

Evaluation of effectiveness of preanesthesia check up system, following a training program

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Abstract

Requirement, both ethically and academically. Anesthesia is rendering patients- unconscious, controlling their reflexes, monitoring and maintaining vital functions. Modern Anesthesia Machines help in great deal. Any malfunction may lead to mishaps, which are directly proportional to morbidity/mortality. The paucity of time during anesthesia makes it- all too, more important to have 100% correct equipment. So PAC systems have been developed-modified-adopted and need to be implemented. As late as 1993 the importance of well designed PAC (preanesthesia check) was developed and accepted for use. Periodically there have been additional recommendations/ Guidelines for practicing PAC and check list are presented. Every day these check-lists are to be filled by anesthesia personal. Accordingly this study was conducted, the study parameters are tabulated, analysed and recommendations are made. The results of this study indicate that the PAC is not practiced, especially the anesthesia machine and circle absorber, as required, and recommended for safe anesthesia. Hence, Periodic training programs and updating of recommendations with stress on strict implementation.

Keywords: preanesthesia check.

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Received Date: 16/04/2016 Revised Date: 07/05/2016 Accepted Date: 02/06/2016

Access this article online

Quick Response Code:	Website: www.statperson.com
	DOI: 06 June 2016

INTRODUCTION

Proper checking of any system, equipment are a prerequisite of it's proper and optimal use. Machine like that of Anesthesia machine-anesthesia work station; which performs multiple. functions, while delivering Anesthesia, needs meticulous and well planned pre anesthesia check up system(PAC), to avoid mishaps² and reduce morbidity and mortality. Anesthesia machines/monitoring systems have gone digital. The Anesthesiologist/Anesthesia technician/Anesthesia care provider is ultimately responsible for proper functioning of equipment for safe anesthesia. So adequate familiarity and relevant application makes PAC mandatory. Newer

Anesthesia machines are multicomponent work stations. Many functions of these machines are controlled by atomated checkout. An automated checkout again needs to be monitored and recorded manually as per the documentation of PAC for safe anesthesia^{3,8,10}.

MATERIAL AND METHODS

The study was undertaken in the Department of Anesthesia BVDU Medical hospital SANGLI, lasted for 4-months-Jan to April 2016, amongst which, Thirty (30) days were randomly selected by faculty for check up. Five Modern anesthesia machines- Mindray WATO 20, selected were assigned to one PG student and one trained anesthesia technician, together for PAC and maintenance before start of everyday anesthesia. They were not told about study but were assigned the job of comprehensive andmeticulous, preanesthesia check. For the study purpose, five important aspects of the check up procedure were marked and noted and one faculty member made the supervisory observation of the parameters meant for study to enter in to check list as follows.

Table 1: Presentation of Parameters of Group-1

Parameters	Total N	P	A	%P
Ambu Bag – Ventilation	30	30	0	100
Drugs	30	20	10	66.67
Airway Equipment	30	27	3	90

Interpretation: The Ambubag ventilator system shows 100% perfection, airway equipment 90% and drugs were deficient in 33.34%.

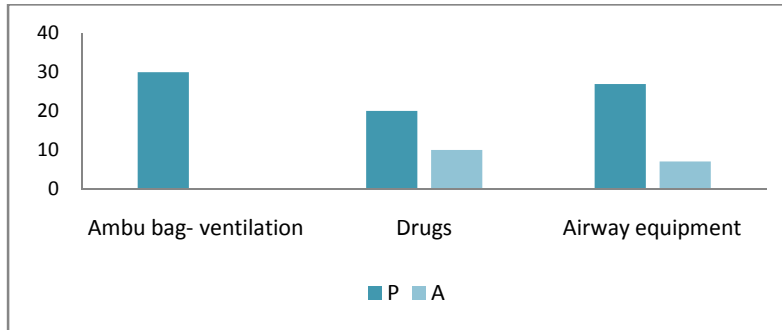


Figure 1: Presentation of studied parameters in group

Table 2: Presentation of parameters of group 2

Parameter	Total	P	A	%N
Electrical Power Supply – Indicator Alarms	30	15	15	50%
O2-N2o Supply/ Fail Safe System	30	28	2	92.4%
Flow Meters – System	30	30	0	100%
Vapourizers	30	27	3	90%
Common Gas Outlet/ O2 Flush	30	27	3	90%

Interpretation: Amongst checked parameter, electrical power supply – indicator and alarms have got poor score ie. 50%. other machine checkup parameters are to near satisfaction.

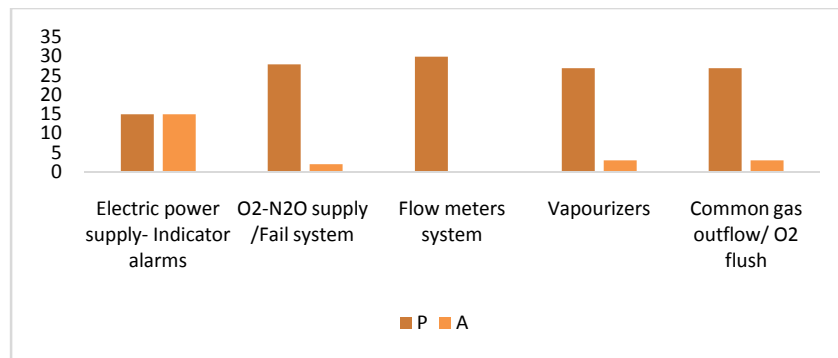


Figure 2: Presentation of study parameters for Group

Table 3: Presentation of parameters of group 3

Parameter	Total N	P	F	%N
Bain circuit	30	25	5	83.25
Absorber	30	10	20	33.34

Interpretation: Circle system with CO2 absorber was checked in 33% and not checked in 66%, Bain’s circuit not checked in 16%.

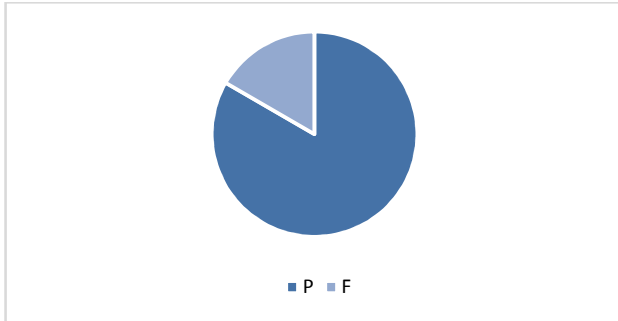


Figure 3: Presentation of Bain system study in Group 3

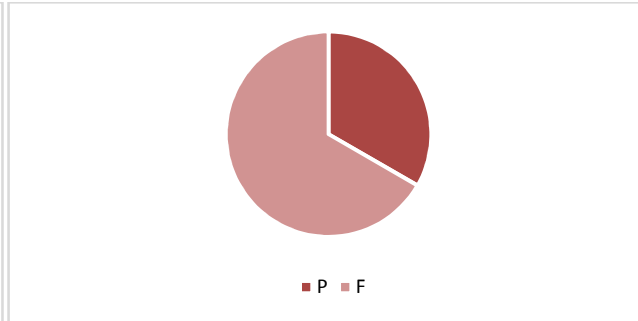


Figure 4: Presentation of CO2 absorber in group 3

DISCUSSION

Pre anesthesia check up (PAC), A training program for checking anesthesia machine and testing anesthesia breathing systems was conducted in the Department of Anesthesia BVDU Medical college SANGLI.

Guidelines By

1. Association of Anesthetists Great Britain and Ireland AAGBI 2012¹².
2. Association Anesthesiologist of Australia and New Zealand 2014(2003-2012)⁶.
3. American society of Anesthesiologist (ASA) guidelines⁷.

The above guidelines are followed while conducting preanesthesia check. There have been number of articles in I.S.A. Journals in the Indian context^{10,11}. Despite the importance and need of PAC, the reliability on its practice is not consistent and hence necessitates check. In this project the checklist parameters were grouped in three groups and presented in three tables. In table no.1. Additional ventilation equipment has P 100%, but parameters, electric power supply for machine operation and drugs (anesthetic and emergency) position are not adequately checked-A 27% and 33% respectively. In table no.2. The parameters checked were related to O₂, anesthetic gas and vapour supply-O₂, N₂O source pressure and flow, flow meter, vapourizers functioning and common gas outlet-O₂ flush. The P is 80%, which should be 100% for any anesthesia. Even though they are automated functions, failure to check or mark them checked has contributed to such results. In table no. 3. Anesthesia breathing system check parameters are presented. Routinely used circuits-Bain's and circle system with Co₂ absorber are checked as described in text. Bain's circuit check results are satisfactory, P 100%, but check or maintenance of circle system with CO₂ is failure with P of only 50%.

CONCLUSION

As per directions from various governing bodies towards safe practice of anesthesia¹, PAC-preanesthesia checkup and entry in to medical records is requirement and to be

practiced every day. To assess our system this survey/assessment project was undertaken. Following this study it is found that, Though majority of procedures of check list (PAC) are fulfilled, some major components of anesthesia requirements are not efficiently addressed. It is stressed here that such lapses are not excused. Hence, recommended for strict practice of PAC and periodic training programs.

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Source of Support: None Declared
Conflict of Interest: None Declared