

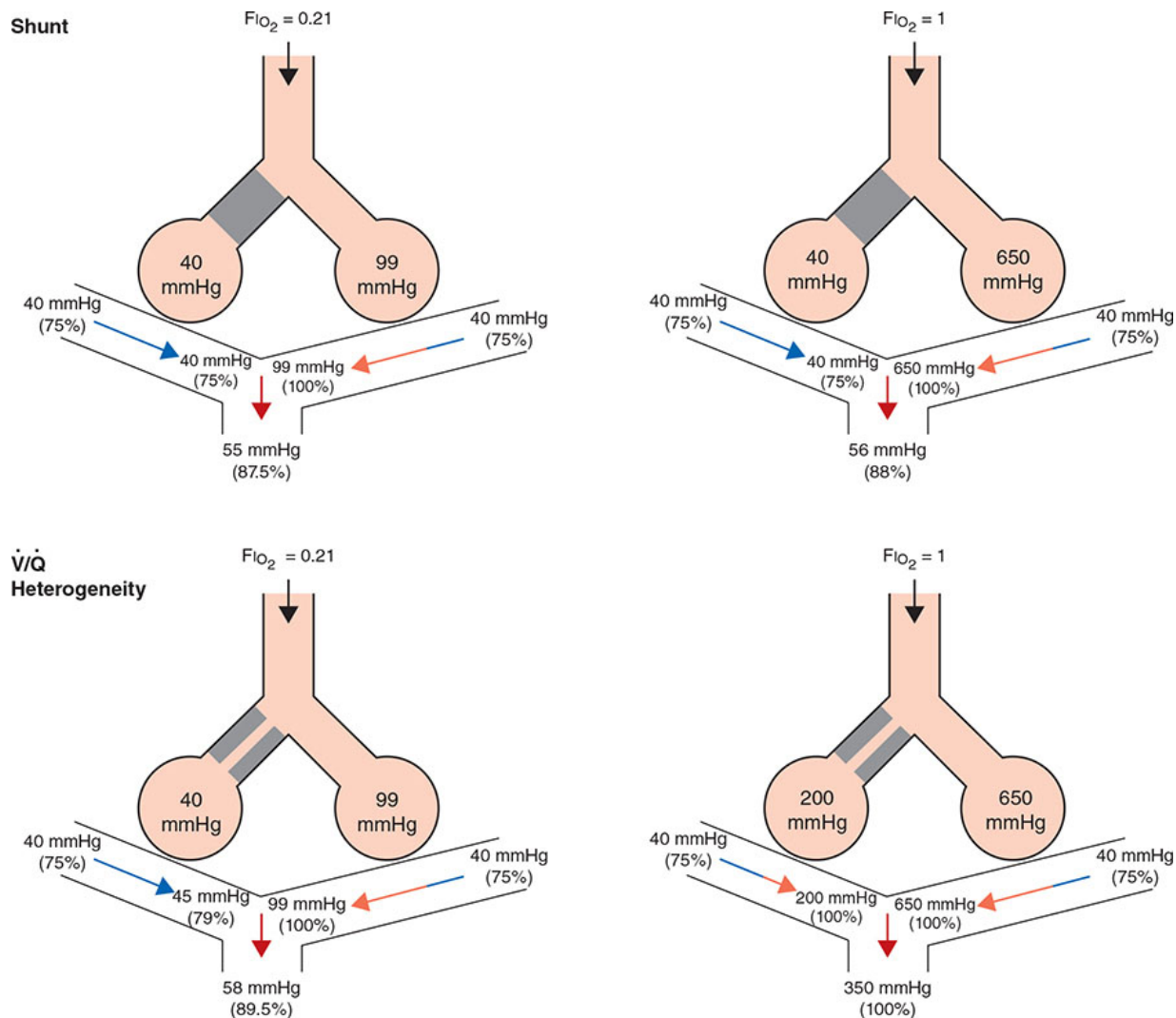


FIGURE 285-5 Influence of air versus oxygen breathing on mixed arterial oxygenation in shunt and ventilation/perfusion heterogeneity. Partial pressure of oxygen (mmHg) and oxygen saturations are shown for mixed venous blood, for end capillary blood (normal vs affected alveoli), and for mixed arterial blood. F_{iO_2} fraction of inspired oxygen; $\dot{V}/\dot{Q}$, ventilation/perfusion.

A more common occurrence than the two extreme examples given above is a widening of the distribution of ventilation/perfusion ratios; such $\dot{V}/\dot{Q}$ heterogeneity is a common consequence of lung disease. In this circumstance, perfusion of relatively underventilated alveoli results in the incomplete oxygenation of exiting blood. When mixed with well-oxygenated blood leaving higher $\dot{V}/\dot{Q}$ regions, this partially reoxygenated blood disproportionately lowers arterial P_{aO_2} , although to a lesser extent than does a similar perfusion fraction of