

# Water first aid is beneficial in humans with burn injuries: evidence from a Bi-National cohort study

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Based primarily on animal studies, recommended first aid after a burn injury is water cooling for 20 minutes within three hours. This was a prospective cohort study of burn patient registry data collected between 2009 and 2012. Information included first aid prior to admission to a dedicated burn service, patient demographics, injury severity markers, and in-hospital interventions. Four outcomes related to injury severity were investigated. These were total hospital length of stay, admission to ICU, whether graft surgery occurred, and death. Doubly robust analysis based upon propensity scores was used to control for confounding and to estimate the strength of association with first aid. Cooling was provided before admission for 68% of patients, with twenty minutes or more duration for 46%.

The results indicated a reduction in burn injury severity associated with first aid and improved outcomes. For ICU admission the probability fell by 0.084 (48%) from 0.175 ( $p<0.001$ ), for graft surgery the probability fell by 0.070 (13%) from 0.537 ( $p=0.014$ ), hospital length of stay (LOS) fell by 2.27 days from 12.9 days ( $p=0.001$ ) and for death the probability fell by 0.003 from 0.009 ( $p=0.39$ ). All outcomes except death showed a dose-response relationship with the duration of first aid.

This study suggests a benefit from cooling water first aid. Efforts to promote first aid knowledge are recommended to limit the consequences and costs that arise from these injuries.

## Key Words

Acute burn, first aid, pre-hospital, outcomes.

## Nominated Stream for Oral Presentations

- Medical
- Nursing
- Allied Health
- Scientific

## Nominated Stream for Poster Presentations

- Care
- Prevention
- Research