CLINICAL UPDATE

27th January 2022

Burns

This Clinical Update surrounds the treatment of burns and how, as a Trust, we are evolving and standardising treatment from call to handover. In general, we attend a small number of burns each year, but the potential severity means we need to ensure our treatment is prompt and effective to give the best, evidence based, care our patients deserve. To aide your treatment, a Burns Action Card (BAC) has been developed and can be found within the burns pack on the vehicles within the Trust. The information in this update is based on the medical papers used to create the BAC and are referenced there. This clinical update will aim to address how to use the card and some special circumstances that require further treatment.

As with all scenes we attend, staff safety is the priority, and this is just as important when attending a burn injury. In some cases, it is safest to delay attendance, structural fires and explosions for example. In some, it is vital to don appropriate Personal Protective Equipment (PPE), such as respiratory and eye protection at a chemical burn.

Once you have made contact with the patient then, as per any other patient, undertake an R<C>ABC assessment to identify time critical illness/injury. The BAC gives guidance on how to treat both time critical and non-time critical patients. Prior to your arrival on scene, the call handler will have given instructions (as of October 2021) that if possible, the burn is cooled by placing the injury under running tap water for **20 minutes**. This 20 minute cooling process can happen up to three hours after the burn and, if the patient is in a remote location, may not have happened before EEAST arrival. As per BAC, if feasible, cool the burn under tap water for 20 minutes **OR**, where tap water is not available, use the Water-Jel dressings provided in the burns pack and place these directly onto the wound for up to 20 minutes. Once the burn has been cooled for 20 minutes, either by water or by Water-Jel dressings, then this treatment can be removed, and a layer of Polyvinyl film (cling film) can be place along the wound in the same fashion. It is worth noting at this point that if the Fire and Rescue Service is in attendance, **DO NOT** use water that has come from the appliance's tanks. This water contains pseudomonas aeruginosa, a multi-drug resistant bacteria that can cause a near impossible infection to treat and can lead to sepsis and ultimately death.

The BAC gives guidance on measuring the Total Burn Surface Area (TBSA) and has a diagram of the Wallace Rule of 9's to aid with assessment. Measurement of TBSA has had the measurement of erythema deliberately included in this assessment. If left untreated burns can, and will, progress and destroy more tissue. By including erythematous burns in the TBSA calculation it is intended that all burns can be assessed and treated with minimal risk of under-treatment. Effectively the risk of over-treatment is significantly outweighed by the risks of under-treating a burn.

If a patient has burn injuries of >20% TBSA then there is a need for fluid resuscitation based on weight and TBSA. The BAC provides simple guidance on the amount of fluid given over the first hour of treatment. The administration of giving fluids should not impact on the time taken cool a burn and leave scene and should, ideally, be done on route to the receiving hospital.

In cases where a hand or foot have been injured then care should be taken to webbing injures. Webbing injuries are where the fingers, or toes, become “stuck” together. You **must not** attempt to separate the digits in the pre-hospital. It is acceptable to simply ask the patient of they can spread their fingers or toes in an effort to separate them, if they can do this then dress the finger/toes individually to prevent a further webbing injury. If they cannot spread their digits then dress appropriately and transport to hospital. It is likely they will need extensive surgery to “undo” the webbing.

All burns patients should be assessed for inhalation injury, especially if the injury has a history of an enclosed space. Signs of this can include burns to the face or soot in the nasal or oral cavities. These patients should be treated as time critical as the burn can progress to present a significant airway obstruction due to swelling. Pulse oximetry can be unreliable in patient with inhalation injury and as such may give a false reading of oxygen in the blood. Patients with a suspected inhalation of fumes or particulates should be assumed to have Carbon Monoxide poisoning until proven otherwise and treated with high flow oxygen and pre-alerted to the nearest emergency department.

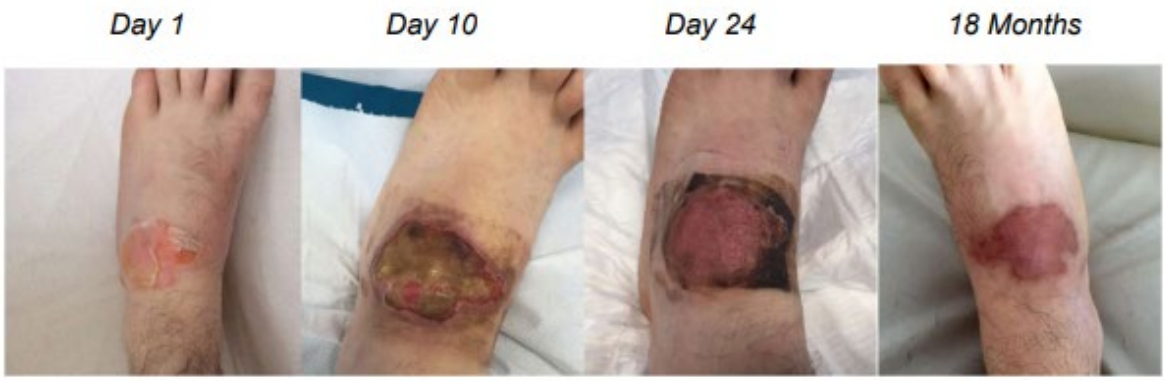
Chemical burns present a situation that calls for different action from staff. As always staff safety is of primary importance and further PPE may need to be donned such as a mask and goggles/visor. It is possible that the chemical cannot be identified prior to being assessed in hospital, this heightens the importance of transportation to hospital. As per the BAC, assess and address R<C>ABC concerns and identify if the chemical is simple wet or dry. If wet then irrigate for as long as clinically plausible, ideally 20 minutes, and convey to hospital. If dry, then move to an open-air area environment, away from the source and brush off with paper towels, once complete then transport to hospital. It is imperative that the receiving hospital is notified prior to the arrival of a chemical burn, especially if the chemical is unknown. This warning will give the hospital time to prepare for decontamination and protect their staff and patients.

Patients who have ingested a corrosive substance may have burns untreatable in the pre-hospital environment. Advise on the symptoms and management of these can be sought from the National Poisons Information Service (ToxBase) but will always need prompt conveyance to hospital.

If a patient has been burnt by an electrical source, then it is of vital importance, for everyone’s safety, that all sources of uncontrolled electricity are disconnected prior to any treatment of the patient. This may not be possible for EEAST staff to achieve, and

guidance may need to be given by the fire service or another official on scene. Once it is safe to approach, treat the patient in line with JRCALC trauma guidelines.

Do not underestimate the importance of your treatment, we often see burns in the early stages and can, therefore, not fully appreciate how burns can progress and how devastating they can be, both physically and mentally, for the patient. For severe burns the patient can expect weeks, if not months or years, of treatment and rehabilitation and may be scared for life. The treatment we provide in those first minutes has a significant impact on long term outcome. To illustrate this, below is a series of pictures from a paper by Patrick Bourne, showing the progression of a burn caused by boiling water:



The BAC is there to support you the treatment of burns and aide your memory with some of the rarer skills required from clinicals. If in doubt, the Clinical Advice Line and Critical Care Desk can support in your decision making and can offer further support and, if required, resources (HART/HEMS).