



# BuRN-Tool

Diagnostic accuracy of a clinical prediction tool (BuRN-Tool) to identify maltreatment associated with burns in children

## Project Summary

V1.0



**Study Title:** Diagnostic accuracy of a clinical prediction tool (BuRN-Tool) to identify maltreatment associated with burns in children

### **What is the BuRN-Tool?**

The BuRN-Tool is a Clinical Prediction Tool (CPT) to aid clinicians to identify maltreatment in children who are seen in the Emergency Department (ED) with burns.

The BuRN-Tool is a validated CPT of seven simple indicators. Each has a numerical score that when summed produce a total score between 0-12. A score of  $\geq 3$  has an increased likelihood of maltreatment (neglect or physical abuse), and prompts the healthcare professional to follow local child safeguarding procedures.

### **Benefits for the public and patients**

At least 1 in 10 children who sustain burns do so as a result of maltreatment. The BuRN-Tool is a simple CPT that can be applied easily in ED to recognise these children so that support can be provided for them and their families to optimise their future health and wellbeing. If effective the BuRN-Tool has the potential for widespread introduction across the NHS. Child abuse and neglect are ‘Adverse Childhood Experiences’ (ACEs) and strongly associated with future violence victimisation and lifelong adverse health and poor opportunities. The future health and wellbeing of the public will benefit if ACEs are recognized and acted upon early.

### **Study Aim**

To investigate the diagnostic accuracy and utility of the BuRN-Tool. The study will evaluate whether the BuRN-Tool improves the recognition of children who require a safeguarding action from Children’s Social Care (CSC).

The study has full ethical approval (Ethics: 15\_WA\_0259 and CAG: 15.CAG.0203) and the approval of the Association of Directors of Children’s Services for centres in England to collect local Children Social Care (CSC) outcome data. We have written to the Directors of Local Authorities that will be involved in the study to inform and discuss the best way to collect the research outcome data and discuss any concerns that they may have regarding the study.

### **Investigation Plan**

A two-year controlled before and after study in five intervention centres. Children from a sixth centre that does not receive the intervention will act as normative controls to monitor background trends over time.

### **Population**

The target population is children <16 years old attending the ED with burns (excluding house fires). For 9 months, clinicians in the five intervention centres and one control site will collect demographic

and clinical data during routine assessment of an estimated 1000 children who attend with a burn using a standardized clinical assessment; the BaSAT (Burns and Scalds Assessment Template) before the BuRN-Tool is introduced at Cardiff and Vale University Health Board, Royal Gwent Hospital Newport, Morrision Hospital Swansea, Bristol Royal Hospital for Children, Birmingham Children's Hospital, the North Manchester General Hospital and Rochdale Infirmary.

### **Intervention**

The BuRN-Tool will then be added to the BaSAT<sup>1</sup> and applied to a further 1000 children in the five intervention centres. The clinicians will derive a total score for each child and take the appropriate safeguarding action. The normative control centre will collect data using the BaSAT throughout the data collection period in an attempt to identify unforeseen baseline trends over time.

### **Primary Outcome**

The primary outcome will be the safeguarding action taken by Children's Social Care (CSC) (e.g. assessment under the Children Act (or Social Services and Wellbeing Act in Wales), or onward referral to other agency for family support).

We will compare safeguarding action taken by CSC before and after the BuRN-Tool is introduced in the five intervention centres. These data will be sought for all children from ED records and Local Authority CSC departments six months before and after the original presentation to ED.

### **Secondary outcomes**

The diagnostic accuracy of the BuRN-Tool measured by actions taken by clinicians with respect to individual BuRN-Tool scores categorised into:

- discussed with senior colleague
- referral to health visitor
- discussed with hospital safeguarding team or
- referred to CSC for assessment.

### **Process Evaluation**

Qualitative data will be collected from parents, ED staff, health visitors and CSC staff about the benefits and limitations of the BuRN-Tool in clinical practice. Qualitative data will also be taken from sources in both primary and social care to explore whether the BuRN-Tool is perceived as beneficial.

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<sup>1</sup> Kemp, A.M., Hollén L., Emond, A.M., Nuttall, D., Rea, D. & Maguire, S. (2018) **Raising suspicion of maltreatment from burns: Derivation and validation of the BuRN-Tool.** *Burns* Volume 44, Issue 2, pp.335–343. DOI: <https://doi.org/10.1016/j.burns.2017.08.018>

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