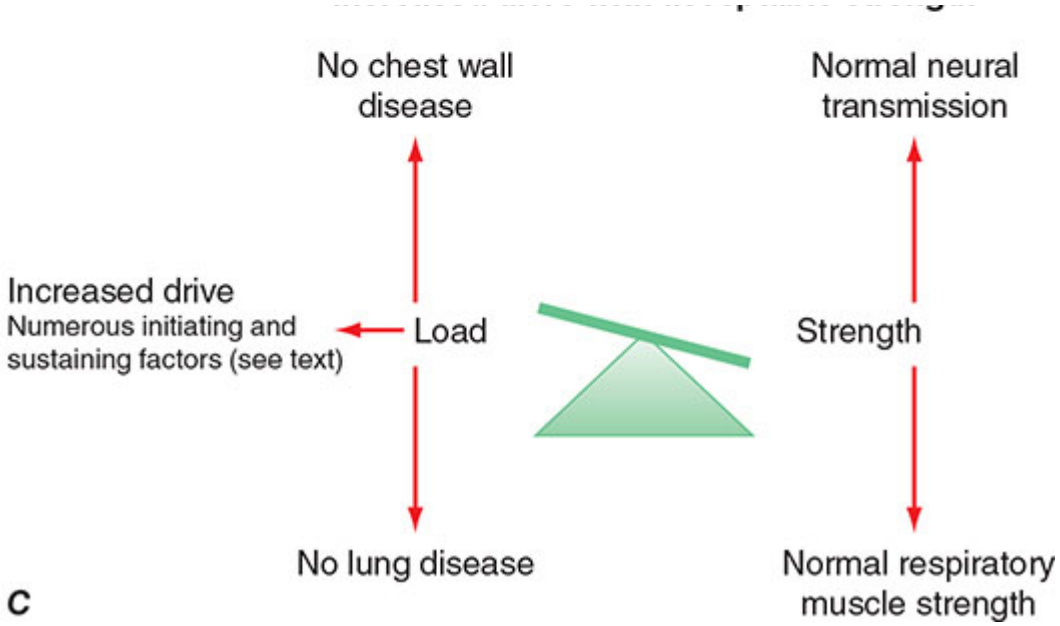

FIGURE 296-1 Examples of balance between respiratory system strength and load. ***A.*** Excess respiratory muscle strength in health. ***B.*** Load greater than strength. ***C.*** Increased drive with acceptable strength.

HYPOVENTILATION

■ CLINICAL FEATURES

Diseases that reduce minute ventilation or increase dead space fall into four major categories: parenchymal lung and chest wall disease, sleep-disordered breathing, neuromuscular disease, and respiratory drive disorders (Fig. 296-1*B*). The clinical manifestations of hypoventilation syndromes are nonspecific **(Table 296-1)** and vary depending on the severity of hypoventilation, the rate at which hypercapnia develops, the degree of compensation for respiratory acidosis, and the underlying disorder. Patients with parenchymal lung or chest wall disease typically present with shortness of breath and diminished exercise tolerance. Episodes of increased dyspnea and sputum production are hallmarks of obstructive lung diseases such as chronic obstructive pulmonary disease (COPD), whereas progressive dyspnea and cough are common in interstitial lung diseases. Excessive daytime somnolence, poor-quality sleep, and snoring are common among patients with sleep-disordered breathing. Sleep disturbance and orthopnea are also described in