

Audit on Adherence to Lung Protective Ventilation (LPV) Strategy in Paediatric ICU



Gandhi V 1, Neal R 2, Mildner R 2
1. Clinical Fellow, 2. Consultant Paediatric intensivist,
PICU, Birmingham Children’s Hospital, Steelhouse Lane, Birmingham: B4 6NH, UK

OBJECTIVES:

In the PICU, mechanical ventilation is employed to address a range of conditions, often serving as a crucial intervention for children experiencing acute lung injury.

Employing a low tidal volume strategy based on ideal body weight within this cohort has been shown to mitigate ventilator-induced lung injury (VILI) and enhance overall patient outcomes. (1).

This pilot observational audit assesses adherence to low tidal volume (Vt) ventilation per the Pediatric Acute Lung Injury Consensus Conference (PALICC-2) 2023 guidelines in our PICU and identifies areas for improvement.

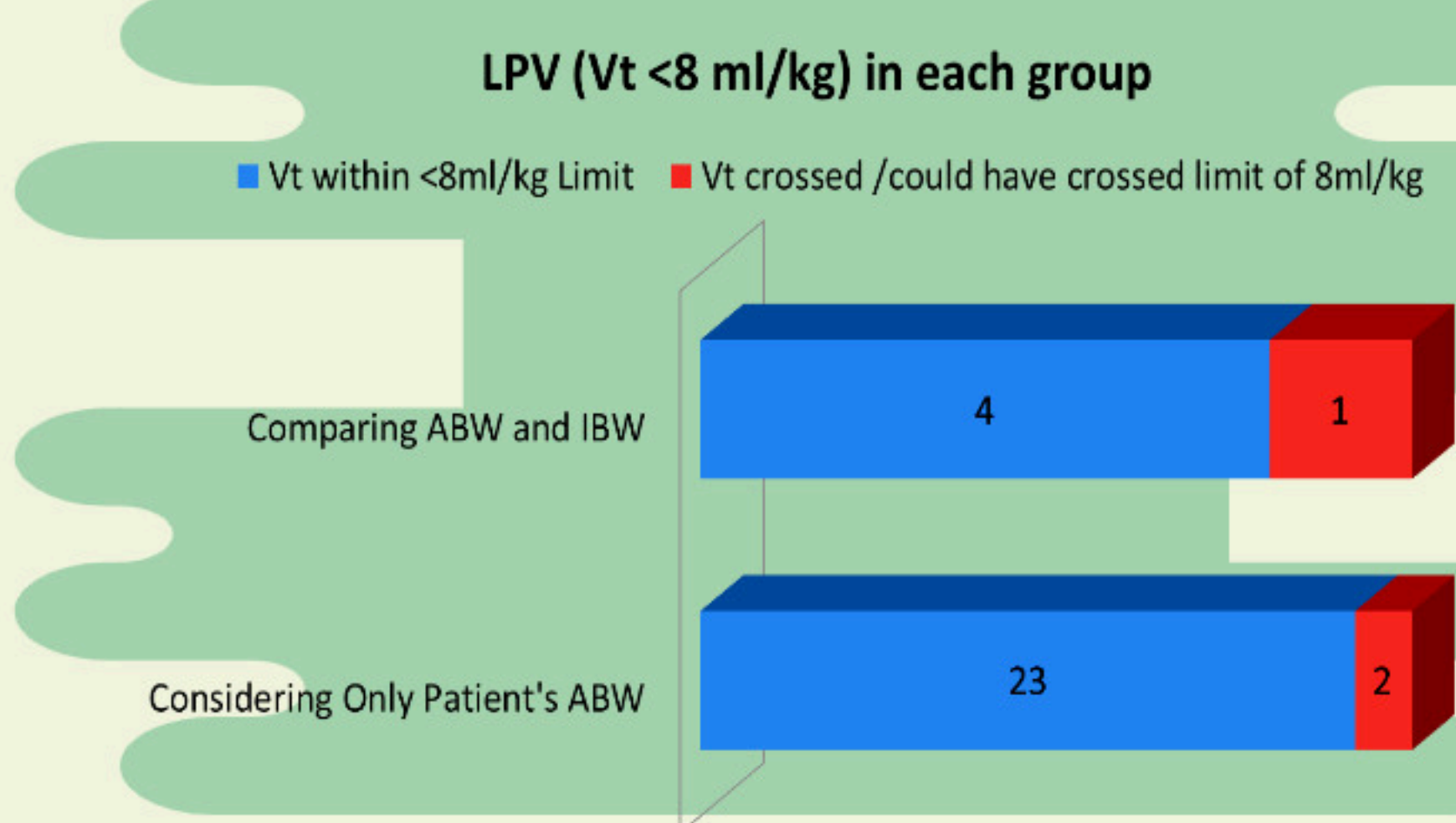
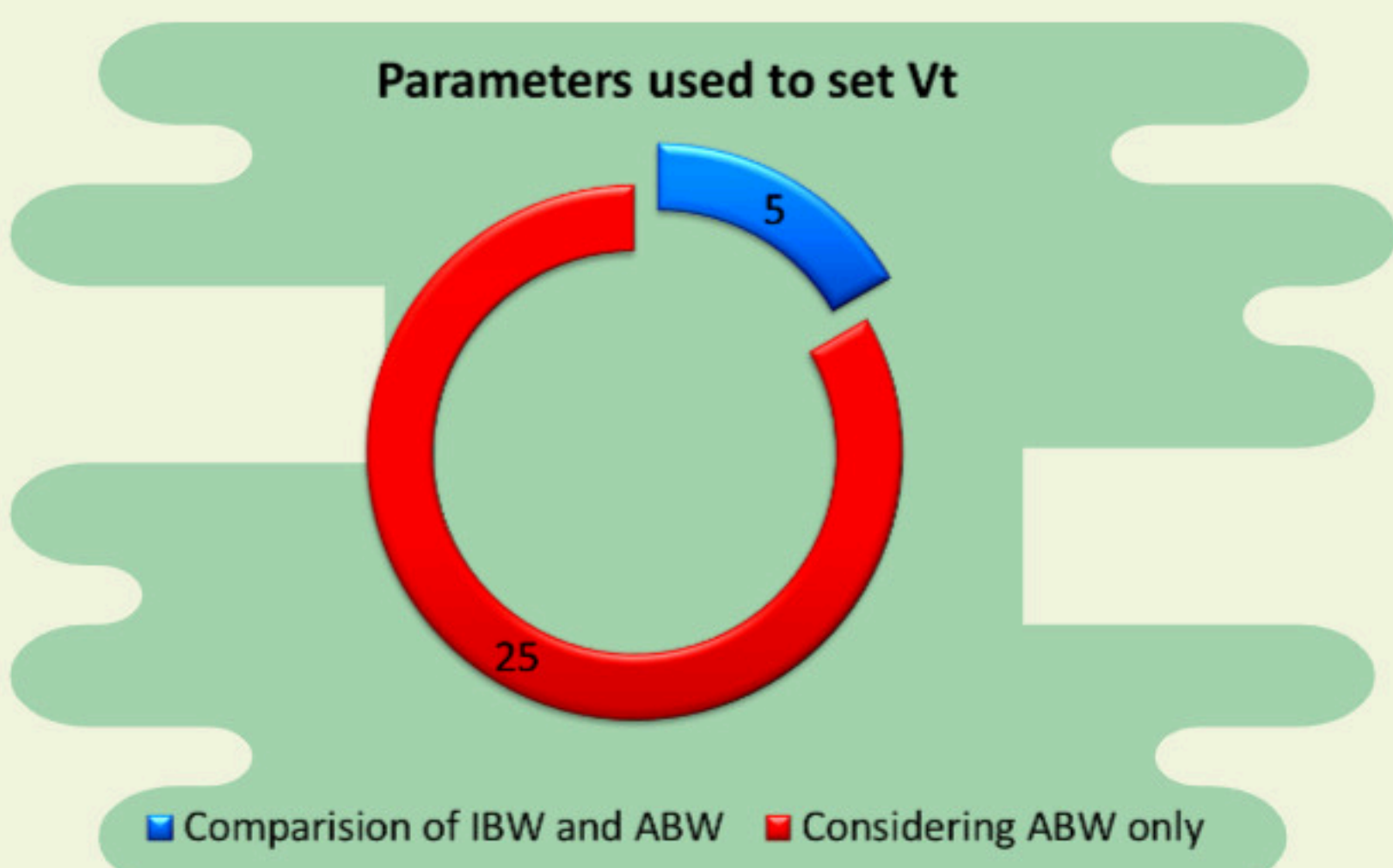
METHODS:

- Patient’s demographics (age range, sex, median weight and range for ABW and IBW), ventilator modes, diagnoses, and oxygenation indices were reviewed
- Focus on patients in invasive mode on Servo I/U ventilators, excluding other modes (HFOV, LTV, NIV, & HFNC)
- Evaluation of adherence to recommended low Vt strategy (6-8 ml/kg) and adjustments to 4-6 ml/kg for patients with poor respiratory compliance and elevated p-plat/DP
- Emphasis on prescribing Vt using lower of actual body weight (ABW) or ideal body weight (IBW)

RESULTS

- 30 ventilated patients met the inclusion criteria, with 10 meeting the criteria for PARDS. Of these, 29 were on SIMV/PRVC mode, and 1 on PRVC mode on servo ventilators.
- Notably, 25 of the 30 patients had Vt prescribed using their ABW alone, neglecting IBW.
- Retrospectively, 19 of these patients had a lower IBW, which should have been used to set Vt.
- The average weight difference between patients’ weight and IBW was 10.9% (ranging from 3.3% to 31.67%).
- In the first group, which solely used the patient's ABW for Vt calculation, 23 instances adhered to the <8ml/kg limit, while 2 instances exceeded it in retrospective analysis.
- Conversely, in the second group, which compared the patient's ABW versus their IBW, 4 instances fell within the <8ml/kg limit, with only 1 instance potentially exceeding the limit; however, it was prevented from doing so by adhering to the PALICC guidelines.

GRAPHS



CONCLUSIONS

- Baseline low compliance with PALICC-2 PARDS low tidal volume ventilation guidelines observed.
- Tidal volume (Vt) not consistently based on the lower of Actual Body Weight (ABW) and Ideal Body Weight (IBW).
- Proposed improvements include additional education for clinical staff.
- Emphasis on regularly calculating IBW and ensuring accurate patient anthropometric measurements.
- Suggested routine comparison of IBW to ABW for Vt prescription.
- Planned repeat audit following educational intervention.

REFERENCES

- 1) Acute Respiratory Distress Syndrome Network, Brower RG, Matthay MA, et al. N Engl J Med. 2000;342(18):1301-1308.
- 2) Emeriaud G, López-Fernández YM, Iyer NP, et al. Pediatr Crit Med.2023;24(2):143-168.



PALICC-2 PARDS guidelines: 2023

