

HEALTH EDUCATION INFORMATION

Extracorporeal Membrane Oxygenation

Extracorporeal membrane oxygenation (ECMO), also known as extracorporeal life support (ECLS), is designed to drain a patient's venous blood with a pump into an artificial oxygenator, where the blood is oxygenated and warmed, and then sent back to the patient's arterial or venous system. The acute heart or lung failure patient can thus gain temporary support until the recovery of the function of his or her heart or lung or as a bridge for the patient awaiting heart or lung transplant.

Care Plan

1. The care model: We adopt a team-based care model, in which the attending physician and an intensive care unit (ICU) ECMO consultant or a critical care physician share responsibilities for better patient care. While general treatments are handled by surgical critical care physicians, major medical decisions (such as the decision of whether to undergo heart or lung transplant) are jointly made by the attending physician and the ICU physician.

2. Monitoring: When the ECMO machine is in operation, caregivers will record changes in a patient and monitor his or her condition in accordance with standard protocols.

The ECMO technician is responsible for the ECMO machine's operation, which includes the set-up, replacement, calibration, and removal of ECMO tubing, as well as daily routine inspections. The nurse provides overall and continuous care for the patient. If the patient has any problems, the nurse will promptly contact the technician and the on-call physician. At the same time, the resident physician will report the patient's condition to the attending physician and call for assistance.

3. Consent: The use of ECMO requires a family member of the patient to fill out a consent form (includes items such as blood tests and out-of-pocket items).

The complications of ECMO are not uncommon

1. Bleeding: This is the most common ECMO-related complication, including bleeding in surgical sites, such as cerebral hemorrhage, cardiac or great vessel rupture, visceral bleeding, cardiac tamponade, and bleeding at the ECMO catheter puncture site, etc.
2. Thrombosis: Thrombosis and embolism are complications related to bleeding. Severe cases may lead to stroke, mesenteric, vascular occlusion, organ ischemia, and pulmonary vascular embolism.
3. Hemolysis: Hemolysis refers to the destruction of blood cells by the machine,

which is more likely to happen if extracorporeal circulation lasts longer. Based on daily routine inspections, the ECMO technician will decide on whether the tubing should be changed. A replacement of the ECMO machine may involve some out-of-pocket items, which the medical staff will explain to the family members of the patient.

4. Limb ischemia: Thrombosis, embolism, or even the direct blockage of blood flow caused by the use of a large catheter may lead to limb ischemia and require an amputation of the limbs.
5. Infection

ECMO set-up during the ICU treatment period

1. Sedative and analgesic medicines are given, according to the patient's condition, to reduce his or her pain and discomfort.
2. Pins are used to help secure the ECMO tubing to prevent any dislodging..
3. The self-adhesive tape is required to secure the catheters near the patient's head.
4. To protect several indwelled vascular catheters, the patient is equipped with gloves and protective constraints on the wrist to keep him or her from plucking the tubes and prevent the tubes from becoming dislodged. To meet visitors, please contact the nurse before any protective constraints are allowed to be removed.
5. Protocols of wound care and aseptic guidelines should be strictly followed.

Communication channels

1. During a patient's stay in an ICU ward, questions may be directed to the nurses and on-call physicians, who will provide an explanation of the patient's disease progression.
2. If you need to talk to the attending physician, the nurse in the ward will help you arrange a meeting time.
3. Questions about an ICU units services may be directed to the head nurse or conveyed via a feedback form (which can be dropped in a suggestion box). You may also contact us via email (service@ntuh.gov.tw) or fax (02-23945063), and we will be more than happy to handle your feedback.

NTUH's Social Work Office provides services for disability medical subsidies, and congenital heart diseases. (Please contact the Adult Congenital Heart Center (Tel 02-23123456 ext. 70356; contact person: Ms. Hung; email: <http://www.ntuh.gov.tw/ped/adultchd/default.aspx>). For low-income household medical subsidies, please contact the nurse and or Social Work Office on the first floor (Tel: 2356 2097).