

Core Principles of Lung Protective Ventilation

1. Control Volume & Pressure (Prevent Overdistension)

Tidal Volume (TV) targets

- **ARDS:** 4–6 mL/kg **Predicted Body Weight (PBW)**
- **Non-ARDS / not at risk:** 6–8 mL/kg PBW

Pressure limits

- Plateau pressure (**P_{plat}**) ≤ **30 cmH₂O**
- Driving pressure (**ΔP**) ≤ **15 cmH₂O**

2. Prevent Repeated Alveolar Collapse (Atelectrauma)

- Use **adequate PEEP**
- Optimise **patient positioning**
- **Early prone positioning** in moderate–severe ARDS
- Consider a role for **APRV** where appropriate

3. Reduce Total Mechanical Stress (Mechanical Power)

Lung injury risk increases with **volume × pressure × respiratory rate**

- Avoid excessive RR to “chase” CO₂
- Accept **permissive hypercapnia** if clinically safe
- Minimise unnecessarily high inspiratory flows

ARDSNet PEEP Table (ARDSNET Study)

FiO ₂	PEEP (cmH ₂ O)	ARDSNet Ventilation Strategy
0.3	5	<ul style="list-style-type: none"> • Target TV = 6 mL/kg PBW • Set RR to maintain adequate minute ventilation (<i>RR should not exceed 35/min</i>) • Oxygenation targets: <ul style="list-style-type: none"> ○ SpO₂: 88–95% ○ PaO₂: 8–10 KPa • Increase PEEP with rising FiO₂ using the ARDSNet table • Aim for P_{plat} < 30 cmH₂O • If needed: <ul style="list-style-type: none"> ○ Reduce TV in 1 mL/kg steps to a minimum of 4 mL/kg PBW ○ If P_{plat} < 25 cmH₂O, TV may be increased stepwise up to 6 mL/kg PBW • Exception: P_{plat} >30 cmH₂O may be accepted if: <ul style="list-style-type: none"> ○ TV = 4 mL/kg PBW and ○ pH < 7.15
0.4	5–8	
0.5	8–10	
0.6	10	
0.7	10–14	
0.8	14	
0.9	14–18	
1.0	18–24	

Tidal Volume Reference charts

- Use correct birth sex chart, read tidal volume according to measured height
- IBW = PBW: Ideal and Predicted Body Weight are interchangeable terms

Male	Height (cm)	Male IBW	4 ml/kg	5 ml/kg	6 ml/kg	7 ml/kg	8 ml/kg
	150	47.8	191	239	287	335	383
	152	49.6	199	248	298	347	397
	154	51.4	206	257	309	360	412
	156	53.3	213	266	320	373	426
	158	55.1	220	275	330	385	441
	160	56.9	228	284	341	398	455
	162	58.7	235	293	352	411	470
	164	60.5	242	303	363	424	484
	166	62.3	249	312	374	436	499
	168	64.1	257	321	385	449	513
	170	65.9	264	330	396	462	527
	172	67.7	271	339	406	474	542
	174	69.6	278	348	417	487	556
	176	71.4	285	357	428	500	571
	178	73.2	293	366	439	512	585
	180	75.0	300	375	450	525	600
	182	76.8	307	384	461	538	614
	184	78.6	314	393	472	550	629
	186	80.4	322	402	483	563	643
	188	82.2	329	411	493	576	658
	190	84.0	336	420	504	588	672
	192	85.9	343	429	515	601	687
	194	87.7	351	438	526	614	701
196	89.5	358	447	537	626	716	
198	91.3	365	456	548	639	730	
200	93.1	372	466	559	652	745	

Female	Height (cm)	Female IBW	4 ml/kg	5 ml/kg	6 ml/kg	7 ml/kg	8 ml/kg
	150	43.3	173	217	260	303	347
	152	45.1	181	226	271	316	361
	154	46.9	188	235	282	329	376
	156	48.8	195	244	293	341	390
	158	50.6	202	253	303	354	405
	160	52.4	210	262	314	367	419
	162	54.2	217	271	325	379	434
	164	56.0	224	280	336	392	448
	166	57.8	231	289	347	405	463
	168	59.6	239	298	358	417	477
	170	61.4	246	307	369	430	491
	172	63.2	253	316	379	443	506
	174	65.1	260	325	390	455	520
	176	66.9	267	334	401	468	535
	178	68.7	275	343	412	481	549
	180	70.5	282	352	423	493	564
	182	72.3	289	362	434	506	578
	184	74.1	296	371	445	519	593
	186	75.9	304	380	456	531	607
	188	77.7	311	389	466	544	622
	190	79.5	318	398	477	557	636
	192	81.4	325	407	488	570	651
	194	83.2	333	416	499	582	665
196	85.0	340	425	510	595	680	
198	86.8	347	434	521	608	694	
200	88.6	354	443	532	620	709	