Introduction:
Although rapid response systems are known to reduce in-hospital cardiac arrest rate, their effect on mortality remains debated. The Rapid Response Call (RRC) is a system designed to escalate care to a specialised team in response to the detection of patient deterioration. There are diurnal variations in hospital staffing levels that can influence the performance of rapid response systems and patient outcomes. The objective of this study was to examine the relationship between the time of RRC activations and patient outcome.

Methods:
Review of retrospectively collected, linked clinical and administrative datasets, at a private hospital during a 34-month period. All patients with medical emergency team activation were included. Rapid response calls occurring between 18:00-07:59 were defined as ´out of hours´.

Results:
Between January 2015 and October 2017 there were 209 RRC. The trigger for RRCs activation was nurse concern (101; 38.3%), modified early warning score (80; 28.3%) and cardiac arrest (28; 13.4%). 44 RRCs were “out of hours” being the main activation trigger a modified warning score > 5.” Out of hours” patients had higher ICU admissions (31.7% versus 20%) and were more likely to have an in-hospital cardiopulmonary arrest (OR=1.4, p<0.002).

Conclusion:
The diurnal timing of RRCs appears to have significant implications for patient outcomes. Out of hours calls are associated to a poorer outcome. This finding has implications for staffing and resource allocation.