

The Management of Open Fractures at Population Level: Are We Hitting the Targets?*Robert John Henry Winstanley MBBS; James Neville Hadfield MBBS;**Christopher Bretherton FRCS (Ortho); Alex Trompeter FRCS; Keith Philip Allison FRCS;**Will Eardley FRCS (Ortho); The OPEN Study Collaborative**South Tees Hospitals NHS Foundation Trust, Middlesbrough, UNITED KINGDOM*

Purpose: Guidelines for the management of open fractures are well established globally. While isolated, single limb or complex only fracture studies are available, there is no evidence investigating management parameters across all fractures. This study aims to describe the full extent of care for all patients with open fractures at population level.

Methods: This UK-wide prospective cohort study recruited all patients admitted to hospital with open fractures (excluding isolated hand injuries) between the dates of 1 June 2021 and 30 September 2021 inclusive. The management for all open fractures was recorded including time to antibiotics and primary debridement and also fixation and wound coverage methods. Wounds and injuries were classified using the Muller AO, Orthopaedic Trauma Society, and Gustilo-Anderson classification systems. Patient data were collected electronically using the REDCap secure online database. This project was funded by AO UK.

Results: Following application of exclusion criteria, 1175 patients were analyzed. The majority (69%) received antibiotics in the emergency department in a median time of 25 minutes (interquartile range [IQR]; 2 hours 48 min) `datetime="2022-01-31T18:13"` from radiological diagnosis. Other locations included pre-hospital (22%) and the trauma ward (9.1%). 72.7% of patients had a photograph of their wound taken on admission prior to being dressed. The median time to primary debridement was 16 hours 14 min (IQR = 14 hours 50 min) from radiological diagnosis. Time to primary debridement was sooner in patients with complex wounds (12 hours 51 min, IQR = 16 hours 38 min) compared to those with simple wounds (17 hours 14 min, IQR = 13 hours 28 min). 90.3% of initial debridements were performed between 8 am and 8 pm. Overall, 60.8% of patients only required a single visit to theater. 65% of fractures were definitively fixed at primary debridement with the majority (92%) of these receiving definitive skin coverage `Christopher Bretherton" datetime="2022-01-31T18:16">` during the same procedure. The most common method of temporary skin coverage was by negative pressure wound therapy (NPWT) (67.7%). Following definitive skin coverage, antibiotics were continued in 47.4% of patients. Median length of stay was 9 days (IQR = 16) and 45% were instructed to fully weight-bear at discharge.

Conclusion: This study describes the care provided to patients across 51 centers in 4 countries. It provides previously unknown data of the patient journey through the health-care system, which will assist to improve future patient care and inform research proposals.