



Background

Firearms are a leading cause of injury morbidity and mortality in Los Angeles County. To monitor trends in firearm injuries, the Injury and Violence Prevention Program uses several sources to identify individuals with firearm-related injuries of differing levels of severity. This report discusses data for all non-fatal firearm injuries that were severe enough to require hospitalization.

While total lifetime costs are highest for fatal injuries, direct costs, those associated with medical care, are highest for non-fatal hospitalized injuries¹. To minimize the enormous human and financial toll that firearm injuries place on Los Angeles County, successful prevention programs must be developed. This report is designed to provide information useful to prevention programs – specifically the demographic characteristics of persons hospitalized for non-fatal firearm injuries.

Methods

Each year the Injury and Violence Prevention Program receives hospital discharge data from the Office of Statewide Health Planning and Development (OSHPD). The dataset includes records for every admission to non-federal acute care hospitals located in Los Angeles County and for Los Angeles County residents who were hospitalized elsewhere in the state. Since this report is intended to reflect the incidence of firearm injuries within Los Angeles, county residents who were hospitalized in an out-of-county facility are excluded from this report. In addition, patients who died after hospitalization are excluded to eliminate duplication of mortality data.

All records for injury-related admissions in the hospital discharge data are coded with the International Classification of Disease 9th Revision (ICD-9) e-codes. Firearm injuries were selected using the e-codes recommended by the CDC². The CDC categorizes injuries in two ways: by mechanism (i.e. firearm, fall, etc.) and by intent (homicide, suicide, unintentional, undetermined, and other). All rates are calculated using Los Angeles County population data estimates based on the 1990 US Census. The 1980 California population was used as a standard to calculate age-adjusted rates. All rates are reported per 100,000 population.

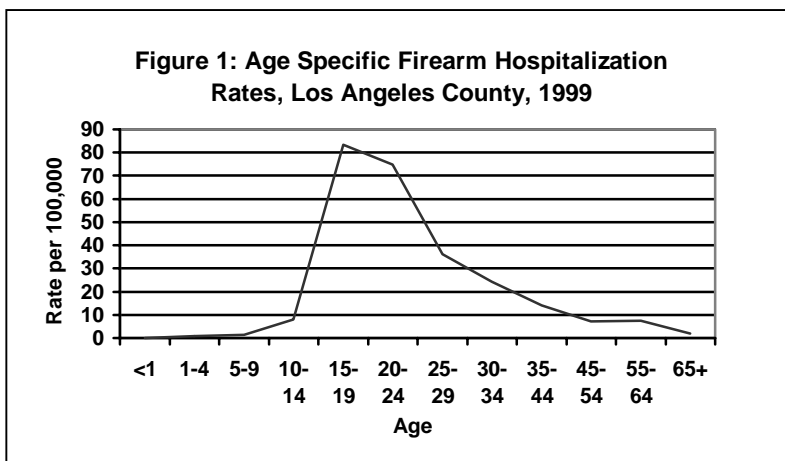
Results

There were 1,995 hospital discharges for non-fatal firearm injuries in Los Angeles County during 1999. Most of the patients were male (91%), Hispanic (54%) or African American (29%), and young (average age of 26 years). Over half (56%) of all patients were discharged from one of three facilities – LAC+USC Medical Center, Martin Luther King/Drew Medical Center, and Harbor/UCLA Medical Center. The total charges for treating these patients was more than \$69 million, an average of \$34,800 per hospitalization.

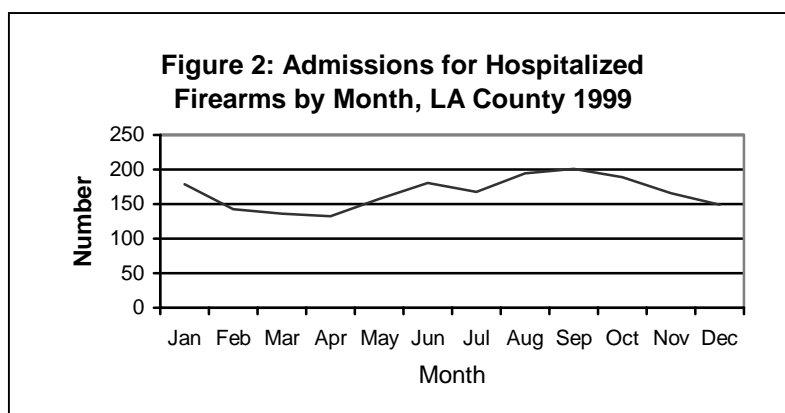
The majority (82%) of patients were hospitalized for assaults. Unintentional injuries (11%) and suicide attempts (4%) caused most of the rest of the hospitalizations, while injuries of undetermined intent (2%) or due to legal intervention (1%) contributed only a small number. Over 80% of all firearm hospitalizations among African Americans and Hispanics and 77% among Asians/Others were caused by assaults. However, only 55% of firearm hospitalizations among Caucasians were attributed to assaults. Unintentional injuries and suicides accounted for 20% and 18%, respectively, of hospitalizations among Caucasians, the highest percentages of any racial/ethnic group. While there were almost twice as many Hispanics as African Americans hospitalized, the rate of hospitalization among African Americans (78/100,000) was almost three times higher than the rate among Hispanics (27/100,000). African Americans have the highest firearm hospitalization rates of any racial/ethnic group for injuries of every intent.

The average age of patients hospitalized for suicide attempts (42 years) was considerably higher than that for assaults (25 years) or unintentional injuries (26 years). Intentionally self-inflicted injuries tend to be more severe, so the average charges for treating suicide attempts (\$51,516) were much greater than the average charges for assaults (\$34,761) or unintentional injuries (\$32,123).

The average age of all patients was 26, but hospitalization rates peaked among 15-24 year olds. Age specific rates for 15-19 and 20-24 year olds were more than twice as high as the rates for any other age group (Figure 1). This pattern held true for unintentional injuries and assaults separately, but not for suicide attempts, where the highest rates were among 25-29 and 45-54 year olds.



The fewest number of firearm injuries occurred during March (136) and April (132), and the greatest number during September (201). The number of firearm admissions in each month is shown in Figure 2. More firearm injuries were admitted on Sundays (404) and Saturdays (375) than during any weekday.



Overall, 39% of firearm injury admissions occurred on weekends.

Firearm injuries are not distributed evenly throughout the county. Hospital discharge data does not include information about location where the injury occurred; however, it does include the zipcode of the patient's residence. 1,795 (90%) of the patients hospitalized in Los Angeles County facilities also lived in the county. Of these, over one third lived in Service Planning Area (SPA) 6 (South). The rate of firearm hospitalizations among SPA 6 residents was over twice that of SPA 8 (South Bay), which had the next highest rate, and more than 9 times the rate of SPA 1 (Antelope Valley), which had the lowest rate of firearm hospitalizations (Table 1).

SPA	SPA Name	Number	Rate/100,000
1	Antelope Valley	22	7.3
2	San Fernando	185	12.0
3	San Gabriel	137	9.0
4	Metro	258	23.1
5	West	41	9.0
6	South	612	67.2
7	East	216	18.8
8	South Bay	322	25.9

Due to cases occurring in zip codes that cross SPA boundaries, the sum of hospitalizations by SPA does not equal the total number for the county.

Discussion

This report shows that non-fatal firearm injuries that require hospitalization are a major burden on Los Angeles County, disproportionately affecting young men of color. However, firearm injuries that result in hospitalization are just the tip of the iceberg. In 1999, there were also 1,004 firearm-related fatalities, 2,412 Emergency Medical Service responses for firearm injuries, and 2,083 firearm-related emergency department visits to five public hospitals. Approximately 48%, or about 1,000 of the emergency department visits did not result in hospitalization, so the ratio of fatal to non-fatal firearm injuries is about 1 to 3. This is much higher the ratio of 1 to 1.3 reported for the state of California by the CDC³. This emphasizes the importance of examining non-fatal injury data when designing firearm injury prevention programs for Los Angeles County.

Commonly reported injury modes vary by the severity of injury. Mortality data is a poor source for information about unintentional firearm injuries, of which only 10% are fatal. Conversely, hospitalization data on suicides/suicide attempts are not useful, because 90% of intentionally self-inflicted firearm injuries result in death³. There are clear differences in the demographics of patients suffering from intentional and unintentional injuries. Of persons hospitalized for firearm injuries, 11% were unintentional and 4% were suicide attempts. However among Caucasians, 20% of firearm hospitalizations were for unintentional injuries and 18% were for suicide attempts. The percent of injuries classified as assaults varied from 55% among Caucasians to 77% among Asians/Others, and 86% among both Hispanics and African Americans. The age of the patients also varied significantly with the intent of injury. The mean age was between 25 and 27 years for unintentional injuries, assaults, and injuries of undetermined intent, but was 42 years for suicide attempts. Since suicides make up a larger percentage of

Caucasian hospitalizations than for any other racial/ethnic group, the average age of Caucasian patients (34 years) is higher than that of African Americans (27 years), Asians/Others (25 years), or Hispanics (24 years).

The financial burden of caring for victims of firearm injuries largely falls to Los Angeles County. The County's Department of Health Services (DHS) has six hospitals, three of which have level 1 trauma centers; these three facilities accounted for over half of all discharges for firearm-related injuries. A population-based study of firearm-related hospital discharges in California found that only 25% of patients had private insurance⁴. However, only 17% of all patients hospitalized in Los Angeles County for non fatal firearm injuries had private insurance and fewer than 9% of patients hospitalized at one of the 6 DHS hospitals had private insurance.

This clearly demonstrates the importance of using data representing a wide variety of injury severity to examine the total impact of firearm injuries on a population. The Injury and Violence Prevention Program will continue to monitor hospital discharge data as well as numerous other data sources to gain a full picture of firearm injuries in Los Angeles County.

References

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4. Vassar MJ, Kizer KW. Hospitalizations for firearm-related injuries. A population-based study of 9562 patients. JAMA, 1996 Jun 12;275(22):1734-9.