Background
Delirium is a significant factor that determines patient outcomes in the ICU. It is associated with longer hospital length of stay, increased risk of hospital mortality and long-term risk of cognitive dysfunction. After-hours discharge of ICU patients is also a matter of concern as it may be associated with increased risk of all-cause hospital mortality and morbidity. Nevertheless, an increasing pressure for ICU beds have led to the continuing practice of discharging patients after hours.

Moreover, there is no large-scale study on the association between after-hours discharge of ICU patients treated for delirium and their subsequent hospital mortality.

Aim
To study the associations between delirium in the ICU, after-hours discharge and post-ICU hospital mortality.

Methods
This was a single-centre, retrospective cohort study of adult patients admitted to ICU and discharged alive to a ward. Stringent exclusion criteria used include patients on limitation of Medical Treatment orders, admissions for drug overdoses and ICU readmission episodes. Delirium was identified in patients newly prescribed and administered with ≥1 anti-psychotic drug usually used for delirium in ICU – dexmedetomidine, haloperidol, olanzapine, quetiapine or risperidone. Both univariate and multivariate statistical analyses were done on the various patient characteristics collated.

Results
In the study cohort, 233 (16.5%) patients were treated for delirium and 346 (24.5%) patients were discharged after-hours.

A higher proportion of patients treated for delirium (73.4%) were admitted as emergency admissions, compared to the proportion of patients not treated for delirium (60.2%).

Overall, after-hours discharge was not significantly associated with worse all-cause mortality (OR 1.41, 95%CI 0.66-3.01; P>0.05). Patients treated for delirium in ICU had higher all-cause hospital mortality (unadj. OR 2.35, 95%CI 1.10-5.04; P<0.05). After-hours discharge of these patients was not associated with worse outcomes (OR 0.87, 95%CI 0.07-11.18; P>0.05). On multivariate analysis, delirium was not found to be associated with increased mortality.

Conclusion
This study found that the after-hours discharge of patients treated for delirium in the ICU was not significantly associated with worse hospital outcomes. However, being a single-centre retrospective cohort study, its external validity may be poor. Further larger-scale research is warranted.

Clinical implication
This study was limited by its retrospective design and stringent exclusion criteria that resulted in a low event rate. However, it is difficult to conduct a randomised controlled trial of this research question, given it may be unethical and harmful to randomise patients to be discharged after-hours.

There is a need for rigorous assessment of delirium in ICU and clinical guidelines regarding which patients may be discharged from ICU after-hours without an increased mortality risk.