AAST PALLIATIVE CARE COMMITTEE

ECMO AND GOALS OF CARE
A PRIMER FOR SURGEONS

SCOPE:
Complex decision making for critically ill adult trauma and surgical ICU patients who may require V-A or V-V ECMO support.

ECMO IS ADVANCED CARDIOPULMONARY SUPPORT:
- Builds a bridge to organ recovery, repair, replacement or decision making.
- ECMO does **NOT** treat the underlying disease.
- Every ECMO initiation and continuation decision requires two questions: **can this organ recover** and **where is this bridge going?** Appropriateness of ECMO support and time on support is directly determined by these answers.
- An ECMO consultation signals nearing the end of what is possible with standard ICU care. The pressure to cannulate when the patient is *in extremis* can be significant. Structured, collaborative decision making prior to this moment is essential.

THE ONLY HARD CONTRAINDICATION: NO VIABLE EXIT STRATEGY:
- **"Exit strategy"** from ECMO support is organ recovery, repair or replacement, or a decision to end ongoing life-sustaining treatment. Collaborative decision making with the ECMO clinical team is strongly recommended.
- If an exit strategy is plausible, clinical severity alone should not block ECMO consideration.
- If an exit strategy is not plausible or the anticipated quality of life is not acceptable, ECMO should not be initiated regardless of technical feasibility.
- ECMO support is often organizationally and regionally very limited. Allocation guidelines may require comparative judgements about recovery potential. Group consensus should be established and presented to family decision makers clearly and consistently.

THE BRIDGE: WHAT EXIT STRATEGY LOOKS LIKE:
- ECMO support is, fundamentally, a time limited trial to **BRIDGE** to one of the following:
  - **Recovery:** organ function returns enough to decannulate.
  - **Decision:** time-limited trial with a defined decision time/ endpoint.
  - **Transplant:** relevant mainly outside trauma and surgical populations.
  - **Nowhere** is often recognized only in hindsight. The viability of a clinical exit strategy with a meaningful quality of life should be part of the weekly team care meetings and include the palliative care team.
- A "reasonable" amount of time is often a source of debate, though as a guideline:
  - Cardiac failure / Veno-arterial support: <2 weeks
  - Pulmonary failure / Veno-venous support: weeks to months

EVERY ECMO PATIENT MUST HAVE A SUBSPECIALTY PALLIATIVE CARE CONSULTATION:
- **Trigger:** cannulation decision.
- **Why:** every ECMO patient carries high mortality, and every patient's bridge status is provisional and dynamic.
- **Subspecialty palliative care does not shorten life on ECMO.** Palliative care documents family discussions and goals of care and facilitates communication and decision making.
- ECMO runs, particularly VV, can be quite prolonged and complex. A consistent point of contact through a subspecialty palliative care consultant eases family communication as the care team rotates.
- Without a reliable trigger, palliative care is underutilized, and patients who need it the most, get it the least.
- Early, structured involvement raises goals-of-care documentation and shortens time to consultation.

REASSESSMENT: HAS THE BRIDGE CHANGED?
- **The question is whether the exit is still valid:** is the patient now on a bridge to nowhere?
- **Time-based metrics should be applied cautiously:** meaningful survival is possible after long VV runs IF no other complications arise and underlying pathology is manageable.
- Risk calculators exist but were largely built without trauma and surgical patients in mind. Use them to inform, not replace, team judgment.
- **Reassess weekly** with the full team: ECMO subspecialty, surgical or critical care, and palliative care together.

FAMILY COMMUNICATION: CONSISTENCY OVER TIME:
- **The main challenge is team consistency,** not any one conversation.
- Hold weekly family meetings, starting within the first week, anchored by subspecialty palliative care.
- **"Bridge to X"** is useful shorthand for the team. Attach a named goal to facilitate communication with the family and the team.
- See: *Best Case, Worst Case One Pager*

COMPASSIONATE DECANNULATION:
- Same core principles as outlined in: *The Withdrawal of Life-Sustaining Treatment One Pager*
- **ECMO-specific addition:** withdrawal of life sustaining ECMO support often results in death within minutes, prepare the family for this immediacy.
- **Decision to stop ECMO support:** can be a very difficult decision, hospital policy and state law may have implications. Family request, by itself, is not an indication for otherwise futile support. Building an alliance with the family is vastly easier than a contentious decision.

TWO COMMON USES OF ECMO
- **Immediate Anatomic Rescue:** Facilitate repair of a severe, but survivable, injury or complication (e.g. main airway transection, massive PE). Short run, survivability driven by injury pattern, supports immediate technical intervention.
- **Prolonged Physiologic Support:** Longer runs to support recovery of a failing organ system (e.g. ARDS, cardiogenic shock). Complicated by a specific injury pattern but the trajectory of pulmonary injury and recovery in ARDS is well described in the literature.
- **TBI + cardiopulmonary failure specific consideration:**
  - The cardiopulmonary failure that warrants ECMO consideration will contribute to secondary brain injury and almost certainly worsening neurological recovery.
  - **Neuroprognostication after ECMO:** exceptionally difficult, limited data. Best case, no change in prognosis but most likely is a worse neurological outcome.
  - **Hypercarbia and relative hypoxemia:** tolerated in standard ARDS management but not acceptable when co-managing TBI. Limits advanced ventilator options and constrains ECMO settings.
  - **Circuit-related bleeding risk:** even without systemic anticoagulation, complicates concurrent TBI management.

TAKE HOME POINTS:
- **ECMO is organ support, not therapy.** The only absolute contraindication is no plausible exit strategy from ECMO support.
- **Every ECMO patient must have a subspecialty palliative care consultation!**
- **Cardiopulmonary recovery** doesn't change a pre-existing prognosis (e.g. TBI, cancer, SCI) and often worsens the "best" and "most likely" cases.
- **Build consensus on the exit strategy early.** Call subspecialty palliative care at cannulation. Decisions become complex quickly and it is difficult to recognize a bridge to nowhere in real time.
- **Know your hospital's policy and state laws well.** Be clear about the family's role in decision making if you are considering futility.
- **ECMO capacity is organizationally and regionally finite.** Build allocation guidelines before scarcity forces the decision.

WHERE TO HANG:

- Surgeon Lounge
- OR Locker Room
- Resident Workroom
- ICU Workroom

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References for further reading

1. Kim JM, et al. Integrating palliative care into the modern cardiac intensive care unit: a review. Eur Heart J Acute Cardiovasc Care. 2022;11(5):442-449.
2. MacLaren G. When to initiate ECMO with low likelihood of success. Crit Care. 2018;22(1):217.
3. Rajsic S, et al. When stopping is just as important as starting: the challenge of extracorporeal membrane oxygenation. Br J Anaesth. 2025;136(1):24-28.
4. Zaaqoq AM, et al. Postcardiotomy extracorporeal membrane oxygenation: narrative review navigating the ethical issues. J Cardiothorac Vasc Anesth. 2021;36(8 Pt A):2628-2635.
5. Na SJ, Jeon K. Extracorporeal membrane oxygenation support in adult patients with acute respiratory distress syndrome. Expert Rev Respir Med. 2020;14(5):511-519.
6. Mueller PS. Ethical and legal concerns associated with withdrawing mechanical circulatory support: a U.S. perspective. Front Cardiovasc Med. 2022;9:897955.
7. Kiker WA, et al. Outcomes of palliative care in extracorporeal life support: a systematic review. J Pain Symptom Manage. 2025;70(6):613-626.
8. Peeler A, et al. Palliative care utilization in patients requiring extracorporeal membrane oxygenation: an observational study. ASAIO J. 2023;69(11):1009-1015.
9. Godfrey S, et al. The role of palliative care in withdrawal of venoarterial extracorporeal membrane oxygenation for cardiogenic shock. J Pain Symptom Manage. 2020;61(6):1139-1146.
10. Stevens K, et al. Caring for patients requiring venous arterial extracorporeal membrane oxygenation: can upstream palliative care make a difference? Am J Hosp Palliat Care. 2024;41(12):1431-1441.
11. Grouls A, et al. Palliative care impact on COVID-19 patients requiring extracorporeal membrane oxygenation. J Pain Symptom Manage. 2022;64(4):e181-e187.
12. Grouls A, et al. Top ten tips palliative care clinicians should know about working with adults receiving extracorporeal membrane oxygenation. J Palliat Med. 2023;26(9):1270-1276.
13. Wolfe ID. On “not recommending” ECMO. Hastings Cent Rep. 2020;50(5):5-6.
14. Machado DS, et al. Finishing well: compassionate extracorporeal membrane oxygenation discontinuation. J Pain Symptom Manage. 2022;63(5):e553-e562.
15. Highet BH, et al. Extracorporeal membrane oxygenation support: palliative care integration, patient experience and quality of life. BMJ Support Palliat Care. 2025.

Scan here to view the
Best Case, Worst Care
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Withdrawal of Life-Sustaining Treatment and Care of the Imminently Dying Patient
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