Study finds increase in severity of firearm injuries, in-hospital fatality rate

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In a study appearing in the June 14 issue of *JAMA*, Angela Sauaia, M.D., Ph.D., of the University of Colorado Anschutz Medical Campus, Aurora, and colleagues examined patterns of gunshot wound-associated severity and mortality at a Colorado urban trauma center.

Death rates provide an incomplete picture of the effect of firearm injuries. To devise appropriate prevention efforts, investigations of the severity and prognosis of both fatal and nonfatal gunshot wounds (GSW) are pivotal, yet they remain scarce. For this study, the researchers examined the state-mandated trauma registry of a level 1 trauma center (Denver Health Medical Center, DHMC) for data on injuries, cause, and severity for all patients who died in the hospital, were hospitalized, or required more than 12-hour observation from 2000 to 2013. Throughout this period, the DHMC catchment area was Denver County. To assess injury deaths at the scene (vs in-hospital), the authors obtained all Denver County records of trauma deaths during the same period.

From 2000 to 2013, 28,948 patients presented to the DHMC with injuries due to GSWs (6 percent), stabbings (6 percent), pedestrian accidents (7 percent), assaults (9 percent), falls (24 percent), motor vehicle crashes (26 percent), and other mechanisms (22 percent). Of these, 5.4 percent died. The proportions of DHMC injury admissions due to GSWs, stabbings, and assaults remained stable from 2000 to 2013, whereas falls increased and motor vehicle crashes decreased over time. Adjusted in-hospital case-fatality rates for GSWs at the DHMC significantly increased and the probability of trauma survival decreased.

All other mechanisms presented stable or opposite trends for deaths and survival probability. Over time, more GSW patients had a high score on a measure of injury severity, and the number of severe GSWs per patient increased significantly.

The authors note that this single trauma center study has limited generalizability.

"Firearm in-hospital case-fatality rates increased, contrary to every other trauma mechanism, attributable to the rising severity and number of injuries," the researchers write. "A renewed attention to research and policy are needed to decrease the morbidity and mortality of GSWs."

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