

Children with burn injuries covering 60 percent or more are at higher risk of complications and death

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New research published Online First by The *Lancet* shows that children with burn injuries are much more likely to suffer severe complications or die when the burns cover 60% or more of their total body surface area (TBSA). As a result, the authors recommend that all children with this level of injury should immediately be transferred to specialist burns units and treated with increased vigilance and improved therapies. The Article is by Dr Marc Jeschke, Ross Tilley Burn Centre, University of Toronto, Sunnybrook Research Institute, ON, Canada, and Dr David N Herndon, Shriners Hospital for Children and University of Texas Medical Branch, TX, USA colleagues.

Previous research in the 1990s suggested that a critical threshold of burns covering 40% or more TBSA resulted in increased risk of complications and death. However, during the past 10 years, additional improvements in care have further reduced [morbidity](#) and improved [survival rates](#) and outcomes after extensive burn injuries. Novel drug treatments, new grafting techniques and materials, and life-support systems combined with improved sensitivity of monitoring methods have all led to improved care after severe burn injuries.

In this study, the authors assessed 952 paediatric burns patient aged between 6 and 10 years treated at the Shriners Hospital for Children Galveston, TX, USA between 1998 and 2008. The patients had burn size of at least 30% TBSA and were stratified into 10% increments, ranging

from 30% to 100% TBSA. Two thirds of all patients were boys, a proportion that rose to 82% in the most severely burned group (90-100% TBSA).

A total of 123 (13%) of the children died (increasing from 3% [five of 180] in the 30-39% TBSA group to 55% [28/51] in the 90% TBSA group;). 154 (16%) developed multiorgan failure (increasing from 6% [10] in the 30-39% TBSA group to 45% [23] in the 90-100% TBSA group). 89 children (9%) had [sepsis](#) (increasing from 2% [3] in the 30% TBSA group to 26% [13] in the 90-100% TBSA group). Burn size of 62% TBSA was a crucial threshold for mortality, with children with burns at this size and above 10 times more likely to die than those with burns smaller than this threshold. Mortality was nearly equal among the groups with burns of 60% TBSA or below.

The authors were able to demonstrate that the presence and/or concentration of a wide variety of established and novel biomarkers for organ function, metabolism, and inflammation differs widely depending on whether [children](#) have burn size above or below this critical threshold. Vital signs such as liver and kidney function were monitored to help come to these conclusions.

The authors conclude: "We have established that, in a modern paediatric burn care setting, a burn size of roughly 60% TBSA is a crucial threshold for post-burn morbidity and mortality. On the basis of these findings, we recommend that paediatric patients with greater than 60% TBSA burns be immediately transferred to a specialised burn centre. Furthermore, at the burn centre, patients should be treated with increased [vigilance](#) and improved therapies, recognising the increased risk for poor outcome associated with this burn size."

In a linked Comment, Dr Ronald G Tompkins, Massachusetts General Hospital and Harvard Medical School, Boston, MA, USA, says: "It is

time to think beyond survival to survivors' quality of life. Clinicians have traditionally assigned their own values to the quality of a burn patient's survival; however, the patient and their family should be allowed to contribute their views of how the injury has affected their lives. Recent articles have validated burn-specific outcomes instruments to measure quality of life after [burn](#) injury from the patient's and family's perspectives. In future, use of such post-burn injury questionnaires should be broadened to drive future strategies not only to ensure survival, but also to improve quality of life for those who do survive."

More information:

[http://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(11\)61345-7/abstract](http://www.thelancet.com/journals/lancet/article/PIIS0140-6736(11)61345-7/abstract)

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