Noninvasive ventilation outside Intensive Care Unit in India: Too many problems to counter

Sir,

We read with interest the original article titled “Cost effectiveness of noninvasive ventilation (NIV) for chronic obstructive pulmonary disease (COPD) – related respiratory failure in Indian hospitals without Intensive Care Unit (ICU) facilities” by Patel et al. The shortage of ICU beds is very common worldwide and has forced NIV application outside ICU. This concept is very fascinating for developing countries such as India where there is a critical shortage of ICU beds and even when ICU beds are available, it may take several hours to reach the nearest ICU. In this study, Patel et al. concluded that ward-based NIV treatment is cost-effective in India and may increase survival in COPD patients with respiratory failure when ICU facilities are not available. However, cost is not the...
only constraint in implementing NIV outside ICU in India. There are many other important practical and logistic issues that need to be addressed before widespread application of NIV outside ICU in India becomes a reality. First of all, we need to decide at what level we want to use this facility, i.e., at Primary Health Centre (PHC), community health center or district hospital. This differentiation has many important implications such as availability of manpower, motorable roads, availability of electricity, and ambulance. In India, 25.5% of subcenters do not have electricity but the number comes down to 8% for PHC’s,[3] and availability of power back up is even more scarce.

To decide whether COPD patient is presenting with type II respiratory failure or some other complicating conditions such as pneumothorax, pneumonia, and acute respiratory distress syndrome. The health facility needs to have some basic investigations such as hemogram, chest X-ray, arterial blood gases, and electrocardiogram. In India, not many primary care facilities can boast of these facilities. It will be difficult to implement NIV without this investigation setup. If under program conditions, it is decided to start NIV on the basis of clinical parameters such as respiratory rate, pulse rate, and blood pressure, then there will be a need to develop a separate set of guidelines for using NIV in non-ICU facilities in a primary care facility. In such resource-constrained setting, there will be more likelihood of NIV failure so the facilities such as availability of backup ambulance 24 × 7, presence of motorable roads, and tie up with referral centers will be essential. At present, 5.8% of Indian PHCs do not even have all weather motorable roads.[3]

A recent survey showed that the ordinary ward nurses applying NIV perceived a high incidence of technical problems or complications.[4] Hence, application of NIV outside ICU requires recruitment of motivated and trained staff in ward experienced in the use of NIV (including treating physician, nursing staff, and respiratory therapist) who can correctly identify the patients who require NIV, properly apply NIV to the patient (explaining working of NIV to patient, choosing correct interface, proper cleaning of NIV mask, etc.), monitor response to NIV and promptly identify technical failure or clinical deterioration in patients for timely referral to a higher medical center where ICU facilities (including invasive ventilation) are available. In addition, all such hospitals where NIV is used outside ICU should be attached to a higher center where patients can be referred in case of NIV failure. Telemedicine may have an important role to play in streamlining connectivity of such hospitals with referral centers.

We need to keep in mind that all COPD patients presenting with respiratory failure cannot be treated in a similar manner. Therefore, before starting NIV outside ICU, we need to formulate definitive and specific guidelines on the use of NIV outside ICU to ensure that all patients are treated safely under all circumstances.

To conclude the use of NIV outside ICU may be cost-effective and appears to be a very promising and attractive prospect on its face value but its real world implementation has certain roadblocks that need to be cleared otherwise it may cause more harm than good. NIV outside ICU in hands of untrained staff may prove to be counterproductive.

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