
Book Review

ECMO: EXTRACORPOREAL MEMBRANE OXYGENATION-TECHNICAL SPECIALIST MANUAL, Ninth Edition, University of Michigan, Chapman, Robin A., Toomasian, John M., Bartlett, Robert H; copyright 1988 University of Michigan—Department of Surgery; 84 pages, 17 illustrations, 55 appendices, 22 listed selected readings. \$20.00

The ninth edition paperback of the ECMO Technical Specialist Manual serves as both a clinical guide to ECMO and as a training guide for those individuals learning the concepts of ECMO. As in the original publication of this series in 1975, this latest edition represents the valuable contributions and sharing of the experience in research and clinical practice of the University of Michigan ECMO group.

There are 33 listed topics in the table of contents which allow for more specific and quicker reference than the previous edition¹. With what appears to be a greater acceptance and proliferation of neonatal ECMO programs, this technical specialist manual provides the practical information for the clinical personnel involved. The extensive list of inventory, disposable supplies and equipment needed for ECMO procedures is invaluable to not only the start-up program but to current programs that are interested in evaluating their current techniques, supplies and equipment. In most cases specific product names are supplied for equipment; however, occasionally only the generic equipment names are used. There have been specific updates to the ECMO patient orders for neonatal ECMO as well as the 24-hour ECMO checklist.

What the reader quickly understands from this manual is that when compared to the previous edition the information is based on the new results of the clinical experience of the University of Michigan, which has pointed out the need for change in specific areas. Sharing the information learned in clinical practice is probably the most important contribution that centers involved in an emerging speciality could provide.

The area of anticoagulation is mentioned in three specific areas (ACT Machine, Starting Bypass, and ECMO Course) The information in these specific areas is very helpful, however, the reader will find it necessary to cross check between the sections to insure a logical flow or sequence for anticoagulation. It would be helpful for the reader to follow an anticoagulation

protocol, through the entire course of ECMO presented in a single page flow sheet. The updated areas under anticoagulation that changed from 1984 to the 1988 edition are follows:

—Platelet supplements should be added to the patients circuit when the patient platelet count drops below 70,000; in the prior manual the platelet count suggested for supplementation was less than 50,000.

—The latest ACT protocol indicates the initiation of a heparin drip when the ACT is measurable below 400 seconds and maintaining a consistent extended ACT of 220 to 260 seconds, whereas the 1984 edition indicated the initiation of heparin after a 600 second initial ACT and continuing the ACT at 240 to 300 seconds. As the area of anticoagulation is extremely important to the course of ECMO these refinements over the four years of experience become extremely important to pass on to the reader.

Updated between the 1984 and 1988 editions is the section entitled TRIAL OFF and the ventilator settings. The new edition indicates a ventilator setting of: FiO_2 to 1.0 and the PIP/PEEP 24/2, and the rate is 24. This is a change from the previous manual in 1984 where the recommended settings were FiO_2 of 1.0 and pressures of 30/4 and the inspiratory time decreased to .3 to .4 seconds, the backup rate was previously set at 30.

The readers will find the sections entitled MANAGEMENT and CIRCUIT PROCEDURES a very well prepared overview of the physiology of ECMO. These two sections are will sequenced and condensed to provide the reader with an overview of the physiology and management of ECMO from its pre-initiation period through the period of termination and decannulation.

Recommending this book only to the technical specialist (the nurse specialist, the ECMO technician, the Perfusionist) would be a mistake. The physician student of ECMO, the physician director of an ECMO program and general administrator overseeing an ECMO program would truly benefit by the addition of the ECMO Technical Specialist Manual to their library.

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1. Toomasian, John and Nixon, Cynthia: **ECMO: Extracorporeal Membrane Oxygenation—Technical Specialist Manual**. Ann Arbor, Michigan: University of Michigan, Department of Surgery, 1984.