LETTERS TO THE EDITOR

Non-invasive mechanical ventilation

We read with interest the study by Moretti *et al* concerning the incidence and causes of failure of non-invasive mechanical ventilation (NIV) after initial success.[1] It is an interesting study, but some important factors associated with the initial treatment of chronic obstructive pulmonary disease (COPD) which could influence the results of the study are not addressed. The aim of NIV includes not only the correction of alveolar hypoventilation, but also the unloading of inspiratory muscles. NIV reduces the work of breathing, allowing resting of respiratory muscles and recovery of muscle function. How long had the patients in the two groups been in an acute state before admission to the intensive care units? Where were they before being enrolled in the study—in an emergency unit or in a pneumology ward? Was it the same for the two groups? Perhaps the patients in group 2 had suffered from respiratory muscle overload for longer. Earlier NIV treatment may avoid late failure.[2]

Another factor not known in the study is the dose of corticosteroids used in the two groups during the time in the intensive care unit. Was the dose of corticosteroids higher in group 2? Corticosteroids are probably not good for recovery of muscle function in these cases and there is no consensus for the use of systemic steroids in the treatment of patients with acute exacerbations of COPD. The ATS and ERS guidelines acknowledge the lack of supporting evidence for the use of steroids in patients with hypercapnic exacerbations of COPD.[3 4] These patients should be checked for possible deleterious effects of high doses of steroids.

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2 Plant PK, Owen JL, Elliott MW. Early use of non-invasive ventilation for acute exacerbations of chronic obstructive pulmonary disease on general respiratory wards: a multicentre randomised controlled trial. *Lancet* 2000;**355**:1931–5.
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AUTHORS' REPLY We thank Dr Vanpee and colleagues for the comments about our paper on the incidence and causes of failure of non-invasive mechanical ventilation after initial success[1] and welcome the opportunity to clarify some important issues. They ask, firstly, whether the duration of the respiratory muscle fatigue may have influenced our results. The diagnosis of respiratory muscle fatigue is very complex and is difficult to perform in the clinical setting. To our knowledge, the loss of force induced by "acute fatigue" can only be identified by the electrical or magnetic stimulation of the phrenic nerve, but only if this is compared with the pressures obtained in a previously fresh muscle.[2] In the clinical setting the occurrence of acute alveolar hypoventilation (hypercapnic respiratory failure) associated with, for example, abdominal paradoxical movements, tachypnoea, or recruitment of accessory muscles may suggest failure of the respiratory pump. At admission the two groups of patients showed some or all these signs and the same degree of decompensation of arterial blood gas tensions (pH 7.25 *v* 7.22; P_{ACO_2} 87 mm Hg *v* 83 mm Hg for the successful and late respiratory failure groups, respectively), so that the "theoretical degree" of pump failure, if any, was likely to be similar in the two groups. Concerning the timing of the occurrence of acute respiratory failure, it should be pointed out that one of the two respiratory intensive care units (RICU), which is part of a rehabilitation centre, does not have an emergency room, so all the patients were transferred to the unit from the pneumological ward as soon as their condition deteriorated. The other RICU is part of a regional general hospital but, again, more than 50% of the patients enrolled in the study came from the pneumological ward, not from the ICU. This latter subset of patients was, however, equally distributed between the successful and late failure groups.

Finally, Dr Vanpee and colleagues are concerned about the possible differences between the two groups in the dosage of steroids used in the acute phase. We did not analyse the daily doses of steroids in the two groups of patients. It is our practice, however, to use systemic methylprednisone (40–80 mg) in acute exacerbations of COPD because it has been shown that it may improve respiratory mechanics[3] and also pulmonary function,[4] and the British Thoracic Society recommends at least a brief trial of steroids in this situation.[5] However, these doses are not likely to affect the short term function of the respiratory muscles since the only "acute" study performed in rats showed a relatively small effect on diaphragmatic fibres with doses at least 10 times higher.[6]

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1 Moretti M, Cilione C, Tampieri A, *et al*. Incidence and causes of non-invasive mechanical ventilation failure after an initial (>48 hrs) successful attempt. *Thorax* 2000;**55**:819–25.
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BTS asthma guidelines

The British Thoracic Society consensus guidelines on the management of acute severe asthma[1] are integral to Emergency Department management. If evidence-based medicine is to remain an important part of modern medical practice, all guidelines require regular review. The recent Cochrane systematic review of intravenous magnesium sulphate has demonstrated a clear role for this as a second line therapy which is both safe and easy to use.[2] Another Cochrane review, however, has thrown clear doubt on a continuing role for intravenous aminophylline as a second line therapy due to lack of evidence of efficacy and a high rate of adverse reactions.[3] The role of subcutaneous adrenaline in unresponsive cases is more anecdotal but it is certainly widely used and has been recommended for such situations in the consensus document produced by the Canadian Thoracic Society/Canadian Association of Emergency Physicians.[4] The role of ketamine as the induction agent of choice, should rapid sequence intubation prove necessary, and the possible use of inhaled low dose anaesthetics as a rescue procedure also need to be addressed. We would urge the early review and update of current guidelines and the production of new standards for management of acute severe asthma in the Emergency Department.

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1 British Thoracic Society, National Asthma Campaign, Royal College of Physicians of London, *et al*. The British guidelines on asthma management: 1995 review and position statement. *Thorax* 1997;**52**(Suppl 1):S1–21.
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NOTICE

3rd International Meeting on Respiratory Care Indonesia (RESPINA)

A meeting entitled "The air, the lung and respiratory care" will be held on 1–3 September 2001 at the Jakarta Convention Center, Jakarta, Indonesia. For further details please contact Inge Djumhana, email: respina_international@yahoo.com. Online registration available at http://www.respina.com