

# ATS Highlights 2023: Critical Care Assembly Early Career Professionals



## Anica Law, MD MS

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### *Tell us about yourself.*

I am a critical care physician and health services researcher. After clinical and research training in the MGH/BI/Harvard Fellowship, I later joined BU/BMC in 2021. In addition to my research, I also serve as the Associate Program Director for Research of our Pulm/CC Fellowship, Co-Director of the Epidemiology, Clinical, Health Services and Outcomes (ECHO) Research Group, and Associate Editor of CHEST Critical Care.

### *Tell us about your research.*

My primary focus is on **understanding determinants of outcomes after critical illness**. Using both granular clinical and national claims databases, and leveraging natural experiments where feasible (e.g., policy changes), the goal of my research is to better inform decision-making during critical illness and the optimal delivery of care after acute critical illness. I also enjoy studying variation in ICU practices in general – how different people do different things with (sometimes) different outcomes.

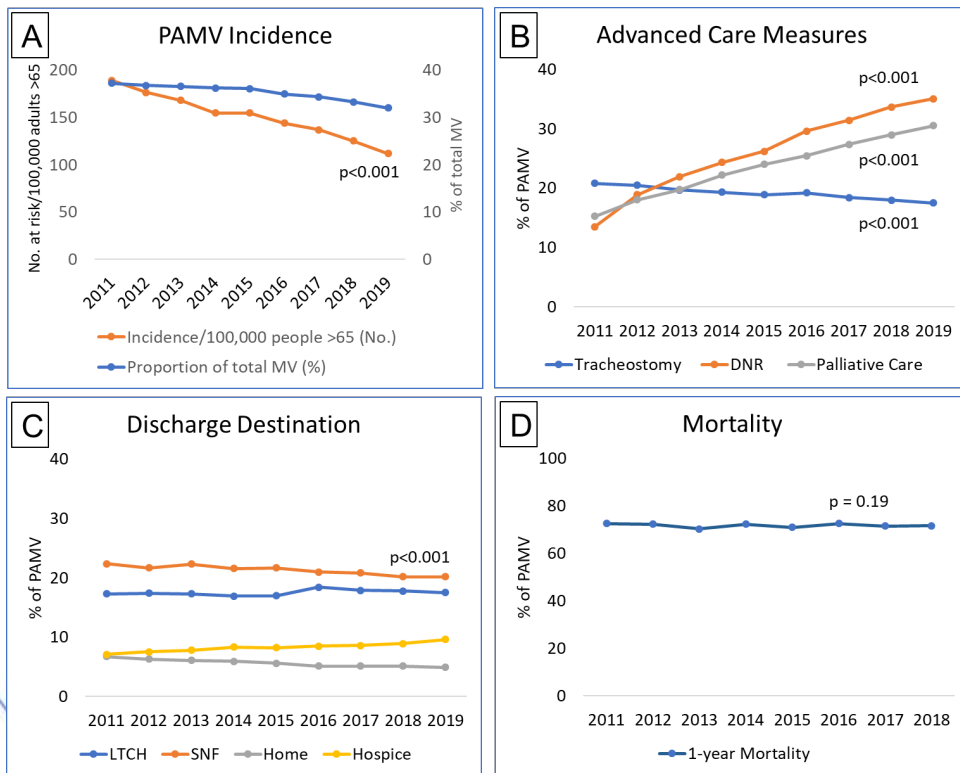
### *How has the Critical Care Assembly contributed to your career?*

I found my first home in the CCA Early Career Professionals Working Group, which led me to a Planning Committee Apprenticeship, and now I serve as Chair of the CC Planning Committee! CCA is full of wonderful people doing inspiring work – so many opportunities to learn from each other and collaborate.

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## Decline in Prolonged Acute Mechanical Ventilation, 2011–2019

Am J Respir Crit Care Med. 2022 Sep 1;206(5):640-644.  
PMCID: PMC9716908.



**Rationale:** Estimates from the early 2000s projected that Medicare would face substantial strain owing to disproportionately rapid growth and resource use by older patients requiring “prolonged acute mechanical ventilation” (PAMV) (i.e., mechanical ventilation [MV] for  $\geq 96$  h); one-third of whom go onto receive prolonged mechanical ventilation (PMV) (i.e., MV for >14-21 days). Actual trends in older adults receiving PAMV in the last decade are unclear.

**Methods:** We conducted an epidemiologic study among Medicare beneficiaries admitted to an ICU, 2011-2019, to determine recent trends in PAMV incidence, decisions to limit invasive treatments, and patient outcomes, including discharge destination, 1-year mortality, and median institution-free days.

**Results:** The population-standardized incidence of PAMV declined among older adults from 2011 to 2019 (189 to 112 per 100,000 adults >65 yrs old, Figure). Among patients receiving PAMV, tracheostomy placement declined (21% to 17.5%;  $p < 0.001$ ), whereas DNR rates, palliative care use, and hospice use all increased (13.5% to 35.1%,  $p < 0.001$ ; 15.2% to 30.5%  $p < 0.001$ ; 7% to 10%  $p < 0.001$ ; respectively). Despite increasing limitations on care, mortality and days alive out of institutions were stable. DNR orders and palliative care delivery were both associated with decreased odds of tracheostomy and post-acute care facility use.

**Conclusions:** Our findings reveal sharp deviations from earlier trends and projections, and may reflect shifts in patient goals of care over time in the United States.

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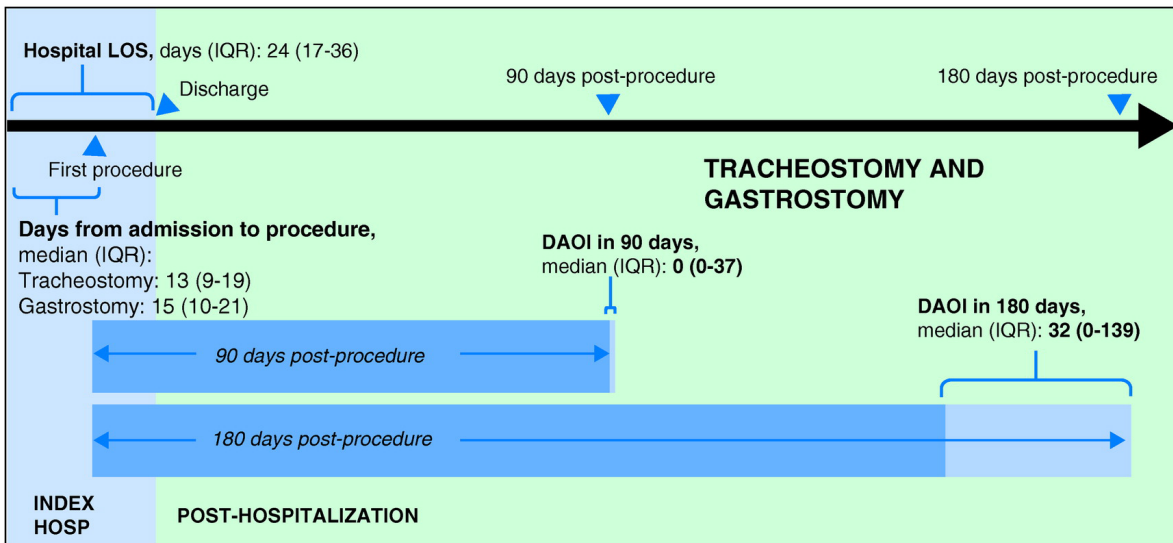
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## Days out of Institution after Tracheostomy and Gastrostomy Placement in Critically Ill Older Adults

Ann Am Thorac Soc. 2022 Mar;19(3):424-432. PMID: PMC8937225.



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**Rationale:** Tracheostomy and gastrostomy tubes are frequently placed during critical illness, with most placed in older adults. Large knowledge gaps exist regarding outcomes expressed as most important to patients.

**Methods:** In this retrospective cohort study of Medicare beneficiaries admitted to an ICU who received a tracheostomy, gastrostomy, or both, we determined the number of days alive and out of institution (DAOIs) after procedure date; 90-day, 6-month, and 1-year mortality; hospital discharge destination; and hospital length of stay. We used claims from the year before admission to define eight mutually exclusive pre-ICU health states and assessed their association with DAOIs in 90 days and 1-year mortality.

**Results:** Among 3,365 patients who received a tracheostomy, 6,709 patients who received a gastrostomy tube, and 3,540 patients who received both procedures, the median number of DAOIs in the first 90 days after placement was 3 (interquartile range, 0–46), 12 (0–61), and 0 (0–37), respectively. Over half died within 180 days. One-year mortality was 62%, 60%, and 64%, respectively. Only the pre-ICU health state without any major comorbidities was associated with improved DAOI and 1-year mortality.

**Conclusions:** Medicare beneficiaries with prior comorbidity who received tracheostomy, gastrostomy tube, or both during critical illness spent few DAOIs and had high short- and long-term mortality.



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