



## Calming Down: Could Sedative Drugs Be a Less-Lethal Option?

by Danielle M. Weiss, J.D.

When law enforcement officers face a critical situation that puts innocent people at risk of injury or death, what options do they have to diffuse the situation and save lives?

Russian Special Forces faced just such a situation in October 2002, when 50 Chechen terrorists stormed a Moscow theater and held more than 800 civilians hostage with guns and explosives for nearly three days. Russian forces decided to use a gas to subdue the terrorists, leading to the release of hundreds of hostages. Unfortunately, at least 129 hostages died during the raid or in the following days. Some reports cited the effects of the gas — combined with the hostages' poor physical condition and inadequate medical treatment following the rescue — as contributing to the victims' cause of death.<sup>1</sup>

The siege of the Moscow theater raises questions for law enforcement in this

country. Might calmative agents be a viable option for officers to safely and effectively respond to critical situations?

In April 2007, the National Institute of Justice (NIJ) convened a panel to discuss pursuing research on whether calmative agents — pharmaceuticals or sedative drugs that produce a calm or tranquil state<sup>2</sup> — might be an addition or alternative to law enforcement's current less-lethal options. NIJ drew on experts from the scientific, toxicological and bioethical communities; civil rights and advocacy organizations; and the legal and law enforcement communities to form this community acceptance panel.

The panel reached general consensus that law enforcement officers need additional less-lethal options and that pursuing new or updating existing research on the safety and viability of calmative agents was reasonable. Members agreed that further research would provide a better understanding of the

options, shortcomings and issues surrounding calmativ agents. It is important to note that the panel did not determine *whether* a tool could be developed, only that further research was an appropriate next step.

As a result of the panel's recommendations, NIJ funded research to explore the potential of operationalizing calmatives and to examine possible pharmaceuticals, technologies and legal issues. The grant was given to Pennsylvania State University in 2007.

### Limitations of Current Less-Lethal Devices

Every day, police officers across the country encounter people who pose a risk to the community and to themselves. It is paramount that officers have effective options to safely deal with these situations.

The U.S. law enforcement community currently uses conducted-energy devices (CEDs) — also known as electro-muscular-disruption devices or, more popularly, as stun guns — to subdue hostile, fleeing, belligerent or potentially dangerous suspects. CEDs transmit pulsating electrical signals through small probes that attach to a suspect's clothing or body. The signals interfere with communication between the brain and the muscular system, which results in temporary incapacitation. There is no conclusive evidence to date that CEDs cause serious injury or death when used properly and within national guidelines, but in some situations — such as a hostage situation — CEDs and other traditional less-lethal devices may not be suitable because they have a limited deployment range.<sup>3</sup> (For more information on the safety of CEDs, see a related story, "Medical Panel Issues Interim Findings on Stun Gun Safety," on page 20.)

In other situations, the use of less-lethal devices may raise concerns about the risk to police officers and suspects. For example, people on drugs who show symptoms of a state known as "excited delirium" frequently experience a spike in body temperature, increasing their risk of death. Concerns

*In some critical situations, current less-lethal devices might not be suitable options for officers. Could calmativ agents serve as an alternative tool for law enforcement to safely and effectively respond to these situations?*

have been raised by law enforcement and the public about whether a shock from a CED — introduced when a suspect's body temperature is rising due to drug-induced excited delirium — could contribute to sudden death.

Less-lethal techniques that involve the use of blunt force may also pose risks; blunt trauma to a person can cause organ damage to the liver, kidneys, heart or brain, which could be permanent.<sup>4</sup>

Could calmativ agents serve as an alternative to CEDs or blunt force for law enforcement when a hostile situation arises and officers are not in close proximity to the suspect — or when use of blunt force or a CED raises concerns about risks to those involved?

Research projects that examine the possibility of safely exposing someone to a pharmaceutical — even if it is for his or her own protection — raise issues that must be addressed. For example:

- What pharmaceutical would be appropriate?
- What would be an appropriate dosage when a suspect's medical history is unknown?
- Is an antidote or reversal agent available?
- What method(s) of delivery would be reasonable or appropriate: ingestion, inhalation, absorption through the skin or injection?
- Does a medically trained professional need to deliver the drug or could a law enforcement officer be trained to do this?

## Considering the Issues: Which Drug?

A 2001 study conducted at Penn State examined the advantages and limitations of using calmative agents as a possible less-lethal option. According to the researchers, to be useful as a less-lethal option, a calmative agent ideally should:

- Have a fast onset.
- With a given dose, produce approximately the same magnitude of calm in people of similar body mass index and age range.
- Have a short or limited duration.

- Have reversible effects.
- Have no prolonged toxicity.
- Be easy to store and administer.<sup>5</sup>

In the study, researchers examined several classes of drugs that may have utility as a calming agent, such as opiates, anti-psychotics, neurolept anesthesia, ketamine, benzodiazepines, rohypnol (date rape drug), and non-benzodiazepines (Ambien).<sup>6</sup> During a presentation to NIJ's community acceptance panel, one of the study's researchers highlighted the drug carfentanil as meriting further investigation. Carfentanil, which is used to sedate large animals, is delivered intramuscularly, intravenously and orally,



## Books in Brief

### ***The Delinquent Girl***

**Margaret A. Zahn, ed.**  
**Temple University Press, 2009**

During the past decade and a half, girls' involvement in the juvenile justice system has increased. Yet the topic remains understudied by criminologists. *The Delinquent Girl* identifies and analyzes the types of girls who become delinquent, the kinds of crimes they commit and the reasons they commit them. Contributors examine the major theories and explanations of female delinquency and consider the "gender gap" between male and female offenders. The book also provides an overview of the research on girls' delinquency, discusses policy implications and points to areas in which further research is needed.

### ***Handbook of Biometrics***

**Anil K. Jain, Patrick Flynn  
and Arun A. Ross, eds.**  
**Springer, 2008**

Biometric recognition — using physical or behavioral characteristics (e.g., fingerprints, face, voice or hand geometry) to identify an individual — is a swiftly evolving science. The *Handbook of Biometrics* provides an overview of the technologies, applications and implementation

of biometric systems. Researchers in the field discuss the basic concepts and traits as well as the latest advancements. The handbook is broken into three areas: individual biometric modalities, multibiometrics, and the deployment of biometrics in government and civilian applications. It also provides extensive bibliographies for the topical areas.

### ***Handbook of Fingerprint Recognition***

**Davide Maltoni, Dario Maio, Anil K. Jain  
and Salil Prabhakar**  
**Springer, 2003**

Fingerprint recognition, despite its use in the forensics community for more than a century, still presents a complex and important pattern recognition problem. The *Handbook of Fingerprint Recognition* covers the most recent advances and practices in the field, including sensing, feature extraction and matching, synthetic fingerprint image generation, indexing, and multimodal systems. The authors discuss the major concepts, topics and security methods associated with fingerprint recognition systems. The handbook also includes a DVD containing the full versions of the FVC2002 and FVC2000 fingerprint databases and a demo version of SFinGe, software used for synthetic fingerprint image generation.

and it has known antidotes, naloxone or narcan. However, because carfentanil is an opioid, it can have some undesirable side effects, including respiratory depression, which can be fatal.

Additional drug options may be identified by looking to the pharmaceutical industry for already existing drugs or ones in the research pipeline.<sup>7</sup>

## When Could Calmatives Be Used?

The circumstances in which a calmativ agent could be used also must be thoroughly researched. Members of the NIJ community acceptance panel emphasized that the goal of using any type of agent identified through extensive research would be to improve the outcomes when using current less-lethal options. Different scenarios with different goals must be considered. For example, the general consensus of the panel was that calmatives would not be recommended as a disbursement option for peaceful protests or mass demonstrations. In these situations, they said, the potential risks would outweigh the intended goal.

In other circumstances — when a hostage situation becomes tactical, moving from verbal negotiations to force, for instance — the hostage-taker is often killed in the ongoing mission to protect the lives of innocents. The panel agreed that, if a less-lethal alternative became available that would spare the life of the hostage-taker as well, law enforcement would likely opt for it. Medical personnel, armed with sufficient amounts of an antidote, could be on site to handle any medical issues that arose. The ideal calmativ, the panel noted, would put the hostage-taker to sleep or incapacitate him without harming nearby innocents. Once the situation was under the control of law enforcement and the suspect was in custody, the suspect could then be aroused in a safe environment, and proper medical treatment could be provided.

## About the Author

**Danielle Weiss holds a Juris Doctor and Master of Forensic Sciences. An associate with Booz Allen Hamilton, she serves as a consultant and technical advisor to the National Institute of Justice. She supports work on post-conviction DNA testing, forensic science training development, solving cold cases with DNA, and the National Missing and Unidentified Persons System (NamUs). Weiss has published a number of articles on the nexus of forensics and the law.**

Several U.S. jurisdictions have medical protocols when dealing with suspects exhibiting signs of excited delirium. In Nashville, Tenn., for example, officers may call upon their medically trained brethren to administer the drug Versed when appropriate.<sup>8,9</sup>

## Legal Considerations

NIJ's community acceptance panel also emphasized that when researching the possibility of using chemical agents in a law enforcement situation, some important legal considerations include the intended use of the agent, the appropriate dosage, the availability of an antidote and the involvement of medical personnel. The panel also noted that a number of international treaties, conventions, protocols or principles to which the U.S. is a party (such as the 1993 Chemical Weapons Convention, the 1907 Hague Convention, the 1925 Geneva Gas Protocol, the 1972 Biological Weapons Convention and the 1986 Nairobi Convention) would have to be considered.

## Moving Forward With Research

In some critical situations, CEDs and other current less-lethal devices might not be suitable options for officers. NIJ's community acceptance panel focused its discussion on the very real need for alternative less-lethal tools and resources to help ensure the ongoing safety and protection of law enforcement officers, suspects and the community at large. Although there may or may not be a safe drug option available

to help officers deal with critical situations safely and effectively, the panel agreed that understanding the options, advantages and disadvantages surrounding chemical agents is important.

Research is the first step toward that understanding.

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**For More Information**

- A summary of the community acceptance panel’s discussion on researching calmativative agents as a possible less-lethal option is available at <http://www.ojp.usdoj.gov/nij/topics/technology/less-lethal/riot-control-agents.htm>.

**Notes**

1. “Russia Names Moscow Siege Gas,” BBC News, October 31, 2002, available at <http://news.bbc.co.uk/2/hi/europe/2377563.stm>; Miller, J., and E. Lichtblau, “U.S. Investigates Moscow Theater Siege, Seeking Qaeda Link,” *New York Times*, November 19, 2003, available at <http://query.nytimes.com/gst/fullpage.html?res=9E02E1DA163BF93AA25752C1A9659C8B63>; McGeary, J., and P. Quinn-Judge, “Theater of War,” *Time Magazine*, October 27, 2002; and “Gas ‘Killed Moscow Hostages,’” BBC News, October 27, 2002, available at <http://news.bbc.co.uk/2/hi/europe/2365383.stm>.
2. Lakoski, J.M., W.B. Murray, and J.M. Kenny, *The Advantages and Limitations of Calmativatives for Use as a Non-Lethal Technique*, University Park, Pa.: Pennsylvania State University, 2000: 7.
3. For example, an independent study commissioned by NIJ recently found that the Taser X26 missed the target a significant amount of times at 20 feet because of the probe’s

spread angle. Mesloh, C., M. Henych, L.F. Thompson, and R. Wolf, *A Qualitative & Quantitative Analysis of Conducted Energy Devices: TASER X26 vs. Stinger S200*, final report submitted to the National Institute of Justice, Washington, DC: May 2008 (NCJ 222769), available at <http://www.ncjrs.gov/pdffiles1/nij/grants/222769.pdf>.

4. Lakoski, *The Advantages and Limitations*, 11.
5. *Ibid.*, 9-10.
6. *Ibid.*, 15-16.
7. The pharmaceutical industry looks to these drugs because the development of a new drug can be time-consuming and costly. Approximately one out of every 10 pharmaceutical drugs in development proceeds to clinical trials. Once there, it can cost more than \$1 billion and take eight to 10 years after chemical synthesis with no guarantee of approval by the FDA. Tufts Center for the Study of Drug Development, *Outlook 2008*, Boston: Tufts University, 2008, available at <http://csdd.tufts.edu/InfoServices/OutlookPDFs/Outlook2008.pdf>.
8. Metro Nashville Police Department, “Tasers to be Redeployed to Field Officers,” press release, May 29, 2008, available at <http://www.police.nashville.gov/news/media/2008/05/29a.htm>; and Kalodimos, D., “I-Team: Injection Used to Subdue Prisoners,” WSMV Nashville, Tenn., July 13, 2008, available at <http://www.wsmv.com/news/16844880/detail.html>.
9. In Miami-Dade County, in circumstances in which CEDs may need to be implemented but excited delirium is recognized, emergency medical services are notified so they can respond to a scene with law enforcement. Once the suspect is successfully subdued with the CED, medical personnel on site nasally administer Versed as part of medically necessary treatment. For more information on Miami-Dade’s protocol, see related story, “Medical Panel Issues Interim Findings on Stun Gun Safety,” on page 20.