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Forensic reporting of TASER exposure: An examination of situational and exposure characteristics

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ABSTRACT

The current study examines the content of autopsy reports (N = 184) for deaths that occurred following TASER exposure by police. Guided by previous research and national autopsy standards for other weapon-specific deaths, we evaluate 1) whether reports document situational characteristics of the police-citizen encounter and 2) whether reports document characteristics of the TASER exposure. We find a large portion of reports are often missing a police report summary and information regarding the TASER exposure. Considering the expanding use of TASERs by police, we emphasize the importance of creating national standards that require documentation of police report summaries, TASER injuries, and TASER logs.

1. Introduction

The use of conducted electrical devices (CEDs) by police has proliferated over the last two decades. The TASER, the most common model, has been distributed to 17,000 law enforcement agencies, private security companies, and military operations worldwide.[1] In a recent survey of 662 U.S. police agencies, 80% reported they were using CEDs.[2] To date, the device has been deployed in the field almost 3 million times, with an estimated 250,000 TASER deployments taking place in the field annually.[3] Despite this widespread use, TASERs still represent a relatively new addition to the toolbox of modern policing. To date, 500 recorded arrest-related deaths (ARDs) have occurred proximate to use of the TASER by police.[3–5] The role of the device in these fatal events remains empirically unclear. Debate surrounds whether TASER-proximate ARDs result from a combination of exposure and compounded emotional and physical strain and injury, or if the role of TASER in these events is incidental. As such, forensic treatment of TASER-proximate ARD is currently only loosely defined.

Autopsy reports are used as an official data source for understanding what transpired during these events, and for empirical research in policing, forensics, and legal medicine.[5–9] However, although the National Association of Medical Examiners (NAME) provides official autopsy standards for common categories of death and injury,[10] there are no standards for CED exposure. This oversight is likely due to the relative novelty of CEDs, compared to more established methods of police force. Such lack of clarity inhibits the ability of forensics practitioners to accurately and consistently account for the role of TASER in their investigations. Further, the lack of standards highlights a need for further empirical inquiry into the role of TASER in arrest-related death. To address these concerns, we analyze the content of autopsy reports (N = 184), each detailing the death of a suspect in police or correctional custody proximate to one or more TASER exposures. We draw on existing literature and national autopsy standards to direct our inquiry.

1.1. TASER use & arrest-related death

Research suggests the TASER[1] may reduce police use of deadly force by offering an alternative to firearms,[11] and allows police to subdue suspects and deescalate conflict.[12–17] Still, some groups

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[1] In accordance with previous research,[9] the term "TASER" is used as a general term for a CED throughout this paper. TASER is only one brand of conducted electrical weapon, but it is used by over two-thirds of police departments in the United States.[24]

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have advocated for stricter policies governing police use of the TASER based on reports of misuse by police and deaths of individuals who had recently been tased.[4,18,19] Others suggest the TASER poses minimal health risk for the majority of people who come into contact with the police.[20–22] The manufacturer of the device has also issued a policy statement warning against deployment near the chest area, noting "exposure in the chest area near the heart has a low probability of inducing extra heart beats … In rare circumstances, [this] could lead to cardiac arrest."[23]

Further complicating matters, it is difficult to account for the combined effects of violent police-citizen encounters, which typically include sustained physical exertion and the use of multiple forms of physical force by police against a resisting party before, during, and after TASER deployment.[3] White and colleagues[9] characterized the TASER-proximate ARD events in their study as "complex, dynamic encounters between suspects who were actively and aggressively resisting police, and officers who were drawing deeply into their arsenal of force options in an attempt to control them" (pg. 102). The multifaceted, evolving nature of these encounters has made it difficult to assess the TASER's role, if any, in arrest-related death. In short, the potential role of the TASER in subsequent ARD remains a major gap in current forensic knowledge. Properly contextualizing and documenting police use of TASER in the field is therefore critical to fostering accurate characterizations of TASER-proximate ARDs.

1.2. National forensic autopsy standards

The National Association of Medical Examiners (NAME) offers nationally recognized accreditation to promote standardized, scientifically grounded practices for conducting autopsies.[10] Accreditation signals that an office performs at a "high-level of competence" and enables the office to receive some forms of federal funding. The guidelines provide standards for conducting investigations into specific types of deaths (e.g. drowning, heart attack), with specific instructions for various forms of weapons (e.g. gunshot injuries, stabbings). For example, when evaluating gunshot cases, NAME standards require a physical description of each injury, the location of entry and exit, and the direction of the trajectory. They must also remove and document foreign objects and correlate external injuries to internal injuries. Other injury categories include burns, blunt and sharp force wounds, unique pattern injuries, and bite marks. Here, standards require a description of the injury's appearance, distribution, location, and size, as well as a sample of any foreign materials. These standards have important implications for the evaluation of injuries from a TASER device. When used properly, police issued TASER prongs produce punctures in the skin.[23] However, there are no national standards that expressly regulate the evaluation and documentation of injuries caused by a TASER. Considering use of the TASER by police is increasing across the country, documenting these injuries systematically will help forensic professionals more accurately assess the nature of arrest-related deaths.

2. Methods

Focusing our study on autopsy reports from TASER-proximate ARDs allowed us to move beyond White et al.'s[9] incident-level profile by specifically analyzing one forensic process for documenting and evaluating police use of force. Guided by research on TASER use and arrest-related death, and NAME standards for conducting autopsies,[10] the current study analyzes:

1. Whether autopsy reports for TASER-proximate deaths document situational characteristics of the police-citizen encounter, and
2. Whether the reports document characteristics of the TASER exposure.

2.1. Data

The current data were drawn from a larger study on TASER-proximate arrest-related deaths.[9] Using the online media search tool (www.webclipping.com) White and colleagues[9] compiled media reports detailing cases in which police deployed a TASER device during a police-citizen encounter and the individual who received the TASER exposure died during the incident. This search resulted in 392 unique cases. To expand on both the quality and quantity of the information provided in the media reports, Freedom of Information Act (FOIA) requests were then filed in corresponding jurisdictions, requesting autopsy reports for all 392 deaths. The follow up search produced autopsy reports for 213 cases, or 54%. The success of each FOIA request depended on voluntary cooperation from local and state agencies, and was constrained by ongoing police investigations, litigation, and state law requirements (e.g. some states require the applicant obtain permission from next-of-kin). The current study systematically examines the content of the obtained autopsy reports. Criteria for inclusion in the present study are listed below. Cases that did not fit the criteria were excluded from the study.

1. The report indicated that the decedent received[2] a standard TASER or drive stun exposure.
2. The report indicated that the exposure occurred within 24 h of the death.
3. The report was legible.

After removing cases that did not fit the criteria for inclusion, the final sample (N = 184) represented 87% of total cases where autopsy reports were obtained by White and colleagues.[9] Reports were only dropped in cases where low quality or missing information prohibited our ability to code the document. For instance, some reports included in the FOIA requests were illegible to the researchers, while others made no nominal reference to a TASER device being used during the fatal event. The nature of case attrition in the current study results in a selection bias toward reports containing more information and/or higher quality, and suggests that our sample represents the 'best of the best' with regards to our variables of interest.

2.2. Coding

We constructed a coding instrument totaling 15 variables (see Table 1). We selected variables to assess whether reports addressed characteristics of the police-citizen encounter and characteristics of the TASER exposure. We coded each variable for its *presence* or *absence* in the document. To ensure the reliability of the coding procedure, we recoded 10% of the data (18 cases) to assess level of agreement. The intercoder reliability test resulted in a high agreement rate (Cohen's $k = .84–1.0$).

2.2.1. Incident characteristics

We selected 9 variables to examine the extent to which the reports assessed situational characteristics of the police-citizen encounter. First, we coded for suspect characteristics, including

[2] Reports indicating that one or both of the TASER probes failed to make contact with the body, or that the TASER device failed to shock the decedent were removed from the data set.

Table 1
Variable names and descriptions.

Variables	Descriptions	Rationale
Name	The decedent's name is present in the report.	Incident characteristics
Age	The decedent's numeric age is present in the report.	Incident characteristics
Race/ethnicity	The decedent's race or ethnicity is present in the report.	Incident characteristics
Gender	The decedent's gender is present in the report.	Incident characteristics
Height	The decedent's numeric height is present in the report.	Incident characteristics
Weight	The decedent's numeric weight is present in the report.	Incident characteristics
Cause of death	An official cause of death is present in the report and is labeled as such.	Incident characteristics
Manner of death	An official manner of death is present in the report and is labeled as such.	Incident characteristics
Incident summary	A written description of the police-citizen encounter resulting in the death is present in the report.	TASER exposure
TASER log	The report includes a Trilogy TASER log – a table with six columns indicating sequence number, date, time, duration, temperature, and remaining battery life	TASER exposure
TASER log summary	The report states a Trilogy TASER log was available to the ME/C.	TASER exposure
Duration	The report states how long the deployment lasted. This variable was also coded as "1" if the necessary information to determine duration was present (e.g. "the decedent was exposed to three TASER shocks, for 5 s each").	TASER exposure
Times tased	The report states the number of TASER exposures sustained by the decedent.	TASER exposure

the decedent's *name*, *age*, *race/ethnicity*, *gender*, *height*, and *weight*. ME/Cs are also responsible for making determinations as to the *cause of death* and *manner of death*. We coded for these two variables as well. Further, we coded for the presence of an *incident summary*. These write-ups are typically found in the police report and provide information about the police-citizen encounter, including the reason for police intervention, methods of force used, and the etiology of events that resulted in the suspect's death.

2.2.2. Exposure characteristics

We also coded reports for information about the TASER exposure. We selected these variables based on national autopsy standards for other weapon-specific injuries. We coded for the *duration* of exposure and the number of times the decedent was tased (*times tased*). Also, modern TASER devices feature a Trilogy Log, which provides a computerized record of every user action.[24] In short, the Trilogy Log indicates for how long and when the device was deployed, calibration data, and a record of output. This information can be uploaded to a computer via a USB cord, and electronically delivered (e.g. via email) to the medical examiner's office. Output from a Trilogy TASER log includes a table indicating sequence number, date, time, duration, temperature, and remaining battery life. We coded reports for the presence of this table (*TASER log*) and also if the ME/C referenced that a Trilogy TASER log had been available for review at the time of the autopsy (*TASER log summary*). Finally, we coded for the presence or absence of a description of TASER *injuries*. This variable was coded as "1" only if the ME/C referred to a TASER or CED specifically in reference to one or more injuries.[3]

3. Results

Table 2 reports the frequencies with which each of the 24 incident variables were included in reports. Generally speaking, standard demographic information was almost always documented in reports. The decedent's name (n = 184), age (n = 183), race (n = 182), gender (n = 184), height (n = 174), and weight (n = 174) were each included in most cases. Official autopsy determinations were also included a majority of the time. Some cause of death (COD) was determined in 97% (n = 180) of reports. Within these 180 reports, 177 reports identified a COD, while 3 listed the COD as "undetermined." Four reports failed to mention any COD. Some manner of death (MOD) was reported in 90% (n = 166) of the autopsy reports. Within these 166 reports, 145 identified an MOD, while 21 listed the MOD as undetermined. Eighteen reports failed to mention any MOD. Police report incident summaries were included in 78% of reports (n = 145). Although this constitutes a majority of reports, it is significant that almost a quarter of autopsies were finalized without the first-hand information generally provided in a police report.

Characteristics of the TASER exposure were rarely included in reports (see Table 3). Descriptions of TASER injuries were present in 70% (n = 130) of the autopsies reviewed, despite that all individuals in the sample had received exposure from a TASER device. Further, the number of times the decedent was tased was only reported 35% (n = 66) of the time, and the duration of the TASER exposure only 12% (n = 23) of the time. Actual printouts of TASER logs (which are available for standard police issue TASER devices) were included in only 1% (n = 2) of examined reports, while an additional 5% (n = 9) indicated that one was made available to the ME/C.

4. Discussion

The TASER is a relatively new yet pervasive piece of the police arsenal. In fact, use of the device is so widespread that it has been characterized by police scholars as the preferred less-lethal weapon for U.S. police.[11] Research indicates the TASER provides both safe and practical benefits both to police and citizens.[11,12,15–17,25–28]

[3] Coding for this variable was intentionally restrictive. There is dramatic variability in how ME/Cs document injuries. Some are vague, listing only that an "injury" exists in a particular location, while others are specific, listing the size, location, physical description, and instrument likely responsible for creating the wound. The latter method proceeds in accordance with NAME autopsy standards, which provide specific instructions for documenting injuries, categorized by weapon and injury type.[10] As such, this variable is coded as "1" only if TASER injuries are reported in conjunction with these standards. Further, given that a large portion of cases involved multiple forms of physical force, it was impossible for coders to assess which "injuries" were caused by a TASER device, versus those inflicted by hands, batons, knives, handcuffs, etc., if this was not explicitly stated. The restrictive coding protocol thus provided a set of clear coding instructions to eliminate variability in assessing whether a description of TASER injuries was present.

Table 2
Incident characteristics (N = 184).

Variable	Frequency	Percent
Name	184	100
Gender	184	100
Age	183	99.5
Race/ethnicity	182	99
Cause of death	180	97.8
Height	174	94.6
Weight	174	94.6
Manner of death	166	90.2
Incident narrative	145	78.8

However, despite the fact that a TASER has been used in 500 arrest-related death incidents in the United States,[3–5] there are currently no national standards for deaths involving TASER exposure. In an effort to address this problem, we analyzed autopsy reports detailing 184 arrest-related deaths involving TASER exposure. Drawing from existing literature and NAME national autopsy standards, we first assessed 1) whether autopsy reports for TASER-proximate deaths address situational characteristics of the police-citizen encounter. Most importantly, we found autopsy reports were missing the firsthand details of the fatal incident (i.e. a police report summary) in one quarter of the cases. Next, we assessed 2) whether the reports addressed characteristics of the TASER exposure. Key here is our finding that the total duration of time the individual was exposed to the TASER device was rarely included in the autopsy reports, despite that TASER devices are equipped to provide this information via a TASER log. These findings suggest three implications, which are discussed below.

First, in 500 documented cases, a suspect has died in police custody after receiving a TASER exposure in the United States.[3–5] Research[9] in this area has characterized the events as "complex, dynamic encounters between suspects who were actively and aggressively resisting police, and officers who were drawing deeply into their arsenal of force options in an attempt to control them" (pg. 102). In other words, police often used multiple forms of force to arrest the individual before, during, and after the TASER was deployed. The dynamic nature of these encounters has made it difficult to assess the TASER's role, if any, in the death. In any event, the police report can provide information otherwise unavailable to the ME/C, including the reason for the interaction, officers' reports of the suspect's behavior, officers' reports of the effectiveness of the TASER device, the complete series of weapons deployed during the encounter, and the amount of time that elapsed between the TASER exposure and subsequent death. To accurately investigate and formulate decisions regarding these forms of fatalities, it is understandably important that ME/Cs obtain, document, and consider the details from the police report. With that said, we analyzed whether autopsy reports for TASER-proximate deaths included these situational characteristics from a police report summary and found 39 (21%) of the 184 reports did not include any summary of the police-citizen encounter. Though most reports did include the police report or a summary thereof, we argue here that incident report summaries should *always* be included in the autopsy report for all arrest related deaths, particularly for those complex cases where a TASER device was used. In fact, for all deaths resulting from complex police-citizen encounters, decisions regarding the cause and manner of death should not be put forth without this information.

Second, the National Association of Medical Examiners (NAME) provides national autopsy standards for most forms of death and injury.[10] However, there are currently no standards for cases involving a conducted-electrical device (CED). Drawing on examples from other weapon-specific cases (e.g. gunshot wounds and stabbings), and some question as to the relative safety of longer durations of exposure to TASER shock,[29] we evaluated whether autopsy reports for deaths involving TASER exposure described the number of times the individual was tased and the duration of exposure to electrical shock. We found reports did not commonly report this information. Specifically, reports indicated the number of times an individual was tased in only 35% of cases, and the total duration of electrical exposure in 12% of cases. This finding is especially noteworthy, given that this information is readily available in TASER Trilogy logs, a feature of the standard law enforcement issued X26, as well as the newer X2 model.[24] Considered in conjunction with incident narratives and a comprehensive biological evaluation, these automated logs would provide the ME/C with a more complete array of available data and facts surrounding the TASER event. As it stands, however, it appears it is not standard procedure to include this information in an autopsy examination. Actual printouts of TASER logs were included in only 1% (n = 2) of examined reports, while an additional 5% (n = 9) indicated that one was made available to the ME/C.

Third, national autopsy standards instruct ME/Cs to document and describe every injury. As such, we assessed whether ME/Cs documented the number, location, and nature of injuries inflicted by the TASER device. Although descriptions of TASER-related injuries were present in a majority (70%) of the autopsies reviewed, there are currently no explicit instructions for documenting these injuries in national standards. Considering that use of the TASER device by police has and continues to proliferate at a rapid pace, developing national autopsy standards for documenting and evaluation injuries from a CED would help clarify these complex events to practitioners and researchers.

Table 3
Exposure characteristics (N = 184).

Variable	Frequency	Percent
Injuries	130	70.7
Times tased	66	35.9
Duration	23	12.5
TASER log summary	9	4.9
TASER log	2	1.1

5. Conclusion

There is good reason to believe that TASER devices will only become more integrated in the police use of force arsenal. With that being said, it is understandable that TASER injuries will frequently accompany the array of injuries presented to a medical examiner or coroner during an autopsy examination. We hope that our research stimulates the development and implementation of national standards for autopsy examinations involving TASER exposure, which would require police report summaries, injury descriptions, and TASER logs be included in the evaluation and reports. We further suggest more research into the complex, dynamic nature of TASER-proximate arrest-related deaths be conducted, to guide autopsy investigations in formulating accurate decisions in these cases.

Conflict of interest

We wish to confirm that there are no known conflicts of interest associated with this publication and there has been no significant financial support for this work that could have influenced its outcome.

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Ethical approval

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