



Epi Monthly Report

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DADE COUNTY

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Emergency Department Utilization Due to Sports- and Recreation-Related Injuries among School-aged Children in Miami-Dade County, Florida, 2014

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BACKGROUND

While there are many childhood health benefits to sports and recreational participation, injuries may occur—injuries ranging from minor cuts and bruises to permanent spinal cord or traumatic brain injuries. According to the Centers for Disease Control and Prevention (CDC), more than 2.6 million children are treated annually in the emergency department (ED) for sports- and recreation-related injuries (SRIs).¹

A study from Micheli et al. identified improper technique, inadequate physical examinations, declining fitness levels of children, and lack of coaching education as risk factors associated with SRIs.² According to the Youth Risk Behavior Surveillance System (YRBSS), High School Youth Risk Behavior Survey from 2013, 23.3% of teens in Miami-Dade County were considered overweight or obese.³ In the past, children frequently engaged in physical activity; however, this type of play has since declined due to increasing participation in sedentary activities, including playing video games and watching television. As a result, a lack of physical fitness due to inactivity leaves children at a higher risk for sports injuries.⁴ Similarly, while the presence of trained coaches and physical trainers reduces the risk of SRIs, availability of these individuals for team sports is rare at the youth-sports level.⁵ This study aimed to explore the epidemiology of SRI-related ED visits among

school-aged (5–17) children in Miami-Dade County during 2014.

METHODS

ED data from 2014 were obtained from the Florida Agency for Health Care Admission (AHCA).⁶ ED data were coded according to the International Classification of Disease, Ninth Revision, Clinical Modification which describes an injury using primary diagnosis and external cause of injury codes (E-codes).⁷ The E-code provides information about the cause of injury and whether it was intentional or unintentional; only unintentional injury codes were included in this study. Percent of children living at poverty level and education attainment among adult population 25 years or older were downloaded from the U.S. Census Bureau, 2010-2014 American Community Survey 5-Year Estimates and linked to ED data by zip code.⁸

SRIs were defined as ED utilizations with the following unintentional injury E-codes: E849.4, E885.0, E885.1, E885.2, E885.3, E885.4, E886.0, E910.0, E910.1, E910.2, E917.0, E917.5, and E001-E010.⁷ Unique client IDs were used to identify repeat visits. Age, race/ethnicity, payment type, poverty, high school graduation, temporality (ED visit time), hospitalization, team sport, type of injury, and mechanism of injury were examined using SAS v9.3 and ArcGIS.^{9,10}

RESULTS

SRI-related ED Visits

A total of 5,678 school-aged children (aged 5 — 17) accounted for 10,872 ED visits due to SRIs in Miami-Dade County during 2014 (Figure 1).

Age

The mean age of children reporting SRIs was 12 years, with a median of 13 years. As child's age increased until the age of 16, the number of SRI-related ED visits increased, as well. This trend, however, reversed at age 16, at which point SRI-related ED visits steadily declined until age 18 (Figure 2).

Sex

Males were consistently more likely than females to be injured. This may have been due to higher participation in sports among males than females, thus, increasing exposure to potential injury.¹¹

Race/Ethnicity

Hispanic children accounted for 63.1% of the study population and 66.7% of SRI-related ED visits; Non-Hispanic White children, 14.2% of this population and 13.2% of visits; and Non-Hispanic Black children, 20.3% of this population and 15.9% of visits.

Peak visit times

SRI-related ED visits peaked between 5:00 PM and 8:00 PM regardless of the day of the week and most frequently occurred on Mondays.

Cost of SRI-related ED Visits

In 2014, the total cost of SRI-related ED visits was \$24,246,491. The median cost per visit was \$1,603 with a range of \$217 to \$62,019. Among SRI-related ED visits, 57.7% were covered by Medicaid, 31.1% covered by commercial or private insurance, and 4.7% were self-pay (Figure 3). Countywide Medicaid coverage among children in Miami-Dade County was estimated to be 47.3%, but coverage by zip code had an upper range of 94.3%.

Poverty

Among children in Miami-Dade County, 27.4% live in poverty, with a range of 0 to 61.8% by zip code (Figure 4). Children living in areas with poverty less than 30 percent accounted for 62.5 percent of SRI-related ED visits (Figure 5).

High School Graduation

Children living in areas with percent of adults over the age of 25 years who graduated from high school less 35 percent accounted for 75.9% of SRI-related ED visits.

Hospitalization

Less than one percent (0.74%) of SRI-related ED visits resulted in hospitalization.

Due to limitations in reporting of the hospitalization code, hospitalizations stratified by team sport were unable to be examined.

Type of Team Sport

According to Cheng et. al, it is estimated that 25 to 30 percent of sports injuries among youth occur in organized sports.¹² In Miami-Dade County, basketball accounted for 39.8% of all team sports-associated injuries, followed by football (26.5%), soccer (18.8%), and baseball (8.1%) (Table 1). Basketball and football were the team sports most frequently associated with SRI-related ED visits among males compared to volleyball for females.

Type of Injury

The most frequently reported natures of injury were fractures (30.9%), sprains and strains (29.7%), and superficial wounds (16.6%) (Table 1). There were 280 traumatic brain injuries of which 206 (73.5%) were sustained by males and 81 (28.9%) were associated with football.

Mechanism of Injury

The most commonly reported mechanisms of injury were "falls" and "struck by/against," which accounted for 34.3% and 29.5% of SRI-related ED visits, respectively (Table 1).

LIMITATIONS

The study identified several limitations in the available data on SRIs. The study underestimated the median cost of ED visits, as the numbers only reflected what was billed rather than the true amount paid for treatment or cost of service provision.¹³ Also, investigators were unable to identify which SRIs were school-sponsored activities versus outside recreational activities. This variable may provide insight regarding the level of risk associated with supervised vs. non-supervised team sports. In addition, investigators were unable to examine the distribution of the type of injury by team sport, and further examine hospitalizations related to TBIs.

DISCUSSION

Understanding the epidemiology of SRIs is the first step in developing prevention strategies. The results of this study indicate a need for targeted injury prevention education for parents and coaches of children in Miami-Dade County to decrease the incidence of SRIs.

According to the CDC, SRI injuries can be prevented by correctly and consistently wearing protective equipment (helmet, wrist guards, and knee or elbow pads).¹¹ Parents and coaches should encourage children to practice the old adage “practice makes perfect,” as children who learn and practice the necessary skills are better able to avoid injury while playing a sport.

Future research is necessary to identify rates of countywide team sport participation among school-aged children; determine which sports have the highest rates of injury; and examine level of SRI prevention knowledge among children, parents, and coaches who participate in team sports. In order to address these gaps in knowledge, we recommend the creation of additional E-codes to indicate the specific setting in which the injury took place (at school, home, etc).

Figure 1. SRI-related ED Visits per 100,000 among School-aged Children in Miami-Dade County, 2014 (Countywide = 2641.4)

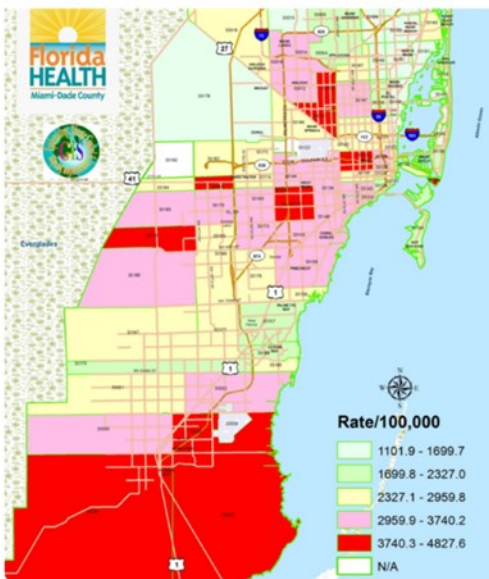


Figure 2. SRI-related ED Visits among School-aged Children by Age, Miami-Dade County, 2014

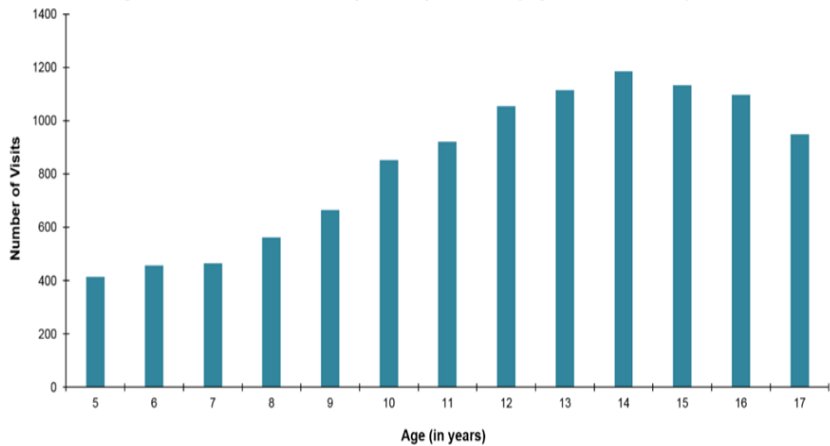


Figure 3. Payment Type for SRI-related ED Visits among School-aged Children in Miami-Dade County, 2014

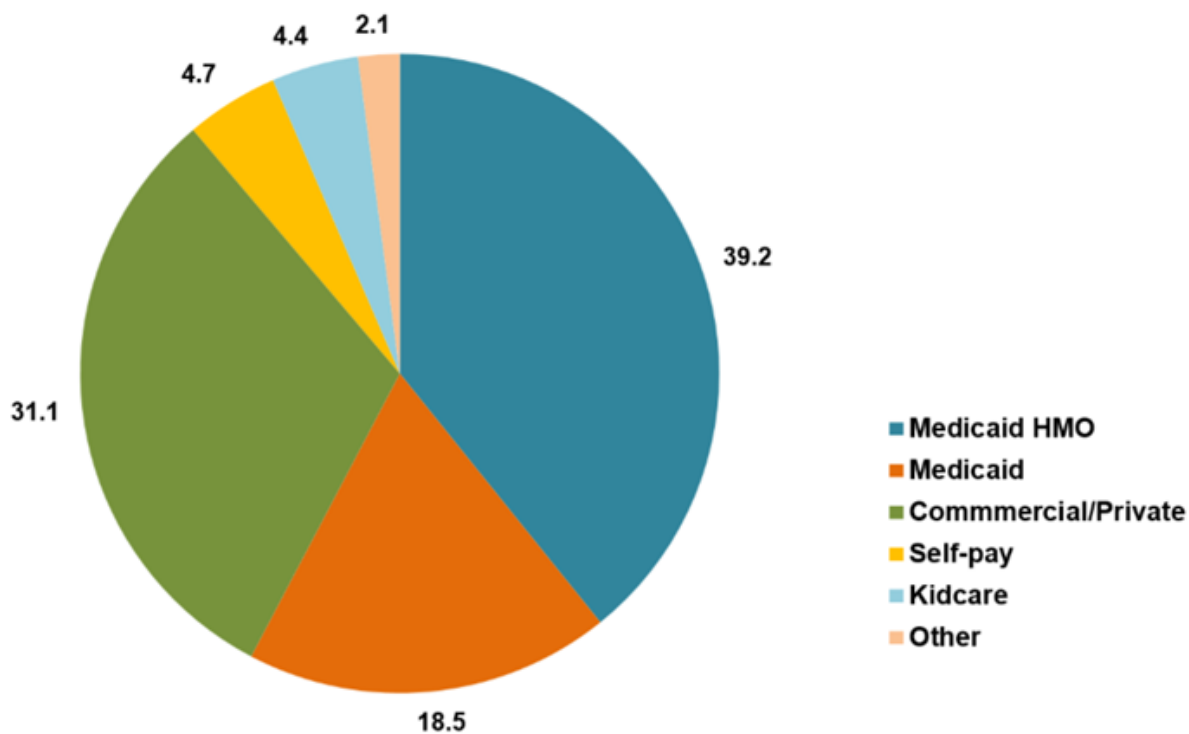


Figure 4. Percent of Poverty among Children under 18 Years of Age in Miami-Dade County, 2010-2014 (Countywide = 27.4)

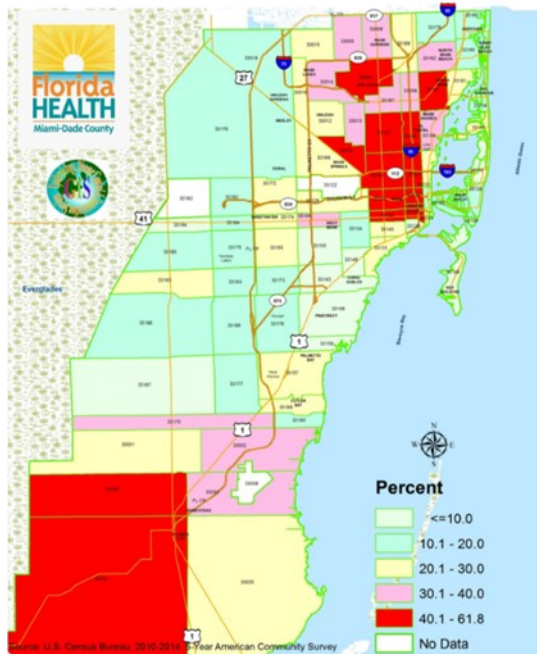


Figure 5. Percent of SRI-related ED Visits among School-aged Children by Poverty in Miami-Dade County, 2014

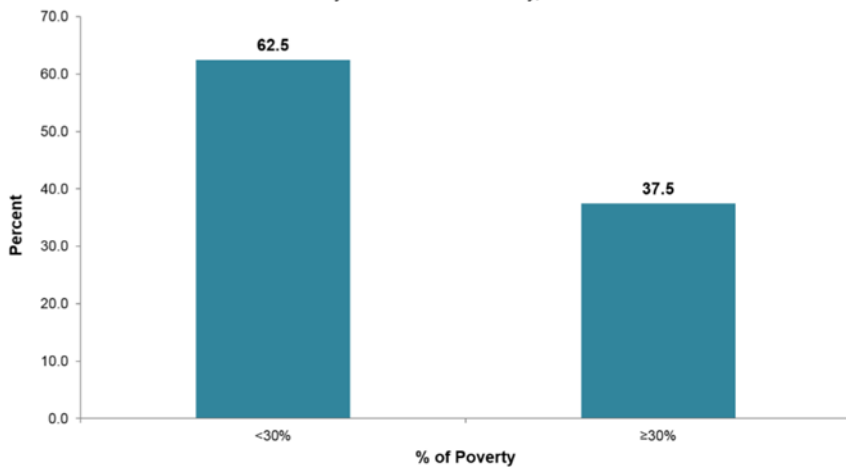


Table 1. Characteristics of SRI-related ED Visits among School-aged Children in Miami-Dade County, 2014

Characteristics	%
Type of Team Sport	
Basketball	39.81
Football	26.47
Soccer	18.82
Baseball	8.12
Volleyball	2.87
Other	3.9
Type of Injury	
Fracture	30.85
Sprains and strains	29.66
Superficial abrasions/contusions	16.63
Open wound	8.36
Other	14.5
Mechanism of Injury	
Falls	34.27
Struck by/against	30.97
Overexertion	14.98
Unknown	10.38
Other	9.42

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⁸ U.S. Census Bureau. "American FactFinder." 2010-2014 American Community Survey 5-year Estimates. N.p., n.d. Web. <<http://factfinder.census.gov/faces/nav/jsf/pages/searchresults.xhtml?refresh=t>>.

⁹ *SAS Version 9.3 (Windows)*. Chicago, IL: SAS Institute Inc., 2012. Computer software.

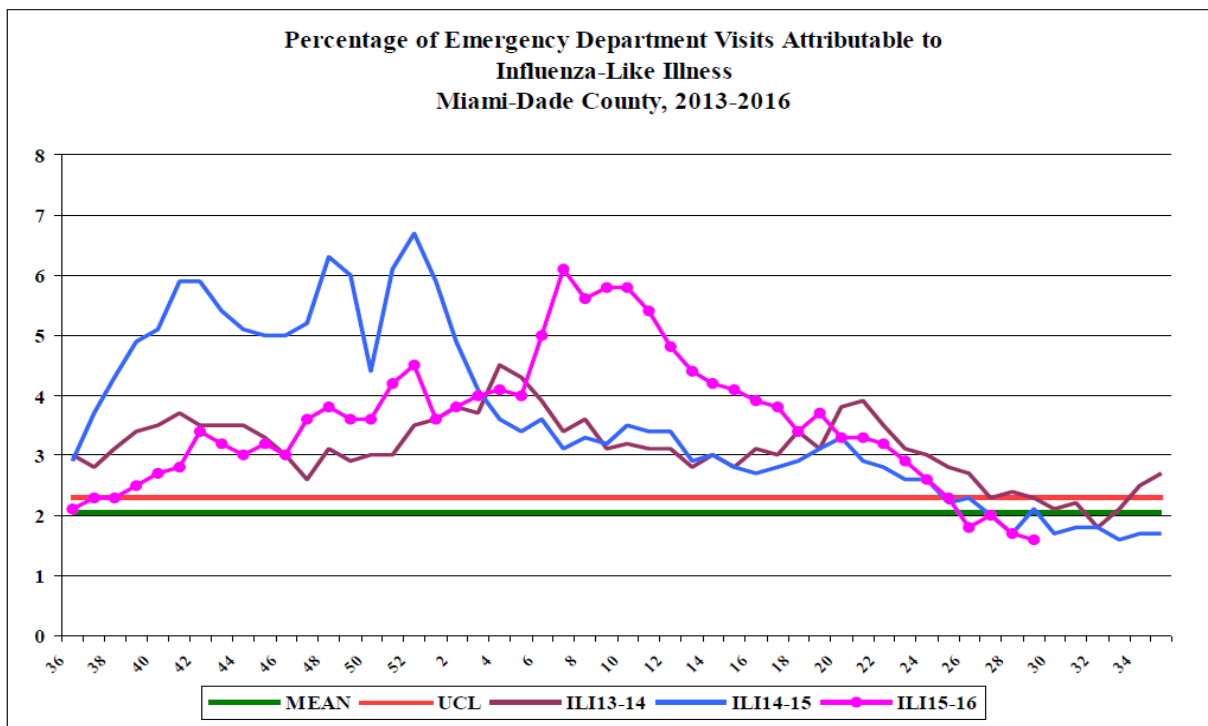
¹⁰ *ArcGIS*. Vers. 10.1. Redlands, CA: ESRI, 2012. Computer software.

¹¹ Centers for Disease Control and Prevention. "Nonfatal Traumatic Brain Injuries Related to Sports and Recreation Activities among Persons Aged <19 Years—United States, 2001—2009." *Morbidity and Mortality Weekly Report (MMWR)* 60.39 (2011). 1137-1342. Web.

¹² Hergenroeder, A. C. "Prevention of Sports Injuries." *Pediatrics* 101.6 (1998): 1057-1063. *AAP Gateway*. Web.

¹³ Hanson, H. R., W. J. Pomerantz, and M. Gittelman. "ED Utilization Trends in Sports-Related Traumatic Brain Injury." *Pediatrics* 132.4 (2013): E859-864. NCBI. Web.

Influenza-Like-Illness, All Age



During this period, there were 28,093 ED visits; among them 451 (1.6%) were ILI. At the same week of last year, 2.1% of ED visits were ILI.

**TO REPORT ANY DISEASE AND FOR INFORMATION CALL:
Epidemiology, Disease Control & Immunization Services**

- Childhood Lead Poisoning Prevention Program305-470-6877
- Hepatitis305-470-5536
- Immunizations or outbreaks305-470-5660
- HIV/AIDS Program305-470-6999
- STD Program305-575-5430**
- Tuberculosis Program305- 575-5415**
- Immunization Service305-470-5660
- To make an appointment.....786-845-0550

PARTICIPATE IN INFLUENZA SENTINEL PROVIDER SURVEILLANCE

Florida Department of Health in Miami-Dade County NEEDS Influenza Sentinel Providers!

Sentinel providers are key to the success of the Florida Department of Health’s Influenza Surveillance System. Data reported by sentinel providers gives a picture of the influenza virus and ILI activity in the U.S. and Florida which can be used to guide prevention and control activities, vaccine strain selection, and patient care.

- Providers of any specialty, in any type of practice, are eligible to be sentinel providers.
- Most providers report that it takes **less than 30 minutes a week** to compile and report data on the total number of patients seen and the number of patients seen with influenza-like illness.
- Sentinel providers can submit specimens from a subset of patients to the state laboratory for virus isolation **free of charge**.

For more information, please contact

About the Epi Monthly Report

The Epi Monthly Report is a publication of the Florida Department of Health in Miami-Dade County: Epidemiology, Disease Control & Immunization Services. The publication serves a primary audience of physicians, nurses, and public health professionals. Articles published in the Epi Monthly Report may focus on quantitative research and analysis, program updates, field investigations, or provider education. For more information or to submit an article, please contact Emily Moore at (305) 470-6918.



Miami-Dade County Monthly Report

Select Reportable Disease/Conditions

June 2016

Diseases/Conditions	2016 Current Month	2016 Year to Date	2015 Year to Date	2014 Year to Date
HIV/AIDS				
AIDS*	60	308	237	298
HIV	167	873	677	599
STD				
Infectious Syphilis*	29	221	152	169
Chlamydia*	1026	6192	4925	4821
Gonorrhea*	238	1406	903	993
TB				
Tuberculosis**	15	56	49	62
Epidemiology, Disease Control & Immunization Services				
Epidemiology				
Campylobacteriosis	33	145	324	179
Chikungunya Fever	0	0	10	0
Ciguatera Poisoning	0	0	5	9
Cryptosporidiosis	1	9	7	12
Cyclosporiasis	0	0	0	0
Dengue Fever	1	8	5	8
Escherichia coli, Shiga Toxin-Producing	1	4	9	8
Encephalitis, West Nile Virus	0	0	0	0
Giardiasis, Acute	13	119	78	106
Influenza Novel Strain	0	0	0	0
Influenza, Pediatric Death	0	0	0	1
Legionellosis	1	4	12	8
Leptospirosis	0	0	1	0
Listeriosis	0	4	0	2
Lyme disease	0	0	0	3
Malaria	0	2	1	3
Meningitis (except aseptic)	2	5	2	12
Meningococcal Disease	0	0	4	6
Salmonella serotype Typhi (Typhoid Fever)	1	1	2	1
Salmonellosis	75	263	256	239
Shigellosis	9	39	58	530
Streptococcus pneumoniae, Drug Resistant	0	2	0	35
Vibriosis	1	2	10	3
West Nile Fever	0	0	0	0
Immunization Preventable Diseases				
Measles	2	2	0	0
Mumps	0	2	3	0
Pertussis	4	14	11	16
Rubella	0	0	0	0
Tetanus	0	0	0	0
Varicella	4	44	25	24
Hepatitis				
Hepatitis A	3	15	17	15
Hepatitis B (Acute)	4	7	9	5
Healthy Homes				
Lead Poisoning	8	55	24	30

*Data is provisional at the county level and is subject to edit checks by state and federal agencies.

** Data on tuberculosis are provisional at the county level.