To Improve the Code Blue (cardiac arrest) Response Time to less than 5 minutes within 6 months in Singapore General Hospital (SGH)

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Introduction
Survival of patients with cardiac arrest is time-sensitive. The chance of successful resuscitation is reduced by 7% to 10% for each minute delay. Code Blue is the emergency response code for cardiac arrests. The 2017 Joint Commission International (JCI) audit identified areas of improvement for Code Blue processes including:
1. Speed: Average Code Blue Team (CBT) response time exceeded 5 minutes
2. Capabilities: Limited in terms of manpower, skill sets and equipment
Commissioned by Chairman Medical Board and Intensive Care Unit Committee, a multidisciplinary Code Blue Workgroup was formed to improve the quality and efficiency of Code Blue processes.

Aim
To improve the Code Blue (cardiac arrest) response time to less than 5 minutes within 6 months in Singapore General Hospital (SGH).

Methodology
Scope: Audit data from Jan to Dec 2017 showed that majority of Code Blue resuscitations occurred in Inpatient wards (76.8%) and Specialist Outpatient Clinics/Centres (14.6%). The project was scoped to focus on SGH main buildings.

Root cause analysis: Utilising cause-effect analysis, observing Code Blue practices and obtaining feedback from Code Blue Teams (CBTs), root causes of delays in response time were identified.

Final solutions: Driver diagram and decision matrix diagram were used to develop the final solutions.

3 Plan-Do-Check-Act (PDCA) cycles implemented.

Results

Time of SMS sent to CBT
Pre-intervention Median = 2.0 min
Post-intervention Median = 1.5 min
P-value < 0.05

Number of Code Blue Incidences Reported
Pre-intervention Median = 10 incidences
Post-intervention Median = 23 incidences
P-value < 0.001

Of Return of Spontaneous Circulation
Pre-intervention Median = 55.6%
Post-intervention Median = 76.5%
P-value < 0.05

Conclusion
- We achieved our aim of improving Code Blue response time in SGH to less than 5 minutes within 6 months of implementation.
- This has helped to develop and strengthen a passionate and committed workforce to deliver efficient and quality patient care.
- The revamped Code Blue model will be adopted for new buildings in Outram Campus.
- Strong leadership, collaborative approaches adapted through active monitoring and evaluation, and commitment and support from all clinical and non-clinical stakeholders were key to the successful execution of Code Blue improvement initiatives.

References: