

*Extra corporeal  
life support  
Courses Brochure  
& Application  
Form*



**January 2024**

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# Introduction

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ECMO society of India (ESOI) established in September 2010. The head office of the society is in Mumbai. Society conducts Biannual training course & conferences in various parts of India since the time of Inception.

## **Aims and Objectives of the Society –**

- Spread of science of ECMO in India
- Spreading the knowledge amongst intensivists, pediatricians, Cardiac surgeon, Cardiologist & Physician about the indication & utility of this science
- Training Medical & paramedical staff for operating ECMO & make ECMO specialist & team
- Make common platform for interaction for those who are doing ECMO or planning to start the program
- To make standard protocols & Guidelines for ECMO in India
- Helping upcoming centre for establishing ECMO program
- To have common data registry of ECMO cases in India
- Publish Indian data 6 monthly & learning from the mistakes.
- Publish Indian data in International societies
- To get ECMO specialist as a recognized course
- To decrease the cost of disposables of ECMO from government
- To organise continuing medical education and training programmes, meetings and conferences in ECMO.
- To seek affiliation with national and international associations and societies or similar bodies to achieve the objectives of the Society.

# Objective of Course

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- To produce competent super specialist ECMO Physician and to cater the need of the community.
- To be aware of contemporary advances and development in the discipline concerned.
- To make ECMO care & practice in standardized form
- To provide the expertise with special skills and intensive monitoring in perioperative period for the needy patients in super specialty departments.
- To provide structured training programme including academic activities in the form of the catered training, lectures, case discussions, journal review and mortality – morbidity meeting and to improve the knowledge and skill in the specialty.

# Organization

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The course is conducted by ECMO society of India. The academic wing of the society will look after the course. Executive committee looking after various courses conducted by the society is for 5 years.

## Advisor -

- Dr Richard Firmin, UK
- Dr G S Wandar, Ludhiana, India
- Dr K M Cherian, Chennai, India
- Dr Bhasker Rao, Delhi, India
- Dr Kunal Sarkar, Kolkata, India

## Program Director -

- Dr Suneel Pooboni

## Program Co-director -

- Dr Venkat Goyal

## Program Co ordinator -

- Dr Pranay Oza
- Dr Vivek Gupta

## Program Assessment Authority -

- Dr Vinod Singh
- Dr Arpan Chakraborty

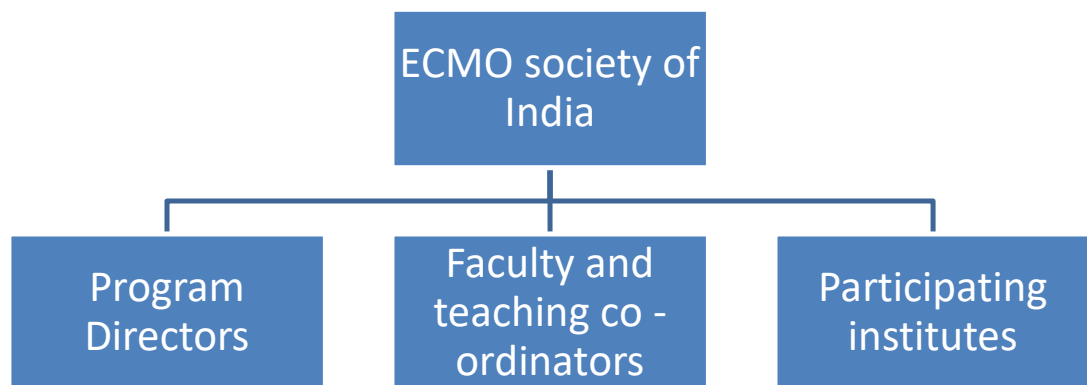
## Teachers -

No	Name of Teacher	Institute attached
1	Dr Suneel Pooboni	RVMH, Mumbai
2	Dr Venkat Goyal	RVMH, Mumbai
3	Dr Pranay Oza	RVCC, Mumbai
4	Dr Vivek Gupta	Hero DMK, Ludhiana
5	Dr Rajiv Gupta	Hero DMK, Ludhiana
6	Dr Vinod Singh	SGRH, Delhi
7	Dr Sanjeev Mittal	SGRH, Delhi
8	Dr Anil Sachdev	SGRH, Delhi
9	Dr Arpan Chakraborty	Medica, Kolkata
10	Dr Dipanjan Chatterjee	Medica, Kolkata
11	Dr Nandkishore	KIMS, Hyderabad
12	Dr Sambit Shahu	KIMS, Hyderabad

13	Dr Samir Gami	Unique, Surat
14	Dr Indira Jayakumar	Apollo, Chennai
15	Dr Madhan Kumar Kuppuswamy	Apollo, Chennai
16	Dr Senthil	Apollo, Chennai
17	Dr Haresh V	Unique, Surat
18	Dr Suresh Rao	MGM, Chennai

### Affiliated Institute -

No	Institute	Fellowship seats regular	Fellowship seats alternate	Certificate seats Regular	Certificate seats alternate
1	Riddhi Vinayak Multispecialty Hospital, Mumbai	1	4	1	3
2	Riddhi Vinayak Critical Care & Cardiac centre	1	4	1	3
3	Sir Gangaram Hospital, Delhi	1	4	1	3
4	Hero DMK Hospital, Ludhiana	1	4	1	3
5	Medica multispecialty Hospital	1	4	1	3
6	KIMS, Hyderabad	1	4	1	3
7	Unique Hospital, Surat	1	4	1	3
8	Apollo Multispecialty Hospital, Kolkata	1	4	1	3
9	Apollo, Chennai	1	4	1	3
10	MGM, Chennai	1	4	1	3



# Course Details

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## Duration of the fellowship Course –

The Total duration of the course is 1 Year. Academic year will be from 1<sup>st</sup> January 2024 to 31<sup>st</sup> December 2024

## Eligibility for fellowship

### Regular course –

- 1) A candidate must possess the Post Graduate degree either
  - MD/DNB (or its equivalent recognised degree) in Anaesthesiology or General Medicine or Respiratory Medicine or Paediatrics or Emergency Medicine
  - MS, MCH (cardiac Surgery)
  - MD; DM (cardiology)
- 2) MBBS with additional qualification – (with 2 years in critical care experience after PG diploma)
  - Diploma in Anaesthesia/ DCH/or any equivalent diploma in relevant speciality
  - CPS
  - IDCC or IFCC

### Alternative Course –

- 1) 4 years post MBBS, with PG Degree/Diploma as mentioned above
- 2) Membership of ECMO Society of India

## Duration of the certificate Course –

The Total duration of the course is 6 month. Academic year will be from 1<sup>st</sup> January 2024 to 30<sup>th</sup> June 2024

## Eligibility for certificate course

### Regular course –

- MBBS
- Paramedical –
  - Respiratory therapist
  - Perfusionist
  - Nursing staff – BSC Nurse & GNM

### Alternative Course or Distant learning or e learning course –

- 3) 2years post MBBS or post basic graduation from respiratory therapist, perfusion & Nursing course (GNM or BSC)
- 4) Membership of ECMO Society of India

## Selection Criteria for candidates

Fellows should be selected in a fair and non-discriminatory manner in accordance with the Equal Opportunities. The selection process will be as per standard guidelines set by ESOI.

- A written Elimination Exam of multi choice Question (MCQ) of 100 marks.
- The syllabus for the written examination is basically from the critical care medicine (30%), critical care paediatrics (30%), cardiac critical care (30%) & bit of perfusion science (10%)
- Minimum passing is 60 marks. Those who have passed will be called for Interview.
- Interview can be onsite or through web meeting as per the time specified by the authority
- Ultimately, selection of a candidate for a fellowship will be done by an interview with panel of faculties constituted by the ESOI.
- Merit list & Successful candidates name will appear on the WEB site of ESOI
- The selected students will have to fill up the preference form for the centre for the fellowship
- Centre allocation will be decided by the selection committee nominated by ESOI
- The decision of the society will remain final.

## Fellowship fees

- Fees structure for students –
  - 15,000 for processing & educational material
  - 25,000 examination fees
  - For overseas students - \$ 750
- Stipend to students as per the institutional terms

## Certificate course fees

- Fees structure for students –
  - 15,000 for processing & educational material
  - 10,000 examination fees
  - For overseas students - \$ 500
- Stipend to students as per the institutional terms

## Important dates

- Last date for filling form – 20 December 2023
- Examination date – 25 December 2023
- Result declaration & List eligible students – 27 December 2023
- Preference filling form – 27 to 28 December 2023
- Display of Allotment – 29 December 2023
- Fees payment & Document submission – 29 to 31 December 2023
- Course joining – 1<sup>st</sup> January 2024

## Curriculum

The syllabus, program delivery & training for fellowship of ECMO is designed to have a balanced exposure of the candidates in various fields of medicine. Fellows should get the proper exposure of respiratory & cardiac ECMO, adult & paediatric ECMO, surgical & non-surgical ECMO. They should have a thorough exposure of cannulation technique, critical care medicine, post cardiac surgical management & perfusion science.

## Syllabus –

Refer annexure 1



## Program delivery & Training

### Regular course –

A candidate during his tenure will be rotated through various institutes/ faculties/ Departments for total exposure to various aspects of ECMO. Rotations to other faculties within the course are important part of the skill development. Rotations are agreed upon by the faculty and optional rotations are available upon request of the fellow and approval by the faculty program director. Upcoming interesting cases by faculty should be broadcast to all fellows through the monthly didactic meetings so freely available fellows can travel to the sites to participate or see these unusual cases.

### Alternative course or distant learning course or e learning course –

- Attendance and follow-up of minimum 5 cases
- Total 15 days attendance at designated ECMO centre attending on the cases (in a year): This duration could be split into intervals of 5 x 3 or 7 and 8 days or in multiples.
- Attendance at 2 ECMO conferences for fellowship course & 1 for certificate course and 1 ECMO training program both for fellowship & certificate course students

The training module for the fellowship will be –

### Theoretical –

- Didactic lecture –
- On line course lectures video
- Monthly Webinar for 2 – 4 hrs
- Round table meets and seminars will routinely update the academic content of the programme.

### Practical –

- Grand Rounds & Clinical meetings
- Live clinical cases – The fellow will attend and work under the faculty in the recognised institutes on the assigned modules. He/ She will participate in the pre-ECMO assessment and planning as well as the post-ECMO follow-up of their assigned patients under the faculty guidance. Operative experience in the form of assisting and being proctored over Cannulation. Each Fellow should minimum have 1000 hrs bedside training in entire 1 yrs course. Each certificate course student should minimum have 500 hrs bedside training in entire 6 month course.
- Simulation – Soft Skill Development and working at skill station and Virtual reality module for co-ordination, team work, basic skills, basic laboratory work and proper perspective
- Water drills & Hands on for priming & handling mechanical complications

### Academic work –

- Review current literature at Journal Clubs.
- Active participation in local, regional and National seminars and conferences.
- Log Book - Maintaining accurate case logs is critical to each fellow. These numbers are vital for hospital privileging. It is mandatory that case logs are entered by each fellow into the Specified format of data Entry. Case logs need to be printed and brought to the monthly didactic meetings for review. Failure to do so results in the curtailing of operative privileges. Log book, presentation & project work will be signed & evaluated on a time to time basis by respective faculties.
- Presentations & Publications
- Research Training: All candidates are expected to be intimately involved with the program's research activities, preferably publish at least 1 case reports per year and present their work at local, regional and National meetings and conferences. Most of the research will focus on the current techniques and outcomes evaluations of Procedures.

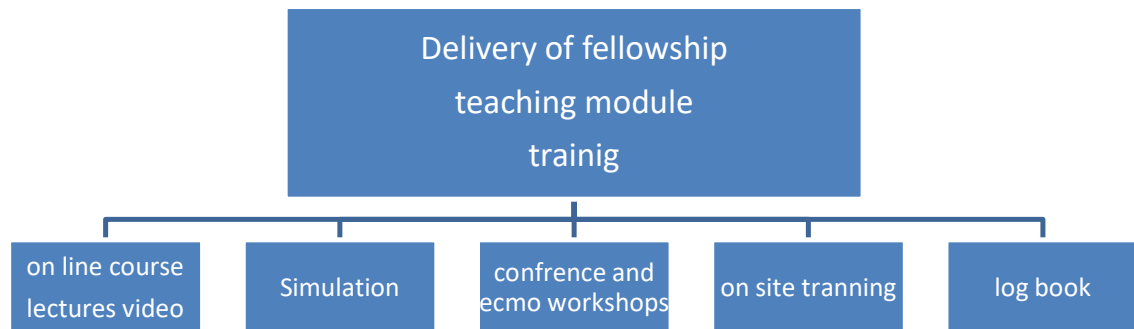
## Fellows & certificate course student Duty –

- Demonstrate manual dexterity appropriate for their training level.
- Critically evaluate and demonstrate knowledge of pertinent scientific information.
- Practice-based learning and improvement that involve investigation and evaluation of their own patient care, appraisal and assimilation of scientific evidence, and improvements in patient care
- Maintain high standards of ethical behaviour.
- Demonstrate sensitivity to age, race, gender, and culture of patients and other health care professionals
- Practice high-quality, cost-effective patient care.
- Demonstrate knowledge of risk-benefit analysis.
- All Fellows will maintain a Fellowship PORTFOLIO.

## Rotation Period –

The fellows may be rotated with different expert faculties / Institutes/ department of a specific module so as to learn maximum from the respective experts in their actual operative module

- Interventional procedures including Cath Lab – 2 weeks for fellowship & 1 week for certificate course student
- Cardiac OT & anaesthesia – 2 weeks for fellowship & 1 week for certificate course student
- Perfusion technology training – 2 weeks for fellowship & 1 week for certificate course student
- Specialty ICU training neonatal, paediatric & adult – 2 weeks each for fellowship & 1 week for certificate course student
- Cardiac ECMO & Cardiac ICU for 4 months for fellowship & 2 months for certificate course student
- Respiratory ECMO & Medical ICU for 4 months for fellowship & 2 months for certificate course student
- Transplant ICU or Casualty or Trauma ICU for 1 month for fellowship & 2 weeks for certificate course student



## Evaluation methodology –

These academic activities will be constantly be reviewed by a Senior Faculty. Evaluations of the fellows by the faculty will be performed of all teaching sites every quarter during the year and upon the completion of each away rotation via internet /in person. This will include Project work Number of hours spent on hands on practice. Minimum of 1000 hrs is mandatory for fellowship & 500 hrs for certificate course student.

Course evaluation will be done by Credits Based System. Total Credit points are 400. The fellow should acquire minimum of 300 points for appearing in Final Exam. The candidates may finish their modules and earn credits in Operative sessions within a certain stipulated time (maximum 2 years and minimum 1 year for fellowship & maximum 1 year & minimum 6 months for certificate course student)

Breakup of credits is based on following Modules

- Didactic lecture – 25
- On line course lectures video – 25
- Meetings seminars & conferences – 25
- Live clinical cases – 150 points. Fellow is expected to actively involved in the management of at least 10 active ECMO patient. Weightage will be given more for the ECMO run of different field like pulmonary, cardiac, adult & paediatrics
- Simulation – 50
- Water drill – 50
- Log book – 25. Certified log book has to be maintained. It should contain details of all the cases attended
- Paper presentation & publications – 25
- Research work – 25

## Examination –

Minimum Number of Credits for successful completion of programme is 300 credits (75%). Those who cross 75% of credit points are eligible for their final theory & practical Exams. The passing marks will be 60%. The exam will be either on site or online.

- Fellowship Theory Examination (100 Credit points) – The examination for a particular course will be conducted of MCQ type for judging overall proficiency of a Fellow.
- Fellowship practical Examination – it will be by Viva & through Simulation.

## Alternative course –

Almost same as regular course except few changes as follows –

- Eligibility for Exam –
  - Attending 5 cases over 15 days at designated centres
- Credit points 300/400
- Attendance at 2 ECMO conferences for fellowship course & 1 for certificate course and 1 ECMO training program both for fellowship & certificate course students
- Membership of ECMO Society of India

## Certification

On successful completion of all modules of the Programme the Fellow will be awarded with the certificate of the Fellowship of ECMO (FECMO) by ESOI.

Annexure I

# Curriculum

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## GOALS

- To understand cardiopulmonary physiology.
- Develop knowledge of Perfusion science.
- Develop technical and monitoring skills in critical care
- Thorough preoperative & Postoperative assessment & management of the patient undergoing cardiovascular or Lung surgery
- Work as a team member with multispecialty colleague
- Learn to maintain good clinical judgment under stress and act quickly and accurately in diagnosis, interpretation, and treatment of critically ill patient
- To acquire the knowledge of recent developments in field of critical care

## SYLLABUS FOR FELLOWSHIP STUDENTS

### **ECMO:**

#### *Section – I      Basics of ECMO*

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1. Introduction
2. History & Statistics
3. Indication And Selection Criteria

#### *Section – II      Types of ECMO*

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4. VA ECMO
5. VV ECMO
6. Hybrid & Variants of ECMO
7. AVCO<sub>2</sub>R & ECCO<sub>2</sub>R

#### *Section – III      Vascular access*

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8. Cannulation – site, Technic, complications
9. Decannulation

#### *Section – IV      Complications*

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10. Mechanical complications
11. Patient complications

#### *Section – V      Management*

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12. Initiation of ECMO
13. Monitoring on ECMO
14. Recent advances in Neuro – monitoring like BIS cerebral oximetry, NIRS, evoked potential monitoring,

15. Management of patient on ECMO
16. Analgesia and sedation - Muscle relaxants on ECMO
17. Pharmacokinetics & pharmacodynamics of drugs during CPB
18. Weaning & trial off

### ***Section – VI      Specific issues***

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19. Transport of patient critically ill patient & patient on ECMO
20. Out of Hospital ECMO
21. Extracorporeal organ support in Hepatic failure
22. Immunocompromised patient & ECLS
23. Sepsis & ECMO
24. Surgical & medical procedures during ECMO
25. Hypothermia, techniques & protocols

### ***Section – VII      Neonatal ECMO***

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26. ECMO for Neonatal Respiratory Failure
27. ECMO for Neonatal Cardiac Failure
28. Neonatal ECMO & Brain
29. Outcome & follow up of Neonates on ECMO

### ***Section – VIII      Paediatric ECMO***

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30. ECMO for Paediatric Respiratory Failure
31. ECMO for Paediatric Cardiac Failure
32. Neurological outcome in Paediatric ECMO

### ***Section – IX      Adult ECMO***

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33. ECMO for Adult Respiratory Failure
34. Long term results of ECMO for adult respiratory failure
35. ECMO for Adult Cardiac Failure

### ***Section – X      Newer applications***

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36. Newer indications of ECMO
37. ECPR
38. Future of ECLS

### ***Section – XI      Administrative issues***

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39. Record keeping & data registry
40. Legal & ethical issues during ECLS
41. Economics of ECLS
42. Safety in ECLS
43. Counselling & relatives education
44. Administrative & training issue in ECLS
45. Guidelines for establishing centre, Training and Continuing Education of ECMO Specialist

## **PERFUSION SCIENCE**

46. Basics of Perfusion science
47. ECMO equipment & circuit
48. Circuit Preparation And Priming
49. Physiology of ECLS & SIRS in ECLS
50. Circuit maintenance & Monitoring
51. Trouble shooting – machine related, Change of circuit or component of circuit

## **CRITICAL CARE TRAINING**

52. Basics of Critical Care monitoring
53. Basics of critical care management – Airway management, Ventilatory management, hemodynamic management, etc
54. Arterial Blood Gas Analysis
55. Electrolyte and Fluid Management
56. Nutrition in critical illness - Enteral and Parenteral nutrition, - Monitoring of nutrition
57. Nosocomial infection, - Infection in the immunocompromised host
58. Antibiotic stewardship, Antibiogram, antifungal therapy

### *Neonatal ECMO*

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59. Neonatal Respiratory Failure – Pathophysiology & management
60. Neonatal Cardiac Failure – Pathophysiology & management
61. Congenital Diaphragmatic Hernia pathophysiology & management options
62. Nursing care of critically ill new-borns

### *Paediatric ECMO*

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63. Paediatric Respiratory Failure – Pathophysiology & management
64. Paediatric Cardiac Failure – Pathophysiology & management

### *Adult ECMO*

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65. Adult Respiratory Failure – Pathophysiology & management
66. Adult Respiratory Failure – ARDS
67. Adult Respiratory Failure – Acute Pulmonary embolism
68. Adult Cardiac Failure – Pathophysiology & management

## **HEMATOLOGY**

69. Coagulation – mechanism, pathophysiology & disorders of Coagulation
70. Anticoagulation & novel anticoagulation
71. Monitoring of Coagulation system including Thromboelastography & Sonoclot
72. Blood & blood product transfusion – threshold's, type & adverse events

## **CARDIAC CRITICAL CARE TRAINING**

73. Cardiac Critical care basic principles & monitoring
74. Cardiopulmonary resuscitation - Basic Life Support (BLS), Advance Life Support (ALS) Placement of a central venous catheter, Pulmonary artery (Swan Ganz) catheterization, Arterial catheterization, Invasive pressure monitoring - Measurement and interpretation of the hemodynamic variables & Transvenous pacing.

75. Non-Invasive Imaging of the Heart like 2D Echo with Colour Doppler & Trans-Oesophageal Echocardiography
76. Cath Lab Procedures like Coronary or regional angiography, Angioplasty, arrhythmia ablation, DSA, Coil Embolization
77. Management of Ischemic Heart disease
78. Management of Valvular heart disease
79. Cardiogenic Shock – Pathophysiology & Management

## **CARDIO-THORASIC & VASCULAR SURGERY**

80. Basic principles of Cardiac surgeries – off Pump & On Pump surgeries
81. Basics of Congenital Heart Diseases – Cyanotic & Acyanotic & its management plan
82. Surgeries & various procedures in Lung disorder – like Lobectomy, ICD insertion, Pulmonary Embolectomy, etc
83. Vascular surgery – Central cannulation, embolectomy, vascular repairs
84. Basics of Cardiac anaesthesia
85. Preoperative preparation and post-operative care in various cardiac & Lung surgeries

## **NEPHROLOGY**

86. Acute Renal Failure in ICU – causes, Pathophysiology & management
87. Basics of Renal replacement therapy – types & management
88. Plasmapheresis
89. Other Extracorporeal therapies like Endotoxin removal, MARS, etc

## **NEUROLOGY**

90. Coma – Pathophysiology & Management
91. Status epilepticus – Pathophysiology & Management
92. Post anoxic brain damage & Brain death.

## **TOXICOLOGY**

93. Toxicology – Acute intoxications, cardiotoxic drug overdose, Electrocutation, animal bites and stings
94. Acute Lung Injury secondary to near-drowning, Radiation injury, Chemical injuries

## **Transplant Medicine**

95. An Overview of Ventricular Assist device –
96. Heart transplantation – Indications, selection criteria, Pre & Post-operative management
97. Lung transplantation – Indications, selection criteria, Pre & Post-operative management
98. Artificial lung
99. ECMO – pre & post lung transplantation
100. Organ donation & ECMO
101. Management of the brain-dead organ donor

## **TEXT BOOKS, REFERENCE BOOKS & JOURNALS FOR FELLOWSHIP**

- ECMO Red book 5<sup>th</sup> Edition
- ECMO training Manual ELSO 4<sup>th</sup> Edition
- ECMO Volume I practical manual Dr Oza & Dr Goyal
- ECMO volume II Theoretical manual Dr Oza & Dr Goyal
- Intensive care Medicine by Irwin & Rippe 7<sup>th</sup> edition
- Principles of Internal Medicine by Harrison 17<sup>th</sup> Edition
- Braunwald's Heart disease 8<sup>th</sup> Edition
- Kirklin Cardiac Surgery

- Glenn Cardiac Surgery
- Gravlee Perfusion
- Journals





Annexure II

# ECMO SOCIETY OF INDIA

## APPLICATION FORM

Name: - \_\_\_\_\_

Father's Name: - \_\_\_\_\_

Mother's Name: - \_\_\_\_\_

Date of Birth: - \_\_\_\_\_

Institutional Address: - \_\_\_\_\_

\_\_\_\_\_

Home Address: - \_\_\_\_\_

Tel. No. \_\_\_\_\_ (R) \_\_\_\_\_ (O) \_\_\_\_\_

Nationality: - \_\_\_\_\_

E-mail1:- \_\_\_\_\_ E-mail2 \_\_\_\_\_

Name of the course: - \_\_\_\_\_

ESOI membership No. \_\_\_\_\_

### Qualification –

	Qualification	University/ College	MCI/State registration no	Year of passing
Basic				
Post Graduate				
Post Doctorate				
Diploma/Fellowship				
Others				

### Clinical Experience –

Sr. No.	Designation	Year		Institute/Hospital	Total Experience
		From	To		
1.					
2.					
3.					
4.					

## Publications if any

Give the details of your all publications in terms of paper presentation, poster presentation, review article or original article, etc

- Indexed Journals – National & International.
- Non indexed journals
- Conferences - National or Regional Conferences/Workshops

## Undertaking

I, Mr/ Miss. \_\_\_\_\_, S/o \_\_\_\_\_

R/O \_\_\_\_\_

\_\_\_\_\_ currently working as \_\_\_\_\_, agrees for all the criteria set by the Society for the given course. Information provided by me is correct to the best of my knowledge. If the information provided by me is incorrect then I am liable for the prosecution by society as per their rules.

[Signature]

Date:

Place:

### Note:-

1. Please attach self-attested photocopies of certificate/experience
  - Degree & registration certificate
  - Experience certificate
  - If you are employed/ studying some other course, a letter of 'no-objection' from the employer/institution
2. Also send both hard copy as well as soft copy of the application & certificates to the ESOI office & Accreditation Coordinator

For any correspondence contact –  
Dr Pranay Oza – 9821214971

Office Address –  
ECMO Society of India,  
c/o Riddhi Vinayak Multispecialty hospital, Plot no 302, Behind Railway Carshed, Shriprastha Colony, Ahead of Fun fiesta Multiplex Theatre on Yashwant Gaurav road, Nallasopara west.  
Pin code 401203 (Nile more village)  
Distt. Palghar, Maharashtra India