

**Firearm and BB/Pellet Gun Injuries—A Comparison from New Mexico’s
Emergency Department Surveillance System**

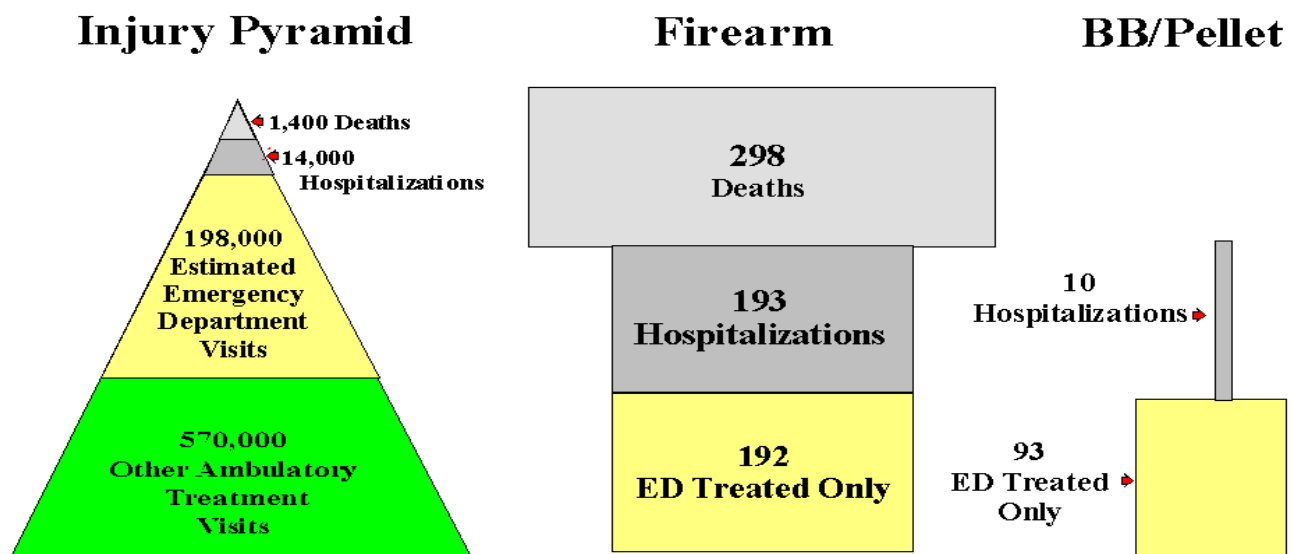
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Introduction

Guns injured approximately 856 persons in New Mexico in 2002. This number is based on 558 persons presenting to New Mexico’s hospital emergency departments (ED) for non-fatal gun-related injuries plus 298 fatalities derived from death certificate data. Injuries were from two types of guns: firearm, defined as a weapon that uses gun powder to propel a bullet or shot cartridge through a barrel, and BB/Pellet, defined as a weapon that uses air to propel BB or pellet ammunition.

Data from the Emergency Department-New Mexico Firearm Injury Surveillance System (ED-NMFISS) provides a more complete description of the impact of injuries from guns in this state. Based on the literature for firearm injuries, it had been expected that New Mexico would have about 600 non-fatal firearm injuries annually^{1,2}. For 2002, ED-NMFISS documented 420 non-fatal firearm injuries.

Figure 1. Outcomes of All Injuries and Gun-Related Injuries in New Mexico Residents



Sources: Office of Epidemiology, NMDOH, ED-NMFISS, 2002
Office of New Mexico Vital Records & Health Statistics, NMDOH, 2002

Methods

After two years of development the ED-NMFISS has become well established in New Mexico's hospital Emergency Departments (ED). In 2002, ED-NMFISS received reports for the full year from the EDs in all non-federal hospitals and reports from a few Indian Health Service (IHS) EDs. Based on this level of completeness, 2002 is being designated as the baseline year for tracking future trends.

In January 2000, firearm injury became a reportable condition to the NM Department of Health, and ED-NMFISS was started. For the purposes of ED-NMFISS reporting, the EDs submit a data form for every injury visit that involved a gun or gun-like instrument (e.g. paintball and taser guns).

Discharge status is the basic health outcome measure for an ED visit. To identify the endpoint of ED treatment for gun injury cases, the discharge status from the last ED that provided service was used. To describe gun injury outcomes more completely, all 298 firearm injury deaths for year 2002 were included and not only those deaths documented in the EDs.

Results

The three areas covered in this report are: 1) outcome of the gun injury with respect to death or level of hospital-based medical treatment, 2) gun type, and 3) age of the injured person.

Of New Mexico's 856 gun-related injury cases in 2002, all 298 deaths were due to firearms. The 558 non-fatal injuries were due to the following gun types: 420 firearm, 103 BB/Pellet, and 35 other and unknown gun types.

Firearms. Of the 683 firearm injury cases, 298 (43.6 %) were fatal; of the remaining, 193 firearm injury cases were hospitalized, 192 firearm injury cases were treated and released from an ED (Figure 1), and 35 firearm injury

cases were transferred to another hospital or left against medical advice. For each firearm injury death there were 1.4 non-fatal firearm injuries.

BB/Pellet Guns. All 103 of these injury cases were nonfatal, and 90.1% were treated in the ED and released (Figure 1).

Age. Differences between firearms and BB/Pellet guns were clarified by examining the age-specific rates for injured persons (Figure 2). The BB/Pellet rate was highest for 10-14 year olds at 27.8/100,000 population, which was twice the non-fatal firearm injury rate (12.2/100,000) for this age group. In contrast, persons in the 15-34 year age group had the highest rates of both non-fatal firearm injury cases and deaths. The non-fatal firearm injury rate peaked at 94.0/100,000 among the 20-24 year age group. The 25-34 year age group had the highest firearm injury death rate.

Comparing the numbers of fatal and non-fatal firearm injuries results in a case fatality rate. In general, firearm injury case fatality rates in NM increase with age with the lowest case fatality rate among children less than 15 years of age and the highest, at 85% of cases, among the 65 years and older age group. This high case fatality rate is likely due to suicide. The one exception to increasing case fatality rates with age was among the 20-24 year age group at 19%, which was lower than the rate for the 15-19 year age group (24%).

Discussion

The traditional model for the distribution of injury outcomes is a pyramid (left diagram in Figure 1). For most injuries the number of cases increases as the severity decreases; thus for each death, 10 injury hospitalizations and an estimated 141 ED visits occur. For gun injuries the distributions differ markedly. Firearm injuries are distributed in a "T" shape (center diagram in Figure 1). This pattern underscores a) the lethality of firearms, b) the similarity in numbers of hospitalizations and ED visits, and

c) the fact that 1.4 persons survive a firearm injury for each one person that dies.

Equally interesting is the contribution of BB/Pellet guns. They are characterized in the third “shovel-shaped” model (right diagram in Figure 1). The impact of BB/Pellet gun injuries has often been masked by use of firearm injury deaths to describe the patterns of gun injuries, a situation resulting from the lack of availability of information on non-fatal injuries. Combining BB/Pellet injuries with the firearm cases increases the number of gun injuries treated in the ED by 21.1%.

Several questions deserving further study emerged, including “Are persons associated with a BB/Pellet injury associated, later in life, with a firearm injury?” and, if so, “By intervening with respect to BB/Pellet injuries can we prevent firearm injuries?” The ED-NMFISS is not designed to answer these questions but does identify such issues and monitor changes in the pattern of gun injuries in New Mexico.

Summary

- The ED-NMFISS system is collecting data from gun-related injury cases from all non-federal hospital Emergency Departments as of 2002; partial participation of Indian Health Service EDs has begun.
- Non-fatal firearm and BB/Pellet gun injuries combined accounted for almost two-thirds of gun injury cases.
- BB/Pellet gun injuries were most commonly seen among children 10-14 years of age who had the peak rate of 27.8/100,000.
- Among adults 65 years and older, there were 6 firearm injury deaths for every non-fatal firearm injury.

For copies of the full 2002 ED-NMFISS annual report contact Isaac Romero at (505) 827-2694 or email: isaacr@doh.state.nm.us at the Injury Epidemiology Unit, Office of Epidemiology, New Mexico Department of Health.

References

1. Gotsch KE, Annett JL, Mercy JA, and Ryan GW. Surveillance for Fatal and Nonfatal Firearm-Related Injuries—United States, 1993-1998. In: *Surveillance Summaries*, April 13, 2001. MMWR 2001;50(No. SS-2):9.
2. Wadman MC, Muelleman RL, Coto JA, and Kellerman AL. The Pyramid of Injury: Burden of Injury: Using Ecodes to Accurately Describe the Burden of Injury. *Ann Emerg Med.* 2003;42:468-478.

Volume 2004, Number 2

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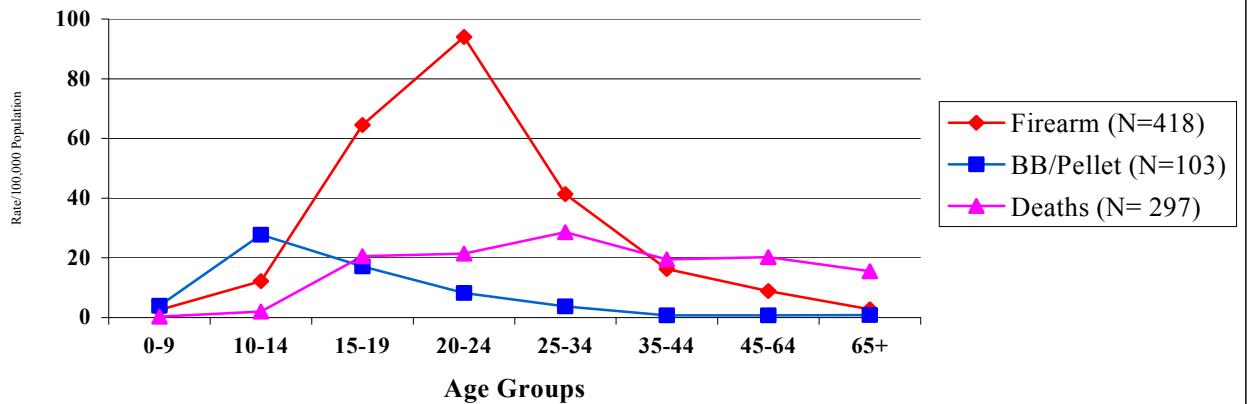
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The *New Mexico Epidemiology Report* (ISSN No. 87504642) is published monthly, free of charge, by the Office of Epidemiology, Public Health Division, New Mexico Department of Health, 1190 St Francis Drive, PO Box 26110, Santa Fe, NM 87502

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**Figure 2. Gun-Related Injury ED Visits and Deaths by Age
New Mexico, 2002**



Note: Non-fatal firearm injury includes transfer and left against medical advice discharges
All deaths are from firearms.

Sources: Emergency Department-NM Firearm Injury Surveillance System (ED-NMFISS),
Office of Epidemiology, NMDOH

