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Books, Films, Tapes, & Software

Noninvasive Mechanical Ventilation. John R Bach MD. Philadelphia: Hanley & Belfus. 2002. Soft cover, illustrated, 348 pages, $39.

Until 15 years ago mechanical ventilation was limited to the intensive care unit because mechanically ventilated patients needed to be paralyzed and sedated. Over the last decade the great interest in noninvasive mechanical ventilation (NIMV) has opened new horizons in the field of mechanical ventilation and ways to apply it. Indeed, as the consequence of various clinical and physiological evidence, NIMV has become a first-line intervention in the management of severe exacerbations of chronic obstructive pulmonary disease (COPD). Moreover, it has been shown that NIMV can be applied at an earlier stage of ventilatory failure than would be usual when a patient is intubated and that NIMV can be administered outside the ICU.[1] NIMV is increasingly used to treat chronic hypercapnic respiratory failure.[2] Its use in patients affected by chronic obstructive pulmonary disorders is still controversial, whereas most of the studies of NIMV for restrictive thoracic disorders (in particular with neuromuscular patients) have suggested that NIMV alleviates the symptoms of chronic hypoventilation in the short term,[3] and in 2 small studies survival was prolonged.[4,5] A recent Cochrane review stated that "long-term mechanical ventilation should be offered as a therapeutic option to patients with chronic respiratory failure due to neuromuscular diseases."[6]

Despite the above-mentioned clinical and scientific evidence about NIMV and the hundreds of studies published in major medical journals, very few books have been published on NIMV, so it is very difficult for non-experts to find a comprehensive and exhaustive review on this subject. A new book on NIMV is therefore most welcome, and I read with great interest **Noninvasive Mechanical Ventilation** (primary author Dr John R Bach, with contributions by others). This book is a physiological and clinical guide for physicians, respiratory therapists, nurses, and other health care professionals. It is divided into 15 chapters and includes illustrative case studies of respiratory management (Chapter 15). The books begins with an epidemiological profile of the diseases treated with NIMV, followed by several chapters dealing with NIMV's mechanisms of action and mainly dedicated to long-term NIMV. The middle part of the book is dedicated to the application of NIMV during acute respiratory failure, with pediatric patients and in the home-care setting. Chapters 13 and 14 deal with chest physical therapy and nutrition.

Dr Bach should be congratulated for the effort and energy he had put into approaching this difficult task. However, unfortunately, this book is not always easily comprehensible or easy to follow, and in places seems not logically organized. Moreover, the book is sometimes anecdotal and paternalistic rather than evidence-based. I do not like the tendency to consider only data from randomized, controlled studies as being true and scientifically worthy; that belief has been recently questioned by editorials in leading medical journals. Nevertheless, I also think that statements we make (especially in a book that consists primarily of a series of logical sequences) about an "*almost* exact science" such as medicine should be supported by a solid rationale, clear clinical evidence, and especially by data reproducible on a large scale.

For example, **Noninvasive Mechanical Ventilation** seems to trace most of the mechanisms of NIMV's actions back to "respiratory muscle aid," and this is really reductive. In this respect Chapter 4, "Noninvasive Ventilation: Mechanisms of Action," is very well written. The chapter's author, Dr Mark W Elliott, highlights the point that the load/capacity balance of the respiratory system is not the only physiological mechanism involved; we should also take into account the effects of NIMV on respiratory drive, sleep, respiratory mechanics, and eventually also in correcting ventilation-perfusion abnormalities. Unfortunately, the remaining chapters seem to deny any active role for the above-mentioned mechanisms (despite that they are mentioned), if not for the muscles. Indeed, in this respect clear definitions of "fatigue" and "weakness", according to the National Heart, Lung, and Blood Institute's workshop summary,[7] are lacking. The reader may be confused by the definition that fatigue is simply "the failure to maintain the required or expected force," since this does not clearly highlight the concept that, generally, fatigue is acute and weakness is chronic. This difference may be very important when we want to explain the different roles of mechanical ventilation in (1) helping to reverse an acute condition or (2) sustaining weakened muscles for chronic conditions such as respiratory failure due to a neuromuscular disease. For example, on pages 242–245 it is stated that alleviating COPD patients' chronic respiratory muscle fatigue may be the leading reason for long-term NIMV. The theory of long-term resting, quite popular in the 1980s, was challenged by the demonstration that the diaphragm of a patient with stable COPD was as good as that of a normal subject in generating pressure in response to bilateral phrenic nerve stimulation, at similar lung volume. This led to the conclusion that the absence of central inhibition and the absence of evidence of chronic fatigue cast doubt on the need to treat such patients with interventions intended to improve the contractility of the diaphragm by resting. More recently other researchers added support to this theory when they showed, with diaphragm biopsy specimens from patients with severe COPD, that the disease increases the slow-twitch characteristics of the muscle fibers, as an adaptive mechanism that increases resistance to fatigue.

Another weakness of this book, in my opinion, is the lack of clarity in describing the various ventilation modalities. Specifically, there is confusion in the description of pressure-controlled ventilation and CPAP, which was invented much earlier than is stated (actually by Dr Barach, in the 1930s), and the functioning of the various ventilators (eg, on page 105 it claims that bi-level positive airway pressure [BiPAP] has a pressure trigger). It would have been very helpful in this respect to highlight some of the classical problems and typical features of NIMV, such as the importance of staff training, how to prevent and correct air leaks, what to monitor, and which variables are the best predictors of NIMV failure or success.

One final minor problem with the book is that the copy-editing was inadequate in

one glaring instance: on page 69 the surname of name Michelangelo Buonarotti is misspelled "Buonarrotte."

Despite my overall rather negative review of this book, I have to admit that it also has several strengths. The more practically oriented chapters (eg, Chapter 1, with its clear divisions and explanations of the diseases that lead to chronic respiratory failure) may be very useful both for experienced medical and paramedical personnel or those who are approaching NIMV for the first time. Moreover Chapter 7, which includes an extensive table about face masks, as well as nice, clear illustrations, is an excellent review of the state of the art of the NIMV-patient interface. Also, the idea of having a chapter (Chapter 15) dedicated to illustrative case studies is brilliant and will stimulate many readers' interest.

Keeping in mind that **Noninvasive Mechanical Ventilation** should not be considered a physiology text or a recommendations/guidelines text on which clinical practice should be based, the book may be useful as a reference for those who want an overview of NIMV.

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Lung Cancer: Myths, Facts, Choices – and Hope. Claudia I Henschke PhD MD and Peggy McCarthy, with Sarah Wernick. New York: WW Norton. 2002. Hard cover, illustrated, 389 pages, $27.95.

Lung Cancer: Myths, Facts, Choices – and Hope is the collaborative effort of 2 health professionals with very different backgrounds: Dr Claudia Henschke is a professor of radiology and chief of the Division of Chest Imaging at Cornell University, and Peggy McCarthy is a medical educator and founder of the Alliance for Lung Cancer Advocacy, Support, and Education, an international advocacy group for lung cancer patients and their supporters. The authors were assisted by Sarah Wernick, a freelance health writer. The book's contents reflect the interests of Henschke and McCarthy, and the result is an excellent resource for patients who are at risk for lung cancer, who have the disease, or who have a family member or friend with lung cancer.

Dr Henschke's father, Dr Ulrich Henschke, was a physicist and a pioneer in radiation oncology; his career began in Berlin in the 1930s. Dr Claudia Henschke was active in her father's practice; she monitored the radiation exposure badges at his office. Prior to his death in an airplane crash in 1980, she had planned to enter practice with him. In July of 1992 she began a research project in which she used serial computed tomography (CT) chest scans to screen for early lung cancer in high-risk patients. The results of that study were published in *Lancet* in 1999 and resulted in a medical debate that persists today.[1] Prior studies of lung cancer screening at the Mayo Clinic, Johns Hopkins University, and Memorial Sloan-Kettering Institute using chest radiographs and/or sputum cytology yielded negative results, and the major chest physicians' organizations advise against lung cancer screening as a recommended policy. Dr Henschke argues that the availability of CT scans has made the prior studies obsolete.

This book is not written for physicians, therapists, or nurses, but for patients at risk for lung cancer, who have or have had lung cancer, and for friends, relatives, and supporters. The central message is that there is hope for lung cancer victims, even if their caretakers tell them that "there is nothing more to be done." This valuable message is repeated throughout the book. The authors recommend second, third, or even more opinions and urge the reader to seek the most renowned and experienced clinicians, even if it takes a long time to get to see them. They emphasize the roles of chest radiation therapists, chest oncologists, and chest surgeons (but not chest physicians!) in making decisions. The most useful aspect of the book is the extensive referencing of books, articles, telephone numbers, and especially the Internet. Telephone numbers and Web sites are referred to frequently, as are support groups and patient advocacy organizations. There are many references to the resources and policies of the Alliance for Lung Cancer Advocacy, Support, and Education.

The first 2 chapters introduce the subject of lung cancer and its detection. The authors explain that lung cancer is a common illness and that the cigarette smoker should not let guilt dictate his/her actions. Chapter 3 provides basic information about the lungs and how they work, and Chapter 4 discusses the development and spread of lung cancer. In Chapter 5 Dr Henschke reviews early detection, with a strong emphasis on serial spiral CT lung scans for patients at risk. Smoking and its grim rewards are the subject of Chapter 6. The authors point out that women are highly at risk and that smoking filtered or mentholated cigarettes or a pipe or cigar does not decrease the risk. Chapter 7 is devoted to helping the smoker kick the habit and, in our opinion, is one of the more useful chapters. It reflects the experience of the authors in this subject.

Chapter 8 addresses detection of lung cancer, pointing out some of the less recognized but common symptoms of early lung cancer and emphasizing the fact that when complaints such as chest pain or hemoptysis appear, the opportunity for a cure has probably already passed. The staging of lung cancer is explained simply and understand-