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Perfusionist-based caregiver model in an ECLS program

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Perfusionist as the ECLS “Specialist”

- The Perfusionist has a documented competency and experience in every facet of extracorporeal circulation technology.
- Perfusionists possess a unique body of knowledge in human physiological responses to biomaterial interfaces, non-pulsatile flow and constrained vortex pumps.
- ECLS is part of their formal entry level education and training.
- ECLS failures are non-intuitive and the Perfusionist is the most proficient in interpreting these complexities.



However a Perfusionist...

- Is quite often engaged in cardiopulmonary bypass and ancillary procedures.
- Expertise and availability depend on the nature and caseload of the center.
- May be an expensive and limited resource.
- May be contracted (external).
- May not be in-house 24/7.



What do guidelines state?



Staff involved in ECMO should meet the requirements of their subspecialty training as set forth by their specific governing national or regional board

ELSO GUIDELINES FOR ECMO CENTERS

The ECMO coordinator may be an experienced intensive care registered nurse or registered respiratory therapist with a strong ICU background (minimum of 1 year of ICU experience), or a **certified clinical perfusionist** with ECMO experience.



What do guidelines state? (cont.)

CRITICAL CARE PERSPECTIVE



Position Paper for the Organization of Extracorporeal Membrane Oxygenation Programs for Acute Respiratory Failure in Adult Patients

Alain Combes¹, Daniel Brodie², Robert Bartlett³, Laurent Brochard⁴, Roy Brower⁵, Steve Conrad⁶, Daniel De Backer⁷, Eddy Fan⁸, Niall Ferguson⁸, James Fortenberry⁹, John Fraser¹⁰, Luciano Gattinoni¹¹, William Lynch³, Graeme MacLaren¹², Alain Mercat¹³, Thomas Mueller¹⁴, Mark Ogino¹⁵, Giles Peek¹⁶, Vince Pellegrino¹⁷, Antonio Pesenti¹⁸, Marco Ranieri¹⁹, Arthur Slutsky⁴, and Alain Vuylsteke²⁰; The International ECMO Network (ECMONet)

American Journal of Respiratory and Critical Care Medicine Volume 190 Number 5, September 1 2014

The ECMO team should be as self sufficient as possible, and specifically should be trained to prime and set up the ECMO circuit.

An ECMO coordinator (typically a nurse, respiratory therapist, or perfusionist) may assist the medical director with:

- Organizing and implementing the training of the ECMO team and staffing
- Maintaining equipment and supplies
- Quality improvement, and ensuring that patient data are entered into the ELSO registry or other database.



Identification of personnel

In establishing an ECMO program, a steering committee must be charged with the task of:

- Identifying the program's goals.
- Addressing the logistics of needed human and material capital.
- Identifying achievable results and defining performance indicators; ideally compared with benchmarks originating from centers of excellence.
- Engaging the local and broader medical community.
- Defining a business plan for predicting expenses and potential revenues, not only monetary (QUALY adjusted)



In a Perfusionist-based program

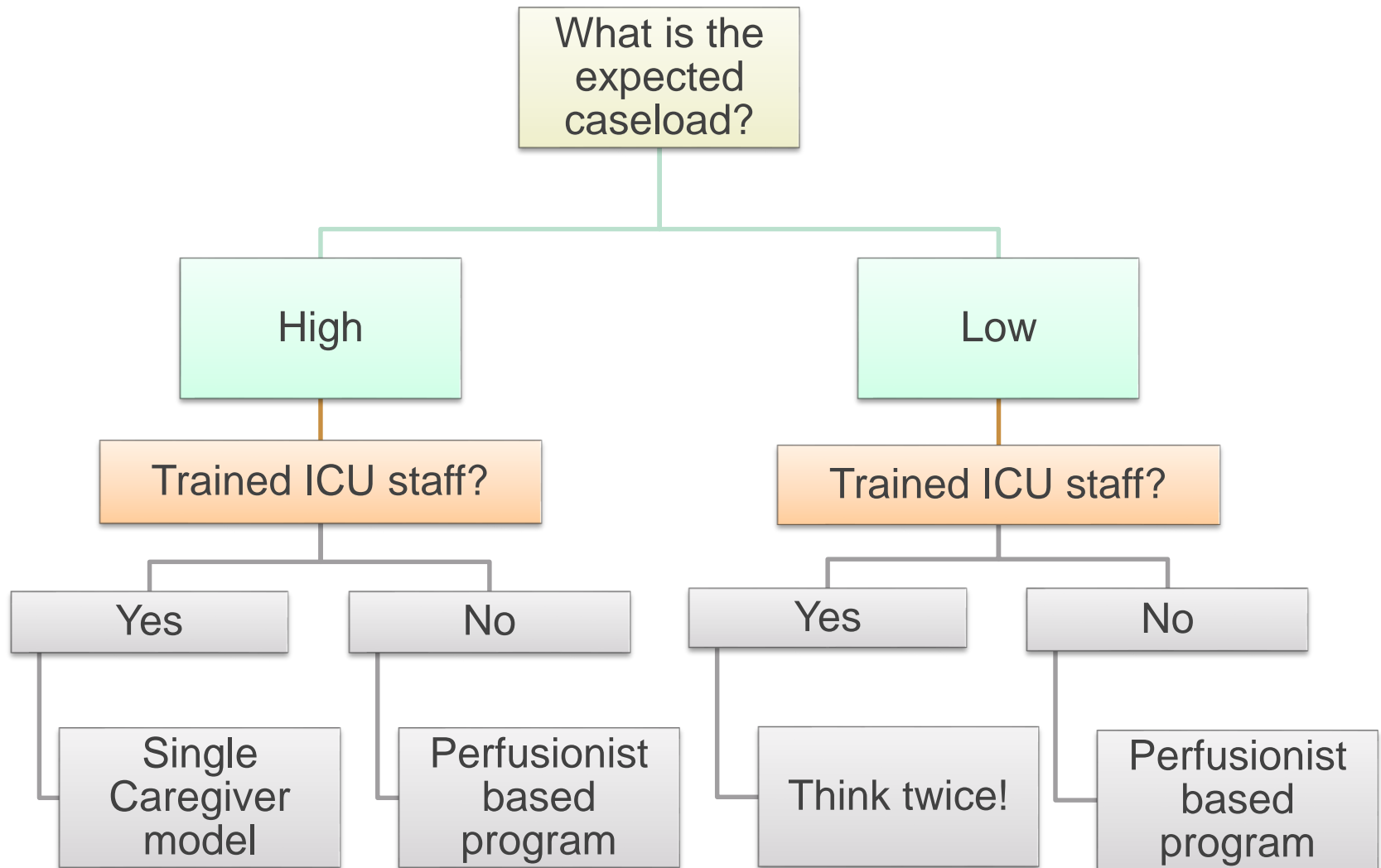
- Once a patient is placed on ECLS and admitted to the ICU, the multidisciplinary considerations for well-rounded care begin with a determination as to the acuity and stability of the patient.
- A team approach is employed with the nurses bearing the primary responsibility for an ongoing monitoring and assessment of the entire patient condition.



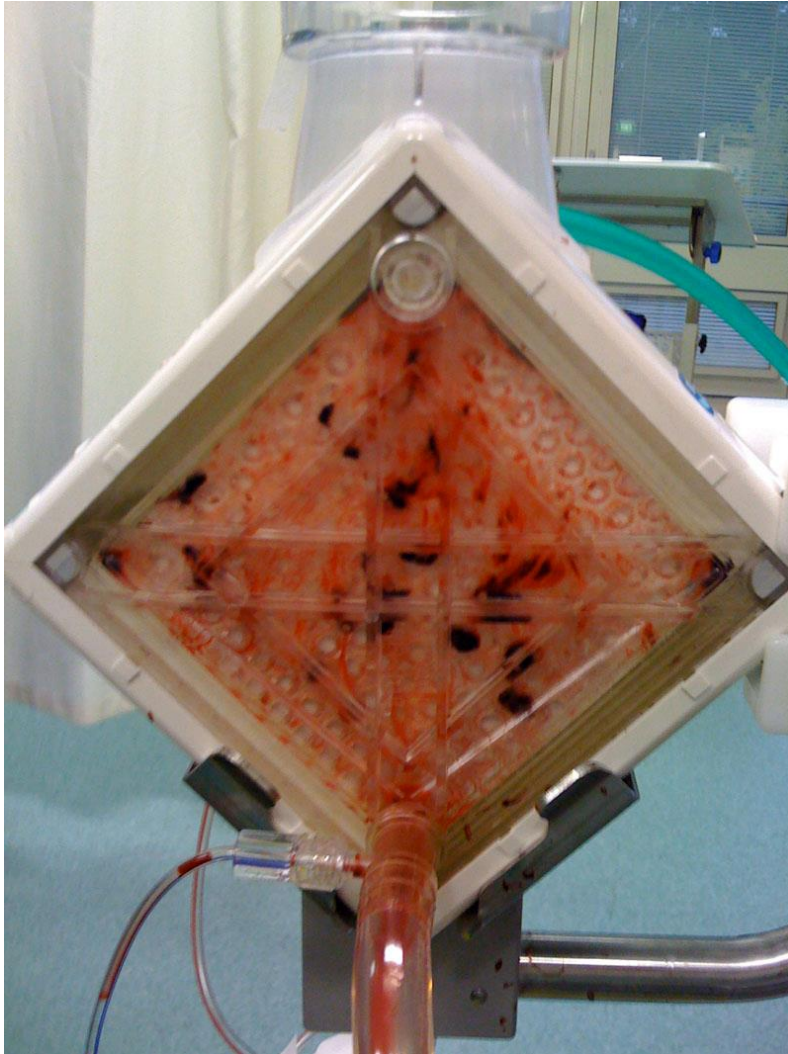
In a Perfusionist-based program

- The perfusionist will round every 2-4 hours and may be called at any moment to make changes to the ECLS circuit.
- The rounding practice or necessary availability of a perfusionist is declared by the multidisciplinary team (example: V-V ECLS).

Proposed decision algorithm



ECLS Troubleshooting



Do you really have someone who can take care of this?

What if the ECLS machine stops? Can you manage it easily?



ECLS preparedness

Expect the unexpected...

Prepare for the worse

Whoever runs the ECLS, **MUST** be equipped to handle any circumstance



Conclusions I

- In ECLS, a multidisciplinary team is of necessity. However it is important to understand that the expertise required to manage critically ill ECMO patients is not innate to all disciplines.
- Ensuring advanced training, competency review and simulation education to non-Perfusionists is time consuming and enormously expensive.



Conclusions II

- ECLS is extracorporeal bypass and Perfusionists are uniquely qualified to perform this task.
- There will never be sufficient perfusionists unless ECLS programs employ them as the primary clinical support personnel.
- Given the increasing ECLS and VAD demands, along with IABPs, is it time to have ICU Perfusionists 24/7 rather than trying to train everyone else to be like one?

Thank you!

