



LONDON'S
AIR AMBULANCE
roadside intensive care



Pre-hospital Care Standard Operating Procedure

One Unders

REVIEW:	June 2008	
APPROVAL/ ADOPTED:	PHC Policy Board	
DISTRIBUTION:	PHC Doctors PHC Paramedics	
RELATED DOCUMENTS:	SOP Safety at Scene	
THIS DOCUMENT REFERS TO:	PHC Clinical Practice PHC Non-clinical Practice <input checked="" type="checkbox"/> PHC Operational Procedure	Ref: OP-3

Aims:

- To ensure understanding of safety when dealing with 'one unders'.
- To describe the steps to take to extricate a patient from under a train.
- To explain some specific problems that may arise.

Background:

Dealing with people trapped under trains is one of the most difficult tasks we undertake. It is critical that you do not compromise your own safety or that of any of the many emergency staff who are invariably present. This service deals with approximately 1 'one under' per week.

The high specificity for serious injury and the fact that communication with the scene for interrogation and crew requests is inherently difficult have made one under calls immediate dispatch criteria.

The safety booklet produced by London Underground- 'Notes for Emergency Services Personnel' should be read in conjunction with this document. This forms part of the introductory pack. Registrars and paramedics will undertake a one-day Safety day at London Underground Training Centre.

Principle Donors:



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Policy:

Take protective headgear to the scene and wear it where possible. By the time you arrive on the platform there will probably be a large number of emergency personnel already present (Fire and Rescue, Paramedics, Transport Police, Station Managers, L.U.L. staff, L.U.L., emergency personnel). Everybody will be attempting to take control. There will be many “Chiefs” and even more “Indians”. In short it can be absolutely chaotic. Your priorities are as follows:

1. Locate the key people:

- London Underground - usually a station manager.
- Fire Brigade – Officer in Charge.
- Ambulance Service – the Paramedic / technician on scene.
- London Underground Heavy Rescue – team leader.

2. Ensure safety of your team: Safety has two components, which must be addressed separately.

Track Current.

- The voltage across the positive and negative rails is 640V. The current is about 25,000 amps. The current is switched off or on by a Line Controller. It is important to speak directly with him, if in any doubt as to whether the current is off. There is a phone at the end walls (far end of each platform) that communicate directly with him/her.
- As a “belt and braces” measure, short circuit devices [SCDs] are employed. These are metal rods which sit across the positive and negative rails and will prevent any current from passing through you if the current is either inadvertently restored, or if another train comes to rest across the break in the line, transferring current from a live section to the one on which you are working. The medical team **MUST** visualise an SCD at both ends of the train before accessing the track. This often means walking through the length train/station platform, and, although a bit of a nuisance, may be a life-saving.
- If you are on a section where track runs in both directions, for example overground track or the Circle line, then the current must be off on both tracks. As each train only has 2 SCDs it may be necessary to have 1 SCD per track until the rescue tender arrives.
- Rail Track do not use SCDs. They switch off current in the same manner, then place a device across the line which will indicate by lights if the current gets switched back on. It is not very useful if you are on the line, but may stop you going down to the track inadvertently.
- On over-ground stations the London Underground Personnel are used to walking around live tracks. Just because you see people milling around **don't presume** the track current is off.
- Time to turn the electricity off is often underestimated – have spare oxygen [E] cylinders.
- When the current is cut off the stationary trains rely on battery power, which illuminates $\frac{1}{4}$ of the lights and can last from two hours to 11 minutes (on some District line trains, due to the presence of the ventilation fans). When a train is stationary there is no ventilation, if the train is full the temperature inside rises exponentially.

Stop all trains.

- Trains can continue to run without current in the line. The record is 18 miles. Therefore it must be explicitly stated to the Line Controller that you want all trains stopped. As with track current, if you are on a double tracked area the trains must be stopped in both directions.

3. Means of Extrication.

- Only one member of the HEMS team should be under the train at any one time. The other team member should remain on the platform to relay instructions.
- The rescue team should not remain under the train when it is moved – either extricate the patient along the length of the train or split the train and roll it [not always possible].
- Entrapments are often lengthy and it's a long trek to restock with oxygen etc. Address the problem well in advance – not when the dial is in the red.
- If it is necessary to restore power to the lines to move rail stock in order to extricate a moving patient, then consider anesthetizing, paralyzing and placing the patient on a portable ventilator. The risk to a medical attendant remaining underneath moving rail stock [with the patient] is unacceptably high. It is therefore essential that once the patient has been paralysed that the patient is connected to a full size E cylinder of oxygen, as it will take a minimum of 20 minutes before the power is restored, the rail stock moved and the power supply switched off, and SCDs re-applied before you will be able to regain access to your patient. It is essential that this procedure is well coordinated with the Fire service and Station manager to avoid unnecessary delays. Ensure that all the ventilator connections are secure. Monitoring the patient during this interval will contribute little, as you will not be able to rapidly regain access to the patient.
- If the patient is actually trapped under the 'running gear' of the train then it is possible for the Fire and Rescue service to jack the carriage up depending on the clearance available above the train. This takes a long time and only usually provides one or two inches of vertical movement. Depending on the "degree of amputation" it may be prudent to simply complete the amputation surgically with a scalpel/ gigli saw.
- If a patient appears unhurt help guide them out under their own steam - spinal immobilisation is not mandatory.

4. Remember

- When the current on a section of the underground is cut off, the section of track isolated covers between one and six stations. This means that it is quite likely that 3 or 4 trains could be stuck in the tunnels. It is not possible to divert trains around a dead section of track.
- Remember that there are two casualties - the driver is often badly affected and Post Traumatic Stress Disorder is relatively common. If possible try and reassure him / her. Whilst London Underground have policies for dealing with these incidents always reinforce the point that they should inform their GP of what has happened.