APPENDIX

ARDS

**Diagnosis:** Bilateral lung infiltrates on chest X-ray, no history of chronic lung disease, or clinical suspicion of left heart failure (*i.e.*, pulmonary artery occlusion pressure <18 mmHg, when available), and a PaO\(_2\) to inspired O\(_2\) fraction (FiO\(_2\)) ratio being less than 200 with the following initial ventilatory settings: pressure-controlled ventilation (PCV, Servo 900C or Servo 300, Stemens-Elema, Sweeden), tidal volume of 10 ml/kg, respiratory rate of 15, inspiratory to expiratory time ratio of 1/2, FiO\(_2\) of 1.0 and PEEP of 5 cm H\(_2\)O\(^{15,19}\).

**Management:** All patients are paralyzed with vecuronium (0.1 mg-kg\(^{-1}\)-h\(^{-1}\)) and sedated with midazolam (0.3 mg/kg/h). Radial artery was catheterized for monitoring arterial pressure (Viggo-Spectramed, USA), and blood sampling for blood gas analyses (ABL-500, Radiometer, Copenhagen, Denmark). PEEP titration was applied at 3 cm H\(_2\)O increments until reaching 15 cm H\(_2\)O.\(^{15,16}\) Our major aim was to keep PaO\(_2\) between 60 and 100 mmHg. Accordingly, FiO\(_2\) was manipulated to maintain PaO\(_2\) greater than 60 mmHg. Peak pressure was not permitted to increase more than 40 cm H\(_2\)O. Blood gas analyses and gas exchange parameters were recorded at each PEEP level after a stabilization period of 20-30 minutes. The PEEP value which maintained the best oxygenation with the least hemodynamic effect was accepted.

**Weaning:** As clinical improvement permitted, the following parameters were gradually decreased in the following order: FiO\(_2\), peak airway pressure, and then PEEP. Patients were accepted into the weaning program when they were clinically and hemodynamically stable with FiO\(_2\) < 0.5, PEEP of \(\leq 5\) cm H\(_2\)O, an arterial oxygen saturation of \(> 90\)%, and a maximal inspiratory pressure \(< -25\) cm H\(_2\)O.\(^{35}\) Pressure support ventilation (PSV) and CPAP were used in the early phase of weaning. Subsequently, we used procedures including high-flow oxygen through an open circuit (T-piece, high flow) and low-flow of oxygen model (easy-breath, humidifier). Mechanical ventilation was thus avoided in the late weaning phases.

**General Care**

**Airway Management:** Percutaneous dilatational tracheostomy was performed for patients who required prolonged mechanical ventilation.
Position: Patients were maintained in semi-recumbent (≥ 30º) position unless a diagnosis of ARDS had been made. In those patients, prone positioning was used routinely. We used prone position, because a previous study from our unit demonstrated that this position improved respiratory parameters without provoking adverse hemodynamic consequences.36

Enteral nutrition: Early enteral nutrition was encouraged. Maximum nutritional intake was set at 2500 kcal/day to avoid excessive CO₂ production.

Hemodynamic management: In general, MAP was maintained above 60 mmHg. For this purpose, the order of management was as follows: 1) crystalloids, and then colloids, were given at a rate sufficient to keep pulmonary-artery occlusion pressure in between 9 and 18 mmHg; and, 2) hemoglobin was maintained above 10 g/dL (unless clinically contrindicated).

Prevention of Hospital Infections

• Patients were separated from each other by rigid barriers.

• The drugs and care materials of patients were kept separately and in ergonometric bed-side closets.

• Each bed unit had its own hand-washing section. Staff members wore disposable gloves for every patient contact. Hands were nonetheless washed after each contact.

• Procedures including catheterization, culture sampling, and percutaneous tracheostomy were performed with full aseptic precautions.