admissions, and that the number of admissions increased steadily at both facilities over the past 3 years. While the admission numbers at many hospitals were fairly small and subject to random fluctuation from year to year, the increasing trend at RCRMC and JFK provides evidence that children in the areas of Moreno Valley and the southern Coachella Valley may not be receiving the needed care to manage their asthma in the outpatient setting or adhering to asthma control regimens at home.

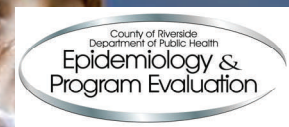
From The Desk Of —Consuela Edmond, Asthma Program Coordinator

Improving asthma symptoms and helping families gain control over their child’s asthma is the primary goal of the the Riverside County Department of Public Health’s Asthma Program. Using the data presented on the pages above allows us to focus our limited resources and work with community partners to help manage asthma more efficiently outside of the hospital setting. Although hospitalization rates were cut in half the past decade, we continue to work hard at our goals. The Childhood Asthma Program provides free asthma education to children 0-17 years of age and also to senior adults (ages 55 and older) who have been diagnosed with asthma. The free services include 1) asthma education (in-home or phone consultation), 2) allergen-proof mattress and pillowcase covers , 3) medication delivery devices (spacers), 4) peak flow meters, and 5) an environmental assessment, which produces a written plan to reduce asthma allergens and irritants in the home. For more information and to find out how to receive free asthma services, please call (951) 358-4977.

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8. Office of Statewide Health Planning and Development (OSHPD), Patient Discharge Data, 2007, 2008, 2009.



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