Diagnosis of Pediatric Acute Respiratory Distress Syndrome (PALICC-2 Definition)

Age	Age < 18 years. Exclude patients with perinatal lung disease		
Timing	Within 7 days of known clinical insult		
Origin of edema	Not fully explained by cardiac failure or fluid overload		
Chest imaging	New opacities (unilateral or bilateral) consistent with acute pulmonary parenchymal disease and which are not due primarily to atelectasis or pleural effusion		
Oxygenation[a] (Use PaO_2 preferentially when available)	IMV: OI ≥ 4 or OSI ≥ 5 NIV: PaO_2/FiO_2 ≤ 300 or SpO_2/FiO_2 ≤ 250 **Stratification of PARDS severity: Apply ≥ 4 hr after initial diagnosis of PARDS**		
	IMV-PARDS	Mild/moderate: OI < 16 or OSI < 12	Severe: OI ≥ 16 or OSI ≥ 12
	NIV-PARDS[b] (Full-face mask interface)	Mild/moderate NIV-PARDS: PaO_2/FiO_2 > 100 or SpO_2/FiO_2 > 150	Severe NIV-PARDS: PaO_2/FiO_2 ≤ 100 or SpO_2/FiO_2 ≤ 150
	Special Populations[c]		
Cyanotic heart disease	Above criteria, with acute deterioration in oxygenation not explained by cardiac disease		
Left ventricular dysfunction	Above criteria, with acute deterioration in oxygenation and new chest imaging changes not solely explained by left ventricular failure or fluid overload		
Chronic lung disease	Above criteria, with acute deterioration in oxygenation from baseline		

IMV: invasive mechanical ventilation, NIV: non-invasive ventilation, OI: oxygenation index, OSI: oxygenation saturation index, PARDS: pediatric acute respiratory distress syndrome, SpO_2: pulse oximeter oxygen saturation

[a]Oxygenation should be measured at steady state and not during transient desaturation episodes. When SpO_2 criteria is used, oxygen should be titrated to achieve an SpO_2 between 88 - 97%

OI = Mean airway pressure (MAP) (cm H_2O) x FiO_2 (%) / PaO_2 (mmHg)

OSI = MAP (cm H_2O) x FiO_2 (%) / SpO_2 (%)

[b]Diagnosis of PARDS on NIV requires full-face mask interface with continuous airway positive pressure/positive end-expiratory pressure of ≥ 5 cm H_2O

[c]Stratification of PARDS severity does not apply to these populations

Table 1: Ventilation targets in Pediatric Acute Respiratory Distress Syndrome

Ventilation		**Targets**	
Tidal volume	Normal lung compliance	6-8ml/kg predicted body weight	
	Decreased lung compliance	4-6ml/kg	To stay below suggested PIP/Pplat
Peak/ plateau pressure	Normal chest wall elastance	≤ 28cm H_2O	
	Increased chest wall elastance	≤ 32cmH_2O	e.g. edema, obesity, restrictive chest wall
Permissive hypercapnia	All patients	pH ≥ 7.20-7.30*	To stay within suggested PIP/Pplat and Vt
Oxygenation		**Targets**	
Permissive hypoxia	Mild/ moderate PARDS	SpO_2 92-97%	Avoid SpO2>97% or <88%
	Severe PARDS	SpO_2 <92%*	With optimized PEEP
Positive end expiratory pressure	All patients	ARDSNet low PEEP/FiO_2 table	

*Except in intracranial hypertension, severe pulmonary hypertension, select congenital heart disease lesions, hemodynamic instability, and significant ventricular dysfunction.

ARDSNet low PEEP/FiO_2 table

FiO_2	.30	.40	.40	.50	.50	.60	.70
PEEP	5-7	5-7	8	8	10	10	10
FiO_2	.70	.70	.80	.90	.90	.90	1.0
PEEP	12	14	14	14	16	18	18

Use a minimum PEEP of 5cmH_2O
If PEEP>12, consider optimizing sedation/paralysis

Table 2a: Predicted body weight to tidal volume chart for boys (HPB growth charts)

Height (cm)	PBW (kg)	TV 4ml/kg	TV 5ml/kg	TV 6ml/kg	Height (cm)	PBW (kg)	TV 4ml/kg	TV 5ml/kg	TV 6ml/kg
50	3.4	14	18	20	100	15.0	60	75	90
55	4.5	18	22	28	110	18.25	75	90	115
60	6.0	24	30	36	120	22.85	90	115	140
65	7.25	30	36	44	130	28.0	110	140	170
70	8.25	34	42	50	140	34.9	140	175	210
75	9.2	38	46	56	150	42.6	170	215	260
80	10.25	42	52	62	160	51.0	210	255	310
85	11.4	46	58	68	170	59.8	240	300	360
90	12.5	50	64	76	180	68.0	270	340	410
95	13.75	56	70	84					

Table 2b: Predicted body weight to tidal volume chart for girls (HPB growth charts)

Height (cm)	PBW (kg)	TV 4ml/kg	TV 5ml/kg	TV 6ml/kg	Height (cm)	PBW(kg)	TV 4ml/kg	TV 5ml/kg	TV 6ml/kg
50	3.25	13	16	20	100	14.8	60	75	90
55	4.4	18	22	26	110	18.0	75	90	110
60	5.75	24	28	34	120	22.5	90	115	135
65	6.8	28	34	40	130	26.8	110	135	160
70	8.0	32	40	48	140	33.9	135	170	200
75	8.9	36	44	54	150	42.1	170	210	250
80	10.0	40	50	60	160	50.7	200	250	300
85	11.0	44	55	66	170	57.8	230	290	350
90	12.1	48	60	72	180	62.7	250	320	380
95	13.25	54	18	80					