daytime hypercapnia in certain patients with obstructive sleep apnea. The second question: Which pathologic events during sleep apnea affect awake ventilation? Sleep deprivation can decrease the ventilatory drive in normal humans, and severe hypoxemia and hypercapnia during sleep can produce reversible awake hypercapnia in man. Therefore, nocturnal hypoxemia, nocturnal hypercapnia, and sleep disturbances all may be important mediators of daytime hypercapnia in patients with sleep apnea. The third question: What mechanisms underlie the effect of apnea and its associated hypoxemia upon central ventilatory control? Preliminary studies suggest that severe hypoxemia during sleep apnea may greatly increase the production of adenosine and other adenosine triphosphate metabolites. Since adenosine and its analogues inhibit neuronal transmission, induce hyperventilation in experimental animals, and may modulate ventilatory depression during hypoxemia, adenosine may mediate some effects of severe hypoxemia upon the ventilatory control centers of the brain in patients with sleep apnea. Answers to these three clinically important questions may clarify the close but mysterious ties between sleep apnea and the obesity-hyperventilation syndrome.

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Advances in Prospective Payment for Pulmonary Patients

On May 19, 1987, the Health Care Financing Administration (HCFA) published changes to the Diagnosis-Related Group (DRG) classification system proposed for Federal fiscal year 1988. Two new DRGs for ventilator patients were proposed among the changes. One DRG would be for patients who have tracheostomy procedure codes and would be considered a surgical classification. The other DRG would be for nonsurgical patients ventilated through endotracheal tubes. Only patients with a primary diagnosis of respiratory disease would be covered. The relative payment for these new DRGs would be great since the HCFA's analysis of 1985 billing data indicated that for all respiratory patients the average charge for those on ventilators was two to ten times greater than for other patients in the same DRGs.

At Rush-Presbyterian-St. Luke's Medical Center we reviewed the annual costs of 446 Medicare patients who received care in our medical intensive care unit and determined they exceeded by over $4.7 million the actual reimbursements for similar patients under the Medicare Prospective Payment System. Each day on a ventilator added $439 for respiratory-related charges.
services to the total hospital costs.²

Another study we recently completed at Rush-Presbyterian-St. Luke's Medical Center revealed that 95 Medicare patients seen over a one-year period who required prolonged ventilator care accrued costs of $3,656,137 or $38,496 per patient. This compared to Medicare payments for patients in similar Diagnosis Related Groups of $8,421 per patient.³ A similar study published simultaneously found that Medicare patients admitted to both tertiary care and community based hospitals found that mean costs per patient were $31,896 (charges $47,391) compared with Medicare payments for similar types of patients of $10,981.⁴

HCFA should be congratulated for these proposed changes, but they nevertheless address only some of the financial bias DRGs present for ventilator patients. Of the 95 patients in our study sample, only 33 were covered by the two new DRGs HCFA proposes. The remainder of the patients did not have respiratory principal diagnoses. Cost of care for patients requiring mechanical ventilation without a primary respiratory diagnosis (ie, neurologic decrease) was not less than those with a respiratory diagnosis. The potential for abuse is also great since the payment for ventilator patients receiving a tracheostomy has a much greater reimbursement than those who need prolonged endotracheal intubation. Studies have shown that the complications of a tracheostomy are greater than those of long-term intubations by endotracheal tube.⁵ HCFA recognizes the potential for abuse and will monitor this possibility closely.¹

Despite some potential problems, this legislation has important implications for our patients. The potential for patients to be disenfranchised from medical care is less after these changes are enacted. Reimbursement for care in the intensive care unit will also more closely approximate the costs of medical care. The HCFA is to be congratulated for this move. Also, our professional societies have used their legislative influence to lobby to get needed reimbursement to prevent a bias against critical care and for patients cared for in specialized units.

The Government Liaison Committee of the American College of Chest Physicians has been particularly vigorous in efforts to acquaint national legislators with current inequity in the reimbursement policies. The official journal of ACCP, Chest, has provided a national forum for data which was of assistance to HCFA as they evaluated current practices.²³ These efforts are to be congratulated.

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The Esophagus  
The Neglected Chest Organ?

The thoracic cavity's organs include the heart, the lung and the esophagus. The American College of Chest Physicians (and the journal Chest, as its official publication) are predominated by cardiologists, pulmonologists and cardiothoracic surgeons whose primary orientation is that of either the cardiac or pulmonary subsystems. However, it seems timely to remind "chest" physicians that physiology and pathology of the esophagus are important considerations because of their impact on the other thoracic organs.

Coronary angiography in some patients (10 to 15 percent) with chest pain considered typical for angina will rule out important coronary artery disease. Many of these patients can eventually be proved to have esophageal disorders causing their symptoms. In some cases, an esophageal motility disorder is found,¹² and on other occasions, gastroesophageal reflux is the culprit.² Both these disorders are eminently treatable and it is not acceptable simply to dismiss patients with the information that they do not have coronary artery disease and therefore their chest pain is not important. One follow-up study¹ showed that pain persists in the majority of these patients and half of them are so incapacitated that they are not able to return to work or their normal life-style. Accordingly, the cardiologist who clears the heart as the cause of chest pain must not stop but must continue the evaluation with a diagnostic evaluation of other organ systems, including the esophagus.

It is also quite clear that esophageal disorders can be responsible for pulmonary disease. The patient presenting with evidence of destructive aspiration, in the absence of neurologic impairment or alcohol abuse, probably has reflex disease and should be evaluated for

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