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Research Article

P2P - From Panic to Peace (Clinical Alarm Safety Campaign)

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ABSTRACT

Abstract : The clinical environment contains a plethora of bells, beeps, and buzzers. Every alarm in the clinical environment should be clinically analysed for its visual and clinical significance. The survey was circulated throughout hospital and was filled by patients, attendants, staff, HODs and Consultants. After analysing the survey it is understood that one of the major concern of noise in the hospital was due to biomedical equipment alarm sound. This project **P2P - From Panic to Peace** was taken up to improve clinical alarms safety. The project aimed to guide critical care nurse in assessment of alarms in critical care environment. A safety program was planned monthly activities were designed keeping in mind all the aspects of information that were obtained from the findings. The Clinical Alarm Safety Program (**P2P**) was created & was plotted on different levels. After conducting the Clinical Alarm Safety program a post analysis survey on noise was done in the hospital. On analyzing the survey it was found that the

- Reduction in alarms rate in ICUs from 7200 to 4380
- Reduction in number of ventilator alarms from 864 to 756
- Hemodynamic alarms per day reduced from 6336 to 2530 per day
- Staff knowledge on handling of medical equipment alarms increased from 53.2 % to 93%
- Noise due to biomedical equipment alarm sound reduced from 90% to 30%
- Noise due to cleaning equipment sound during day and night reduced from 90% to 20%
- The patients complemented our program and rewarded us as the best Silent hospital.

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INTRODUCTION

The clinical environment contains a plethora of bells, beeps, and buzzers. ^[1] Every alarm in the clinical environment should be clinically analyzed for its visual and clinical significance. The challenge is to develop clinical alarm monitoring techniques that are sensitive and specific. It also determines:

- Practices that are designed for a specific population
- Customized settings for each individual patient
- Facilitate the caregiver to make best use of the monitoring systems
- Ensure patient safety

The impact of these adverse alarm events proposed by Joint Commission International represent a significant global problem and are taking a toll on morbidity, cost of care and mortality of patient. ^[2] Reshaping the delivery of healthcare is subsequently creating challenges for nurses.

A survey was conducted with 100 random samples in the hospital to determine the major reasons causing noise in the hospital. The survey was circulated throughout hospital and was filled by patients, attendants, staff, HODs and Consultants. On analyzing the survey, it was found that the top three major reason of noise in hospital was due to:

- Noise from the hallway due to loud conversation between hospital personnel
- Noise due to biomedical equipment alarm sound
- Noise due to cleaning equipment sound during day and night

The major concern of noise in the hospital was due to biomedical equipment alarm sound. When a detailed study was done regarding the biomedical equipment alarm it was found that there were many missing links that needed immediate attention. Some major focus area noticed are-

- Accessories are connected to the patient before monitoring thereby increasing technical alarms

- Total number of alarms in one ICU per day - 7200
- Number of ventilator alarms per day - 864
- Hemodynamic alarms per day - 6336
- 56% of the alarms came from violations in heart rate default settings.
- 30 % of the alarms were from SpO₂
- Staff knowledge on handling of medical equipment alarms - 53.2 %
- Number of patient's complaint due to noise - 17 per month
- Consultants complaint due to noisy wards and ICUs - 2 per month
- No. of staffs trained on Clinical Alarm Safety – all new recruited nursing staff

The need for a clinical alarm safety program was considered and the Project "Panic to Peace" was started.

MATERIALS AND METHODS

In view of the above stated problems, a safety program was planned with monthly activities keeping in mind all the aspects of information that we got from our findings. The Clinical Alarm Safety Program (**P2P**) was created & was plotted on different phases:

➤ Phase I

1. Hospital wide survey
2. Pre-assessment in units by quiz sessions
3. Sensitization of the ICU and HDU staff on Present scenario on expectation of alarm management and its importance
4. Syringe pump training program by Fresenius
5. Infusion pump training program by Fresenius
6. Patient monitor training program by Philips healthcare
7. Ventilator training program by Covidien
8. Post assessment in unit quiz session
9. Summing up achievements
10. Awards and accolades for best managers of clinical alarms and biomedical equipment

11. Appreciation of hard work
12. Revision of Standardize Operating Protocol (SOP) for Patient Clinical Alarms Safety

➤ **Phase II**

In service training for sustaining Clinical Alarm Safety Program:

1. Weekly Unit training sessions on clinical alarm safety
2. Random audits & training
3. Spots check, practice check in units
4. Post error training for all the staff if any incident related to equipment mishandling occurs
5. Hands on equipment sessions are organized for staff with experts for clearing doubts.

➤ **Phase III**

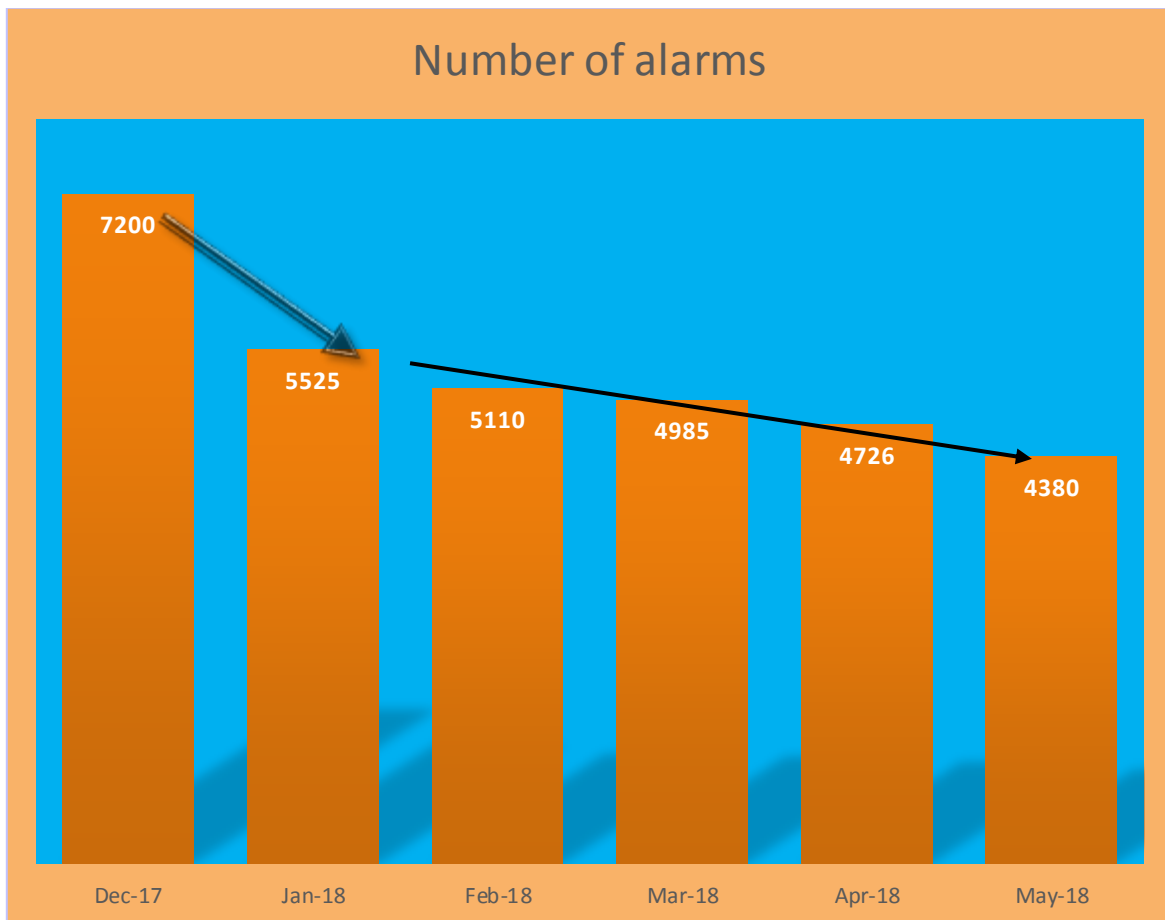
1. Reinforcement training for all staff once in a month
2. Monthly practicum on alarm awareness and settings

➤ **Phase IV**

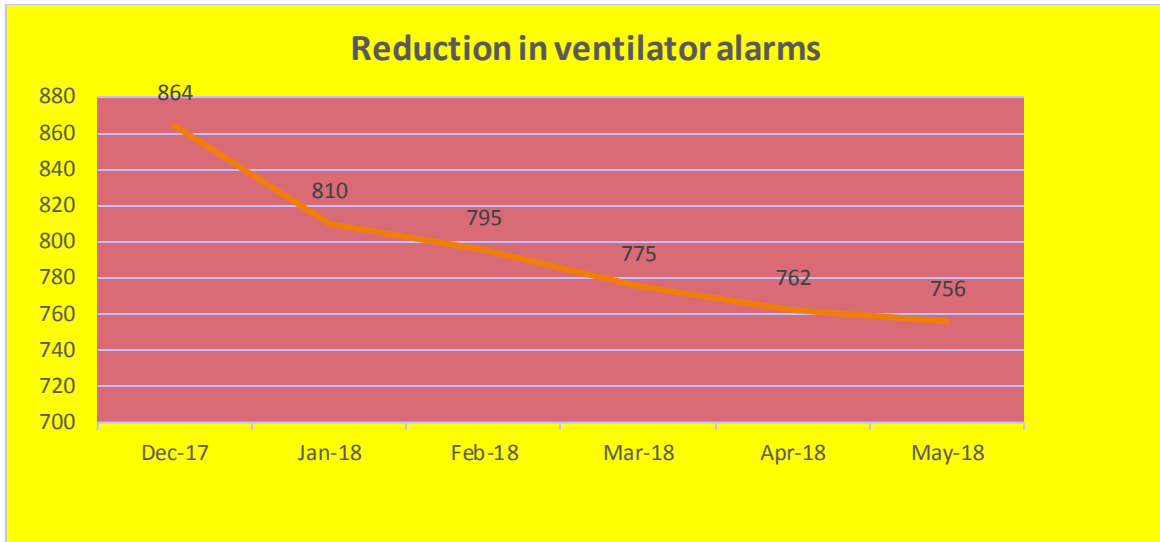
Mandatory training for Biomedical Equipment /point of care testing devices is carried out and completion certificate is awarded: once in a year for all the nursing staff

RESULTS

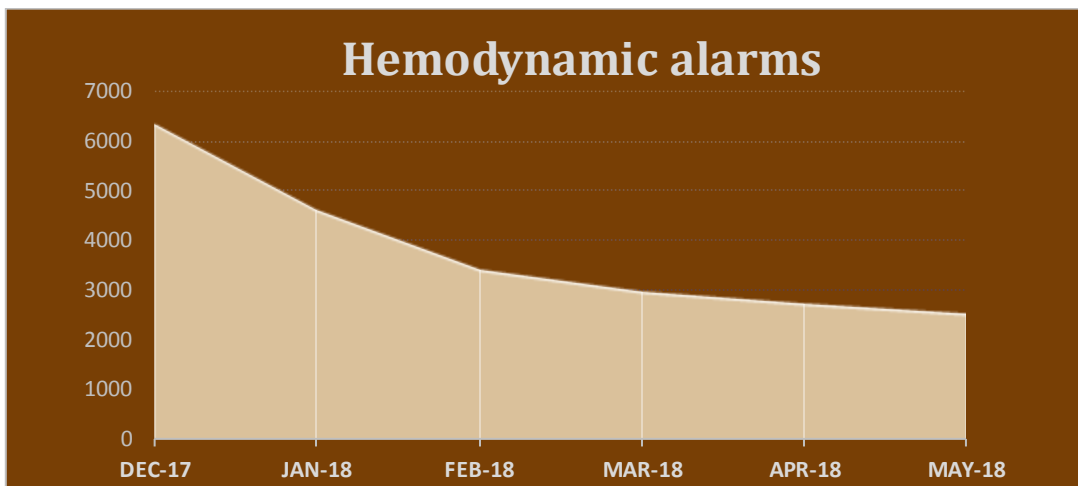
The Impact of the Clinical Alarm Safety Program was monitored on the following aspects which were monitored to check the effectiveness of the study. There was immense reduction in the findings and it is tabulated as follows



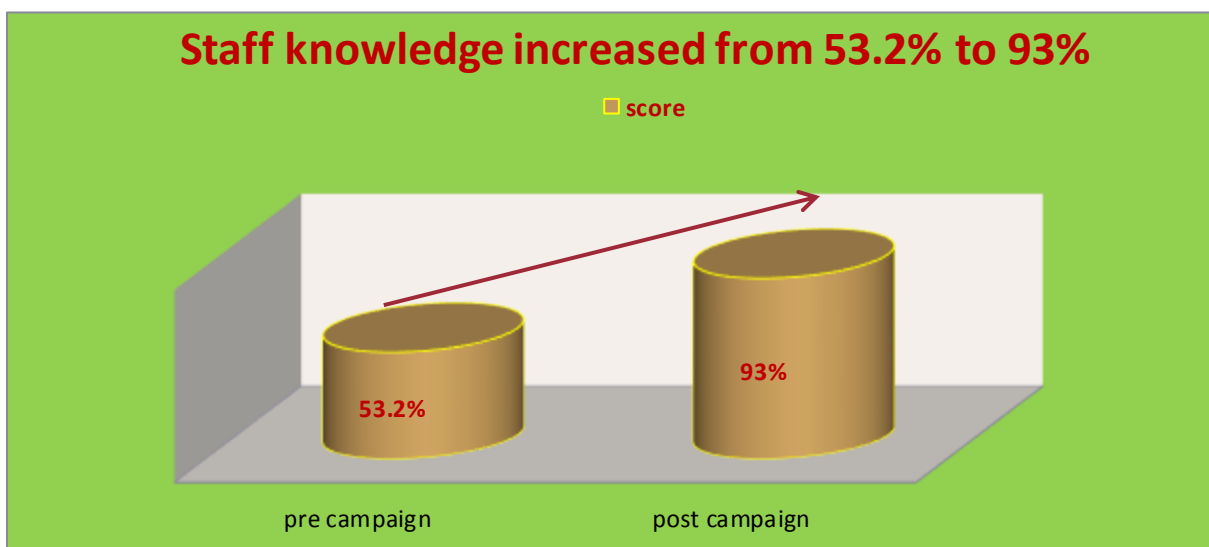
“Fig.1 “Column graph showing reduction in number of alarms in ICU from Dec 2017 to May 2018.”



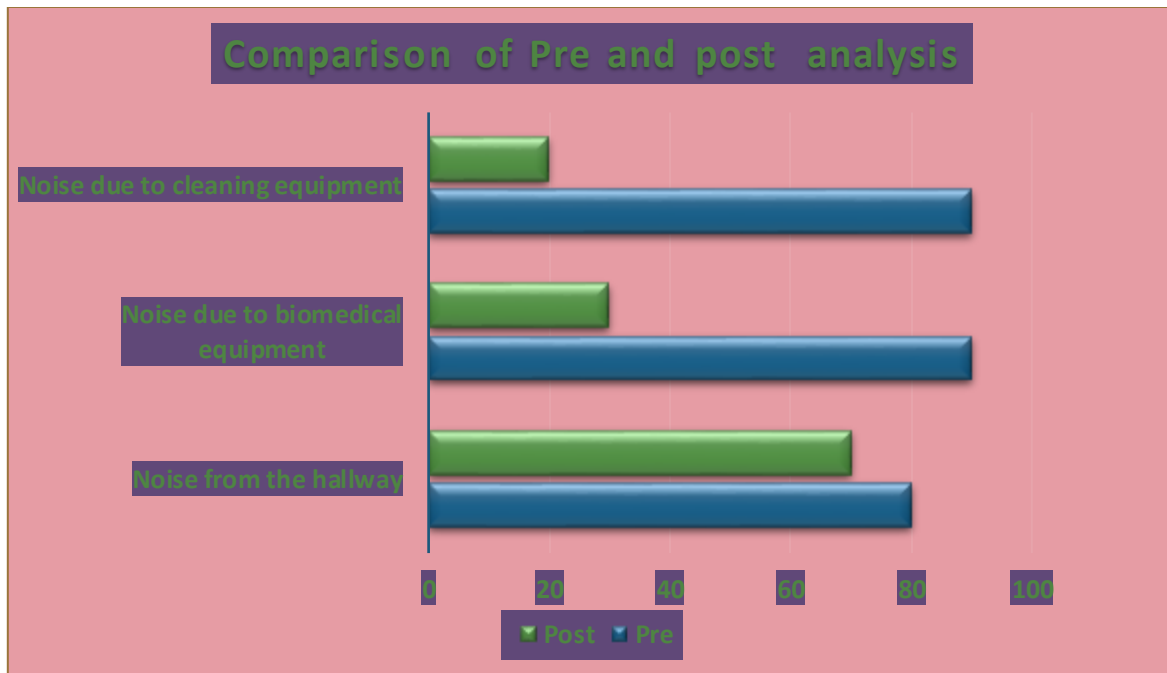
“Fig.2 “ Line graph showing reduction in number of ventilator alarms from Dec 2017 to May 2018.



“Fig.3 “Line graph showing reduction in number of hemodynamic alarms from Dec 2017 to May 2018.



“Fig.4“Column Graph showing increase in staff knowledge



“Fig.5” The column chart depicts the drop in the level of Noise Pre and Post clinical alarm safety program

- 1.Reduction in alarms in ICUs
2. Reduction in number of ventilator alarms
3. Reduction in hemodynamic alarms per day
4. Increase in Staff knowledge
5. Comparison of reduction in Noise before and after the Clinical alarm safety program
6. 56% of the alarms came from violations in heart rate default setting - Alarm settings for heart rate to be adjusted between +20 and – 20 of mean Heart rate value
7. 30 % of alarms were from SpO₂ - Alarm setting for SpO₂ to be adjusted between 90 to 100%
8. Patients complaints due to noise in a month – reduced from 17 to 6
9. Consultants complaint due to noisy wards and ICUs - 2 in a month (reduced to zero)
10. No. of staffs trained on Clinical Alarm Safety – All new recruited nursing staff - (All staff covered in training - 1400 nurses).

DISCUSSION

It is believed that a Silent Hospital helps in healing and better health recovery. Therefore, we practice this alarm safety program in all areas of the hospital. Consultants and doctors were also a part of this program and rated it as

one of the best practices in the hospitals. Other departments have taken us as a benchmark and came together to reduce noise in the hospital due to various other sources. Nurses can focus more on their work rather than running after nuisance alarms and causing themselves fatigue.

CONCLUSION

This Clinical alarm safety program also helped in:

- Increasing staff knowledge on patient safety
- Reducing environmental stress due to reduction in noise
- Reducing staff distraction
- Creating peaceful environment for the patient
- Developing policy outline for proper monitoring
- Eliminating false alarms
- Reducing alarm fatigue

REFERENCE

- 1.<https://europepmc.org/abstract/med/16239820>
- 2.https://www.jointcommission.org/assets/1/6/Perspectives_Alarm.pdf

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