

# Recently published burns research & news: 25<sup>th</sup> September 2024

Dear Northern Burn Network member,

In association with St Helens and Knowsley NHS Teaching Hospitals NHS Foundation Trust Library and Knowledge Service, please find attached your fortnightly burns and plastic surgery research and news update. This is a **selection** of the most recently published research on topics we think you will find of interest.

*Professor Kayvan Shokrollahi*

on behalf of the Northern Burn Operational Delivery Network, NHS England

1. Todor, LA. et al. (2024) **Retrospective analysis of pathogens for guided creation of an EMPIRIC antibiotic prEscribing pathway (EMPIRE)**. *Journal of burn care & research: 45(5)*, pp. 1103–1109. <https://doi.org/10.1093/jbcr/irae069>

## **Retrospective study, USA**

*The objective of this study was to evaluate the susceptibilities of pathogens isolated from cultures within the first 7 days of admission to the burn center and in the absence of healthcare-associated infection risk factors (HAIRF) to determine if current empiric antibiotics can be narrowed for refinement of an empiric antibiotic prescribing pathway according to the suspected source. A 3-year sample of patients and cultures was utilized in hopes of obtaining at least 30 isolates of the most common pathogens and their respective susceptibilities. A total of 268 clinically relevant (e.g., deemed infectious, versus colonization) pathogens were included in the final sample with sources including wounds, respiratory, blood, urine, and bone. Of the 268 pathogens included, 45% were Gram-negative and 69% of all pathogens were isolated from wound cultures. The existing empiric pathway, vancomycin plus cefepime, covered 98% and 84% of all Gram-positive and Gram-negative pathogens, respectively. In patients without HAIRF, coverage rose to 98% and 90%, respectively. Initial use of vancomycin and cefepime remains adequate for pathogens isolated within 1 week of admission in patients without HAIRF. For pneumonias, a narrower spectrum beta-lactam would not sufficiently cover respiratory pathogens isolated within the first week of admission. Regarding early wound infections, difficult-to-treat pathogens remain as a rare isolate of wound cultures within 1 week of admission.*

2. O'Neil AM. et al. (2024) **Mobilization with femoral catheters in the burn ICU: A retrospective review following change in practice guidelines**. *Journal of burn care & research: 45 (5)*, pp. 1746-1751. <https://doi.org/10.1093/jbcr/irae082>

## **Retrospective review, USA**

*Femoral catheters are commonly viewed as a barrier to Burn ICU mobility progression due to anatomical location and potential risk of complications. The purpose of this review was to examine outcomes and complication rates following implementation of femoral catheter mobilization guidelines, as well as determine safety and feasibility of mobilization with femoral catheters in place within the burn population. A retrospective review was completed on 17 patients prior to and following the implementation of new femoral catheter mobility guidelines, 34 patients total. Burn therapy notes were reviewed for burn admissions with at least 1 femoral catheter in place, including arterial, central, and dialysis catheters. Demographic data, admission statistics, line placement timelines, and active mobility achieved during therapy sessions were recorded for both the nonmobilization group (NMG) and mobilization group (MG). The 34 patients reviewed had 99 total lines placed (30 NMG, 69 MG). Change in mobility protocols for the MG resulted in more therapy sessions ( $n = 516$  vs  $281$ ) and a significant increase in active mobility sessions ( $n = 83$  vs  $5$ ,  $P < .001$ ), including 146 total mobility activities such as transitions to chairs, tilt table, sitting edge of bed, standing, active chair transfers, ambulation, and cycle ergometry. No catheter-associated adverse events occurred during active mobility sessions and no complications were associated with participation in mobility. This review supports that the presence of femoral catheters alone should not limit the progression of mobility interventions with the use of clinical judgment in specialty-trained burn therapists.*

3. Greenhalgh, DG. & Kiley, JL. (2024) **Diagnosis and treatment of infections in the burn patient**. *European burn journal: 5(3)*, pp. 296-308. <https://doi.org/10.3390/ejb5030028>

## **Review article, USA**

*Infection is very common in burn patients because they lose the primary barrier from microorganism invasion, the skin. While there are attempts to prevent infections, topical antimicrobials and systemic prophylaxis tend to lead to more resistant organisms. After the initial resuscitation, the most common cause of death is from sepsis and multiple organ dysfunction syndrome. The diagnosis is difficult in the burn population because the constant exposure from the open wound leads to an inflammatory response that leads to persistent hypermetabolism. This paper reviews the current understanding and treatment of infection and sepsis in burns.*

4. Coleman, G. et al. (2024) **Working conditions for burns resident doctors—Better now than ever?** *European burn journal*: 5(3), pp. 309-320.

<https://doi.org/10.3390/ejb5040029>

#### Qualitative research , UK

*Background:* The work and life of a resident (or “junior”) doctor has changed dramatically over the past 50 years. Descriptions of historic working conditions are usually anecdotal and tinted with nostalgia, but do today’s burns and plastic surgery doctors feel working conditions have improved or declined over the last 50 years, and does this have an impact on recruitment and retention? *Methods:* An interview was conducted with a retired surgeon who, in 1970, worked as a house surgeon (Year 2 doctor equivalent) in a burns unit for the pioneering burn surgeon Mr. Douglas MacGregor Jackson. This was coupled with a literature review to objectively assess working conditions in that period for doctors. The information generated from this produced a poster summarizing the key differences between these periods. This was presented to the current medical work force, and a survey was conducted to determine their preferences for working conditions. *Results:* The questionnaire was completed by 68 doctors of mixed grades and backgrounds. The majority of respondents (60%) would choose to work in today’s burns centres. There was a significant difference between the mean age of respondents’ preference of working conditions in 1970 (37 years) and those preferring today (31 years) ( $p = 0.035$ ). *Conclusions:* Multiple changes in the working conditions and the management of burns patients were identified. The majority of those who were asked consider today’s working conditions to be better than those of the past. However, more senior clinicians tended to prefer the conditions of 1970 over the present day, suggesting a generational shift in opinion..

5. Gordon, T. et al. (2024) **Long-term renal function after burn-related acute kidney injury with continuous renal replacement therapy.** *Burns*: 50(7), pp. 1762-1768.

<https://doi.org/10.1016/j.burns.2024.05.019>

#### Retrospective cohort study, Canada

Acute kidney injury (AKI) is a common complication of severe burn injury and is associated with significant morbidity and mortality. Continuous Renal Replacement Therapy (CRRT) is the preferred treatment for stage 3 AKI due to severe burn. This retrospective cohort study at a single institution aimed to examine the long-term renal outcomes after discharge of burn survivors who underwent CRRT during their ICU stay between 2012–2021 due to burn-related AKI, hypothesizing a return to baseline renal function in the long term. Among the 31 patients meeting inclusion criteria, 22 survived their burn injuries, resulting in a 29 % mortality rate. No significant disparities were observed in demographics, comorbidities, burn characteristics, or critical care interventions between survivors and non-survivors. Serum creatinine and eGFR values normalized for 91 % of patients at discharge. Impressively, 91 % of survivors demonstrated a return to baseline renal function during long-term (>3 years) follow-up. Furthermore, only 18 % underwent dialysis after discharge, primarily within the first year. Cumulative mortality rates were 18.2 %, 22.7 %, and 31.8 % at 1, 3, and > 3 years after discharge, respectively. Causes of death were primarily non-renal. These results suggest that burn-related AKI with CRRT results in lower rates of conversion to ongoing renal dysfunction compared to general ICU cohorts. Despite limitations, this study contributes vital insights into the underexplored issue of long-term outcomes after discharge in this patient population.

6. Tapking, C. et al (2024). **Negative pressure wound therapy in burns: a prospective, randomized-controlled trial.** *Burns*: 50 (7), pp. 1840-1847.

<https://doi.org/10.1016/j.burns.2024.04.005>

#### RCT, Germany

**BACKGROUND:** Negative-pressure-wound-therapy (NPWT) has become a widely used tool for the coverage and active treatment of complex wounds, including burns. This study aimed to evaluate the effectiveness of NPWT in acute burns of upper and lower extremities and to compare results to the standard-of-care (SOC) at our institution.

**METHODS:** Patients that were admitted to our institution between May 2019 and November 2021 with burns on extremities between 0.5 % and 10 % of the total body surface area (%TBSA) were included and randomized to either NPWT or SOC (polyhexanide gel, fatty gauze, and cotton wool). Treatment was performed until complete wound healing. Patients that required skin grafts, received additional NPWT after grafting independent on the initial group allocation.

**RESULTS:** Sixty-five patients suffering from burn injury between May 2019 and November 2021 were randomized into treatment with NPWT ( $n = 33$ ) or SOC ( $n = 32$ ); of these, 33 patients (NPWT) and 28 patients (SOC) had complete data sets and were included in the analysis. Both groups were similar regarding age ( $39.8 \pm 13.7$  vs.  $44.8 \pm 16.2$  years,  $p = 0.192$ ), total burn size ( $3.1 \pm 2.3$  vs.  $3.4 \pm 2.8$  %TBSA,  $p = 0.721$ ) and treated wound size ( $1.9 \pm 1.2$  vs.  $1.5 \pm 0.8$  %TBSA,  $p = 0.138$ ). We found no differences regarding healing time ( $11.0 \pm 4.9$  vs.  $8.6 \pm 3.8$ ,  $p = 0.074$ , and significant differences in a number of dressing changes throughout the study ( $2.4 \pm 1.5$  vs  $4.2 \pm 1.9$ ,  $p < 0.001$ ). The Kaplan-Meier time-to-event analysis exhibited no statistically significant difference in the time to healing or skin grafting ( $p = 0.085$ ) in NPWT group compared with SOC group. The median time to healing or skin grafting was 10(8-11) days for NPWT and 9(7-11) days for SOC. The hazard ratio for healing or skin graft was HR= 0.64(0.38-1.08). The results of the time-to-event analysis as well as the Kaplan-Meier curve on the PPS confirmed this result. We found no differences in secondary surgical operations 15.2 vs 21.4 % pain or functional outcomes.

**CONCLUSIONS:** In this study, we found no significant difference between the two groups in terms of time to detect wound healing. We also found no difference regarding further operations for wound closure, pain and/or scarring. However, dressing changes were significantly less frequent for patients that were treated with NPWT, which may be a psychological and logistical advantage.

7. **NEWS: BAPRAS Congress 2025**

<https://www.bapras.org.uk/professionals/training-and-education/bapras-events/bapras-congress-2025>

Save the date: 3-5<sup>th</sup> December 2025

ICC Belfast

8. **NEWS: BAPRAS Members Wellbeing Weekend**

<https://www.bapras.org.uk/professionals/training-and-education/bapras-events/members-wellbeing-weekend>

Date: 10-11 May 2025

Location: Mottram Hall, Cheshire

---

If you are unable to access any of the articles in full text via your **NHS Open Athens** account, you can request them from  
**your local NHS Library Service**



**Mersey and West Lancashire Teaching Hospitals NHS Trust**  
**Library and Knowledge Service - St Helens and Knowsley**

<https://www.knowledge-nw.nhs.uk>

[library@sthk.nhs.uk](mailto:library@sthk.nhs.uk)