



Measure Abbreviation: PUL 01

Measure Description: Percentage of cases with median tidal volumes less than 10ml/kg.

NQS Domain: Patient Safety

Measure Type: Process

Measure Summary: PUL 01 measures performance in lung protective ventilation techniques. PULM 01 will measure the median tidal volume (in ml/kg ideal body weight) across a case. For a given case, this measure will exclude time before intubation and after extubation, and will also exclude periods when patients are not under positive pressure ventilation (as defined by peak inspiratory pressure of ≤ 6).

Inclusions:

Patients undergoing endotracheal intubation.

Exclusions:

- ASA 5 and 6 cases
- Patients < 12 years of age
- Patients <20kg.
- Patients ≥ 18 years old with a height <121.9cm (48 in) OR >213.4cm (84 in)
- Patients 12-17 years old with a height <91.4cm (36 in) or >213.4cm (84 in)
- Cases without a documented sex
- Cases without a documented height
- Outpatient surgery
- Cases in which patients are mechanically ventilated for less than 45 cumulative minutes.
- One lung ventilation procedures as indicated by intraoperative notes or note details mapped to one of the following MPOG concepts:
 - 50501: Thoracic: Single-lung ventilation
 - 50202: Thoracic: Single-lung ventilation, side detail

Success: Median tidal volume < 10 ml/ kg ideal body weight

Threshold: 90%.

Responsible Provider: Provider signed in for largest portion of case.

Risk Adjustment (for outcome measures):

Not applicable.

References:

1. Brower RG, Matthay MA, Morris A, Schoenfeld D, Thompson BT, Wheeler A. Ventilation with lower tidal volumes as compared with traditional tidal volumes for acute lung injury and the

- acute respiratory distress syndrome. *The New England journal of medicine*. 2000;342(18):1301-1308.
2. Fernandez-Perez ER, Keegan MT, Brown DR, Hubmayr RD, Gajic O. Intraoperative tidal volume as a risk factor for respiratory failure after pneumonectomy. *Anesthesiology*. 2006;105(1):14-18.
 3. Futier E, Constantin JM, Paugam-Burtz C, et al. A trial of intraoperative low-tidal-volume ventilation in abdominal surgery. *The New England journal of medicine*. 2013;369(5):428-437.
 4. Guldner A, Kiss T, Serpa Neto A, et al. Intraoperative protective mechanical ventilation for prevention of postoperative pulmonary complications: a comprehensive review of the role of tidal volume, positive end-expiratory pressure, and lung recruitment maneuvers. *Anesthesiology*. 2015;123(3):692-713.
 5. Serpa Neto A, Hemmes SN, Barbas CS, et al. Protective versus Conventional Ventilation for Surgery: A Systematic Review and Individual Patient Data Meta-analysis. *Anesthesiology*. 2015;123(1):66-78.
 6. Severgnini P, Selmo G, Lanza C, et al. Protective mechanical ventilation during general anesthesia for open abdominal surgery improves postoperative pulmonary function. *Anesthesiology*. 2013;118(6):1307-1321.
 7. Phillips S, Edlbeck A, Kirby M, Goday P. Ideal body weight in children. *Nutrition in clinical practice : official publication of the American Society for Parenteral and Enteral Nutrition*. 2007;22(2):240-245.