



# TASER no agent of death

**Law** enforcement officers use electronic control devices (ECDs) to subdue aggressive offenders who, in certain circumstances, pose a physical threat to them and/or others.

Because some deaths have occurred around the time of the use of ECDs, there exists a medical question as to whether the electric shock caused those deaths, or whether they occurred by chance, or from intoxication or other causes. Medical research on animals and some human experiments have taken place to try to answer the question.

TASER is an acronym for the Thomas A Swift Electric Rifle, which is the dominant brand of ECD, and the names are often used interchangeably.

Of the six models produced by TASER International, the X26 was used in human studies in 2007 on the effects on the heart. The X26 was the latest and most commonly used model in the US.

If the ECD were to cause death, it would be assumed that the electrical discharge would have caused a dangerous cardiac rhythm and stopped the heart.

Human studies had not shown any heart effects, but animal studies showed some heart irregularities (significantly rapid heart rates or tachycardia). So the human studies were set up to explore the heart rhythms in humans while they were being "TASERed" (subjected to the application of an ECD) and afterward.

Initial human studies found that the ECD application distorted the cardiographs used to measure the electrical impulses of the heart. So the cardiac behaviour was recorded on an ultrasound to detect the actual movement of the muscle of the heart during the experiment.

In a study of 33 subjects, aged 28 to 59, there were no adverse events following a 10-second TASER X26 application (*Echocardiographic Evaluation of a TASER-X26 Application in the Ideal Human Cardiac Axis, 2008 Society for Academic Emergency Medicine 15:838-844*).

The normal "real-life" time would be more like a five-second ECD exposure, but some longer exposure time can occur.

The ECD is designed to cause the involuntary contraction of muscle. But, if the contact points are not far enough apart to produce the involuntary contractions, the electrical charge is designed to cause pain.

While deaths have occurred around the time that an ECD has been used, there is no research or experiential evidence to suggest a cardiac arrhythmia (abnormal heart rate) or direct electrical damage to the heart has caused deaths.

The involuntary muscle contraction or pain will slow down or stop a subject, and recovery will depend on the muscles being able to recover, or pain tolerance.

Because other substances are often involved (alcohol, amphetamines, narcotics), the effect can be variable; and the other factors will likely affect behaviours, medical risk or recovery more than will the ECD.

The variability in response is thought to be about the pain tolerance or the state of arousal of the subject, rather than the electrical current.

Because the situations that require a TASER are always difficult, there exists the possibility of death or injury but, to date, no absolute evidence has emerged to link directly the ECDs as the causal agents of death.

Despite the animal studies raising the question of a cardiac abnormality, or arrhythmia, as a possibility, it has not been shown to occur in humans.

The possibility of pre-existing medical conditions exposing a person to a higher risk of death must remain a valid question but, at this stage, there is no evidence that the ECDs expose subjects to a greater risk than

do other means of restraint or self-defence. Ongoing caution can be reasonably applied, but the link has not been absolutely established.

After an ECD has been discharged and is no longer activated there remains no risk from the device to the subject, or anyone who comes into contact with the subject. Normal procedures can be reasonably applied and the other circumstances need to be dealt with as normal.

The electrical discharge should only be an issue for any contact between the darts; and involuntary contraction of muscles between the darts is likely if they are more than about 10cm apart, otherwise the pain is the main limiting problem. The effects stop as immediately as any electrical discharge stops.

These groups of devices are termed "intermediate weapons" because they are generally meant to induce subject compliance owing to pain or incapacitation at a level above empty-hand control techniques. But they are at a level less than deadly force.

Other intermediate weapons include devices such as aerosol chemical irritants, impact batons and projectile beanbags.

The ECDs are still new and more needs to be understood about their best use. But it seems reasonable at this stage that they have their place among the options available to police in dangerous situations.

It also seems reasonable that they should have a legitimate place as a use-of-force alternative which can effectively reduce both police-officer and offender injuries.



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