

Abstract

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Effect of a Rapid Response System on unplanned intensive care unit admissions and cardiac arrests in a Singapore hospital

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Objectives:

CGH started its Rapid Response System (RRS) in 2009, with a single-parameter trigger criteria and a physician-led medical emergency team (MET). MET calls were more frequent in medical than surgical inpatients and remain so even with annual increase in MET activation volume. We hypothesized that with maturation of the RRS over 10 years, there will be overall reduction in rate of unplanned intensive care unit (ICU) admissions and unexpected cardiac arrests; and the magnitude of reduction will differ between medical and surgical inpatients.

Methods:

We conducted a prospective analysis and examined the effect of our MET service on unplanned ICU admissions and unexpected cardiac arrests. We analysed MET activation and outcome data retrieved from the hospital's registry. Unplanned ICU admissions and cardiac arrests were identified and cross-referenced with the ICU admissions database.

Results:

There were 66 MET activations in 2009, increasing to a peak of 910 in 2016, and stands at 727 in 2018. In 2018, 603 (82.9%) MET activations were in medical patients. MET activation rate stood at 14.2 per 1000 admissions in 2018. Overall unplanned ICU admissions reduced from 15.9% in 2009 to 11.6% in 2018. Unplanned medical ICU admissions reduced from 294 in 2009 to 113 in 2018, while unplanned surgical ICU admissions decreased from 48 in 2009 to 26 in 2018. Unexpected cardiac arrest rate reduced from 2.9 per 1000 admissions in 2009 to 0.98 per 1000 admissions in 2018.

Conclusions:

With the progressive increase in MET activation rate over the 10 year period, there is a sustained reduction in unplanned ICU admissions, with a greater effect seen in medical inpatients; and an overall reduction in the incidence of cardiac arrests.