

Outcome of Patients Treated With Noninvasive Ventilation by a Medical Emergency Team on the Wards: Is It Really Scarce Monitoring?

To the Editor:

I have read with attention the original article entitled "Outcome of patients treated with noninvasive ventilation by a medical emergency team on the wards."¹ In this study, the authors prospectively evaluated 238 patients with an S_{pO_2} of < 90% and a breathing frequency of > 28 breaths/min identified by a medical emergency team (MET). Fifty-four of these patients received noninvasive ventilation (NIV), whereas another 75 patients did not; both groups were evaluated in the general medicine ward.

The authors found significant differences in intubation percentage, with the rate being higher in the group without NIV. No significant differences in the percentage of mortality in the ICU and in the mortality assessed at 28 days in both groups were found. The authors concluded that NIV in a select group of patients with exacerbation of COPD/asthma and acute lung edema could be maintained regularly in the ward with no additional staffing and monitoring in the context of the assessment of an MET.

I have some remarks on this study.

1. Of the 238 patients initially evaluated, 45% were excluded, and 83 (34%) were transferred to the ICU. Data on the causes of transfer to the ICU, use of NIV, intubation, mortality in this group, and how many of these patients corresponded to exacerbations of COPD/asthma or acute lung edema were not provided.
2. The authors suggested maintaining and monitoring NIV in the general ward. However, noninvasive ventilators with sophisticated software monitoring (BiPAP Vision, Philips Respironics, Murrysville, Pennsylvania), which included exhaled tidal volume, minute volume, leak check, breathing frequency, T_I/T_{tot} , peak inspiratory pressure, F_{IO_2} , and even average volume-assured pressure support² or pressure controlled ventilation with backup modes of ventilation in patients who did not tolerate initially or did not respond to CPAP or bi-level positive airway pressure were used. Furthermore, the MET consisted of an internal medicine physician, a critical care nurse, a

respiratory therapist, and a standby pharmacist for prompt delivery of medication. The Scientific Group on Respiratory Intensive Care of the Italian Association of Hospital Pneumologists and the European Respiratory Society clearly distinguish between respiratory care units with a nurse/patient ratio of 1:5 or 1:6 in common rooms.^{3,4}

3. The duration of the evaluation period of the MET was 82–118 h ($P = .001$), which was in favor of the NIV group, indicating that the time spent in the general ward on these patients is the same as that spent in respiratory care units or ICUs. Moreover, the authors reported pH values of 7.27 ± 0.15 in the NIV group. Evidence exists of the feasibility of using NIV for patients with mild-to-moderate COPD exacerbations but with pH values > 7.30.^{5,6}

I believe that, with early identification, there is a select group of patients who may benefit from the use of NIV outside the ICU, but they must be evaluated with predictors of success^{7,8} and must also be willing to undergo NIV outside the ICU when there is a limited availability of beds in the ICU/respiratory care unit.

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Outcome of Patients Treated With Noninvasive Ventilation by a Medical Emergency Team on the Wards: Scarce and Probably Secure and Resourceful Monitoring in Select Subjects—Reply

In Reply:

We reviewed the comments by Killen H Briones Claudett. Of 238 subjects, we excluded the ones who were immediately transferred to the ICU. These subjects were deemed to be ICU candidates during the initial medical emergency team (MET) evaluation and were not the focus of our study.

Table 1. Excluded Subject Characteristics and Outcomes

Parameter	Immediate ICU Transfer, n = 83 (%)
Use of NIV	23
Intubation	51
Diagnosis	
COPD/asthma	10
Pulmonary edema	8
28 d mortality	22

NIV = noninvasive ventilation

Nonetheless, their characteristics are outlined in Table 1.

As mentioned in our study results, we used newer versions of CPAP or bi-level positive airway pressure machines in 44 subjects. The more advanced pressure controlled ventilation and average volume-assured pressure support modes were utilized in only 7 subjects. Newer generations of ventilators provide volume-controlled, pressure-controlled, and pressure support ventilation.¹ Most of these newer generation noninvasive ventilators are equipped with monitoring parameters such as exhaled tidal volume, minute volume, leak check, and breathing frequency.² This makes it easier for clinicians to monitor patient response, and in our opinion, ventilators are now much safer for use on the wards. In less resourceful areas where very old generation ventilators are still being used, our results may not apply.

Respiratory care units (RCUs) are a good option in hospitals that have this facility. However, to our knowledge, no one has looked at outcome differences between subjects managed on the ward in the context of an MET and managed in these RCUs. If a patient can be managed safely on the ward, it would be prudent to use these RCU beds for other patients requiring more aggressive care or observation.

The duration of the MET call in our study was 82–118 min (not hours), favoring the noninvasive ventilation group. This duration is much less than the time these sub-

jects would spend in the ICU or specialized RCUs. In our opinion, this short duration of close monitoring by an MET of select subjects on the wards can help reduce already strained health care resources.

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Management of H7N9 Bird Flu Case

To the Editor:

The report entitled “Management of the first confirmed case of avian influenza A H7N9” is very interesting. Qiao et al¹ reported that “when the viral infection was identified, strict procedures for disinfection and protection were carried out.” Basically, the standard influenza management guide-

line can be applied to the management of H7N9 bird flu, and the respiratory infection control process is very important.² In fact, there are many related publications on H7N9 bird flu management. Chen et al³ noted that “underlying disease, late diagnosis, and untimely antiviral treatment are possible high-risk factors for infections and death.” An important point is the control of infection that might be transmittable to medical personnel. As Qiao et al¹ mentioned, there is still no report of medical personnel infection due to contact with patients. In the previous situation of H1N1 swine flu, there were many cases of infection of medical personnel resulting from close contact with patients. In addition, the human-to-human transmission of H7N9 is still a controversial issue.⁴ A recent animal model study also showed a low possibility of air-borne transmission of H7N9 bird flu.⁵ Nevertheless, it is necessary for medical personnel to take precaution against infection by H7N9 bird flu after contact with infected patients.

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