Acute Respiratory Distress Syndrome (ARDS) Prevention & Management
This serious lung disease can, at times, be prevented or mitigated and can be treated with careful fluid and ventilator management.

Domain
Patient Care Processes:
Clinical processes that ensure delivery of high-quality care to individual patients

Aims
Effective:
An evidence-based practice that produces better outcomes than its alternative

Process Attributes

Cost to Implement
The monetary resources required to implement this process

- Minimal: Just the cost of the improvement effort itself

Time to Implement
The amount of time, from months to years, it will take on average to establish this process

- Fewer than 12 months

Difficulty to Implement
The challenges of implementing this process

- Most Challenging: Involves multiple units or disciplines AND requires a substantial shift in culture and/or operations

Level of Evidence
The degree to which the actions in this process are supported by research and experience; based on the Cochrane scale

- Strong Evidence: Level I or Level II — Studies published using randomized trials
**Details**

**Elements**

- **Standardize screening criteria for acute lung injury (ALI) or acute respiratory distress syndrome (ARDS)**
  Reliably identify all patients with a PaO2/FiO2 < 300 and ask physicians to clearly state whether or not the patient has ALI or ARDS

- **Treat patients who screen positive for ALI or ARDS using the following:**
  - Maintain tidal volume near 6 ml/kg for ideal body weight (IBW) and inspiratory plateau pressures < 30 cm H2O for mechanically ventilated patients
  - Use admission order sets and other approaches that establish 6 ml/kg IBW as the default standard for ALI patients and ensure that this standard is used by Respiratory Therapy
  - Use daily checklists to review for low tidal volume standard.
  - Educate front-line personnel about the importance of maintaining this standard, including the strong evidence that supports this standard.

- **Promote conservative fluid management**
  - Make reliable use of a fluid protocol and set daily fluid goals; re-evaluate progress toward the daily goal every six hours and readjust therapy accordingly.
  - Monitor closely for potential side effects of a negative fluid balance (hemodynamic or renal compromise, electrolyte imbalance).
  - Develop specific order sets or tools for the task of diuretic administration.

- **Use the IHI Ventilator Bundle**

- **Remove continuous sedation as early as possible**
  - Design sedation liberation protocols for aggressively removing sedation.
  - Monitor and document pain, delirium, confusion, and agitation using an acceptable scoring system for each and use non-sedating medications to control each appropriately whenever possible.

- **Promote early ambulation of ventilator patients with early and progressive mobilization program**

**Outcomes**

- **Mortality (HSMR):** Decreased mortality (hospital standardized mortality ratio, or HSMR)
- **Time in ICU:** Decreased time in intensive care in the last 6 months of life (Dartmouth Atlas)

**Service Lines and Critical Functions**

- Intensive Care

**Key Measures**

- 28-day survival rate following intubation for ARDS

- Average length of stay on mechanical ventilation for ARDS patients OR Number of ventilator-free days in the first 28 days following intubation for ARDS

**Reasons and Implications**

**Importance for Patients and Families**
Improved care for ARDS reduces harm to patients, improves survival, and reduces costs and length of stay.

**Requirement, Standards, Policies, and Guidelines**

- [National Heart, Lung and Blood Institute (NHLBI)](http://app.ihi.org/imapp/tool/#process=2faf06a6-383e-4701-e895-6e53a520e539)
  ARDS Clinical Network

- [National Quality Forum (NQF)](http://app.ihi.org/imapp/tool/#process=2faf06a6-383e-4701-e895-6e53a520e539)
  Safe Practice for Better Healthcare—2009 Update
  Safe Practice 11: Intensive Care Unit Care
Financial Implications

- Expense reduction due to potential decreased average length of stay on mechanical ventilation and in intensive care.

Prerequisites

High-functioning multidisciplinary rounds for communication between the physician, respiratory care practitioner, and nurse about low tidal volumes

Resources

Additional Resources

- The Joint Commission (TJC)
  The Joint Commission Journal on Quality and Patient Safety
  Improving Care of the Sepsis Patient

- Society for Critical Care Medicine (SCCM)

- American Thoracic Society

Information Compiled By

- Terry Clemmer, MD, Intermountain Healthcare and IHI Faculty
- Bruno DiGiovine, MD, Wayne State University and IHI Faculty