

# ARDS (Acute Respiratory Distress Syndrome)

Setting: **Inpatient**    Population: **Pediatric**    Keywords: **failure, pulmonary, breathing**

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## Clinical Description

Care of the hospitalized child experiencing new onset of respiratory failure within 7 days of the initial insult, including bilateral infiltrates, an acute deterioration in oxygenation from baseline and refractory hypoxemia that cannot be explained by cardiac failure or fluid overload.

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## Key Information

- Volume-targeted ventilation allows for consistent lung volumes and real-time pressures as lung compliance changes.
  - Higher PEEP (positive end expiratory pressure) and prone positioning may be more beneficial for those with moderate-severe ARDS (acute respiratory distress syndrome).
  - Refractory hypoxemia, lung compliance and respiratory mechanics may be used to guide an optimal PEEP (positive end expiratory pressure) strategy.
  - Evidence does not support routine use of inhaled nitric oxide, beta-2 agonist medication or high-frequency oscillatory ventilation in the pediatric population.
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## Clinical Goals

By transition of care

A. The patient will demonstrate achievement of the following goals:

- Effective Oxygenation

B. Patient, family or significant other will teach back or demonstrate education topics and points:

- Education: Overview
  - Education: Self Management
  - Education: When to Seek Medical Attention
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## Correlate Health Status

Correlate health status to:

- history, comorbidity, congenital anomaly
- age, developmental level
- sex, gender identity
- baseline assessment data
- physiologic status
- response to medication and interventions
- psychosocial status, social determinants of health
- barriers to accessing care and services
- child and family/caregiver:
  - health literacy
  - cultural and spiritual preferences
- safety risks
- family interaction
- plan for transition of care

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## ARDS (Acute Respiratory Distress Syndrome)

### Signs/Symptoms/Presentation

- breath sounds abnormal
- breath sounds diminished
- lung compliance decreased
- minute volume increased
- oxygen demand increased
- oxygen index increased
- PaO<sub>2</sub>/FiO<sub>2</sub> ratio less than or equal to 300 mmHg
- plateau pressure (lung) increased
- work of breathing increased

## Vital Signs

- heart rate increased
- respiratory rate increased
- blood pressure increased or decreased
- SpO<sub>2</sub> (peripheral oxygen saturation) decreased

## Laboratory Values

- ABG (arterial blood gas) abnormal
- PaO<sub>2</sub> (partial pressure of arterial oxygen) decreased

## Diagnostic Results

- CXR (chest x-ray) abnormal

## Problem Intervention(s)

### **Optimize Oxygenation, Ventilation and Perfusion**

- Provide oxygen therapy judiciously to maintain prescribed oxygen saturation level.
- Use low tidal volume-targeted (e.g., 3 to 6 mL/kg predicted body weight) and low pressure (e.g., 28 cm H<sub>2</sub>O plateau) ventilation strategies that minimize the risk of lung overdistension and progression of lung injury.
- Apply PEEP (positive end expiratory pressure) to improve oxygenation and lung compliance; consider higher PEEP for moderate-severe ARDS (acute respiratory distress syndrome).
- Promote conservative fluid strategy to achieve net even fluid balance once hemodynamically stable.
- Monitor hemodynamic status closely to evaluate the effects of fluid volume expansion and impact of ventilation and disease on cardiac function; anticipate the need for vasoactive medication.
- Maintain head of bed elevation with regular position changes to improve ventilator/perfusion mismatch; consider prone positioning to maximize alveolar recruitment and functional residual capacity.
- Consider the use of sedation and short-term neuromuscular blockade to optimize oxygen delivery and tolerance to ventilation strategies.
- Prepare for adjunctive therapy, such as corticosteroids, alveolar recruitment maneuvers and ECLS (extracorporeal life support).

## Associated Documentation

- Airway/Ventilation Management
  - Lung Protection Measures
  - Stabilization Measures
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## General Education

- admission, transition of care
  - orientation to care setting, routine
  - advance care planning
  - diagnostic tests/procedures
  - opioid medication management
  - oral health
  - medication management
  - pain assessment process
  - safe medication disposal
  - tobacco use, smoke exposure
  - treatment plan
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## Safety Education

- call light use
  - equipment/home supplies
  - fall prevention
  - harm prevention
  - infection prevention
  - MDRO (multidrug-resistant organism) care
  - personal health information
  - resources for support
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## Education: Overview

- description
  - signs/symptoms
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## Education: Self Management

- activity
  - fluid/food intake
  - provider follow-up
  - rehabilitation therapy
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## Education: When to Seek Medical Attention

- unresolved/worsening symptoms
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## Population-Specific Considerations

### Pregnancy

- ARDS (acute respiratory distress syndrome) in pregnancy is best managed in a hospital where obstetrics, adult and neonatal intensive care capabilities are available.
  - Medication effects and serum levels may be altered by pregnancy.
  - Medications and diagnostic imaging used to treat ARDS (acute respiratory distress syndrome) should not be withheld from a pregnant mother; however, potential fetal effects should be carefully considered when determining treatment.
  - While prone position is recommended for patients with ARDS (acute respiratory distress syndrome), it should be approached cautiously during pregnancy, taking into consideration gestational stage. Positioning aids may be used to maintain proper maternal alignment, should prone position be used.
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