6 BEYOND THE DEFAULT MALE: EXPLORING SEX DIFFERENCES IN THE ACUTE PHYSIOLOGICAL RESPONSE TO TRAUMA AND ASSOCIATED CLINICAL OUTCOMES

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Background Female patients are consistently outnumbered by males in trauma studies. This bias towards male physiology may influence research outputs and result in females receiving less efficacious care. This study looks at male and female patients with comparable injury severities (as assessed by ISS), observing acute physiological responses to injury and subsequent clinical outcomes.

Method Data from over 2000 patients enrolled in the Activation of Coagulation and Inflammation in Trauma (ACIT-II) prospective cohort study (REC: 07/Q0603/29) at the Royal London Hospital was sex disaggregated. Patients are eligible for inclusion into ACIT-II if they arrive in ED within 2 hours of injury and meet the local criteria for a trauma team activation. In order to look at males and females with comparable injury severities, Injury Severity Scores (ISS) were grouped into 'control' (ISS 0-3), 'mild' (ISS 4-8), 'moderate' (ISS 9-15), 'severe' (ISS 16-25), 'critical' (ISS $\geq$25).

Results In the total study cohort, females were significantly more likely to be older, to have experienced blunt rather than penetrating injury, and to have a severe (AIS$\geq$4) head injury. To mitigate the potential influence of these factors, a cohort of 757 patients aged <50 years with only blunt injury and without severe head injury was identified. In this group we showed that females were significantly more shocked and had different coagulation profiles at presentation to ED. There were minimal differences between males and females regarding blood product administration, time to first TXA or length of stay. Notably, however, females had a significantly worse survival rate at both 24hrs (p = 0.009 overall) and 28days (p = <0.001 overall).

Conclusions Even when the confounding influences of age, mechanism and severe head injury are removed, females with comparable injury severities have different physiological responses and worse outcomes following trauma. Further work is needed to establish the underlying causes for this.