

A82 - Effect of hospital case volume on clinical outcomes of patients requiring extracorporeal membrane oxygenation

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Introduction:

The utilization of extracorporeal membrane oxygenation (ECMO) has increased rapidly around the world. Being an overall low-volume high-cost form of therapy, the effectiveness of having care delivered in segregated units across a geographical locality is debatable. Longitudinal trends in outcomes of ECMO patients managed in high- and low-case volume centers are not well described.

Methods:

This was a retrospective observational study including all adult ECMO cases admitted to public hospitals in Hong Kong between 2010 and 2019. With reference to an international guideline, “high-volume” centers were those with >20 ECMO cases annually, while “low-volume” centers were those with ≤20. Clinical outcomes such as hospital mortality of patients who received ECMO care in high-volume centers were compared with those in low-volume centers.

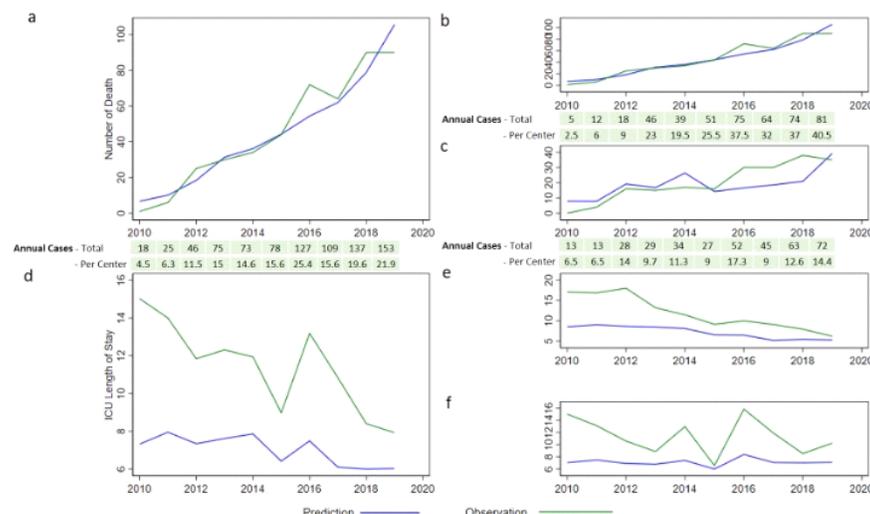
Results:

A total of 911 patients received ECMO – 297 (32.6%) veno-arterial ECMO, 450 (49.4%) veno-venous ECMO, and 164 (18.0%) ECMO-cardiopulmonary resuscitation. The median age was 54 years (IQR 42 - 62), and 583 (64.0%) were male. The average number of ECMO cases managed in high- and low-volume centers was 25 and 12 per center per year, respectively. Management in a high-volume center was associated with decreased ICU mortality compared with a low-volume center (255 [50.2%] vs 201 [49.9%]; adjusted OR 0.70, 95% CI 0.52 – 0.95, p= 0.024). Over the 10-year period, the observed mortality was similar to the APACHE-IV predicted mortality in high-volume centers, but was worse than predicted in low-volume centers.

Conclusion:

We demonstrated that ECMO in high-volume centers was associated with decreased mortality that closely reflected predicted outcomes. With the drastic increase in ECMO utilization worldwide, our data supports current international guidelines that delivery of ECMO should be consolidated to high-volume dedicated centers to improve patient outcomes of this expensive form of organ support.

Image :



These figures compare the observed (green lines) and APACHE IV predicted (blue lines)

outcomes. The overall observed hospital mortality was similar to the predicted mortality (panel a). In high-volume centers, the observed hospital mortality was similar to the predicted mortality (panel b); while in low-volume centers, the observed hospital mortality became higher than the predicted mortality from 2015 to 2018 (panel c). The observed ICU length of stay was longer than predicted in all hospitals (panel d), high-volume centers (panel e), and low-volume centers (panel f).