

# ATS Highlights 2024: Critical Care Assembly Early Career Professionals



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### ***Tell us about yourself.***

I am a Pulmonary/Critical Care physician at the University of Minnesota with an interest in enhancing the care and outcomes of critically ill patients. I was born and raised in Omaha, Nebraska, completed my undergraduate degree at Marquette University, and returned to Omaha to pursue medicine at Creighton University. Most importantly, I met my wonderful wife during our time at Creighton and we couples matched at the University of Minnesota and have been here since! Alongside my clinical duties, I lead the Minnesota Critical Care Outcomes & Research Effort (MN-CCORE), bringing together a multidisciplinary team to advance the boundaries of critical care research. I enjoy goofing around with my three children, socializing with friends, and biking.

### ***Tell us about your research.***

My interests are rooted in health services research, focusing on the critical care delivery. Through innovative approaches, I aim to bridge the gap between clinical observations and actionable interventions. My work primarily investigates the provider-level variation in adherence to evidence-based practices in mechanically ventilated patients. Utilizing a rich array of clinical databases, my goal is to unveil new pathways to optimize care delivery.

### ***Where do you see yourself in 5 years?***

In the next five years, I hope to be part of a team that is leading the field of critical care research, developing and testing personalized interventions to improve patient care and outcomes. I aim to foster collaborations within the ATS community to further our collective understanding and treatment of critical illnesses. Most importantly, working to create and build data frameworks that maintain the granularity of ICU data while also enabling efficient and rigorous collaborations across institutions.

### ***How has the Critical Care Assembly contributed to your career?***

The Critical Care Assembly has been instrumental in my career development, offering unparalleled opportunities for networking, collaboration, and mentorship. It has provided a platform to engage with leading experts in the field, share my research findings, and gain insights that have significantly shaped my research trajectory. Lastly, it has helped to normalize the career experience. Many times, we find ourselves in a self perceived silo, but its not true. Being able to make friends across institutions helps you tackle different career barriers while adding a layer of fulfillment and joy!



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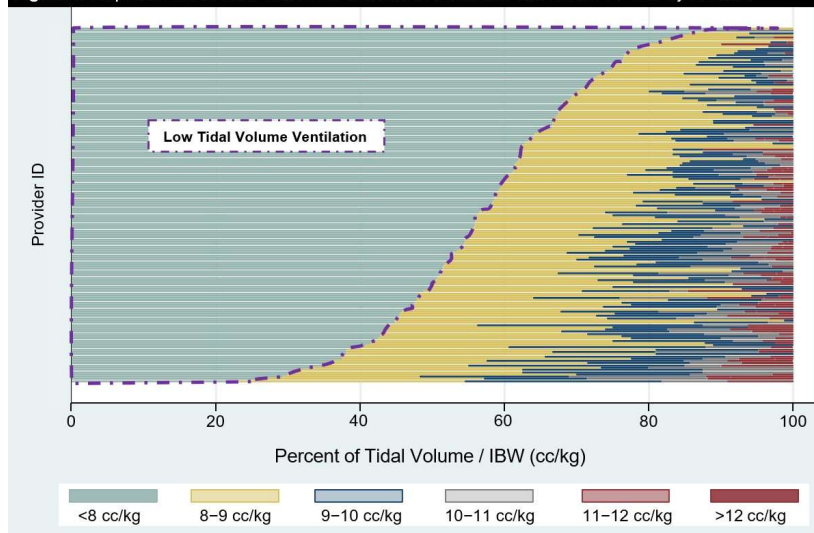
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Figure 1: Proportion of Set Tidal Volume on Initiation of Ventilation with known PF<300 by Provider



## Variation in Setting Low Tidal Volume Ventilation on Day 1 of Mechanical Ventilation by Provider

### Rationale

Variation in healthcare outcomes stems from structural and process factors across institutions. A large body of research investigating the effects of structural variables exists; however, the identification and evaluation of process factors that contribute to variation remain limited. A potentially key process factor contributing to these disparate outcomes is the healthcare providers themselves. In this study, we sought to utilize this algorithm to assess rates, across providers, of low tidal volume ventilation (LTVV) settings, an evidence-based practice in those with and without acute respiratory distress syndrome.

### Methods

We assessed adherence to LTVV (<8cc/kg ideal body weight) for patients with PaO<sub>2</sub>/FiO<sub>2</sub> (PF) ratios < 300 mm/Hg across a 12-hospital health system from 2011-2021 at the patient-day level. Patient (and provider) days were included if they required mechanical ventilation (MV) and had recorded PF ratios. For a total of 158 physicians, who had at least 25 eligible patient days which involved the initiation of MV (i.e. the first day of MV), we show the percentage of patients who received lung-protective ventilation in Figure 1 based on the max set tidal volume for that day.

### Results

The **overall rate of LTVV on initiation of MV across encounters was a median of 66%** (IQR 58-73). Rates of LTVV varied across providers. The **median provider rate of setting LTVV on initiation of MV was 57% (IQR 52-63), ranging from 27-92% of the time.** The median provider rate of LTVV across all patient days was 66% (IQR 61-73) and ranged from 24 to 92%.

### Conclusions

**Variability in the provision of LTVV exists across providers.** Subsequently, there appears to be significant room for improvement based on targeted education/intervention given a subset of providers account for a disproportionate number of missed opportunities to provide LTVV. Future studies are required to investigate the barriers and facilitators to adhering to LTVV. Leveraging facilitators or mitigating barriers may provide another dimension to improving patient care by increasing the rate of high-quality, evidence-based care.



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