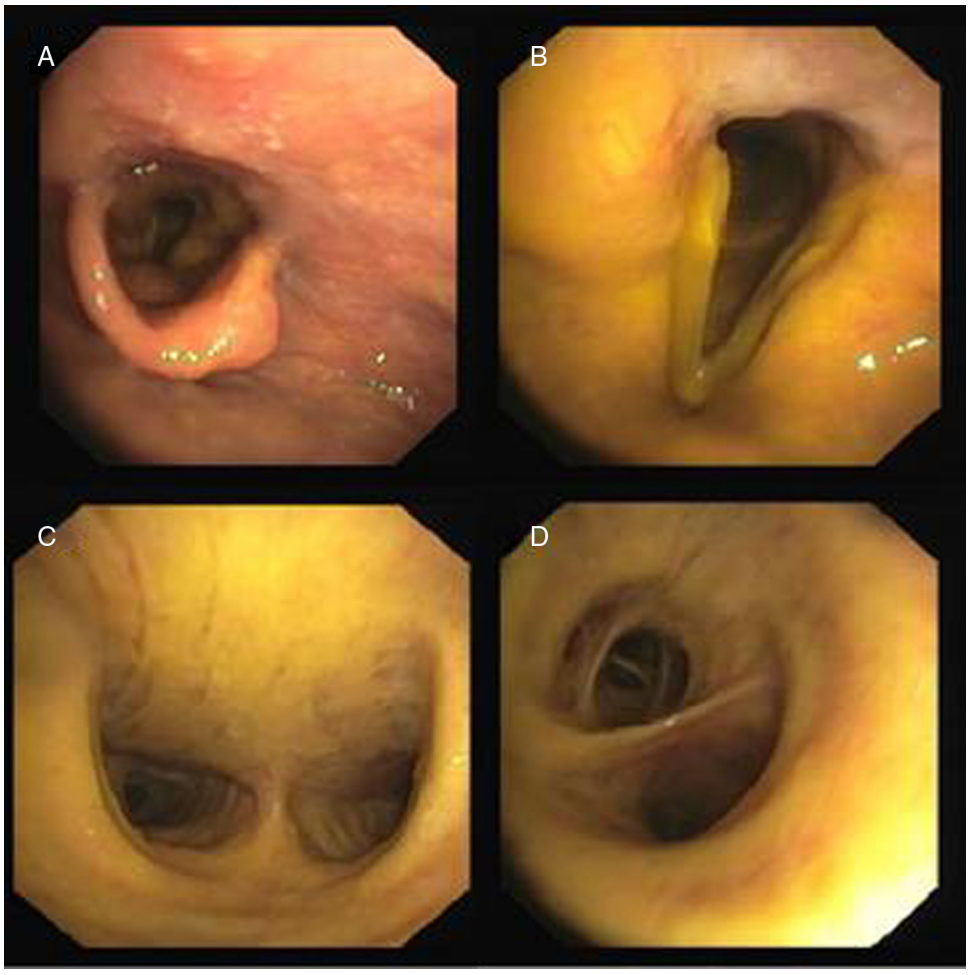

Fig. 1 (A) Epiglottis; (B) Vocal cords; (C) Carina; (D) Truncus intermedius.

Conflict of interest

The authors have no conflicts of interest to declare.

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http://dx.doi.org/10.1016/j.rppnen.2015.06.003

Misconceptions in the assessment of cough peak flow measurements for extubation or decanulation protocols

Dear Editor,

Winck et al. proposed routine use of cough peak flow (CPF) measurements in the assessment of extubation and decanulation readiness.[1] However, intubated patients cannot cough because they cannot close their glottis to hold pressure, and the paper the authors cited suggesting that 90 L/m predicts successful extubation[2] is irrelevant for patients with neuromuscular respiratory muscle weakness since they can almost always be successfully extubated even when their unassisted CPF and vital capacities are unmeasurable.[3,4] The paper that the authors referred to that used 160 L/m as a reference reported the need for maximum unassisted or assisted CPF to reach 160 L/m after extubation.[5] Assisted CPFs are attained by patients air stacking to the maximum lung volumes that can be held by the glottis and then an abdominal thrust is applied to generate CPF.[6] It is the maximum flow that can be generated through the upper airways that is important and not whether the patient can generate that flow him/herself because the greater the flow, the greater the patency of the airways, and the more effective mechanical insufflation–exsufflation (MIE) will be in elimi-

nating airway secretions via an oronasal interface once the tube is out.[4] Thus, the distinction between unassisted and assisted CPF is important. The fact is that in a recent report, many patients (e.g. babies with spinal muscular atrophy type 1) could generate no measurable flows via the upper airway, but were almost invariably successfully extubated anyway because following extubation, MIE generated effective flows to clear the airways.[4]

Decanulation protocols begin by transitioning from cuffed to cuffless fenestrated tracheostomy tubes or tracheostomy buttons so that the patient can practice CNVS and MIE and speak without the tube obstructing the upper airways. Failure to permit verbal communication almost invariably results in severe reactive depression.[7] The first step in the process of decannulation to noninvasive management is cuff deflation. We have seen numerous other tragic examples of failure to deflate the cuff, and this has been reported.[7] Switching patients to cuffless fenestrated tubes does not always clear the upper airway sufficiently to use NVS comfortably because the fenestration can abut against the back wall of the trachea rather than be in the airway. When there is obstruction to the tube, the NVS backs up into the patient's cheeks. Tracheostomy buttons can eliminate this problem by clearing the airway of the tube so that air can leak up through the vocal cords for speech, and the leak is compensated by increasing ventilator settings to maintain normal alveolar ventilation.

Conflicts of interest

The authors have no conflicts of interest to declare.

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http://dx.doi.org/10.1016/j.rppnen.2015.05.002

Reply to ''Misconceptions in the assessment of cough peak flow measurements for extubation or decanulation protocols''

We thank very much the comments of Chiou M et al. about our paper entitled ''The value of cough peak flow measurements in the assessment of extubation or decannulation readiness'' recently published in the Portuguese Journal of Pulmonology.[1]

We agree with the authors that intubated patients cannot reproduce a true cough maneuver because they cannot close their glottises; so we explain that in our article saying that the ''Cough PEF measured in intubated patients may be considered a ''huff'' or, perhaps, a peak expiratory flow maneuver and not a true peak cough flow'', so we clearly differentiate a Cough Peak Expiratory Flow (PEF) to a true Peak Cough Flow (CPF). In the conclusions we also state that: ''Only when the measurement is obtained with an active glottis should we call it cough peak flow, otherwise it should be termed cough PEF''. So we believe that in our paper we contributed to the clarification of the concept and to the standardization of the measurements. Moreover in Table I we summarized the papers designed to evaluate cough strength in the extubation or decannulation phases, differentiating each setting and the population is predominantly of critically ill. The context of neuromuscular patients is somewhat different and the measurements should also include CPF's obtained with enhancing maneuvers.

We agree with Chiou M et al. that the distinction between unassisted and assisted CPF is important and in fact Dr Bach's group was one of the first to propose in this setting the measurement of assisted CPF with an abdominal thrust timed to glottic opening.[2] In our review paper we also acknowledge this by saying that ''if a spontaneous CPF of more than 160 L/min is not achieved a manually assisted CPF or lung volume recruitment CPF should be evaluated''.[1] Unfortunately, only 4 papers published so far refer to this manually assisted coughing maneuver, and not all systematically report the values of assisted versus unassisted CPF.[2–5] The fact that in these papers values are measured normally through the mouth and within 3 h of

DOI of refers to article: http://dx.doi.org/10.1016/j.rppnen.2015.05.002