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Letter to the Editor

## “Mixed messages” — Ongoing confusion with hydrogel dressings in burn 1st aid. Commentary on the trial report from Holbert et al. 2018/19

In, “Effectiveness of a hydrogel dressing as an analgesic adjunct to first aid for the treatment of acute paediatric thermal burn injuries: study protocol for a randomized controlled trial”, (Trials 2019 20:13), Holbert et al. hypothesize cooling with hydrogels will lead to better healing in paediatric burn patients than clingfilm covering [1].

Despite the worthy goal however, the report describing the trial which commenced in late 2017, appears to demonstrate misunderstanding of the role of hydrogel burns dressings in the pre-hospital and acute care setting.

Firstly, if one accepts cooling reduces pain in burns [2] (Burnaid<sup>®</sup> 90% water) then surely the most effective form of cooling—running water, should be employed as the primary intervention given the limited support for HBD in the literature [3–7] and this could be done without removing clingfilm eliminating the need for dressings changes and preventing exposure of the wound—both known contributors to burn pain.

Well-timed (but still underutilized) analgesia from paramedics who now carry multiple agents including ketamine, would provide a second tier of analgesic therapy before application of the very effective “DITTO” instrument [8] and further hospital analgesia and sedation aimed at achieving the same goal [9–11].

The trials 60 min of cooling, which includes 20 min. “pre-cooling” — possibly a confounding variable, surely increases hypothermia risk contradicting the authors own remarks; “After adequate CRW the burn must be covered to protect the wound, reduce pain and prevent hypothermia”. This sends mixed messages to responders encouraged to present normothermic burn patients to the ED as a matter of the highest priority [12].

That the authors state; “Burnaid’ (i.e. HBD) . . . .” is recognised as an adjunct to standard 1st aid” seems to provide an example of the ongoing misunderstanding of the purely functional role of dressing in 1st aid currently taken by clingfilm which forms part of a model where cooling is strictly controlled to a single fixed period reducing hypothermia risk and aiding delineation of roles between lay first responders and ambulance paramedics prior to procedural intervention [13].

The authors elaborate further claiming; “The proposed intervention is considered to be part of standard pre-hospital care and is currently used by Queensland Ambulance Service. . . .”, also suggesting the model and inconsistencies seen in QAS practices will benefit from trial data and lead to more robust underpinnings for this HBD approach going forward; “The difference in rates of use (of HBD) between regions (in Queensland) further exemplifies the need for evidence-based guidelines for the use of hydrogel dressings in burn patients”, and also state;

The described hybrid model with HBD cooling is superimposed over the dressing element of burn 1st aid to provide “adjunctive pain relief”, is entirely at odds with the prevailing methodology in burn 1st aid. Indeed, the suggestion the QAS/trial HBD model can be considered a “default” is not reflected by the myriad of approaches seen in EMS practices none of which have a supporting basis in evidence [6]. The authors also appear to have failed to note current QAS burn guidelines for paramedic practice (CPG’s), in fact, restricts HBD use in paediatric burns to injury below 10%TBSA — well outside protocol inclusion criteria limit of 20% TBSA [14] while the manufacturers themselves, including Burnaid<sup>®</sup>, now only recommend their product line for use in “minor burns” [15], a delineation without universally accepted parameters, and a pale shadow of the historically grandiose claims of hydrogel marketers in the past who saw the technology as “revolutionizing” pre-hospital burn 1st aid [16] and the option of choice for all sizes and depths of thermal injury [17,18].

Thus, the suggestion Burnaid can be used “as an effective adjunct to burn 1st aid” . . . . “following standard 1st aid” implicit to the pre-hospital sector does not appear to be representative of any claim outside those made by the company itself and the report authors.

In respect of references in the report, there appears to be no explanation as to why several important studies [19] are notated out of context while references of hydrogel derivatives not employed in pre-hospital or in the acute care setting of the trial are cited, for example, Burd [19].

As the only systematic review of HBD use in burn 1st aid in the literature, the systematic review by Goodwin et al. is cited only to describe the products basic functions [6] while the study by Allison which described the muddled use of HBD in ambulance and fire services in the UK as a barrier to standardisation, is instead cited only to support the contention “The use of hydrogel dressings as an acute treatment for burn injuries has increased in the pre-hospital setting over the past decade” suggesting growing popularity [20].

Rather, popularity for HBD in ambulance has waned significantly in recent years as more and more services adopt the consensus position of burns advisory agencies such as the BBA and ANZBA [21,22] although much work remains to unravel the distortions in practice created by unregulated adaptations of this product.

For example, in Australian ambulance no-one uses HBD as 1st line management. Some apply HBD in a dressing role with caveats e.g. TBSA, (Western Australia [23], Northern Territory [24], Queensland [16]), one applies HBD as dressing after cooling without caveats (ACT [25]), 2 states use HBD as a “no water” contingency (South Australia — PDF available

from the author), New South Wales [26]) whilst 2 states do not use HBD in any role. (Victoria [27], Tasmania [28]).

In the US, many state EMS guidelines recommend a “dry dressing only” approach reflecting the almost paranoiac concern with hypothermia in that jurisdiction [13].

As an advocate for establishment of a standard model of burn 1st aid, I find the assertions and confusion of the Holbert unhelpful while the urgent need to reach this goal remains unrealized. Current thinking must move away from marketed “solutions” to clinical problems and reflect best care underpinned by evidence and better-informed interpretations of practice.

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