come to some agreement on those objective findings, which best define the severity of asthma. At that point, perhaps we can establish guidelines.

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Outcomes of Home Care for Life-Supported Persons

Long-term Oxygen and Prolonged Mechanical Ventilation

High technology home care (HTHC) is now the fastest growing sector of the home care economy.1 Life-sustaining technologies for home application include long-term oxygen (LTO) therapy which became prominent in the 1980s.2,3 Prolonged mechanical ventilation (PMV), which began during the polio epidemics of the 1950s, has had expanded use at home during the critical care era.4,5

An urgent need exists for information about clinical outcomes of patients who require LTO and PMV at home. Evidence-based research would be helpful for clinicians to develop medical necessity guidelines. Outcome data would improve care due to more informed clinical decisions regarding appropriate utilization. Outcome research would also justify program development and public policy that benefit such patients. Aggregate data would be useful to designers of home care programs and integrated health-care delivery systems. Managed care organizations and health-care providers would find information valuable since patients with chronic respiratory insufficiency (CRI) represent some of the highest costs of the general population for which they assume financial risk. Public policy makers also find that these patients require more services when health-care resources are more constrained.

At present, France is unique with a system in place capable of obtaining this essential information for patients requiring LTO/PMV for CRI at home. The French approach features 32 regional associations and 1 national organization (ANTADIR) to track experience with LTO/PMV for a variety of cardiopulmonary, neuromuscular, skeletal, and CNS control of breathing conditions. Although there have been publications about the French association system in the past,6-8 in this issue of CHEST (see page 741), Chailieux and colleagues present a 10-year analysis of the French experience conducted by French physicians who are actively involved in the regional associations and ANTADIR national observatory. It is vital that those interested in clinical management, home care program development, health-care system design, and public policy formulation understand this system and what it can accomplish.

The French system requires submission of a universal medical prescription for LTO/PMV whether the service is provided by the not-for-profit regional associations (75%) or private sector organizations (25%). Data elements are thus available to French authorities responsible for reimbursement and to the National Observatory for analysis of clinical outcomes of a representative sample of the population. This has been done by Chailieux and colleagues over a 10-year period. Readers interested in cost, quality, and economic outcomes have a large series of patients with CRI treated by different modalities to determine efficacy of clinical management. This will help them with programmatic and policy decisions such as resource allocation for this population.

It is unfortunate that such data collection and analysis are not available in the United States. Although there have been state surveys9,10 and the establishment of a National Center for Mechanical Ventilation (1400 Jackson St., J-105a, Denver, Colo., 80206), a comprehensive evaluation of the US experience has not been successful to date.11 Due to the explosive growth of HTHC in the United States and other countries, it is essential to collect, analyze, and disseminate such technology assessment. The application of new tech-
nologies and overuse of existing ones account for up to 50% of the rise in health-care costs. This is occurring at a time of constriction of federal entitlement programs, development of block-grant Medicaid programs without care guidelines, and planning of healthcare delivery which must adapt to managed care and capitation.

Patients with CRI now face a crisis due to the impact of rising costs of life-sustaining technologies on global health-care spending. We must redesign services supporting such patients with a tracking system to obtain outcome data, or we risk denying care to this vulnerable population.

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Vasodilator Therapy in Acute Respiratory Failure

Since the British MRC1 and the NOTT2 trials, there has been no debate that supplemental oxygen therapy improves survival in severe COPD. Whether or not this effect is a consequence of improvement in pulmonary hypertension is not yet known. Nevertheless, over the past few years, there has been a large number of studies evaluating the use of pharmacologic vasodilators in patients with pulmonary hypertension associated with chronic obstructive lung disease, although there has never been a demonstrated improvement in survival with this therapy. In contrast, there have been comparatively few trials of vasodilator therapy in patients with COPD and acute respiratory failure. In this issue of CHEST (see page 750), Archer and colleagues have studied the effect of intravenous prostacyclin in mechanically ventilated patients with an acute exacerbation of COPD. Predictably, this therapy resulted in a fall in PaO₂, and importantly, no improvement in systemic oxygen transport was noted. This study raises interesting issues relating to the pathophysiology of gas exchange in respiratory failure.

First, systemic vasodilator therapy in patients with parenchymal lung injury is not without important side effects such as tachycardia, systemic hypotension, and hypoxemia. Worsening hypoxemia following intravenous vasodilator therapy in these patients results from loss of regional hypoxic pulmonary vasoconstriction and increased perfusion of poorly ventilated lung units. For precisely these reasons, there is now great interest in the use of inhaled vasodilator therapy in this clinical setting. For example, inhaled nitric oxide (NO) and nebulized prostacyclin (PGI₂) (both potent vasodilators) will preferentially be delivered to better ventilated lung units, and therefore, may improve gas exchange. Indeed, in patients with ARDS, the use of inhaled NO³ and PGI₂ has resulted in both increased PaO₂ and lowered pulmonary artery pressure. Despite the great interest in this novel form of therapy, there is good reason to sound a cautionary note before using it in patients with obstructive lung disease. Recent work using the multiple inert gas technique has demonstrated that in patients with stable COPD, inhaled NO may in fact lead to worsening hypoxemia due to worsening V/Q matching.⁵

So why do patients with ARDS and COPD respond differently to inhaled vasodilator therapy? The explanation likely lies in the different nature of their lung physiology. Patients with ARDS have lung disease typically characterized by shunt, whereas in COPD patients, V/Q mismatch is the predominant problem. In ARDS patients (with shunt), the inhaled vasodilator is not delivered to areas with absent ventilation. Therefore increased blood flow to these areas (and worsening V/Q mismatch) does not result. In contrast, when inhaled vasodilators are administered to patients with COPD, vasodilation and release of hypoxic pulmonary vasoconstriction in low V/Q lung units may account for the worsening gas exchange. Nevertheless, use of inhaled vasodilator therapy in patients with an