Title	Aims and goal	Learning outcomes/objectives
Capturing the trapped piece: Refractory hypoxemia during V-V ECMO for respiratory support	This workshop provides a systematic approach of analyzing patient-ECMO interactions that can lead to severe, refractory hypoxemia on V-V ECMO. This is a review workshop that entail a theoretical part combined with immersive high fidelity simulation with debriefing of refractory hypoxemia during V-V ECMO support.	- Define "hypoxemia" on VV ECMO - review the notions of oxygen transport and oxygen delivery - Understand the physiology of hypoxemia on VV ECMO - assess a patient by using a systematic approach for hypoxemia - consider all the possible etiologies of hypoxemia while on V-V ECMO - apply all the potential therapeutic interventions to correct the hypoxemia
Rising above the expectation: Normothermic regional perfusion in DCD donors	Engaging a case-based discussion on DCD organ donation and NRP, and joining a wet lab focused on NRP circuits and complications. Expanding the donor pool enrolling DCD organ donors respecting country-specific ethical/legal boundaries. Application of NRP in DCD donors in Europe. Implementing a safe and effective NRP in DCD donors preventing and managing major potential clinical and mechanical complications.	- Understand the basic concepts and ethical/legal boundaries in DCD organ donation in different European country/specific scenarios. - Understand rationale, techniques and potential ethical/legal issues of NRP in DCD donors in different European country/specific scenarios. - Know how to prevent, recognize, and manage the major potential clinical complications of NRP. - Know how to prevent, recognize, and manage the major potential mechanical complications of NRP.
EuroELSO/EBCP join workshop with European Board of Cardiovascular Perfusion	This workshop provides insights how to perform cannulation via percutaneous vascular access during resuscitation of the arresting patient using mechanical circulatory support system.	High quality CPR use of mechanical chest compression devices - percutaneous vascular access - ECMO management - team logistic - team communication
Dark squared discovery: Mechanical ventilation during ECMO	Targets for lung protective ventilation (10 MINS-All attendees together-slide presentation): - Concepts of compliance, elastance, normalized elastance and specific elastance - Driving pressure to set tidal volume - Pitfalls of driving pressure (AOP, Inspiratory time) 2 stations (attendees will rotate between the two) PV Loops (40 MINS): - Meaning of pressure volume curve (inspiratory/expiratory): lung hysteresis - Hysteresis to evaluate alveolar recruitment and PEEP - Airway closure and airway opening pressure - Recruitment-to-inflation ratio to assess recruitability Esophageal and transpulmonary pressure (40 MINS) - How to measure it at the bedside: esophageal pressure monitoring and catheter placement - Meaning of Pes measurement: vertical gradient and transpulmonary pressure heterogeneity in the lungs: elastance-derived vs. direct methods. - How to establish the upper limit of ventilation: elastance-derived end-inspiratory transpulmonary pressure	Understand - Concepts of compliance, elastance, normalized elastance and specific elastance - Driving pressure to set tidal volume - Pitfalls of driving pressure (AOP, Inspiratory time) - Meaning of pressure volume curve (inspiratory/expiratory): lung hysteresis - Hysteresis to evaluate alveolar recruitment and PEEP - Airway closure and airway opening pressure - Recruitment-to-inflation ratio to assess recruitability - How to measure it at the bedside: esophageal pressure monitoring and catheter placement - Meaning of Pes measurement: vertical gradient and transpulmonary pressure heterogeneity in the lungs: elastance-derived vs. direct methods. - How to establish the upper limit of ventilation: elastance-derived end-inspiratory transpulmonary pressure - How to (possibly) set peep: end-expiratory transpulmonary pressure.

	- How to (possibly) set peep: end-expiratory transpulmonary pressure. To understand bedside and advanced techniques of respiratory monitoring	
Capturing on the edge: Tips and pitfalls in ultrasound guided ECMO cannulation	The participants should get a good overview of the safe execution of different cannulation strategies using ultrasound guidance. A special focus will be on the right jugular insertion of dual lumen cannula. Demonstration, practical guidance and practice (simulation) of ultrasound-guided cannulation for VV- and VA-ECMO with single- and double-lumen cannulas, jugular and inguinal access. A specific focus will be placed on techniques for echocardiographic guidance and further tricks for the implantation of double-lumen cannulas via jugular access. The trainers will show and explain criteria and requirements for successful jugular cannulation. Potential periinterventional complications will be explained and complication management will be practiced during the sessions. Finally, replacement strategies for relocation of dislocated cannulas during ongoing ECMO support will be trained. High-end simulators will allow training close to real-life conditions.	All participants should be able to: - Understand benefits, caveats and challenges of different cannulation strategies Participants with prior experience in ECMO cannulation will be able to adopt the strategies for their clinical practice.
In between the destinations: Renal replacement (CRRT) and plasmapheresis during ECMO	Through theoretical presentation and simulation provide an understanding of both the theory of CRRT/plasmapheresis and ECMO and practical skills. Describe indications for connecting CRRT/plasmapheresis to the ECMO circuit. Demonstrate through simulation safe connection and disconnection. Discuss complications and challenges of different approaches. Discuss prevention and troubleshooting of complications.	- Identify indications for connecting CRRT/plasmapheresis to the ECMO circuit. - Demonstrate safe connection and disconnection. - Understand the complications and challenges of different approaches. - Understand prevention and troubleshooting of complications in the clinical area.
Interfering with the disappearing pieces: Managing complications during V-A ECMO for cardiac support	Participants will achieve a greater understanding of how to run peripheral VA ECMO safely, to recognise when complications are occurring, and how to successfully manage them. Tutorial on complications of VA ECMO Harlequin syndrome: clinical features, causes, how to diagnose, and management options. LV distension: clinical features, causes, how to diagnose, and management options. Simulation scenario using high-fidelity mannekin, Cardiohelp console with HLS circuit, and invasive monitoring to illustrate educational learning points	- Understanding of peripheral VA ECMO circuit anatomy including retrograde blood flow - Understanding of complications of VA ECMO, specifically Harlequin syndrome and LV distension - Appreciation of clinical features, recognition of complications, symptomatology, and management options - Opportunity to take part in simulation scenario to consolidate learning through direct experience and/or debriefing
Capturing the trapped piece: Refractory hypoxemia during V-V ECMO for respiratory support	This workshop provides a systematic approach of analyzing patient-ECMO interactions that can lead to severe hypoxemia on VV ECMO. The participants will be able to understand the causes of hypoxemia while on VV ECMO and to address the causes. This is a review workshop that entail a theoretical part combined with immersive high-fidelity simulation that engages the	- Define "hypoxemia" on VV ECMO - Review the notions of oxygen transport and oxygen delivery - Understand the physiology of hypoxemia on VV ECMO - Assess a patient by using a systematic approach for hypoxemia - Consider all the possible etiologies of hypoxemia while on VV ECMO

	learner followed by a debriefing on hypoxemia on VV ECMO.	- Apply all the potential therapeutic interventions to correct the hypoxemia.
Simulate and cannulate in 3D: virtual ECMO model and digital twins	Immersive, three-dimensional experience of ECMO cannulation perceived through a device known as a Virtual Reality and transformation into augmented reality.	The user will perform an ECMO cannulation in a computer-generated ICU environment with scenes and objects that appear in a simulated 3D environment that enables users to explore and interact with a virtual surrounding in a way that approximates reality, as it is perceived through the users' senses.
Let's learn hemodynamic with my friend Harvi	Harvi is a set of online textbooks and cardiovascular and pulmonary simulators that has been in development for over 20 years for research and education (harvi.online). The Harvi platform is currently used in an interactive program (TEACH, Training and Education in Advanced Cardiovascular Hemodynamics) for training in basic and advanced cardiac pathophysiology, ECMO and Mechanical Circulatory Support. Workshops that focus on the physiology of ECMO have been developed and presented at several ELSO meetings. It is challenging to understand the hemodynamics seen in patients supported with many cannulation strategies, concurrent secondary devices, and a myriad of underlying (and rapidly changing) cardiopulmonary pathophysiologic conditions. However, using the high-fidelity online simulation, Harvi, (running on a standard web browser) it is possible to explore a wide range of conditions and interventions and add layers of complexity one at a time. Workshops are divided into several modules, each lasting approximately 45 minutes, in which participants are given detailed instructions and guided through specific scenarios. Each module is preceded by a short introductory lecture, and followed by an audience response questions and a detailed review of the exercise. Participants are given access to continue using and learning with Harvi following the workshop.	The goals are for participants to: - Identify events of the cardiac cycle on the PV Loop - Recognize how changes in Preload, Afterload, Contractility, Lucitropy, are manifest on the PV Loop - Appreciate that different approaches to treat hypotension have different effects on stoke volume, PA pressures, and PCWP. - Understand the determinants of myocardial oxygen demand - Appreciate the protective nature of myocardial hibernation and the factors that bring myocardial oxygen supply and demand into balance. - Recognize the impact of hibernating myocardium and myocardial infarction on the PV diagram and hemodynamics. - Understand the mechanisms by which remodeling is both adaptive and maladaptive. - Recognize the features of dilated cardiomyopathy and cardiogenic shock on the PV Loop - Compare the effects of pharmacologic therapies (vasopressors, into tropes) on hemodynamics during cardiogenic shock - Compare the effects of IABP, VA-ECMO, tandem heart and LVAD on hemodynamics during cardiogenic shock The goals are for participants to understand the management strategies for the following conditions: - Case 1: V-V ECMO for Influenza - Case 2: V-A ECMO and Harlequin Syndrome - Case 3: VA-ECMO Loss of Pulsatility; management strategies and decompression options - Case 4: BiVentricular (BiV) Failure - Case 5: Ischemic VSD and Mechanical Support options
Advanced respiratory monitoring	The goal is to understand bedside and advanced techniques of respiratory monitoring. Targets for lung protective ventilation (10	Understand - Concepts of compliance, elastance, normalized elastance and specific elastance - Driving pressure to set tidal volume

	MINS-All attendees together-slide presentation): - Concepts of compliance, elastance, normalized elastance and specific elastance - Driving pressure to set tidal volume - Pitfalls of driving pressure (AOP, Inspiratory time) 2 stations (attendees will rotate between the two) PV Loops (40 MINS): - Meaning of pressure volume curve (inspiratory/expiratory): lung hysteresis - Hysteresis to evaluate alveolar recruitment and PEEP - Airway closure and airway opening pressure - Recruitment-to-inflation ratio to assess recruitability Esophageal and transpulmonary pressure (40 MINS) - How to measure it at the bedside: esophageal pressure monitoring and catheter placement - Meaning of Pes measurement: vertical gradient and transpulmonary pressure heterogeneity in the lungs: elastance-derived vs. direct methods. - How to establish the upper limit of ventilation: elastance-derived end-inspiratory transpulmonary pressure - How to (possibly) set peep: end-expiratory transpulmonary pressure.	- Pitfalls of driving pressure (AOP, Inspiratory time) - Meaning of pressure volume curve (inspiratory/expiratory): lung hysteresis - Hysteresis to evaluate alveolar recruitment and PEEP - Airway closure and airway opening pressure - Recruitment-to-inflation ratio to assess recruitability - How to measure it at the bedside: esophageal pressure monitoring and catheter placement - Meaning of Pes measurement: vertical gradient and transpulmonary pressure heterogeneity in the lungs: elastance-derived vs. direct methods. - How to establish the upper limit of ventilation: elastance-derived end-inspiratory transpulmonary pressure - How to (possibly) set peep: end-expiratory transpulmonary pressure.
Pediatric ECMO adventure – and the stars look very different today!	The goal of the training is to acquire advance knowledge and competencies in managing children on ECMO, and to develop adequate multidisciplinary teamwork skills to manage children on advanced mechanical life support. Description: This immersive hands-on workshop and high-fidelity simulation provides the latest techniques and technology surrounding the clinical use of ECMO, including novel educational models. Through various multilevel, simple, and advanced clinical scenarios, we will apply the knowledge gained in the understanding and managing children supported on ECMO utilizing high fidelity simulation mannequins and educational modalities with international, experienced facilitators.	Learning Outcomes: Upon completion of this activity, participants should be able to: recognize complications of V-V and V-A ECMO, troubleshoot routine and catastrophic ECMO events, identify and illustrate the most effective cannulation strategy, ECPR, ECMO in Trauma, ECMO and Impella, ECMO transport, ECMO in sepsis, Induction to multidisciplinary teamwork & basic pathway during ECPR, evaluate the modality of ECMO most appropriate for the patient, eork and communicate clearly with multi-disciplinary team using closed loop communication

Preliminary details Educational Corners as per February 2024