

# Evaluation of the New York City Police Department Firearm Training and Firearm-Discharge Review Process

Bernard D. Rostker, Lawrence M. Hanser, William M. Hix, Carl Jensen,  
Andrew R. Morral, Greg Ridgeway, Terry L. Schell



Center on Quality Policing

A RAND INFRASTRUCTURE, SAFETY, AND ENVIRONMENT PROGRAM

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## Preface

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For the New York City Police Department (NYPD), every time a police officer's weapon is fired, except for circumstances when it is fired (or discharged) at a firing range, the officer makes a report and the department undertakes an investigation to determine the circumstances surrounding the incident. In early January 2007, New York City Police Commissioner Raymond W. Kelly asked the RAND Corporation to undertake an "objective, comprehensive assessment of the New York Police Department's (NYPD) firearms training and firearms discharge review process" (NYPD, 2007b). This monograph recommends ways in which the NYPD can reduce firearm discharges generally and inappropriate discharges in particular.

### The RAND Center on Quality Policing

This research was conducted under the auspices of the RAND Center on Quality Policing within the Safety and Justice Program of RAND Infrastructure, Safety, and Environment (ISE). The center conducts research and analysis to improve contemporary police practice and policy. The mission of ISE is to improve the development, operation, use, and protection of society's essential physical assets and natural resources and to enhance the related social assets of safety and security of individuals in transit and in their workplaces and communities. Safety and Justice Program research addresses occupational safety, transportation safety, food safety, and public safety—including violence, policing, corrections, substance abuse, and public integrity. Questions or comments about this monograph should be sent to the project leader, Bernard Rostker (Bernard\_Rostker@rand.org). Information about the Safety and Justice Program is available online (<http://www.rand.org/ise/safety>), as is information about the Center on Quality Policing ([http://www.rand.org/ise/centers/quality\\_policing/](http://www.rand.org/ise/centers/quality_policing/)). Inquiries about research projects should be sent to the following address:

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## Executive Summary

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### Introduction

The discharging of a firearm by a member of the New York City Police Department (NYPD) is a significant event. Every time an NYPD officer's weapon is fired, except when it is fired (or discharged) at a firing range, the officer makes a report and the department undertakes an investigation to determine the circumstances surrounding the incident. In January 2007, New York City Police Commissioner Raymond W. Kelly wanted to make sure that his department was doing everything necessary to minimize the unnecessary discharge of firearms. He asked the RAND Corporation to examine the quality and completeness of the NYPD's firearm-training program and identify potential improvements in the design and delivery of the curriculum, the technology used, the frequency and duration of training sessions, the tactics and procedures on which the training is based, and the police department's firearm-discharge review process.

Starting in February 2007, an interdisciplinary team from RAND met with NYPD officials to observe training and to collect data for future analysis. During the spring and summer of 2007, the team met numerous times with the senior uniformed and civilian staff at headquarters, at the academy, at the range, and (with officers) at precincts. Over the subsequent nine months, RAND researchers talked with NYPD plainclothes and uniformed members, collected and reviewed policy documents, and examined the relevant general literature on policing, the use of force, and reflexive and contagious shooting. In addition, the team analyzed firearm-discharge cases; NYPD personnel data; and stop, question, and frisk report data, as well as data derived from the automated, online booking system. The RAND team also collected information from a number of other police departments and sponsored a daylong discussion of the issue with a panel of independent national experts. The panel discussions were helpful in checking preliminary findings and identifying areas for further investigation.

While the subject of this study is firearm discharge and a good deal of the general police literature on this subject is in the context of the training in, and use of, the weapon, the link between firearm training and the subsequent use of deadly force is not clear and has led some researchers to question the role that firearm training plays in

subsequent uses of deadly force. Moreover, as sociologist Albert J. Reiss Jr. pointed out, “To understand how one might avert or preclude the use of deadly force in situations in which it might be a likely alternative, we need to understand how the organization of police departments and of police work regulate and restrict the use of deadly force and alternatives to its use” (Reiss, 1980, p. 133). Accordingly, the RAND team observed the in-service training that recruits and members of the service (MOSs) receive on the *use-of-force continuum*, a continuum that ranges from “verbal persuasion” to the use of “deadly force” (NYPD Police Academy, 2007a, p. 7); how to deal with uncooperative suspects; and how to control situations to minimize the use of firearms.

During the study, we became acutely aware that we were reviewing only cases in which officers discharged their weapons. We recognize that different officers will approach similar situations in different ways and that there is no single test to determine the correctness of an officer’s decision to use deadly force. The legal standard set by the U.S. Supreme Court in the case of *Graham v Connor* is “reasonableness” (490 U.S. 386, 109 S. Ct. 1865, May 15, 1989). Certainly, in the future, a great deal may be learned from cases in which an officers could deescalate the situation and did not have to revert to deadly force. However, such an inquiry was beyond the scope of this study.

## Background

NYPD officers are taught that the use of a firearm “should be a last resort. [The officer] should shoot someone only when there are no other available ways of protecting [him or herself] or someone else against imminent death or serious injury” (NYPD Police Academy, 2007a, p. 20). Nationally, as it is in New York City, the use of any force is rare. The U.S. Department of Justice (DOJ) estimates that, in 2005, police used or threatened to use some force against a citizen in 1.6 percent of police-citizen contacts (Durose, Smith, and Langan, 2007, p. 1). Recent data for the NYPD shows the same general pattern as that reported by DOJ. In New York City, an analysis of the more than half a million stop, question, and frisk reports filed in 2006 shows that police pointed their weapons at suspects in about 0.5 percent of filed reports (Ridgeway, 2007).

The law provides that police officers can use force to take control of someone who refuses to cooperate, but there are legal and practical limits. The U.S. Supreme Court case of *Tennessee v Garner* reversed the long-standing practices based on English common law and set new standards for the use of deadly force (471 U.S. 1, 105 S. Ct. 1694, March 27, 1985). The case of *Graham v Connor* makes it clear that the legal test by which the use of force, including deadly force, should be judged is reasonableness (490 U.S. 386, 1989). For NYPD officers, however, department guidelines for the use of deadly physical force are more stringent than the standards set by the *Graham*

case or even the legal restriction established by Article 35 of the New York Penal Law (NYPL).

The Firearms and Tactics Section of the NYPD Police Academy produces an annual report on firearm discharges from the previous year. With a uniformed force of approximately 37,000 officers, it is unlikely, statistically, that an officer will ever discharge his or her weapon during his or her entire career on the police force. During 2006, 156 officers were involved in a firearm-discharge incident. Moreover, fewer than half of these incidents involved an officer shooting at a human being. The majority of discharges are accidental or involve officers shooting at dogs. After eliminating two-sided gunfights, there were 47 incidents in which an officer discharged his or her weapon without being fired on.<sup>1</sup> Unfortunately, firearm-discharge statistics are not collected nationally, so comparisons with national averages or other departments are difficult. Moreover, while the Commission on Accreditation for Law Enforcement Agencies (CALEA) publishes standards, they are very general and do not prescribe specific procedures to follow. However, we did identify one department, the Metropolitan Police Department of Washington, D.C. (MPDC), that reports statistics that use categories that are comparable with those that the NYPD uses (MPDC, 2006).<sup>2</sup> In 2005, the NYPD was almost 10 times larger than the MPDC. Comparing the per-officer discharge rate of the two departments, the police in Washington “intentionally discharged firearms at people” 3.7 times more than did police officers in New York City.<sup>3</sup>

While not part of the NYPD, the New York City Civilian Complaint Review Board (CCRB) also looks at police-firearm-discharge cases that are brought to its attention as excessive-force complaints against New York City police officers. Between 2002 and 2006, the NYPD reported 612 firearm-discharge incidents, of which 455 might have brought the public into contact with officers discharging their weapons, e.g., officers involved in gunfights, shooting at suspects who did not return fire, or shooting at a dog. In the same period, but not necessarily from these incidents, there were 101 complaints about gunfire. In the same period, 87 cases were resolved; only three of these cases “substantiated that there was sufficient credible evidence to believe that the subject officer committed the act charged in the allegation and committed

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<sup>1</sup> The NYPD reports separately *gunfights*, which are defined as any incidents in which the subjects and officers fired their weapons at each other, and *other shooting incidents involving subjects* as those in which an officer fired his or her weapon in defense of self or others against subjects who did not return fire.

<sup>2</sup> A comprehensive review of all police departments was beyond the scope of this study. We did review the departments highlighted by the Police Assessment Resource Center (PARC) (2003a, pp. 163–166), and only the MPDC had comparable data. We made the numerical comparison by dividing the per-capita firearm-discharge rate by the number of sworn officers for each department.

<sup>3</sup> We treated as categorically equivalent those data reported by the MPDC for *intentionally discharged firearms at people* and the data reported by the NYPD for *gunfights and other shootings involving subjects*. We made the comparison by dividing the per-capita firearm-discharge rate by the number of sworn officers for each department.



misconduct” (CCRB, 2007, p. 9). Of the 84 other cases, 73 were either unsubstantiated or unfounded or the officers were exonerated. The officers involved in the remaining 11 cases had left the NYPD, and their cases were closed.

## Training

The NYPD Police Academy trains approximately 4,000 recruits each year in two classes of about 2,000 recruits each. The academy has five sections that conduct different aspects of training: Recruit Training, Firearms and Tactics, Specialized Training, Leadership Development, and Executive Development. Recruit training is divided into two terms that together encompass 23 weeks: Knowledge and Fitness and Skills and Abilities.

The Patrol Services, Housing, and Transit bureaus are responsible for in-service training, including the Field Training Program for new probationary police officers after they graduate from the police academy. In-service training occurs through a number of different vehicles. The most structured forms of regular in-service training are borough-based (or “IN-TAC”) training, precinct-level training, and semiannual firearm-requalification training.

## Method

We reviewed the relevant literature on police-officer training; collected and reviewed training materials, including lesson plans, tests, and other evaluation forms; and observed both basic and complex skill training over several periods and in multiple venues. We also visited and observed similar training in other large police departments.

We used the Gagné et al. (2005) theory of instructional design and the Council for Adult and Experiential Learning (CAEL) principles of effectiveness for adult learners (see CAEL, 2000) as a frame of reference for evaluating training.

## Findings

The training that underlies an officer’s decision to intentionally discharge a weapon is the training received in the use-of-force continuum (i.e., how to deal with uncooperative suspects and how to control situations to minimize the use of firearms). Training in the use-of-force continuum is embedded in and cuts across the training that officers get in a number of classes, including ground tactics, gun retention, management of street encounters, encounters with emotionally disturbed persons, car stops, and domestic incidents.

**Recruit Training.** Overall, the training we observed in basic policing skills (ground tactics, firearm retention, and baton lessons) was done in accord with the Gagné et al. (2005) and CAEL (2000) principles. These are the basic skills that police officers need when “going hands-on” with a suspect. Consistent with Gagné’s principles of instruc-

tional design and CAEL's principles of effectiveness for adult learners, the instructors carefully demonstrated each of the basic techniques and allowed the trainees multiple practices of those techniques under close supervision before adding increasing complexity to the techniques. Training included going hands-on with their fellow students, thus providing realistic practice and confidence in these skills.

Instructors observed and corrected student performance on the spot, with a formal evaluation at the end of a block of several related lessons. If a recruit fails any single category or technique, he or she receives remedial training from an instructor and is retested on all the categories and techniques, not just the one that was scored as unacceptable.

The nine weeks of recruit training devoted to hands-on skills and abilities is done largely in scenario-based, role-playing workshops or with simulators, such as with the Meggitt Defense Systems FATS Caswell or Simunition® training systems. Typically, this training involves two to four students working with one or more instructors for a short period while the rest of the class watches. The students who are working with the instructors prepare for the simulated event. The simulation is run, and then the instructors provide a critique of the simulation. Once complete, another set of students steps up for their turn. In this way, each student in the class generally gets no more than one chance at each simulation. Unlike the basic policing-skills training, the limits on the number of students that can participate in one simulation at a time or on the number of simulators available in these workshops means that recruits do not have an opportunity to practice what they have just been taught. In addition, students are not graded nor called on to demonstrate that they have mastered the techniques being taught. Moreover, while some training records that we observed were marked "retrained," this meant that the instructor had told the student what he or she had done wrong and what the correct procedure was, not that the student had to demonstrate that he or she had learned the correct behavior. Given the logistics of these workshops and the size of the recruit class, retraining does not mean that the student was given the opportunity to try the simulation again. As a result, it is not possible for the department to know whether the students mastered the information taught in the classroom, whether they are able to apply it in the scenarios or on the job, or whether the two hours of classroom time was effective in achieving the training performance objectives. The failure to ensure that students have internalized the right way to approach situations by providing sufficient opportunities to practice what they have been taught may create an inappropriate response on the street and is a shortcoming in the NYPD recruit-training program.

There is a national consensus that the key to improving police-recruit training is to move from traditional classroom to more hands-on instruction by increasing the quality, number, and use of scenario-based training events. There needs to be sufficient flexibility in the training schedule to allow students the opportunity to repeat training if necessary until they can demonstrate that they have mastered the skills being taught.

Practically, such improvements mean that students would perform multiple scenarios and simulations and receive a full grading of their performance on all of them. Shifting from very large recruit classes that start twice a year to more-frequent, smaller classes that start every two weeks would allow the existing inventory of simulators to be more efficiently used over the entire year and provide better opportunities for students to practice and be graded on their performances using simulators.

**In-Service Training.** In-service training is particularly important to reinforce the comprehensive training that officers received as recruits, to correct bad habits developed on the job, and to keep up with the dynamically changing law-enforcement environment. Unfortunately, officers are generally not tested on the information imparted to see whether the training was absorbed.

NYPD officers are required to requalify on their firearms twice a year. While the requalification course meets the standards required by New York and is consistent with national norms, shooting at paper targets on a known-distance range does not demonstrate that the officer has mastered his or her firearm and is ready for a shooting confrontation on the streets. While the NYPD has several advanced ranges that better prepare officers for confrontations that may involve firearms, the size of the department and logistical considerations prevent them from being used as part of the semiannual requalification program for the vast majority of officers.

The goal of all training should be to prepare recruits, as well as seasoned officers, for life as a police officer on the streets, in the subways, and in the housing developments of New York. Recruits should be required to pass proficiency standards in real-life and scenario-based tests of complex decisionmaking before they graduate from the police academy. Seasoned officers should be required to demonstrate their continued proficiency on the most demanding real-life scenarios, just as, for example, seasoned airline pilots are required to do.

### **Recommendations**

To facilitate training effectiveness, we recommend that the NYPD take the following actions:

- Develop standards of performance for all basic policing skills and evaluate recruits accordingly, not passing them until they have demonstrated they have mastered the skill at an appropriate level.
- Upgrade computer simulations to incorporate the latest use-of-force scenarios now available from simulator vendors.
- Expose recruits to scenario-based training and role-playing workshops throughout training.
- Design scenario-based training to increase the department's confidence that recruits have learned basic principles.
- Have recruits practice on a wide set of scenarios.

- Focus debriefings primarily on the big principles, not the potential nuances that exist in every situation.
- Develop detailed evaluation guides and assess training-outcome data to determine whether the training was successful.
- Require recruits to pass proficiency standards in real-life and scenario-based tests of complex decisionmaking before graduating them from the police academy.
- Collect detailed training records from the various recruit-training activities and store them in one location.
- Substantially increase the availability of simulators, including scenarios using Simunition systems, to allow recruits to practice and then demonstrate that they have mastered the requisite skills, particularly those associated with the use of force.
- Take the lead: Partner with one or more virtual-simulation companies to determine whether technological advances can be used to create simulators for judgment in potential use-of-force scenarios that might operate on stand-alone laptop computers without an instructor's or operator's intervention. This might start with the issuing of a request for qualification (RFQ) to determine the interest and qualifications of potential collaborating firms.
- Undertake a full cost-benefit analysis of resequencing recruit training. Given the importance of scenario-based training and the high cost of equipment (such as simulators), the analysis should include all tangible and intangible costs and benefits. A rolling induction of recruits with classes starting every two weeks instead of having large, semiannual recruit classes should allow for a much higher utilization of simulators, spreading their use over the entire year and giving recruits more opportunities to practice and be graded on their performance using simulators.
- Investigate alternatives to the current semiannual firearm-requalification paradigm to provide enhanced firearm instruction that would focus on the officer's proficiency rather than just the score on a static target.

## **Firearms Discharge Review Board Investigation and Reporting**

In 1972, the NYPD, in response to what was perceived at the time as a “relatively high number of firearms incidents involving police officers,” produced a new set of “enhanced” shooting guidelines (NYPD, 2004, p. 7). The new guidelines substantially limited the situations in which officers were allowed to use deadly force and established the Firearms Discharge Review Board (FDRB) to investigate each discharge and to determine whether the discharge was consistent with the new policy. If the discharge were “out of policy,” even if it met the legal requirements of the NYPL, the officer would be subject to departmental discipline. The department reported that these

changes “almost immediately improved firearms discipline and reduced the number of shootings” (NYPD, 2004, p. 7).

### Findings

Our assessment of the firearm-discharge review process is based on (1) interviews with departmental officials who participate in and manage the FDRB’s process, (2) observation of both borough-level and department-level FDRB deliberations, (3) a detailed review of all cases presented to the full FDRB during the years 2004–2006, (4) the opinions of an outside panel of national experts in officer-firearm discharges, and (5) a limited review of the processes and reports of other police departments. Based on the review of national best practices, the NYPD has a number of exemplary features, including substantial and appropriate command attention at the scene of the incident, which varies with the seriousness of the incident, and a process that generally results in reasoned disciplinary action where appropriate.

The stated purpose of the process is to “assess the propriety of firearms discharges and gauge the need for adjustments in weapons training for officers” (NYPD, 2004, p. 7). As a result, typically, findings and recommendations in final reports center on whether the discharge was intentional or accidental and whether it violated department policy.

Alternatively, the investigation might follow a broader path suggested in the NYPD *Police Academy Student’s Guide* (NYPD Police Academy, 2007a). Officers are taught that, if they are involved in a shooting, they will be judged not only on the propriety of the discharge but also on the tactics they used prior to the shooting, including whether they unnecessarily placed themselves in a position that gave them no choice but to fire their weapons (NYPD Police Academy, 2007a, p. 20). A more complete assessment of firearm-discharge cases might also identify the needs for improved tactics and different equipment. We identified 25 cases in which, in our judgment and after giving full consideration of the threats facing the officers involved, if a less lethal standoff weapon were available, the officer might reasonably have used it instead of his or her firearm, with a possible reduction in the number of shootings and associated casualties.

We also found that reports do not always adhere to the formats specified in NYPD regulations. Neither the patrol guide (NYPD, 2005) nor the investigation manual (NYPD, 2004) specifies a detailed format for the final report. The largest part of a final report is generally a summary of interviews with the officers who discharged their firearms. In general, final reports are long on facts and relatively short on analysis. Final reports frequently lack a synthesis of the information presented and seldom discuss conflicting information or attempt to reconcile evidence presented in the initial report with information presented in the final report.

## Recommendations

To improve the firearm-discharge review process, we recommend that the NYPD do the following:

- Expand the focus of the firearm-discharge investigation to include a review of the tactics used.
- Build a formal lessons-learned process into the FDRB report.
- Adhere to the formats that are part of the *Firearm Discharges Investigation Manual*, specifically ¶4A, which requires an explicit statement on the availability of less-lethal equipment and a description (not an evaluation) of the tactics used before the discharge (NYPD, 2004).
- Change the final report format to require a summary statement that contains the author's best judgment of how the incident unfolded, noting uncertainties and conflicts and rendering his or her judgment about what occurred.

## Analysis of Factors Associated with NYPD Officers Discharging Their Firearms

We recommend in Chapter Four that a more integrated assessment of all firearm discharges might provide further insights into patterns and common characteristics that do not become clear until all cases are assessed together. We conducted an integrated analysis that incorporated data from cases that the FDRB adjudicated during the period 2004–2006. We compared the characteristics of officers who discharged their firearms with those of officers who were at or near the scene of those shooting incidents and did not discharge their weapons. To be clear, proximity to the incident is merely a means of selecting a comparison group of officers who might be expected to possess characteristics similar to those who shot. There is no presumption that they necessarily had the same opportunity to shoot. If the officers who discharged their weapons were a simple, random selection from this larger population, we would expect to find no characteristics that differentiated the two groups.

## Findings

In fact, characteristics did differentiate the groups besides the obvious one of the discharge of the officer's weapon. We found that, although the likelihood that an officer is involved in a shooting in any given year is small, officers who discharged their weapons were more likely to have had negative marks on their job records. An officer with an average of 3.1 negative marks (Central Personnel Index [CPI] points) per year of service in his or her record was three times more likely to discharge his or her weapon than other officers from the population of similar officers. In other words, on average, and after statistically accounting for other demographic differences, officers in the matched

population of nonshooters had significantly fewer negative marks in their files. To put this observation in perspective, our analysis of the 2006 data showed that 16 officers of the total of 2,611 officers, or 0.6 percent, with CPI scores greater than 3.1 were involved in shootings.

Readers should note that establishing statistical correlation (or association, as it is sometimes called) is not the same as establishing a causal link. With the data available to us, we cannot say what it is about officers with higher CPI scores that puts them at risk for being involved in a shooting.

### **Recommendations**

The fact that officers with certain characteristics were more likely to discharge their weapons than were other officers is not in itself an indication that a given discharge was inappropriate or that the officers involved were indiscriminate in their use of deadly force. Since the analysis found differences that cannot be explained as random and since it is NYPD policy to use the minimum force necessary in every situation, the analysis suggests that the NYPD might pay particular attention to shootings involving officers with an annual CPI-point average in excess of 3.1 to make sure that the officers did everything appropriate before discharging their firearms. While the NYPD already monitors those officers exceeding a career total of 20 CPI points, this analysis suggests that the close monitoring of officers with an excessive accumulation rate of CPI points may also be warranted.

### **Need for an Improved Less-Than-Lethal Standoff Weapon**

Analysis of the NYPD firearm-discharge cases and the experience of other police departments suggests that, if the NYPD employed a more robust, less lethal standoff weapon, it might not only prevent some incidents from escalating to deadly force but also reduce injuries to officers and citizens alike, as it has with other departments.

When physical force is not appropriate and drawing a firearm is problematic, the use of a less lethal weapon may provide an appropriate alternative. Members of RAND's expert panel that supported this study reviewed a number of firearm-discharge cases and saw several opportunities in which they thought the situation might have ended differently if the officers involved had used less-than-lethal force.

### **Findings**

The only less lethal weapon to which patrol officers in New York City routinely have access is oleoresin capsicum (OC), or pepper, spray. Nationally and in New York City, OC spray is relatively rarely used. In the NYPD, supervisory personnel and special operations units have access to a conducted-energy device (CED), specifically a TASER®

device. While departments that use CEDs report reductions in injuries to officers and citizens alike and in the use of deadly force, TASER-device use is still controversial.

While police departments generally have had very favorable experiences using CEDs, the American Civil Liberties Union (ACLU) and Amnesty International USA (AIUSA) have called for a moratorium in the use of CEDs. Concerns appear to fall into three areas: (1) CEDs seem to be used too frequently, (2) police officers do not have proper guidance or supervision and abuse CEDs, and (3) probably the most disturbing concern, CEDs contribute to the deaths of suspects who have been stunned. A number of objective, third-party organizations, however, have reviewed the evidence and found little support for this concern.

### **Recommendations**

We recommend that the NYPD implement a pilot program in which patrol officers in selected precincts are trained and equipped with a CED in addition to the standard-issue OC spray. The purpose of the study would be to determine what impact CED use might have on the way in which NYPD officers apply force. Before CEDs are issued, use-of-force information should be collected to establish an analytic baseline against which performance can be measured in the subject precinct and in a statistically matched precinct. Officers in both precincts would be trained in the proper reporting of use-of-force information. The pilot should run for between six and 12 months.

### **Need for Other Innovative Technologies**

We also explored two technologies that could assist the NYPD in appropriate and acceptable applications of force: laser sights and gun-mounted flashlights.

### **Findings**

Law-enforcement agencies have used laser-sighting systems since the 1990s. Proponents claim that they help officers maintain awareness of muzzle direction and do not degrade peripheral vision when aiming a weapon. Others claim that they can alert a suspect to an officer's location and that multiple laser sightings can create confusion when more than one officer is present; they worry that officers will overly rely on the sights, allowing traditional shooting skills to degrade.

Several members of RAND's panel of independent experts who reviewed cases suggested that the outcomes of those cases might have been different if officers had been equipped with flashlights mounted on their weapons, because a gun-mounted flashlight would allow the officer to keep the nongun hand free. While there was some concern that the mounted light would give away the location of the officer's firearm, the panel's consensus was that the tactical advantage that the handgun-mounted light provides more than offsets this concern.



## Recommendations

We recommend that the NYPD do the following:

- Conduct a test using laser sights with plainclothes officers; if this initial test proves positive, initiate a pilot study with uniformed personnel to evaluate whether the use of laser sights increases shooting accuracy, reduces injuries to officers and third parties, reduces average number of shots fired, and contributes to the deescalation of confrontations between officers and suspects.
- Initiate a pilot study to determine whether handgun-mounted flashlights reduce improper, unnecessary, or unjustified officer-involved shootings in conditions of low light, injuries to officers and third parties, and the average number of shots fired in conditions of low light.

## Reflexive Shooting

The NYPD categorizes *contagious shootings* as intentional reflexive discharges and, together with accidental reflexive discharges, they make up the broader category of reflexive firearm discharge.

## Findings

Data on intentional reflexive discharge or contagious shooting are not readily available, neither within the NYPD nor across departments. The firearm-discharge reports make no determination about whether the discharge is an intentional reflexive discharge. As a result, it is not possible to determine the extent of reflexive shootings and whether the phenomenon is increasing or decreasing over time.

The general psychological research demonstrates that questioning people about the basis for a decision results in information that is highly unreliable. More specifically, police officers are sometimes surprised that their weapons discharge, claiming that they never had a finger on the trigger. They sometimes do not accurately report how many rounds they discharged or how many times they reloaded their weapons.

## Recommendations

We recommend that the NYPD do the following:

- Modify training to include reflexive-shooting scenarios in which a stimulus or the sounds of guns going off are included, to sensitize officers to cues that may not be reliable and to teach them that such cues may generate unwanted responses.
- Have officers practice with the correct decisionmaking process to reduce the use of inappropriate decisionmaking shortcuts.

- Ensure that all officers involved in a shooting undergo the mandatory one-day refresher course at the range.

## **Final Word**

In the landmark essay *The Functions of the Police in Modern Society*, Egon Bittner (1970) laid out the central role that the use of force plays in policing in the United States. According to Bittner, a police officer is an agent of the state who is granted special powers to apply coercive force under special circumstances. The force applied may be as trivial as pushing or as consequential as using deadly force. However, whatever force is used, it is expected to be reasonable for the situation at hand. Both the training that NYPD officers receive and the FDRB process are designed to ensure that officers adhere to department policies. Hopefully, the observations, findings, and recommendations from this study will enhance the department's efforts in this regard.



## Abbreviations

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ACLU	American Civil Liberties Union
ACPO	Association of Chief Police Officers
ADMS	Advanced Disaster Management Simulator
AIUSA	Amnesty International USA
ASPCA	American Society for the Prevention of Cruelty to Animals
CACP	Canadian Association of Chiefs of Police
CAEL	Council for Adult and Experiential Learning
CALEA	Commission on Accreditation for Law Enforcement Agencies
CCRB	New York City Civilian Complaint Review Board
CED	conducted-energy device
CPCARCOMP	Commission for Public Complaints Against the Royal Canadian Mounted Police
CPI	Central Personnel Index
CPRC	Canadian Police Research Centre
DCRP	Deaths in Custody Reporting Program
DHS	U.S. Department of Homeland Security
DOJ	U.S. Department of Justice
DOMILL	British Defense Scientific Advisory Council Sub-Committee on the Medical Implications of Less-Lethal Weapons
DSAC	Defense Scientific Advisory Council
ED	excited delirium

EDS	excited delirium syndrome
EMDD	electromuscular disruption device
EMS	emergency medical service
ESU	Emergency Services Unit
FAA	Federal Aviation Administration
FDRB	Firearms Discharge Review Board
GBPD	Green Bay (Wisc.) Police Department
IAB	Internal Affairs Bureau
ICD	International Classification of Disease
ICT	Institute for Critical Technologies
IN-TAC	borough-based in-service training
ISE	RAND Infrastructure, Safety, and Environment
IST	Institute for Simulation and Training
MDPD	Miami-Dade County Florida Police Department
MOS	member of the service
MPD	Madison (Wisc.) Police Department
MPDC	Metropolitan Police Department of Washington, D.C.
MTAS	Municipal Technical Advisory Service
NYPD	New York City Police Department
NYPL	New York Penal Law
OC	oleoresin capsicum
OCI	official company instructor
PARC	Police Assessment Resource Center
PERF	Police Executive Research Forum
RCMP	Royal Canadian Mounted Police
RFQ	request for qualification
RMP	radio mobile patrol

## Introduction

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### Background and Study Objective

The discharging of a firearm by a member of the New York City Police Department (NYPD) is a significant event. Every time a police officer's weapon is fired, except for circumstances in which it is fired, or discharged, at a firing range, the officer makes a report and the department undertakes an investigation to determine the circumstances surrounding the incident. In January 2007, New York City Police Commissioner Raymond W. Kelly wanted to make sure that his department was doing everything necessary to minimize the unnecessary discharge of firearms. He asked the RAND Corporation to examine the quality and completeness of NYPD's firearm-training program and identify potential improvements in the design and delivery of the curriculum, the technology used, the frequency and duration of training sessions, the tactics and procedures on which the training is based, and the police department's firearm-discharge review process. This monograph recommends ways in which the NYPD can reduce firearm discharges generally and inappropriate discharges in particular.

While the *New York Times* (Buckley, 2007) and other New York newspapers (Weiss, 2007) tied the study "to the shooting death of an unarmed Queens man (Sean Bell) by police officers nearly seven weeks earlier" (Buckley, 2007), Commissioner Kelly made it clear that this study would not focus on the Bell case but would instead consider issues that affect the use of firearms by New York City police generally. In the press announcement that accompanied the news conference, Kelly lay out the scope of the RAND inquiry:

RAND will examine the quality and completeness of our firearms training program and identify potential improvements in the design and delivery of the curriculum, the technology used, the frequency and duration of training sessions, the tactics and procedures on which the training is based and the Police Department's firearms discharge review process. (NYPD, 2007b)

## Study Approach

Starting in February 2007, an interdisciplinary team from RAND met with NYPD officials to observe training and to collect data for future analysis. During spring and summer 2007, the team met numerous times with the senior uniformed and plain-clothes staff at headquarters, at the academy, at the range, and with patrol officers at precincts. Over the subsequent nine months, RAND researchers talked with NYPD civilian and uniformed members; collected and reviewed policy documents;<sup>1</sup> and examined the relevant general literature on policing, the use of force, and intentional and accidental reflexive shooting. In addition, the team analyzed firearm-discharge cases; NYPD personnel data; and stop, question, and frisk report data, as well as data derived from the automated, online booking system.

Deputy Commissioner for Strategic Initiatives Michael J. Farrell was the senior point of contact. He assigned Captain Terrence Riley as the point of contact. (Captain Riley was promoted to deputy inspector during the period of the study.) The NYPD provided all the information requested, including the complete files of all firearm-discharge cases that were completed from 2004 to the present. This provided a unique opportunity to examine almost 200 firearm-discharge cases that involved NYPD officers and civilians (i.e., the cases that the full, department-level Firearms Discharge Review Board [FDRB] reviewed).<sup>2</sup> (The RAND team did not review the cases in which officers shot at dogs or those in which accidental discharge did not result in injury or death to a person.)

Besides reviewing specific firearm-discharge cases, Joseph Esposito, the chief of the department, arranged for us to observe the deliberations of the department-level FDRB and a borough-level firearm-discharge advisory board. In addition, with the help of the department's deputy commissioner for legal matters, S. Andrew Schaffer, we reviewed the state of the law, including the important decisions by the U.S. Supreme Court and

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<sup>1</sup> NYPD policies and procedures are contained in the police department's patrol guide. The use-of-force policy is procedure 203-11 (NYPD, 2006g), the use-of-deadly physical force policy is procedure 203-12 (NYPD, 2006a), and the policy on use of force when dealing with a mentally ill or emotionally disturbed person can be found in procedure 216-05 (NYPD, 2006c). The police academy's student guide (NYPD Police Academy, 2007a) explains these policies. Although every police officer is expected to know the patrol guide's contents, only the more recent graduates of the police academy may be familiar with the additional material presented in the student guide.

<sup>2</sup> The fact that we reviewed a large number of firearm cases does not mean that police officers in New York City are more prone to fire their weapons than are officers in other cities. New York is the largest city in the country, with nearly twice the population of the next-largest city, Los Angeles. It has twice as many officers per capita as Los Angeles has. Unfortunately, statistics are not collected that provide a direct comparison of police departments in their use of force, use of deadly force, or firearm discharge, even though the Violent Crime Control and Law Enforcement Act of 1994 (P.L. 103-322) (§210402) requires the U.S. Attorney General to collect police use-of-force data annually from police departments throughout the country. On a national level, the U.S. Department of Justice (DOJ) does report national use-of-force statistics by surveying a random sample of citizens and asking them about their contact with police. The last two surveys were in 2002 and 2005 (Durose, Schmitt, and Langan, 2005; Durose, Smith, and Langan, 2007).

the New York Penal Law (NYPL), and noted that department policy is substantially more stringent than the law is.<sup>3</sup> The RAND team also observed recruit and in-service weapon and use-of-force training, with a focus on how force escalates, the use and limits of physical force, the decision to draw and point a weapon, and the decision to purposefully discharge a weapon. The team also visited several police departments suggested by our panel of independent, national experts that RAND established to advise the team as the work progressed<sup>4</sup> and collected information from a limited number of other departments, as well as sponsored a daylong discussion of the issue with the panel during May in New York City. The panel discussions were helpful in checking preliminary findings and in identifying areas for further investigation. We also visited a number of organizations involved in developing advanced training simulations to better understand how the NYPD might employ new training technologies.

While the subject of this study was firearm discharge and a good deal of the general police literature on this subject is in the context of the training in, and use of, the weapon, the link between firearm training and the subsequent use of deadly force is not clear and has “led some researchers to question the role that firearm training plays in subsequent uses of deadly force” (Morrison, 2006, p. 332).<sup>5</sup> As Reiss (1980, p. 133) pointed out,

[A]nalyzes of encounters between the police and citizens in which deadly force is used carry hidden assumptions that the officers in the situations had no choice about how they might restructure the encounter or of how they might organize themselves in it. . . . But officers often can restructure elements of the situation, particularly their own role in it. . . . To understand how and when deadly force is

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<sup>3</sup> To understand NYPD policies, the RAND team reviewed the NYPD patrol-guide procedure on use of force (NYPD, 2006g) and the material taught at the academy, especially the student guide (NYPD Police Academy, 2007a).

<sup>4</sup> Members of the panel were as follows: Charles Crawford, associate professor, department of sociology, Western Michigan University; Major Steve Ijames, Springfield (Mo.) Police Department; David A. Klinger, associate professor, department of criminology and criminal justice, University of Missouri–St. Louis; Gregory B. Morrison, associate professor, department of criminal justice and criminology, Ball State University; and Oren Root, deputy director, Police Assessment Resource Center (PARC).

<sup>5</sup> Morrison (2006, p. 336) noted,

The impact of [in-service requalification] training on field performance is largely speculative. . . . Nearly two thirds (64%) committed half or more of their resources to re-qualification. Furthermore, when asked which of several firearm activities consumed the most resources, instructors most often (43%) responded with re-qualification, an activity they typically (61%) characterized as administrative as opposed to serving practical or applied purposes.

Vila and Morrison (1994, p. 2) also noted that,

[d]uring the past 100 years, the amount of handgun training received by police officers has increased dramatically, as has the quality of the weapon they carry. However, on average, there appears to have been very little improvement in the ability of officers to hit their targets during combat situations.



used, we need to understand why and when it is not used. To understand how one might avert or preclude the use of deadly force in situations in which it might be a likely alternative, we need to understand how the organization of police departments and of police work regulate and restrict the use of deadly force and alternatives to its use.<sup>6</sup>

Thus, the RAND team observed the training that recruits and members of the service (MOSs) receive in their in-service training in the *use-of-force continuum*, a continuum that ranges from verbal persuasion to the use of deadly force (NYPD Police Academy, 2007a, p. 7), how to deal with uncooperative suspects, and how to control situations so that the use of firearms is minimized.

During the study, we became acutely aware that we were reviewing only cases in which officers discharged their weapons. We recognize that different officers will approach similar situations in different ways and that there is no single test to determine the correctness of an officer's decision to use deadly force. The legal standard set by the U.S. Supreme Court in the case of *Graham v Connor* is "reasonableness" (490 U.S. 386, 109 S. Ct. 1865, May 15, 1989). Certainly, in the future, a great deal may be learned from cases in which an officer could deescalate the situation and did not have to revert to deadly force. However, such an inquiry was beyond the scope of this study.

Ultimately, the RAND team had to make judgments about the behavior of officers involved in firearm-discharge cases. We had the expert panel review a number of firearm-discharge cases, both from the NYPD and from other agencies. The expert panel validated our assessments, particularly about the need for an improved, less lethal standoff weapon, as discussed in Chapter Six.

## Organization of This Monograph

The monograph is organized into nine chapters. To set the stage and put firearm discharge in context, Chapter Two examines firearm-discharge policy and experience in New York City, including the use-of-force continuum. Chapter Three presents observations, findings, and recommendations for training. Chapter Four offers observations, findings, and recommendations for the investigation of firearm discharges and the workings of the FDRB. Chapter Five contains our analysis of factors associated with NYPD officers discharging their firearms. Chapter Six covers the issue of a standoff and less-than-lethal-force weapons. Chapter Seven presents observations,

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<sup>6</sup> The NYPD *Police Academy Student's Guide* (2007, p. 20) explains,

If you are involved in a shooting, the Department will review it carefully to determine whether you used appropriate tactics prior to the shooting. This includes an analysis of whether you may unnecessarily put yourself into a position that gave you no choice but to fire your weapon.

findings, and recommendations for other technologies. Chapter Eight reviews what is known about reflexive shooting and recommends ways in which officers might be better trained to control it. Finally, Chapter Nine provides a summary of findings and recommendations.



## Firearm-Discharge Policy and Experience in New York City

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### Introduction

The student guide given to new recruits when they enter the NYPD Police Academy clearly explains that, if officers are involved in a shooting, they will be judged not only on the propriety of the discharge but also on the tactics used prior to the shooting, including whether they unnecessarily placed themselves in a position that gave them no choice but to fire their weapons (NYPD Police Academy, 2007a, p. 20). The NYPD patrol-guide procedure on use of force reminds officers that

[A]ll uniformed members of the service are responsible and accountable for the proper use of force under appropriate circumstances. . . . Only the minimum amount of force necessary to overcome resistance will be used [and] deadly physical force will be used ONLY as a last resort and consistent with Department policy and the law. (NYPD, 2006g)

In this chapter, we review how and why police officers use force, the scale of force that the NYPD authorizes—often called the use-of-force continuum—and the most recent firearm-discharge statistics.

### Use of Force Is an Essential Part of Policing

In the landmark essay *The Functions of the Police in Modern Society*, Egon Bittner (1970) lay out the central role that the use of force plays in policing in the United States.<sup>1</sup> According to Bittner, a police officer is an agent of the state who is granted special powers to apply coercive force under special circumstances. The force applied may be as trivial as pushing or as consequential as using deadly force. However, whatever force is used, it is expected to be reasonable for the situation at hand. The NYPD student-guide procedure on use of force puts it this way:

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<sup>1</sup> The NYPD cites Bittner's essay in its instruction of new police officers (NYPD Police Academy, 2007a).

The police are permitted to use force to stop people from doing things that are illegal and/or dangerous to themselves or others; or that threaten public order; or to take people into custody to answer for criminal behavior. Thus in some carefully delineated situations, the police can use force to take control of people who would otherwise be imminent threats to the lives and safety of innocent people or even themselves; or who otherwise would successfully complete or escape from crimes; or who otherwise would threaten public order. Officers cannot arbitrarily select from force options available to them, however. . . . The amount of force [that an officer is] permitted to use must be carefully matched to the nature of the situation [that the officer] confronts and the danger it presents. (NYPD Police Academy, 2007a, p. 4)

Under the general heading of tactics, NYPD officers are taught that the use of a firearm “should be a last resort. [The officer] should shoot someone only when there are no other available ways of protecting [him or herself] or someone else against imminent death or serious injury” (NYPD Police Academy, 2007a, p. 20).

## Use of Force Is Rare

The use of any force is rare. DOJ estimates that, “of the 43.5 million persons who had contact with police in 2005, an estimated 1.6% had force used or threatened against them during their most recent contact, a rate relatively unchanged from 2002 (1.5%)” (Durose, Smith, and Langan, 2007, p. 1).<sup>2</sup> Recent data for the NYPD show the same general pattern as that reported by the DOJ. In New York City, an analysis of the more than half a million stop, question, and frisk report worksheets filed in 2006 shows that police pointed their weapons at suspects in about 0.5 percent of filed reports.<sup>3</sup>

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<sup>2</sup> The rate of contacts varies by gender, race, and age. Interestingly, it also varies by the size of the jurisdiction where the citizen resided in 2002, with the lowest contact rates reported in jurisdictions with populations of 1 million or more (Durose, Smith, and Langan, 2007, p. 1). However, in large jurisdictions, with populations of more than 500,000 people, the contact with police was more than twice as likely to involve either the use of force or a threat to use force, i.e., 3 percent versus 1.3 percent of all contacts (Durose, Smith, and Langan, 2007, p. 16).

<sup>3</sup> In 2006, NYPD officers filed 506,489 stop, question, and frisk reports. As reflected in these data, police weapons were drawn (only) 1,280 times (0.3 percent) or drawn and pointed at a suspect 3,169 times (or 0.6 percent). While direct comparisons between the national data and the New York City data are not possible because of differences in data-collection methodologies, both national data and NYPD data suggest that this is a very rare event (NYPD, 2006f).

## Matching Force to the Nature of the Situation

The patrol-guide procedure on use of force promulgates the NYPD’s policy on the use of force. The policy makes it clear that “excessive force will not be tolerated” and charges each MOS to “maintain control or intervene if the use of force against a subject clearly becomes excessive” (NYPD, 2006g). The application of minimum force is discussed more clearly in the *Police Academy Student’s Guide* section on use of force (NYPD Police Academy, 2007a). The NYPD has developed an “escalating scale of force” that “matches several general types of situations or provocations with the degree of force that is reasonable and necessary for each” (NYPD Police Academy, 2007a, p. 5). The purpose of the scale is to ensure that “NYPD officers’ action[s] always pass the (Fourth Amendment) constitutional test” (NYPD Police Academy, 2007a, p. 5)—that is, that the force used was reasonable and necessary in order to seize, or bring under police control, the person against whom it was used. Table 2.1 shows the provocations and appropriate responses.

**Table 2.1**  
**Escalating Scale of Force**

Provocation or Condition	Appropriate Force Response
Imminent threat of death or serious physical injury	Use deadly force, usually the firearm
Threat or potential of lethal assault	Draw or display firearm
Physical assault likely to cause physical injury	Use impact techniques (e.g., batons, fists, feet)
Threatened or potential physical assault that is likely to cause physical injury	Use oleoresin capsicum (OC), or pepper, spray (less-than-lethal weapon)
Minor physical resistance, such as grappling, going limp, or pulling or pushing away	Use compliance techniques, such as wrestling holds and grips designed to physically overpower subjects or to inflict physical pain, which end when the technique is stopped and cause no lasting injury
Verbal resistance, such as failure to comply with directions	Use a firm grip on, for example, arm or shoulder that causes no pain but is meant to guide someone (e.g., away from a fight, toward a police car)
Refusal to comply with requests or attempts at persuasion	Use a command voice: Firmly giving directions (e.g., “I asked for your license, registration, and proof of insurance, sir. Now I am telling you that, if you don’t give them to me, I will have to arrest you.”)
Minor violation or disorderly conditions involving no apparent threats to officers or others	Use spoken persuasion: Requests for compliance (e.g., “May I see your license, registration, and proof of insurance, sir?”)
Orderly behavior in public places	Maintain a professional presence (e.g., the officer on post deters crime and disorder; the highway unit deters speeding)

SOURCE: NYPD Police Academy (2007a, p. 7).

The law provides that police officers can use force to take control of someone who refuses to cooperate, but there are legal and practical limits. Legally, the force applied must fit the situation, but, if the force applied does not have the desired results, officers are not free to escalate by using deadly force. In other words, just because an officer is not able to physically control a suspect, the officer is not justified in shooting the suspect.

## Use of Deadly Force: A Changing Paradigm

Discharging a weapon with the intent of hitting a person is the most profound application of force by a police officer. The acceptability of police use of deadly force in the United States has been changing. Police departments have had to adjust the ways in which they train and report accordingly, with the U.S. Supreme Court case of *Tennessee v Garner* (471 U.S. 1, 1985) standing out as the landmark event in this shifting paradigm. Before *Garner*, police officers were authorized, based on English common law, to use deadly force in defense of life and to *apprehend persons committing or fleeing to avoid arrest* for a felony. The fleeing-felon doctrine was finally reversed in *Garner*. Justice Byron R. White, writing for the majority, pointed out that common-law rule arose at a time when virtually all felonies were punishable by death. He stated that, since most U.S. jurisdictions “also imposed a flat prohibition against the use of deadly force to stop a fleeing misdemeanor” (471 U.S., p. 13), and since, over time, “the gulf between the felonies and the minor offences” (471 U.S., p. 15) had narrowed and was today minor and often arbitrary, the justification for using deadly force against a fleeing felon had been undermined. The majority of the court held that the “apprehension by the use of deadly force is a seizure subject to the reasonableness requirement of the Fourth Amendment” (471 U.S., p. 3) and that “such force may not be used unless it is necessary to prevent the escape and the officer has probable cause to believe that the suspect poses a significant threat of death or serious physical injury to the officer or others” (471 U.S., p. 4).

By the time *Garner* was decided, a number of states had already started to change, and the common-law tradition was not universally observed throughout the United States.<sup>4</sup> In fact, Justice White noted that the variation in state rules indicated a move away from the common-law rule, particularly in the police departments themselves

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<sup>4</sup> Fyfe (1981, p. 378) noted, “[M]any legislatures have modified the fleeing felon rule. Eight states have limited justifiable use of police deadly force to defense-of-life situations and to apprehension of persons who have at least threatened the use of deadly force, or whose conduct indicates that delay in apprehension would create a substantial risk to others of death or serious bodily harm; and ten states have limited the use of deadly force in arrest to situations involving persons suspected of crimes of violence. Thirty-two states operate under the ‘fleeing felon rule,’ which authorizes use of deadly force to apprehend even unarmed suspects fleeing from nonviolent felonies.”

(471 U.S. 1), citing both the Federal Bureau of Investigation and the NYPD as examples of law-enforcement agencies that “forbid the use of firearms except when necessary to prevent death or grievous bodily harm” (471 U.S., p. 1).<sup>5</sup>

The U.S. Supreme Court added clarity to the standards by which police officers should be judged when using force, deadly or otherwise, in the case of *Graham v Connor* (490 U.S. 386, 1989). The court rejected Graham’s claim that excessive force was used in stopping him in violation of his rights under the Fourth Amendment. The court held that “*all* claims that law enforcement officers have used excessive force—deadly or not—in the course of an arrest, investigatory stop, or other ‘seizure’ of a free citizen should be analyzed under the Fourth Amendment and its ‘reasonableness’ standard” (490 U.S., p. 396). The court further held,

Determining whether the force used to effect a particular seizure is ‘reasonable’ under the Fourth Amendment requires a careful balancing of ‘the nature and quality of the intrusion on the individual’s Fourth Amendment interests’ against the countervailing governmental interests at stake. . . . The ‘reasonableness’ of a particular use of force must be judged from the perspective of a reasonable officer on the scene, rather than with the 20/20 vision of hindsight. (490 U.S., p. 397)

## Efforts to Control the Use of Deadly Force

In 1972, the NYPD, in response to what was perceived at the time as a “relatively high number of firearms incidents involving police officers” (NYPD, 2004, p. 7) produced a new set of enhanced shooting guidelines. The new guidelines substantially limited the situations in which officers were allowed to use deadly force and established the FDRB to investigate each discharge and to determine whether the discharge was consistent with the new policy. If the discharge was out of policy, even if it met the legal requirements of the NYPL, the officer would be subject to departmental discipline. The department reported that these changes “almost immediately improved firearms discipline and reduced the number of shootings” (NYPD, 2004, p. 7).<sup>6</sup> The changes

<sup>5</sup> Justice White also noted that, for accreditation by the Commission on Accreditation for Law Enforcement Agencies (CALEA), a department must restrict the use of deadly force to situations in which “the officer reasonably believes that the action is in defense of human life . . . or in defense of any person in immediate danger of serious physical injury” (471 U.S., p. 19). For a discussion of the evolution of views on the use of deadly force, see Fyfe (1988).

<sup>6</sup> Michael White (2000, p. 296) noted that, “In 1972, the New York City Police Department created new, more restrictive guidelines governing the use of deadly force. These generally permitted officers to shoot only in defense of life and greatly limited officer discretion to shoot at fleeing suspects.” In 1975, James Fyfe examined the effect that the directive had on the frequency, nature, and consequences of shootings from 1971 to 1975. His analysis showed significant decreases after the directive was implemented both in the use of deadly force, especially in circumstances prohibited by the new rules, and in officer injury and death. See Fyfe (1978).



also included a systematic review of all future firearm discharges to “assess the priority of firearms discharges and gauge the need for adjustments in weapons training of officers” (NYPD, 2004, p. 7).<sup>7</sup>

## **NYPD Policy on the Use of Deadly Force**

The current NYPD guidelines covering deadly force and the discharge of a firearm (NYPD, 2004, p. 7) are as follows:

- A police officer shall not use deadly force against another person unless the officer has probable cause to believe that he or she must protect self or another person present from imminent death or serious physical injury.
- A police officer shall not discharge his or her weapon when doing so will unnecessarily endanger innocent persons.
- A police officer shall not discharge his or her firearm in defense of property.
- A police officer shall not discharge his or her firearm to subdue a fleeing felon who presents no threat of imminent death or serious physical injury to self or another person present.
- A police officer shall not fire warning shots. A police officer shall not discharge his or her firearm to summon assistance, except in emergency situations in which someone’s personal safety is endangered and unless no other reasonable means is available.
- A police officer shall not discharge his or her firearm at or from a moving vehicle unless deadly physical force is being used against the police officer or another person present by means other than a moving vehicle, e.g., being fired at from the vehicle.
- A police officer shall not discharge his or her firearm at a dog or other animal except to protect self or another person from physical injury and when there is no other reasonable means to eliminate the threat.
- A police officer shall not, under any circumstances, cock a firearm. Firearms must be fired double action at all times.

It should be noted that the NYPD guidelines for the use of deadly physical force are more stringent than the legal restriction established by Article 35 of the NYPL. Table 2.2 compares the NYPL and NYPD policy by examining the situations in which a police officer may use deadly force to apprehend a person.

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<sup>7</sup> For example, to minimize unintentional discharges, the NYPD increased the trigger pressure required for the firearm to discharge. The GLOCK™ pistol comes factory set at a trigger pull of 5 to 5.5 pounds. Before it is issued, the trigger pull is set to 12 pounds.

**Table 2.2**  
**NYPD Policy and NYPL: Situations in Which a Police Officer May Use Deadly Force to Apprehend Someone**

Situation	NYPL	NYPD
The suspect has used, attempted to use, or threatened imminent use of nondeadly physical force against a person.	Yes	No
There is kidnapping, arson, escape in the first degree, burglary in the first degree, or any attempt to commit such a crime.	Yes	No
A felon or one resisting arrest or trying to escape custody is armed with a firearm or deadly weapon.	Yes	No
It is necessary to defend the officer or another person against use of imminent, deadly physical force.	Yes	Yes

SOURCE: NYPD Police Academy (2007a).

## Firearm-Discharge Statistics

The Firearms and Tactics Section of the NYPD Police Academy produces an annual report on firearm discharges from the previous year.<sup>8</sup> The purpose of the report is to identify “patterns and possible hazards . . . which allow the Department to structure training courses to address current conditions” (Hurley, 2006, p. 4). In addition, since January 2006, an advisory committee within the Firearms and Tactics Section reviews shooting reports to “glean information regarding tactical deficiencies [so that] semi-annual re-qualification cycles, recruit training, lectures and scenarios used in the advanced tactical firearms course” (Hurley, 2006, p. 4) may be revised.

Table 2.3 shows the number and type of firearm discharges between 1999 and 2006.<sup>9</sup> With a uniformed force of approximately 37,000 officers, statistically, it is unlikely that an officer will ever discharge his or her weapon during his or her entire career on the police force. During 2006, 156 officers were involved in a firearm-discharge incident. Moreover, fewer than half of these incidents involved an officer shooting at a

<sup>8</sup> In 1999, the NYPD revised the annual firearm-discharge report, changing formats and definitions. Unfortunately, over time, the numbers do not track (e.g., tables that present data from earlier years do not track with the corresponding numbers previously published). A consistent set of definitions and formats has been issued since the 1999 report was published and is presented in Table 2.3.

<sup>9</sup> In 1999, the NYPD introduced a new aggregation scheme in its yearly reports. Prior to that, starting in 1995, the total numbers of incidents between 1995 and 1998 were 345, 318, 253, and 249, respectively. The numbers of officers involved between 1995 and 1998 were 659, 590, 463, and 451, respectively. These numbers are significantly greater than those reported during the 1999 to 2005 period. The average number of incidents between 1995 and 1999 was 291, compared with 130 for the later period. Also, in the earlier period, the average number of officers involved was 589, compared with 149 in the later period. (Data are taken from the yearly firearm-discharge reports prepared by the Firearms and Tactics Section of the NYPD Police Academy.)

human being. After eliminating two-sided gunfights, there were 47 incidents in which officers discharged their weapons without being fired on.

Unfortunately, the statistics of the type shown in Table 2.3 are not collected nationally, so comparison with national averages or other departments is difficult. However, the Metropolitan Police Department of Washington, D.C. (MPDC), does report comparable statistics (MPDC, 2006). In 2005, the NYPD was almost 10 times larger than the MPDC (Reaves, 2007). Adjusting for size, on a per-officer basis, the police in Washington “intentionally discharged firearms at people” 3.7 times more than did police in New York City.

While not part of the NYPD, the New York City Civilian Complaint Review Board (CCRB) also looks at police firearm-discharge cases that are brought to its attention as excessive-force complaints against New York City police officers. Between 2002 and 2006, the NYPD reported 612 firearm-discharge incidents, of which 455 might have brought the public into contact with officers discharging their weapons, e.g., officers involved in gunfights, shooting at suspects who did not return fire, shooting at a dog. In the same period, but not necessarily from these incidents, there were 101 complaints about “gun fire.” In the same period, 87 cases were resolved; only three of these cases “substantiated there was sufficient credible evidence to believe that the subject officer committed the act charged in the allegation and committed misconduct” (CCRB, 2007 p. 9). Of the remaining 84 cases, 73 were unsubstantiated or unfounded or the officers were exonerated. The officers in the remaining 11 cases had left the NYPD, and their cases were closed (see CCRB, 2007, p. 52, Table 2; p. 95, Table 25).

Besides the numbers reported in Table 2.3, noteworthy items from the 2005 firearm-discharge report (Hurley, 2006) include the following:

- As has been reported nationally, police officers often miss their targets (Morrison, 2006, p. 332). The NYPD reports hit-rate statistics both for officers involved in a gunfight and for officers who shoot at subjects who do not return fire. Between 1998 and 2006, the average hit rate was 18 percent for gunfights. Between 1998 and 2006, the average hit rate in situations in which fire was not returned was 30 percent. In 2006, the hit rate against subjects who did not return fire was 27 percent.<sup>10</sup>
- On average, more rounds were discharged during gunfights than during other types of incidents. In 2006, the number of shots fired per gunfight incident was 11.1, compared with 4.7 for incidents against subjects who did not return fire. Officers involved in gunfights fired, on average, 7.6 rounds, compared with an average of 3.5 for officers who fired against subjects who did not return fire.

<sup>10</sup> Vila and Morrison (1994, p. 1) found that, while “variables such as cognition and perception . . . are important, the body’s nervous and mechanical system places finite limits on combat handgun shooting accuracy.”

**Table 2.3**  
**NYPD Firearm Discharge, 1999–2006**

Measure	1999	2000	2001	2002	2003	2004	2005	2006
MOSs involved	194	175	175	138	184	144	166	156
On duty	160	143	149	119	155	113	140	126
Off duty	34	32	26	19	29	31	26	30
Uniformed, on duty	104	79	84	61	100	58	79	70
Plainclothed, on duty	90	96	91	77	84	86	87	56
Total incidents	155	134	136	119	130	114	123	126
Defense of self or others: gunfights	20	11	16	12	6	11	16	13
Defense of self or others: no fire returned	41	52	41	43	55	40	43	47
Dog	43	39	40	38	35	26	32	30
Accidental discharge	37	26	27	24	25	27	24	26
Other	14	6	12	2	9	10	8	10

SOURCES: NYPD firearm-discharge reports, 1999–2006.

- Accuracy improves at close range, with officers hitting their targets 37 percent of the time at distances of seven yards or less; at longer ranges, hit rates fall off sharply, to 23 percent.
- About one-quarter of all accidental discharges occur while officers are “struggling with a subject.”

Because weapon discharges are already infrequent,<sup>11</sup> efforts to reduce them are likely to have small numerical results. What these numbers do not show, however, are the cases in which civilians or officers were injured during the application of force but a weapon was not discharged.

<sup>11</sup> For example, the NYPD stop, question, and frisk database, which accounts for only part of the contacts that the officers have with the public, reports more than half a million encounters. By that measure, one may conclude that only a very small number of encounters between NYPD officers, even those including members of the public whom police stop, result in a weapon being discharged and that a weapon discharge is infrequent.



## Training

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### Introduction

While the original focus of the training portion of this study was to “conduct a systematic review of NYPD’s new recruit and in-service firearms training . . . to ensure that training materials address the appropriate range and complexity of discharge circumstances that any officer may encounter during a police career” (NYPD, 2007b), as the RAND team considered the full range of training that officers receive, the focus shifted from firearm training alone to a range of training that officers receive in the use of force—for example, how officers are trained to deal with uncooperative suspects and to control situations so that the use of firearms might be minimized. The constellation of skills required to be successful in these encounters come from the training that officers receive in a broad range of classes, including ground tactics, gun retention, the management of street encounters, encounters with emotionally disturbed persons, car stops, and domestic incidents, to name a few. These skills become intertwined in day-to-day policing. For example, a mishandled domestic disturbance can quickly turn into a scuffle in which the importance of training in ground tactics and gun retention becomes evident.

In this chapter, we review the training that an NYPD officer receives, starting with recruit training at the police academy, the field training program that probationary police officers receive, and the in-service training that continues as long as an officer is an MOS. We then discuss our observations of training and our assessment of it.

### Overview of NYPD Training

The NYPD is the largest police department in the country, with almost three times the number of sworn officers as the Chicago police department, the next-largest department.<sup>1</sup> The NYPD Police Academy trains, on average, approximately 4,000 recruits

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<sup>1</sup> In 2004, the last year for which national data were available from DOJ, New York had 36,118 full-time sworn officers. Chicago, the nation’s third-largest city, had 13,129. Multiple departments serve the Los Angeles

each year in two classes of about 2,000 recruits each. The Patrol Services, Housing, and Transit bureaus are responsible for in-service training, including the field training program for new probationary police officers after they graduate from the police academy. In-service training occurs through a number of different vehicles. The most structured forms of regular in-service training are borough-based (or IN-TAC) training, precinct-level training, and semiannual firearm-requalification training.

### Recruit Training

The NYPD Police Academy has five sections that conduct different aspects of training: Recruit Training, Firearms and Tactics, Specialized Training, Leadership Development, and Executive Development. Recruit training is divided into two terms that together encompass 23 weeks: Knowledge and Fitness and Skills and Abilities.

The knowledge and fitness term extends for 14 weeks and is divided into three trimesters (see Table 3.1). In the knowledge and fitness term, police recruits learn the laws, policies, and procedures of policing, as well as the required basic physical skills (e.g., how to effectively “lay hands” on a suspect, how to retain control of their firearms). Although some lessons may be given in groups, much attention is paid to the individual recruit.

The skills and abilities term extends for the remaining nine weeks of training and includes two weeks of firearm and tactical training, as well as the lessons shown in Table 3.2. The lessons in this term are heavily focused on workshops and practical exercises in policing. They are exposed to increasingly complex scenarios, often with partners in classrooms, the tactical house, and the tactical village. These become dress rehearsals for what they will see and do when they are assigned to a precinct.

Recruits are assigned to a training company of approximately 30 recruits each; some training lessons are taught to one company at a time, and, for other lessons, several companies may be engaged at the same time. Because of space and scheduling constraints, the lessons shown in Table 3.2 are not necessarily provided in the same order to all recruits.

To graduate from the NYPD academy, recruits must complete and pass the following examinations and activities (see NYPD Police Academy, 2007b, pp. 41–42):

- *Three written trimester exams:* This paper-and-pencil test has a minimum passing score of 75 percent. One retry per exam is allowed within seven working days.
- *Justification exam:* This paper-and-pencil test has a minimum passing score of 100 percent. Content is focused on justifications for the use of force. One retry is allowed within seven working days.

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metropolitan area: The two largest are the Los Angeles Police Department and the Los Angeles County Sheriff's Department, which have 9,099 and 8,239 full-time sworn officers, respectively (Reaves, 2007).

**Table 3.1**  
**Knowledge and Fitness Term Lessons**

<b>Trimester</b>	<b>Description</b>	<b>Hours</b>
1	Introduction to the NYPD	3.0
	General regulations	9.0
	Introduction to law and justice	4.5
	Multicultural policing	3.0
	Policing with integrity	4.5
	Discretion	3.0
	Policing professionally	1.5
	Policing impartially	1.5
	Investigation and report writing	9.0
	Street encounters	10.5
	Authority to arrest	9.0
	Use of force	9.0
	Arrest processing	4.5
	<b>Subtotal</b>	<b>72.0</b>
2	Community policing	4.5
	Criminal procedures	13.5
	Stress management	4.5
	Police field communication	3.0
	Collecting and processing evidence	9.0
	Court appearance	3.0
	People in crisis	9.0
	Missing persons	1.5
	Emotionally disturbed persons	4.5
	Introduction to penal law	4.5
	Crimes against persons	13.5
	Theft and property crimes	9.0
	Crimes and procedure review	1.5
	<b>Subtotal</b>	<b>81.0</b>



**Table 3.1—Continued**

Trimester	Description	Hours
3	Identity theft	4.5
	Weapons	4.5
	Drug offenses	4.5
	Custodial offenses	1.5
	Integrity crimes	9.0
	Domestic violence	9.0
	Children	9.0
	Auto procedures	9.0
	Summonses	4.5
	Quality of life	3.0
	Public order	4.5
	Domestic preparedness	4.5
	Patrol operations	9.0
	Bureau functions	1.5
	CompStat	1.5
	<b>Subtotal</b>	<b>79.5</b>
All	<b>Total</b>	<b>232.5</b>

SOURCE: NYPD (2007a).

- *Job-standard test*: Minimum passing requires successful completion of each of six physical tasks, all performed in 3 minutes 32 seconds or less.
- *1.5-mile run*: Minimum passing requires completion in 14 minutes 21 seconds or less.
- *Firearms and tactics*: Passing means successfully completing all components of basic firearm course and tactical components. It includes handgun qualification with a minimum of 78 percent hits on a number of stationary targets from fixed firing positions.
- *Recruit-officer evaluation*: This requires satisfactory evaluation by Recruit Training Section instructors and squad commanders on practical exercises included in the skills and abilities term.
- *Final written exam*: This paper-and-pencil test has a minimum passing score of 75 percent. One retry is allowed within seven working days.
- *Satisfactory discipline*: This requires a record of adherence to disciplinary standards.

**Table 3.2**  
**Skills and Abilities Term Lessons**

Description	Hours
Introduction to assessments	3
Patrol-guide update	4.5
Car-stop workshop	16
Computer training	8
Bureau functions, CompStat, and electric shock (responding to incidents in which civilians are the victims of an electric shock, how to recognize such victims, and how the officer should avoid becoming a victim him- or herself)	4.5
Mock precincts with radio listening	16
Forms 1 and 2	16
Culture speech	16
Testimony workshop	8
Emotionally disturbed persons workshop at John Jay College	8
Lesbian, gay, bisexual, and transgender persons workshop	3
Legal-issues workshop	4.5
Stop, question, and frisk workshop	4.5
Domestic-violence workshop	4.5
Quality-of-life workshop	4.5
Mass-gathering workshop with Emergency Services Unit (ESU) speaker	4.5
Detecting and deterring fraud	4.5
Problem-solving workshop	3
Arrest workshop	4.5
Patrol days	32
Drug-awareness workshop	2
Dirty-war video (a made-for-TV movie involving a dirty nuclear bomb exploding in downtown London)	2
Gun-identification and -invoicing workshop	2
Communication: 911 speaker	1.5
Command-post operations	1.5
American Society for the Prevention of Cruelty to Animals (ASPCA) Speaker	3
Gang speaker	1.5

SOURCE: NYPD Chief of Patrol (2007).

- *Performance evaluation:* This is an overall evaluation by Recruit Training Section instructors and squad commanders.
- *Driver training:* Passing means successful completion of driver-training program. Four retries are allowed.

**Field Training Program**

On graduation from the police academy, a probationary police officer is assigned to one of three bureaus: Patrol Services, Housing, or Transit. The Patrol Services, Housing, and Transit bureaus are responsible for command-level training of probationary police officers who are new graduates from the academy. The Patrol Services Bureau’s field training program includes 10 primary lessons and three secondary lessons (Table 3.3). The training program is dynamic. For example, a community-immersion program to familiarize officers with the many cultural groups found throughout New York City was recently added to the Patrol Services Bureau’s field training program.

The Housing Bureau uses the Patrol Services Bureau’s field training program with the addition of three lessons unique to the Housing Bureau. These three additional lessons include patrol-guide procedures for field reports, the housing authority trespass-notice program, and vertical patrols.

**Table 3.3**  
**Field Training Program Lessons**

Lesson Type	Description
Primary	Proper preparation of department forms
	Police radios
	Arrests
	Handling prisoners
	Hazardous situations
	Safety and tactics
	Property
	Special victims
	Functions and allegations processing of Internal Affairs Bureau (IAB)
	Summonses
Secondary	Introduction to administrative duties
	Effective communication and problem solving
	Incident response and mobilization training

SOURCE: NYPD Chief of Patrol (2007).

The Transit Bureau has its own training program for probationary police officers that includes three elements: a mentoring program, an academic roll-call training program, and a field training program.

Generally, all of the field training programs consist of unit training in classroom settings and fieldwork under the guidance of supervisors and experienced officers. Probationary police officers are also required to perform a number of radio mobile patrol (RMP) tours (patrol-car tours); foot-patrol tours, including train (for those assigned to the Transit Bureau) and vertical (for those assigned to the Housing Bureau); administrative duties; and arrests. Probationary police officers receive this training in addition to the normal precinct training for in-service officers. Like on-the-job training in other settings, each probationary police officer is required to gain experience in a range of activities and procedures. Experiences are listed on a training form and checked off as the officer completes the experience. Finally, because it is on-the-job training, training occurs as events unfold rather than in some standardized fashion.<sup>2</sup>

### **In-Service Training**

Training continues throughout an NYPD officer's career. There are daily precinct training sessions for various members of the command, and monthly a citywide training session is held at the police academy for all training sergeants. In-service training is provided on new equipment that comes into use in the NYPD (e.g., expandable baton), and there are regular monthly precinct training sessions on various topics. Officers are required to receive refresher training and to requalify with their firearms semiannually. Some officers also receive special training that is required for entry into, or for maintaining status in, certain positions in the force (e.g., ESU, detective, plainclothes, undercover assignments). As one indication of the scope of the training offered, the March 2007 training course catalog lists more than 280 different in-service training courses.<sup>3</sup>

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<sup>2</sup> We did not undertake an evaluation of the field training programs other than to review the few materials available and to note that they exist. Their relatively unstructured nature did not lend itself to observations, and the materials essentially consist of checklists of experiences that probationary officers have completed. Furthermore, they have very few elements directly related to training in the use of force except as it may come up in regular police encounters with the public, in which case a probationary police officer would be coached by his or her training officer or other superior.

<sup>3</sup> We observed only a small portion of the wide range of in-service courses available to officers: expandable baton, several sessions of the semiannual firearm refresher and requalification training, a number of the special firearm-training sessions in which officers fire against movable targets, and scenario or role-playing training with Simunition simulations in the tactical training village.

## Method of Assessment

Our review of NYPD firearm-discharge cases, reinforced by the observation that “one must [be taught to] avoid making choices that sequentially increase the probability” of force being used (Helsen and Starkes, 1999, p. 396), led us to focus on the hands-on training conducted during the skills and abilities term of training for recruits enrolled in the police academy. Our assessment of the quality of training is based on information gathered in the following three ways:

- review of the literature on police training (see, for comparison, Bennell and Jones, 2005; Helsen and Starkes, 1999; Morrison and Vila, 1998; Saus et al., 2006)
- review of the training materials provided by the NYPD, including lesson plans, tests, and evaluation forms from the hands-on workshops and lessons
- observations of a number of workshops and lessons in the skills and abilities term, including stop, question, and frisk; car stop; ground tactics; firearm retention; straight-baton lessons; basic tactical firearm training; situational simulations (i.e., scenario-based training) using the Meggitt FATS simulator; the tactical house; the tactical village with Simunition systems; and the mock-precinct exercises). Also, for comparison, we observed firearm and tactical training at two large police departments and one large sheriff’s department in other cities.

Next, we describe the theoretical framework that guided our assessment.

### A Framework for Assessing the Quality of Training

There are many theories of instructional design and adult learning from which to choose that include frameworks applicable to evaluating the quality of NYPD training. We chose one to guide our evaluation that, in our judgment, is well established and particularly relevant: Gagné’s theory of instructional design (2005).

A central concept of Gagné’s theory is that different learning outcomes (e.g., verbal information, cognitive strategies, attitudes, motor skills) require different internal and external conditions. A quick scan of the elements of police-recruit training makes it clear that all of these learning outcomes are present in police-recruit training. For example, knowledge of laws and procedures is representative of the verbal information that recruits must learn; firearm qualification is an example of motor skills that trainees are required to develop; and the application of these skills in day-to-day police work requires the learning of appropriate cognitive strategies and attitudes coupled with verbal information and motor skills.

Gagné’s theory also identifies nine instructional events that are developed and included in the design of an instructional system:

1. Gain attention.
2. Inform learners of objectives.

3. Stimulate recall of prior learning.
4. Present the content.
5. Provide learning guidance.
6. Elicit performance.
7. Provide feedback.
8. Assess performance.
9. Enhance retention and transfer to the job.

This categorization of learning outcomes and these nine instructional events provide a simple framework for our review of training materials and observations of training activities.

Because these are adult learners, we also used Council for Adult and Experiential Learning (CAEL) principles of effectiveness for adult learners as an additional guide in our evaluation. Specifically, the CAEL principles are as follows:

- The teaching-learning process includes a high degree of interaction among learners and between learners and faculty.
- Multiple methods of delivery are used.
- Assessment is an integral part of the learning process and is done in ways that enhance competency and self-confidence.
- Technology is employed in the learning experience in ways that mirror the technology-rich environment in which many adults work (CAEL, 2000).

### **Application of the Framework**

We did not apply formal scoring protocols in our review of the training materials and observations of the training events. However, the framework guided our review of the training materials and our observations of the training itself. By this we mean, for example, that, in examining lesson plans, one of the things we sought was clearly stated learning objectives. In observing training events, one of the aspects on which we focused was how the content was presented (e.g., whether it followed CAEL principles). We also noted whether and how performance was elicited, feedback was provided, and performance was assessed.

We present our assessment of training in narrative form below, organized by the training activities we observed firsthand. Our narrative focuses on highlighting our judgments, guided by the framework laid out previously, of the strengths and weaknesses we found in the training.

### **Assessment of Recruit Training**

**Basic Policing-Skills Training.** This is our label for the basic skills that police officers need when going hands-on with a suspect—ground tactics, firearm retention, and baton. These basic policing skills are critical because it is precisely in hands-on encoun-

ters that police officers can lose control of their handguns with potentially dire consequences. The different basic-skill training events are conducted in medium to large groups (approximately 30 to 60 trainees).

Overall, we judged that the training we observed in basic policing skills adhered to Gagné's instructional-design principles and the CAEL principles. Consistent with Gagné's principles of instructional design and the CAEL principles of effectiveness for adult learners, the instructors themselves first carefully demonstrated the basic techniques. Next, trainees were slowly coached through each movement. Trainees then practiced the movements with each other under the close observation of instructors. Trainees were allowed multiple practices of each technique before increasing complexity was added to the techniques. Finally, training included multiple trials of going hands-on with their fellow students, thus providing realistic practice in these skills.

Instructors were present throughout the training and observed and corrected student performance on the spot, with a formal evaluation at the end of a block of several related lessons. For example, the Baton Physical Skills Test<sup>4</sup> is given at the end of a block-five lesson and contains 24 separate categories or techniques. Every recruit must score "acceptable" on each of the categories and techniques before he or she can pass the Baton Physical Skills Test. If a recruit fails any single category or technique, an instructor provides remediation training, and the trainee is retested on all the categories and techniques, not just the one that was scored as unacceptable.

As indicated, we judged this instruction to be consistent with the principles discussed earlier. There was substantial interaction between the instructors and the students. As much as was practical, multiple ways of presenting the material were used. Instructors described each movement, demonstrated it with another instructor, and walked the students through the movements in slow motion. Finally, assessment and correction of students' techniques were integral to the instruction process.

**Complex Policing-Skills Training.** We use the term *complex policing-skills training* to refer to training that is centered on preparing officers for the contextually rich situations that they face in day-to-day policing. One example of this training is the stop, question, and frisk workshop. A scenario presented to trainees in this workshop might be a radio call indicating only that someone at a bus stop has been seen waving a handgun. As a pair of trainees approaches the bus stop, they are confronted with integrating their knowledge of laws and procedures with the application of basic policing skills, in real time, to bring this scenario to a safe and legal conclusion.

The nine weeks of recruit training devoted to hand-on skills and abilities is largely done in this kind of scenario-based, role-playing workshop or with simulators, such as the Simunition simulators. The complex-skill training activities we observed in the

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<sup>4</sup> The formal evaluation-scoring sheets, including the Baton Physical Skills Test, are contained in the *Physical Training and Tactics Department Recruit Tracking Booklet* (NYPD, 2007a).

NYPD involved two to four students working with one or more instructors as role-player for a short time while the rest of the class observed.<sup>5</sup>

Complex-skill training in NYPD generally unfolds in the following way. Two to four students are selected from the class for a role-playing scenario or simulation. While the rest of the class observes, the students who are going to role-play the scenario receive a radio call typical of one they might receive on the job, and the scenario commences. The simulation runs its course, and then the instructors provide a critique of student performance. Once complete, another set of students is chosen to participate, usually in a scenario in which the details differ slightly from those of the one they just observed.

Unlike the basic policing-skills training, the limits on the number of students that can participate in one complex-skill training event at a time (in most cases, no more than two to four students), on the number of simulators available in these workshops (e.g., one setup in the academy and two at the firing range), or on the number of instructors means that recruits do not get time to practice, do not get to redo a scenario, and, in the end, are not required to demonstrate a minimum level of mastery of the techniques being taught. Also unlike the basic policing-skills training, in none of the complex-skill training events that we observed did the instructors demonstrate or model correct behavior in the upcoming scenario or simulation.

The car-stop workshop, the use of the simulator, and the North Precinct scenario-based training are indicative of what we observed in complex-skill training generally. That is, all of the complex-skill, scenario-based training we observed unfolded in much the same way with regard to the preparations for the scenarios, the way in which trainees were chosen to participate, the lack of instructor demonstrations of performance, the lack of opportunity for trainees to become proficient, the lack of standardized assessments of performance, and the lack of a requirement for trainees to demonstrate proficiency. We discuss these in greater detail next.

**The Car-Stop Workshop.** The instructor's assessment guide for the car-stop workshop has a clear statement of the training objectives that instructors use to "inform learners of objectives" in accordance with Gagné's theory. It describes the instructional goal of the car-stop workshop as being to

acquaint the recruit officer with the fundamentals needed to conduct low risk car-stops, and high-risk felony car-stops. Sound tactics and the introduction of Verbal Judo to enhance professional demeanor will be demonstrated. Recruits will be expected to balance the need to protect themselves with the need to be professional, courteous, and respectful. (NYPD Curriculum Development Unit, 2004)

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<sup>5</sup> In all of the scenario-based training we observed, a pair of trainees receives a radio call and arrives at the scene. In some of the scenario-based training (e.g., tactical house, tactical village, and car stops), there is usually another pair of trainees identified as backup to the first pair.



For the car-stop workshop, we observed a two-hour classroom presentation of lectures and videos, followed by the role-playing session itself. Of the 18 training performance objectives identified in the instructor's assessment guide, more than half were passive, such as "discuss the recorder's responsibilities during a vehicle stop" (NYPD Curriculum Development Unit, 2004). After a meal break, the recruits assembled on an asphalt-covered area with two patrol cars and one "suspect's" vehicle for approximately four hours of role-playing.

Other than occasional questions and answers in the classroom, no time was allotted for either a formal or informal evaluation of whether the recruits had absorbed the verbal information and intellectual skills that had been taught in the classroom. No examination was given, either of the verbal information or of the trainees' performance during the role-plays. As a result, it is not possible for the department to know whether the students mastered the information taught in the classroom, whether they are able to apply it in the scenarios or on the job, or whether the two hours of classroom time was effective in achieving the training performance objectives.

The instructor's assessment guide calls for a half-hour to be devoted to a "demonstration of unknown risk car stops and high risk (felony) car stops by police academy staff." The instructors demonstrated the various individual elements of a car stop, such as where to stop the patrol car in relation to the vehicle being stopped and how the operator and recorder should each approach the stopped vehicle. But they did so in a disjointed manner. However, the fluid performance of two experienced police officers conducting a car stop was never demonstrated in its entirety for the trainees to model.

At least six of the training performance objectives call for the recruits to be able to demonstrate the responsibilities and tactics of the operator and recorder in a car stop. However, the size of the class in attendance (two companies, or approximately 60 trainees) and the limited amount of time allocated to the role-playing exercises meant that no single recruit participated in more than one exercise and that approximately half of the recruits did not have an active role in any exercise. Furthermore, we did not observe the instructors systematically working their way through a class roster to ensure that everyone participated, nor did they take notes or score participants in the role-playing exercises. While feedback was provided to the role-players, the assessment of performance called for by Gagné's theory and the CAEL principles was lacking.

Although the instructors conducted extensive debriefings after each role-playing exercise, recruits were not required or given the opportunity to demonstrate an ability to perform the car stop correctly. Indeed, although few recruits performed the car stop correctly, the number of trainees and limited time for the class meant that there was no time for "do-overs." In addition, the staff often remarked that the academy is "where we want you to make your mistakes." While it may be true that recruits should make their mistakes in the academy and not on the street, if the recruits are not allowed to practice a task until they can perform it correctly, recruits will have little confidence

that they will be able to perform a task correctly when they are assigned to a precinct. Although meeting several of the CAEL principles, in our judgment, the car-stop workshop misses on the CAEL principle that assessment “is done in ways that enhance competency and self-confidence.”

**Simulator Training.** The NYPD had new simulator equipment delivered in March 2007 but continues to rely on the same scenarios it used previously. In the course of our observations, every scenario that was used progressed to the point of trainees having to make a shoot/don’t shoot decision.<sup>6</sup> Although each of the scenarios we observed could have been resolved without shooting, there was always a branch in the scenario that led to the trainee having to make a shoot/don’t shoot decision. This is not atypical of the way such simulators are used in the other departments we visited.

Other systems<sup>7</sup> and additional scenarios are available that incorporate such things as broadcast-quality DVD technology to create vivid digital environments and offer a wider range of use-of-force scenarios (i.e., more than 90 standard video scenarios that include such titles as “Officer Down,” “Plain Clothes Officer,” “School and Workplace Violence,” and a number of TASER-device scenarios). However, even with the new scenarios, the Meggitt FATS simulator can still accommodate only a few students at a time, thus limiting how useful it can be in providing recruits with a robust tool to learn and practice these complex policing skills that may have direct consequences for the use of force.<sup>8</sup> Typically, two students use the Meggitt FATS simulator at a time, with the remaining recruits observing. Each training event takes several minutes to set up, five minutes or so to run, and five minutes to critique. With 16 recruits in a class, it takes 1.5 hours for every member of the class to get a single opportunity to experience training on the simulator. At that rate, it is not possible to expose students to the widely varied scenarios that Meggitt has developed that now include judgment scenarios. In some departments we visited, students must pass multiple scenarios before they can graduate.

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<sup>6</sup> Young (2006) noted that

the evolutionary path of law enforcement training sims [simulators] has been from simple systems that presented officers with shoot/don’t shoot targets to high-powered computer systems that allow instructors to create their own scenarios. New simulation systems will be capable of training anyone on any topic, anytime, at any location. . . . Other than role-playing and force-on-force exercises, using sims is one of the best ways to train officers how to react to rapidly developing incidents. You can use a sim to learn how to talk to and approach an unruly drunk at a traffic stop, or to practice how to respond to an active shooter. . . . The result was that simulation training systems evolved from shoot/don’t shoot scenarios into scenarios that required trainees to make a variety of use-of-force decisions.

<sup>7</sup> In addition to Meggitt, other companies produce video branching-based simulators, including IES Interactive Training, Advanced Interactive Systems, and L-3 Communications.

<sup>8</sup> The scenarios and equipment are generally designed for one or two trainees to participate at the same time. As a result, the limiting factors on how many scenarios in which an individual trainee can participate are the number of instructors and simulators available, number of trainees, time allotted to debriefing, and total time allotted to simulator training.

**The Mock Precincts.** NYPD holds two mock-precinct training sessions for recruits. Trainees face six scenarios in one day in the North Precinct, and, several weeks later, they face an additional six scenarios in the South Precinct. Unlike the car-stop workshop and the simulator training, the performance of individual trainees in the mock precincts is scored. We observed several trainees in four of the North Precinct scenarios: A brick has fallen from a building and hit someone on the head; a man is urinating in public; an individual is playing a very loud radio in public; and a man is violating a protection order in a domestic dispute. Much like all of the complex-skill training we observed, the scenarios unfold when two trainees receive a radio call and are dispatched to where the incident is occurring. Also like the other complex-skill training we observed, trainees did not have a chance to do a scenario over. However, unlike the other complex-skill training events, every trainee goes through every scenario in the mock precincts.

The scenarios are set up in classrooms in the police academy using simple props. Two experienced officers observe the scenario, making notes and an overall evaluation (“excellent,” “good,” “fair,” or “unacceptable”) of each trainee on a recruit-assessment form. No clear exit standards exist for how overall performance should be judged, and, as a result, judgments appeared inconsistent. For example, in the domestic-dispute scenario, one trainee allowed the male in the dispute to get his hand on the trainee’s firearm. The role-player stated that he could easily have taken the weapon but did not because the trainees had not yet had the class in handgun retention. The trainee was scored “fair” in the scenario. In another round of the same scenario with two different trainees, one trainee stayed with the complainant and failed to assist his partner in controlling the male in the dispute. This trainee’s overall performance was rated “unacceptable.”

In addition to the overall performance rating, the recruit-assessment form includes places to mark deficits in four categories of performance: radio communication; knowledge of procedure; knowledge of law; and courtesy, professionalism, and respect. The completed forms are returned to the official company instructor (OCI) for review. We reviewed the recruit-assessment forms for four companies of trainees (approximately 120 trainees). Very few of these deficits were noted, most included a brief comment, and yet approximately 40 percent of the assessment forms indicated “retrained on scene” without a clear indication of what element of performance was retrained. In our observations, *retraining* meant primarily that the officers observing the trainees’ performance commented on or provided feedback to the trainees after the scenario was brought to a conclusion. OCIs do not observe or have firsthand knowledge of their trainees’ performance in the mock precincts and must rely on word of mouth from the assessors or on the remarks written on the recruit-assessment forms or

on the end-of-day review meeting, at which the assessors, trainees, and OCIs assemble to review trainee performance in the scenarios.<sup>9</sup>

At the end-of-day meeting, the assessors review performance in each scenario and discuss the major issues that surfaced in trainee performance. Only those individual trainees who have had substantially greater difficulties in the scenarios are singled out for more in-depth review of their performance. In the end, demonstration of acceptable performance in the mock precincts is not required for graduation from the academy. This is not to say that it is irrelevant: Exceptionally poor performance in any of the scenario-based training events could, but rarely does, result in a trainee failing to graduate.

The use of these role-playing scenarios falls far short of what other departments have incorporated as one of their major pedagogical methods. In other departments, recruits are exposed to a wider variety of situations and are given the opportunity to practice with the expectation that they will achieve a higher score than “fair” or “unacceptable” before they graduate. While the class size at the NYPD may explain why that level of training is not provided, the failure to make better use of simulations raises serious problems when comparing the NYPD recruit-training program with those of other departments.

### **Options to Improve Recruit Training**

The NYPD engages in a substantial amount of complex-skill training using role-playing exercises. However, as noted, there is room for improvement. In our judgment, recruit training could be significantly improved by increasing the quality, number, and use of scenario-based training events that each recruit experiences and the flexibility in the training schedule to allow full remediation and demonstrations of proficiency. Improvements should include the opportunity for students to have multiple tries in scenarios and on simulators and a full grading of student performance in scenarios and simulators.

Complex-skill training is expensive because class sizes are large and it is time and instructor intensive. To accomplish the improvements suggested, we recommend that the NYPD explore a resequencing of recruit training from semiannual classes to a more continuous sequencing with smaller classes starting every several weeks. In addition, the NYPD should explore options to reduce the unit cost of scenario-based training.

**Options to Improve the Efficient Use of Scenario-Based Training by Resequencing Recruit Training.** Currently, the NYPD starts training twice a year with approximately 2,000 recruits in each semiannual class. With 30 recruits in each company, the academy moves 66 companies through the various simulation stations in relatively

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<sup>9</sup> It is worth noting that OCIs also do not routinely accompany their companies to the car-stop workshop or to firearm and tactical training at Rodman’s Neck. As a result, OCIs also lack firsthand knowledge of how well their trainees perform in these activities.

quick order. For example, twice a year, the range at Rodman's Neck devotes 10 weeks to training recruits. With a limited number of Meggitt FATS simulators, moving 2,000 recruits in such a short period is very difficult. Moreover, during the rest of the year, the demand on simulators is reduced.

Alternatively, if the NYPD started an academy class every two weeks, leaving a gap for the holiday season, the training load could be spread over 24 classes. Each class would be 167 students rather than 2,000 students. There would be six companies in each class, rather than 66 companies. The demands on the range, the simulators, and scenario-based training events, such as the car stop, would be spread more evenly over the year. In addition, if a student missed a class because he or she were sick, or if a student needed remediation to include taking a unit over again, the student could be reassigned to the next class, which would be just two weeks behind.<sup>10</sup>

A full analysis of the costs and benefits of resequencing recruit training might uncover other tangible and some intangible costs and benefits, but, given the importance of scenario-based training and the high cost of the equipment, alternative sequencing should be explored.

**Options with the Potential to Reduce the Cost of Scenario-Based Simulator Training.** We realize that substantially increasing scenario-based training, particularly as it is done today, will be expensive. The major cost of this system is student and instructor time. This will be multiplied many fold if recruits are given the opportunity to practice and required to demonstrate proficiency before they pass.

Unfortunately, the improved Meggitt FATS trainer and other advanced simulators, such as the Advanced Interactive Systems PRISim<sup>®</sup> video-based judgment-training simulator, still use the same basic video-branching technology that makes a single, scenario-based training event expensive. Modern computer technology, however, does hold some promise to turn laptop computers into individual simulation workstations and to effectively drive down the marginal cost of running a scenario. While the cost of developing the scenario might be substantial, that cost would be amortized over all the students and all the scenarios they might play. For example, if scenarios can be developed for laptops that can teach use-of-force judgments, the marginal cost of a scenario-based training event would be only the cost of the recruit's time, because it would not require an instructor's intervention.

The current state of the art suggests that this may be feasible in the near future, although it has not been developed. Advances in video-game technology have resulted in computer software and hardware developments that are directly relevant (e.g., advanced video cards and processors for laptops today can quickly render lifelike figures and faces with realistic expressions that are responsive to inputs from the player,

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<sup>10</sup> A number of institutions with very large student loads sequence their training this way. The military starts new basic-training classes every week, and the Culinary Institute of America starts new classes every three weeks. In this way, they can maintain the proper order of classes and make better use of their resources, e.g., resources that are used at the beginning of the sequence do not lay idle waiting for a semiannual class to start.

and advanced authoring systems facilitate the programming of real-world situations). While today's video games are generally first-person-shooter action games that teach exactly the wrong behaviors for a police officer (e.g., shoot first and never ask questions), that is the choice of the game designer and not something that is inherent to the game technology.

There are a number of serious applications of these modern technologies that teach similar skills to soldiers and disaster workers. The U.S. Army, in partnership with the University of Southern California, has established the Institute for Critical Technologies (ICT). Simulations that use game technologies, such as *Every Soldier Is a Sensor* (see Ray, 2005), have some of the features that might go into a use-of-force laptop simulation, but they still lack some of the realism of today's better video-based simulations.

The virtual simulations built by the Environmental Tectonics Corporation into its Advanced Disaster Management Simulator (ADMS™) systems provide a software platform that appears to have the potential to support a high-end laptop use-of-force simulation. Working with the University of Central Florida's Institute for Simulation and Training (IST) and Drexel University's RePlay Lab, it has demonstrated a range of realistic facial features that can be programmed as the responses that a suspect might have in reaction to the commands an officer gives (see Figures 3.1 through 3.3). The facial features that the suspect displays are sufficiently realistic to provide additional cues to the officer. Its program provides similar cues based on body movement and spoken responses. Officers' input would be through a joystick, a simulated weapon, or

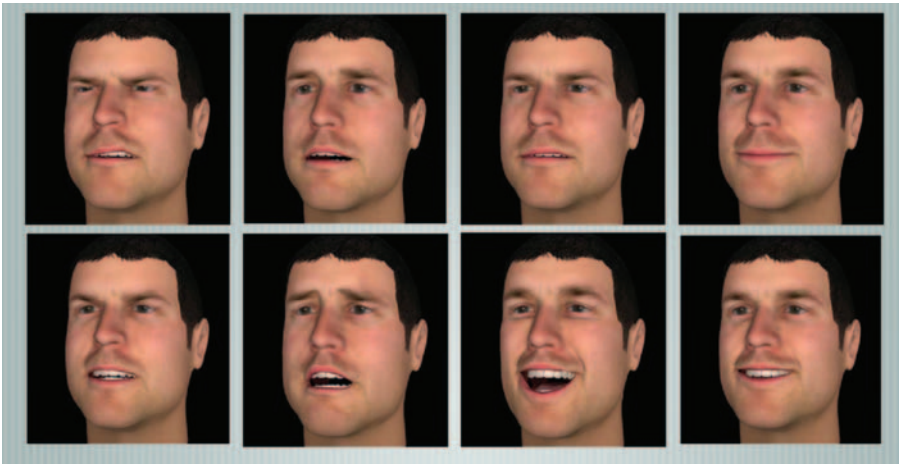
**Figure 3.1**  
Environmental Tectonics Corporation's ADMS Expression Engine



SOURCE: Environmental Tectonics Corporation. Used with permission.

RAND MG717-3.1

**Figure 3.2**  
**Environmental Tectonics Corporation's ADMS Emotional Expression Range**



SOURCE: Environmental Tectonics Corporation. Used with permission.  
RAND MG717-3.2

**Figure 3.3**  
**Environmental Tectonics Corporation's ADMS Emotional Range (Detail)**



SOURCE: Environmental Tectonics Corporation. Used with permission.  
RAND MG717-3.3

voice commands. Officers' responses could be movement to make contact with the suspect, drawing and pointing a weapon, firing the weapon, or issuing a simple spoken command. A stand-alone system might consist of nothing more than the laptop itself and a joystick. It could also run a projector or a video visor. In no case would an instructor or operator be required. The software, however, would have the capability to record, store, and score the training events for later playback or formal evaluation.

## Observations and Assessment of In-Service Training

Continuing, or in-service, training includes regular precinct-based training, firearm and tactical training, and other specialized training. In-service training is particularly important to reinforce the comprehensive training that officers received as recruits, to correct bad habits developed on the job, and to keep up with the dynamic law-enforcement environment.

Some training at the precinct is informal, consisting of listening to a prescribed briefing or watching a video. Officers are not tested on the information imparted to see whether the training was absorbed. Because of this, although this training may be effective, the department knows only who has attended the training and not whether the training had the desired effect. While it may not be realistic or feasible to evaluate the effectiveness of all such training, it would be worthwhile on occasion to test whether officers are absorbing the training they receive. This would have the benefit of affording the NYPD the information needed to assess and improve training. It would also have the side benefit of encouraging officers to maintain an active role in the training.

We observed the more formal expandable-baton training, firearm-requalification training, and advanced tactical training, which we discuss next.

### In-Service Baton Training

As with the basic-skill training that recruits receive, we judged the expandable-baton in-service qualification training that we observed to be well done and in accordance with Gagné's theory and the CAEL principles. This training was marked by careful instructor demonstrations of the correct techniques to follow and by extensive practice exercise. The small class size meant that individualized instruction could be given and on-the-spot corrections made. The proficiency and confidence that the officers who completed the training demonstrated was impressive.

### Refresher Firearm Training and Requalification

The semiannual firearm requalification consists of three parts:

- *Lecture:* A two-part lecture to remind officers of current safety and tactical issues. The first lecture consists of 38 overhead slides that review drawing the firearm, fundamentals of shooting, accidental discharges, firearm maintenance, and the basics of using OC spray. The second lecture covers departmentwide firearm-discharge reports, use of force, reflexive shooting, patrol tactics, dogs, and firearm safety.
- *Practice:* An opportunity to fire 45 rounds of ammunition at stationary targets at 7-, 15-, and 25-yard distances. Practice is unscored on a tactical pistol course.



- *Requalification*: This included firing 50 rounds at stationary targets at 7-, 15-, and 25-yard distances. A minimum of 39 hits is required to qualify.

The current firearm-requalification program is less about making sure officers can effectively use their pistols in real-life situations than it is about meeting legal requirements and professional standards. While the requalification course meets the standards required by the state of New York and is consistent with national norms, shooting at paper targets on a known-distance range is basically target practice. It does not demonstrate that the officer has mastered his or her firearm and is ready for a shooting confrontation on the streets. In fact, the NYPD has several advanced ranges that better prepare officers for confrontations involving firearms, but logistical considerations prevent them from being used as part of the semiannual requalification program for the vast majority of officers, including patrol officers assigned to street duty. The NYPD is not alone in this. Morrison and Vila (1998, p. 510) made the point that,

[despite a nearly] universal acceptance [that] both the process and product of handgun qualifications . . . strongly [imply] that officers exceeding prescribed minimum performance levels are proficient . . . a consensus among police firearms trainers [is that such training does not] substantially enhance officer or community safety. . . . There are serious reasons to question the validity of police recruit and in-service handgun training activities.

They argued that “[o]fficers are not truly qualified merely by firing a rote ‘qualification’ course since much more than this is required to produce the type and degree of preparation needed for armed encounters” (Morrison and Vila, 1998, p. 529). They concluded as follows:

It is difficult to reconcile demonstrated police handgun accuracy with the commonly held notion that the police are competent with their handguns by way of their participation in mandated recruit and in-service training. Since qualification implies competency, it is important to reconsider what, and how the police are taught, particularly since the handgun remains a primary defensive tool and will continue receiving the bulk of departmental firearms budgets, training time and effort. . . . Much more than [the rote qualification course] is required to produce the type and degree of preparation needed for armed encounters. (Morrison and Vila, 1998, p. 529)

The firearm trainers are aware that static targets are not sufficient to meet the department’s needs and have been planning a new tactical pistol course. Unlike the static qualification course, it includes firing at moving targets, firing from cover and crouched positions, moving to different firing positions and distances and firing from each, firing in pairs, and firing after exertion. We observed one group of officers going through this course that is being implemented at the firing range. This is surely

an improvement over shooting at static targets, but it is not scored, and, because of the scale of operations with so many officers having to requalify twice a year, we are not confident that it will be a much more meaningful training experience than officers currently receive with static targets. For example, without scoring the tactical pistol course, how can the Firearms and Tactics Section evaluate its effectiveness? Given the number of officers who must requalify each year, the objective seems to be to get the officers through as quickly as possible rather than to have them master the art of realistic shooting. For example, during one of our visits to the range, one instructor pointed out that the bullet-hole grouping of one officer indicated that she was improperly anticipating her shots. However, because the officer had achieved the requisite score, no remedial instruction was offered.

## Summary and Recommendations

The NYPD faces a difficult task in transforming 4,000 young adults into rookie police officers every year and in keeping 37,000 officers current with the latest in policing. Our review of training focused on the recruit and in-service training, particularly the skills and abilities training that is most relevant to the complex decisionmaking that accompanies use of force and, ultimately, to the possible discharge of a firearm by an NYPD officer. We observed training and reviewed the training materials in a number of areas and noted where improvements could be made by providing more and better scenario-based training and by evaluating training outcomes to ensure that graduates of the police academy and those who complete in-service training courses have mastered what they were supposed to have mastered.

The goal of training and of training evaluation should be to prepare recruits as well as seasoned officers for life as a patrol officer on the streets, in the subways, and in the housing developments of New York. Recruits should be required to pass proficiency standards in real-life and scenario-based tests of complex decisionmaking before they are graduated from the police academy. Seasoned officers should be required to demonstrate their continued proficiency on the most demanding real-life scenarios, just as seasoned airline pilots are required to do.<sup>11</sup>

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<sup>11</sup> Title 14 of the Code of Federal Regulations (14 CFR 61) specifies the knowledge and skill that the applicant must demonstrate before a commercial-pilot certificate can be issued. In the interest of safety and practicality, when flight evaluations are accomplished in an aircraft, the Federal Aviation Administration (FAA) allows certain task elements to be simulated. However, when the evaluation is done in a flight simulator, these same actions may not be simulated. Whether accomplished in an aircraft or simulator, the same performance standards apply in determining overall satisfactory performance (FAA, 2002, p. 8). The FAA also requires continuing training and evaluation. The Advanced Qualification Program provides for periodic aircrew training and evaluations conducted in a “full cockpit crew environment,” either on an aircraft or a full flight simulator, with a full flight scenario systematically designed to target and test specific technical and crew skills.

Next, we provide a summary of our findings and some recommendations, starting with basic recruit training and then turning to in-service training.

### Basic Recruit Training

**Basic Policing-Skills Training.** As noted, the RAND team judged the training in basic policing skills, such as ground tactics, firearm retention, and baton lessons to be done in accordance with the CAEL and Gagné principles for instructional design and to be done well.

**Scenario-Based Training.** Scenario-based training or role-playing workshops are where basic skills are integrated and complex skills are learned. They are key to modern police training. Based on what we observed, we recommend the following:<sup>12</sup>

- Scenario-based training and role-playing workshops should be integrated throughout the 23 weeks of academy training, not just in the skills and abilities term.
- The purpose of scenario-based training should be to create recruits' confidence that they have learned basic principles that will carry them through the majority of situations they will later face. The purpose should not be to show them how many ways in which it is possible to fail. Instructors should demonstrate a complete run through of each kind of scenario before students are put into the exercise. Following this demonstration, a debriefing should emphasize the principles behind the instructors' actions in the scenario.
- Recruits should be given enough practice on a set of standard scenarios so that they perform competently in those scenarios. Research on how novices learn suggests that they need to focus on learning the big principles, as noted earlier. Debriefings should focus primarily on the big principles, not the potential nuances that exist in every situation.
- Detailed evaluation guides should be constructed and used to evaluate each of the scenario-based training events. Officers who provide and assess scenario-based training should themselves be trained in the use of guidelines to ensure consistency in evaluations. Performance in training evaluations should be analyzed to assess whether the training itself is successful and to identify where changes are needed.

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<sup>12</sup> Our recommendations are very similar to ones made in 2005 by Craig Bennell and Natalie J. Jones (Bennell and Jones, 2005). They reviewed similar training in Canada and recommended, among other things, that

Open simulation practice should be implemented for trainees who have already received a degree of instructor-supervised training.

A greater number of scenarios of a given type (e.g., domestic disputes) should be presented until the trainee masters appropriate use-of-force responses in a specific context. Only at this time should other scenarios be introduced.

Trainees should be allowed to master basic responses (e.g., motor skills) before additional difficulties are introduced (e.g., parallel performance of motor and cognitive skills). (Bennell and Jones, 2005, p. 6)

- Recruits should be required to pass proficiency standards in real-life and scenario-based tests of complex decisionmaking before they are graduated from the police academy.
- Detailed training records from the various recruit-training activities should be collected and stored in one location.
- Computer simulations should be updated to incorporate the latest use-of-force and judgment scenarios now available from simulator vendors.
- Because scenario-based training, particularly as it is done today, is very expensive, the NYPD, NIJ, and other large agencies should take the lead and partner with one or more virtual-simulation companies to see whether advances in technology can be used to create use-of-force judgment simulators that might operate on stand-alone laptop computers that do not require the intervention of an instructor or operator. This might start with the issuing of a request for qualification (RFQ) to determine the interest and qualifications of potential collaborating firms.
- Given the importance of scenario-based training and the high cost of the instructors and equipment to support it, a full analysis should be undertaken of the costs and benefits of resequencing recruit training to provide greater access to it.

### **In-Service Training**

Each year, NYPD officers spend thousands of hours in in-service training that ranges from semiannual firearm-requalification training to specialized training as officers change positions. Unfortunately, common problems that we observed were poor evaluation systems and archaic training-information systems. While the master personnel record contains the date on which the officer last qualified, it does not contain the officer's score. With modern wireless communications, such information could be entered at the range and the NYPD personnel records could be updated immediately. If the personnel files were part of a relational database, the training information could be merged with all other personnel information to provide much more complete records for both administrative and analytic purposes. For example, analyses could be undertaken to uncover relationships between performance in training and performance in use-of-force incidents or to identify other areas in which training is or is not successful.

We are well aware of the pressure to have all officers requalify with their firearms twice a year. We are also aware that there is a substantial body of information to suggest that the current requalification paradigms have not enhanced real-world shooting performance. We, of course, cannot tell what would happen if a different requalification paradigm were followed. One alternative that might be tried would be to requalify once a year but take one of the two days that officers currently spend at the range and devote the time to more in-depth retraining, including remedial instruction based on the quality of performance, not just on scores for hitting fixed targets on a

known-distance range. Such an alternative would cost the department no more, but might result in a more confident and proficient officer.

## The Firearm-Discharge Investigation and Review Process

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### Introduction

Since 1972, the NYPD has managed a structured internal investigative and review process for firearm discharges.<sup>1</sup> An investigation is conducted any time an officer discharges any firearm or another person discharges an officer's weapon, except under authorized training or while lawfully engaged in target practice or hunting (NYPD, 2005).<sup>2</sup>

In this chapter, we examine the current procedures for reviewing firearm-discharge events and then assess the implementation of this process, ending with a series of recommendations for improvement.

### Current Procedures

The patrol guide requires an officer to provide immediate notification to his or her supervisor of any firearm discharge other than one explicitly exempted, such as on the shooting range (NYPD, 2005, p. 2). On receiving such notification, the patrol borough dispatches a firearm-discharge investigative team (commonly called a shooting team) to the scene. The team is nominally comprised of the investigating ranking officer (team leader), detectives, borough investigation unit, crime-scene investigators, emergency service, community-affairs representatives, and precinct supervisor (NYPD, 2005, p. 1). The team may be expanded or reduced at the team leader's discretion. After conducting an initial investigation of the incident, including administering a breath-alcohol test of all officers involved, the team leader renders an initial report the same day, or at least before the team goes off duty. The *Firearm Discharges Investiga-*

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<sup>1</sup> The review process is dynamic. In summer 2007, Commissioner Kelly announced a policy change that requires all officers involved in a firearm discharge resulting in injury to or death of a person to undergo a mandatory alcohol test using a portable breath analyzer (e.g., Breathalyzer®) or another appropriate device.

<sup>2</sup> Discharges at firearm-safety stations are also excluded.

*tion Manual* specifies in detail the required content of the 28-section report (NYPD, 2004).

If the incident involves an officer shooting at a person, the patrol borough commander and his or her superior officers in the chain of command brief the police commissioner the morning after the incident.

The investigation manual requires a final report within 90 days unless, for some reason, that deadline cannot be met, in which case interim reports are required monthly. The most common reason for delay in completing the final report is lack of permission from the district attorney to interview the officer who discharged the firearm.

The district attorney is always immediately notified of a shooting. The department does not interview the officers involved in the shooting until the district attorney has released the case. In some cases, especially if the case is presented to a grand jury, this can take months.

After a final report is completed, it goes up the chain of command for sequential recommendations from the borough's FDRB, the patrol borough commander, the department's FDRB, and, finally, for a decision by the department chief, who also chairs the department's FDRB. Lesser cases, typically shootings against dogs or simple accidental discharges,<sup>3</sup> are not decided by the full board; instead, the department chief delegates those to one member for review and decision.<sup>4</sup>

## Assessment of the Process

Our assessment of this process is based on (1) interviews with departmental officials who participate in and manage the FDRB process, (2) observation of both borough-level and department-level FDRB deliberations, (3) a detailed review of all cases presented to the full FDRB during the years 2004–2006,<sup>5</sup> (4) the opinions of an outside panel of national experts in officer-firearm discharges, and (5) a limited review of the processes and reports of other police departments.<sup>6</sup>

We used the interviews to elicit participants' understanding of the current review process. The interviews also helped prepare us for observing the actual discharge-review proceedings. We used the observation sessions to compare the workings of

<sup>3</sup> Specifically, dog shootings and accidental discharges do not go to the full board if all the following conditions are met: no perpetrator was involved, no more than minor property damage occurred, there was no personal injury, and it is the first or second shooting involving that officer (McAleer, 2007).

<sup>4</sup> The individual board member has the authority to decide these routine cases but may also request a full-board review if he or she deems it appropriate (Riley, 2007).

<sup>5</sup> To be clear, the RAND team did not review all incidents that occurred during the three-year period. Instead, it reviewed the cases that the full board decided during that period. The oldest of these occurred in 1998, but most were of more recent vintage, principally 2003 through 2006.

<sup>6</sup> PARC (2003b) reported a number of discharge-review procedures.

actual discharge-review hearings to the established guidelines. We supplemented the observations of hearings with detailed reviews of the written records for all discharge incidents, again focusing on adherence to established protocols. We used an outside panel to discuss current NYPD procedures and walk through several complicated discharge incidents. Finally, we used the limited review of discharge-investigation procedures in other cities as a check on the sufficiency of the current NYPD process and to identify potential options for improvement. While there is no universally accepted set of procedures to be followed or processes employed for investigating the discharge of firearms,<sup>7</sup> one can infer best practices by examining critical reviews and highlights of other departments. For example, in its review of the Portland (Oreg.) Police Bureau, PARC identified timeliness of the review, the use of a model report format, and the substantial involvement of senior officers, including the department chief (PARC, 2003a, pp. 163–166) as important features of a firearm-discharge review. MPDC has an extensive set of detailed procedures that DOJ has scrutinized (Compliance Monitoring Team, 2007) that also provide insights into what features a firearm-discharge review process might have.

Accordingly, based on the review of best practices, we note that the NYPD has a number of exemplary features, including the following:

- substantial and appropriate command attention at the scene of the incident that varies with the seriousness of the incident
- initial reports that were timely and fairly thorough, providing a substantial amount of information in a matter of hours after the incident. This information is promptly reported up the chain of command to the commissioner.
- a process that is well regulated and based on a multilevel review by the senior leader at each level, including the department chief
- a final report that generally provides an adequate basis for determining whether a discharge was within department guidelines
- a process that generally results in reasoned disciplinary action where called for.

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<sup>7</sup> While CALEA does publish standards, they are very general and do not prescribe specific procedures to follow. The relevant CALEA standards are as follows:

Standard 1.3.6 is *[a] written report is submitted whenever an employee: a, discharges a firearm, for other than training or recreational purposes; . . .*

Commentary: the intent of this standard is to establish use of force reporting systems within the agency for effective review and analysis. . . . The reporting systems should help identify trends, improve training and officer safety, and provide timely information for the agency addressing use of force issues with the public. Early and accurate reporting helps establish agency credibility. . . . The agency may choose to use a variety of reporting methods to document use of force incidents, based on severity or other established criteria. . . . If physically able, the primary employee involved should be required to verbally report his/her involvement within a specified time period. The verbal report should be committed to writing as soon as practical, thereafter. Written procedures should state by whom, when, and how the report will be submitted. (CALEA, 2003)



## Recommendations

Our review revealed a number of areas in which improvements should be made. We discuss these next.

### Focus of the Firearm-Discharge Investigation Should Be Expanded to Include a Formal Review of the Tactics Used

The stated purpose of the process is to “assess the propriety of firearms discharges and gauge the need for adjustments in weapons training for officers” (NYPD, 2004, p. 7). As a result, typically, findings and recommendations in final reports center on whether the discharge was intentional or accidental and whether it violated departmental policy.<sup>8</sup> While the FDRB reviews tactics used by the officers involved as part of its normal deliberations, it formally includes its findings in the written report only when the discharge is judged to be in violation of policy.

Alternatively, the investigation might follow a broader path suggested in the NYPD *Police Academy Student’s Guide*. Officers are taught that, if they are involved in a shooting, they will be judged not only on the propriety of the discharge but also on the tactics they used prior to the shooting, including whether they unnecessarily placed themselves in a position that gave them no choice but to fire their weapons (NYPD Police Academy, 2007a, p. 20).<sup>9</sup>

A broader inquiry based on the student’s guide might include, among other things, such questions as these:

- “Did the officers . . . approach the situation cautiously and in a manner that is consistent with their training?”
- “Did the officers take advantage of all reasonably available assistance, information, and tactical considerations (i.e., cover), before confronting the individual they shot?”
- “Did the officers avoid an unnecessary confrontation with the individual they shot?”
- “Was the officer’s reaction at the time of the shooting reasonable, or is there evidence that the shooting was the result of panic or carelessness?” (NYPD Police Academy, 2007a, p. 21).

<sup>8</sup> Each round fired is assessed individually for whether it was intentional or accidental and for whether it was discharged in violation of policy.

<sup>9</sup> The statement in the student’s guide reflect Reiss’s concerns that

current decision models for managing the use of deadly force rely too much upon a micro-model detailing the sequential “choice” points in decisions to use deadly force. Such models have distinct limits. Among the more serious ones are that they ignore the ways that the use of deadly force in police encounters with citizens may be averted or precluded and of how the behavior of police organizations can [affect] its use. (Reiss, 1980, p. 122)

### **There Needs to Be a Formal Lessons-Learned Process**

Under current practice, after the FDRB finishes with each case, the case file is sent to the Firearms and Tactics Section at the police academy. In January 2006, the section's commanding officer formed an advisory committee to expand the analysis of the cases received each month. The committee sometimes recommends changes that might be made in training, but lessons are not regularly reported to other sections of the department (e.g., the chief of patrol or the chief of detectives) (Hurley, 2007).

Besides developing lessons that might affect training or, potentially, the department's operating procedures, a more complete assessment of these cases might also help identify the need for improved or different equipment. Specifically, as part of its review, we identified 25 cases in which the officer involved might have plausibly used, if available, a less-than-lethal standoff weapon instead of his or her firearm, with a possible reduction in the number of shootings and associated casualties.

To ensure that insights from the discharge-review process result not only in changes to training but also in changes to tactics and equipment, the NYPD should (1) formally expand the stated purpose of the firearm-discharge investigations to incorporate an assessment of predischarge tactics, (2) modify the report format to explicitly require such an assessment, and (3) require all levels of review to assess the predischarge tactics used. To implement these changes, the department will need to modify the procedure 212-29 in the patrol guide (NYPD, 2005) and the *Firearm Discharges Investigation Manual* (NYPD, 2004).

The NYPD should also formalize a lessons-learned process based on an integrated assessment of all firearm discharges, seeking patterns and common characteristics that may indicate a requirement for new or different equipment or tactics. Chapter Five presents an analysis of factors associated with NYPD officers discharging their firearms that integrates data from 2004 to 2006. This kind of analysis is specialized and might be performed by a dedicated analytic cell or provided by other elements of the department that routinely produce analytic reports or by an outside organization under contract to the department. The reports should explicitly address implications for tactics, training, and equipment, as well as implications for other policies. Further, the analytic team should periodically review the *Firearm Discharges Investigation Manual* (NYPD, 2004) and procedure 212-29 (NYPD, 2005). The results of these assessments should be included in the training-bureau bulletins disseminated to all operational units throughout the department.

### **There Is a Need to Better Adhere to Stipulated Formats**

The *Firearm Discharges Investigation Manual* requires initial reports to include a ¶4A, an explicit statement of the availability of less-than-lethal equipment, as well as a description (not an evaluation) of the tactics used before the discharge. The manual also requires a statement about why less-than-lethal options were not used if the officers were so equipped. This paragraph was included in only a minority of the reports we

reviewed. This format requirement should be uniformly enforced, because the information would be very helpful in understanding the options available to police officers and their decisions to use deadly force.

### **There Is a Need for Synthesis in Final Reports**

While initial reports follow the 28-section format, neither the patrol guide nor the investigation manual specifies a detailed format for the final report. Instead, the patrol guide requires only that the final report include all information not available at the time of the initial report and that it include the following specific items:

- findings and recommendations
- medical examiner's report
- ballistic report
- department gunsmith's report (for accidental discharges)
- synopsis of uniformed member(s) statements
- statement that communication-section tapes were audited and are consistent or inconsistent with uniformed member(s) and witnesses' statements
- district attorney's and grand jury's findings, if applicable
- IAB findings, if applicable (NYPD, 2006b, p. 5).

A review of the past three years' worth of final reports reveals that the reports generally cover these topics. The largest part of final reports is generally a summary of interviews with the officers who discharged their firearms. These are typically not part of the initial report.

In general, final reports are long on facts (e.g., the officer said X) and relatively short on analysis (e.g., this is what we can conclude from all the evidence). As such, final reports frequently lack a synthesis of the information presented and often do not discuss conflicting information or attempt to reconcile evidence presented in the initial report with information presented in the final report.

We recommend that each final report include a summary statement containing the author's best judgment of how the incident unfolded, pointing out uncertainties and conflicts and rendering his or her judgment about what occurred. The final judgment on the case needs to be consistent with and reflect the analysis. Having such summary statements as "in my professional judgment, the shooting was within policy" without explaining why and logically connecting the officer's analysis undermines the judgment. It is perfunctory and compromises the credibility of the report and the investigation.

## **Analysis of Factors Associated with NYPD Officers Discharging Their Firearms**

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### **Introduction**

As noted in Chapter Four, a more integrated assessment of all firearm discharges might provide further insights into patterns and common characteristics that do not become clear until all cases are assessed together. For example, individual case reviews cannot reveal whether there are patterns in the shootings or common characteristics of the officers who are involved in shootings. If such patterns can be identified, they might suggest other changes that might be advisable. In this chapter, we describe one such integrated analysis that incorporated data from cases that the FDRB adjudicated during the period 2004–2006. We compared the characteristics of officers who discharged their firearms with those of officers who were at or near the scene of those shooting incidents and did not discharge their weapons. To be clear, proximity to the incident is merely a means of selecting a comparison group of officers who might be expected to possess characteristics similar to those who shot. There is no presumption that they necessarily had the same opportunity to shoot. If the officers who discharged their weapons were a simple random selection from this larger population, we would expect to find no characteristics that differentiated the two groups. In fact, there were characteristics that differentiated the groups besides the obvious one of the discharge of the officers' weapons. For example, we found that, although the likelihood that an officer is involved in a shooting in any given year is small, officers who discharged their weapons were more likely to have had negative marks on their job record. Officers with an average of 3.1 or more negative marks (Central Personnel Index [CPI] points) per year of service in their record, officers in the top 15 percent of officers by average CPI points, were three times more likely to discharge their weapons than were officers from the population of similar officers. In other words, on average, and after statistically accounting for other demographic differences, officers in the matched population of nonshooters had significantly fewer negative marks in their files.

The fact that officers with certain characteristics were more likely to discharge their weapons than were other officers is not in itself an indication that a given discharge was inappropriate or that the officers involved were indiscriminate in their use of deadly force. Since the analysis found differences that cannot be explained as random

and since it is NYPD policy to use the minimum force necessary in every situation, the analysis suggests that the NYPD might pay particular attention to shootings involving officers with an annual CPI-point average in excess of 3.1 to make sure that the officers did everything appropriate before discharging their firearms. While the NYPD already monitors those officers exceeding a career total of 20 CPI points, this analysis suggests that the close monitoring of officers with an excessive accumulation rate of CPI points may also be warranted.

## Data Sources

After consultations with NYPD management and NYPD computer specialists, we identified information that we thought might be relevant to our analysis of factors associated with NYPD officers discharging their firearms. The NYPD provided the following classes of information:

**Demographics and Career History.** The basic personnel database provided demographics on each officer: age, race, sex, and education. It also recorded when each officer first joined the NYPD, the positions he or she has had at NYPD throughout his or her career, dates of promotions, the associated ranks, and dates of transfer to different command assignments.

**Performance Evaluation.** NYPD officers have annual reviews. They receive scores between 0 and 5 (at half-point increments), with higher values indicative of better performance. About 5 percent of officers receive the highest score, and most officers (82 percent) receive a score between 3.5 and 4.5. Evaluation scores have been increasing in recent years; in 2000, 22 percent of officers received a score greater than 4.0, while, in 2006, the share increased to 40 percent.

We also obtained records on officers' meritorious behavior. We recorded dates and descriptions of the awards, the most common being medals for excellent police duty (72 percent) and meritorious police duty (22 percent). Forty percent of officers have at least one medal, averaging about one medal per person every 2.5 years.

The NYPD's CPI-point system penalizes officers for certain serious incidents. For example, an auto accident with an NYPD vehicle warrants 1 point. More serious incidents receive greater penalties: 4 points for the loss of a badge, 6 points for loss of a firearm, and up to 8 points if the officer requires special performance monitoring or receives a suspension. A firearm discharge of any kind always counts for 1 point, with the possibility of additional points for performance issues involved in the discharge. For shootings between 2004 and 2006, officers received between 1 and 15 points, with internal investigations being the most common reason for receiving more than 1 point for the shooting. Officers who accumulate a career total of 20 points or more are considered for performance monitoring.

**Felony, Misdemeanor, and Gun Arrests.** We obtained data on every arrest made by NYPD officers. The data included an identifier for the officer who made the arrest, the date of the arrest, whether the arrest was for a felony or misdemeanor, and whether the arrested suspect was in possession of a gun. We specifically extracted arrests involving armed suspects to understand the relationship between experience with armed suspects and risk of shootings.

**Injury and Illness Leave.** The NYPD documents the amount of time that an officer is off the job for injury and illnesses. The data include the leave dates and diagnosis codes for the leave. The most common reasons include influenza and back, foot, and knee injuries. The data flag those injuries received in the line of duty.

**Complaint Data.** We received data on all official complaints filed against NYPD officers through the CCRB. Aside from the date of the complaint, the data also include the type of allegation and the final disposition of the complaint (e.g., substantiated, unfounded, conciliated, exonerated, withdrawn). About 58 percent of the active NYPD officers and 72 percent of shooting officers have had one or more complaints in their careers.

**Firearm-Range Data.** The firearm range maintains requalification scores on all NYPD officers. The data include the requalification dates and the officers' range scores. The NYPD suggested that historical data (from before 2004) may not be reliable for the purposes of this study due to a change in the system housing the data.

**Shooting Incidents.** For all shooting incidents adjudicated in 2004, 2005, and 2006, we recorded the incident number, the department identifiers for the shooters in the incident, as well as the department identifiers for the other, nonshooting officers who were witnesses to the shooting or in the immediate vicinity of the shooting. There were 184 incidents involving 279 shooting officers and 193 nonshooting officers who either directly witnessed the shooting or were in the immediate vicinity of the shooting officers.

Of the 472 shooting and nonshooting officers in the 2004–2006 data, 79 (17 percent) had left the NYPD by June 1, 2007, the date on which we extracted personnel, arrest, and sick-leave data from the master personnel database. A marked difference between those officers and those who remained would affect the results presented here.

## Methods

To identify factors associated with officers discharging their firearms, we analyzed these data according to a matched case-control design (see Rothman and Greenland, 1998, Chapter Seven), a commonly used method in epidemiology for studying the occurrence of rare events. The method involves comparing the characteristics of cases (shooting officers) with matched controls (similar officers who did not discharge their

weapons) to determine those characteristics that are associated with officers discharging their firearms, e.g., being a shooter.

## Findings

Table 5.1 compares the characteristics of the shooting officers with those of officers who were on the scene at the time of the shooting but did not discharge their weapons. There are few statistical differences between the groups, though the shooter is more likely to be at the rank of police officer and to have greater rates of accumulating CPI points and of arresting armed suspects. While the remaining characteristics are not statistically different between the groups, the general pattern is that shooting officers are more proactive officers: They receive more medals, more frequently make arrests, and are more frequently injured in the line of duty.

We are particularly interested in those characteristics that distinguish the shooting officers from the nonshooting officers. To jointly assess the relationship of these characteristics to the probability of discharging a weapon, we fit a conditional logistic-regression model that estimates the probability that an officer with a particular set of characteristics is one of the shooting officers. This model assumes that the odds of an officer being a shooting officer are equal to a product of terms. Each term, known as an *odds ratio*, depends on one of the characteristics listed in Table 5.1. Estimates of each of these odds ratios can identify which officer characteristics are associated with larger or smaller odds of being a shooting officer. Those characteristics with odds ratios near 1 likely have no effect on the odds of being a shooting officer.

In the analysis, we included all of the variables shown in Table 5.1. There were a number of officers with extreme values (e.g., 12 CPI points per year over an eight-year career). To avoid results that would give undue leverage to these extreme values, we dichotomized these annual averages into two groups: The first group was made up of the 15 percent of officers who had the highest yearly averages, with all other officers being in the second group. Officers in the first group average 3.1 or more CPI points per year.

Table 5.2 shows the results of the analysis. The second column reports the odds ratio, the relative increase in the odds of being one of the shooting officers relative to the reference. For example, those officers who averaged more than 3.1 CPI points per year were three times as likely to be shooting officers as were officers with fewer than 3.1 CPI points per year. On the other hand, those officers making frequent misdemeanor arrests, averaging more than 10 annually, were three times *less* likely to be shooting officers than were those officers who averaged fewer misdemeanor arrests. While some officers above the rank of police officer were shooting officers, they were up to 90 percent less likely to be shooting officers than were those at the rank of police officer. This is likely due to their operational leadership role on a scene rather than to

**Table 5.1**  
**Comparison of Shooting and Nonshooting Officers Who Witnessed the Shooting or Were Near the Scene**

Characteristic	Shooting	Nonshooting
Number	239	154
Rank <sup>a</sup> (%)		
Police officer	65	52
Detective	16	16
Sergeant	16	23
Lieutenant	1	7
Captain or higher	2	2
Years at NYPD	8.9	9.3
Age	34.0	34.8
Education (%)		
High school	21	18
High school and some college	59	60
College	18	20
College and some graduate school	1	2
Command type (%)		
Precinct	57	59
Anticrime	8	6
Detective	5	4
Housing	5	3
Other	26	28
Evaluation score	4.0	4.1
Range score	92.7	92.9
Average annual medals	1.9	1.5
Average annual CPI points <sup>a</sup>	1.9	1.4
Average annual gun arrests <sup>a</sup>	1.4	1.1
Average annual felony arrests	5.1	4.5
Average annual misdemeanor arrests	5.9	5.6
Average annual days of sick or injury leave <sup>b</sup>	8.8	7.4



**Table 5.1—Continued**

Characteristic	Shooting	Nonshooting
Not due to line-of-duty injury	5.4	5.1
Due to line-of-duty injury	3.4	2.3
Administrative sick leave	1.3	1.8
Officers with 3.1 CPI points per year <sup>a,c</sup> (%)	19.7	8.4

SOURCE: Computed from NYPD data sources for NYPD officers active on June 1, 2007.

<sup>a</sup> Shows a statistically significant difference at the 0.05 level, indicating that the observed difference is likely not due to chance.

<sup>b</sup> Average annual sick leave computed for the most recent five years.

<sup>c</sup> There were 2,611 NYPD officers (1.8 percent of the force) with CPI averages greater than 3.1.

**Table 5.2**  
**Matched Case-Control Analysis of Shooting and Nonshooting Officers Who Witnessed the Shooting or Were Near the Scene**

Variable	Odds Ratio	95% Confidence Interval	
		Low	High
Rank			
Police officer (reference)			
Detective	1.2	0.2	5.7
Sergeant	0.3 <sup>a</sup>	0.1	0.8
Lieutenant	0.0 <sup>a</sup>	0.0	0.3
Captain	0.1 <sup>a</sup>	0.0	0.8
Years at NYPD	1.1	1.0	1.2
Age	0.9 <sup>a</sup>	0.8	1.0
Education			
High school (reference)			
High school and some college	1.1	0.5	2.5
College	1.4	0.5	4.3
College and some graduate	1.3	0.1	19.0
Precinct officer <sup>a</sup>	0.3	0.1	1.1
Average annual evaluation score < 3.5	0.6	0.3	1.6
Average annual range score < 86	1.6	0.7	3.7
Average annual complaints > 0	1.7	0.6	4.8

**Table 5.2—Continued**

Variable	Odds Ratio	95% Confidence Interval	
		Low	High
Average annual medal count > 3.8	2.6	0.6	10.4
Average annual CPI points > 3.1	2.9 <sup>a</sup>	1.0	8.3
Average annual gun arrests > 2.4	0.6	0.2	2.0
Average annual felony arrests > 9.3	2.0	0.7	6.3
Average annual misdemeanor arrests > 10.0	0.2 <sup>a</sup>	0.1	0.6
Average annual days of leave			
Not due to line-of-duty injury > 8.4	0.9	0.4	2.0
Due to line-of-duty injury > 5.6	0.9	0.4	2.3

SOURCE: Computed from NYPD data sources.

NOTE: We included data on officers in only those shootings in which there was at least one shooting and one nonshooting officer who were active NYPD officers on June 1, 2007 (152 shooting officers and 142 nonshooting officers in 107 incidents).

<sup>a</sup> Shows a statistically significant difference at the 0.05 level, indicating that the observed difference is likely not due to chance.

<sup>b</sup> We labeled as precinct officers those officers assigned to precincts with no special assignments (e.g., anticrime, detectives, housing, task forces).

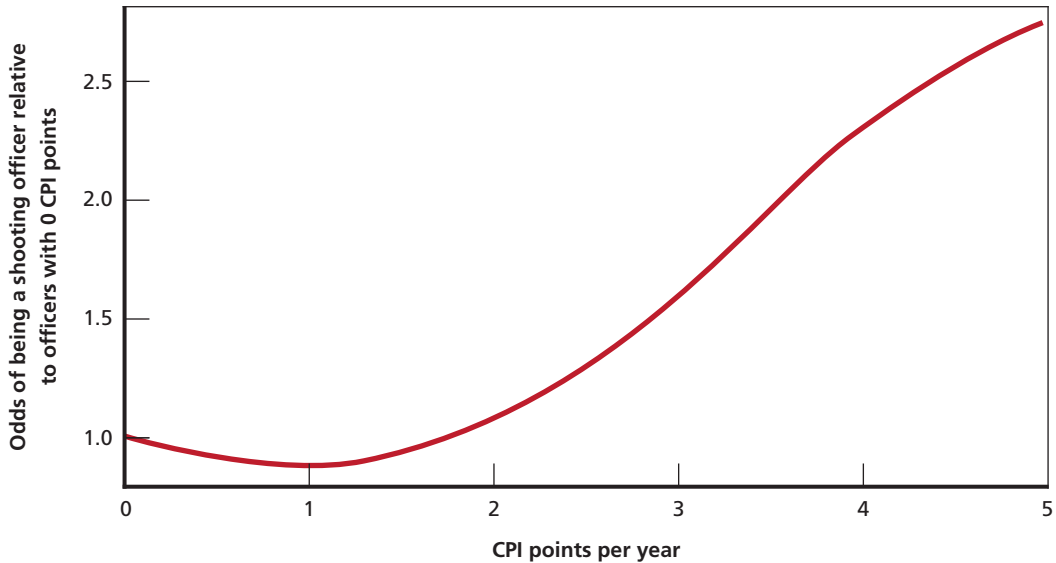
experience or decisionmaking. Aside from those three characteristics, none of the other characteristics was consistently associated with being a shooting officer.

Figure 5.1 plots the relationship between CPI points per year and the odds (relative to an officer with 0 CPI points) of being among the shooting officers. Those with CPI-point rates between 0 and 2 are essentially at equal odds of being a shooting officer. However, each additional CPI point per year above 2 appears to be associated with an additional 50-percent increase in the odds of being a shooting officer.

Our analysis revealed a statistical association—not a causal link—between an officer’s annual CPI-point average and the odds of being a shooting officer: Officers with 3.1 or more CPI points per year are more likely to be involved in shootings than are officers with lower scores. To put this observation in perspective, our analysis of the 2006 data showed that 16 officers of the total of 2,611 officers with CPI scores greater than 3.1 were involved in shootings.

Readers should note that establishing statistical correlation (or association, as it is sometimes called) is not the same as establishing a causal link. With the data available to us, we cannot say what it is about officers with higher CPI scores that puts them at risk for being shooting officers. To answer this question of cause, we would need to know additional officer characteristics and how the shooting incidents unfolded. For instance, it would be important to assess whether shooting officers differ from others

**Figure 5.1**  
**Relationship Between Officer's CPI Points per Year and the Odds of Being a Shooting Officer**



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in terms of their tactical and policing skills, their judgment, whether they are especially assertive or proactive in their duties, the tactical roles they assume when responding to calls, and any other factors that could lead some officers to be at higher risk for both accumulating CPI points and being involved in shootings. We have been unable to identify what the specific characteristics are that lead to this association, and we emphasize that the range of possible characteristics that might account for it is broad, encompassing explanations with very different implications for the how the NYPD might choose to interpret and respond to the observed findings. Our inability to say something about causal links in this analysis highlights the need for the NYPD to undertake a systematic and ongoing study to identify the true characteristics leading to the association between CPI scores and the odds of being a shooter.

Although most of the variables do not have a statistically significant relationship with the odds of being a shooting officer, Table 5.2 does indicate a general pattern. The shooting officers *tend* to be younger, get more medals, accumulate more CPI points, make more felony arrests, be injured in the line of duty, have more complaints filed against them, and have a special, non-patrol-officer assignment. These characteristics describe a more assertive officer, the kind of officer who can do heroic actions and garner medals. At the same time, that assertiveness can lead to the kinds of actions that warrant CPI points.

## Summary

The analysis in this chapter suggests that some factors increase the risk of officers being involved in shootings. The analysis focused on the kinds of officers likely to be involved in shootings. We used a matched case-control design using the actual shooting officers and the nonshooting officers who witnessed or were near the scene of shooting incidents. We found that officers with annual CPI-point averages exceeding 3.1 had odds of being a shooting officer that were three times larger than those for officers with smaller annual CPI-point averages. We also found that officers that made a substantial number of misdemeanor arrests, averaging in excess of 10 arrests annually, had odds of being a shooting officer that were three times lower than those for officers who made few misdemeanor arrests.

While the average NYPD officer has a small chance of involvement in a shooting (0.26 percent annually), certain officers have a much greater shooting risk, in part due to assignment and exposure to perpetrators of crime, but perhaps also due to personality and decisionmaking. The fact that officers with certain characteristics were more likely to discharge their weapons than were other officers is not in itself an indication that a given discharge was inappropriate or the officers involved were indiscriminate in their use of deadly force. Since the analysis found differences that cannot be explained as random and since it is NYPD policy to use the minimum force necessary in every situation, the NYPD should pay particular attention to shootings involving officers with an annual CPI-point average in excess of 3.1 to make sure that the officers did everything appropriate before discharging their firearms. While the NYPD already monitors those officers exceeding a career total of 20 CPI points, this analysis suggests that the close monitoring of officers with an excessive accumulation rate of CPI points may also be warranted.



## The Need for an Improved Less-Than-Lethal Standoff Weapon

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### Introduction

Analysis of the NYPD firearm-discharge cases and the experience of other police departments suggests that, if the NYPD employed a more robust less-than-lethal standoff weapon, it might not only prevent some incidents from escalating to deadly force but might also reduce injuries to officers and citizens alike, as has been the case in other departments.<sup>1</sup> To understand why a more robust less-than-lethal standoff weapon may be needed, it is important to understand where such a weapon fits into the use-of-force continuum and how, without it, police are hampered in their ability to control uncooperative suspects.

In this chapter, we examine the need for an improved less-than-lethal standoff weapon, including a discussion of what currently is used (OC spray and batons), discuss two other groups of less-than-lethal standoff weapons—conducted-energy devices (CEDs) and impact munitions—and provide some recommendations for the two groups.

### The Tactics of Taking Control: Controlling an Uncooperative Subject

The use of force by a police officer is a serious matter, not only for the citizen against whom force is used but potentially for the police officer's physical safety as well. Without a credible and widely used less-than-lethal standoff weapon, force can escalate from physical force to drawing and pointing a weapon and, ultimately, to the use of deadly force. While the use of force is a rare event, when physical force is used, drawing and pointing a gun are the two most prevalent means of controlling a suspect. While these

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<sup>1</sup> For example, the Cincinnati Police Department reports a decrease in injuries to prisoner and suspects of 35 percent and officers from arrests and assaults of 56 percent between February 2003 and January 2005, which it attributes to the introduction of CEDs to the department (Carr, 2005, p. 2). However, as discussed in this chapter, CEDs remain controversial (see, e.g., AIUSA, 2007).

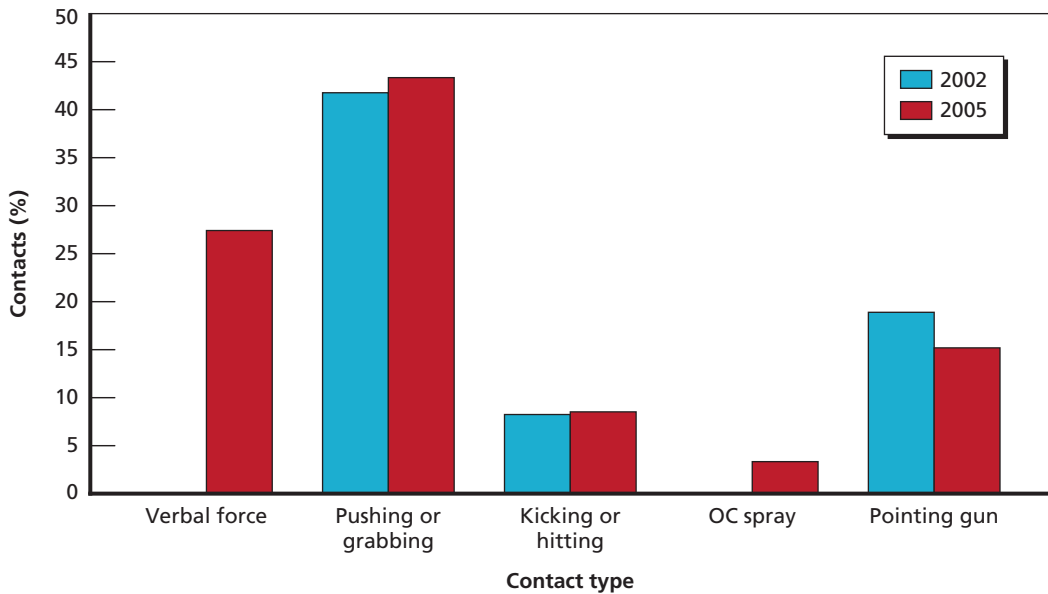
means are often effective, they can have very negative consequences for both the officer and suspect—consequences that are commonly reflected in the discharge-review cases we examined.

### Physical Force

Nationally, in 2002 and again in 2005, as shown in Figure 6.1, physical force (e.g., pushing, grabbing, kicking, or hitting) occurred in more than half the cases in which some kind of force was used or threatened to be used.<sup>2</sup> (Note that the 2002 survey did not ask questions about verbal force or OC spray.)

Despite the fact that physical force is the most common force employed, students at the NYPD police academy are taught (and for good reason) that coming into contact with a subject who is not yet under control may

**Figure 6.1**  
**Contact Between U.S. Residents Aged 16 or Older and Police Officers Nationally in Which Police Used or Threatened to Use Force, 2002 and 2005**



SOURCES: Durose, Smith, and Langan (2007, p. 10); Durose, Schmitt, and Langan (2005, p.17).

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<sup>2</sup> Force was more likely to be used against males, blacks, those between the ages of 16 and 19, and in urban areas with populations greater than 500,000. Interestingly, there was no difference in the use of force in jurisdictions with a population of between 500,000 and 999,999 and in cities with a population of more than 1 million (Durose, Schmitt, and Langan, 2005, p. 16). The predominant use of physical force is also reflected in the NYPD's 2006 stop, question, and frisk reports, which reveal that police put their "hands on (the) suspect" 17 percent of the time. The form used by the police (NYPD, 2006e) is covered in the patrol guide (NYPD, 2006d).

compromise the security of . . . firearm and any other weapons that are within the suspect's grasp. This is a serious concern around the United States[;] about 15 percent of all officers who are shot in the line of duty are shot with their own weapons after [being] been disarmed [by the suspect]. (NYPD Police Academy, 2007a, p. 11)<sup>3</sup>

In fact, our review of NYPD firearm-discharge cases from 2004 through 2006 showed several incidents in which an officer ended up in a hand-to-hand confrontation with a suspect and either the officer lost his or her weapon or the weapon discharged during the struggle, endangering the officers and suspects.

While every situation is different and hard rules cannot be applied when dealing with the dynamic situation that an officer faces when confronting a suspect, the guidance that the NYPD gives does not consistently reflect a practical dilemma that police face. On the one hand, officers are told that they are not responsible for being “able to physically overpower everybody who refuses to submit to your authority” (NYPD Police Academy, 2007a, p. 10) and that they should try to use physical force, e.g., a firm grip or compliance technique, “only when you are virtually certain that your strength and skills are adequate to decisively control a subject” (NYPD Police Academy, 2007a, p. 10).<sup>4</sup> On the other hand, the department provides few means besides physical force to control an uncooperative suspect—i.e., OC spray or the threat to use deadly force inherent in the drawing and pointing of a gun. While there is no way to know how many times officers walk away from a situation because they are not sure of their ability to use physical force, there are many examples of officers trying to use physical force only to lose control of the situation as it escalates from a hand-to-hand confrontation to the use of deadly force. We reviewed a number of cases in which, with gun drawn, it was the officer, not the suspect, who introduced deadly force to the confrontation—situations that might have ended differently if the officer had had an effective less-than-lethal standoff weapon.

### Drawing or Displaying a Firearm

The next—most common type of force used to control an uncooperative suspect is to “draw and/or display firearm.”<sup>5</sup> Although the escalating scale-of-force guidelines sug-

<sup>3</sup> The FBI (1992) reported a number closer to 20 percent.

<sup>4</sup> This is reinforced by posing four questions, the answers to which the officer will often not be able to provide. The four questions are: “What does this person have to lose by submitting to you? Is this person a martial artist? Is this person's behavior influenced by drugs or some mental imbalance? and Is this person really *alone*?” (NYPD Police Academy, 2007a, pp. 12–13).

<sup>5</sup> Garner and Maxwell (1999, p. 31) found that “firearms are infrequently used but are the most frequent weapon displayed.” Based on their study of six police departments, they reported that police officers “displayed” their handgun 2.7 percent of the time but used it only 0.1 percent of the time (i.e., displayed 202 times and used 11 times) in the arrest of 7,512 suspects.



gest that this is an appropriate response for a provocation that is a “threat or potential lethal assault,” it is often used in an attempt to gain control in lesser circumstances. Although in some police departments, drawing and, especially, pointing a firearm is considered a significant act—with pointing a firearm resulting in a formal inquiry—in New York, the act of drawing and pointing is not routinely recorded or investigated. Officers are instructed that “merely drawing a weapon, regardless of whether it is pointed at anybody, causes no injury to anybody” (NYPD Police Academy, 2007a, p. 17). As the NYPD noted, “drawing and displaying the firearm often is a deterrent to violence, because it lets suspects know that they are very close to a much higher degree of force” (NYPD Police Academy, 2007a, p. 17).<sup>6</sup>

By policy, police officers are allowed to draw and point a weapon when they have a “reasonable belief” that they might have to use their weapons. The issue is, of course, what constitutes a reasonable belief. For example, is having a confrontation in a high-crime neighborhood enough to sustain a “reasonable belief” that the officer may soon have to use deadly force? In New York, police officers are allowed to draw their weapons *and point them at a suspect* in any of the following circumstances:

- responding to violent crimes in progress
- searching for hidden or fleeing violent-crime suspects
- having a confrontation with known violent offenders or persons alleged to have committed crimes punishable by lengthy sentences (e.g., serving warrants on armed robbers or drug traffickers, making felony or high-risk vehicles stops) (NYPD Police Academy, 2007a, p. 17).

While drawing and pointing a weapon may calm a situation, it may also escalate it, and the results may prove to be problematic. In a small number of firearm-discharge reports reviewed, officers who had drawn their firearms were not able to maintain a safe distance from the suspect, and several lost control of their weapons to the suspect.

The NYPD also instruct officers that, “except in the most extreme circumstances, officers who are holding drawn firearms should never come within striking distance of suspects. Instead, officers who are holding drawn firearms should keep a safe distance away—10 feet or more.<sup>7</sup> If they are alone, officers should freeze confrontations in this

<sup>6</sup> By comparison, in Washington, D.C., officers are not permitted to

draw and point a firearm at or in the direction of a person unless there is a reasonable reception of a substantial risk that the situation may escalate to the point where lethal force would be permitted. When it is determined that the use of lethal force is not necessary, as soon as practicable, firearms shall be resecured or holstered.” (PARC, 2003b, p. 124)

<sup>7</sup> Data compiled by the FBI Uniform Crime Reporting Program on law-enforcement officers killed and assaulted shows that, between 1989 and 1998, of the 682 local, state, and federal law-enforcement officers in the United States who lost their lives because of criminal action, nearly 75 percent (509) received fatal wounds while within 10 feet of their assailants (Pinizzotto, Davis, and Miller, 2000, p. 2).

manner until assistance arrives to help cuff and search suspects” (NYPD Police Academy, 2007a, p. 18).

The NYPD student’s guide gives a number of examples of how a drawn weapon places the officer at a disadvantage; examples, many of which were observed in actual firearm-discharge cases, include the following:

If an offender who is being held at gunpoint by an officer who has come too close to him or her decides to forcibly resist the officer, he or she has great advantage over the officer. Such an offender has both hands free to overpower the officer, but one of the officer’s hands—almost always the stronger hand—is tied up in trying to safeguard the weapon. It is nearly impossible for officers who are handicapped in this way to overcome such a suspect, and, if they fail to overcome them, either officer or suspects become victims of shootings that should not have happened. (NYPD Police Academy, 2007a, p. 18)

Such situations—a suspect is being held at gun point—greatly increase the chances of accidental or unintended shootings. Should suspects make some unanticipated movement—like turning to explain themselves, reaching for their identification, slipping, or tripping—officers are likely to be startled and to pull their triggers. Should suspects try to forcibly resist, the chances of an accidental shooting that will strike the suspect, an officer, or a bystander are increased significantly. (NYPD Police Academy, 2007a, p. 18)

Although drawing a weapon may have a deterrent value and may give the officer a tactical time advantage in some situations, it also may result in some very serious negative consequences for the officer. While it may be *initially* correct—the NYPD student’s guide notes that “merely drawing a weapon . . . causes no injury to anybody”—a review of firearm-discharge cases suggests that drawing a weapon may be an important contributor to very undesirable outcomes, including the death or injury of the NYPD officer who drew the weapon in the first place. There are, however, alternatives, which we discuss next.

### **Less-Than-Lethal Force**

If physical force is not appropriate and drawing a firearm is problematic because there is no imminent threat to use deadly force against the officer or lethal assault against others, use of a less-than-lethal weapon may provide an appropriate alternative to brandishing a firearm.<sup>8</sup> The student’s guide instructs officers at the scene of a police incident

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<sup>8</sup> A comprehensive review of all less-than-lethal technology is provided in Downs (2007).

A recent report by the Minneapolis Police Department to the Minneapolis City Council Public Safety and Regulatory Services Committee noted

In reality, there are few safe weapon options available to the average officer when someone is actually threatening to use deadly force. . . . Deadly force threats can include those with firearms, knives, striking items, and

to “a. immediately establish firearms control, b. use minimum necessary force, (and) c. *employ less-lethal alternatives, as appropriate*” (NYPD, 2006g). The only less-than-lethal weapons to which patrol officers in New York City routinely have access are OC spray and the baton.

**OC Spray.** OC spray is authorized to be used to “effect an arrest of a resisting suspect, for self-defense or defense of another from unlawful force, or to take a resisting emotionally disturbed person into custody” (NYPD, 2006h, p. 1). Research has shown that the use of OC spray can reduce injuries among police officers and suspects and that it has resulted in reductions in use-of-force complaints lodged against officers.<sup>9</sup> Although one manufacturer of OC spray claims an effectiveness rate of 98 percent, a 1999 survey by the NYPD found an effectiveness rate of 84 percent (Greinsky, Holland, and Martin, 2000, p. 8). OC spray appears to be used relatively infrequently in New York City, possibly because the confined environment within a building does not lend itself to the use of the spray, because of concerns that suspects can fight their way through the effects of the spray, or because officers are concerned that they themselves might become contaminated.

In the NYPD scale of force, OC spray falls between physical force (e.g., compliance techniques) and the use of impact techniques (e.g., batons) and the drawing and displaying of a firearm. The NYPD recognizes the utility of OC spray “when physical force is required to protect the officer or others from assault, or to restrain or subdue a suspect or emotionally disturbed person who cannot be taken into custody by lesser means” (NYPD Police Academy, 2007a, p. 14). It can be used at some distance, is independent of the suspect’s physical strength or martial-arts expertise, and has no lasting effect.

Questions have arisen as to the safety in using OC, both to the target person and to the officer who employs it. While a comprehensive review is beyond the scope of this monograph, recent research sponsored by DOJ found that

There is no evidence that OC as used by law enforcement officers in confrontational situations is a total or contributing cause of death, except when pre-existing asthma (or disease-narrowed airways) is present. As a tool for the law enforcement

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even physical assault. . . . When you look at these other kinds of deadly force threats, you can see that there is a great value for CEDs. Minus the CEDs the officers’ only available weapons to combat those threats are the threat—drawing and pointing a firearm—or use of deadly force with a firearm. (Dolan, 2006, p. 4)

<sup>9</sup> For example, see Bowling and Gaines (2000); Edwards, Granfield, and Onnen (1997); and TAPIC (1994). While questions have been raised about the safety of OC spray, with some arguing that OC in combination with restraint can lead to significant respiratory compromise and risk of death, a study for DOJ found that “OC exposure resulted in no evidence of pulmonary dysfunction, hypoxemia, or hypoventilation when compared to placebo in both the sitting and restraint positions” and concluded that “OC spray use by law enforcement personnel in the field does not result in respiratory compromise or increased risk for respiratory arrest and death in exposed subjects” (Chan et al., 2000, p. 55).

officer, OC ranks at the low end of the escalation of force scale and is relatively innocuous. (Petty, 2004, p. 15)

Both nationally and in New York City, OC spray is relatively rarely used. Nationally, in 2005, OC spray was used in 3.4 percent of the cases in which police actually used force, compared with physical force (such as pushing, grabbing, kicking, or hitting), which was used 52 percent of the time, and “pointing a gun,” which was used 15.2 percent of the time (Durose, Smith, and Langan, 2007, p. 10). The NYPD stop, question, and frisk reports for 2006 also show that OC spray is rarely used by New York City police officers.<sup>10</sup> The NYPD online booking system shows that during the three-month period between October 1, 2006, and December 31, 2006, the use of OC spray was reported 274 times; about 7 percent of the times that force was used to make an arrest, the force used was OC spray.<sup>11</sup>

The expert panel that we assembled reviewed a number of firearm-discharge cases and identified several situations that its members thought might have ended differently if the officers involved had used less-than-lethal force, rather than pointing a weapon and, eventually, either purposely or accidentally firing it.<sup>12</sup>

While OC spray is the only less-than-lethal weapon issued to patrol officers in New York City, supervisory personnel and special units do have access to other less-than-lethal weapons, specifically TASER devices.<sup>13</sup> A TASER device is classified as a CED or sometimes as an electromuscular disruption device (EMDD), the former

<sup>10</sup> Based on the 2006 stop, question, and frisk data, of the half-million reports filed (503,633), some form of force was used 25 percent of the time (125,463), with OC spray being used only 116 times. From these data, it would appear that it is 16 times more likely that an officer will draw his or her weapon and point it at a suspect than use OC spray (NYPD, 2006f).

<sup>11</sup> Data from the automated, online booking system for the last quarter of 2006 (October–December 2006) record more than 92,595 bookings; 5 percent involved the use of force (4,557), and OC spray was employed 294 times, or about 7 percent of the time when force was used.

<sup>12</sup> This is the way several of our panelists phrased it:

The value of the TASER is that, if I’m going to go to fisticuffs with you and I have a TASER, I’m going to try to introduce that TASER into the scenario because it’s better for me. It’s going to stop you in cases where I’m never going to be able to. In my department, every uniformed officer gets a TASER. Very few exceptions. It’s our logic on force less than deadly. In order for it to be effective, it has to be operationalized at the spontaneous street encounter level.

I carry a little bag—that’s how I carry my off-duty gun. It’s got a TASER in it, it’s got OC, and above all, it’s got handcuffs. The chance of me shooting anyone [is] statistically very low. The chance of me having to incapacitate and secure somebody is very high. It’s inconceivable to me to carry a gun and not carry something to deal with a person while you’re waiting for the troops to arrive—i.e., handcuffs. I would absolutely carry OC and handcuffs so you have an intermediate tool. OC would have changed the outcome on this about 85 percent of the time. If you really want to be safe and effective when you’re carrying a gun, carry things less than guns. (Member of the RAND advisory panel, 2007)

<sup>13</sup> The NYPD maintains a log book in which the use of TASER devices is noted. Between January 1, 2006, and November 10, 2006, TASER devices were employed 258 times.

referring to the fact that it carries an electric charge and the latter to how it affects a person when deployed.<sup>14</sup> Departments that use CEDs report “reduction in injuries (both sides) and a reduction in the use of deadly force” (Miami-Dade County Grand Jury, 2005, p. 26). However, as the use of the CEDs has increased, so has the controversy surrounding its use, which we discuss next.

## Other Less-Than-Lethal Alternatives: Conducted-Energy Devices

### What Is a Conducted-Energy Device?

CEDs are handheld weapons that deliver shocks in one of two ways. In the probe mode, two small barbs with wires attached are ejected from the device and embed in the suspect or the clothes that the subject is wearing. Direct contact with the suspect’s body, a requirement of early models, is no longer necessary. An electric charge is then delivered through the wires. The Advanced TASER M26 has an effective range of 3 to 13 feet, with a cartridge that contains a spool of wire 15 feet long, and a 3- to 19-foot range with a cartridge containing a spool of wire 21 feet long (Barton, 2003). Alternatively, in the drive-stun mode, the device is pressed against the subject, and a charge is delivered through small, nonpenetrating probes. A CED is not incapacitating in the drive-stun mode; rather, like some other less-than-lethal technologies, it encourages compliance through pain.

The vast majority of CEDs in use today are either the Advanced TASER M26 or TASER X26 models<sup>15</sup> (see Figure 6.2).

TASER International reports that it has sold 260,000 CEDs to 11,500 law-enforcement and U.S. military agencies in 45 countries throughout the world, with 3,500 of these agencies issuing the devices to all patrol officers (Tuttle, 2007).

Unlike other less lethal methods that depend on pain for compliance, CEDs deliver a short-duration (5-second), high-voltage (50,000 volts), low-amperage charge to a subject. This, in turn, interrupts the communication signals from the brain to the body and briefly involuntarily incapacitates most subjects. Because it does not rely

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<sup>14</sup> The word “TASER” is a registered trademark and an acronym for Thomas A. Swift Electronic Rifle. While TASER International dominates the CED market, other companies have begun to manufacture their own CEDs in recent years. TASER devices are available online; as of this writing, the Advanced TASER M26 sells for \$399.95 and the TASER X26 sells for \$799.95.

<sup>15</sup> The major differences between the TASER X26 and Advanced TASER M26 models are shape and weight. The X26 weighs 7.2 ounces, while the M26 weighs 19.2 ounces. Both come in yellow or black. Both the M26 and X26 models record information on deployments. In the case of the M26, this includes the date and time for approximately 585 firings. The X26 records time, date, burst duration, unit temperature, and remaining charge. In addition, it has an optional video camera that records deployments. According to a survey of law-enforcement agencies conducted by the Police Executive Research Forum (PERF), tactical teams preferred the M26 model, while patrol officers favored the lighter X26 (Will Johnson et al., 2007, pp. 102–103).

**Figure 6.2**  
**A TASER X26**



SOURCE: Courtesy of TASER International. Used with permission.

RAND MG717-6.2

exclusively on compliance through pain, as does OC spray, the manufacturer claims that CEDs are much more effective against pain-resistant subjects, such as individuals who are under the influence of drugs or who are mentally unbalanced. However, some agencies that extensively use CEDs report that the weapon is not always effective.<sup>16</sup>

A survey of law-enforcement agencies found that the vast majority issue CEDs to both front-line officers and supervisors. Only 3 percent of reporting agencies required supervisory approval prior to CED deployment. Only 4 percent required that a supervisor respond to the scene before a CED could be used, although many agencies require a supervisor to respond after a CED deployment. Several agencies noted that the spontaneity and quick escalation of incidents usually precluded significant supervisory participation prior to deployment (Will Johnson et al., 2007, p. 107).

### **How Are They Supposed to Be Used?**

CEDs are intended to complement the existing suite of lethal and less-than-lethal weapons available to police officers. However, as has recently been noted,

<sup>16</sup> The San Jose Police Department noted,

Taser device was not always effective when it was deployed. [The] variables [determining its effectiveness] included the thickness of a suspect's clothing and whether or not the suspect's own movement dislodged one of the prongs, stopping the electrical charge. There were also some cases in which officers firing Taser devices missed their targets. Of the 131 Taser deployments, the Taser was not effective in assisting in the process of taking the suspect into custody in only 8 cases, or 6% of the time. It was noted that in the 8 cases where the Taser was not effective, 5 of those cases (62.5%) occurred during the cold weather months of November and December when thicker clothing is more likely to be worn. (Davis, 2007a, p. 31)

there is a lack of consensus in the development and application of policies relating to Taser training and use. Variation in policy and training and the substitution of Tasers for other technologies across the use-of-force continuum, result in operational inconsistency . . . (making) it difficult to compare police departments in terms of Tasers on improved office and citizen safety and reduction in the use of lethal force. (Adams and Jennison, 2007, p. 447)

The following model CED-policy statement, based on one developed by the University of Tennessee's Municipal Technical Advisory Service,<sup>17</sup> captures many of the features that seem to be developing and makes it clear that

An officer is authorized to use the M26 after he/she has clearly displayed a physical presence and thus identified themselves as a police officer. . . . The officer must also give verbal warning and verbal commands to a resisting subject or arrestee if the situation allows. . . . A suspect failing to comply and showing NO INTENTION OF COMPLIANCE to an officer's official, lawful instructions may be incapacitated by the use of the M26 Taser.

The use of this weapon should, in most cases, eliminate the need for actual hands-on active countermeasures and the possibility of an officer or suspect injury. . . . The officer is not required to attempt soft empty hand control tactics if the officer believes that they would be ineffective and/or the officer believes the use of the M26 Taser would reduce the likelihood or possibility of more serious injuries to the subject, the officer, and third parties. . . .

The use of the M26 Taser is intended solely as a control device to minimize injuries to officers and suspects. Its purpose is to enable the officer to carry out his/her duties in a safe, efficient and most professional manner. The timely and appropriate use of the M26 Taser can greatly reduce injuries to both officers and suspects. Any escalated use of force may be thereby avoided.

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<sup>17</sup> These items generally follow from the policy statement developed by the University of Tennessee's Municipal Technical Advisory Service (MTAS) (Barton, 2003) and generally apply to the use of a CED in a situation that would benefit from a less-than-lethal standoff weapon, a situation that the RAND team observed in a number of firearm-discharge cases it reviewed. The MTAS policy also endorses the use of the CED "on a suspect, previously under control, who suddenly reacts violently and requires immediate attention during the post arrest and/or booking process." Presumably, such a suspect is already restrained, and it is not clear how further temporary electromuscular disruption of a suspect will bring the suspect under control. The PERF model policy also says, "CEDs should not be used on handcuffed persons unless they are actively resisting or exhibiting active aggression, and/or to prevent individuals from harming themselves or others" (PERF, 2005, p. 2). The model policy of the International Association of Chiefs of Police (IACP) "forbids" the use of a CED "On a handcuffed or secured prisoner, absent overtly assaultive behavior that cannot be reasonably dealt with in any other less intrusive fashion" (IACP, 2005, p. 1).

The M26 Taser is not a substitute for deadly force and should not be used in those situations. Deployment of the M26 Taser should be backed up with the availability of lethal force. . . .

The M26 Taser will never be used as a means of punishment. (Barton, 2003, pp. 1–2)

### How Effective Have CEDs Been?

Numerous studies have commented on the “dearth of research on Taser use in policing” (Adams and Jennison, 2007, p. 447). In their study of the use and effectiveness of CEDs, White and Ready (2007, p. 170) noted that, “despite its adoption by more than 8,000 law enforcement agencies in the United States and abroad, there is little empirical research examining use of the Taser by police officers.” Similarly, the Commission for Public Complaints Against the Royal Canadian Mounted Police (CPCARCMP) noted that, although the Royal Canadian Mounted Police (RCMP) had deployed 3,000 CEDs with more than 9,000 officers trained in their use, seven years after their introduction, the RCMP has “neither comprehensive nor even more cursory analysis readily available” (Kennedy, 2007, p. 3) on CED use. However, less-rigorous, anecdotal data suggest that CED effectiveness can be judged at two levels. First, at the individual engagement level, what proportion of the time does CED deployment have the desired effects? Second, since CEDs change the way police interact with suspects, overall, what effect do CEDs have on the way police use force?

Departments report varying degrees of effectiveness in controlling suspects (White and Ready, 2007, p. 174). In 2006, Cincinnati reported an effectiveness rate of 73 percent (Ventre, 2007), while Columbus, Ohio, reported an effectiveness rate of 70 percent (Columbus Ohio Division of Police, 2006). In New York City, CEDs are authorized for use by supervisors and special tactical units. In 2006, based upon log-book entries, the NYPD reports that CEDs were effective 89 percent of the time.<sup>18</sup>

Police departments have generally noted that, after deploying CEDs, use-of-force statistics change significantly. Table 6.1 shows comments from a number of departments concerning how CED deployment has changed the number of officers injured, the number of suspects injured, and the use of deadly force.<sup>19</sup> The entries in Table 6.1 reflect the views of some of the departments currently using CEDs. These views are not universally shared in each city, nor has every police department chosen to adopt CEDs. The next section examines some citizen concerns. For example, in Table 6.1, both the mayor and chief of police of Houston reported very positively on CED use. The American Civil Liberties Union (ACLU), however, citing newspaper reports, was

<sup>18</sup> From the 2006 TASER log book maintained by the NYPD and provided to the RAND study team.

<sup>19</sup> The departments quoted in Table 6.1 were listed by IACP (undated).



**Table 6.1**  
**Comments from Selected Police Departments**

Department	Comments	Source
Westminster, Colo.	<p>"Great success with using [TASER devices]. We have had several situations [that] would have likely ended in the use of deadly force, but were diffused safely by the use of a [TASER device] instead.</p> <p>"Significant drop in injuries to officers, as well as suspects, since deploying the [TASER] units. It is no longer necessary in most situations to go "hands on" with resistive suspects because the [TASER device] can be deployed at a safe distance. This is one of biggest benefits to using [TASER devices], as injuries to everyone can be minimized."</p>	2004 data, Westminster (Colo.) Police Department (undated)
Minneapolis, Minn.	<p>"We are having about fifty actual uses of the CEDs a year with fewer serious injuries to citizens and officers. We have had one proximity death with a CED that the medical examiner ruled the cause as 'excited delirium' [that] was due to a narcotic reaction. In reality, the most in custody deaths across the nation are found to be from physical and/or psychological medical causes not associated with the force used during the arrest.</p> <p>"Minneapolis police officers [user TASER devices] about fifty times a year now to help with over 45,000 arrests by 800 sworn officers while we answering nearly 400,000 call for service and making over a million citizen contacts. We have had very few citizen complaints regarding CEDs, and CEDs are an accessible and safer alternative to higher end uses of force to deal with combative and threatening suspects.</p> <p>"The on-going deployment of [TASER devices] to street officers as a means of less-than-lethal force has allowed for safer encounters with potentially volatile and violent subjects, resulting in fewer injuries for officers and subjects alike."</p>	2006 data, Dolan (2006, 2007)
Madison, Wisc.	<p>"[The goal is] to provide officers with additional options that would reduce injuries to officers and citizens, and would reduce officers' utilization of deadly force.</p> <p>"Summary of MPD's [Madison Police Department's] [TASER-device] program to date:</p> <p>"MPD's deployment of the [TASER device] has reduced injuries to officers and suspects resulting from use-of-force encounters.</p> <p>"MPD's deployment of the [TASER device] has reduced MPD officers' utilization of deadly force.</p> <p>"The [TASER device] has proven to be a safe and effective use-of-force tool.</p> <p>"MPD officers are deploying the [TASER device] in an appropriate manner.</p> <p>"The [TASER device] has been utilized to resolve more than 100 use-of-force encounters, with few resulting injuries to officers or suspects. Given the alternative force options that would have been utilized in these encounters, there is no question that both the number and severity of injuries (to both officers and suspects) would have been far greater had the [TASER device] not been available. The [TASER device] has also allowed officers to avoid having to deploy deadly force in a handful of incidents, and has also likely precluded other incidents from escalating to deadly force encounters."</p>	2007 data, Wahl (2007)

Table 6.1—Continued

Department	Comments	Source
Green Bay, Wisc.	<p>“[The goal is] to expand the use of force options available to GBPD [Green Bay Police Department] officers and provide them with an effective less lethal alternative that would increase officer safety, reduce officer and subject injuries, and potentially reduce the actual use of deadly force.</p> <p>“Although a [TASER device] is a very effective control device, it’s important to realize that it DOES NOT take the place of other intervention options available and necessary for officers to carry out their duties. The [TASER device] IS NOT a replacement for active countermeasures, OC spray, batons, or firearms. It is yet another effective tool or option for law enforcement officers.</p> <p>“The key findings of this study include:</p> <p>“The X26 Taser is an effective and safe device to control combative offenders who pose a significant threat to themselves, officers, or others.</p> <p>“The X26 Taser is used sparingly to control violent offenders with no instances of serious injury to officers and/or offenders.</p> <p>“In several instances, the mere presence of an X26 Taser has convinced offenders to comply with no additional use of force measurers needed.</p> <p>“The X26 Taser is an effective device to control those most at risk for sudden incustody death and when used appropriately can prevent the end result of excited-delirium, that being death.</p> <p>“Although not a deadly force tool, the X26 Taser has been used at least seven (7) times to gain control of offenders who were posing a significant and potentially deadly force threat to officers or others. Therefore, the use of this tool prevented at least seven potentially deadly force incidents.</p> <p>“GBPD officers are deploying the [TASER device] in an appropriate manner consistent with their training and policy.”</p>	2006 data, Knetzger and Knetzger (2006)
San Jose, Calif.	<p>“Officers have a variety of force options to select from. Having these options in mind, officers overwhelming select the lowest level of force, physical hands-on in 71% of their encounters, to control uncooperative suspects. The use of impact weapons (batons) and [TASER devices] represent 12% and 10% respectively as the next most selected use of force, with the use of OC spray representing 6% of the total.”</p>	2007 data, Davis (2007b)
Cincinnati, Ohio	<p>“[TASER devices] have reduced the need for police officers to have physical, potentially violent, encounters with resistive suspects.</p> <p>“[TASER devices] are the safest alternative in a use of force situation and the statistics in cities where [TASER devices] are being used bear out our findings. [TASER-device] use can save lives when deadly use of force may have been the only other option.</p> <p>“Use of force, as a whole, has declined since the deployment of [TASER devices]. Physical harm to prisoners and suspects was down 35 percent in the first full year of [TASER-device] use, compared to the last full year without [TASER devices]. Physical harm to officers was down 56 percent over the same periods of time. [TASER devices] have created a different environment for subduing those engaged in criminal activity. We have fewer injuries and more cooperation from persons who do not want a police officer to apply a TASER [device].”</p>	2005 data, Carr (2005)

**Table 6.1—Continued**

Department	Comments	Source
Columbus, Ohio	<p>“It is clear [that] the Division’s deployment of the X-26 [TASER device] has made a substantial difference in the first full year of deployment.</p> <p>“Decreases in officer injury, injuries to prisoners, citizen complaints, and higher levels of subject control demonstrate the effectiveness of the Division’s [TASER-device] program.</p> <p>“The Division’s [TASER-device] program is also assisting our officers in controlling resistive/aggressive subjects quicker.</p> <p>“Officers are able to control resistive/aggressive behavior by displaying, sparking, and using the [TASER device,] which limits the need of officers to escalate to higher levels of control.</p> <p>“The most important statistics are the human lives saved through the use of the [TASER device]—16 suicides and a total of 24 incidents deadly force could have (and most likely would have) been used to end confrontations is exceptional.”</p>	Columbus Ohio Division of Police (2006)
Houston, Tex.	<p>“Used 892 times between December 2004 and October 2006. In 39 instances, officers involved would have been justified in pulling a gun and shooting someone instead of stunning them.”</p>	Moran (2006)

SOURCES: As noted.

concerned that the Houston Police Department was using CEDs “inappropriately” (ACLU Nebraska, 2005, p. 9).

TASER International also reports that, “out of the 18,000 law enforcement agencies in the U.S., over 11,000 agencies deploy TASER brand technology. Over 3,500 of these agencies deploy TASER CEDs to all their patrol officers” (Tuttle, 2007). In the federal government, however, the U.S. Marshals Service deploys CEDs, but the law-enforcement agencies of the U.S. Department of Homeland Security (DHS) do not. While it was reported in 2003 that DHS had decided that CEDs “just didn’t fit,” citing concerns about “safety of our officers and the public” (Kevin Johnson, 2005), we have not been able to independently confirm why these agencies do not use CEDs. These concerns notwithstanding, the National League of Cities found that CEDs

have proven to be a safe and effective tools for law enforcement to de-escalate violence, protect citizens and reduce injuries to criminal subjects; and . . . statistical data has shown decreases in officer and subject injuries . . . [and that] overall law enforcement related shootings have declined in cities where electronic control devices are deployed. (National League of Cities, 2006)

The league recently endorsed CEDs, calling on Congress to “provide adequate funding resources to assist local law enforcement agencies with the deployment” of CEDs (National League of Cities, 2006).

### Several National Organizations Object to the Use of TASER Devices

While police departments generally have had very favorable experiences using TASER devices, the ACLU<sup>20</sup> and Amnesty International USA (AIUSA)<sup>21</sup> have taken issue with, and called for a moratorium in use of, CEDs. Concerns appear to fall into three areas: CEDs seem to be used too frequently, police officers do not have proper guidance or supervision and abuse CEDs, and CEDs contribute to suspect deaths.

**Frequency of Use.** The ACLU of Northern California charges that TASER International misled the public and police agencies when it “billed the TASER as a non-lethal alternative to deadly force” (Schlosberg, 2005, p. 1) and called for the “California Legislature [to] pass a law that allows Tasers to be used solely as an alternative to deadly force” (Schlosberg, 2005, p. 1). CPCARCMP has made a similar request. While it notes that CEDs have “a role in specific situations that require less than lethal alternatives to reduce the risk of injury or death to both the officer and the individual when use of force is required,” it goes on to make a more restrictive caveat when it writes, “it is an option in cases where lethal force would otherwise have been considered” (Kennedy, 2007). The manager of the Less Lethal Technology program at the National Institute of Justice recently warned, however, that is not always an appropriate alternative to the use of deadly force, and “over-confidence of less lethal weapon capabilities have put officer’s lives at risk when they are used as a substitute for deadly force when the latter is indeed the appropriate response” (Downs, 2007, p. 378).

In truth, the use of a CED may be a more appropriate alternative to the use of physical force or the drawing of a weapon and can stop an incident from progressing toward the use of deadly force. In fact, as shown in Table 6.1, police departments have no illusions that CEDs are a substitute for firearms, but, when used properly, they complement firearms in providing a more robust set of options. In the words of one department, CEDs “provide[s] officers with additional options that would reduce injuries to officers and citizens, and would reduce officers’ utilization of deadly force” (Wahl, 2007, p. 1).

While the place into which CEDs fit on the use-of-force continuum varies by department, treating CEDs as only a substitute for deadly force as recommended by the ACLU of Northern California—e.g., “law enforcement agencies should be restricted from using Tasers in non-life-threatening situations” (Schlosberg, 2005, p. 2)—would endanger officers and negate the benefit that has been demonstrated.<sup>22</sup> For example, the Minneapolis Civilian Police Review Authority (2006, p. 1) recommended that

<sup>20</sup> Individual chapters of the ACLU conduct their own research and render opinions independent from other chapters. To that end, the ACLU does not necessarily speak with a single voice about CED use.

<sup>21</sup> Citing the AIUSA report, DOJ has commissioned several studies (see NIJ, undated).

<sup>22</sup> The GAO (2005, p. 9) found that, among seven police departments that it surveyed, “the placement of the Taser on the use-of-force continuum of the agencies varied; . . . two agencies permitted the use of Tasers when a police officer perceived the situation as potentially harmful; . . . two agencies engaged in assaultive behavior that creates a risk of physical injury to another, [while] four other police departments allow the use of Tasers at a lower

Tasers be placed on the use-of-force continuum at or above the level of a closed-hand strike; however, the policy should allow for a flexible threshold for Taser use, depending on officer size and stature, suspect size and stature, and other elements on the scene. The policy should note that evidence suggests that Tasers may cause burning and scarring, and they may be harmful or fatal in rare instances. Tasers should be viewed as an extraordinary use of force. Tasers should not be used until all other appropriate force techniques have been exhausted. Every Taser use should be justified by the officer as the only viable tool available under the circumstances, using the reasonable officer standard. This policy should be frequently reviewed to respond to new data about the efficacy and safety of Tasers.

Empirically, the relationship between the various categories of force is suggested by the 2004–2005 experiences of the Austin Police Department and by comparisons of pre- and post-CED deployment in Cincinnati. The Austin Police Department was an early user of TASER devices but reports that, with a change in deployment standards, CEDs were used 36 percent fewer times (down from 334 to 215) in 2005 than in 2004. It reports that the “clarification of policy” may also have contributed to a corresponding 31.3-percent increase in the use of soft-hand control (increase from 384 times to 504 times), a 31.6 percent increase in hard-hand control (increase from 177 to 233 times), and an increase in the use of OC spray of 38 percent (288 to 397) (Austin Police Department, 2006, pp. 2, 7–8).

In Cincinnati, between 2003 and 2004, when TASER devices were introduced, the use of chemical irritants went down from 440 to 176 and physical force from 263 to 158, while the use of CEDs increased from 3 to 568 (Cincinnati Police Department, 2005).<sup>23</sup> In other words, if CEDs were limited to situations in which firearms might appropriately be used, one might expect to see more physical confrontations between police and suspects, an increased use of OC spray, an increase in the number of officers and suspects injured, and a further escalation of incidents, leading to deadly force being used more often.

A team from the University of South Carolina (Smith et al., 2007, p. 432) analyzed data from the Miami-Dade County Florida Police Department (MDPD). They examined 762 lone officer-to-lone suspect use-of-force situations that occurred between January 2002 and May 2006. They reported that, if an officer used soft-hand tactics, the odds of officer injury more than doubled (Smith et al., 2007, p. 435). However, there was a 68-percent reduction in the odds of officer injury when a CED was used.

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level in the use-of-force continuum in situations that the officers perceive as volatile.” The National Institute of Justice ranks the use of the less-than-lethal chemical agent OC spray “just above hands-on pain compliance and immediately below the use of impact weapons” on the use-of-force continuum (Greinsky, Holland, and Martin, 2000, p. 4).

<sup>23</sup> In addition, officer injuries decreased from 103 to 54, and prisoner injuries decreased from 235 to 168 (Cincinnati Police Department, 2005). In addition, since first introduced in 2004, the use of CEDs has gone down each year: 629 in 2004, 547 in 2005, and 499 in 2006.

Similarly, when officers used hard-hand tactics, the odds of suspect injury (Smith et al., 2007, p. 437) were significantly increased. They also found “that CED . . . use was associated with a 677 percent increase in the odds of suspects not being injured during use-of-force encounters. Thus whereas hands on tactics significantly increase the risk of injury among both officers and suspects, CEDs significantly decreased the risk of injury to both groups” (Smith et al., 2007, p. 437).<sup>24</sup>

**Inappropriate Use of CEDs.** ACLU Nebraska (2005), CPCARCMP (Kennedy, 2007) and AIUSA (2007) have expressed concern that CEDs may be inappropriately used, and clearly there are cases in which that has happened. Generally, these are cases in which multiple CEDs were fired<sup>25</sup> or in which CEDs are not used as a standoff weapon but rather as a stun gun and, particularly, on suspects already restrained. This was the case in New York City in 1985: Officers used stun guns on suspects already in custody, creating in that city a negative attitude that still lingers.

Clearly stated policies and proper training can minimize these problems. There are a number of models that have been suggested, such as the 52 standards developed by PERF (Cronin and Ederheimer, 2006, pp. 23–29). ACLU Nebraska (2005, p. 24) particularly liked the PERF standards, noting that the “PERF recommendations addressed all of our concerns and in some cases gave even more detailed recommendations than we had previously seen.”

**Health Consequences from Using CEDs.** Finally, probably the most disturbing concerns that the ACLU of Massachusetts (2007) and AIUSA (2007) raised are that CEDs contribute to the deaths of suspects who have been stunned by them. While an independent review of the technical medical literature is beyond the scope of this monograph, a number of objective, third-party organizations have reviewed the evidence.<sup>26</sup> Their findings are discussed next.

**The Miami-Dade County Grand Jury.** The Miami-Dade County grand jury noted that, at the time of its review,

Nationwide, more than 150 people have died after being stunned by . . . Tasers. The Miami-Dade County Grand Jury decided that the community might benefit from our review of several questions that appeared to be of greatest concern to

<sup>24</sup> Smith et al. (2007) also reported results for their analysis of the Richland County (S.C.) Sheriff’s Department. This department, with approximately 475 sworn officers, is much smaller than the approximately 3,000 sworn officers of the MDPD. Results of the analysis were similar, with a full comparison at (Smith et al., 2007, pp. 437–440).

<sup>25</sup> The Columbus (Ohio) Police Department reported that, in 234 cases, single cycles were used 80 percent of the time, two cycles were used 14 percent, three cycles were used 2 percent, and more than three cycles were used 3 percent of the time (Columbus Ohio Division of Police, 2006).

<sup>26</sup> In addition, individual researchers have published a number of reviews of the medical literature and reported what they found. For example, Vilke and Chan (2007, p. 341) reported, “There is no clear evidence that these devices are inherently lethal nor is there good evidence to suggest a causal link between sudden in-custody death and the use of irritant sprays [OC spray] or conducted energy devices.”

Miami-Dade County residents. Were the Tasers causing deaths? Are they safe? Have they been sufficiently tested? What policies and guidelines are in place to govern the use of [CEDs] by law enforcement? (Miami-Dade County Grand Jury, 2005, pp. 1–2)

It found the following:

The implication in many of [the media reports about people dying after being stunned by CEDs] was that the Tasers directly caused the deaths. In all of the instances we followed, autopsy reports revealed the cause of death to be drug overdoses and/or other underlying medical conditions. (Miami-Dade County Grand Jury, 2005, pp. 12–13)

Many of the persons who died after being stunned were found to have died from the same or similar cause. Moreover, their cause of death, and maybe more importantly, their actions immediately preceding death, were entirely consistent with other persons who died and were not stunned. They all died as a result of Excited Delirium Syndrome (“EDS”). (Miami-Dade County Grand Jury, 2005, p. 13)<sup>27</sup>

In the cases reviewed here in Miami-Dade County, the doctors have not detected any evidence during the autopsies that would indicate a contributing cause of death from use of stun guns. (Miami-Dade County Grand Jury, 2005, p. 19)

**Potomac Institute for Policy Studies.** The Potomac Institute for Policy Studies is an independent, not-for-profit, public-policy research institute. It found the following:

Indirect Evidence of Safety—Available animal modeling results offer confirming scientific evidence that the employment of stun technology is relatively safe.

Direct Evidence of Safety—(1) Examination of the 72 mortality cases appearing in an Amnesty International 2004 report reveals that in no instance was stun employment singularly indicated or implicated as the specific cause of death, although the application of stun devices could not be ruled out as a possible contributing factor. (2) Analysis of the 72 mortality cases showed that other contributing factors included pre-existing morbidity, such as heart disease; and other significant factors such as excessive drug ingestion, and multiple force applications (e.g., baton + wrestling + stun).

Based on the available evidence, and on accepted criteria for defining product risk vs. efficacy, we believe that when stun technology is appropriately applied, it is relatively safe and clearly effective. The only known field data that are available

<sup>27</sup> *Excited delirium* (ED) refers to “individuals in a state of temporary mental confusion and clouded consciousness who display unusual, bizarre behavior and may be emotionally charged, under the influence of a drug, mentally ill, or affected by a combination of these factors” (Parent, 2006, p. 19).

suggest that the odds are, at worst, one in one thousand that a stun device would contribute to (and this does not imply “cause”) death. This figure is likely not different than the odds of death when stun devices are not used, but when other multiple force measures are. A more defensible figure is one in one hundred thousand. (McBride and Tedder, 2005, p. 4)

**Canadian Police Research Centre.** The Canadian Police Research Centre (CPRC) is a partnership between the RCMP, the Canadian Association of Chiefs of Police (CACP), and the National Research Council and supports research and development relevant to the demands of law enforcement. In August 2004, as a result of a number of deaths associated with CED use and growing concern within the public and law-enforcement communities in Canada, CACP asked CPRC to “conduct a comprehensive review of the existing scientific research and data and provide a national perspective on the safety and use of CEDs” (Manojlovic et al., 2005, p. i). It found the following:

Definitive research or evidence does not exist that implicates a causal relationship between the use of CEDs and death.

Existing studies indicate that the risk of cardiac harm to subjects from a CED is very low.

Excited Delirium (ED), although not a universally recognized medical condition, is gaining increasing acceptance as a main contributor to deaths proximal to CED use.

The issue related to multiple CED applications and its impact on respiration, pH levels, and other associated physical effects, offers a plausible theory on the possible connection between deaths, CED use, and people exhibiting the symptoms of ED.

CEDs are effective law enforcement tools that are safe in the vast majority of cases (Manojlovic et al., 2005, p. ii).

**British Defense Scientific Advisory Council Sub-Committee on the Medical Implications of Less-Lethal Weapons (DOMILL).** On January 20, 2003, the home secretary approved an operational trial of the Advanced TASER M26 as a less-than-lethal option in incidents for which authority to use firearms had been granted to police officers already trained in the use of firearms. Five police forces took part in the 12-month trial, which began on April 21, 2003. Prior to the start of the trial, DOMILL provided an independent statement on the medical implications of M26 use: “From the available evidence on the use of the device, the risk of life-threatening or serious injuries from the M26 Advanced Taser appears to be very low” (Wilkinson, 2005, p. 103). PricewaterhouseCoopers concluded, in a report for the Home Office, that use of the



M26 “helped secure a positive outcome to an incident, minimizing the potential need for officers to deploy other, possibly more lethal technologies, produced a report on the operational trial of the M26” (cited in Wilkinson, 2005, p. 105).

A second DOMILL assessment was concluded in July 2004 and found that “the risk of life-threatening or serious injuries from the M26 Taser is very low” (Wilkinson, 2005, p. 288), and the tests were extended to allow all existing firearm officers to use CEDs in situations in which authority for firearm use would normally be granted. On July 20, 2007, Tony McNulty MP, the Home Office minister of state for security, counterterrorism, crime, and policing, notified the House of Commons:

Taser has been available to all Authorized Firearms Officers since September 2004 as a less lethal alternative for use in situations where a firearms authority has been granted in accordance with criteria laid down in the Association of Chief Police Officers [ACPO] Manual of Guidance on Police Use of Firearms. I am giving my approval . . . for Chief Officers throughout England and Wales to deploy Taser for use by Authorized Firearms Officers in operations or incidents where the criteria for the authorization to issue firearms does not apply, but where officers are facing violence or threats of violence of such severity that they would need to use force to protect the public, themselves and/or the subject(s) of their action. I am also approving a 12 month trial of the deployment of Taser by specially trained units who are not firearms officers in similarly violent circumstances requiring conflict management. . . . The Defense Scientific Advisory Council (DSAC) Sub Committee on the Medical Implications of Less Lethal Weapons (DOMILL) was invited to provide a fourth statement on the medical implications of the use of Taser taking into account the new ACPO policy and guidance. The DOMILL statement confirms that the risk of death or serious injury from Taser remains low. All Taser deployments will continue to be monitored and a detailed report of every deployment will be produced. (McNulty, 2007)

## **Arrest-Related Deaths and Excited Delirium**

The medical consequences of using CEDs is often linked to issues of arrest-related deaths and ED. For example, while the CPCARCMP noted that

while [ED is] still a contentious issue with some, [it] has been identified in the [medical] literature to be a compelling medical concern that should be taken into account by law enforcement personnel . . . as it [relates] to the use of CEDs. (Kennedy, 2007, p. 4)

The Death in Custody Reporting Act of 2000 (P.L. 106-297) requires DOJ to collect data on individual death records for all persons incarcerated in state or local correctional facilities, as well as for any person who is in the arrest process. In October

2007, the Bureau of Justice Statistics issued a *Special Report on Arrest-Related Deaths in the United States, 2003–2005* (Mumola, 2007). DOJ reported that, between 2003 and 2005, there were 2,002 arrest-related deaths in the United States, of which 17 (or 0.85 percent) of all arrest-related deaths were reported to having been directly caused by a CED. The report noted,

Conducted-energy devices (CEDs), such as stun guns or Tasers, were involved in 36 arrest-related deaths reported to DCRP (Deaths in Custody Reporting Program) during 2003 through 2005. In about half of these deaths (17), the CED was reported as the weapon that caused the death. In the remaining 19 deaths, the use of a CED was indicated, but it was not reported as the cause of the death. The involvement of CEDs in arrest-related deaths increased from 3 deaths in 2003 to 24 in 2005. . . . (Mumola, 2007, p. 4)

Mumola (2007, p. 4) further noted,

Among medical and law enforcement experts, the ability of CEDs to cause a death is a subject of debate. Due to reporting gaps, these 36 cases do not represent a complete count of all deaths in which the use of a CED was involved.

Arrest-related deaths are not new and predate the deployment of CEDs. There is a growing medical literature, especially in the area of emergency medicine, concerning fatalities and physiology of acutely agitated patients. While the term *ED* does not correspond to any diagnosis found in the International Classification of Disease (ICD) manual, closely associated diagnoses can be found under the headings of “manic delirium” and “psychomotor excitement.”<sup>28</sup> One study from Los Angeles County is particularly interesting because it focused on ED cases, reported over a six-year period from 1992 to 1998, in which 216 subjects were restrained with the wrists and ankles bound and all four extremities attached securely behind the back and were observed by trained emergency medical service (EMS) personnel. From this group, 20 hobbled, restrained individuals “suddenly died.” One hundred ninety-six restrained subjects did not die. Unique to these data is a description of the initial “cardiopulmonary arrest rhythm” in 72 percent of the sudden-death cases. The authors reported that 78 percent of the deceased individuals had positive toxicology tests for a stimulant drug. OC spray alone was used in four cases, CEDs alone were used in three cases, and both together were used in two cases. They found that, in 90 percent of the cases, the subject either had cardiac disease or was under the influence of a stimulant. The authors concluded,

Violent victims of excited delirium often must be restrained for the safety of the individual and the public. It should be recognized that such individuals are at high risk for sudden death, particularly those who are obese, under the influence

<sup>28</sup> For a further discussion of the acceptance of the term *ED*, see Peters (2007).

of stimulant drugs, and have underlying medical disease. (Stratton et al., 2001, p. 191)

### **Recommendations for CEDs and OC Spray**

Noting the “dearth in research on Taser use in policing,” Adams and Jennison (2007, p. 447) called for “evidence-based Taser [CED] policy development ... [as] necessary to maintain the integrity of the technology, protect officers and citizen safety, and encourage the use of less-than-lethal force.” We make the following recommendations on how to proceed to improve the NYPD’s effective use of less-than-lethal standoff weapons. This would also substantially add to the general understanding of the use of CEDs and how police manage the use-of-force continuum.<sup>29</sup>

**Implement a Pilot Study of CED Use by Patrol Officers.** Accordingly, we recommend that the NYPD implement a pilot program in which patrol officers in selected precincts are trained and equipped with CEDs as well as the standard-issue OC spray. The purpose of the study would be to determine what effect the use of CEDs might have on the way in which NYPD officers apply force. Before CEDs are issued, use-of-force information should be collected to establish an analytic baseline against which performance can be measured in the subject precinct and a statistically matched precinct. Officers in both precincts should be trained in the proper reporting of use-of-force information. The pilot should run for between six and 12 months. By comparing the pre- and post-CED periods and the reports from both precincts, the analysis would answer the following questions:

- What effect did the availability of CEDs have on the need to resort to deadly force?
- How did CEDs change the overall distribution of the various force options?
- What effect did the introduction of CEDs have on the use of OC spray?
- Did CEDs reduce injuries to officers, suspects, and third parties?
- Were CEDs acceptable to officers?
- Were CEDs acceptable to the community?

### **Other, Less-Than-Lethal Alternatives: Impact Munitions**

There are a number of other, less-than-lethal alternatives that can be used to subdue uncooperative suspects, even suspects who display nonfirearm instruments of deadly force, particularly a class known as *impact munitions*. These weapons, however, are not

<sup>29</sup> Much of CPCARCMP’s recent criticism of the RCMP arises because the data and analysis were not “readily available to the Commission to assist in conducting this review.” They noted that “failure to properly collect, collate or analyze its own data means that the RCMP is unable, by its own inaction, to relate any external research to RCMP use” of CEDs (Kennedy, 2007, p. 3).

likely to be carried by patrol officers and may require special training and handling. Nevertheless, in certain situations, they are a less-than-lethal alternative.

Impact munitions are projectiles made of various substances that are usually fired from 12-gauge shotguns or 35-mm to 40-mm grenade launchers. They are classified as less-than-lethal devices and are designed to stun or temporarily incapacitate a suspect to facilitate an arrest. Unlike CEDs, they induce compliance through blunt force and pain. In addition, because they have greater range than CEDs have, impact munitions should be considered a complementary tool rather than a replacement. When first introduced, impact munitions were primarily issued to specialty units, such as SWAT teams. Increasingly, patrol officers are carrying and deploying them (Hubbs and Klinger, 2004, p. 2).

A recent National Institute of Justice–sponsored survey elicited responses from 106 police agencies and examined a total of 373 incidents involving the deployment of impact munitions. In those 373 incidents, a total of 969 projectiles were discharged, and eight individuals died as the result of being struck by the munitions. Two additional deaths occurred when officers mistook lethal devices for munitions. (Some impact munitions closely resemble lethal shotgun rounds.) In 93 percent of the incidents, officers did not have to resort to deadly force. The authors found this to be significant, given that 90 percent of the offenders displayed weapons, and opined that the use of impact munitions did indeed save lives (Hubbs and Klinger, 2004, p. 3).

A variety of impact munitions are in use today. In the 373 incidents cited, beanbag rounds were the most common projectiles deployed (65 percent). The second most popular were plastic baton rounds (28 percent). In addition to these two types, a total of 19 other types of impact munitions were deployed across incidents.<sup>30</sup>

Numerous types of impact munitions are on the market. As part of the study, we conducted an extensive literature review, interviewed use-of-force experts, and discussed impact munitions with the focus group. Based on that analysis, we identified Super-Sock™ rounds and sponge rounds as two impact munitions that might meet the NYPD's unique needs.<sup>31</sup> Each is briefly described next.

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<sup>30</sup> Of the 969 munitions discharged, 782 resulted in injuries. These injuries were broken down as follows: bruises, 80 percent; abrasions, 31 percent; serious lacerations, 5.5 percent; broken bones, 3.5 percent; and penetration of skin, 1.8 percent (Hubbs and Klinger, 2004, pp. 5–6).

<sup>31</sup> According to the National Institute of Justice report (Hubbs and Klinger, 2004, p. 7),

Super socks are beanbags that look more like cloth socks than the traditional square bags. Super socks are typically sewed or tied off in the middle and often have a streamer at the rear to stabilize their flight. Sponge rounds are, as their name implies, projectiles made of a spongy material that can be fired from long range with increased accuracy and consistency.

Interestingly, the New Zealand Police (2006) considered each of these impact munitions. The report “endorsed the continued use of OC Spray [as] the main means of personal protection for front line officers . . . . Of the options recommended in the report for further trials only the Taser has been approved by the Police Commissioner to undergo a field trial.”

### **Super-Sock Rounds**

Similar to beanbag rounds, Super-Sock rounds have been altered by the addition of streamers or some other device to provide them with better aerodynamics. Launched from a 12-gauge shotgun, Combined Tactical Systems (the manufacturer) claims that the Super-Sock has a 5- to 10-yard greater range than standard beanbag rounds have. In addition, they are alleged to have a stabler impact.

### **Sponge Rounds**

The U.S. Army developed sponge rounds over a five-year period. Launched from a 40-mm launcher, they disperse on impact over a wide surface area. This, along with the dampening effect of the sponge material used, contributes to a wide distribution of the impact, thereby decreasing the possibility that the projectile will penetrate the skin.

### **Recommendations for the Deployment of Impact Munitions**

Impact munitions have proven effective in certain situations and round out a full set of options available to the NYPD. Because patrol officers do not readily carry these munitions and special training is required, they have been used mainly by special operations units. The NYPD should evaluate their use by patrol officers. How might patrol officers have access to them? How might patrol officers use them? What effect will these weapons have on the way patrol officers use force?

## Other Innovative Technologies

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### Introduction

Most NYPD officers will never fire their weapons at another human being. Indeed, many officers resist using deadly force even when it is authorized. Nevertheless, it is critical that every officer be able to do the following:

- Correctly decide when deadly force should be applied.
- Efficiently and effectively employ deadly force without harming innocent third parties.
- Correctly decide when to cease the application of deadly force.

Firearm-training literature suggests that increased range time alone will not appreciably increase shooting accuracy in real-world situations.<sup>1</sup> As Morrison (2006, p. 332) noted, “bullet hit rates hovering around one in five shots have persisted from the earliest measurements in the 1970s through the 1990s, this despite the many changes in such training during that period.” There are, however, a number of technologies that can improve shooting accuracy and situational awareness, promote efficient and effective shooting, and reduce misses and rounds fired.

As part of this project, RAND was asked to explore technologies that could assist the NYPD in appropriate and acceptable applications of force. While technology alone will not resolve all the issues addressed in this monograph, we believe that it has a role to play in helping the NYPD employ levels of force that meet legal and community standards.

This chapter explores existing or emerging firearm-related technologies that may assist the NYPD in applying appropriate levels of force when necessary. Of the myriad of firearm technologies that claim to improve shooting accuracy or firearm retention, the two that hold particular promise for the NYPD are laser sights and

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<sup>1</sup> Between 1998 and 2006, the average hit rate for NYPD officers engaged in gunfights and in defense of self or others where there was no return fire, as reported in the yearly firearm-discharge report, was 18 percent and 30 percent, respectively.

firearm-mounted flashlights. We discuss each of these next, followed by some specific recommendations.

## Laser Sights

Law-enforcement agencies have used laser sighting systems since the 1990s. While systems differ, each system uses laser diode technology to place a visible dot over the spot that a fired bullet would hit. Lithium batteries that have shelf lives of between one and five years generally power them. For handguns, most laser sighting systems are incorporated into weapon grips, guide rods, flashlights, or accessory rails. Newer models are relatively lightweight, and reliability has increased.

There are numerous manufacturers for laser sighting systems. Costs for systems that would be appropriate for law enforcement range from approximately \$200 to \$400 per weapon. One example is the Crimson Trace Lasergrip (see Figure 7.1).

The primary benefit of a laser sight is obvious: It provides a tactical advantage by improving target sighting, which, in turn, leads to increased shooting accuracy. Crimson Trace Corporation claims that laser sights have improved hit accuracy from 20 percent (national average) to 90 percent in officer-involved shootings (Heal, 2007). Also, proponents claim that they help officers maintain awareness of muzzle direction and do not degrade peripheral vision when aiming a weapon. Another claimed benefit

**Figure 7.1**  
Crimson Trace LG-617 Lasergrip on a GLOCK Handgun



SOURCE: Crimson Trace Corporation. Used with permission.

RAND MG717-7.1

of laser sights is that they can produce effective threat deescalation in hostile situations (Warren, 2007). If true, each of these benefits could enhance community safety: Better accuracy could produce fewer shots fired and less chance of injury to third parties, while deescalation could reduce instances of officers firing their weapons.

Laser sights potentially have a place in training as well. Nielsen (2003, p. 82) noted,

The laser provides officers with an immediate feedback system, showing officers how they are shooting on a real-time basis. It can thus be of significant assistance in diagnosing any problems that require correcting. The use of a laser sight will not result in a dependence on the laser to the exclusion of conventional sighting methods; on the contrary, laser sights have been shown to improve shooting skills at a much higher rate than without lasers.<sup>2</sup>

Laser sights are not without detractors. Some claim that they can alert a suspect to an officer's location and that multiple laser sightings can create confusion when more than one officer is present. Others worry that officers will become overly reliant on the sights, allowing traditional shooting skills to degrade. In addition, laser sights are more effective in dark or low-light conditions and have less utility in daylight. Agencies that currently use laser sights include the Las Vegas Metropolitan Police Department, the Singapore Police Force, and the Los Angeles County Sheriff's Department. Heal (2007) provided his assessment of laser use:

The department authorizes the use of laser sights but doesn't issue them. There are an estimated 700 currently in use in the field. Based on anecdotal reporting, accuracy goes up in close range low light, sometimes pretty dramatically. The lower the light the more dramatic it seems. Bright lighting or anytime the contrast is low (background is orange, red, rust colored, etc.—because the lasers are red) you can acquire a sight picture with the iron sights faster and more accurately. Also, a deeply serrated background, like a deeply folded curtain can make it difficult to pick up the laser when it moves into the deep folds. We have suggested to the companies to “blink” the laser at about 4 to 15 Hz, because the brain processes different parts of vision in different priorities (motion then color then shape). This indexes a part of the brain that processes movement and makes it more conspicuous—dramatically so. It is the same reason we use a blinking cursor. Lasers, like tracers, work both ways. Searching for a suspect with a laser on makes you VERY easy to see, not to mention where your gun is pointing. Green lasers work better than red lasers but they are more expensive. That is because the brain processes green colors faster than red ones. Ideally, I'd like to see a green blinking laser. We are getting numerous stories from the field of violent, belligerent suspects surrendering without incident when they see a laser on their chest.

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<sup>2</sup> Warren (2007) supported Nielsen's assertion that laser sights are a valuable training tool.



## Recommendation

Given the potential of laser sights to have a positive effect on firearm discharge, we recommend testing with plainclothes officers; if this initial test proves positive, we recommend that the NYPD consider a pilot study with uniformed personnel. The test should evaluate whether the use of laser sights increases shooting accuracy, reduces injuries to officers and third parties, reduces average number of shots fired, and contributes to the deescalation of confrontations between officers and suspects.

## Handgun-Mounted Flashlights

Many police shootings occur under conditions of poor lighting. Reviewing several firearm-discharge cases, several members of RAND's panel of independent experts suggested that the outcome might have been different if the officers had been equipped with flashlights mounted on their weapons, because a gun-mounted flashlight would allow an officer to keep the nongun hand free. While there was some concern that a mounted light would give away the location of the officer's firearm, the panel's consensus was that the tactical advantage that a handgun-mounted light provides more than offsets this risk.<sup>3</sup>

The flashlight mounts on a rail (see Figure 7.2). GLOCK provides a number of options (see Figure 7.3).

As the name implies, handgun-mounted flashlights are nothing more than small, powerful flashlights that can be mounted on a rifle, shotgun, or pistol. Usually powered by small, lithium batteries with shelf lives of 10 years, these lights often utilize a gas-filled, incandescent lamp or high-output LED illuminating system and weigh around four ounces. Handgun-mounted flashlights are available as after-market additions from specialty companies or from the gun or light manufacturer.

In a recent survey of almost 1,200 police officers,<sup>4</sup> 47.8 percent reported that their departments permit handgun-mounted lights, while 52.1 percent said that they are not ("PoliceOne Duty Gear Market Survey," 2004, p. 3). Where officers were allowed

<sup>3</sup> Bertomen (2006) would agree with the judgment of the panel:

Some experts have suggested that a weapon-mounted light is hazardous as the suspect can easily see the source of the light and therefore the officer. While this is partially true, the benefits of saturating an area with light will usually outweigh the disadvantages. Suspects are less likely to step into a well lit area than shadows.

<sup>4</sup> PoliceOne.com reported that

1,106 . . . members responded to the Duty Gear survey. The respondents represent a randomly selected subsection of the PoliceOne membership base. PoliceOne.com's member base is broadly representative of the Law Enforcement market as a whole, being evenly distributed geographically across the United States, as well as across rank, purchasing role, and department size. A survey sample size of 1,106 respondents from a total Law Enforcement market population of 800,000 equates to a statistical significance of  $\pm 3\%$  ("PoliceOne Duty Gear Market Survey," 2004, p. 3).

**Figure 7.2**  
**Flashlight Mounted on a Handgun**



SOURCE: GLOCK, Inc. Used with permission.  
RAND MG717-7.2

**Figure 7.3**  
**Flashlight Mounts on GLOCK Handguns**

**GTL 10/11**

The modern light module with Xenon illumination technology for target identification in the ergonomically ideal GLOCK polymer design.

**GTL 21/22**

Tactical module with visible Red Laser option for sophisticated low light operations. Xenon Lamp for the highest luminosity.

**GTL 51\*/52\***

High-end module with progressive infrared technology (IR) for Special Forces. Switchable to Xenon Lamp and/or visible Red Laser or IR illuminator and IR Laser.



- Functions:**
- Xenon Light (white)



- Functions:**
- Xenon Light (white)
  - Visible Red Laser



- Functions:**
- Xenon Light (white)
  - Visible Red Laser
  - IR Light
  - IR laser

SOURCE: GLOCK, Inc. Used with permission.  
RAND MG717-7.3

to use them, Streamlight and Surefire were the two most popular suppliers, with 66 percent and 22 percent shares of the market, respectively. Most often, officers reported that they “use a standard holster and take off and store the light in a separate pouch” (59 percent of the time), with the remaining using “a holster that allows the light to remain on the handgun” (Meyer, undated).

The PoliceOne Training Advisory Board concluded that “the gun-mounted light enhances an officer’s ability to identify and engage a target *if the officer has justification/reason to have [his or her] gun drawn in the first place*” (Meyer, undated, p. 1, emphasis in original). It argued that officers should use a holster specifically designed to accommodate the weapon-mounted light, because removing the light before holstering would hinder an officer’s ability to promptly deescalate and may force him or her to handle a loaded weapon in a manner that could be dangerous. Using other holsters would cause officers to mount a light on a loaded weapon, which the board did not recommend. In addition, the weapon-mounted light should issue enough ambient light to illuminate the periphery while the weapon is held in the ready-gun position, and officers should train for conditions of low light.

### **Recommendation**

We recommend that the NYPD consider a limited distribution of gun-mounted flashlights. While it would be highly desirable to determine whether handgun-mounted flashlights would improve shooting outcomes, reduce injuries to officers and other parties, and reduce the average number of shots fired in conditions of low light, the difficulties controlling the variability in low-light environments might make a rigorous evaluation problematic. The final judgment may well rest on how comfortable officers are using gun-mounted flashlights.

## Reflexive Shooting

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### Introduction

To the general public, the terms *contagious shooting* or *mass reflexive response* refer to “gunfire that spreads among officers who believe that they, or their colleagues, are facing a threat” (Wilson, 2006). For the NYPD, contagious shootings are categorized as intentional reflexive discharges and, together with accidental reflexive discharges, they make up the broader category of reflexive firearm discharge. This chapter discusses reflexive shooting and what can be done to reduce it.

### Understanding Reflexive Shootings

Accidental reflexive discharges occur without an explicit decision to shoot. In 2005, the NYPD recorded 24 cases in which a firearm was accidentally discharged (Hurley, 2006, p. 16). Four of the cases occurred when officers were loading or cleaning their weapons. Thirteen more cases were classified as accidental discharges that occurred while “handling the weapon.” Seven cases occurred during a “struggle with subjects.” In previous years, discharges were also recorded when officers were running, falling, or trying to force entry. No accidental discharges, however, were recorded in these categories during 2005.

The more troubling type of discharge, and the one highlighted in the press as contagious shooting, is the intentional reflexive discharge. While it is often discussed as a group phenomenon, a single officer can also intentionally discharge his or her weapon out of fear and without knowing specifically what he or she is shooting instead of carefully considering whether the situation meets the requirements for the use of deadly force. Typically, the officer is reacting to the sight and sound of other officers shooting and starts to shoot. An intentional reflexive discharge may involve as little as a single round being fired, or, when many officers are involved, a large number of rounds may be fired.

This phenomenon is well known in psychology.<sup>1</sup> One explanation of what is happening is that officers replace a set of rules that they have been taught during their formal training with a simpler, more basic set of rules. Psychologists call these simpler rules a *decision heuristic*. “Fire your weapon if others are firing their weapons” may be a decision heuristic that officers, in the heat of combat, substitute for the more complex use-of-force decision processes they were taught during training and that reflect the legal standard for discharging a firearm at a person.

Unfortunately, data on intentional reflexive discharge or contagious shooting are not readily available, either within the NYPD or across departments. While the FDRB investigates each round to determine whether it was fired in violation of department guidelines, no determination is made about whether the discharge is an intentional reflexive discharge. Without that information being part of each firearm-discharge report, the annual firearm-discharge report cannot provide summary statistics. As a result, it is not possible to determine the extent of reflexive shootings and whether the phenomenon is increasing or decreasing over time.

A more complete investigation to determine whether an officer’s decision to fire his or her weapon was based on a full evaluation of all the policies taught by the department or a decision heuristic may be problematic. In general, questioning someone about the basis for a decision results in information that is highly unreliable.<sup>2</sup> More specifically, police officers are sometimes surprised that their weapons discharge, claiming that they never had a finger on the trigger. They sometimes do not accurately report how many rounds they discharged or how many times they reloaded their weapon, and they often are not sure where they were aiming.

## Training to Reduce Reflexive Shooting

Several aspects of officer training might be modified to reduce the incidence of reflexive shooting. Accidental reflexive discharges occur without an explicit decision to shoot. The officer discharges the weapon because of a problem with physical coordination or an involuntary physiological response to a stimulus or inadvertently while struggling with a suspect. The factor uniting all these unnecessary discharges is that the officer pulled the trigger when he or she did not intend to. While these incidents are somewhat understandable—everyone experiences involuntary reactions to noises and falls—for these reactions to result in a discharge usually requires that the officer have a finger within the firearm’s trigger guard.

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<sup>1</sup> In fact, research by Daniel Kahneman and others (Kahneman, Slovic, and Tversky, 1982) strongly suggests that these decision heuristics are used without the decisionmaker’s awareness.

<sup>2</sup> For example, Nisbett and Wilson (1977) reported that “subjects are sometimes (a) unaware of the existence of a stimulus that importantly influenced a response, (b) unaware of the existence of the response, and (c) unaware that the stimulus has affected the response.”

To prevent these types of accidental discharges, virtually all firearm-safety training, including the NYPD's training, highlights the need to keep one's finger outside the trigger guard except when actually firing the weapon. For officers to avoid bad habits in handling their weapons, this basic safety principle needs to be enforced even more than it is today in all firearm training, including target practice and requalification, Simunition and other simulator training, and tactical house training. When an officer rests a finger on the trigger in these exercises prior to aiming the weapon (e.g., at the low-ready position), the trainer should interrupt the exercise to ensure that proper firearm-safety habits are being developed.

Similarly, current firearm training does not emphasize the decision to draw the weapon. The student's guide given to each recruit explains the advantages and disadvantages of unholstering the weapon; however, the scenario that we observed did not focus on this decision. As a result, if some officers draw too soon or too often, they may be increasing the risk of accidents. Because accidental discharges virtually never occur with properly holstered weapons and NYPD pistols do not use an internal safety catch, the holster functions as the safety. Expanding training on holstering may reduce these unnecessary discharges. A holster that allows an officer to quickly reholster while running or climbing and then redrawing if the situation requires it could help him or her better control the environment. If such a holster were available, drawing and reholstering should be incorporated into all levels of simulation training.

Changes in training might also reduce contagious shootings. Including scenarios in which the stimuli normally associated with contagious shootings—such as the cry, "He's got a gun!" or the sounds of guns going off—might sensitize officers that cues may not be reliable and that such cues may generate unwanted responses. Having officers practice with the correct decisionmaking process may reduce the use of inappropriate shortcuts.

## **Documenting Reflexive Shootings**

While accidental discharges are reported in the annual firearm-discharge report, broad categories, such as "handling weapon" and "struggling with subjects," are too general to provide meaningful information. Moreover, while our case review identified a number of cases in which there might have been contagious shootings and, in some cases, officers were admonished, neither the 28-paragraph report guidelines nor the final report format required investigators to specifically evaluate the officer's decision to use deadly force. While it is important to note that after-the-fact inquiries may not always be reliable, a further inquiry could build a useful database, and further analysis might help the NYPD better understand the causes of intentional reflexive discharge.

## **Recommendations**

Based on these findings, we recommend that the NYPD modify training to include reflexive-shooting scenarios in which a stimulus, such as the cry, “He’s got a gun!” or the sound of guns going off, is included to sensitize officers to cues that may not be reliable and to teach them that such cues may generate unwanted responses. In addition, the NYPD should have officers practice with the correct decisionmaking process to reduce the use of inappropriate decisionmaking shortcuts.

Finally, the NYPD should make sure that all officers involved in a shooting undergo the mandatory, one-day refresher course at the range.

## Summary of Findings and Recommendations

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### Introduction

Commissioner Kelly asked RAND to undertake a “objective, comprehensive assessment of the NYPD firearms training and firearms discharge review process” (NYPD, 2007b). This monograph recommends ways in which the NYPD can reduce firearm discharges generally and inappropriate discharges in particular. During the study, the RAND team observed recruit and in-service weapon and use-of-force training. It also observed the operations of department- and borough-level FDRBs and analyzed the complete files of all firearm-discharge cases completed between 2004 and the present.

In this chapter, we summarize the findings and recommendations that the preceding chapters have presented for training; FDRB investigation and reporting; the need for an improved less-than-lethal standoff weapon; other innovative technologies; and reflexive shooting.

### Training

#### Findings

The training that might best affect an officer’s decision to intentionally discharge a weapon is the training received in the use-of-force continuum (i.e., how to deal with uncooperative suspects and how to control situations so that firearm use might be minimized). Rather than being stand-alone topics, these issues are part of the training that officers get in a broad range of classes, including ground tactics, gun retention, management of street encounters, encounters with emotionally disturbed persons, car stops, and domestic incidents.

Overall, the RAND team was impressed with the training in basic policing skills at the police academy. The nine weeks of recruit training devoted to hands-on skills and abilities is largely done in scenario-based, role-playing workshops or with simulators, such as the Meggitt FATS simulator. Typically, this training involves two to four students working with one or more instructors for a short period while the rest of the class watches. The students who are working with the instructors prepare for the



simulated event. The simulation is run, and then the instructors provide a critique of the simulation. Once complete, another set of students step up for their turn. In this way, each student in the class generally gets no more than one chance at each simulation. Unlike the basic policing-skills training, the limits on the number of students that can participate in one simulation at a time or on the number of simulators available in these workshops mean that recruits are not given adequate time to practice and do not have to demonstrate that they had mastered the techniques being taught. While some training records we observed were marked “retrained,” this meant that the instructor had told the student what he or she had done wrong and what the correct procedure was, not that the student had to demonstrate that he or she had learned the correct behavior. Given the logistics of these workshops and the size of the recruit-training class, *retraining* does not mean that the student was given the opportunity to try the simulation again. The car-stop workshop and the use of the simulator are indicative of the problem areas we observed.

NYPD officers are required to requalify on their firearms twice a year. Instructors observed officers who demonstrated poor firearm techniques, but, as long as they achieved the minimum score, no remedial training was offered. Research has shown that there “are serious reasons to question the validity of police recruit and in-service handgun training activities” (Morrison and Vila, 1998, p. 510).

### Recommendations

Based on these training findings, we recommend that standards of performance be developed for all basic policing skills and that recruits be evaluated accordingly and not passed until they have demonstrated that they have mastered the skill at an appropriate level.

We concur with the general recommendation of Bennell and Jones (2005):

- Perform a cost-benefit analysis conducted to determine the optimal training time for desired performance gains.
- Implement open simulation practice.
- Ensure that trainees master basic responses.
- Ideally sequence simulation training sessions over the course.
- Schedule retraining sessions as needed.
- Increase instructor-feedback time.
- Complement instructor feedback with trainees’ self-assessment.

Specifically, the NYPD should ensure and document that trainees have mastered basic and complex use of force tactics and decisionmaking skills. This should be done by

- updating computer simulations to incorporate the latest use-of-force scenarios now available from simulator vendors

- exposing recruits to scenario-based training and role-playing workshops throughout training
- ensuring that scenario-based training creates recruits' confidence that they have learned basic principles
- ensuring that recruits practice on a set of standard scenarios
- ensuring that debriefings focus primarily on the big principles, not the potential nuances that exist in every situation
- ensuring that recruits pass proficiency standards in real-life and scenario-based tests of complex decisionmaking before they are graduated from the police academy
- undertaking a full analysis of resequencing recruit training to uncover tangible and intangible costs and benefits, given the importance of scenario-based training and the high cost of the equipment
- exploring opportunities to lead and partner with one or more virtual-simulation companies to see whether advances in video-game technology can be used to create use-of-force judgment simulators that might operate on stand-alone laptop computers that do not require the intervention of an instructor or operator, or substantially increase the availability of other simulators to allow recruits to practice and then demonstrate that they have mastered the requisite skills, particularly those associated with the use of force
- enhancing record keeping for all training but particularly in-service training with data input over wireless modems to a master training file for each MOS and with training and other personnel data being part of a relational data system that would make all personnel information available for administrative and analytic use
- exploring alternatives to the current semiannual firearm-requalification paradigm to provide enhanced firearm instruction that would focus on the officer's proficiency rather than just the score on a static target.

## **FDRB Investigation and Reporting**

### **Findings**

Based on the review of best practices, the NYPD has a number of exemplary features, including the following:

- substantial and appropriate command attention at the scene of the incident that varies with the seriousness of the incident
- initial reports that were timely and fairly thorough, providing a substantial amount of information in a matter of hours after the incident, which is promptly reported up the chain of command to the commissioner

- a process that is well regulated and based on a multilevel review by the senior leader at each level, including the department chief
- a final report that generally provides an adequate basis for determining whether a discharge was within department guidelines
- a process that generally results in reasoned disciplinary action where called for.

However, the final firearm-discharge report centers on whether the discharge was intentional or accidental and whether it violated department policy. This means that, except in the small fraction of incidents—those judged to represent violations of policy—reports rarely assess the tactics leading up to the discharge.

The stated purpose and the scope of the inquiry seems overly limiting and in sharp contrast with statements in the NYPD's student's guide that, if an officer is involved in a shooting, he or she will be judged not only on the propriety of the discharge but also on the tactics used prior to the shooting, including unnecessarily placing him- or herself in a position that left no choice but to fire the weapon.

A more complete assessment of firearm-discharge cases might also identify the need for improved tactics and different equipment. We identified 25 cases in which the officer involved might have plausibly used, if available, a less-than-lethal standoff weapon instead of the firearm, with a possible reduction in the number of shootings and associated casualties.

Reports do not always adhere to the formats specified in NYPD regulations. Neither the patrol guide nor the investigation manual specifies a detailed format for the final report. The largest part of a final report is generally a summary of interviews with the officers who discharged their firearms. In general, final reports are long on facts and relatively short on analysis. Final reports frequently lack a synthesis of the information presented and often do not discuss conflicting information or attempt to reconcile evidence presented in the initial report with information presented in the final report.

### **Recommendations**

Based on these findings, we recommend that the NYPD expand the focus of the firearm-discharge investigation to include a formal and mandatory review of the tactics used. A broader inquiry based on the student's guide might include, among other things, such questions as these:

- “Did the officers . . . approach the situation cautiously and in a manner that is consistent with their training?”
- “Did the officers take advantage of all reasonably available assistance, information, and tactical considerations (i.e., cover), before confronting the individual they shot?”
- “Did the officers avoid an unnecessary confrontation with the individual they shot?”

- “Was the officer’s reaction at the time of the shooting reasonable, or is there evidence that the shooting was the result of panic or carelessness?” (NYPD Police Academy, 2007a, p. 21).

We also recommend that the NYPD build a formal lessons-learned process into the firearm-discharge review report by (1) formally expanding the stated purpose of the firearm-discharge investigations to incorporate an assessment of predischarge tactics; (2) modifying the report format to explicitly require such an assessment; (3) requiring all levels of review to assess the predischarge tactics used; and (4) modifying procedure 212-29 (NYPD, 2005) and the *Firearm Discharges Investigation Manual* (NYPD, 2004) accordingly.

The NYPD should also adhere to the formats that are part of the *Firearm Discharges Investigation Manual*, specifically §4A, which requires an explicit statement on the availability of less-than-lethal equipment and a description (not an evaluation) of the tactics used before the discharge.

Finally, the final report format should be changed to require a summary statement that contains the author’s best judgment of how the incident unfolded, pointing out uncertainties and conflicts and rendering his or her judgment about what occurred. The final judgment on the case needs to be consistent with and reflect the analysis.

## **Analysis of Factors Associated with NYPD Officers Discharging Their Firearms**

### **Findings**

Although the likelihood that an officer is involved in a shooting in any given year is small, officers who discharged their weapons were more likely to have had negative marks on their job records. Officers with an average of 3.1 negative marks (CPI points) per year of service in their records were three times more likely to discharge their weapons than were officers from the population of similar officers. In other words, on average and after statistically accounting for other demographic differences, officers in the matched population of nonshooters had significantly fewer negative marks in their files.

### **Recommendations**

The NYPD should pay particular attention to shootings involving officers with an annual CPI-point average in excess of 3.1 to make sure that the officers did everything appropriate before discharging their firearms. While the NYPD already monitors those officers exceeding a career total of 20 CPI points, this analysis suggests that the close monitoring of officers with an excessive accumulation rate of CPI points may also be warranted.

## Need for an Improved Less-Than-Lethal Standoff Weapon

### Findings

Analysis of the NYPD firearm-discharge cases and the experience of other police departments suggests that, if the NYPD employed a more robust less-than-lethal standoff weapon, it might not only prevent some incidents from escalating to deadly force but might also reduce injuries to officers and citizens alike, as has been the case in other departments.

When physical force is not appropriate, when drawing a firearm is problematic, and when there is no justification for the use of deadly force, the use of a less-than-lethal weapon may provide an appropriate alternative. Members of the expert panel that supported the RAND study reviewed a number of firearm-discharge cases and saw several situations in which they thought that things might have ended differently if the officers involved had used less-than-lethal force rather than pointing a weapon and, eventually, either purposely or accidentally firing it.

The only less-than-lethal weapon to which patrol officers in New York City routinely have access is OC spray. Nationally and in New York City, OC spray is relatively rarely used.

In the NYPD, supervisory personnel and special operations units have access to CEDs. Departments that use CEDs report “reduction in injuries (both sides) and a reduction in the use of deadly force” (Miami-Dade County Grand Jury, 2005, p. 26). However, as CED use has increased, so has the controversy surrounding such use.

While police departments generally have had very favorable experiences using CEDs, the ACLU and AIUSA have taken issue with, and called for a moratorium on, CED use. Concerns appear to fall into three areas: CEDs seem to be used too frequently, police officers do not have proper guidance or supervision and abuse CEDs, and CEDs contribute to suspects’ deaths.

Clearly, each case is different, but, in the aggregate, reductions in the level of injury to both police and suspect suggest a metric consistent with police departments’ expectations when CEDs were introduced; for example, as long as the level of injuries continues to fall, the increased use of CEDs is having a positive effect.

CED misuse seems to center on cases in which multiple CEDs were fired or in which CEDs were not used as a standoff weapon but as a stun gun, and, particularly, on suspects already restrained.

Probably the most disturbing concerns that the ACLU (2007) and AIUSA (2007) raised are that CEDs contribute to the death of suspects who have been stunned. A number of objective, third-party organizations have reviewed the evidence. The Miami-Dade County Grand Jury (2005, p. 19) found that, in the cases it reviewed, “doctors have not detected any evidence during the autopsies that would indicate a contributing cause of death from use of stun guns.” The Potomac Institute for Policy Studies concluded that, when stun technology is appropriately applied, it is relatively

safe and clearly effective (McBride and Tedder, 2005, p. 4). The CPRC also concluded that CEDs are effective law-enforcement tools that are safe in the vast majority of cases (Manojlovic et al., 2005, p. ii). And DOMILL noted, “the risk of death or serious injury from Taser is low” (Wilkinson, 2005, p. 103).

### Recommendations

To establish an “evidence-based CED policy” the NYPD should implement a pilot program in which patrol officers in selected precincts are trained and equipped with CEDs. The resulting analysis should answer the following questions, with the aim of informing a final decision about the deployment of CEDs to patrol officers:

- What effect did the availability of CEDs have on decreases in the need to resort to deadly force?
- How did CEDs change the overall distribution of the various force options?
- What effect did the introduction of CEDs have on the use of OC spray?
- Did CEDs reduce injuries to officers, suspects, and third parties?
- Were CEDs acceptable to officers?
- Were CEDs acceptable to the community?

## Other Innovative Technologies

### Findings

Law-enforcement agencies have used laser sighting systems since the 1990s. Proponents claim that they help officers maintain awareness of muzzle direction and do not degrade peripheral vision when aiming a weapon. Others claim that they can alert a suspect to an officer’s location and that multiple laser sightings can create confusion when more than one officer is present; they also worry that officers will become overly reliant on the sights, allowing traditional shooting skills to degrade.

While there is no universal holster standard, it seems reasonable to expect that a holster should allow quick, reliable access when the officer has to draw a weapon; secure retention at all times when the weapon is holstered; *and* the ability to be reholstered using one hand in a quick, unencumbered manner.

Several members of RAND’s panel of independent experts who reviewed cases suggested that the outcomes of those cases might have been different if officers had been equipped with flashlights mounted on their weapons, because a gun-mounted flashlight would allow the officer to keep the nongun hand free. While there was some concern that a mounted light would give away the location of the officer’s firearm, the panel’s consensus was that the tactical advantage that a handgun-mounted light provides more than offsets this risk.

## Recommendations

Given the potential of laser sights to have a positive effect on firearm discharge, we recommend a pilot study to evaluate whether the use of laser sights increases shooting accuracy, reduces injuries to officers and third parties, reduces the average number of shots fired, and contributes to the deescalation of confrontations between officers and suspects.

We recommend that the NYPD ensure that holsters used by both plainclothes and patrol officers have the following features:

- quick, reliable access when the officer has to draw a weapon
- secure retention when the weapon is holstered
- the ability to reholster in a quick, unencumbered manner
- durability.

We also recommend a limited distribution of gun-mounted flashlights. While it would be highly desirable to determine whether handgun-mounted flashlights would improve shooting outcomes, reduce injuries to officers and other parties, and reduce the average number of shots fired in conditions of low light, the difficulties controlling the variability in low-light environments might make a rigorous evaluation problematic. The final judgment may well rest on how comfortable officers are using gun-mounted flashlights.

## Reflexive Shooting

### Findings

Accidental reflexive discharges occur without an explicit decision to shoot. In 2005, the NYPD recorded 24 cases in which a firearm was accidentally discharged. The more troubling type of discharge, and the one highlighted in the press as contagious shooting, is the intentional reflexive discharge. While it is often discussed as a group phenomenon, a single officer can also intentionally discharge his or her weapon out of fear and without knowing specifically what he or she is shooting instead of carefully considering whether the situation meets the requirements for the use of deadly force. Typically, the officer is reacting to the sight and sound of other officers shooting and starts to shoot. An intentional reflexive discharge may involve as little as a single round being fired, or, when many officers are involved, a large number of rounds may be fired.

Unfortunately, data on intentional reflexive discharge or contagious shooting are not readily available, either within the NYPD or across departments. The firearm-discharge reports make no determination about whether the discharge is an intentional reflexive discharge. As a result, it is not possible to determine the extent

of reflexive shootings and whether the phenomenon is increasing or decreasing over time.

The general psychological research demonstrates that questioning people about the basis for a decision results in information that is highly unreliable. More specifically, police officers are sometimes surprised that their weapons discharge, claiming that they never had a finger on the trigger. They sometimes do not accurately report how many rounds they discharged or how many times they reloaded their weapons.

### **Recommendations**

Based on these findings, we recommend that the NYPD modify training to include reflexive-shooting scenarios in which a stimulus, such as the cry, “He’s got a gun!” or the sounds of guns going off, are included to sensitize officers to cues that may not be reliable and to teach them that such cues may generate unwanted responses. In addition, the NYPD should have officers practice with the correct decisionmaking process to reduce the use of inappropriate decisionmaking shortcuts.

Finally, the NYPD should make sure that all officers involved in a shooting undergo the mandatory, one-day refresher course at the range.





## Data and Methodology

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To identify factors associated with officers discharging their firearms, in Chapter Five, we analyzed these data according to a matched case-control design (Rothman and Greenland, 1998, Chapter Seven), a commonly used method in epidemiology for studying the occurrence of rare events. The method involves comparing the characteristics of cases (shooting officers) with matched controls (similar officers who did not discharge their weapons) to determine those characteristics that are associated with officers discharging their firearms, e.g., being a shooter.

Specifically, we constructed a model for  $P(\text{shooter} \mid \mathbf{x})$ , the probability that an officer is a shooter given that the officer has the collection of characteristics  $\mathbf{x}$ , those items recorded in the databases (e.g., age, requalification scores, injury leave). Since shootings are rare events, we included all officers whose firearm discharge was adjudicated by the FDRB between 2004 and 2006. To learn about the relationship between and probability of an officer discharging his or her weapon and being a shooter, we needed to record the characteristics of officers who did not discharge their weapons, e.g., non-shooters.

$P(\mathbf{x} \mid \text{nonshooter})$  is the distribution of features of officers who were not involved in discharge cases adjudicated by the FDRB between 2004 and 2006. The vast majority of NYPD officers are not shooters, and most of them were not even in a position to have been a shooter during the period we were examining, i.e., assigned to other precincts, with different shifts, with different assignment, and perhaps even desk jobs. As a result, it would be improper to compare the characteristics of shooting officers to the characteristics of *all* nonshooting officers. To take this into consideration, we could include the assignments of all officers in the analysis. This approach proved problematic, since there are so many jobs and assignments for which involvement in a shooting is exceedingly unlikely, and, even within assignments, not all officers have the same chance of finding themselves in a situation that might lead to a weapon being discharged. Instead, we decided to use an incident-density sampling technique (Miettinen, 1976) in which the sampling of controls is coincident with the sampling of the cases.

Incident-density sampling is a common strategy used in epidemiological studies that relates exposures to rare health outcomes.<sup>1</sup> Applying this technique, we selected nonshooting officers who were similar to the shooting officers, in that they either witnessed the shootings or were in close proximity—time and place—to the shooting scene as reported in the firearm-discharge investigation report.<sup>2</sup> We did not presume that the nonshooting officer had the same opportunity to engage the suspect, but rather that he or she was at the same location at the same time and could have been put in a situation to have confronted the suspect. If external factors, such as the suspects' actions, were the only causes of shootings, then officers involved in shootings and the nonshooting officers near the scene should have similar characteristics. If, instead, officers with particular characteristics are disproportionately represented among the shooters, then this is evidence that those characteristics might be associated with a heightened likelihood that the officer would discharge his or her weapon.

## The Statistical Model

We recorded all the characteristics  $\mathbf{x}$  for these officers to obtain a sample from  $P(\mathbf{x} \mid \text{nonshooter})$ , the distribution of characteristics of nonshooting officers who were similarly situated to shooting officers. This gives us samples from  $P(\mathbf{x} \mid \text{shooter})$  and  $P(\mathbf{x} \mid \text{nonshooter})$ , the reverse of the conditional probabilities. Bayes' theorem relates the two conditional probabilities.

$$\frac{P(\text{shooter} \mid \mathbf{x})}{P(\text{nonshooter} \mid \mathbf{x})} = \frac{P(\mathbf{x} \mid \text{shooter})}{P(\mathbf{x} \mid \text{nonshooter})} \times \frac{P(\text{shooter})}{P(\text{nonshooter})} \times \frac{P(\mathbf{x})}{P(\mathbf{x})}. \quad (\text{A.1})$$

The left side of this equation gives the odds that an officer with characteristics  $\mathbf{x}$  will be a shooter. Applying Bayes' theorem to the numerator and denominator of the left side shows the relationship to  $P(\mathbf{x} \mid \text{shooter})$  and  $P(\mathbf{x} \mid \text{nonshooter})$ . We further assume that  $P(\mathbf{x} \mid \text{nonshooter})$  is an arbitrary distribution function, but  $P(\mathbf{x} \mid \text{shooter}) = P(\mathbf{x} \mid \text{nonshooter}) \exp(\beta'_j x_j)$ , so that, for each characteristic, there is a multiplier that increases or decreases the frequency of that characteristic among shooters relative to nonshooters. Substituting these expressions into Equation A.1 yields

<sup>1</sup> For example, when a case of an adverse outcome, such as a cancer, is identified, a control is selected that is similar to the case. The control might be selected from the same household, same neighborhood, or same job site or may be selected to match the case in terms of age, sex, and occupation.

<sup>2</sup> Initially, we attempted to select officers from roll calls on the shifts and in the precinct sectors in which shootings occurred. This proved difficult, since it required going back three years to get archived roll-call records and it was not always clear which officers at the roll call had similar assignments to those who were involved in the shootings.

$$\log \frac{P(\text{shooter} | \mathbf{x})}{P(\text{nonshooter} | \mathbf{x})} = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \dots + \beta_d x_d, \quad (\text{A.2})$$

which has the form of a logistic regression model. Note that  $\beta_0$  consumes the constant term  $P(\text{shooter})/P(\text{nonshooter})$  in Equation A.1 and is difficult to interpret, since, in our data, there is a nearly equal number of shooters and nonshooters. However, our interest is not in  $\beta_0$  but rather the other coefficients, which measure how the officer characteristics affect the odds of being a shooter. Even though we drew our samples from  $P(\mathbf{x} | \text{shooter})$  and  $P(\mathbf{x} | \text{nonshooter})$ , the estimates of  $\beta_j$  from the logistic-regression model fit in Equation A.2 are consistent and unbiased for the odds ratios of interest (Manski and Lerman, 1977; Prentice and Pyke, 1979).

Finally, since the cases and controls are matched within a shooting incident, we gain greater precision for the odds ratios of interest by stratifying the analysis by incident. Following a technique recommended by Breslow et al. (1978), we used a conditional likelihood estimation to fit a stratified logistic-regression model to account for the matching within incident. The model we used treats each shooting incident as an independent event and selects the regression coefficients that best predict, within each shooting incident, those officers on the scene who were among the shooting officers.



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