Wake Forest Baptist Study Suggests Tasers Don't Cause Cardiac Complications

WINSTON-SALEM, N.C. – June 28, 2012 – Taser shots to the chest are no more dangerous than those delivered to other body locations, according to a new study by one of the country's leading experts on the devices.

William P. Bozeman, M.D., an associate professor of emergency medicine at Wake Forest Baptist Medical Center, and colleagues reviewed 1,201 cases of real-life Taser uses by law enforcement agencies but found none in which the devices could be linked to cardiac complications, even when the Taser probes landed on the upper chest area and may have delivered a shock across the heart.

Their findings are published online this month in the *Journal of Emergency Medicine*.

"While we know that the Taser is a very effective and remarkably safe weapon for law enforcement use, we also continue to have some concern about injuries that may be related to it," Bozeman said. "However, in this review, we found no cases where there was an apparent cardiac complication related to the Taser, even in the worst-case scenarios when the probes landed across the front of the chest and the heart may have been in the path of the electrical current produced by the device."

The team of researchers led by Bozeman reviewed cases of Taser use against criminal suspects by law enforcement officers from agencies across the country. Of the 1,201 cases reviewed, 178, or 22 percent, involved the device's probes landing on the suspect's chest and delivering an electrical charge that may have traveled across the heart area. The majority of the suspects in the reviewed cases were male (94 percent) and the mean age was 32. None of the suspects with Taser shots to the chest were found to have heart-related complications, and they did not have a higher injury rate than suspects with Taser shots elsewhere on the body.

Bozeman said it was important to conduct this research because concerns have been expressed that Taser activations across the front of the chest might be unsafe and should be avoided due to the possibility of probes landing near the heart. It also was important to look at real-life situations, he added, because criminal suspects are thought to be at a higher risk of complications than healthy volunteers because of the stress of the situation, the possible presence of drugs, underlying medical conditions and a variety of other factors.

"This analysis was done to assess whether medical data shows these concerns to be valid and whether law enforcement officers should change how the Taser is used in the field due to possible medical risks," Bozeman said. "The study results indicate that no adverse effects were seen that could be related to transcardiac conduction of Taser shocks."

Tasers are commonly used by law enforcement personnel worldwide as an intermediate-force option to subdue and apprehend potentially dangerous or combative suspects. Tasers function by delivering a series of very brief high-voltage, low-current electric pulses that result in pain, muscle contraction and inhibition of voluntary movement.

Bozeman has been conducting research into the use of Tasers by law enforcement personnel since 2004. In 2007 and 2009 he released results from the first large, independent study of injuries associated with Tasers, finding that they are relatively safe and pose minimal risk of injury. In that study, findings showed that 99.7 percent of those subjected to a Taser had no injuries or only mild ones, such as scrapes and bruises.

In a related study also released in 2009, Bozeman evaluated the immediate cardiac and cardiovascular effects on a group of volunteer police officers, finding that Taser exposure overall was safe and well tolerated. No adverse cardiac affects or rhythm changes were seen.

"This study adds to the accumulated medical evidence that Tasers are safe and effective and that their risks overall are extremely low," Bozeman said. "Although not risk free, Tasers have been associated with

lower rates of injuries to suspects and officers than other traditional intermediate force options such as physical force, pepper spray, and handheld impact weapons."
This research was funded by the National Institute of Justice. Co-authors include James "Tripp" Winslow, M.D., of Wake Forest Baptist, and Eric Teacher, M.D., of Loma Linda University Medical Center in California.

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