

blood leaving regions of pure shunt. In addition, in contrast to shunt regions, inhalation of supplemental oxygen raises the P_{aO_2} even in relatively underventilated low $\dot{V}/\dot{Q}$ regions, and so the arterial hypoxemia induced by $\dot{V}/\dot{Q}$ heterogeneity is typically responsive to oxygen therapy (Fig. 285-5).

In sum, arterial hypoxemia can be caused by substantial reduction of inspired oxygen tension, severe alveolar hypoventilation, perfusion of relatively underventilated (low $\dot{V}/\dot{Q}$) or completely unventilated (shunt) lung regions, and, in very unusual circumstances, limitation of gas diffusion.

■ PATHOPHYSIOLOGY

Although many diseases injure the respiratory system, this system responds to injury in relatively few ways. For this reason, the pattern of physiologic abnormalities may or may not provide sufficient information by which to discriminate among conditions.

Figure 285-6 lists abnormalities in pulmonary function testing that are typically found in a number of common respiratory disorders and highlights the simultaneous occurrence of multiple physiologic abnormalities. The coexistence of some of these respiratory disorders results in more complex superposition of these abnormalities. Methods to measure respiratory system function clinically are described later in this chapter.