ARDS

Acute Respiratory Distress Syndrome · 2023 Global Definition

PROTECT
the lung

DIAGNOSE

all four criteria required

TIMING

Within 1 week of a known insult or new/worsening respiratory symptoms.

IMAGING

Bilateral opacities on CXR, CT or ultrasound; not from effusion / collapse / nodules.

ORIGIN

Not fully explained by cardiac failure or fluid overload (echo if no risk factor).

OXYGENATION

Hypoxaemia on PEEP/CPAP ≥ 5 (intubated) or HFNO ≥ 30 L/min (non-intubated).

SEVERITY

by PaO_2/FiO_2 on PEEP ≥ 5

Severity	PaO_2 / FiO_2	Mortality
Mild	201 - 300	~ 27%
Moderate	101 - 200	~ 32%
Severe	≤ 100	~ 45%

NEW in 2023

- Non-intubated category: on HFNO ≥ 30 L/min or CPAP/NIV.
- SpO_2/FiO_2 ≤ 315 (if SpO_2 ≤ 97%) may replace PaO_2/FiO_2.
- Lung ultrasound accepted; Kigali pathway for resource-limited settings.

LUNG-PROTECTIVE VENTILATION

the non-negotiable core

TIDAL VOLUME	PLATEAU	DRIVING P	pH FLOOR
4 - 8	**≤ 30**	**< 15**	**≥ 7.20**
mL/kg PBW	**cmH_2O**	**cmH_2O**	**permissive**
start 6, drop to 4	*inspiratory hold*	*Pplat – PEEP*	*hypercapnia OK*

Predicted body weight: men = 50 + 0.91 × (height cm − 152.4) · women = 45.5 + 0.91 × (height cm − 152.4)

PEEP / FiO_2 LADDER

titrate to PaO_2 55-80 or SpO_2 88-95%

FiO_2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
PEEP	5	5-8	8-10	10	10-14	14	14-18	18-24

ESICM 2023: use higher PEEP in moderate-severe ARDS; avoid routine recruitment manoeuvres (ART trial harm).

PRONE POSITIONING

Indication: Moderate-severe, PaO_2/FiO_2 < 150 on FiO_2 ≥ 0.6, PEEP ≥ 5.

Dose: ≥ 16 consecutive hours per session; start early.

Evidence: PROSEVA: 28-day mortality 16% vs 33% (proned vs supine).

ADJUNCTS & RESCUE

moderate-severe / refractory

- **Conservative fluids** - once shock resolved (FACTT)
- **Neuromuscular blockade** - ≤ 48 h, early severe / dyssynchrony only
- **Inhaled NO / prostacyclin** - rescue oxygenation, no mortality benefit
- **VV-ECMO** - P/F < 80 or pH < 7.25; ECMO centre (EOLIA)
- **Corticosteroids** - dexamethasone 20 mg/day (DEXA-ARDS)

TREAT THE TRIGGER: Pulmonary - pneumonia, aspiration, contusion, inhalation, near-drowning. Extrapulmonary - sepsis, pancreatitis, massive transfusion / TRALI, trauma, burns. ARDS is a syndrome: always find and treat the precipitant.

REFRACTORY HYPOXAEMIA (stepwise): optimise sedation & synchrony → recruit / increase PEEP → prone 16 h → neuromuscular blockade ≤ 48 h → inhaled NO / prostacyclin → VV-ECMO (P/F < 80). First exclude pneumothorax, tube / secretion block, PE.

PEARLS & PITFALLS

- Dose tidal volume on PREDICTED body weight, not actual - actual weight overventilates and causes VILI.
- Driving pressure < 15 may matter more than any single tidal volume or PEEP value.
- Do not chase a normal $PaCO_2$ with bigger breaths; accept permissive hypercapnia to pH ≥ 7.20.
- Prone early and for long sessions; brief or late proning underdelivers the benefit.

References: Global Definition of ARDS 2023 · ESICM ARDS 2023 · ARDSNet 2000 · PROSEVA 2013 · EOLIA 2018.