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The Public Health Crisis of Law Enforcement's Over-Use of Force

Mary E. Helander and Austin McNeill Brown

George Floyd's death following 8 minutes and 48 seconds of neck compression has called widespread attention to police use of force and restraint methods, particularly when used against non-white individuals. Sadly, George Floyd was not the first individual whose restraint by law enforcement officers ended in death. A recent study by the Proceedings of the National Academy of Sciences estimated that black men are 2.5 times more likely to be killed by police than non-Hispanic white men.¹

Recognizing the over-use of force as a public health issue can help focus constructive reform on harm reduction, public safety, health, and well-being.

According to researchers at the Harvard Kennedy School, statistics on deaths during law enforcement subdual, arrest, and transport are not publicly available and are possibly not being collected by the U.S. Department of Justice.² Despite the 2013 *Death in Custody Reporting Act*,³ which has been established law since December 2014, these data remain uncollected and unavailable. Best estimates of death rates, compiled in the year the law was passed, placed non-Hispanic blacks at 0.6 deaths per 100,000 population, Hispanics at 0.3 per 100,000, and non-Hispanic whites at 0.1 per 100,000.²

This brief describes potential injuries and fatal consequences of the over-use of force by law enforcement. It argues that "over-use" should be categorized as a public health issue—a step that focuses constructive reform on harm reduction, public safety, health, and well-being.

Government Responsibility and 'Use of Force' Guidelines

In 2009, the U.S. National Institute of Justice published the Use-of-Force Continuum as a guideline for law enforcement agencies, which then establish their own policies and procedures.⁴ The continuum outlines levels to resolve a law enforcement situation, while recommending that officers respond with the lowest level of force possible for de-escalation (see Figure 1).

Even with training, the use of force in law enforcement is intertwined with the need for nearly instantaneous decision making, which can result in human error and biased reactivity.

Still, an essential question remains: how much force should be applied in any single situation? Officially, the answer relies on a balance between the force necessary to establish and maintain control of a situation and the constitutional rights of the individual in the situation. Managing the safety of the scene is multi-dimensional, which further complicates interactions between police and citizens. Emergency medical responders are trained to defer to law enforcement officers to secure scene safety.⁵ Police are trained to protect the welfare of the public at large while also tending to their own personal safety.⁶ Excessive harm must not be rendered to individuals being taken into custody.

Even with training, the use of force in law enforcement is intertwined with the need for nearly instantaneous decision making, which can result in human error and biased reactivity. This may be the case in police incidents ending in fatal outcomes. The highly publicized stories of Rayshard Brooks, George Floyd, Terence Crutcher, and Akai Gurley have brought public attention to the life-and-death consequences of the over-use of force as well as systemic racism.

The social injustice of the over-use of force is troubling because apprehensions, arrests, and transports represent moments of extreme vulnerability for the individual being taken into custody. At the time of arrest, the government immediately becomes responsible for an apprehended individual's well-being, including medical attention for pre-existing and caused conditions. This is a fundamental human right and a governmental obligation of every civil society.⁷

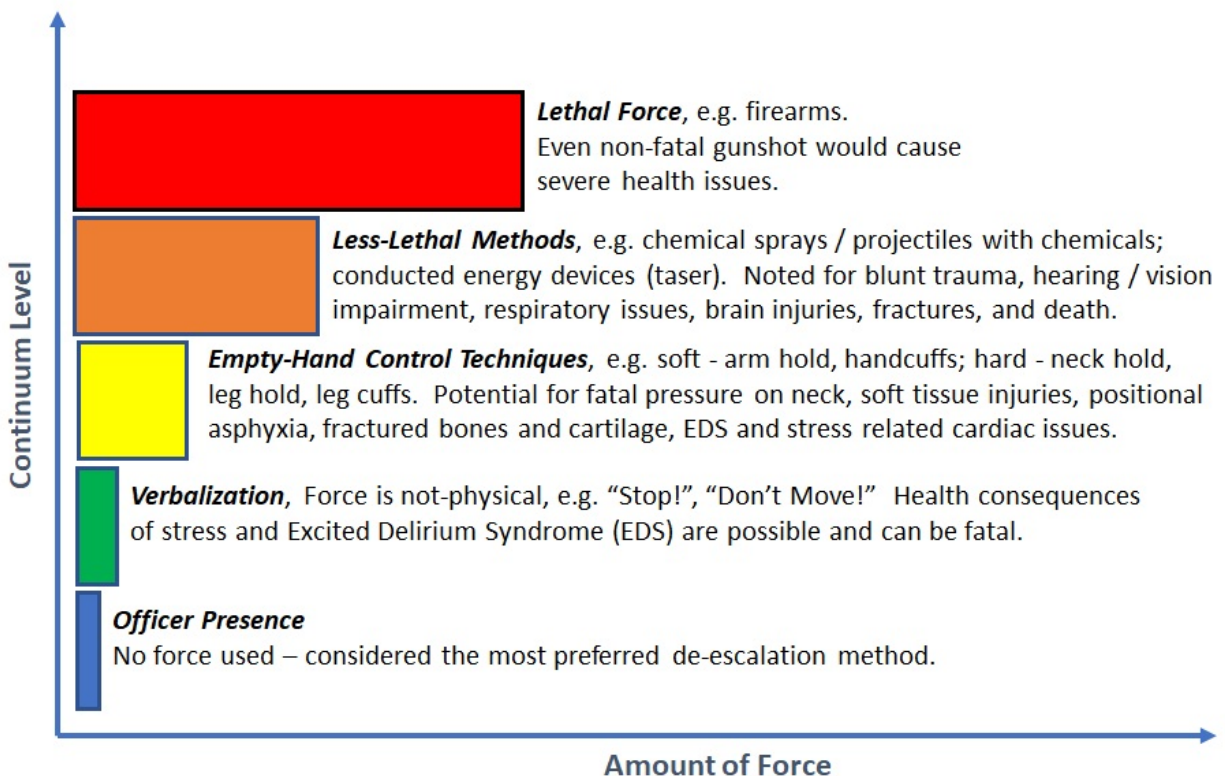


Figure 1. Use-of-Force Continuum

Data Source: Adapted from the definition provided by the National Institute of Justice.⁴ Health implications derived from references 5,7-9, and 11-15.

Potential Health Consequences By ‘Use of Force’ Escalation Level

The use of force by law enforcement officials can cause stress, injury, and death to individuals. The escalation levels include:⁴

- **Officer Presence and Verbalization:** Considered the preferred methods of de-escalation, these methods can still induce stress-related harm to health.
- **Empty-Hand Control Techniques:** Positioned in the middle of the Use-of-Force Continuum, these techniques may be the most deadly, absent lethal force.⁷ These techniques include all forms of holds, involving the neck, arms, legs, back, and chest. They can result in soft tissue injuries, fractured bone and cartilage, cardiac issues, strangulation, and positional asphyxia leading to death.
- **Less-Lethal Methods:** These methods include the use of batons, projectiles containing chemicals including pepper sprays, and conductive energy devices (e.g. CEDs, stun guns, and

tasers). These methods are used by law enforcement to subdue individuals and groups.¹⁰ Potential harmful effects include burns, respiratory difficulty, eye wounds, vision and hearing impairment, blunt force trauma, brain injury, and death.^{11,12,13,14} Coupled with restraints, less-lethal methods can lead to positional asphyxiation and other complications including cardiac issues, hyperthermia, and stress, all of which can be fatal. While pepper spray is associated with lower injury rates for both police and assailant, health outcomes can be complicated by the presence of substance use, mental health issues, and pre-existing physical conditions.^{9,13,16} Disturbingly, a recent study demonstrated that tasers were deployed for 28% of mental distress cases and that such cases often required multiple shocks.¹⁶ Taser use on individuals who are in mental-health crises, or who have used substances, elevates their likelihood of fatality. A Reuters investigation found that 1,081 people have died from the use of tasers in the U.S. from 2000-2018.¹³

- **Lethal Force:** The use of firearms is the main method of lethal force in law enforcement.⁴ An ultimate last resort in situation de-escalation, firearms generally result in death or significant permanent injury. Gunshot wounds from use of lethal force are the injuries most likely to be fatal. These injuries cause massive hemorrhage; organ perforation, penetration, and/or rupture; shredding, shearing, compression, and/or stretching of tissue and ligaments; penetrating fractures; and complications from entry, exit, and/or internal wounds including peritonitis—all of which can be fatal.^{5,8,9,15}

Risk of Sudden Death While Restrained

Many of the factors complicating the health outcomes of police use of force are specific to situations where physical restraint is employed. In addition to the type and degree of force, preexisting physical and mental health conditions as well as drug- and alcohol-use are known factors.^{11,17,18,19,20} The vigor of a physical struggle and potential trauma endured also play important roles in the outcomes of use of force. The most prevalent pathologies^{8,9} and their health consequences are:

- **Positional Asphyxia:** This can result when the apprehension of an individual interferes with his or her ability to fill the lungs with air due to forced placement of the body and the inability to change position.^{8,9} Any airway obstruction and constraints to movement of the chest wall, diaphragm, or abdomen are examples of interference.⁸ Diminished oxygen (i.e., hypoxia) and total oxygen deprivation (i.e., anoxia) have serious long-term health implications and can be fatal.⁹
- **Fatal Pressure on the Neck:** Serious permanent injury and death are possible consequences of any type of neck or chokehold.⁹ A “vascular neck hold” is used to control an individual by purposefully rendering the person unconscious within 5-18 seconds. A chokehold is essentially manual strangulation and can cause cessation of respiration within two minutes.^{5,8,9} Additional injuries could include obstruction of the veins and/or arteries to and from the head, fracture of the trachea or larynx, and cardiac arrest. The Hennepin County medical examiner attributed George Floyd’s death to “cardiopulmonary arrest complicating law enforcement subdual, restraint, and neck compression.” Put more simply, Floyd’s heart failed due to this method of force.^{21,24}
- **Excited Delirium Syndrome (EDS):** Individuals presenting as hyperactive and violent may be suffering from EDS,⁹ which can be caused or exacerbated by drug use.⁹ EDS presents as a “supercharged” response and is believed to be a function of catecholamines released from the adrenal glands. These hormones increase the rate and force of the heart, electrochemical impulses, and blood pressure leading to increased oxygen demand. This reaction peaks several minutes after the most vigorous phase of activity and has the potential to cause cardiac arrhythmia.^{8,9} Unresponsiveness and cardiopulmonary arrest may occur after the struggle has

ended—similar to what is known as post-exercise peril. EDS is extremely difficult to diagnose post-mortem.⁹

- **Hyperthermia:** Defined as abnormally elevated body temperature, hyperthermia often accompanies EDS.^{4,8,9} Alone or in conjunction with EDS, hyperthermia can lead to loss of consciousness, seizures, a breakdown of muscle tissue, and renal failure. Those experiencing hyperthermia are susceptible to acute stress cardiomyopathy (heart failure), acute myocardial infarction (heart attack), and ventricular arrhythmias (abnormal heartbeats which can lead to heart malfunction and cardiac arrest).^{9,23}
- **Stress:** Individuals with heart conditions who are subjected to physically or emotionally stressful situations, like being subdued or restrained, can experience sudden death. The hormone cortisol—the “flight or fight” hormone—becomes elevated, increasing the chances of ventricular fibrillation, particularly if there is also trauma affecting breathing, such as positional asphyxia.^{8,9}

Additional Factors Related to the Use of Force

Upon review of the altercations between police and citizens that have been caught on camera, it is clear the over-use of force can be both unwarranted and brutal. George Floyd’s arrest stands out, as his alleged crime was nonviolent and he was not resisting in a violent manner. In many bodycam and cellphone videos, police use “resisting” as a justification for escalation. While taking someone into custody, an officer may attempt to handcuff the individual and simultaneously give him or her verbal orders, despite the order suggested by the Use-of-Force Continuum. This can cause an individual to reflexively tense up. Any tensing by the suspect might then be considered “resisting” and the officer may

Officers may also inaccurately evaluate the safety of the scene or misinterpret the type of crime alleged, leading to potentially harmful, sometimes deadly, decisions regarding the use of force applied.

escalate to an unnecessary level of force. This can also be seen during the restraint of Eric Gardner, whose alleged crime involved selling loose cigarettes.

These examples highlight the failure to avoid escalation. Officers may also inaccurately evaluate the safety of the scene or misinterpret the type of crime alleged, leading to potentially harmful, sometimes deadly, decisions regarding the use of force applied.

Recommendations for Policy and/or Practice

Recognizing the over-use of force as a public health issue can help focus constructive reform on harm reduction, public safety, health, and well-being. With this approach, the over-use of force can be tracked, monitored, and reported through public health channels, instead of depending on singular incidences publicized by the media. **The rates of injury and death sustained while in law enforcement custody should be collected as a part of the public health strategy to minimize the over-use of force.** Full implementation and compliance of the Death in Custody Reporting Act³ are imperative and long overdue.

Major David Hughes, a 33-year veteran of law enforcement in Virginia, recommended several actions to reform police departments, addressing systemic racism and over-use of force:

1. Hire police officers with four-year college degrees. College education gives people more exposure to other cultures and worldviews, which can build empathy within police ranks.
2. Rebalance training to be less focused on how to make arrests, fight, and use weapons, and more focused on escalation prevention and harm avoidance.
3. Change the question following an incident from “Was it legal?” to “Was it necessary?”

4. Increase the duration of both police academy training and probationary periods and set higher performance expectations.
5. Address racism within agencies by hiring police officers that represent the cultural, ethnic, and racial identities of the communities that they serve.
6. Establish residency requirements so police officers feel they are members of the communities in which they serve and thus have a stake in overall welfare of their locality.²³

Finally, the training of “peace officers,” (i.e., police and any other officers carrying badges and firearms with the authority to arrest) should go beyond the basics of first aid and CPR. Detailed instruction about the possible anatomical and physiological health outcomes at every level of the Use-of-Force Continuum should be incorporated into training programs. Doing so will better prepare law enforcement to uphold an oath to protect the public through the prevention of unnecessary harm. Partnering with emergency medical workers, particularly in training, to deescalate and avoid the over-use of force, can be a step toward solving this national public health issue.

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About the Author

Mary E. Helander and Austin M. Brown are Social Sciences Ph.D. Students in the Maxwell School of Public Policy at Syracuse University, and Graduate Researchers for the Lerner Center for Public Policy Promotion. Mary E. Helander is also an MPH student in the Falk College at Syracuse University.

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