Failed ventilation due to heat and moisture exchange filter malfunction: A difficult diagnostic scenario

Dear Editor,
It gives immense satisfaction to the authors when the academic and clinical message is rightly perceived by the dedicated and learned readers. The concerned readers are right on the target and have given a beautiful constructive review of our article.[1] It is really difficult to explain the hazards associated with humidification sciences in a short communication. The present article was an attempt to put forth the hazards associated with
one of the potential manufacturing defect in heat and moisture exchange filter (HMEF). [2]

The precise control and clinical perfection in working atmosphere is very difficult to achieve in developing nations with limited resources. The disposable HMEFs are essential for prolonged surgical procedures and ventilation to maintain hydration and healthy pulmonary tissue. [3] Such equipment is quite economical to use in low-resource settings while providing immense benefit in maintaining hydration and temperature of the inspired air. In the absence of automatic alarm system during failure of such equipment, the clinical acumen and vigil exercised by the attending anesthesiologist can be life saving. In routine anesthesiology practice, such incidents remain either unnoticed or are under-recognized but majority of them remain under-reported for one reason or the other in developing countries. The purpose of this communication was aimed at bringing awareness among anesthesia fraternity about such potentially fatal mishaps due to manufacturing defects. [1] We feel we have partially succeeded in eliciting responses to our literary communication. This should help in encouraging the readers to actively report such incidents so as to minimize the morbidity and mortality potentially associated with such mishaps.

Authors have suggested policy changes and formulation of guidelines with regards to HMEFs. But in reality, it is extremely difficult to make policy changes regarding the use of humidifiers in anesthesia practice without having obtained a nationwide consensus, leave aside the global consensus. However, at institutional level, one may formulate certain guidelines and protocols for the safe usage. Safety can be further enhanced by preparing a checklist for all disposable and nondisposable equipment. At present, it seems highly unlikely that we may get some suitable alternative alarm system in the breathing circuit to detect such manufacturing defects. Possibly, few modifications such as carbon dioxide alarm system, humidity analyzers, and so on can be incorporated into breathing circuit to detect any such defects at the earliest.

The manufacturing firms may or may not adhere to global standards during the manufacturing process. Moreover, policies of these firms may exhibit variance especially in countries with limited resources. Majority of times such equipment is supplied without any support literature or work manual. In such circumstances, it becomes extremely difficult to detect any malfunction or failure of these devices. The readers have rightly conveyed that such equipment should have some system to measure the effectiveness in providing optimal humidified air with minimal impact on airway dynamics. The prevalence of such mishaps can best be known by doing a multicenter and nationwide survey especially in the non-institutional set-up of developing nations. Regular auditing and reporting is essential to bring forth the actual prevalence of such mishaps both in the developed and developing nations. This can go a long way in helping to formulate policies and guidelines with regards to safe usage of such equipment.

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References
1. Bajwa SJ, Singh A. Failed ventilation due to heat and moisture exchanger filters malfunction. J Anaesthesiol Clin Pharmacol 2012;28:269-70.
2. Wilkes AR. Heat and moisture exchangers and breathing system filters: Their use in anaesthesia and intensive care. Part 2-practical use, including problems, and their use with paediatric patients. Anaesthesia 2011;66:40-51.
3. Rathgeber J. Devices used to humidify respired gases. Respir Care Clin N Am 2006;12:165-82.