

Mortality of patients discharged in-hours and out-of-hours from a British ICU - are functional ICU practices to blame?

My presentation described a retrospective cohort study we conducted, looking at mortality rates for those discharged in-hours and out-of-hours from the BSUH ICU. Our study covered a 6 month period of 2017. Various previous studies conducted internationally have identified a higher mortality rate for those discharged from the ICU out-of-hours. As well as our primary outcome (mortality), we were interested in exploring possible mechanisms behind any differences in mortality rate.

We collected data retrospectively on all patients admitted to, and discharged from, our unit between 1st January 2017 and 30th June 2017. Readmissions, elective surgical patients and those with ICU stay < 8 hours were excluded. Data were collected on age, sex, length of stay, APACHE II score, nature of admission (medical or surgical), time from unit to hospital discharge or death, and final outcome. In-hours was defined as 07:01 to 21:59 and out-of-hours was defined as 22:00 to 07:00. Data were compared by Chi-squared test or Mann-Whitney U test as appropriate. ICU admission and discharge summaries were reviewed for patients discharged from the ICU who did not survive to hospital discharge, as were medical certificates of cause of death. Patients discharged from the ICU for organ donation or end-of-life-care were identified and excluded. Comparisons of those discharged in-hours and out-of-hours were then repeated.

The study population initially contained 613 subjects, the majority discharged in-hours. The mortality rate after ICU discharge was 5.37% for those discharged in-hours and 13.64% for those discharged out-of-hours. After removal of those discharged for end-of-life care or organ donation (n=19), however, corresponding mortality rates were 3.25% and 6.86% respectively ($p=0.0854$).

This raised the question of whether inclusion of these patients in mortality calculations may contribute to a disparity between those discharged in-hours and out-of-hours, as the prognoses of patients discharged from the ICU following clinical improvement will contrast with those discharged for organ donation or to a ward-based environment for end-of-life care. Small numbers of patients in this group being discharged at differing times may lead to striking differences in reported mortality rates. If these discharges frequently occur out-of-hours the effect could be even greater. This has provided an interesting foundation upon which to build, with a more comprehensive project investigating the new hypothesis – that with exclusion of these groups the difference in mortality rates may diminish – over a longer time period.