





ECLS: The ELSO Perspective

Jonathan Haft, MD

Medical Director, Extracorporeal Life Support Program
Surgical Director, Heart Transplantation
Associate Section Head for Quality
Department of Cardiac Surgery
University of Michigan

Disclosures

None

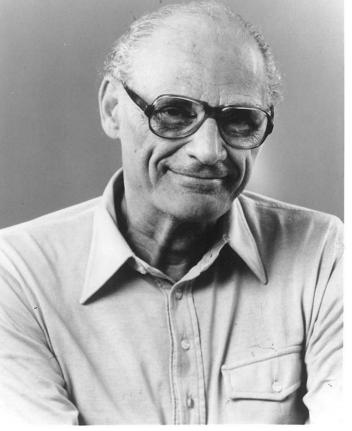
















Michigan vs Penn State

NCAA football

NCAA football · Sat, Nov 13



8 Michigan Wolverines (9 - 1)

Penn State Nittany Lions (6 - 4)

Team Michigan Wolverines Penn State Nittany Lions 17





Final





Football Dominates Millikin, 55-13

WASHU

55

Final	1	2	3	4	T
WASHU (5-2)	14	14	20	7	55
MILLIKIN (2-5)	0	13	0	0	13

MILLIKIN

13





November 10, 2021 | Men's Basketball







WE DON'T ALWAYS SUCK

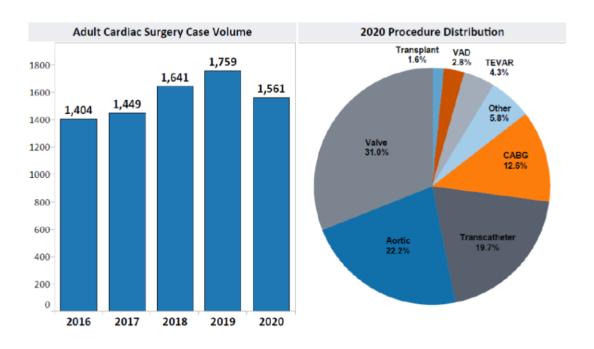


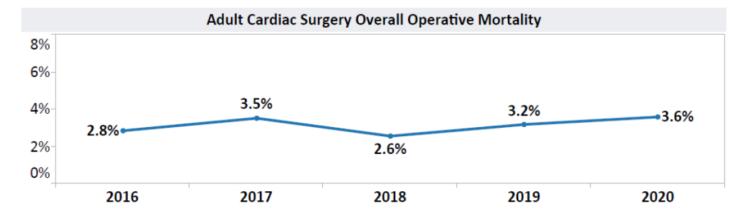
OH WAIT YES WE DO

DIYLOL.COM

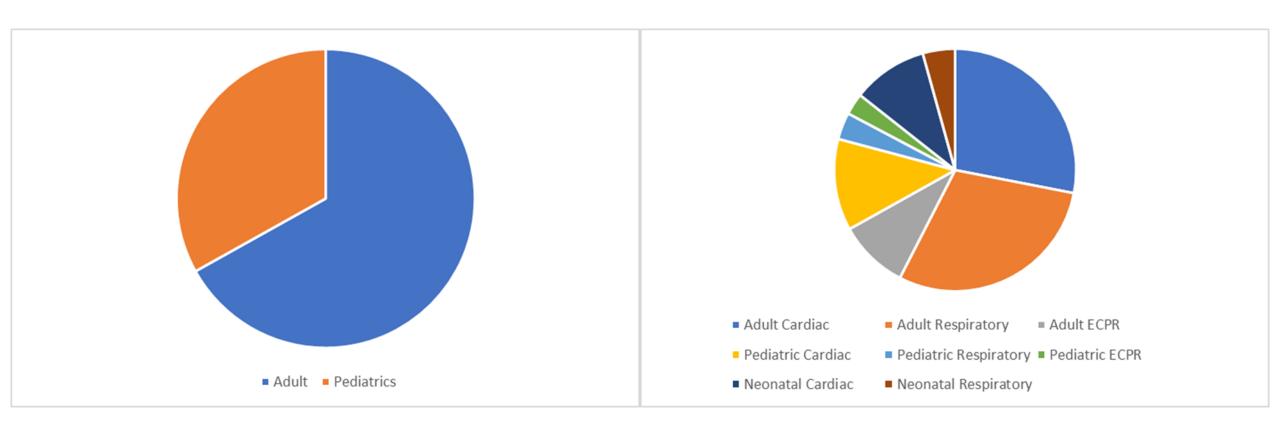


CY2020 Review





FY 2020: 139 total ECMO cases



EXTRACORPOREAL LIFE SUPPORT ORGANIZATION



August 26, 2021

University of Michigan Therese Adamowski Dr. Jonathan Haft 1500 E Medical Center Dr F5850 Ann Arbor, MI 48109 United States

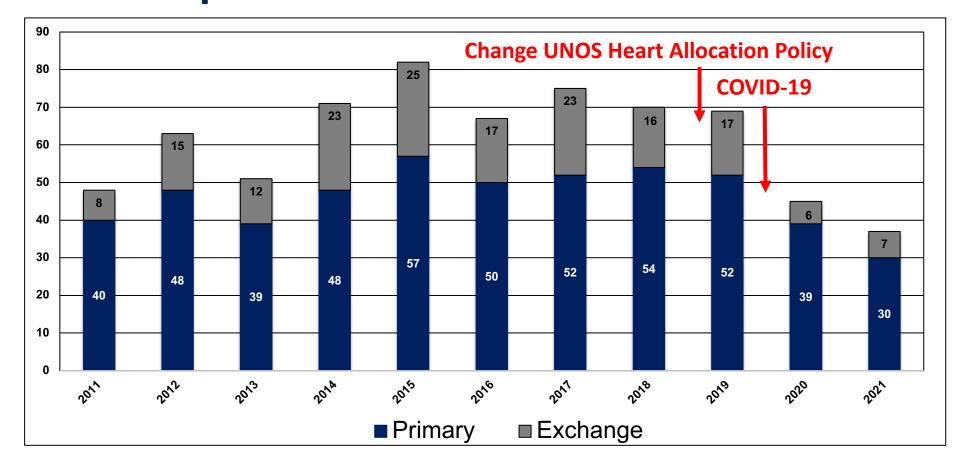
Dear Therese Adamowski and Dr. Jonathan Haft,

It is with great pleasure that we inform you that your ECLS Center has received the *Gold Level* ELSO Award for Excellence in Life Support. This is an outstanding achievement by your center and we offer you sincere congratulations on behalf of the Extracorporeal Life Support Organization.

The ELSO Excellence in Life Support Award recognizes ECLS programs worldwide that distinguish themselves by having processes, procedures and systems in place that promote excellence and exceptional care.

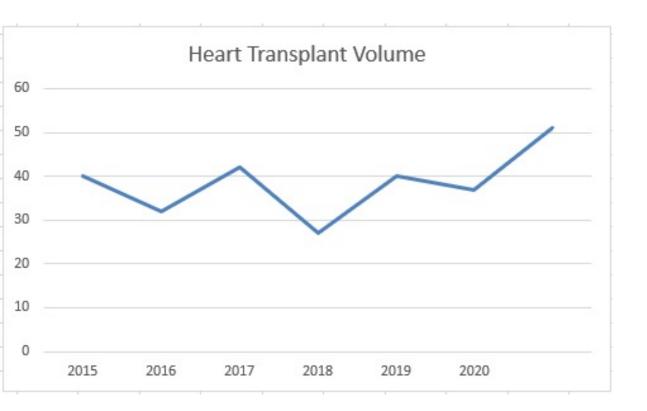


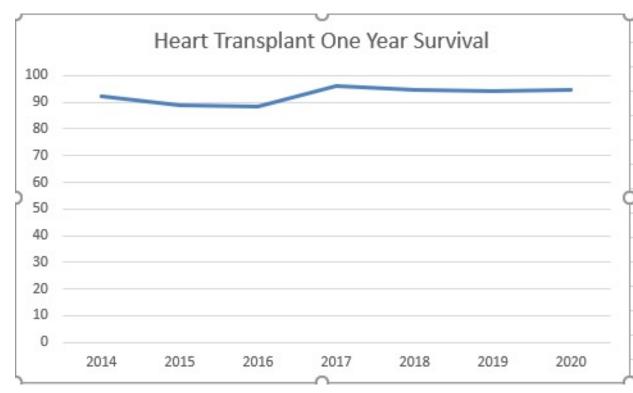
Annual Volume Ventricular Assist Device Implants













History of ELSO

Mission Statement

• Founded in 1989

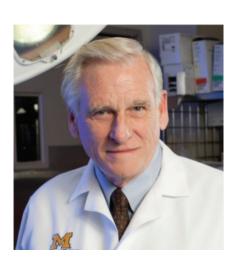


EXTRACORPOREAL LIFE SUPPORT ORGANIZATION
Charter Meeting

October 1-3, 1989

Ann Arbor, Michigan

To provide support to institutions delivering extracorporeal life support through continuing education, guidelines development, original research, publications and maintenance of a comprehensive registry of patient data.









Registry

 Voluntary international database



Ryan Barbaro

International Summary - October, 2021

ECLS Registry Report

International Summary

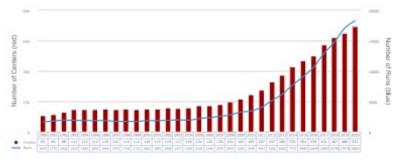


Extracorporeal Life Support Organization 3001 Miller Rd Ann Arbor, MI 48103 USA

October, 2021 Report data through 2020

Overall Outcomes						
	Total Runs	Survived ECLS		Survived to DC or Transfer		
Neonatal	V TO A TO	F2-75-1911				
Pulmonary	33,484	29,332	87%	24,457	73%	
Cardiac	9,620	6,648	69%	4,218	43%	
ECPR	2,261	1,588	70%	961	42%	
Pediatric						
Pulmonary	11,223	8,122	72%	6,775	60%	
Cardiac	14,078	10,204	72%	7,594	53%	
ECPR	5,682	3,379	58%	2,417	42%	
Adult						
Pulmonary	34,319	23,254	67%	20,320	59%	
Cardiac	33,115	19,727	59%	14,765	44%	
ECPR	10,324	4,315	41%	3.113	30%	
Total	154,106	106,569	69%	84,620	54%	

Centers Centers by year



Tuesday, October 19, 2021

(c) 2021 Extracorporeal Life Support Organization

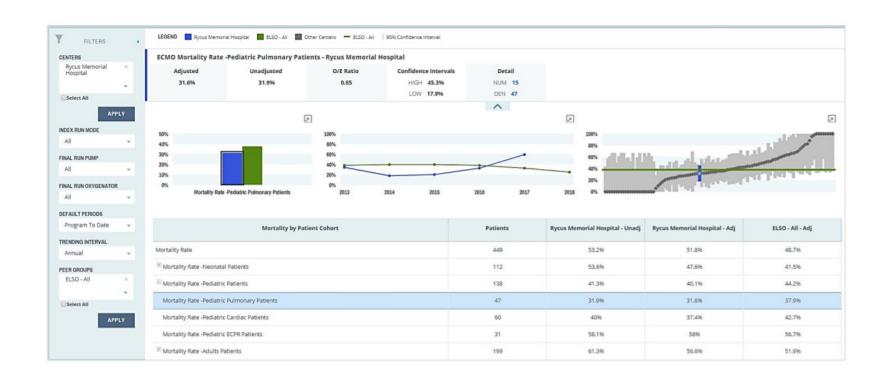
Page 1

ECLS Registry Form

nique ID:			Birth Date:	
			(include	time for neonates)
ex: (M, F, un	known) Race:	(/	Asian, Black, Hispanic, White, Middle Ea American, Native Pacific Islander, Other,	stern or North African, Native Unknown)
Run Information				A. (4.5) (2.5) (2.5)
Date/Time On:	Da	ate/Time Off:	Support Tyr	e: Pulmonary
Run No: Veight (kg):	Height (cm			Cardiac ECPR
ntubation:			Invasive Ventilation:	
Yes, Date Known:			Yes,New Date/Time:	
Pre-existing Trach: Yes, Date Estimated:			Pre-existing Ventilation: Yes, Date/Time Estimated:	
Yes, Date Unknown		10	Yes, Date/Time unknown	.93
No No			No	
800			<u> </u>	
Veonatal patients only:				
Birth weight (kg):		Ges	tational age:	_
Apgar (1 min):		Deli	very: (Vaginal, ER or I	Elective C-section, Unknown)
Apgar (5 min):			ernal age:	
,				nknown
CDH: Y N	Unknown	CDH Pre	enatal diagnosis: Y N U	nknown
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Quality Assurance





Scientific Value

ASAIO Journal 2013

Adult Circulatory Support

Extracorporeal Life Support Organization Registry Report 2012

MATTHEW L. PADEN,* STEVEN A. CONRAD, † PETER T. RYCUS, ‡ AND RAVI R. THIAGARAJANS, ON BEHALF OF THE ELSO REGISTRY

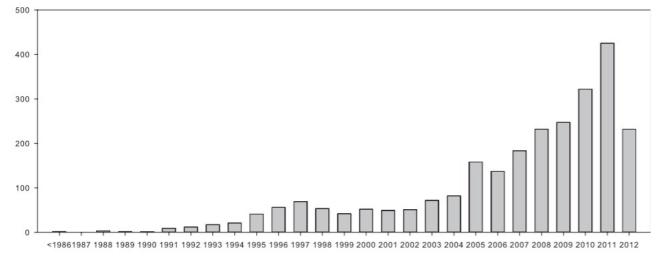


Figure 9. Cardiac extracorporeal life support in patients greater than or equal to 16 years of age, by year of therapy. The value for 201 lower than expected owing to delays in reporting to the Registry.

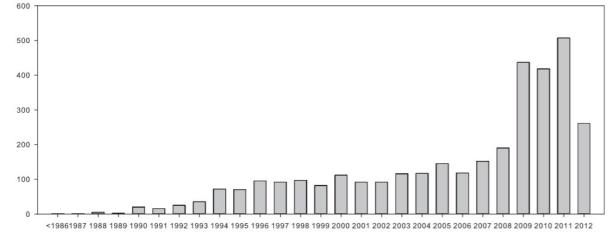


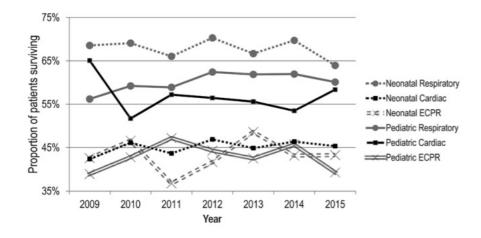
Figure 5. Adult respiratory extracorporeal life support (ECLS) by year. After stable levels of utilization from 1996 to 2006, increases in adult respiratory ECLS have been observed. The spike in 2009 is likely attributable to the H1N1 influenza pandemic and publication of the results of the CESAR trial. The value for 2012 is lower than expected owing to delays in reporting to the Registry. CESAR, Conventional ventilation or ECMO for Severe Adult Respiratory failure.

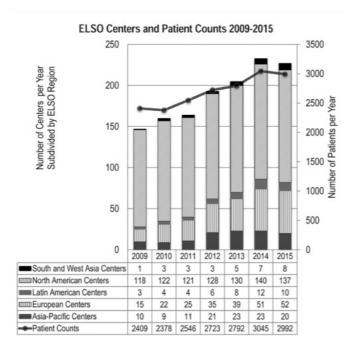
Scientific Value

ASAIO Journal 2017 Pediatric Circulatory Support

Pediatric Extracorporeal Life Support Organization Registry International Report 2016

RYAN P. BARBARO,* MATTHEW L. PADEN,† YIGIT S. GUNER,‡ LAKSHMI RAMAN,§ LINDSAY M. RYERSON,¶ PETA ALEXANDER,II VIVIANE G. NASR,# MELANIA M. BEMBEA,** PETER T. RYCUS,†† AND RAVI R. THIAGARAJAN,II ON behalf of the ELSO member centers





Registry Value in COVID-19



COVID-19 Cases on ECMO in the ELSO Registry

COVID-19 **Confirmed Cases**

Total COVID-19 Cases

10,349

Total counts of COVID-19 confirmed patients..

Patients who initiated **ECMO** at least 90 days ago

COVID-19 Confirmed

COVID-19 In-hospital Mortality

8,589

48%

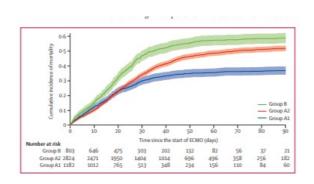
COVID-19 ECMO counts by ELSO Chapter

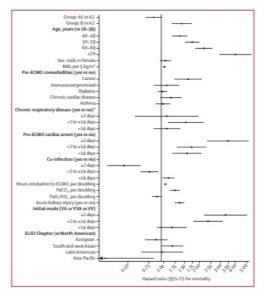
North America	6,798
Europe	2,121
Asia Pacific	145
Latin America	672
SWAAC	653



→ (**) The second of the s evolving outcomes from the international Extracorporeal Life Support Organization Registry

Ryan P Barbaro*, Graeme MacLaren*, Philip S Boonstra, Alain Combes, Cara Agerstrand, Gail Annich, Rodrigo Diaz, Eddy Fan, Katarzyna Hryniewicz, Roberto Lorusso, Matthew L. Paden, Christine M. Stead, Justyna Swol, Theodore J. Iwashyna†, Arthur S. Slutsky†, Daniel Brodie†, for the Extracorporeal Life Support Organization





Scientific Oversight Committee

KR Ramanathan



Marc Anders



Aparna Hoskote



Lorusso et al. Crit Care (2021) 25:107 https://doi.org/10.1186/s13054-021-03533-5

RESEARCH

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Critical Care

Open Acces

Neurological complications during veno-venous extracorporeal membrane oxygenation: Does the configuration matter? A retrospective analysis of the ELSO database

Roberto Lorusso^{1†}, Mirko Belliato^{1,4,5}, Michael Mazzeffi^{2,3†}, Michael Di Mauro^{1,6}, Fabio Silvio Taccone^{7*}, Orlando Parise¹, Ayat Albanawi¹, Veena Nandwani², Paul McCarthy², Zachary Kon⁶, Jay Menaker², Daniel M. Johnson¹, Sandro Gelsomino¹ and Daniel Herr²

CLINICAL RESEARCH

Hemocompatibility-Related Adverse **Events and Survival on Venoarterial** Extracorporeal Life Support

An ELSO Registry Analysis

Mabel Chung, MD, MPH, a.b., Fausto R. Cabezas, MD, c. Jose I. Nunez, MD, Kevin F. Kennedy, MS, b.d Katelyn Rick, RN, Peter Rycus, MPH, Mandeep R. Mehra, MBBS, A. Reshad Garan, MD, MS, Robb D. Kociol, MD, E. Wilson Grandin, MD, MPH, MEDb,



Contents lists available at ScienceDirect

International Journal of Cardiology

journal homepage: www.elsevier.com/locate/ijcard



VOL. 8, NO. 11, 2020



T.L. Olson a.*.*.1, E.R. O'Neil a.**, K. Ramanathan b. R. Lorusso c. G. MacLaren d. M.M. Anders e

Extracorporeal membrane oxygenation in peripartum cardiomyopathy:

Department of Pediatrics, Baylor College of Medicine, Houston, TX, USA

A review of the ELSO Registry

- b Cardiothoracic Intensive Care Unit, National University Hospital, Singapore
- Cardio-Thoracic Department, Heart and Vascular Centre, Maastricht University Medical Centre, Cardiovascular Research Institute Maastricht (CARIM), Maastricht, the Netherlands ^d Paediatric Intensive Care Unit, Royal Children's Hospital, University of Melbourne, Melbourne, Australia
- Section of Critical Care Medicine, Department of Pediatrics, Baylor College of Medicine, Texas Children's Hospital, Houston, TX, USA



Value to Industry

- Relationship with multiple Industry partners
 - Information about device performance
 - Product penetrance
 - Potential value to FDA
 - Part 11 compliant
 - Training for data entry
 - Digital fingerprint for all entries
 - Audits for quality and completeness

The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

Prospective Trial of a Pediatric Ventricular Assist Device

Charles D. Fraser, Jr., M.D., Robert D.B. Jaquiss, M.D., David N. Rosenthal, M.D.,
Tilman Humpl, M.D., Ph.D., Charles E. Canter, M.D.,
Eugene H. Blackstone, M.D., David C. Naftel, Ph.D., Rebecca N. Ichord, M.D.,
Lisa Bomgaars, M.D., James S. Tweddell, M.D., M. Patricia Massicotte, M.D.,
Mark W. Turrentine, M.D., Gordon A. Cohen, M.D., Ph.D., Eric J. Devaney, M.D.,
F. Bennett Pearce, M.D., Kathleen E. Carberry, R.N., M.P.H.,
Robert Kroslowitz, B.S., and Christopher S. Almond, M.D., M.P.H.,
for the Berlin Heart Study Investigators

Education



International ELSO Chapters

















Get dates and registration from Christine



About ASELSO 2021 Program Abstract Submission Registration Sponsorship & Exhibition Visiting Taiwan Contact Us Photo

Welcome Message









FEBRUARY 6-9, 2022 SAN JUAN, PUERTO RICO • SMART EVENT





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Friday, February 4, and Saturday, February 5, 2022

ECMO Simulation Course

Held in partnership with the Extracorporeal Life Support Organization Designed for learners who have completed the ELSO Virtual ECMO Training Course and for practitioners with a strong foundational knowledge of ECMO patient care.

Explore venoarterial and venovenous ECMO concepts using patient case scenarios and experience hands-on learning and troubleshooting of clinical cases. This course is structured for multidisciplinary learning at various stages of experience.



STSIELSO

Management Symposium

March 12-14 | Houston, Texas



sts.org/ecmo

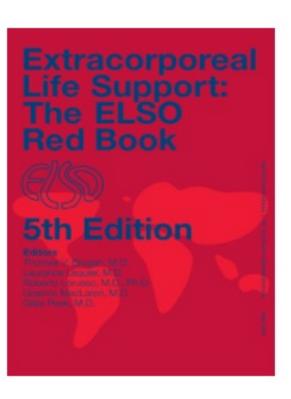
ELSO "Endorsed" Courses

ELSO reviews the curriculum and the faculty

CHAPTER	Center of Excellence	COUNTRY	ату	HOSPITAL Course Director		DATE ENDORSEMENT	Re-Endorsement Due Date
LA	YES- Platinum	Chile	Santiago	Clínica Las Condes Rodrigo Diaz		May 1-4, 2019	May-22
AP	FF	China		CHSECLC	Housisotong	Dec 15-16, 2018	Dec. 2021
LA	Not listed	Colombia	Bucaramanga	Fundación Cardiovascular de Colombia Leonardo Salazar		12-Mar-19	Mar-22
Euro	Not listed	France	Paris	La Pitié-Salpëtriëre Paris University Hospital Alain Combes		Mach 11-15, 2019	Mar-22
EURO	Yes- Platinum	Germany	Regensburg	University Hospital Regensburg	Thomas Müller	Oct 1-5, 2018	Oct. 2021
EURO	Not listed	Germany	Cologne	Kliniken Kln	Christian Karagiannidis	2019-2020	
AP	YES-Gold	Hong Kong	Hong Kong	Queen Mary Hospital	Peter Lai	14-17 Oct 2019	Oct. 2022
SWAAC	Not listed	India	New Delhi	IECS	Sandeep Dewan	July 22-25, 2019	Jul-22
SWAAC	No listing for hospital at all	Israel	Sheeba	Sheba Medical Center Amir Vardi		March, 2019	Mar-22
EURO	No listing for hospital at all	Italy	Rome		Carmine Della Vella		
LATAM	Not listed	Mexico	Monterrey	Christus Muguerza Alta Especialidad Hospital	René D. Gómez	Jun 26-29, 2019	Jun-22
LATAM	Not listed	Mexico	Queretaro	Hospital San Angel Inn University, Queretaro, Mexico	Enrique Monares Zepeda	Oct 28 - Nov 02, 2019	Oct. 2022
EURO	Not listed	Poland	Poznan	Poznan University of Medical Sciences	Mateusz Puślecki	Oct, 25-27, 2019	Oct. 2022
SWAAC	YES-Gold	Qatar	Doha	Hamad International Training Center	Ibrahim Hassan	Dec 7-8, 2018	Dec-21
SWAAC	YES-Gold	Qatar	Doha	Hamad International Training Center	Ibrahim Hassan	Dec 7-8, 2018	Dec-21
SWAAC	YES-Gold	Qatar	Doha	Hamad International Training Center	Ibrahim Hassan	Dec 7-8, 2018	Dec-21
AP	Not listed	Singapore	Singapore	National University Hospital in Singapore Ram Ramanathan		17 - 18 April 2019	Apr-22
EURO	Not listed	Sweden	Stockholm	Karolinska Hospital	Bjorn Frenckner	Oct 1-4, 2018	Oct. 2021
EURO	Not listed	Spain	Barcelona	HOSPITAL UNIVERSITARIO VALL D'HEBRON	Jordi Rera	Nov5-8,2019	Nov. 2020
AP ELSO	Not listed	Australia	Brisbane	The Prince Charles Hospital	Kiran Shekar	April 20-23, 2021	Apr-24
NA	YES-Gold	USA	Dellas TX	Dallas Children's Lakshmi Raman		March 23-25, 2020(Canceled)	

ELSO Certification

- ELSO Academy
 - Online foundational course
 - All ECMO providers
- Simulation Course
- Certifying examination



Red Book 5th Edition

"Extracorporeal Life Support: The ELSO Red Book, 5th Edition" covers all aspects of the use of ECMO support therapies covering the use of ECMO in all patients from neonates to adults. The use of ECMO in patients with cardiac or respiratory dysfunction is covered in depth. The use of extracorporeal technologies in special circumstances such as sepsis, transplantation, and pregnancy among others. Additionally, details of program building, education, and economics are also covered.

eBook \$84.99 USD

US Order Form \$115.00 USD

Non US Order Form \$115.00 USD

ELSO Guidelines

Patient Care Practice Guidelines

General Guidelines for all Cases

EL SO Guidelines General v1.4

Equipment, cannulation, safety measures and general management of ECLS patient are discussed within these guidelines. Last updated: August 2017



Guidelines for ECMO Transport

Last updated: May 2015





EL SO Guidelines for Adult Respiratory

Respiratory Support Guidelines

EL SO Guidelines for Neonatal

Last updated: October 2020

Respiratory Failure

Last updated: October 2020



Endotracheal extubation in patients with respiratory failure receiving venovenous ECMO

EL SO Guidelines for Pediatric

Last updated: October 2020

Respiratory Fallure

Last updated: May 2015



Ultrasound Guldance for Extracorporeal Membrane Oxygenation

Last updated: May 2019



identification and management of recirculation in venovenous ECMO

Last updated: May 2015



Indications for Pediatric Respiratory Extracorporeal Life Support

Last updated: May 2015



Ultrasound Guldance for Extracorporeal Membrane Oxygenation Veno-Venous ECMO

Last updated: May 2015



EL SO Guideline for Adult Respiratory Fallure Managed with Venovenous

Last updated: June 2021



Circulatory / Cardiac Support

Extracorporeal Cardiopulmonary Resuscitation in Adults, interim Guideline Consensus Statement From the Extracorporeal Life Support Organization

Last updated: March 2021



Pediatric Extracorporeal Cardiopulmonary Resuscitation ELSO

Last updated: March 2021



Ultrasound Guldance for Extracorporeal Membrane Oxygenation Veno-Arterial ECMO

Last updated: May 2015



Guidelines for ECMO in COVID-19

ELSO has prepared an in-depth set of guidelines for ECMO in COVID-19 patients. These have been collaboratively developed by a global team of ECMO experts. The guidelines include: patient selection criteria, cannulation and decannulation strategies, transport on ECMO, PPE and staff protection strategies with ECMO, to ethical dilemmas and quality. ELSO wants to recognize the leadership of Kiran Shekar in chairing the development of these guidelines during a critical time

Guidelines for ECMO in COVID-19

Last updated: May 2020



Published Guidelines

ASAIO Journal 2021



Guidelines

Management of Adult Patients Supported with Venovenous Extracorporeal Membrane Oxygenation (VV ECMO): Guideline from the Extracorporeal Life Support Organization (ELSO)

Joseph E. Tonna[®], MD, MS,*† Darryl Abrams, MD,‡ Daniel Brodie[®], MD‡ John C. Greenwood[®], MD,\$ Jose Alfonso Rubio Mateo-Sidron, MD,¶ Asad Usman[®], MD, MPH,|| and Eddy Fan, MD, PhD#

Reviewers: Nicholas Barrett, MBBS,** Matthieu Schmidt,†† Thomas Mueller, MD,‡‡ Alain Combes, MD, PhD††
Kiran Shekar, MBBS, PhD§§

ASAIO Journal 2021

Position Statement

2020 EACTS/ELSO/STS/AATS Expert Consensus on Post-cardiotomy Extracorporeal Life Support in Adult Patients

ROBERTO LORUSSO[®] (Chairperson) (Netherlands)^{a,*,†}, Glenn Whitman (Chairperson) (USA)^{b,*,†}, Milan Milojevic[®] (Serbia, Netherlands)^{c,d,e,†}, Giuseppe Raffa[®] (Italy)^f, David M. McMullan (USA)^g, Udo Boeken (Germany)^h, Jonathan Haft (USA)ⁱ, Christian A. Bermudez (USA)^j, Ashish S. Shah (USA)^k and David A. D'Alessandro (USA)^j

ASAIO Journal 2021



Guidelines

SAIO Journal 2020

ELSO Guidelines

ELSO Interim Guidelines for Venoarterial Extracorporeal Membrane Oxygenation in Adult Cardiac Patients

ROBERTO LORUSSO®,* KIRAN SHEKAR,† GRAEME MACLAREN®,‡ MATTHIEU SCHMIDT,§ VINCENT PELLEGRINO,¶

BART MEYNS || JONATHAN HAFT,# LEEN VERCAEMST, || FEDERICO PAPPALARDO,** CHRISTIAN BERMUDEZ,††

JAN BELOHLAVEK®,‡‡ XIAOTONG HOU,§§ UDO BOEKEN,¶¶ ROBERTO CASTILLO, || || DIRK W. DONKER®,##***

DARRYL ABRAMS,††† MARCO RANUCCI,‡‡‡ KASIA HRYNIEWICZ,§§§ IVAN CHAVEZ,§§§ YIH-SHARNG CHEN,¶¶¶

LEONARDO SALAZAR, || || || AND GLENN WHITMAN###

REVIEWERS: Hergen Buscher,**** Rodrigo Diaz, ++++ Thomas Mueller, ++++ AND Alain Combes, \$\\$\\$\$

Extracorporeal Life Support Organization (ELSO): 2020 Pediatric Respiratory ELSO Guideline

CHRISTINA MARATTA, MD,* RENEE M. POTERA, MD,† GRACE VAN LEEUWEN®, MD,‡ ANDRÉS CASTILLO MOYA, MD,\$
LAKSHMI RAMAN, MD,† GAIL M. ANNICH®, MD*

Reviewers: Thomas V. Brogan, MD, ¶ Mark Davidson, MD, 🏾 Graeme MacLaren, MBBS, FCCM, # Giles Peek, MD, FRCS CTh, FFICM**

Advocacy

COVID ECMO Availability Map



Professional Billing

- Prior to 2015
 - 36822 ECMO cannulation
 - 33960 ECMO management day 1
 - 33961 ECMO management all subsequent days

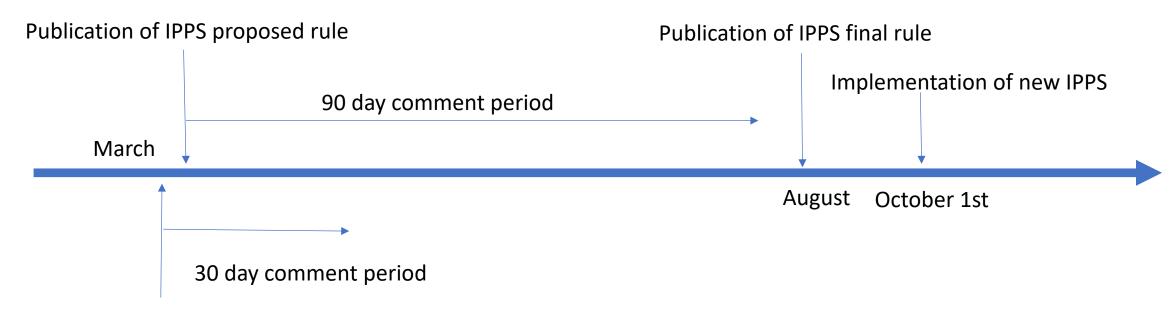
- Unbundling of ECMO and critical care codes
- Orchestrated through the AMA RUC
 - ELSO worked with RUC members

- 2015 to present
 - 33946 VV ECMO management day
 1
 - 33948 VV ECMO management all subsequent days
 - 33947 VA ECMO management day
 1
 - 33949 VA ECMO management all subsequent days
 - Numerous cannulation codes
 - Central vs peripheral
 - Open vs percutaneous
 - Adult vs pediatrics

Hospital Billing

- CMS payment for ECMO prior to 10/1/2018:
- ECMO was assigned a single PCS procedure code: 5A15223
- This code exclusively led to DRG 003
 - Relative weight ~18
 - Average payment \$101,892

CMS Transparency:



PCS Maintenance and Certification Meeting

2018 CMS PCS Maintenance and Certification Meeting

- Individual representing himself proposed new PCS codes for ECMO
- Stated that mode of cannulation predicts acuity and resource use

- 3 new codes created:
 - Central ECMO write codes
 - Peripheral VA (cardiac failure)
 - Peripheral VV (respiratory failure)

Medicare MS-DRGs, relative weighting factors, and geometric and arithmetic mean length of stay for ECMO (Table 5 - FY 2019 Final)

MS- DRG	MDC	TYPE	MS-DRG Title	Weights	Geometric mean LOS	Arithmetic mean LOS
003	PRE	SURG	ECMO OR TRACH W MV >96 HRS OR PDX EXC FACE, MOUTH & NECK W MAJ O.R.	18.2974	23.4	30.1
207	PRE	SURG	ECMO OR TRACH W MV >96 HRS OR PDX EXC FACE, MOUTH & NECK W MAJ O.R.	5.5965	12.0	13.9
291	05	MED	HEART FAILURE & SHOCK W MCC OR PERIPHERAL EXTRACORPOREAL MEMBRANE OXYGENATION (ECMO)	1.3454	4.1	5.2
296	05	MED	CARDIAC ARREST, UNEXPLAINED W MCC OR PERIPHERAL EXTRACORPOREAL MEMBRANE OXYGENATION (ECMO)	1.5355	2.0	3.2
870	18	MED	SEPTICEMIA OR SEVERE SEPSIS W MV >96 HOURS OR PERIPHERAL EXTRACORPOREAL MEMBRANE OXYGENATION (ECMO)	6.2953	12.4	14.4

Societal Response

- ELSO Steering Committee 2018
- Contracted Ed Berger consultant
- J Haft assigned to represent society







Richard Prager



Marc Ogino



Keith Naunheim

Steps:

- 1) Understand the Process
 - Comment letter
 - Face to face meeting
- 2) Gather Data
 - ELSO Registry
 - Center cost data
- 3) Build a Coalition
 - Clinical partners in ECMO

ELSO Registry Data from Jan 2013 - July 2018 for ECMO in Adults in the U.S.					
	# CASES	% CASES	ECMO DAYS	Hosp Length of Stay	OUTCOME (% Survived)
Respiratory Support	6788	40% overall			60
Peripheral	6490	96%	11.8	47	61
Central	298	4%	13.4	53	45
Cardiac Support	10,033	60% overall			35
Peripheral	7723	77%	5.3	31	39
Central	2310	23%	6	69	33
			8 days	70 days	
Total Adult ECMO cases	16,821	100	avg	avg	50

November 1, 2018

SENT VIA EMAIL

Seema Verma, Administrator
Centers for Medicare & Medicaid Services
Department of Health and Human Services
Mail Stop C4-26-05
7500 Security Boulevard
Baltimore, Maryland 21244-1850

Re: CMS-1694-P Fiscal Year 2020 Inpatient Prospective Payment Systems for Acute Care Hospitals – Coding and MS-DRG Classification for Extracorporeal Membrane Oxygenation (ECMO)

Dear Administrator Verma,

The undersigned specialty societies are writing to request that all Extracorporeal Membrane Oxygenation (ECMO) codes be reassigned back to Pre-Major Diagnostic Category (Pre-MDC) Medicare Severity Diagnosis Related Group (MS-DRG) 003 for FY 2020 and that the Centers for Medicare and Medicaid Services (CMS) take steps to mitigate the negative impact of these changes in 2019. We have significant concerns with the process, the lack of transparency, and the lack of opportunity to provide public comment on the MS-DRG assignment for services related to ECMO for FY-2019.

Sincerely,

American Academy of Pediatrics

American Association for Thoracic Surgery

American College of Cardiology

American College of Chest Physicians

American Society of ExtraCorporeal Technology Board of Directors

American Society of ExtraCorporeal Technology Mechanical Circulatory Support Committee

American Thoracic Society

Extracorporeal Life Support Organization

Heart Failure Society of America

Society for Cardiovascular Angiography and Interventions

Society of Cardiovascular Anesthesiologists

Society of Critical Care Medicine

The American Academy of Cardiovascular Perfusion

The American Society of Anesthesiologists

The Society of Critical Care Anesthesiologists

The Society of Thoracic Surgeons

CMS Response:

- Thanks
- Request for additional data



Face to Face meeting









April 17, 2019

ICD-10-PCS	Code		n lacenne	
Code	Description	Current MS-DRG	Proposed MS-DRG	
5A1522G	Extracorporeal Oxygenation, Membrane, Peripheral Veno-arterial	MS-DRG 207 (Respiratory System Diagnosis with Ventilator Support >96 Hours or Peripheral Extracorporeal Membrane Oxygenation (ECMO))	Pre-MDC MS-DRG 003 (ECMO or Tracheostomy with Mechanical Ventilation >96 Hours or Principal Diagnosis Except Face, Mouth and Neck with Major O.R. Procedure)	
		MS-DRG 291 (Heart Failure and Shock with MCC or Peripheral Extracorporeal Membrane Oxygenation (ECMO))	Pre-MDC MS-DRG 003 (ECMO or Tracheostomy with Mechanical Ventilation >96 Hours or Principal Diagnosis Except Face, Mouth and Neck with Major O.R. Procedure)	
		MS-DRG 296 (Cardiac Arrest, Unexplained with MCC or Peripheral Extracorporeal Membrane Oxygenation (ECMO))	Pre-MDC MS-DRG 003 (ECMO or Tracheostomy with Mechanical Ventilation >96 Hours or Principal Diagnosis Except Face, Mouth and Neck with Major O.R. Procedure)	
		MS-DRG 870 (Septicemia or Severe Sepsis with Mechanical Ventilation>96 Hours or Peripheral Extracorporeal Membrane Oxygenation (ECMO))	Pre-MDC MS-DRG 003 (ECMO or Tracheostomy with Mechanical Ventilation >96 Hours or Principal Diagnosis Except Face, Mouth and Neck with Major O.R. Procedure)	
5A1522H	Extracorporeal Oxygenation, Membrane, Peripheral Veno-venous	MS-DRG 207 (Respiratory System Diagnosis with Ventilator Support >96 Hours or Peripheral Extracorporeal Membrane Oxygenation (ECMO))	Pre-MDC MS-DRG 003 (ECMO or Tracheostomy with Mechanical Ventilation >96 Hours or Principal Diagnosis Except Face, Mouth and Neck with Major O.R. Procedure)	

EXTRACORPOREAL LIFE SUPPORT ORGANIZATION



Phone: (734) 998-6600 FAX: (734) 998-6602

June 24, 2019

reimbursing DRG codes. The rational for this change was based upon a premise that patients that received ECMO using peripheral cannulation were less ill and therefore consumed fewer hospital resources. This premise is factually incorrect.

length of stay, and survival rates. An analysis of this registry has demonstrated <u>no relationship</u> between site of cannulation (central or peripheral) and markers of patient acuity or hospital resource consumption. There are no differences in patient survival, duration of ECMO use, or hospital length of stay when comparing centrally or peripherally cannulated patients. We appreciate the input from CMS clinical advisors who acknowledged the findings of the ELSO registry analysis and agree that <u>DRG assignment should not be based upon site of cannulation</u>.

ELSO welcomes any opportunity to work with CMS on potential future PCS codes and DRG assignments, leveraging our clinical expertise and powerful registry. Again, we support the 2020 CMS IPPS Proposed Rule regarding the

ELSO Award of Excellence in Extracorporeal Life Support

- Overall assessment of a programs processes and systems to achieve excellence in patient care
- Seven categories:
 - **Systems Focus** the ECLS Center provides generalized information about your institution
 - <u>Environmental Focus</u> the Center provides information about the facility and equipment available for ECLS
 - Workforce Focus the center describes the personnel caring for the patient
 - Knowledge Management the Center provides information on the ECLS Team training and competencies
 - Quality Focus the Center provides evidence regarding continuous quality improvement activities
 - <u>Process Optimization</u> the Center provides information concerning outcome reviews and developmentally focused care
 - Patient & Family Focus the Center describes the family education and participation in care



ELSO Awards

Curt Froehlich Education Award

Free annual meeting registration and travel expenses

Robert H. Bartlett Award

Best abstract at the annual meeting

Summary

- Extracorporeal Life Support Organization provides multifaceted support to ECMO programs
 - Registry
 - Education
 - Advocacy
- ALL ECMO PROGRAMS SHOULD JOIN ELSO!!!

