

ICU Terms and Definitions

ALI/ARDS (Acute Lung Injury/Acute Respiratory Distress Syndrome) A syndrome of inflammation and increased pulmonary permeability. ALI is a less severe form. Early signs include:

- dyspnea (shortness of breath)
- hypoxia (low arterial O₂ levels)
- respiratory alkalosis (decline in arterial CO₂ levels with a drop in plasma bicarbonate HCO₃)
- bilateral pulmonary infiltrates (abnormal chest x-rays)
- pulmonary edema (alveoli are “flooded with fluids” and are incapable of sufficient gas exchange)
- refractory hypoxia (in spite of increasing the O₂ level in inspired air, arterial levels do not increase)
- decreased lung compliance (lungs are abnormally stiff)

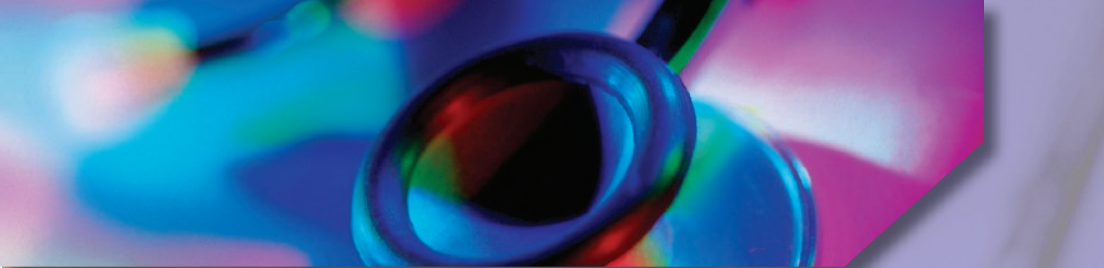
CARS (Compensatory Anti-inflammatory Response Syndrome). Develops when anti-inflammatory mediators dominate. CARS patients are often immune-suppressed and at risk for infection.

SIRS (Systemic Inflammatory Response Syndrome). SIRS is often caused by bacterial infection or septicemia, but it can also be caused by viral or fungal infection, trauma, or pancreatitis. SIRS is defined by a combination of the following:

- abnormal temperature (>38 degrees C, or < 36 degrees C)
- increased heart rate (> 90 beats/minute)
- increased respiratory rate (> 20 breaths/minute)
- abnormal white count (WBC >12,000/mm³, or <4,000/mm³, or > 10% immature [band] cells)

APACHE II (Acute Physiology and Chronic Health Evaluation II). An example of a general severity of illness scoring system used to predict risk-adjusted mortality in ICU patients. It is also used in research to ensure that control and treatment groups have a similar degree of severity of illness.

PEEP (Positive end Expiratory Pressure). A ventilator setting which allows pressure to be maintained in the lung at the end of expiration to keep alveoli open. This helps improve gas exchange. Initially it is set at 3-5 to keep the FiO₂ at or below 60% while maintaining an adequate PaO₂. (average setting = 5)



PaO₂ — The partial pressure of oxygen dissolved in the blood. Determined from a blood gas or an arterial line (A-line), normal value is 80 to 100 mm Hg (below 80 is considered hypoxia). The goal for patients on a ventilator is 60-90 mm Hg.

FiO₂ — The fraction of inspired oxygen. The percentage of gases provided by the ventilator that is oxygen. It is usually started at 100% and weaned to 40-60%. A sustained O₂ above 50% is considered “toxic” and may lead to fibrosis. Normal room air is 21% O₂.

PaO₂/FiO₂ — The ratio of arterial oxygenation to inspired oxygen concentration, an index of the efficiency of arterial oxygenation. PaO₂/FiO₂ < 300 mm Hg = ALI, PaO₂/FiO₂ < 200 mm Hg = ARDS. A normal PaO₂/FiO₂ ratio = 500 mm Hg.

PaCO₂ — The partial pressure of carbon dioxide dissolved in the blood. It is a measure of the adequacy of alveolar ventilation. Normal value is 36 – 44 mm Hg.

As appropriate, the above indicators are monitored and recorded in the patient's record (chart). This information can typically be found in the progress notes, on respiratory flow sheets, and in laboratory reports. Normal values may vary slightly from institution to institution; therefore, it is important to identify your institution's normal ranges.