

Consensus On The Pre-hospital Approach To Burns Patient Management

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Introduction

In the United Kingdom (UK), burns patients account for approximately 175,000 emergency department attendances and 15,000 hospital admissions each year (1). Consequently the first aid and pre-hospital care for this large group of patients is of great importance and yet in the authors' experience, simple things are often not done very well.

In 1998 a national survey revealed 58% of UK ambulance services had no specific treatment policy for burns patients (2). Pre-hospital carers often feel out of their depth in caring for burns patients, particularly

children and there is a lack of teaching and simple, evidence-based guidelines.

The Faculty of Pre-hospital Care set out to improve the information available concerning immediate care of the burns patient in simple, unambiguous guidelines, so that any carer (including first-aider, ambulance personnel, nurse or doctor) could administer safe, appropriate care. The process to achieve consensus over these guidelines has taken time and the advice and ratification by all groups that look after burns patients from the point of their injury through to definitive care has been painstakingly followed (Tables 1&2).

Table 1. Process of consensus guidelines.

Ambulance service and plastic & burns surgeons questionnaire survey	1998
Presentation of data at Trauma UK meeting	June 1999
Presentation of Data at British Burns Association (BBA) meeting	April 2000
Letter in BBA newsletter inviting suggestions and help	September 2000
Publication: "The UK pre-hospital management of burn patients: current practice and the need for a standard approach"	Burns 2002; 28:135-42.
Consensus meeting held in Birmingham	February 2001
Consensus information presented at BBA meetings	April 2001, April 2002
Consensus guidelines included in Joint Royal Colleges and Ambulance Liaison Committee (JRCALC)	March 2002

Table 2. Individuals and organisations present at the consensus meeting in February 2001.

Ambulance Services (West Midlands, Warwickshire, County Air Ambulance)
Ambulance Service Association
Medical Directors of 3 ambulance services
British Association of Immediate Care Schemes (BASICS) and BASICS education
Faculty of Pre-hospital Care, Royal College of Surgeons of Edinburgh
British Burns Association
Local Burns Surgeons
Burns Nurses
Military medical staff
DERA
Voluntary Aid Societies
Fire Services
Clinical Biochemist
British Association of Accident and Emergency Medicine (BAEM)
Accident and Emergency specialty consultants
General Practitioners

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It is hoped that the guidelines although basic, can form the basis for current pre-hospital care and that they may be updated as new evidence or arrangements for burns patients are made within the UK (Table 3).

Table 3. Consensus guidelines.

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|-------------------------------|
| 1.S.A.F.E Approach |
| 2.Stop the burning process |
| 3.Cooling |
| 4.Covering / Dressing |
| 5.Assessment of AcBC |
| 6.Assessment of burn severity |
| 7.Cannulation (and fluids) |
| 8.Analgesia |
| 9.Transport |

S.A.F.E approach

For all pre-hospital emergencies, this acronym can be used to remind the carer as to the first priorities in patient care:

- **S**hout or call for help
- **A**ssess the scene for dangers to rescuer or patient
- **F**ree from danger
- **E**valuate the casualty (3-7)

Stop the burning process

The burning process should be stopped or extinguished and the patient should be removed from the burning source. All burnt clothing should be removed (unless it is stuck to the patient) and any jewellery, which may become constrictive. All items of clothing should be brought in a plastic bag to the hospital for examination. Patients with chemical burns may need a longer period of irrigation under tap water and specific information about the chemical concerned should be obtained.

Cool the burn wound

There is often confusion over this process and for how long it should last. It is suggested that the ambulance service despatch system will advise the '999' caller to cool the burn area for up to 10 minutes. Cool running tap water is sufficient and ice cold water should not be used. If this has been done, pre-hospital carers should cool for another 10 minutes during package and transfer. If the burn area is small (< 5%) then a cold wet towel can be placed on the burn area, on top of the Clingfilm™ dressing (see next section), but before wrapping up the whole patient to maintain body warmth beneath the blankets. Delays in transporting the burn patient should be minimised, as should the risk of inducing hypothermia, particularly in children. A helpful reminder is to: "Cool the burn wound but warm the patient" (2, 8-31).

Dressings

Dressings are important to help the patient's pain control and to keep the burnt area clean. The burnt area should be covered with a cellophane type wrap, such as Clingfilm™, remembering the possible constricting effect of wrapping; smaller pieces are ideal and circumferential sheets should be avoided. The patient should be wrapped up in blankets or a duvet.

In chemical burns the affected area should be irrigated thoroughly until pain or burning has decreased and only wet dressings should be used. There may be a specific antidote for the chemical being used and data regarding the likely chemical should be taken with the patient to hospital (2,32-38).

Assessment and management of immediately or imminently life threatening problems: A.c.B.C (Airway with cervical spine stabilisation, Breathing, Circulation)

It should be remembered that the patient may have other injuries co-existent with their burn injury. These should be suspected, diagnosed and treated as with any other pre-hospital emergency. The patient should have high flow oxygen delivered via a non-rebreath mask (15 litres/min). If a patient has an isolated burn injury which is small and when no inhalation injury is suspected the oxygen may not be necessary (20, 39,40).

Assessment of burn severity

In order to estimate the size of the patient's burned area, use the Wallace Rule of Nines or serial halving ("half burnt/half not" approach: is the burn >1/2 patient's Total Body Surface Area (TBSA): if it is not, is it 1/4-1/2 or <1/4). This latter technique although new, is effective in burn size estimation in pre-hospital care. Other important features of the burn injury which must be identified or considered are:

- Time of burn injury.
- Mechanism of Injury (flame (clothes or patient caught fire), flash burn, scald, electrical, chemical).
- Burn within confined space (possible respiratory inhalation injury).
- In children and elderly, always be mindful of potential Non Accidental Injury.

It is of paramount importance that the pre-hospital carer keeps good records (41-44).

Cannulation and intravenous fluids

The emphasis for patient cannulation should be for the administration of titrated opiate/opioid analgesia. It is important that cannulation procedures do not unnecessarily extend the on scene time. Access should be limited to two attempts only and should

generally be undertaken in transit. The intraosseous route may be necessary in children. Fluid replacement with 0.9% normal saline or Hartmann's solution **can** be commenced if the patient is cannulated, but **must be** started for burns >1/4 TBSA and/or if time to hospital is more than one hour from time of injury. A guide to fluid volumes is 1000ml for adult and 10ml/kg for children <15 years old. Fluid therapy should ideally be warmed (45-48).

Analgesia

As previously indicated, analgesia is best accomplished by cooling and covering the burned area. Intravenous opiate or opioid can be titrated to make the adult patient more comfortable and should be accompanied by an anti-emetic. In children intranasal diamorphine is an option that may be considered. Entonox should only be used when these options are unavailable as it may be difficult to administer, has varying efficacy and decreases the oxygen delivery (2,13,36,49-52).

Transport

All treatment should be carried out with the aim of **reducing** on-scene times and delivering the patient to the appropriate treatment centre. This should be the nearest appropriate accident and emergency department (A&E), unless local protocols allow direct transfer to a burns facility.

Communication with A&E should give the standard information (age, gender, incident, ABC problems, relevant treatment, ETA) (1, 53-60).

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