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Conference Abstract

## Mersey Burns App - Assessing major burns

*Rowan Pritchard Jones, St. Helens & Knowlsey NHS Trust, United Kingdom*

*Paul McArthur, St. Helens & Knowlsey NHS Trust, United Kingdom*

*Chris Seaton, Dept. Computer Science University of Manchester, United Kingdom*

Correspondence to: **Rowan Pritchard Jones**, St. Helens & Knowlsey NHS Trust, United Kingdom, E-mail: [rowan.jones@sthk.nhs.uk](mailto:rowan.jones@sthk.nhs.uk)

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## Abstract

**Introduction:** Accurate assessment and resuscitation of a major burn injury is a difficult task for inexperienced clinicians, yet essential for patient outcome. The commonly used Lund and Browder Chart (LB) offers an accurate tool but is the start of a series of 19 calculations required to begin fluid resuscitation at the bedside.

'Mersey Burns' (MB) is an Application (App) for use on smartphones and tablets designed to improve the assessment and resuscitation of adults and children following burn injury. The App allows clinicians to shade the burn pattern onto the screen in real time, and then generate detailed fluid protocols as well as an email that can be sent to a receiving Burns Unit. The study evaluated the effectiveness of this technology compared to current paper based methods (LB).

**Methods:** Under ethical approval, Senior Undergraduate Medical Students with no previous experience of burns management were recruited from the Liverpool University. Students were given a one-hour lecture on burn management and fluid resuscitation involving demonstrations of both the LB and Mersey Burns application. They then assessed a simulated patient with 20% Total Body Surface Area (TBSA) burn devised by Whiston Hospital Prosthetic Department. Students then assessed the size of burn and calculation fluid resuscitation timed using both LB with a calculator, and MB. Students completed surveys assessing ease of use, confidence in output, preference in the emergency setting, speed, accuracy, ease of calculation and ease of shading of the two methods. Statistical analysis comprised one-way-ANOVA, student t-tests and chi-square tests.

**Results:** 30 students took part. The variation in TBSA between students was similar between LB and MB ( $p=0.39$ ).

Average time of calculation was 11.8 minutes for LB and 4.6 minutes for MB ( $p<0.05$ ). Total fluid volumes, were more likely to be correct using MB than LB ( $p<0.05$ ). Students were more confident in the output, found calculations easier to perform, found overall use easier, felt accuracy to be superior, found ease of shading to be superior and felt that calculations were quicker using MB ( $p<0.05$ ).

**Discussion and Conclusions:** Early, accurate assessment of major burn injury saves lives. The challenge is to support doctors in Emergency Departments, who encounter serious injuries

infrequently, to rapidly assess, treat and transfer. Our solution is to harness agile technology using tablets and smartphones to manage these patients and share the details with a receiving Burns Unit by email. Mersey Burns is the first UK Healthcare App carrying a CE Mark from MHRA. It allows fluid calculations to be performed more quickly and accurately than Lund and Browder charts when used by burns care naive medical students. Students found the application to be easier, quicker and more accurate to use and would prefer to use it in the emergency setting. This suggests a useful role for the App in the care of burns patients by inexperienced staff providing both confidence and timely delivery of care. It further highlights the novel use of technology to train the next generation of burns care clinicians.

## **Keywords**

**burns; mobile; app; research; emergency**

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## **PowerPoint presentation:**

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