
LOW MINIMUM ALVEOLAR CONCENTRATION ALARM: A STANDARD FOR PREVENTION OF AWARENESS DURING GENERAL ANAESTHESIA MAINTAINED BY INHALATIONAL ANAESTHETICS

Goneppanavar Umesh, MD, Kaur Jasvinder, MD and Nanda Shetty, MD

Umesh G, Jasvinder K, Shetty N. Low minimum alveolar concentration alarm: a standard for prevention of awareness during general anaesthesia maintained by inhalational anaesthetics.

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ABSTRACT. Awareness during general anaesthesia is a rare but significant problem that can be frightening to the patients. We suggest that newer generation monitors should include this facility to provide a low alarm limit to MAC settings so as to improve the quality of patient care. Also we suggest that a “near empty” alarm be incorporated into vaporizers which can warn the anaesthesiologist prior to development of possible light plane of anaesthesia. We hope that adopting these two features can help enhance patient safety and can further aid in quality assurance.

KEY WORDS. Awareness, General anaesthesia, Volatile anaesthetics.

Awareness during general anaesthesia is a rare but significant problem that can be frightening to the patients. A recent review article has highlighted light plane of anaesthesia as the most frequent cause for intra-operative awareness [1]. Although several monitors have been used for estimation of awareness during anaesthesia, nothing has been found to be fail-proof. A recent study by Avidan et al. has failed to demonstrate any superiority of bispectral index monitoring over the simple end-tidal anaesthetic concentration monitoring. These authors found an alarming number of patients (75%) with a minimum alveolar concentration (MAC) value of <0.7 for sustained periods intraoperatively [2]. Although none of these patients had any awareness, it becomes imperative to monitor the MAC and aim to maintain it equal to or above 0.7 as far as possible “*whenever general anaesthesia is provided with volatile anaesthetics only*”. As the anaesthesiologist would be focused on varied aspects of patient care during anaesthetic conduct, should the MAC value fall to <0.7 at any point, it might not be noticed early enough to prevent lengthy durations of lower anaesthetic concentrations. In the light of these observations, we suggest use of a low alarm limit for MAC at 0.7 so that the monitor can detect it early and warn the anaesthesiologist in time. Present generation monitors do not provide such a facility where an alarm limit can be applied to the MAC value. We suggest that newer generation monitors should include this facility to provide a low alarm limit to MAC settings so as to improve the quality of patient care. Also we suggest that a “near empty” alarm be incorporated into vaporizers which can warn the anaesthesiologist prior to development of possible light plane of anaesthesia. We

From the Department of Anaesthesiology, Kasturba Medical College, Manipal 576 104, Karnataka, India.

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Address correspondence to G. Umesh, Department of Anaesthesiology, Kasturba Medical College, Manipal 576 104, Karnataka, India.

E-mail: drumeshg@yahoo.co.in

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REFERENCES

1. Ghoneim MM, Block RI, Haffarnan M, Mathews MJ. Awareness during anesthesia: risk factors, causes and sequelae: a review of reported cases in the literature. *Anesth Analg* 2009; 108: 527–535.
2. Avidan MS, Zhang L, Burnside BA, Finkel KJ, Searleman AC, Selvidge JA, Saager L, Turner MS, Rao S, Bottros M, Hantler C, Jacobsohn E, Evers AS. Anesthesia awareness and bispectral index. *N Engl J Med* 2008; 358: 1097–1108.