

What Differentiates ART™ From ECMO?



Forward Looking Statement

This presentation contains express or implied forward-looking statements pursuant to U.S. Federal securities laws. For example, the Company is using forward-looking statements when it discusses the advantages and benefits of the ART over ECMO, and the market potential of the ART. These forward-looking statements and their implications are based on the current expectations of the management of the Company only and are subject to a number of factors and uncertainties that could cause actual results to differ materially from those described in the forward-looking statements. Except as otherwise required by law, the Company undertakes no obligation to publicly release any revisions to these forward-looking statements to reflect events or circumstances after the date hereof or to reflect the occurrence of unanticipated events. More detailed information about the risks and uncertainties affecting the Company is contained under the heading “Risk Factors” in the Company’s Registration Statement on Form F-1 filed with the SEC, which is available on the SEC’s website, www.sec.gov.

ART™ Vs. ECMO

- Patient population
- Cannulation
- Mechanical design of device and cannula
- Patient sedative state
- Ventilator induced lung injury
- Hospital's prior experience with ECMO
- Market size

What is ECMO (Extracorporeal Membrane Oxygenation)?

Extracorporeal Membrane Oxygenation (ECMO) is a life support machine.

People who need ECMO have a severe and life-threatening illness that stops their heart or lungs from working properly.

For example, ECMO is used during life-threatening conditions such as severe lung damage from infection, or shock after a massive heart attack¹.



1. Am. J Respir Crit Care Med Vol. 193, P9-P10, 2016 Online version updated March 2020 ATS Patient Education Series © 2016 American Thoracic Society

ART™ System Vs. ECMO: The Patients' Level of Severity

ECMO*

ECMO is a salvage therapy

VV-ECMO¹ is used when all other forms of lung support have failed for critically ill patients

There is no “plan B” when a patient is not improving with ECMO

VV-ECMO is considered a “bridge to nowhere” if a patient doesn’t improve. The daily costs per patient are very high, and patient cannot be taken-off the device in such a scenario

ART™ System

ART has the potential to prevent invasive mechanical ventilation and its associated long-term damages

ART might be applied in (1) patient prior invasive mechanical ventilation, to avoid MV, and (2) in addition to MV to decrease MV duration and subsequent ventilator associated lung injury

ART is designed to allow for early intervention

In the case patient deteriorates while receiving ART treatment², alternative treatments can be applied (mechanical ventilation)

1. **Venovenous (VV) ECMO** provides lung support only, so the patient's heart must still function well enough to meet the body's needs. Two cannulas are placed into veins in spots close to or inside the heart.

2. **ART Treatment** – Early extracorporeal blood oxygenation with 1-1.5 liters of blood.

* ELSO website - <https://www.else.org/Resources/TypesofECMO.aspx>

https://www.else.org/Portals/0/ELSO%20Guidelines%20General%20All%20ECLS%20Version%201_4.pdf (Accessed on July 23, 2018)

ART™ System Vs. ECMO: Cannulation

ECMO*

Two single lumen cannulas

Typically, two large (21-25 fr) single lumen cannulas are used to withdraw and return 5-7 liters of blood per minute.

(Commercially available dual lumen cannulas are relatively new, and extremely expensive)

Increased probability of bleeding and infection

- Two insertion points: higher probability of bleeding
- Two insertion points, one is typically femoral: higher probability of infection

ART™ System

One dual lumen cannula

One (16-21 fr**) dual lumen cannula, will be used to withdraw and return 1-1.5 liters of blood per minute.

Reduced probability of bleeding and infection

- One insertion point - lower probability of bleeding
- Cannula is inserted to intrajugular vein : lower probability of infection in comparison to a femoral insertion point

* https://www.else.org/Portals/0/ELSO%20Guidelines%20General%20All%20ECLS%20Version%201_4.pdf (Accessed on July 23, 2018)

** The diameter of the cannula depends on the flow volume required to perform the treatment. As the volume of flow decreases, the cannula diameter is reduced accordingly

ART™ System Vs ECMO: Safety Optimization of Low Blood Flow

ECMO*

A high flow device is not designed to support low flow treatment
ECMO treatment cessation, is characterized by short duration of low blood flow during weaning process

In many ECMO centers ,low flow duration (as part of ECMO weaning process) is minimal ,as clinicians assume the probability for clotting events increases dramatically^{1,2}

Cannulas, pump, pump head and oxygenator utilized with regular ECMO, are less suitable for low flow treatment and may put the patient in danger

ART™ System

ART is designed to optimize the effectiveness profile of low flow extracorporeal treatment

How do we aim to increase the devices 'safety profile?

- Reduce hemolysis
- Reduce thrombosis (Less anticoagulants)

Hemolysis –breakdown or destruction of red blood cells so that the contained oxygen carrying pigment hemoglobin is freed into the surrounding medium

Thrombosis – formation of a blood clot in the heart or in a blood vessel

* https://www.else.org/Portals/0/ELSO%20Guidelines%20General%20All%20ECLS%20Version%201_4.pdf (Accessed on July 23, 2018)

1. Ki, Katrina K., et al. "Low flow rate alters haemostatic parameters in an ex-vivo extracorporeal membrane oxygenation circuit." *Intensive care medicine experimental*.1-15 :(2019)7.1
2. Broman, Lars M., et al. "Weaning from veno-venous extracorporeal membrane oxygenation: how I do it." *Journal of thoracic disease* .692S :(2018)5 IppuS.10

ART™ System Vs. ECMO: Sedation & Paralysis

ECMO*

Patients are sedated and paralyzed

Patients are mechanically ventilated, sedated and paralyzed when ECMO is first administered

“Awake ECMO” is an off-label, non-prevalent event as clinicians wish to prevent cannulas dislocation which might result in massive bleeding & death

- Cannulas must be large enough to maintain the blood flow of 5 liters

ART™ System

Patients are awake and spontaneously breathing

- Delirium can be prevented
- Muscle mass loss can be prevented
- Patient can eat and drink
- Patient can communicate their symptoms and needs to the medical staff
- Patient can communicate with family and friends

* https://www.else.org/Portals/0/ELSO%20Guidelines%20General%20All%20ECLS%20Version%201_4.pdf (Accessed on July 23, 2018)

ART™ System Vs. ECMO: Ventilator Induced Lung Injury

ECMO*

Ventilator induced lung injury is highly prevalent
Patients are mechanically ventilated prior to ECMO administration, as well as during ECMO treatment period

ART™ System

Patients may be awake and spontaneously breathing

ART may potentially prevent MV

Prevention of:

← ventilator induced lung injury
← ventilator associated pneumonia
← ventilator induced diaphragmatic dysfunction

ART may be added to mechanically ventilated patients to shorten ventilation duration and reduce MV damage to the lung

ART may potentially reduce the duration of MV .

Significant reduction of:

← ventilator induced lung injury
← ventilator associated pneumonia
← ventilator induced diaphragmatic dysfunction

* https://www.else.org/Portals/0/ELSO%20Guidelines%20General%20All%20ECLS%20Version%201_4.pdf (Accessed on July 23, 2018)

ART™ System Vs. ECMO: Hospital's Prior Experience With ECMO

ECMO*

ECMO treatment is limited to hospitals with relevant know how and accumulated experience:

ICU physicians, perfusionist and trained ICU nurses must operate and monitor a patient treated with ECMO.

ECMO cannot be operated in the absence of a perfusionist

Perfusionist - operates a heart-lung machine (extracorporeal respiratory system), which is an artificial blood pump, which propels oxygenated blood to the patient's tissues

ART™ System

ART design will may potentially eliminate the need for a perfusionist and facilitate its everyday use.

1. Innovative automatic auto-priming system, eliminates the need for perfusionists, and prevents air embolism
2. Disposable Cartridge is a one unit, no need to connect the different disposable element prior to use
3. Disposable cartridge is entered into the device in a plug-and-play easy to use manner

ART would potentially be used in any ICU, with or without prior ECMO experience.

For that reason, the device commercial potential is significantly larger than ECMO's

* https://www.else.org/Portals/0/ELSO%20Guidelines%20General%20All%20ECLS%20Version%201_4.pdf (Accessed on July 23, 2018)

ART™ System Vs. ECMO: The Market

ECMO*

The number of patients treated with ECMO is limited:

1. ECMO is a salvage treatment
2. High rate of bleeding and infection complications
3. Expensive

ECMO's limited patient population, combined with its high complication rate and its significant financial burden to providers, limit its use

ART™ System

ART market size may resemble the invasive mechanical ventilation market:

1. ART may potentially prevent MV, when used prior to MV.
2. ART may potentially reduce the duration of MV, when added to MV.
3. High volume manufacturing, would allow competitive pricing.

ART's potential patient population includes all patients considered candidates for MV. ART will potentially allow for an extracorporeal intervention aimed to prevent MV and offer a cost-benefit solution from a payor perspective

* https://www.else.org/Portals/0/ELSO%20Guidelines%20General%20All%20ECLS%20Version%201_4.pdf (Accessed on July 23, 2018)



THANK YOU