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Police Use of Force, Tasers and Other Less-Lethal Weapons

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This Research in Brief is based primarily on "A Multi-Method Evaluation of Police Use of Force Outcomes," final report to the National Institute of Justice, July 2010, NCJ 231176, available online at http://www.ncjrs.gov/pdffiles1/nij/grants/231176.pdf.

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ABOUT THIS REPORT

This study looked at injuries that occur to law enforcement officers and citizens during use-of-force events. Most applications of force are minimal, with officers using their hands, arms or bodies to push or pull against a suspect to gain control. Officers are also trained to use various other force techniques and weapons to overcome resistance. These include less-lethal weapons such as pepper spray, batons or conducted energy devices (CEDs) such as Tasers. They can also use firearms to defend themselves or others against threats of death or serious bodily injuries.

What did the researchers find?

This study found that when officers used force, injury rates to citizens ranged from 17 to 64 percent, depending on the agency, while officer injury rates ranged from 10 to 20 percent. Most injuries involve minor bruises, strains and abrasions.

The study's most significant finding is that, while results were not uniform across all agencies, the use of pepper spray and CEDs can significantly reduce injuries to suspects and the use of CEDs can decrease injuries to officers.

The researchers assert that all injuries must be taken seriously. When police in a democracy use force and injury results, concern about police abuse arises, lawsuits often follow and the reputation of the police is threatened. Injuries also cost money in medical bills for indigent suspects, workers' compensation claims for injured officers or damages paid out in legal settlements or judgments.

What were the study's limitations?

In many cases, agency-supplied injury data did not allow for a detailed analysis of the nature or seriousness of the injuries reported.

Geoffrey P. Alpert, Michael R. Smith, Robert J. Kaminski, Lorie A. Fridell, John MacDonald, and Bruce Kubu

Police Use of Force, Tasers and Other Less-Lethal Weapons

Introduction

Police weaponry has come full circle.

During the middle of the 19th century, police officers in New York and Boston relied on less-lethal weapons, mostly wooden clubs. By late in the century, police departments began issuing firearms to officers in response to better armed criminals. Although firearms are still standard issue, law enforcement agencies are again stressing the use of less-lethal weapons rather than firearms.[1]

The Fourth Amendment forbids unreasonable searches and seizures, and various other legal and policy controls govern how and when officers can use force. Most agencies tightly control the use of force and supervisors or internal affairs units routinely review serious incidents. New technologies have added to the concerns about the use of force by law enforcement.

New technologies raise questions

During the past 20 years, new technologies have emerged that offer the promise of more effective control over resistive suspects with fewer or less serious injuries. Pepper spray was among the first of these newer less-lethal weapons to achieve widespread adoption by police forces, and more recently, conducted energy devices (CEDs) such as the Taser have become popular.

Taser use has increased in recent years. More than 15,000 law enforcement and military agencies use them. Tasers have caused controversy (as did pepper spray) and have been associated with in-custody deaths and allegations of overuse and intentional abuse. Organizations such as Amnesty International and the American Civil Liberties Union have questioned whether Tasers can be used safely, and what role their use plays in injuries and in-custody deaths.

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Several studies found that when agencies adopted the use of pepper spray, they subsequently had large declines in assaults on officers and declines in officer and suspect injury rates, and associated injuries were usually minor. Pepper spray provides a way to reduce injuries.

CEDs such as Tasers produce 50,000 volts of electricity. The electricity stuns and temporarily disables people by causing involuntary muscle contractions. This makes people easier to arrest or subdue. When CEDs cause involuntary muscle contractions, the contractions cause people to fall. Some people have experienced serious head injuries or bone breaks from the falls, and at least six deaths have occurred because of head injuries suffered during falls following CED exposure. More than 200 Americans have died after being shocked by Tasers. Some were normal, healthy adults; others were chemically dependent or had heart disease or mental illness.[2]

Tasers use compressed nitrogen to fire two barbed probes (which are sometimes called darts) at suspects. Electricity travels along thin wires attached to the probes. (A new wireless Taser is also on the market.) Darts may cause puncture wounds or burns. A puncture wound to the eye could cause blindness.[3]

Despite the dangers, most CED shocks produce no serious injuries. A study by Wake Forest University researchers found that 99.7 percent of people who were shocked by CEDs suffered no injuries or minor injuries only. A small number suffered significant and potentially lethal injuries.

This NIJ-sponsored study included six police departments and evaluated the results of 962 "real world" CED uses. Skin punctures from CED probes were common, accounting for 83 percent of mild injuries.[4]

Policymakers and law enforcement officials want to know whether Tasers are safe and effective, and how (if at all) they should be used to match police use-of-force choices with levels of suspect resistance. This study indicates that CED use actually decreases the likelihood of suspect injury.

Previous research on use of force and injuries

The controversy around Taser use is not unique. Law enforcement agencies found themselves in similar circumstances with pepper spray in the 1990s. Human rights groups such as Amnesty International questioned the safety and misuse of pepper spray as its use spread rapidly in American law enforcement agencies. NIJ

funded various studies on the safety and effectiveness of pepper spray.[5]

Some studies have focused on officer injury. Several found that about 10 percent of officers were injured when force was used.[6] However, two studies of major police departments found officer injury rates of 38 and 25 percent.[7] The agencies with lower rates allowed officers to use pepper spray, while the two with higher rates did not.

A few researchers have looked at how various approaches to force affect officer injury rates.[8] Overall, the empirical evidence shows that getting close to suspects to use hands-on tactics increases the likelihood of officer injuries. Research also shows that suspects have a higher likelihood of injury when officers use canines, bodily force or impact weapons such as batons. Alternatives to bodily force and impact weapons are found in other less-lethal weapons such as pepper spray and CEDs.

Previous studies on pepper spray and CEDs

Pepper spray. Law enforcement agencies rapidly adopted pepper spray in the late 1980s and early 1990s as an alternative to traditional chemical agents such as tear gas, but its use sparked controversy. Notably, the American Civil Liberties Union of Southern California asserted that pepper spray was causing in-custody deaths. NIJ studies on the link between pepper spray and in-custody deaths found that the deaths were largely a result of positional asphyxia, pre-existing health conditions or were drug related.[9]

Several studies found that when agencies adopted the use of pepper spray, they subsequently had large declines in assaults on officers and declines in officer and suspect injury rates, and associated injuries were usually minor.[10] Pepper spray provides a way to reduce injuries.

CEDs. Many law enforcement agencies noted that injury rates for officers and suspects declined after they introduced CEDs.[11]

Medical research, including controlled animal trials and controlled human trials, has produced various insights. Some animal studies were conducted to learn if CED

use could result in ventricular fibrillation. Several studies showed that standard shocks that lasted five to 15 seconds did not induce ventricular fibrillation of the heart. Higher discharges, 15 to 20 times the standard, or those of longer duration — two 40-second exposures — induced fibrillation or increased heart rhythm in some pigs. In addition, longer exposures led to ventricular fibrillation-induced death in three pigs.[12]

Controlled studies involving healthy human subjects (often law enforcement trainees) found that subjects experienced significant increases in heart rates following exposure, but none experienced ventricular fibrillation.[13]

NIJ study and recommendations

NIJ gathered an expert panel of medical professionals to study in-custody deaths related to CEDs. In its report, the panel said that while CED use is not risk free, there is no clear medical evidence that shows a high risk of serious injury or death from the direct effects of CEDs. Field experience with CED use shows that exposure is usually safe. Therefore, law enforcement agencies need not avoid using CEDs provided they are used in line with accepted national guidelines.[14]

A preliminary review of deaths following CED exposure found that many are associated with continuous or repeated shocks. There may be circumstances in which repeated or continuous exposure is required, but law enforcement officers should be aware that the associated risks are unknown. Therefore, caution is urged in using multiple activations.[15]

The seeming safety margins of CED use on normal healthy adults may not be applicable to small children, those with diseased hearts, the elderly, those who are pregnant and other at-risk people. The use of CEDs against these populations (when recognized) should be avoided, but may be necessary if conditions exclude other reasonable choices.[16]

A suspect's underlying medical conditions may be responsible for behavior that leads law enforcement officers to subdue him or her. Sometimes this includes CED use. Abnormal mental status in a combative or resistive subject, sometimes called

"excited delirium," may be associated with a risk for sudden death. This should be treated as a medical emergency.[17]

The national survey

The Police Executive Research Forum conducted a survey of state, county and municipal law enforcement agencies to learn more about less-lethal technologies and related policies and training. More than 500 agencies participated.

Most agencies have a "use-of-force continuum" that is covered in training, where officers learn to use suitable force levels depending on circumstances. For example, an officer might start by using verbal commands when dealing with a suspect. Then an officer might move to soft empty-hand tactics (such as pushing) when faced with lack of cooperation or mild resistance. The continuum covers various circumstances up to the use of firearms.

The survey included various levels of resistance and asked agencies to describe what force they allow in each. Most agencies allow only soft tactics against a subject who refuses, without physical force, to comply with commands. Just under half allow officers to use chemical weapons at that point. However, if the subject tensed and pulled when an officer tried to handcuff him or her, most agencies would allow chemical agents and hard empty-hand tactics, such as punching. Many also allow for CED use at this point but about 40 percent do not. Almost three-fourths allow CED use if the suspect flees, and almost all allow it when the subject assumes a boxer's stance. Most agencies do not allow baton use until the subject threatens the officer by assuming the boxer's stance.

Three-fourths of the surveyed agencies that use CEDs issued them between 2004 and 2006. Most are using Tasers. In most agencies, officers receive four or six hours of training, and 63.7 percent of agencies require that officers experience activation (i.e., get shocked) during training.

Most agencies do not allow CED use against a subject who nonviolently refuses to comply with commands. However, six in 10 allow for CED use against a subject who tenses and pulls when the officer tries to handcuff him or her. Agencies usually

The seeming safety margins of CED use on normal healthy adults may not be applicable to small children, those with diseased hearts, the elderly, those who are pregnant and other at-risk people. The use of CEDs against these populations (when recognized) should be avoided but may be necessary if conditions exclude other reasonable choices.

place the CED with chemical agents in their force continuum, meaning that their use is typically approved in the same circumstances in which pepper spray use is allowed. CEDs are usually lower on the continuum than impact weapons.

One facet of the controversy surrounding CED use concerns vulnerable populations and circumstances that pose potentially heightened risk to the subject. For only one circumstance — when a subject is near flammable substances — do most agencies (69.6 percent) ban CED use.

Some 31 percent forbid CED use against clearly pregnant women, 25.9 percent against drivers of moving vehicles, 23.3 percent against handcuffed suspects, 23.2 percent against people in elevated areas and 10 percent against the elderly. However, many agencies, while not forbidding use in these circumstances, do restrict CED use except in necessary, special circumstances.

Analysis of information from specific law enforcement agencies

Looking at the experiences of specific agencies can yield important information that might otherwise be lost in larger analyses. The researchers used various statistical techniques to identify factors that increase or decrease the odds of injury to officers and suspects alike.

Richland County Sheriff's Department. The Richland County Sheriff's Department (RCSD) includes about 475 sworn officers who serve the unincorporated portions of Richland County, S.C. Deputies carry Glock .40 caliber pistols, collapsible metal batons and pepper spray. Increasingly, they also carry the model X-26 Taser. The agency started phasing in Taser use in late 2004. During data collection, about 60 percent of deputies carried Tasers.

Researchers coded 467 use-of-force reports covering the period from January 2005 to July 2006. Of the 49 separate injuries recorded for officers (three officers had more than one injury), 46 involved bruises, abrasions or cuts. The department recorded 92

suspect injuries; 69 of those were bruises, abrasions or cuts. Most of the remaining suspect injuries were dog bites, but three involved broken bones or internal injuries.

Further analysis of the data included identifying how various factors increased or decreased the risk of injury to officers or suspects. The use of soft empty-hand techniques by an officer, active aggression by a suspect and suspect use of deadly force all increased the risk for deputies.

Soft empty-hand control was the most frequent force level used by deputies, occurring in 59 percent of all use-of-force incidents. These techniques increased the odds of officer injury by 160 percent. Thus, deputies were at greatest risk for injury when using the least force possible.

Two variables significantly decreased the risk for suspects. Pepper spray use decreased the odds of suspect injury by almost 70 percent, and a deputy aiming a gun at a suspect reduced injury odds by more than 80 percent (because the act of pointing a gun alone often effectively ends the suspect's resistance).

However, the use of a canine posed, by far, the greatest injury risk to suspects, increasing injury odds by almost 40 fold. Suspects who displayed active aggression toward deputies were also more likely to suffer injuries. CED use had no effect on the likelihood of injury; this is inconsistent with the experiences of other agencies, suggesting that not every agency's experience with the Taser will be the same.

Miami-Dade Police Department. The department has about 3,000 officers, is the largest law enforcement agency in the Southeast and is one of the largest departments that has never issued pepper spray to its officers.[18]

The researchers examined 762 use-of-force incidents involving a lone officer and a lone suspect that occurred between January 2002 and May 2006. About 70 percent of the officers carried Tasers by May 2006. Officers were substantially less likely to be injured than suspects, with 16.6 percent (124) of officers injured and 56.3 percent (414) of suspects injured. Most injuries were minor, but 73 suspects (17 percent)

suffered serious injuries. Minor injuries included bruises, sprains and lacerations. Major injuries included bites, punctures, broken bones, internal injuries and gunshot wounds.

The department does not issue pepper spray to its line officers, and there were few incidents involving guns or batons. Analysis of the incidents found that the use of both soft-hand tactics and hard-hand tactics by officers more than doubled the odds of officer injury. Conversely, CED use was associated with a 68-percent reduction in the odds of officer injury.

As for suspects, hands-on tactics increased the odds of injury, the use of canines greatly increased the odds and CED use substantially decreased the odds.

Seattle Police Department. The Seattle Police Department has about 1,200 sworn officers. The agency started using Tasers in December 2000. Other less-lethal weapons include pepper spray, batons and shotgun beanbag rounds. The department recorded 676 use-of-force incidents between Dec. 1, 2005, and Oct. 7, 2006. Suspects suffered injuries in 64 percent of the incidents, while officers suffered injuries in 20 percent of the incidents. Officers used hands-on tactics in 76 percent of the incidents. The next most frequent type of force officers used was the Taser (36 percent), followed by pepper spray (8 percent).

Suspects were impaired by alcohol, drugs or mental illness in 76 percent of the incidents. Just over half (52 percent) of the suspects were nonwhite, and 95 percent were male. Analysis of the data revealed that Taser use was associated with a 48-percent decrease in the odds of suspect injury but did not affect officer injury.

The use of unarmed tactics by officers increased the odds of officer injury 258 percent. The odds of officer injury increased significantly when suspects resisted using physical force or the use or threat of use of a weapon.

Although results were not uniform across the agencies, the analysis shows that the use of pepper spray and CEDs can have a significant and positive injury-reduction effect.

Interestingly, nonwhite suspects were less likely to be injured than whites in both

agencies (Miami and Seattle) where suspects' race was available as a variable for analysis. Another important finding concerns the use of canines. While canines were used rarely, their use substantially increased the risk of injury to suspects in two of the agencies.

Combined agency analysis and its limitations

The researchers also conducted a combined analysis of use-of-force data from 12 large local law enforcement agencies.[19] The full report gives a detailed description of the information available and the limits of the data. Most agencies, for example, had details about demographic characteristics of suspects, but only four had officer demographic information. Moreover, the Miami-Dade Police Department did not use pepper spray while San Antonio did not use CEDs.

Despite the limitations, the study's use of a large sample, representing more than 25,000 use-of-force incidents, allowed the researchers to use statistical techniques in an effort to learn which variables are likely to affect injury rates to officers and suspects. The use of physical force (hands, feet, fists) by officers increased the odds of injury to officers and suspects alike. However, pepper spray and CED use decreased the likelihood of suspect injury by 65 and 70 percent respectively. Officer injuries were unaffected by CED use, while the odds of officer injury increased about 21 percent with pepper spray use.

The researchers noted the 12-agency analysis yielded puzzling results about the relationship between pepper spray use and officer injury rates. Those results are inconsistent with the single agency analysis. More research may explain the differences.

Longitudinal analysis

The researchers reviewed use-of-force information from police departments in Austin, Texas, and Orlando, Fla., to learn how introducing CEDs affected injury rates. This quasi-experimental approach tracked injuries before and after CED introduction.

The Orlando data include 4,222 incidents covering 1998 to 2006. CED use began in February 2003. The Austin data includes 6,596 incidents from 2002 to 2006. However, CED use was

phased in beginning in 2003 and was not completed until June 2004. A large drop in injury rates for suspects and officers alike occurred in both cities following CED introduction.

In both cities, Taser adoption was associated with a statistically significant drop in average monthly injuries to suspects. In Orlando, the suspect injury rate dropped by more than 50 percent compared to the pre-Taser injury rate. In Austin, suspect injury rates were 30 percent lower after full-scale Taser deployment.

In Orlando, the decline in officer injury rates were even greater than for suspects; the average monthly rate dropped by 60 percent after Taser adoption. In Austin, officer injuries dropped by 25 percent.

Interviews with officers and suspects

Researchers conducted interviews with 219 officers from South Carolina's Richland County Sheriff's Department, 35 from the Columbia Police Department (CPD), and 35 suspects involved in use-of-force situations to supplement and add a qualitative context to their quantitative analyses. Generally, they tried to contact officers and suspects within 48 hours of receiving a use-of-force report. Interviews were voluntary, and some officers and suspects declined to participate.

In nine out of 105 use-of-force incidents, Richland County Sheriff's Department officers reported that a Taser did not work properly or did not have the desired effect. In addition, researchers received reports of multiple Taser hits on a suspect and multiple uses of the Taser in "drive stun" mode (when the Taser is pressed against a suspect rather than firing darts) to control suspects (or, based on the suspects' reports, as punishment). These reports indicate that some officers are using Tasers multiple times during an encounter.

Nine percent of the officers reported injuries, almost all of which were scrapes, cuts or bruises suffered while struggling with resistant suspects. Officers also reported that 26 suspects (12 percent) were injured. Most suspect injuries were cuts or abrasions, but there were also two dog bites, and one suspect was shot in the arm after firing at officers.

In 22 cases, researchers interviewed both the officers and suspects involved in an incident. Most suspects said officers used excessive or unnecessary force to subdue them. Some suspects said officers used Tasers quickly, and several said the officers enjoyed watching them endure the pain. Some suspects said officers kneed them in the back and kicked or punched them after they were in handcuffs. Some also said officers used Tasers on them after they were handcuffed.

Suspects often tell a different story than the officers who arrest them. In almost all cases, suspects said officers used excessive force and that they were not resisting arrest. The officers, for their part, said they used minimal force to control suspects, and did not mention using force after a suspect was under control. Officers reported that the force used was necessary and reasonable. In a typical account, a suspect said he was unaware there was a warrant out for his arrest, and when police confronted him, he did not resist. He said the officers "pushed me to the ground and put the cuffs on … they didn't have to do that to me." He said that all the officers had to do was tell him to "quit acting up." He complained that officers should just have told him to calm down instead of pushing him to the ground. By contrast, they said the suspect ran away when confronted, so they tackled him. These kinds of contradictions were common; suspects said they did not resist, and officers provided justification for the force levels they used.

In other cases, suspects and officers offered radically different versions of events. For example, in one case, an officer said he saw several traffic violations and the suspects sped off and stopped, with one suspect running away. The officers said the driver then tried to exit the vehicle from the passenger's side holding a shotgun. One officer pointed his weapon at the suspect, who then dropped the shotgun. The suspect failed to mention the shotgun to researchers and only complained that officers put the handcuffs on too tightly and slammed him around in the back of the transport vehicle.

Unlike the Richland County Sheriff's Department, the

Columbia Police Department did not use Tasers. The officers described 35 use-of-force incidents. Three officers reported that pepper spray was ineffective. In all three cases, the suspects were either drunk or high on drugs. One case, in particular, highlighted the potential advantages of the Taser over pepper spray in some circumstances. In that case, a 6'7", 370-pound man wanted for domestic violence charged an officer with a metal object in his hand. The officer used pepper spray, but it had no effect. The suspect then retreated to the apartment kitchen and grabbed a knife. The officers pointed their guns at him and ordered him to drop the knife, but he refused. He cut and stabbed himself with the knife while the officers waited for another agency to arrive that was equipped with a Taser. The suspect cut himself more than 100 times before the South Carolina Law Enforcement Division arrived and used a Taser on him. The Taser had an instant effect, and officers were then able to handcuff the suspect.

Most injuries in both agencies occurred when officers and suspects struggled on the ground. The differences between the agencies were striking. RCSD equips most of its deputies with Tasers. The deputies collectively reported fewer injuries to themselves and suspects from ground fighting than did CPD officers. CPD did not issue Tasers, and 31 percent of its officers reported getting cuts, scrapes and bruises from wrestling with suspects on the ground. The prevalence of ground fighting injuries among RCSD officers (less than nine percent) was lower, as were injuries to suspects caused by contact with the ground. Some of the injuries could have been prevented had officers used Tasers instead of hands-on tactics.

Implications for policy, training and future research

Because of the controversial nature and widespread use of CEDs, the researchers explored their use in detail and made recommendations, based on the findings, for whether and how CEDs should fit into the range of less-lethal force alternatives available to law enforcement officers.

Factors affecting injuries

Physical force

The findings clearly show the use of physical force and hands-on control increase the risk of injury to officers and suspects. In Richland County, S.C., soft empty-hand control significantly increased the odds of injury to officers, while hard empty-hand tactics increased the risk of injury to suspects. In Miami-Dade, both types of force increased the risk of injury to both officers and suspects. In Seattle, use of force increased injury risk to officers but not to suspects, while the overall analysis (of 12 agencies) showed increased injury risk to suspects and especially to officers associated with physical force. This increased risk was large. When controlling for the use of CEDs and pepper spray in the overall analysis, using force increased the injury odds to officers by more than 300 percent and to suspects by more than 50 percent.

Suspect resistance

Increasing levels of suspect resistance were associated with an increased risk of injury to officers and suspects. The increased injury risk was especially acute for officers. In Richland County, active aggression and threats of deadly force increased the odds of officer injury by more than 100 percent. The odds of suspect injury were unchanged in Seattle with increased resistance levels. These findings suggest that officers, rather than suspects, face the most increased injury risk when suspects resist more vigorously.

Pepper spray

The findings suggest that, at least for suspects, pepper spray use reduces the likelihood of injury. In Richland County, pepper spray use reduced the odds of suspect injury by 70 percent but did not affect officer injuries. In Seattle, pepper spray use had no effect on injury rates for officers or suspects. However, the overall analysis (of 12 agencies) showed that pepper spray use reduced the likelihood of injury to suspects by 70 percent, which was even more than the decline noted with CEDs (see below). For officers, pepper spray use increased the likelihood of injury by 21 to 39 percent. This finding

was unexpected, and more research may help to explain how officers choose to use pepper spray versus CEDs.

CEDs

Except for in Richland County where its effects were insignificant, CED use substantially decreased the likelihood of suspect injury. In Miami-Dade, the odds of a suspect being injured were almost 90 percent lower when a CED was used than when it was not. Similarly, the odds of suspect injury went down by almost 50 percent when CEDs were used in Seattle. The larger analysis of 12 agencies and more than 24,000 use-of-force cases showed the odds of suspect injury decreased by almost 60 percent when a CED was used. In Richland County, Seattle, and in the larger analysis, Taser use had no effect on officer injuries, while in Miami-Dade, officer injuries were less likely when a Taser was used. Controlling for other types of force and resistance, CED use significantly reduced the likelihood of injuries. CED adoption by the Orlando and Austin police departments reduced injuries to suspects and officers over time.

Demographic characteristics

Apart from officer force and suspect resistance, few other factors influenced injury outcomes. In Miami-Dade, male suspects were twice as likely to be injured as females. The same held true for the 12-agency analysis. In that larger analysis, the presence of a male suspect slightly increased injury risk to officers. In Seattle, female officers were more than twice as likely to be injured as male officers.

Placement of pepper spray and CEDs on a linear use-of-force continuum

People rarely die after being pepper sprayed or shocked with a Taser. However, if injury reduction is the primary goal, agencies that allow use of these less-lethal weapons are clearly at an advantage. Both weapons prevent or minimize the physical struggles that are likely to injure officers and suspects alike. Although both cause pain, they reduce injuries, and according to current medical research, death or serious harm associated with their

use is rare. In that sense, both are safe and similarly effective at reducing injuries. Both should be allowed as possible responses to defensive or higher levels of suspect resistance. This recommendation is supported by the findings and is now followed by most agencies that responded to the national survey.

Policy and training issues related to CEDs

CEDs were used far more often (four to five times more often) than pepper spray among agencies that equipped officers with CEDs and were sometimes used at rates that exceeded empty-hand control. Unlike pepper spray, CEDs do not require decontamination and do not carry the risk of accidental "blow back" that often occurs with pepper spray use. However, they do entail the removal of prongs and the potential for an unintended shock to an officer. Even with these concerns, they are rapidly overtaking other force alternatives. Although the injury findings suggest that substituting CEDs for physical control tactics may be useful, their ease of use and popularity among officers raise the specter of overuse.

The possible overuse of CEDs has several dimensions. CEDs can be used inappropriately at low levels of suspect resistance. Law enforcement executives can manage this problem with policies, training, monitoring and accountability systems that provide clear guidance (and consequences) to officers regarding when and under what circumstances CEDs should be used, or when they should not be used.

Besides setting the resistance threshold appropriately, good policies and training would require that officers evaluate the age, size, gender, apparent physical capabilities and health concerns of a suspect. In addition, policies and training should prohibit CED use in the presence of flammable liquids or in circumstances where falling would pose unreasonable risks to the suspect (in elevated areas, adjacent to traffic, etc.). Policies and training should address the use of CEDs on suspects who are controlled (e.g., handcuffed or otherwise restrained) and should either prohibit such use outright or limit them to clearly defined, aggravated circumstances.

In addition to being used too often, CEDs can be used too much. Deaths associated with CED use often involve multiple Taser activations (more than one Taser at a time) or multiple five-second cycles from a single Taser. CED policies should require officers to assess continued resistance after each standard cycle and should limit use to no more than three standard cycles. Following CED deployment, the suspect should be carefully observed for signs of distress and should be medically evaluated at the earliest opportunity.

Directions for future research

CEDs can be used too much and too often. A critical research question focuses on the possibility of officers becoming too reliant on CEDs. During interviews with officers and trainers, the researchers heard comments that hinted at a "lazy cop" syndrome. Some officers may turn to a CED too early in an encounter and may relying on a CED rather than rely on the officer's conflict resolution skills or even necessary hands-on applications. Research should explore how officers who have CEDs perceive threats, compared to officers who do not have them. In addition, it is important to determine when, during an encounter, an officer deploys the CED.

Another important CED-related research project would be a case study of in-custody deaths involving CED use and a matched sample of in-custody deaths when no CED use occurred. Advocacy groups argue that CEDs can cause or contribute to suspect deaths. The subjects in CED experimental settings have all been healthy people in relatively good physical condition who are not under the influence of alcohol or drugs. There is no ethical way to expose overweight suspects who have been fighting or using drugs to the effects of CEDs, so an examination of cases where similar subjects lived and died may shed some light on the reasons for the deaths. Law enforcement officials typically argue that most if not all the subjects who died when shocked by a CED would have died if the officers had controlled and arrested them in a more traditional hands-on fight. At this point, the argument is rhetorical and research is needed to understand the differences and similarities in cases where suspects died

in police custody, including deaths where a CED may or may not have been involved.

Finally, female officers in Seattle were more than twice as likely to suffer injuries as males. Perhaps the finding in Seattle is an anomaly, but it should be investigated further.

Notes

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18. The MDPD provides police services to the unincorporated areas of Miami-Dade County, Fla., which together contain more than 1 million people in a 1,840 square mile area.

19. The agencies included police and sheriff's departments in Austin, Texas; Cincinnati, Ohio; Harris County, Texas; Hillsborough County, Fla.; Los Angeles (both the city and the county); Miami-Dade, Fla.; Nashville, Tenn.; Orlando, Fla.; Richland County, S.C.; San Antonio, Texas; and Seattle, Wash.

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