Letters to Editor

Nebulizer practices among paramedics in India

Sir,

Nebulizers have been used for many years in acute and chronic management of airflow obstruction in adults and children.[1] Drug deposition in lungs with nebulizer is around 10%, compared to 20%–30% with handheld inhalers.[2,3] Despite this difference, studies have concluded that all devices have similar efficacies,[4,5] when used appropriately. Nebulizers require minimal coordination and patient effort during inhalation,[6] an important aspect in patient satisfaction.[7]

Although nebulization is prescribed by the clinician, paramedics play a critical role in administering treatment to the patient. We conducted a county-wide survey with paramedics (from nursing homes, hospitals, and clinics) to assess the current nebulizer practices. A 15-item questionnaire in English and Hindi on instructions provided by clinicians, administration of the nebulized drugs, and maintenance of the nebulizer was administered to 100 paramedics (62% females, mean practice 5.89 ± 5.77 years, and mean age 29.68 ± 8.58 years).

Fifty-three percent administered nebulization to more than 10 patients a week. Nebulization time was 5–8 min by 36% paramedics, more than 10 min by 28% and 32% reported time to be dependent on drug volume in the medication chamber. It has been observed that longer nebulization time causes inconvenience resulting in reduced patient compliance.[7]

Nebulizer drugs can be delivered through either face mask or mouthpiece.[8] Nasal inhalation can filter drug particles, reducing bronchodilator response to nearly half which further reduces lung deposition; inhaling through the mouth, especially with the facemask, is therefore important.[5,7,9,10] In the survey, 46% paramedics provided facemask to all patients requiring nebulization.

Sixty-seven percent clinicians instructed on drug and dosage followed by cleaning (50%), nebulization frequency (43%), selection of facemask/mouthpiece (38%), and nebulization time (31%). These parameters are equally important for effective delivery with nebulizers. Inconsistencies in the instructions may affect drug delivery, thus compromising clinical response and treatment outcomes.

Nebulizer accessories are potential sources of infection hence should be cleaned after every use and disinfected daily. Nebulizer manufacturers recommend that medication chamber, facemask, mouthpiece, and tubing should not be reused for multiple patients without being sterilized.[11] Our survey reported that cleaning was done after each use by 62% paramedics, 44.68% cleaned only mouthpiece/face mask, and 4.26% cleaned only medication chamber. Disinfectant was used by 39% paramedics whereas 35% used only water for cleaning purposes. To reduce the incidence of nosocomial infections such as pneumonia, measures to prevent transmission of pathogenic microbes[8,12] should be practiced in clinics and hospitals.

68% paramedics were trained on the use and maintenance of nebulizers, 11% learnt through observation while 21% were untrained. About 34.34% paramedics could not recall attending any training program on handling nebulizers in their practice years.

To the best of our knowledge, this is the first ever paramedic survey from India which highlights the nebulizer practices among paramedics across the country. Inconsistencies reported may lead to inadequate drug delivery and predispose patients to infection transmission. Thus, it is imperative to develop and propagate standardized protocols on “good nebulization practices” and conduct training programs for paramedics which can be followed at clinics as well as hospitals.

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Conflicts of interest
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