Introduction:
The SOFA score is a reliable tool to describe organ dysfunction following trauma.[1] Serum IL-6 and IL-10 have been shown to rise early following injury and potentially be useful markers in predicting clinical outcomes.[2] This study evaluated the predictive potential of early IL-6 and IL-10 levels on SOFA outcome in patients following major trauma.

Methods:
One hundred major trauma patients were included in this study. Inclusion criteria were 1) injury severity requiring immediate transfer from the emergency department to the operating theatre or critical care, 2) enrolment within 24 hours of the injury. Principle exclusion criteria were 1) age <18 years, 2) patients on steroids or other immunosuppressive medication. Serum samples collected day 1 and day 3 were evaluated for IL-6 and IL-10 using cytometric bead arrays. SOFA scores were calculated on day 1 and day 5, from which delta SOFA was calculated. All study procedures were approved by the National Research Ethics Committee South Manchester.

Results:
Day 1 IL-6 did not correlate with day 5 SOFA (r = 0.120, P = 0.21 n = 100), day 3 IL-6 correlated with day 5 SOFA (r = 0.40, P = 0.002 n = 52). The day 1 (r = 0.24, P = 0.018 n = 100,) and day 3 (r = 0.43, p = 0.0013, n = 21,) IL-10 concentrations, however, were both found to significantly correlate with patients’ day 5 SOFA scores.

Patients with a delta SOFA of < 0, indicating recovery, display a lower IL6:IL10 ratio on both day 1 serum (7.94 ±0.81 compared to 14.15±2.30, P = 0.03) and day 3 serum (5.11 ±0.78 compared to 10.57±1.32, P = 0.0008) (Figure 1).

Conclusion:
IL-10 may be a useful biomarker to predict late organ dysfunction following major trauma. Furthermore, the ratio of IL6:IL10 on both day 1 and day 3 post injury, may be of particular value in predicting the risk of deterioration or improvement (delta SOFA) in the first 5 days after trauma.

References:
Day 3 IL6:IL10 ratio grouped by delta SOFA (Day 5-1)

Day 3 IL6:IL10 ratio grouped by delta SOFA Day 1 to Day 5