The Royal College of Emergency Medicine

Best Practice Guideline

Management of Controlled Energy Device (Taser) Attendances

Royal College of Emergency Medicine

November 2021

Summary of Recommendations

1. ED clinicians should be aware of the consequences of conducted energy devices (CED) or ‘Tasers’ discharge, not just in relation to probe removal but also the potential to be associated with other injuries.

2. ED clinicians should pay particular attention to the circumstances of CED discharge in relation to whether their patient may be suffering from a mental health disorder, acute behavioural disturbance or intoxication through drugs or alcohol.

3. Assessment of CED discharge cases is likely to be mainly on clinical grounds, routine investigations are not indicated.

4. In patients who are symptom free and alert, prolonged observation is not required.

5. Patients who are being discharged back to police custody, should be clinically safe to be detained and accompanied by a discharge letter from the ED outlining what treatment (procedural, medication etc.) they have had and if there are any signs to look for in the case of potential deterioration.

6. The role of the assessing ED clinician is primarily one of clinical management; the ED clinician is NOT a substitute for a forensic practitioner.

Scope

Patients attending emergency departments (ED) following discharge of controlled electrical devices (CED) by the Police Service.

Reason for development

To provide clinical and medicolegal guidance for ED clinicians.

Introduction

The material in this guideline extensively uses information from the Joint Working Group into Conducted Energy Devices [1] which involved both police and medical representation as well as extensive involvement from the Faculty of Forensic and Legal Medicine. The Faculty of Forensic and Legal Medicine also has a CED hub with associated resources which is also referenced.

Controlled energy devices (CED) or tasers have been deployed in the UK for use by specially trained officers since 2007. Their aim is allow a police officer to rapidly incapacitate a person through neuromuscular incapacitation (as well as pain and sensory overload) by the use of a series of very rapid and short electrical impulses. The CED's delivered energy is around 0.1 joules/pulse and therefore should not be associated with ventricular fibrillation, coagulation or thrombus formation seen at much higher energy levels.

The CED delivers the energy through barbs (9.6-11.7mm) and a nitrogen gas propelled darts fired at a person; generally two barbs which are separated are required to penetrate a person's body or clothing to complete the circuit and deliver the charge. There are a number of different types of CED in use by UK police services which differ in the number and type of barbs used, number of pulses per second and kinetic energy (appendix 2). Knowledge of the type of CED is often clinically relevant.

CEDs may be used in a number of different types of modes

Probe mode:	CED projects at least a pair of probes resulting in neuromuscular incapacitation. Failure of one of the probes to make contact with the skin or clothing will not result in discharge of energy.
Drive-stun mode:	Two electrodes on the front of the CED are driven into the individuals clothing or exposed skin to gain compliance through pain rather than neuromuscular incapacitation. Probes or barbs not deployed. Least likely to cause harm.
Angled-drive stun mode:	when the probes are too close together (less than 30cm) then neuromuscular incapacitation will not be achieved, in this mode of use the actual device is held against the person's skin to create the circuit.

CED Associated Injury and Illness

Significant injury or illness associated with CED discharge is rare, especially in healthy people and evidence of injury/illness limited to case reports. CEDs may cause injury as a result of an uncontrolled / unprotected fall as a result of neuromuscular paralysis, there is also the possibility of prolonged forceful muscle contraction being implicated in fractures or dislocations. Retained barbs

and superficial burns are some of the commonest injuries. Box 1 summarises acute injuries or illness which have been temporally associated with CED discharge, although attributing causation is much more difficult. The chance of serious injury or illness and need for medical assistance, following CED discharge, is often associated with drug use (eg. sympathomimetics such as cocaine) and mental health issues.

Box 1

Injuries or illnesses which have been temporally associated with CED discharge

Cardiac Arrhythmias including ventricular fibrillation
Single case reports seizure, stroke, miscarriage, thoracic vertebral fracture
2 case reports of rhabdomyolysis
Probe injuries to head, face, eye, testicle, throat, pneumothorax

Current guidance for custody healthcare practitioners (CHP) is that all people who have been subject to a CED discharge require an assessment by a CHP, whether assessed by an on-scene paramedic or not. The majority of people having been exposed to a CED discharge do not require referral to the ED, they should be seen and assessed by a competent custody healthcare practitioner who should also attempt removal of any probe. Indications for the referral of people who have subject to CED discharge to the ED and hospital are shown in boxes 2, 3. All patients referred by custody healthcare practitioners should be accompanied by a referral letter. There may be occasions when the nature and severity of the injuries or continued severe agitation dictate that the patient is taken to the ED before the custody suite.

Box 2.

Indication for referral to ED following CED Discharge

● Acute Behavioural Disturbance (ABD)
● Probe remains embedded in a sensitive area: Face, Neck, Genitalia, Eyes, Probe remains embedded in area adjacent to large vessels (eg. carotid, femoral) or has penetrated tendons.
● Chest pain, palpitations or new irregular pulse
● Condition which is a threat to airway, breathing or circulation
● Head injury meeting any NICE referral criteria (eg. seizure, intoxication)
● Presents as 'drunk and incapable'

Indications to consider referral to hospital

● Significant burn injury at probe site
● Penetration of a sensitive area by probe (removed) face, neck, genitals, adjacent to large vessel
● Child
● Previous spinal surgery
● Further assessment and management not within capability of custody suit

Box 3.

Indications for referral to hospital following CED Discharge, without the need to attend the emergency department

●Patient has a pacemaker, internal cardiac defibrillator (ICD) or vagus nerve stimulator – custody healthcare practitioners should liaise directly with cardiologist or neurologist in those patients who are clinically stable.

●Patient is pregnant - custody healthcare practitioners should liaise directly with obstetrician, early pregnancy clinic or maternity assessment clinic for those who clinically stable.

Management

Patients should be triaged and prioritised as usual taking into account their injury / illness and acuity level.

Patient symptoms may include (during or after CED discharge):
● Extreme pain and muscle spasms when the electricity was delivered,
● Being dazed for several minutes afterwards,
● Loss of memory of the event,
● Unsteadiness and a spinning sensation
● Temporary tingling
● Weakness in the limbs
● Local aches and pains
● Tissue redness and swelling at the skin area where the TASER™ electricity was applied
These symptoms generally resolve within 24hrs.

The assessing clinician should seek to understand the exact reason for discharge of the CED and the patient's behaviour prior to the discharge especially with the presence of behaviour that might be associated with mental illness, ABD, intoxication. It is also important to know the type of CED used (helps determine how to remove probe), the number of discharges, the duration of discharges, number of body strikes by probes.

The assessing clinician should confirm whether neuromuscular incapacitation has taken place and the possible consequences of an unprotected fall in that particular location in terms of injury pattern to the patient. Events following incapacitation including whether any restraint used, further collapse, on-site first aid, probe removal should also be ascertained.

Clinical assessment should progress along standard lines (eg. head injury) in keeping with symptoms and injury patterns. Patients who are intoxicated (drugs or alcohol), displaying signs of mental illness or significant agitation represent a higher risk group and are likely to require a period of observation or more intensive investigation.

Clinicians should consider the possibility of occult injuries cause by unprotected fall eg. shoulder dislocation. In those with head injuries the possibility of co-existent neck injury should also be considered. In those patients with co-existing toxic ingestion seek advice from Toxbase® [2]. The possibility of a penetrating injury from a CED probe should also be considered in relation to the relevant anatomy, following patient assessment, bearing in mind barb length approximately 1cm and projectile nature of insertion.

All patients will require a set of vital signs; those with pacemakers/ICD and with symptoms of chest pain or palpitations will require an ECG. In well patients; routine urinalysis, blood tests and chest X-ray are not indicated.

In patients who are symptom free and alert, prolonged observation is not required.

The assessing ED clinician should make accurate, legible notes detailing injuries or consequences of the CED discharge in the usual manner. The clinical record should include names/numbers of any attending police officers and which police station they are from and whether they were present when the CED was discharged. The role of the assessing ED clinician is primarily one of clinical management; the ED clinician is NOT a substitute for a forensic practitioner. ED clinicians do need to be mindful that their notes and a statement may be requested as part of any subsequent trial. Requests for statements should be through the normal routes, without any expectation that they are provided as a condition of the patient's discharge back to police custody or home.

Patients who are being discharged back to police custody, should be clinically safe to be detained and accompanied by a discharge letter from the ED outlining what treatment (procedural, medication etc.) they have had and if there are any signs to look for in the case of potential deterioration.

All discharged patients should be handed an advice leaflet regarding CED discharge [appendix 3] and any other indicated injury specific information.

Specific Management Issues

1. Retained Probe

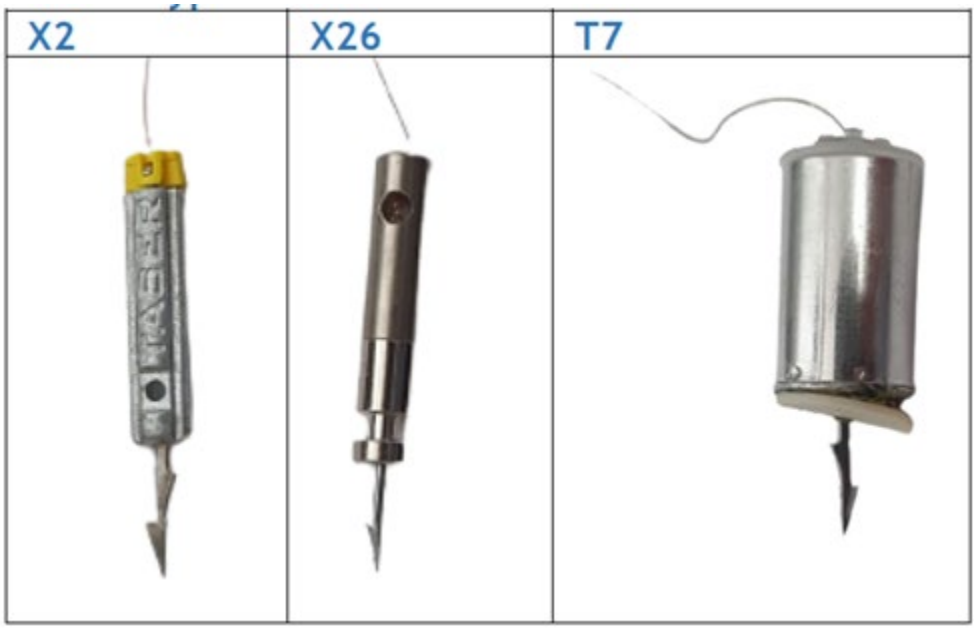
Ascertain which type of CED was used; Taser ™ 7 has a specific removal device which the police should supply (see appendix 4 for description of how to remove barb).

Taser ™ X26 and X2, the barb can usually be removed by firm and rapid perpendicular traction whilst bracing the skin (forceps, needle holder optional) [3]:

Expose area and cut wire if necessary
Stabilise skin surrounding probe (ensure you are not too close to the barb to cause yourself a sharps injury)
Grasp firmly (forceps optional, but not usually necessary)
Remove with RAPID traction (note if only pulled gently the skin is likely to tent and cause more pain to the patient)

Examine the probe to ensure it is not broken and a retained FB has not been left in the skin. Place probe in specimen bottle and hand to police.

Probe types with Barbs shown [4]



Examine wounds for signs of any injury to surrounding structures (tendons, nerves, vessels) in the usual manner.

Wound care advice including potential signs of infection.

2. Burns

Superficial localised burns should not warrant ED attendance however more extensive burns (if incapacitant spray has been used and ignited by the CED) should be managed as per local burns policy.

3. Pregnancy

Although theoretically low risk, mothers may have sustained injury from an unprotected fall and intense muscular contraction, arrange for review by obstetric team in an appropriate timeframe dictated by the patient's clinical condition.

4. Pacemakers / ICD

Perform an ECG and decide on the need for cardiac monitoring based on this and the patient's vital signs and symptoms. A pacemaker check is a sensible precaution, but not necessarily an indication for admission in an otherwise well patient with an ECG which does not show any cause for concern.

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Review

Usually within three years or sooner if important information becomes available.

Declarations of Interest

Simon Smith, member of the Conducted Energy Device Joint Working Group

Disclaimers

RCEM recognises that patients, their situations, Emergency Departments and staff all vary. This guideline cannot cover all possible scenarios. The ultimate responsibility for the interpretation and application of this guideline, the use of current information and a patient's overall care and wellbeing resides with the treating clinician.

It is not the role of RCEM to be determining the safety of CEDs, this is for other agencies to determine. It is not the role of RCEM to determine Policing policy and the indications for use of CED, it is beyond our scope of expertise.

Research Recommendations

None.

Audit standards

All patients discharge to custody should have an accompanying discharge letter.

Key words for search

Conducted energy device, Taser, Controlled electrical weapons, Less lethal weapons.

Appendix 1

Methodology

Where possible, appropriate evidence has been sought and appraised using standard appraisal methods. High quality evidence is not always available to inform recommendations. Best Practice Guidelines rely heavily on the consensus of senior emergency physicians and invited experts.

Evidence Levels

1. Evidence from at least one systematic review of multiple well designed randomised control trials
2. Evidence from at least one published properly designed randomised control trials of appropriate size and setting
3. Evidence from well designed trials without randomisation, single group pre/post, cohort, time series or matched case control studies
4. Evidence from well designed non experimental studies from more than one centre or research group
5. Opinions, respected authority, clinical evidence, descriptive studies or consensus reports.

Appendix 2

Taser™ Model Comparison [1]

	Taser™ X26	Taser™ X2	Taser™ 7
Probe (dart)			
	3.8 cm (1 cm dart)	3.4 cm (1.1 cm dart)	2.2 cm (1.1 cm dart)
Loaded cartridges	One	Two	Two
Laser sighting	Single red laser	Dual red laser	Dual laser; green (upper) and red (lower)
Range	6.4 meters	7.6 meters	7.6 meters
Pulse rate	19 pulses per second	19 pulses per second	22 pulses per second
Pulse duration	110 microseconds	80 microseconds	45 microseconds

Appendix 3

Example of Patient Advice Leaflet
Adapted from reference 5

Advice to People Subjected to TASER™ Discharge

You have been subjected to the effects of a TASER™ Conducted Energy Device (CED). The TASER™ CED passed short pulses of electricity into your body. The electricity made your muscles contract (go stiff). You may well have lost balance and fallen to the ground. The device was used by a specially trained police officer.

During or after use of the TASER™ you may have experienced one or more of the following:
- Extreme pain and muscle spasms when the electricity was delivered
- Being dazed for several minutes afterwards
- Loss of memory of the event
- Unsteadiness and a spinning sensation
- Temporary tingling
- Weakness in the limbs
- Local aches and pains
- Tissue redness and swelling at the skin area where the TASER™ electricity was applied

These are normal effects of the TASER™ and should resolve by themselves.

You have been clinically assessed and treated for any injuries, following the use of the TASER™ CED. If any of the above symptoms (with the exception of local aches and pains and mild redness or swelling) are still present after 24 hours, or if you develop any other health problem that was not there before the TASER™ was used, you should seek medical advice from NHS111.

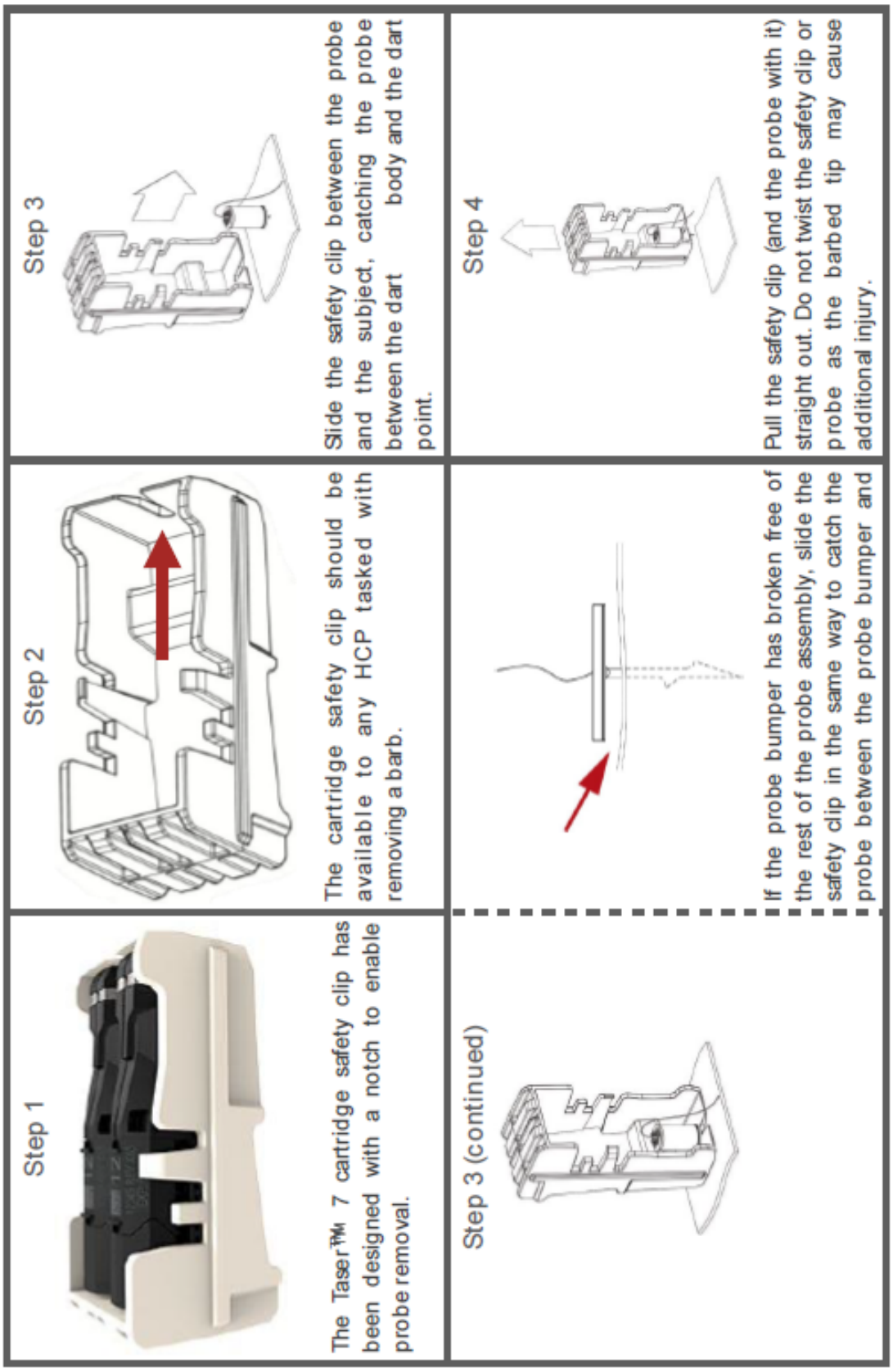
You may have two or more small marks (similar to bee stings) in your skin. These are small puncture wounds from the short needles (barbs) through which the electric current passed into your skin. These barbs will have been removed before, or while, you were in custody or after your emergency department attendance. There may be small burns similar to sunburn around these marks. These should return to normal in a few days. If they do not, and there is pain and swelling, you may have a local infection, you should seek medical advice from NHS111. If the probes only stuck in your clothing you may still have two small areas of skin underneath that look sunburned.

There are no known effects of the TASER™ electricity on the well-being of the unborn child. However, if you are pregnant and have been subjected to TASER™ discharge you should consider contacting your doctor (GP) or midwife as a precautionary measure.

This advice has been adapted from guidance produced by the CED Joint Working Party, convened by the Faculty of Forensic & Legal Medicine with representation from the organisations listed above. The advice in this leaflet is designed to complement, and not replace, locally authorised SOPs or guidelines for the medical management of members of the public who have been subjected to TASER™ discharge and other forms of force. Where the advice given in this leaflet differs from local procedures, the local procedures should take precedence.

Appendix 4

Taser ™ 7 Probe Removal [1] see also [6]



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