Acute Respiratory Distress Syndrome

Clinical Features
- Progressive dyspnea
- Worsening hypoxemia
- Bilateral infiltrates on chest radiographs
- Acute onset (<7 days) of inciting event

CAUSES
- Direct: Pneumonia, Aspiration
- Indirect: Sepsis, Trauma

Pathophysiology
- Alveolar injury with diffuse inflammatory response
- Increased pulmonary vascular permeability with excess interstitial and alveolar fluid
- Impaired gas exchange, decreased lung compliance, and increased pulmonary arterial pressure

Diagnosis
A syndrome, not a specific disease. Most recent definition was created by a panel of experts in 2012:

**BERLIN DEFINITION**
- Onset within 1 week of insult or new/worsening respiratory symptoms
- Respiratory failure unexplained by cardiac function or volume overload
- Bilateral CXR opacities unexplained by other etiology (eg, effusion, collapse, nodules)
- Hypoxemia

<table>
<thead>
<tr>
<th>Severity</th>
<th>PaO$_2$/Fio$_2$</th>
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<tbody>
<tr>
<td>Mild ARDS</td>
<td>200-300</td>
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<tr>
<td>Moderate ARDS</td>
<td>100-200</td>
</tr>
<tr>
<td>Severe ARDS</td>
<td>&lt;100</td>
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Treatment
In addition to treatment of the inciting etiology, consider the following in a stepwise fashion:

- **Ventilation strategies:**
  - Target tidal volume of 4-8 mL/kg ideal body weight
  - Plateau pressures <30 cm H$_2$O (or transpulmonary pressure < 20 cm H$_2$O)
  - Conservative oxygen strategy (target PaO$_2$ 55-80)
  - PEEP: Consider a high PEEP strategy in moderate-severe ARDS
- Prone positioning
- Neuromuscular blockade
- Consider transfer to ECMO center if symptoms do not continue to improve.

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Additional references: