

CALL-A-CAB-66 (Heart to brain drive)

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Abstract

Cardiovascular diseases are considered as one of the major causes of deaths worldwide. Occurrence of coronary heart disease is increasing even more in the low middle income countries like India. It is proven that if a cardiac arrest is treated in time, then a life can be saved. A cardiac arrest in roadside is difficult to be treated while it is easier in a hospital setting as nurses are available round the clock to treat patients. The general administration for cardiac arrest includes capturing the early warning signs, beginning of CPR and calling the emergency response team.

Nurses play an important role in handling such life threatening situations and it is often found that they lack confidence in such situations due to various reasons.

Result of a survey reflected that the major reasons of incompetency among nurses is under confidence and lack of training after which the concept of CALL-A-CAB project was introduced for all nurses.

The project included training sessions for all nursing staff for a month which comprised of mock drills, sessions for staff on Code Blue management, post sessions competency check, on spot intubation contest, Basic life support demonstration etc.

The project delivered positive results by reducing the number of Code Blue in the hospital, ICU shifting was reduced and as a result more patients were saved.

As a sustainable measure, a Quick response team is formed in the hospital which is available round the clock and is instructed to assess patients for early warning signs and assist in emergency situations across the hospital.

KEYWORDS- Code Blue, Cardiac Arrest, American Heart Association, ACLS, BLS, emergency response services, Cardiopulmonary resuscitation, Defibrillation, Quick response team, CALL A CAB.

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I. Introduction

Worldwide, there are >135 million cardiovascular deaths each year, and the prevalence of coronary heart disease is increasing. Globally, the incidence of out-of-hospital cardiac arrest ranges from 20 to 140 per 100 000 people, and survival ranges from 2% to 11%.¹

In India, as per WHO census statistics, mortality due to cardiac causes has overtaken mortality due to all cancers put together. Approximately 4280 out of every one lakh people die every year from sudden cardiac arrest in India alone, accounting for more than 60 per cent of all cardiac death.²

After a cardiac arrest there are four to six minutes before brain death and death occur. Chances of survival reduce by 7-10 percent with every passing minute.

In hospital nurses are the first advocate of the patient who deals with the emergency conditions such as cardiac arrest. Cardiac arrest is reversible if the victim is administered prompt and appropriate emergency care. This generally involves administration of cardiopulmonary resuscitation (CPR), shock treatment to the chest to reset the heart's rhythm (defibrillation) and advanced life support at the right time which every nurse should know.

The nurse's competency is a critical factor in effective patient outcome from cardiac arrest. Despite of this fact, there are enough evidence in the medical field that nurses lack confidence and ability to handle a critical life-threatening situation like cardiac arrest.

Some of the major reason for incompetency of nurses are tabulated as follows:

- Lack of knowledge on importance of Basic Life Support.
- Lack of confidence in handling equipment like defibrillator, patient monitor, ECG machine etc.
- Hesitant towards taking leadership role and failure in task allocation to their colleagues in such situations.
- Inexpert in handling medication kept in Crash Cart trolley.
- Inefficient in identification of arrhythmia in ECG and early warning signs
- Constant Doctor's complaint regarding incompetency of nurses.(Fig-1)

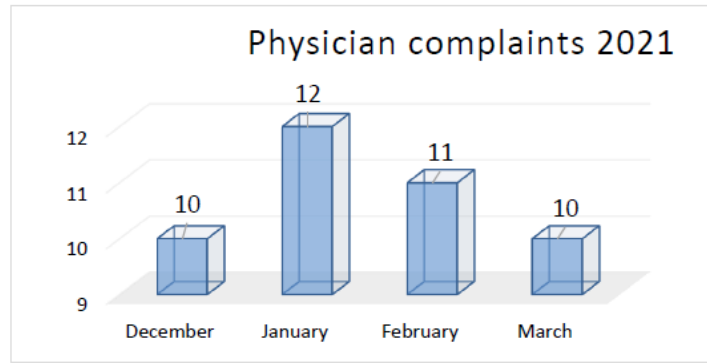


Figure-1

- High attrition rate among nurses.

II. Material and method

Study Design: Observational study

Study Location: The study was conducted in Nursing department, Indraprastha Apollo Hospital, New Delhi

Study Duration: March 2021 to July 2022.

To understand the challenges of nurses, a survey was done among 200 surveyors including Doctors, nurses and other clinical partners (Fig-2), where it was found that the nurses require refresher hands on training and learning sessions frequently to enhance their competence while performing CPR and proper management of patient during a cardiac arrest.



Figure-2

Based on the pareto analysis (Fig-3) result applied on the feedback received during the survey, it was found that focus should be given to Hands on training. To solve this problem, the nursing training team commenced sessions including hands on equipment sessions for staff nurses for 5 months by trainers and instructors specialized from American Heart Association. All in charges and unit supervisors also were covered in these training sessions.



Figure-3- Pareto analysis

AIM of the training session was:

- To provide knowledge on importance of Basic Life Support.
- To provide hands on training to nurses on Cardiopulmonary Resuscitation.
- To provide hands on equipment training on defibrillator, patient monitor, ECG machine.
- To encourage nurses to participate in such situations and take leadership role.
- To provide sessions on handling medications kept in Crash Cart trolley.
- To practice and participate in CODE ORANGE for recognition of early warning signs (To reduce the number of code blue and increase code orange) (Fig-4)
- To provide sessions on identification of arrhythmia in ECG.
- To focus on intubation process and other airway management.
- To make nurses competent to manage patients in the wards to handle CODE ORANGE

CODE ORANGE
 Rapid Response Team comprises of
 Clinical care coordinator, Charge Nurse/ Nursing supervisor/ QRT Nurses

In case of Adults, Criteria of calling a Code Orange/ Rapid Response Team

- Any health care provider worried about the patient
- Acute change in heart rate < 60 or > 130 beats/ minutes
- Acute change in systolic BP < 90 mmHg
- Acute change in respiratory rate < 10 or > 28 per min
- Acute change in saturation < 90% despite supplemental oxygen
- Acute change in conscious / mental state (drowsy or irritable)
- Acute change in urinary output to < 50 ml in 4 hours
- Persistent chest pain not relieved by analgesics

In case of Pediatric Patients – Criteria for Code orange (RRT).
 Any health care provider worried about the patient

- HR > 180 < 80/min (< 5yrs)
- HR > 160 < 60/min (> 5yrs)
- BP: 0-1 yrs.: < 60 mmHg (systolic)
 - 1-8 yrs < 70 mm Hg (systolic)
 - Above 8 yrs < 90 mm Hg (systolic)
- RR > 60/min or < 20/min
- Increased work of breathing (retractions, nasal flaring, grunting)
- Alteration in sensorium – Drowsy or irritable/failure to recognize parents
- Reduction in urine output (< 1 ml/kg / hr) over last 4 hours

- Cyanosis - Fall in saturation - SPO2 < 90%, O2 requirement > 6 L /min
 - Cold extremities - Convulsion - Hypothermia ≤ 36-degree C

Figure-4

Procedure Methodology

To further enhance nursing competency towards cardiac arrest and other emergency situations, the Nursing Training Department of Indraprastha Apollo Hospital, under the leadership of Capt Dr Usha Banerjee, New Delhi organized a campaign **CALL-A-CAB 66**.



Figure-4

This campaign aimed to enhance the knowledge of nurses on existing American Heart Association guidelines on Basic Life Support, Advance Cardiac Life Support and Paediatric Advanced Life Support and to improve Clinical Partnership between nursing practice and nursing education.

As part of the campaign, following activities were planned in a structured manner:

Launch- Campaign launch was started with Lamp Lighting Ceremony followed by logo launch and banner launch. Motivational speech from Leadership team (Group director nursing, Emergency HOD, Intensivist, DDMS etc.). Fig-5



Figure-5

Reinforcement sessions for all nurses (Hands on session)- To cover maximum staff for the campaign a calendar was prepared mentioning the details of the training sessions for all units in the hospital. The training sessions started with the senior team- Charge Nurses and Senior Nursing team was briefed by Intensivist, Indraprastha Apollo Hospital in the first session as they are the first point of contact for nurses. They were taught on Airway Management, Intubation, Cardiopulmonary Resuscitation, recording during CODE BLUE, Crash Cart, Application of Defibrillator, Reading of Electrocardiograph.

The Charge Nurses and senior nursing team also performed hands on training during the session where most of their doubts were cleared (Fig-6).



Figure-6

Session for nursing staff on CODE BLUE Management (Fig-7)

A two-week calendar was prepared by the nursing education department with an aim to cover all nursing staff from all units within the hospital. The nursing staff was called for sessions in two shifts each day.

Four teaching stations were made, each was supervised by a trainer from the education department, the stations were categorised as follows:

- Station 1-** Airway Station, Crash Cart and ECG
- Station 2-** Defibrillator
- Station 3-** Basic Life Support
- Station 4-** Advance Cardiac Life Support, Neonatal/ Paediatric Life Support



Figure-7

The staff were told to return demonstrate the things that were taught during the session. The nursing staff was excited to be a part of such activity. A Post session objective questionnaire was prepared by the nursing education team and was circulated among the staff to assess their learnings. Subsequently, a competency test was also conducted for all staff in which majority scored well above average marks.

Special Session for staff who scored below 50% in competency test

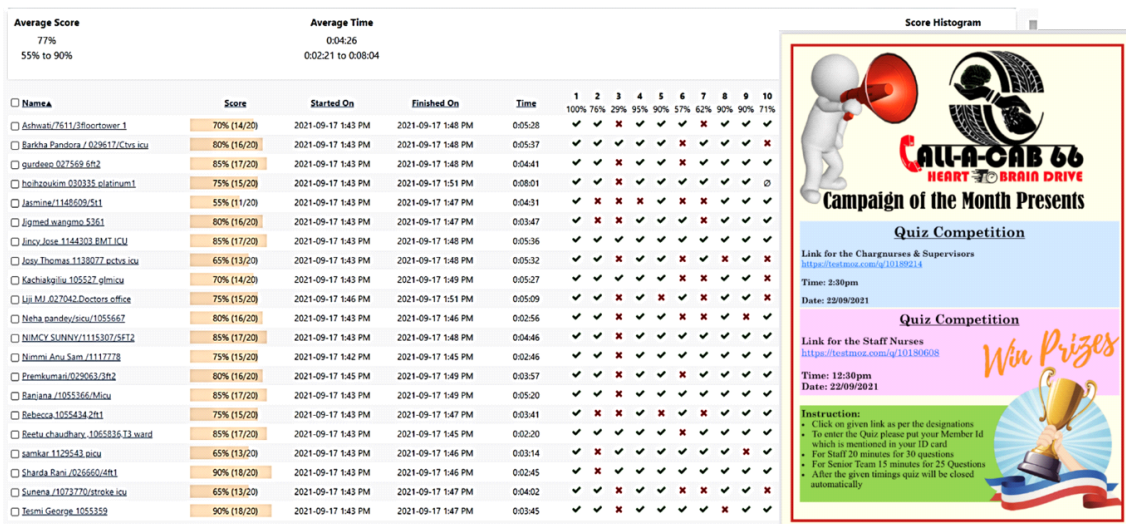
All those staff who scored below 50% in competency test underwent a retraining session. Their training concentrated on the weak points which required more attention and focus.

Post session competency assessment/test/Quiz

Quiz for All

All the nursing staff participated in the quiz at the same time from their own location. The quiz was time bound and entries were to be submitted within 20 minutes. There were around 200 entries received within the stipulated time. The names of winners were displayed on WhatsApp groups and winners were rewarded with trophy, hampers and exciting gifts.

Competency Assessment Post Campaign



Ward Activities-Fig-8,9

Spin the wheel- This activity was conducted in ward areas where the winners were awarded with exciting gift. The staff participated in the activity and answered the questions proactively.

On the spot Intubation Competition

A unit wise intubation competition was organised to check the impact of the campaign among the nursing staff. The staff that were hesitant in the beginning of the campaign were found confident during this activity.

Ward Activity - Spin the wheel

On the spot Intubation Competition



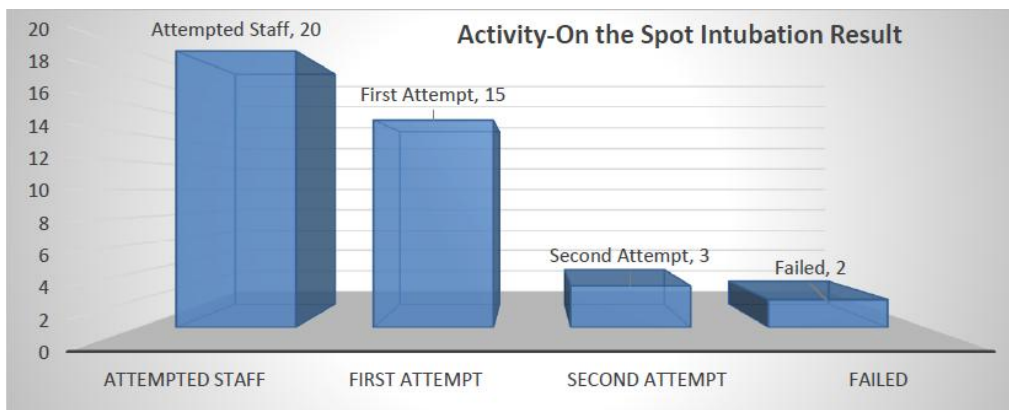
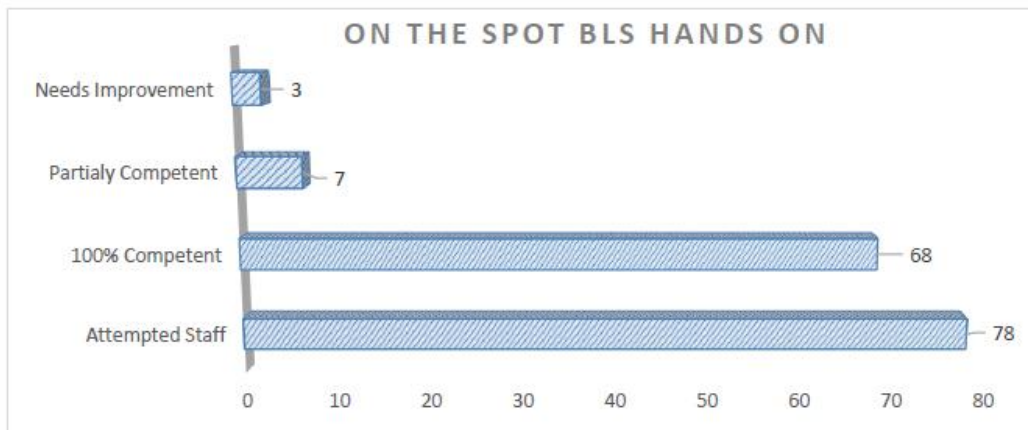
Surprise CODE BLUE Drill

On the spot BLS demonstration



Figure-8

On the spot BLS demonstration Competition-Units were identified where staff's BLS demonstration was checked. Randomly the staff was picked to demonstrate BLS.



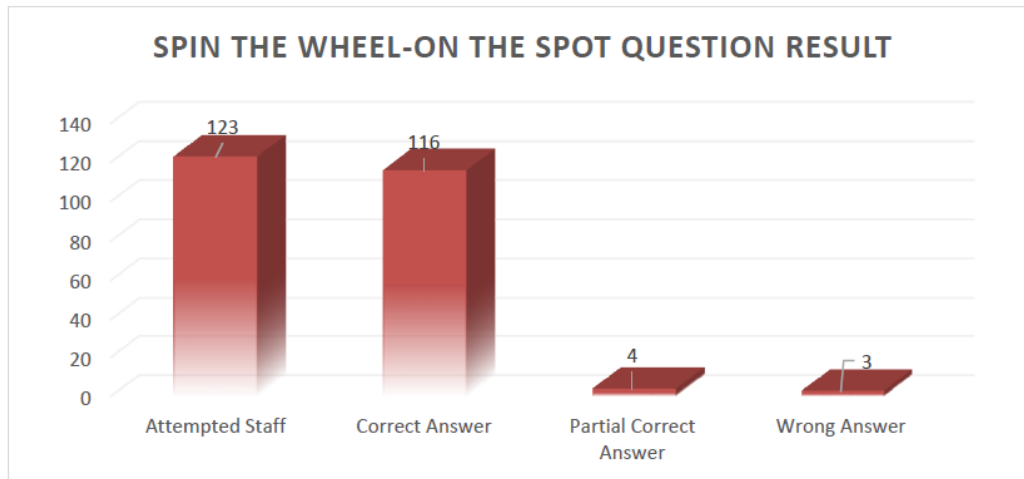


Figure-9

CODE BLUE Drill- In order to check the overall impact of the campaign and awareness level of the nursing staff, last and final activity was conducting a mock CODE BLUE DRILL. In this activity, Medicine Registrar, Anaesthesia Registrar, Clinical Care Coordinator, Emergency Male Nurse, and Quality Head participated. The drill was effective in majority of the places while in some places staff was found incompliant. Closing & prize distribution ceremony was held in the end on the campaign which was followed by an oath taking ceremony in which all the nursing staff pledged to be more vigilant and active towards emergency situations such as CODE BLUE. The senior leadership team emphasized on the role of nurses towards patient safety.

III. Results Fig-10

As a sustainability measure, the nursing education and training team is taking following steps:

- Continuing with 3 ACLS instructors.

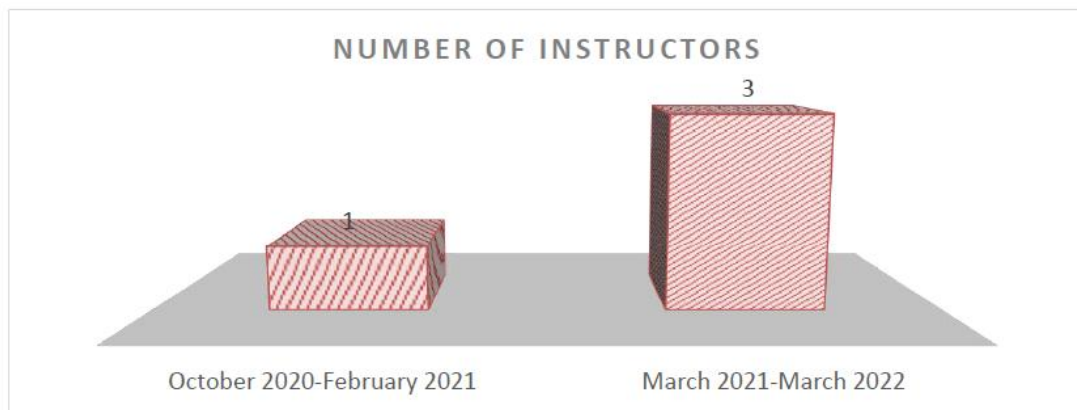


Figure-10.1

- Continuing with 3 sessions per month covering all new staff joined and other pending staff. Unit specific trainings are ongoing.

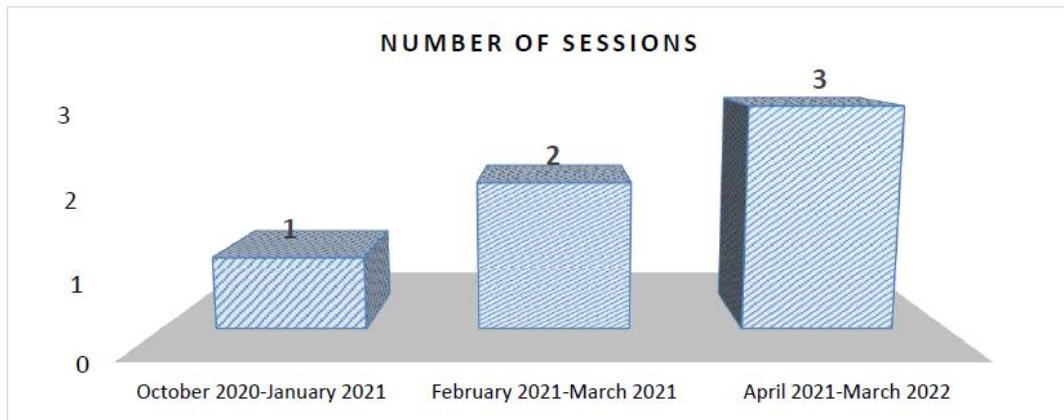


Figure-10.2

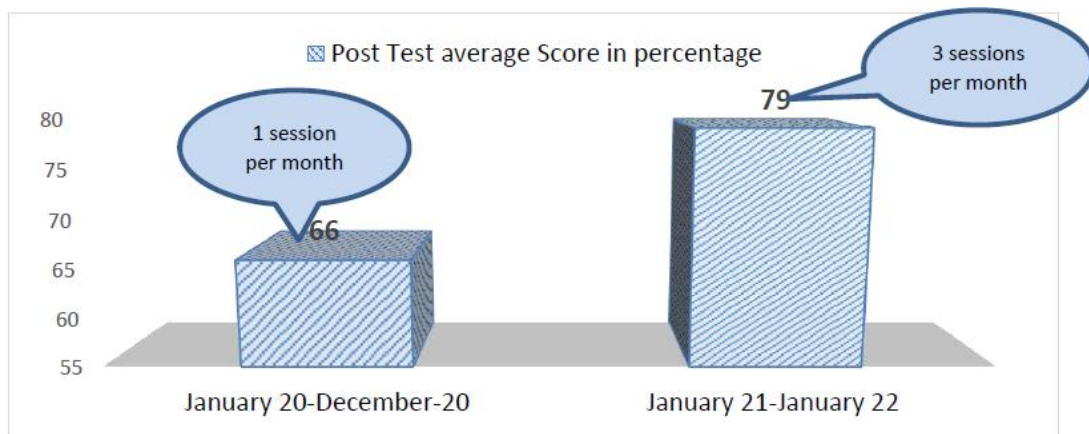


Figure-10.3

- Launched QRT team which is available 24x7- Aim is to track critical patients on the floors prior to prevent code, manage them with proper treatment on the floors and shift them to required ICU's if needed. All codes also shall be attended by QRT team so the assigned nurses will be stress free.
- Reduced number of patient shifting to ICU/HDU Post code Orange.

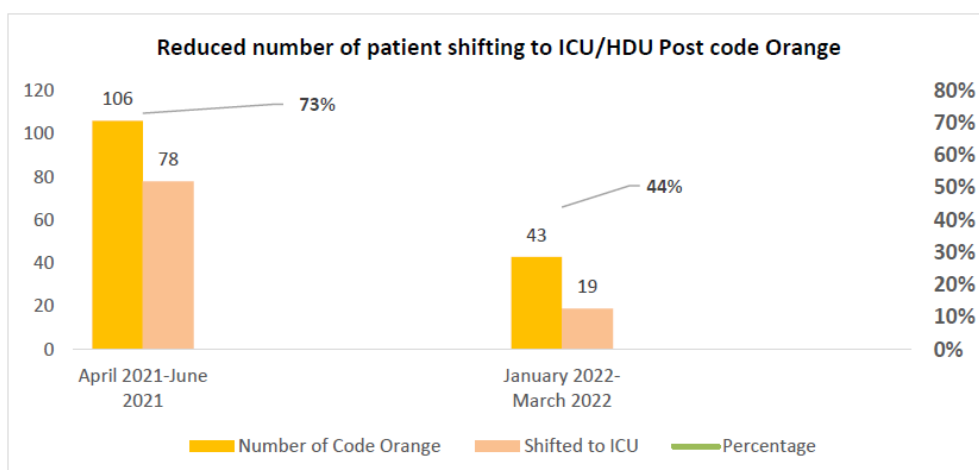


Figure-10.4

- Reduced number of Code Blue in wards.

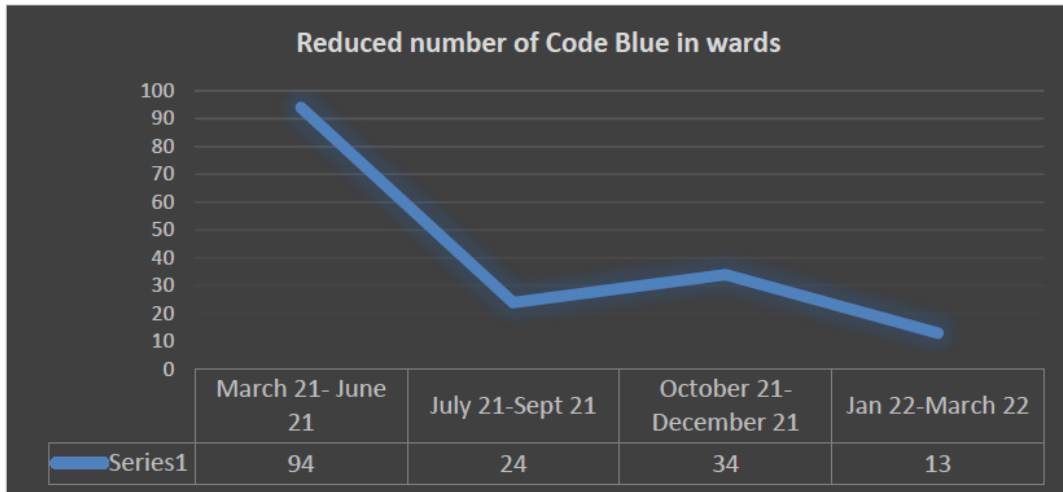


Figure-10.5

- New practice started for prior assignment of duties for effective management of the codes.

New practice started for prior assignment of duties for effective management of the codes

Example with format
Date: 10/11/2022

S.No	Name of the staff on Duty	Bed Assignments	Code Assignment
1	R/N Simmy Rajan	XXXX	Medication Nurse (Crash Cart)
2	R/N Aditi Saxena	XXXX	Intubation Trolley (inway Breathing)
3	R/N Sangeetha	XXXX	Recorder
4	R/N Prachi Tripathi	XXXX	Helping rescuerHR
5	R/N Nagma	XXXX	
6	R/N Kamlesh	XXXX	
7	In charge, Supervisor, Evening Supervisor		CPR Coach, Bed arrangement,
8	QRT		Overall Command and management
9	Any Nurse can be the		First Rescuer
10	Emergency male nurse		Defibrillation

Note: If code blue occurred for any staff who is assigned for the responsibility that taken care by the helping rescuer staff

Daily code assignments are given to the nurses along with the bed assignments

Benefits:

- Overcrowding should be avoided during codes
- Only the assigned nurses with their responsibility will be present at the time of the codes.
- No doubts about the responsibility given
- At the time of code no wasting time for delegating the responsibility

Figure-10.6

Clinical Impact of the campaign (Fig-11)

- Code blue reduced by 23% in the hospital.

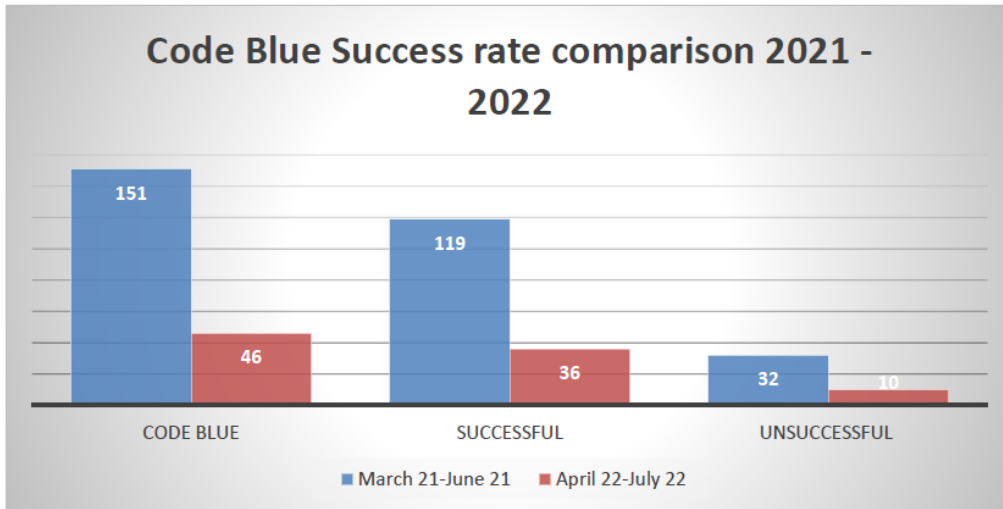


Figure-11.1

- Post code deaths reduced by 24% in the hospital.
- A total of 133 codes were prevented due to timely assessment and early detection of warning signs by the QRT Team. The patients were shifted to designated units for better care.

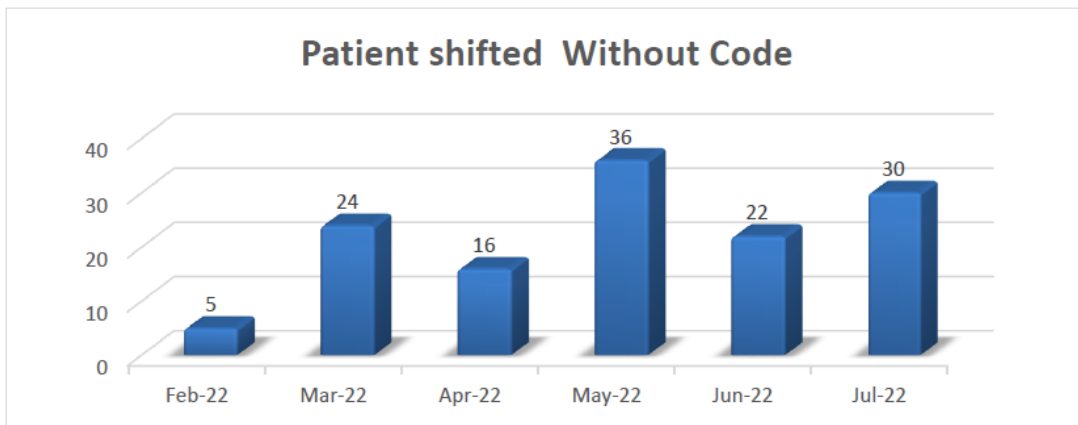
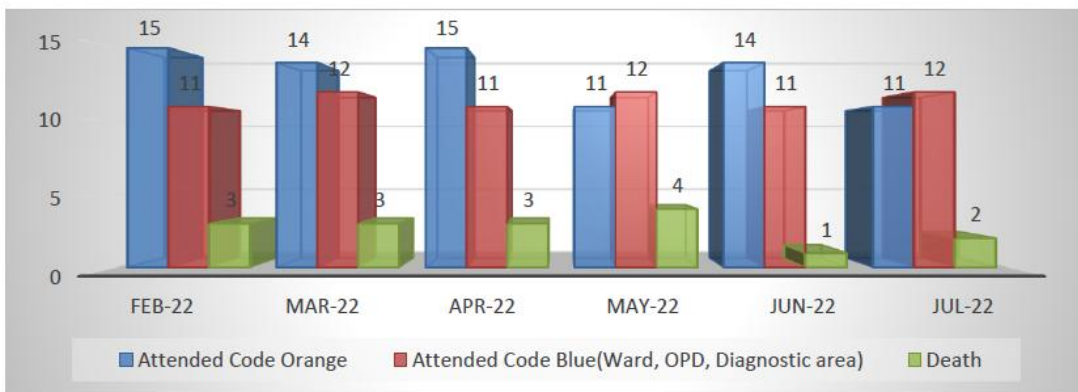


Figure-11.2

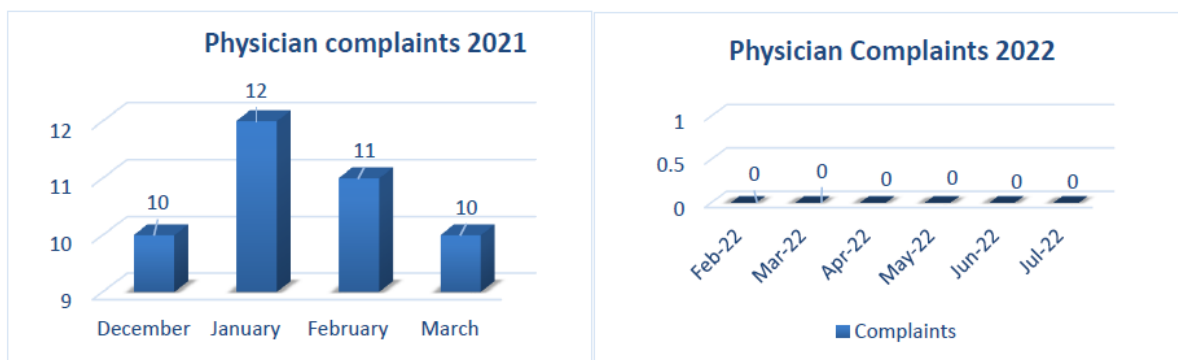
- During Feb- July 2022, 149 codes (Orange and Blue) were announced of which 89% were successful and the patient was revived.



QRT impact or benefits

- Quick Response Team (QRT) was formed in February 2022 and since inception, the team has been working constantly to assess patients and capture the early warning signs.

- The QRT assessed 3132 patients in six months in 2022. The team shifted 133 patients without announcing any code by timely detection of warning signs.
- Team successfully managed 69 patients in wards itself, which reduced dependency on ICU.
- 80 Code Orange and 69 Code Blue were attended by the QRT.
- The team received 52 appreciations from senior doctors, residents, consultants, and other hospital staff for managing and helping them in tough times.
- No complaints were reported by the physician after the formation of QRT for providing resuscitation support. (Fig-12)



IV. Conclusion

Apollo hospitals constantly strives to push boundaries by sharing, teaching and collaborating within the hospital to make quality healthcare more accessible. Campaign like **Call-A-Cab** reiterates the significance of quick response that shall be taken while handling a CODE BLUE situation. Under the mentorship of Capt Dr Usha Banerjee, this campaign was accepted whole heartedly and appreciated by all departments within the hospital and after the grand success of this campaign in Apollo Delhi, the nursing group launched this campaign across all Apollo Hospitals Group.

The campaign was awarded in GOLD category in the prestigious **QCI-DL Shah Quality Award**. Fig-11

This Project got Gold award in “QCI-DL Shah Quality Award- In GOLD Category”



Figure-11

References

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