ECMO Workshop

Facilitator: The workshop will be organised by Paul van der Heiden, a Critical care nurse/teacher with a broad experience in cardiosurgery intensive care and possesses over more than 15 years’ experience in ECMO. Paul is a RGN since 1986 and has worked in Holland, Switzerland and Germany. He now works in Cardiocentro Ticino in Lugano Switzerland. Paul is the Swiss critical care association representative on the EfCCNa Council since 2007.

The history of ECMO: the past, the present and the future of ECMO.

Extracorporeal membrane oxygenation (ECMO) is a technique for providing life support, to sustain the life of patients with severe heart or lung failure when other treatments fail to maintain a sufficient oxygenation of the body organ systems.

Extracorporeal membrane oxygenation (ECMO) is not a new technique. It has been used in clinical practice for more than 40 years. In the beginning it was an adaptation of the conventional cardiopulmonary bypass (CPB) technique and introduced into the treatment of severe acute respiratory distress syndrome (ARDS) in the 1970s. The initial reports of the use of ECMO in ARDS patients were quite enthusiastic.

A large randomized multicenter trial was launched in 1974 to test venoarterial ECMO versus conventional therapy in adult ARDS patients. The study revealed that mortality rates in the ECMO therapy group were as high as 90% and not significantly different from those in the conventionally treated group. These discouraging results in adult ARDS patients dampened previous enthusiasm, and interest in venoarterial ECMO waned in most research groups. In the following years it became clear that ECMO was actually of great benefit in newborns with acute respiratory failure. In adults the complexity of management and the important complications limited its diffusion to few specialized centers. Normally only heart surgery centers.

The last years, the development of new materials and the simplification of the procedure led to a dramatic increase in the centers providing extracorporeal life support (ECLS) and in the number of ECMO runs, for both respiratory and circulatory indications.

Today ECMO, also called ECLS (extracorporeal life support), in its actual application is an evolution of the heart–lung machines used in cardiac surgery. Depending on its configuration – venovenous or venoarterial (and some of this derivative techniques) – it is used to support respiratory function, circulation, or both. This treatment provides a bridge, either to healing of the natural organs or to long-term devices or transplantation. In fact, although ECMO has the capability to support cardiorespiratory function temporarily, it is not a cure for the underlying disease. As Warren Zapol, one of the fathers of respiratory ECMO, pinpointed in an editorial in the New England Journal of Medicine in 1972, the goal of ECLS is to “buy time” while sustaining an adequate tissue perfusion and preventing further damage to the diseased lungs by reducing their motion (pulmonary rest) with application of only a few ventilator breaths with low VT and low peak inspiratory pressures.

This workshop will develop skills and knowledge in the management of patients with ECMO:

Content:
- Define the different ECMO techniques
- VA ECMO: principles, practice, problems & troubleshooting
- VV ECMO: principles, practice, problems & troubleshooting
- The future of ECMO newer indications and Challenges.

This ECMO Workshop is for critical care nurses seeking to provide ECMO support to patients with severe forms of cardiac and respiratory failure. It is designed for participants with little prior experience in the provision of ECMO.