CHEST

VOLUME 120 / NUMBER 6 / DECEMBER, 2001 Supplement

Section I: Guidelines

Evidence-Based Guidelines for Weaning and Discontinuing Ventilatory Support*

A Collective Task Force Facilitated by the American College of Chest Physicians; the American Association for Respiratory Care; and the American College of Critical Care Medicine

Chairman
Neil R. MacIntyre, MD, FCCP
Writing Committee on Behalf of the Panel
Deborah J. Cook, MD, FCCP
E. Wesley Ely, Jr., MD, MPH, FCCP
Scott K. Epstein, MD, FCCP
James B. Fink, MS, RRT
John E. Heffner, MD, FCCP
Dean Hess, PhD, RRT
Rolf D. Hubmayer, MD, FCCP
David J. Scheinhorn, MD, FCCP

Members
Suzanne Burns, RN, MSN, CCRN, RRN
David Chao, MD, FCCP
Andres Esteban, MD
Douglas R. Gracey, MD, FCCP
Jesse Hall, MD, FCCP
Edward F. Haponik, MD, FCCP
Marin H. Kollef, MD, FCCP
Jordi Mancebo, MD
Constantine Manthous, MD, FCCP
Arthur S. Slutsky, MD, FCCP
Meg Stearn-Hassenpflug, MS, RD
James K. Stoller, MD, FCCP

(CHEST 2001; 120:375S–395S)

Abbreviations: AHCPR = Agency for Healthcare Policy and Research; ASV = adaptive support ventilation; CPAP = continuous positive airway pressure; FIO_2 = fraction of inspired oxygen; HCP = health-care professional; IMV = intermittent mandatory ventilation; LOS = length of stay; LR = likelihood ratio; MMV = minimum minute ventilation; NPPV = noninvasive positive-pressure ventilation; NRCU = noninvasive respiratory-care unit; Pdi = transdiaphragmatic pressure; PEEP = positive end-expiratory pressure; PMV = prolonged mechanical ventilation; RWC = regional weaning center; SBT = spontaneous breathing trial;

The discontinuation or withdrawal process from mechanical ventilation is an important clinical issue.[1,2] Patients are generally intubated and placed on mechanical ventilators when their own ventilatory and/or gas exchange capabilities are outstripped by the demands placed on them from a variety of diseases. Mechanical ventilation also is required when the respiratory drive is incapable of initiating ventilatory activity either because of disease processes or drugs. As the conditions that warranted placing the patient on the ventilator stabilize and begin to resolve, attention should be placed on removing the ventilator as quickly as possible. Although this process often is termed "ventilator weaning" (implying a gradual process), we prefer the more encompassing term "discontinuation."

Unnecessary delays in this discontinuation process increase the complication rate for mechanical ventilation (*eg*, pneumonia or airway trauma) as well as the cost. Aggressiveness in removing the ventilator, however, must be balanced against the possibility that premature discontinuation may occur. Premature discontinuation carries its own set of problems, including difficulty in reestablishing artificial airways and compromised gas exchange. It has been estimated that as much as 42% of the time that a medical patient spends on a mechanical ventilator is during the discontinuation process.[3] This percentage is likely to be much higher in patients with more slowly resolving lung disease processes.

There are a number of important issues involved in the management of a mechanically ventilated patient whose disease process has begun to stabilize and/or reverse such that the discontinuation of mechanical ventilation be-

*Correspondence to: Neil R. MacIntyre, MD, FCCP, Duke University Medical Center, Box 3911, Durham, NC 27710; e-mail: neil.macintyre@duke.edu