

Current Event

Extracorporeal Membrane Oxygenation (ECMO) and MERS-CoV

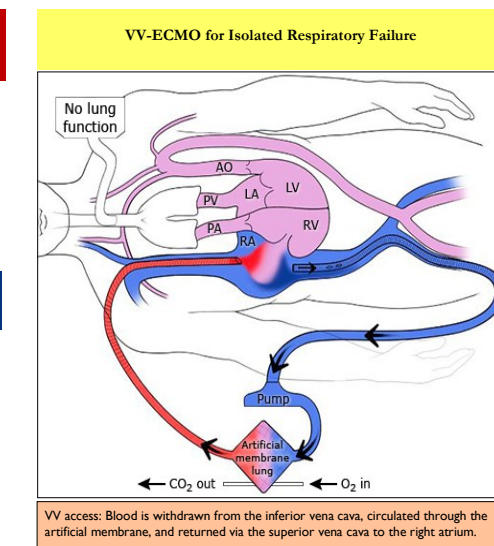
ECMO program was initiated in 2014 to handle respiratory complications of MERS-CoV in critical cases.

Editorial Notes

ECMO device is a cardiopulmonary support system that, in addition to helping movement of blood forward, removes carbon dioxide from and adds oxygen to venous blood using an artificial membrane lung. The pulmonary circulation is bypassed and oxygenated blood returns to the patient via an arterial or venous route. With Venous-Venous (VV) bypass, ECMO is effective primarily as a therapeutic option for patients with severe respiratory failure. With Venous-Arterial (VA) bypass, an extracorporeal pump is employed to support systemic perfusion, thus providing a hemodynamic support option in patients with circulatory and respiratory failure.

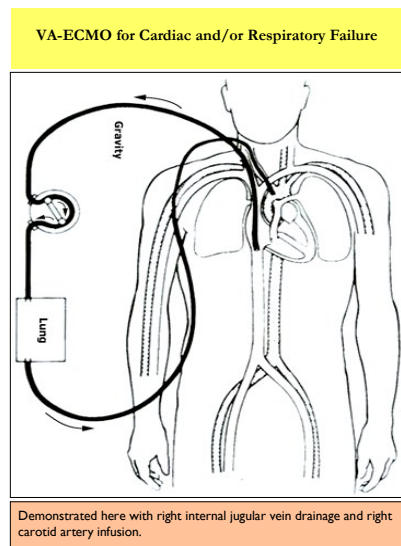
The ECMO system involve placement of large bore catheters in the central arterial and venous circulation that allow positioning of cannula in the aorta and right atrium. Blood from the venous catheter is pumped through a heat exchanger and oxygenator and then returned to the systemic arterial circulation via the arterial cannula. The ECMO systems can be used for support for up to 30 days. Criteria for the initiation of ECMO include acute severe cardiac or pulmonary failure that is potentially reversible and unresponsive to conventional management.

Studies demonstrate that referral to an ECMO center significantly improves recovery and survival from severe Acute Respiratory Distress Syndrome (ARDS). In experienced ECMO centers, approximately 25 percent of patients will improve and recover without ECMO, while 75 percent of pa-



VV access: Blood is withdrawn from the inferior vena cava, circulated through the artificial membrane, and returned via the superior vena cava to the right atrium.

Revised and updated from: Bartlett RH, Gattinoni L. Current status of extracorporeal life support (ECMO) for cardiopulmonary failure. *Minerva Anestesiologica* 2010; 76:534. Graphic 56522 Version 4.0



Demonstrated here with right internal jugular vein drainage and right carotid artery infusion.

Reproduced from: Van Meurs, K, Lilly, KP, Peek, G, Zwischenberger, JB. ECMO: Extracorporeal Cardiopulmonary Support in critical care. *Extracorporeal Life Support Organization, Ann Arbor 2005. Graphic: 80959 Version 1.0*

Cases of MERS-CoV: International Week (IW) No. 52: 21–27 Dec 2015

Total	1
Symptomatic (S)	1
Asymptomatic (AS)	0
Healthcare worker (S)	0
Healthcare Worker (AS)	0

tients will require ECMO. Among those who require ECMO, 60 to 70 percent will survive. However, some experts are less confident that the survival benefit is due to ECMO itself because they believe that a potential benefit from co-interventions in the ECMO centers has not been excluded.

In 2014, Ministry of Health (MOH) initiated ECMO national program to provide ECMO support for MERS-CoV associated respiratory complications. One ECMO center were prepared in each major city of the country, Prince Mohammed bin AbdulAziz hospital in Riyadh, King Abdullah medical complex in Jeddah, and Saud Al-Babtain cardiac center in Dammam. Building and developing capacity of healthcare workers in this field and the need for attracting more specialized experts are majorly considered by the officials in MOH.

Recent Publications:

Das KM, Lee EY, Al Jawder SF, Enani MA, Singh R, Skakni L, Al-Nakshabandi N, Aldossari K, Larsson SG. Acute Middle East Respiratory Syndrome Coronavirus: Temporal Lung Changes Observed on the Chest Radiographs of 55 Patients. *AJR Am J Roentgenol.* 2015 Sep;205(3):W267-74. doi: 10.2214/AJR.15.14445. Epub 2015 Jun 23.

Sindi, A. and Alshahrani, MS. (2015). Extracorporeal Membrane Oxygenation Support for Middle East Respiratory Syndrome Induced Respiratory Failure. Unpublished manuscript, Dammam University, Saudi Arabia.

MERS-CoV in KSA 2015*

Region	Case	Primary	Secondary	U.C.
Riyadh	294	102	184	8
Al-Ahasa	56	11	41	4
Eastern Region	21	10	11	0
Jeddah	18	10	7	1
Qassim	17	10	7	0
Najran	15	10	5	0
Taif	11	8	3	0
Madinah	7	1	6	0
Asir	4	2	2	0
Tabuk	4	4	0	0
Makkah	3	3	0	0
Hail	2	1	1	0
Al-Joaf	2	2	0	0
Jazan	1	1	0	0
Northern Borders	1	1	0	0
Qunfotha	1	1	0	0
Al-Baha	0	0	0	0
Bisha	0	0	0	0
Hafr Al-Batin	0	0	0	0
Qurayyat	0	0	0	0
Total	457	176	268	13

Case: Confirmed Symptomatic. U.C. : Unclassified cases

*Period: Form 29 Dec 2014 to 27 Dec 2015