



## First Aid Position Statement

There is variation in the first aid advice currently available for management of burns and scalds<sup>i, ii</sup>. Adequate and appropriate first aid has shown to impact on burn outcome, preventing further tissue damage and subsequent morbidity.<sup>iii</sup> A nationally agreed consensus is required regarding the optimum first aid for burns and scalds that is practical and effective to perform in the home or pre-hospital environment. The following recommendations are based on evidence from a formal systematic literature review.

### 1. Stop the burning process:

- Remove person from the source of the burn if safe to do so.
- Electrical injury sources should be isolated before rescue.
- Care should be taken to avoid cross-contamination from chemical injury sources.
- Burning clothing should be extinguished using water or the 'drop and roll' method.<sup>iv</sup>

### 2. Cool the Burn:

- Cool the burn immediately with running tap water for 20 minutes.<sup>v, vi, vii</sup>
- Cooling is beneficial for up to three hours after injury, and should still be performed, even if there is a delay in accessing a method of cooling.<sup>vi, viii</sup>
- Keep the patient, especially children, as warm as possible during cooling: 'cool the burn but warm the patient'.<sup>ix</sup>

### 3. Clothing and jewellery:

- Clothing and jewellery should be removed immediately.<sup>viii, x</sup>
- Clothing or jewellery that is melted or firmly adherent to the wound should be left undisturbed, but this should not deter from cooling the burn wound<sup>viii, xi</sup>

### 4. Covering the wound:

- Cover the cooled burn with cling film, or where this is not available, a clean cloth or non-adherent dressing.<sup>xi</sup> Chemical injuries must be first fully decontaminated.
- Cling film should be applied loosely, but not on the face. Burn gel wraps may be used to provide analgesia, but only after adequate cooling has occurred as they are not as effective in removing heat from the wound<sup>ii</sup>

#### **'Cool, Call and Cover':**

1. **Cool** the burn with **running cold tap water** for **20 minutes** and **remove** all clothing and jewellery.
2. **Call** for help – 999, 111 or local GP for advice.
3. **Cover** with cling film or a sterile, non-fluffy dressing or cloth. Make sure the patient is kept warm.

## Evidence Summary

### Cooling the burn wound:

*Temperature:* Cuttle in 2008 demonstrated the effects of cold running water on a porcine model of partial thickness burn injury. Running water of 2 or 15°C applied for 20 minutes post burn resulted in better outcomes compared to a control regarding healing and appearance at six weeks post injury. Although 2 °C provided marginally improved outcomes over 15°C, the risk of hypothermia is greater in children. <sup>iv</sup> Guidelines set by the Department of Health require the temperature of domestic tap water in the UK to be below 20°C, making the UK cold water supply an adequate method of cooling. <sup>xi</sup>

*Duration and delay:* Bartlett in 2008 demonstrated that applying cold running tap water to the burn for 20 minutes resulted in significantly less histological damage compared to cooling of five, ten or 30 minutes. <sup>iv</sup> Cuttle showed higher re-epithelialisation rates and decreased scar tissue compared to untreated controls with this duration of cooling. <sup>vi</sup> Immediate cooling is always recommended to best limit tissue damage and to alleviate pain <sup>vi, vii</sup>, however, two studies have also demonstrated beneficial outcomes even when cooling was delayed by one to three hours. <sup>vi, vii</sup> A recent review suggests the effects of cooling have more to do with altered gene expression than the simple removal of heat. <sup>xiii</sup>

### Clothing and jewellery:

Clothing can retain heat, particularly in hot water scalds, and so should be removed as soon as possible. <sup>xi</sup> Synthetic materials such as nylon can melt and adhere to the skin and should be handled by experienced personnel. Any loss of skin with adherent clothing indicates non-viability of that skin. Jewellery should be removed to prevent constriction around swollen limbs or digits following burn injury which could threaten vascular supply to the distal tissues. <sup>ii</sup>

### Covering the burn wound:

Cling film provides a non-adherent, fluid resistant and transparent dressing; it reduces pain from air exposure and allows for medical assessment without its removal. <sup>ii</sup> If it is unavailable, any clean, sterile dressing or cloth can provide an adequate substitute. <sup>vii</sup> Creams, butter, ointments, oils, milk and toothpaste should not be used. <sup>xii</sup> Gel wraps, and burn gel products, can be used for comfort, but are not a substitute for cooling with cold running tap water. <sup>ii</sup> Plain gels should be used, unadulterated with Aloe Vera, tea tree oil etc to avoid the risk of allergic reaction.

## References

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- <sup>xiii</sup> Wright EH, Harris AL, Furniss D. Cooling of burns: Mechanisms and models. *Burns* 2015, (41): 882–889