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Technical Report

TR-01-2008

FIRST RESPONDERS EVIDENCE COLLECTION PROTOCOL: Sudden, Unexpected Deaths & Excited Delirium

November 2007

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**For the
Canadian Police Research Centre**

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First Responders Evidence Collection Protocol

Sudden unexpected deaths following a period of excitement and restraint have been documented within the community since the 1650's (Dewhurst, 1981). The problem has also been reported and commented upon extensively in psychiatric settings for over 150 years (L. V. Bell, 1849; Calmeil, 1832; Griesinger, 1867). The problem became linked to police activity in the 1980's in parallel to the societal rise in cocaine use (Fishbain & Wetli, 1981; Rutenber *et al.*, 1997; Wetli & Fishbain, 1985). These deaths often involve persons who are abusing street drugs, particularly cocaine (Karch, 2002). Other abused substances involved in these types of deaths include, but are not limited to alcohol, methamphetamine, ecstasy, and cannabis. A smaller number of deaths have been associated with mental illness, most notably schizophrenia (Lawrence, 2005).

Past theories that have attributed sudden unexpected deaths following an altercation with law enforcement officers include positional asphyxia (M. D. Bell *et al.*, 1992; Petty, 2004; Reay *et al.*, 1992), neck restraints (Reay & Eisele, 1982), pepper spray (Granfield *et al.*, 1994), and now conducted energy devices (Amnesty International, 1999). While police agencies have responded by altering restraint methods, such deaths continue to occur.

Current understanding of these events is that they can result from multi-factoral and complex physiological interactions (Di Maio & Di Maio, 2005; Mohr *et al.*, 2003; Darrell L. Ross & Chan, 2006). Indeed, deaths occur in both medical settings (Morrison & Sadler, 2001; Pinninti & Rissmiller, 2001) and the community without any police involvement (Dolinak *et al.*, 2005; Rosh *et al.*, 2003; Rutenber *et al.*, 1997). "Incidents involving subjects who die suddenly and unexpectedly while in custody fit two profiles. Investigators find that subjects die from conditions that leave evidence readily apparent at autopsy (such as heart attack, aneurysm, or stroke) or they find insufficient evidence to establish a cause of death. The first profile is generally unproblematic and the case is closed. The second instance is a significant problem and calls for intensive investigation" (Lawrence & Mohr, 2004, p.44). Sudden unexpected deaths following an

altercation with police often follow a similar pattern. According to two separate studies, deaths usually involve a male, whose average age is between 32 (D. L. Ross, 1998) and 34 (Lawrence, 2005). Ross' study included decedents ranging from 17 to 45 years old, while in the Ontario ages range from 17 to 57 years(Lawrence, 2005). Typically the male subject is creating a disturbance sufficient to cause citizens to summon police. Subject's are often found naked or partially clothed, shouting incoherently. These people are routinely bathed in sweat, regardless of environmental conditions. Paranoia is a common feature when describing the attitude or immediate concern of the subject. Many run through or into traffic if it is nearby. There is a remarkable affinity to smashing glass.

As medical understanding of the events associated with sudden, unexpected death linked to police interaction has grown certain evidence, underappreciated for its value in the past, needs to be collected to assist pathologists in determining the cause(s) of death. A formal investigative protocol has been published (Lawrence & Mohr, 2004) and used successfully in the field. It must be recognized that situations may occur in remote areas where the arrival of a formal investigation team may take considerable time. While it is imperative that officers collect evidence immediately after such deaths, it must be understood that the necessary equipment and infrastructure may be unavailable to front line officers due to budget constraints or other systemic issues beyond the officers control. It must be appreciated that policing occurs in diverse conditions, including remote locations staffed by widely dispersed officers. In such cases some evidence may be lost prior to the arrival of formal investigators, and therefore may require collection by the officers involved in the event. Wherever possible uninvolved supervisors should attend the scene as soon as possible and either manage the collection of transient evidence, or actually assume the role of collecting it where necessary. All evidence collected must be forwarded to the pathologist for evaluation.

Many of the points will seem obvious to experienced investigators. Others will not normally be part of a routine investigation until hindsight illuminates these points as being relevant. The intent of this document is to assist in the systemic, consistent collection of evidence that may not last until the arrival of a formal investigation team.

One of the most consistent problems with sudden deaths following an altercation with law enforcement officials is a lack of evidence with respect to the subject's core temperature prior to or at the time of death (Di Maio & Di Maio, 2005; Karch, 2002; Darrell L. Ross & Chan, 2006).

Although other medical conditions that can lead to violent behaviour followed by a sudden unexpected death (Lawrence, 2006), individuals who die following an altercation with law enforcement officers often fit into two broad categories: persons suffering from mental illness and people who are abusing substances (Di Maio & Di Maio, 2005; Lawrence, 2005; Darrell L. Ross & Chan, 2006). A number of documented side effects are associated with psychiatric medications, including the impairment of a person's ability to cool their body (Simpson *et al.*, 1987). In some cases the subject may not be sweating at all. If the officer's notice this unusual situation, responding medical personnel should be made aware of this observation and the information included in the police report and officer's notebooks. Similarly, a common factor associated with cocaine use can be an impairment with the brain's heat regulating center (Mash *et al.*, 2003; Staley *et al.*, 1994; Wetli *et al.*, 1996). Another factor that may contribute to high internal body temperatures is cocaine-induced increased muscular activity plus intense vasoconstriction, which results in impaired heat dissipation (Shanti & Lucas, 2003). Increased vasoconstriction may also result in an impairment of blood reaching the subject's skin. This can result in an assessment of "normal" body temperature because the subject's skin may not feel hot to the touch.

Significant physical exertion during periods of high internal body temperature (hyperthermia) has been described as one of the greatest stresses ever imposed on the human cardiovascular system (Rowell, 1986).

Officers should be aware that not all paramedic units are equipped with thermometers. The expectation is that patients will be promptly transported to a medical facility where the subject's temperature can be taken if deemed necessary. Often in cases where a subject's dies suddenly after an altercation with police the subject's continued struggling will impair, if not preclude, the ability to obtain a core temperature

until their activity substantially subsides. In cases involving an agitated person immersed in a state of excited delirium, sudden tranquility after frenzied activity has been noted to be a common precursor to death (Young, 1995). Officers should attempt to determine whether or not the subject's skin is hot to the touch once they have the subject under control. If medical assistance has not yet arrived then the subject's body temperature may have to be subjectively assessed and noted by responding officers or independent witnesses. While some subjects who suddenly die have been reported as being very hot to the touch, having a warm or hot skin temperature does not mean the subject will die nor is "normal" skin temperature an indication the subject is not overheated.

Officers should be encouraged to note their observations of the subject's physical condition, particularly heat regulation. It can be helpful to document unusual circumstances relating to body temperature, particularly extremes. Subjects who suddenly die have often been described as being either bathed in sweat or not sweating at all. People who have experienced substantial exertion should be hot and sweating. If the subject is hot and sweating so too should the involved officers. If the subject is not profusely sweating and the involved officers are, this should be cause for concern as the subject's ability to regulate his or her internal heat may be impaired.

Officers should inquire if responding paramedics have the capability of establishing the subject's body temperature. The response should be noted. Upon arrival at a medical facility officers should inquire if medical staff have established the subject's body temperature during their care. If the subject dies then officers should request that this evidence be collected and noted on the medical records. It is unlikely that medical staff will be able provide this information to police without appropriate authority (Coroner's Warrant), however, evidence uncollected is evidence lost. The appropriate documentation can be secured at a later time. Regardless of whether or not the deceased subject's temperature is obtained officers should make the request and note the response given and the identity of the person making the response.

Officers at the scene should also note whether or not the paramedics employ a pulse oximeter. This piece of equipment monitors the amount of oxygen in the subject's blood through a non-invasive clip attached to the subject's finger. The clip looks like a over-sized clothes pin on the end of a small cable. The reading can occur within seconds of placing the clip on the subject and will be projected on the unit as a percentage. This device will provide information with respect to the subject's ability to breathe and transport oxygen within the subject's body. The difficulty in obtaining this information is in keeping the device on the finger of a struggling person. If the reading is taken officers should note this fact . Paramedics usually record the information on a subject's medical records.

It is highly unlikely that a subject will be pronounced dead at the scene of the event. Neither police nor nurses are in a position to make this determination unless death is obvious (decapitation, transection). Subjects who significantly struggle with the police should receive some level of medical assessment beyond that of a responding front line officer.

A number of pathology textbooks state that attempting to establish a subject's body temperature at the time of death, or establishing a time of death based on a rate of cooling through reconstruction can be difficult, despite the existence of various formulas designed for such purposes. (look for citation) Another problem with after –the-fact calculations is that related charts usually presume a normal body temperature.

Police officers will, in most cases engage the subject where he or she is found. The temperature of any surface upon which a subject is restrained should be considered, particularly when the event occurs outdoors. For example, restraining a subject during the summer on a concrete or asphalt parking lot may impair the subject's ability to dissipate heat due to the high temperature of the surface upon which he or she lays. Restraint of a partially clad or naked subject upon a frozen surface may also cause a different type of heat stress which could also impact the subject's survival. If the subject should suddenly and unexpectedly die, a surface temperature where the restraint occurred should be recorded as soon as possible after the event. This

information should be provided to the pathologist prior to the commencement of the autopsy. For example, sustained high body temperatures can cause dehydration and multiorgan system failure (Varghese *et al.*, 2005) and alter the time course of rigor mortis after death (Krompecher, 1981).

Evidence of high surface temperatures may have to be collected by front line responders. Various methods can be used. Infrared thermometers are available whereby the devices require that they simply be pointed at the surface and a temperature is digitally provided.

In addition to high surface temperatures high ambient temperatures may reduce the effectiveness of the subject's heat dissipation capability, particularly when the humidex, the combination of temperature and humidity, approaches or exceeds 37 degrees Celsius (98.6 degrees Fahrenheit). Sudden, unexpected deaths do not always occur in association with high temperatures and humidity. Deaths have occurred where the subject is outside, naked, in sub-freezing temperatures (Lawrence, 2005). Officers should note the local conditions and communicate the information to the pathologist regardless of whether or not the temperature is extreme.

If the event occurred within a climate controlled setting, officers should determine whether or not the heating, ventilation or air conditioning was operating at the time of the event, and note the system settings. This information should be recorded for any rooms and/or vehicles the subject remained within.

Note the nature and duration of objectionable behavior prior to police contact. Officers should record details of what the subject was doing and saying prior to police intervention and record witness estimation of the duration and progress of the subject's behavior. Notations should also include whether or not the subject was hyperventilating, hallucinating, shouting, running, smashing property (particularly glass), or the presence of an exaggerated startle response.

Officers should describe the type, nature, and duration of the subject's resistance. For example, did the subject attack the officer or was the subject attempting to flee? Was the subject angry or fearful?

Information should also include the number of officers required to establish control of the subject and the methods used. Was pepper spray or other aerosol weapons used? Was a Conducted Energy Device involved in the event, and how was it deployed? Did officers apply a neck restraint to control the subject? Were the officers sweating and winded? Notes should contain information concerning the fitness level, age, size, and experience of the officers involved in the incident.

Other comments and observations should include:

- ✓ Officer's position with respect to the subject, both during restraint and transport (right or left side, near subject's head, waist or feet, viewing subject's face;
- ✓ Subject's verbalizations or noises;
- ✓ Breathing patterns, breathing sounds;
- ✓ Eye contact, pupil description (dilated, constricted, unresponsive to light);
- ✓ Assessment of strength;
- ✓ Response to physical or chemical restraint (continued struggling or sudden calming).

To the extent possible, officers should do their best to record their recollections, noting times as they are able, to assist investigators in creating a timeline of the event.

Officers should note the position in which the subject was transported, the mechanism of restraint and how vigorously the subject struggled against restraints. If an officer is present during transport they should make notes if the subject is intubated to assist in breathing, who did it and how many attempts were required before the tube was successfully placed. Since it is unlikely that a police officer will have any experience in intubation the attending paramedic or other member of the medical team who does this will have to be asked. Record whether or not pressure on the subject's windpipe

was employed during the intubation process and whether or not the subject aspirated (vomited) during transport.

The factors involved in sudden, unexpected deaths are complex and multi-factoral. Failure to collect certain transient evidence following a sudden, unexpected death may negatively impact community support and contribute to the subject's family questioning the police response through a misappreciation of the circumstances surrounding the event. By providing consistent, systematic collection of evidence pathologists will have a better understanding of the circumstances surrounding to the event. Other benefits could flow from consistent evidence collection, for example, a better understanding of these events through further research.

A broader protocol for the investigation of these types of events was published in the January 2004 edition of Police Chief Magazine (vol.71, No.1), pages 44-52. For copies of the expanded investigation protocol, (including the evidence collection form) which supports this front-line responder protocol, you can contact the author at chris.lawrence@cprc.org.

NOTE: I would like to thank those who assisted in the creation of this document, made suggestions, and/or reviewed the contents including Inspector Rick Shaw, RCMP; Sergeant Bruce Stuart, RCMP; Elizabeth A. Laposata, MD and Steven B. Karch, MD.

First Responders Evidence Collection Protocol

Subject Name	Date	Occurrence #
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Subject's Temperature	Upon Control	Cessation of Resistance	Post Mortem
Method			
Name			

Duration of unusual behaviour prior to police contact.	<hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/>
Behaviours prior to police intervention	<hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/>
Subject utterances	<hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/>

- Hyperventilating
 Shouting
 Running
 Other

Subject's actions	<hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/>
Type of resistance	<hr/> <hr/> <hr/> <hr/>
Duration of resistance	<hr/> <hr/> <hr/> <hr/>
Length of time taken to subdue	<hr/> <hr/> <hr/> <hr/>

the subject	
Number of officers involved	_____ _____ _____
Method of subject transport	_____ _____ _____
Time Transport Begins Time Transport Ends	
Struggle against restraints during transport	_____ _____ _____ _____ _____ _____
Describe breathing pattern	_____ _____ _____
Shouting	
Presence or absence of sweating by the subject	_____ _____ _____
Pulse rate during incident	_____ _____ _____
Determined by	_____ _____
Condition of officers / other responders (sweating, winded)	_____ _____ _____ _____ _____ _____ _____
Resuscitation Efforts	_____ _____ _____ _____ _____ _____ _____

The Scene

Air Temperature _____ Relative Humidity _____
 Method _____ Time _____ Name _____

Transport vehicle interior temperature _____
 Climate control settings _____
 Functional? _____ Used Method _____ Time _____
 Name _____

Treatment facility temperature _____
 Relative Humidity _____
 Climate control settings _____
 Functional? _____ Used Method _____ Time _____
 Name _____

Additional location temperature _____ Relative Humidity _____
 Climate control settings _____
 Functional? _____ Used Method _____ Time _____
 Name _____

Describe surface where subject restrained _____

Surface temperature _____ Method _____ Time _____
 Name _____

Environmental Factors

External Air Temperature _____ Humidity _____
 Humidex _____ Wind Chill _____
 Wind Speed _____ Direction _____
 Method _____ Time _____ Name _____

Surface temperature of the ground _____
 Method _____ Time _____ Name _____

Duration of contact with ground _____
 Position _____
 Other _____

Time Line of Event

1. Start of unusual behavior
Witnesses Descriptions
2. Call for Assistance/Complaint Taken
3. Front Line Units Dispatched
4. Paramedics Notified/Dispatched
5. Backup Requested/Dispatched
6. Police Arrival on Scene
Observations
Witnesses
7. Paramedics on Scene
Observations
8. Subject Engaged
Full Description
9. Subject Restrained by Police
Method of Restraint
Duration of Restraint
10. Subject Turned Over to Paramedics
Subject's Position
Observations
11. Subject Secured on Stretcher
Subject's Position
Observations
12. Chemical Restraint (If any)
Observations
Changes
13. Subject Loaded into Ambulance
Observations
Breathing, Sweating, etc.
14. Subject Enroute to Hospital
Observations
Breathing, Sweating, etc.
15. Subject Arrived at Hospital
Observations
Breathing, Sweating, etc.
16. Turned Over to Hospital Staff
Observations
Breathing, Sweating, etc.

Note: If the subject should experience sudden deterioration of his or her condition it is vital that the events and observations that follow be documented in the order they occur, with times noted as accurately as possible under the circumstances, providing rich description. Doing so can greatly assist the pathologist in his or her investigation of the death.

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