THE FLOW

April 2017

"Plan your day, but live for the interruptions.
They often turn out to be the part that matters most."

-J. Devn Cornish, MD

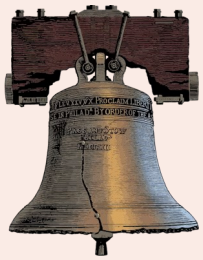
JOIN US

Join us at our 28th ELSO Annual Congress Sept 24-27th at the Hilton Hotel in Baltimore, Maryland. Our pre-conference will provide 2 tracks: one for new providers and programs that will give didactic and simulation exercises on many topics—how to make a cannulation cart, what equipment to order, general physiology, and patient management. The other track will focus on more advanced ECMO care—expanding on last year's cardiogenic shock populations and updating on newer methods of combined techniques for respiratory and organ support. Hands-on application of other tools such as the Impella, Tandem Heart, artificial lung will also be provided. Management of difficult cases with "realistic" simulations will be provided.

Our main conference will feature Bart Griffith updating us on new artificial lung projects, pros and cons of a 605 day ECMO run and Alan Flake talking about the artificial placenta. Breakout sessions on Adult, Neonatal, Outcomes, Research, Administrative issues (billing, finance, what your CEO wants to know), and Family Stories will also occur. Awards for the best abstract as well as updates on research grants will also be highlighted. Our awards ceremony will feature Center of Excellence recipients and Fellows of ELSO recognition. Directors and Coordinators meetings will also occur, as will an update on the PediECMO effort between the PALISI and ELSO organizations.

Join us for education, interaction and sharing stories as well as wine and cheese at our reception. Visit the ELSO Conference website for more details.

ELSO Adult ECMO Training Course



Drexel University College of Medicine

Independence Blue Cross Simulation Center

Philadelphia, PA

Date: June 21-24, 2017

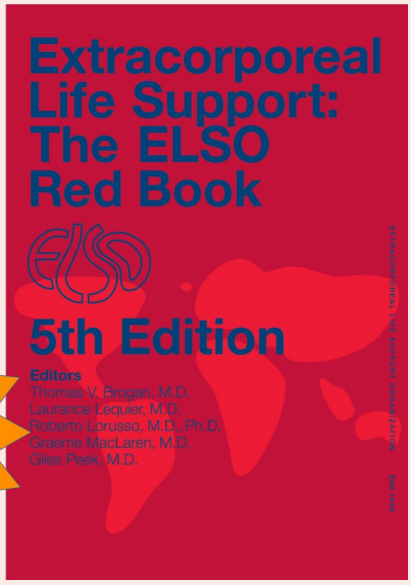
https://www.elso.org/Members/Courses/June2017Philadelphia.aspx

Location: Philadelphia, PA

For more information contact:

Kennethia Banks-Borden *734-998-6600*

kbanksborden@elso.org



The 5th Edition ELSO Red Book is *now available!!* This edition is the largest and most comprehensive Red Book ever. Ensure your team has a copy of the most up to date ECMO resource available!!

Bedside with Dr. Bartlett

Dr. Bartlett is considered by many to be the "father" of ECMO. He has a vast amount of experience and has faced many critical situations and decisions. In this newsletter series, he will join us on ECMO rounds at the bedside.

A 55 year old 75kg woman has severe ARDS due to pneumococcal pneumonia. She had not been vaccinated and had symptoms for 3 days before coming to the hospital. Despite 24 hours of antibiotics, her lung function has deteriorated and she is now intubated, paralyzed, on a mechanical ventilator with 100% oxygen, peak inspiratory pressure 40, plateau airway pressure 35, PEEP 15, at a rate of 30. Tidal volume is 400 cc. At these settings her blood gases are PaO_2 40, saturation 80%, $PaCO_2$ 50. Her chest x-ray shows extensive bilateral pulmonary infiltrates. She has no signs of cardiac failure. Her blood pressure is 130/85 and her right atrial pressure is 5 cm/H_2O. She is on optimal /maximal support but has hypoxemia and hypercarbia. Should ECMO be considered? What are indications for ECMO in adult respiratory failure?

The mortality for ARDS has been 40% for the past 25 years. If we could detect the patients who would ultimately die early in the course, and if we managed them all with ECMO with a 60% survival, we would have a major impact on the overall outcome from ARDS. The key to this algorithm is identifying those patients who have a high risk of ultimate mortality within the first day or two after the onset of ARDS. There are four practical scoring systems to identify high mortality risk patients within the first few days after intubation. They are based on oxygenation failure (PaO_2/FiO_2), compliance, and age. The Murray Lung Injury Score requires a calculation (available on the web, http://cesar.lshtm.ac.uk/murrayscorecalculator.htm) resulting in a score from 0 to 4. The Murray Lung Score was the entry criterion for ECMO in the Cesar Trial in 2000. The patients in the control group had an average Murray Lung Score of 3.5 and had 60% mortality. (1) This patient's **Murray score is 4.** A second method is the Adult Oxygenation Index (AOI), based on the ARDSnet database. (2) In the AOI the oxygenation index is calculated as FiO_2 x plateau airway pressure divided by PaO_2. The AOI is the oxygenation index plus the age in years. In this patient the **AOI is 130,** indicating 90% mortality risk. The APSS method proposed by Villar uses the elements of the AOI converted to a simple numeric scoring system ranging from 1-9. (3) This patient has a **APSS of 8 indicating 80%** mortality risk. The Berlin ARDS consensus definition of ARDS recommends instituting ECMO at a PaO_2/FiO_2 ratio below 60. This patient's **P/F is 40.** (4) ELSO guidelines suggest that ECMO should be considered at 50% mortality risk and instituted at 80% mortality risk. This patient has a mortality risk over 80% by all scoring systems.

Using these scoring systems, we would like to institute extracorporeal support as soon as high risk is identified to minimize ongoing lung damage caused by high pressure/high oxygen ventilation. However, the patient is stable and getting along despite the hypoxia and hypercarbia. ECMO has inherent risks therefore it is tempting to wait a few more hours, even a few more days to see if the patient will improve on maximal therapy. When does the ongoing lung damage from high oxygen/high pressure balance the inherent risks of ECMO? We know that delaying ECMO for 5-7 days increases mortality risk. We know that ECMO instituted within 24 hours of onset has the best survival outcome, at least in H1N1 infection. This patient is now at high mortality risk scores after 24 hours of management. We should notify the ECMO team and prepare a circuit, talk to the family, and plan to institute ECMO if there has not been significant improvement in another 6-12 hours.

(1) Murray score calculator: http://cesar.lshtm.ac.uk/murrayscorecalculator.htm (2) Dechert RE, Park PK, Bartlett RH: Evaluation of the oxygenation index in adult respiratory failure. J Trauma Acute Care Surg 2014; 76:469–473 (3) Villar J, Perez-Mendez L, Basaldua S, Blanco J, Aguilar G, Toral D, Zavala E, Romera MA, Gonzalez-Diaz G, Nogal FD. et al. A risk tertiles model for predicting mortality in patients with acute respiratory distress syndrome: age, plateau pressure, and P(aO(2))/F(IO(2)) at ARDS onset can predict mortality. Respir Care. 2011;4(4):420–428. doi: 10.4187/respcare.00811 (4) Ranieri VM, Rubenfeld GD, Thompson BT, Ferguson ND, Caldwell E, Fan E, Camporota L, Slutsky AS. Acute respiratory distress syndrome: the Berlin definition. JAMA. 2012;4(23):2526–2533.

Surveys...

ELSO would like your opinion on the severity of illness section in the data collection application. The survey is only seven questions (fast people can do in 38 seconds!!)

https://www.surveymonkey.com/r/2017ELSOSOI

Although over 26,0000 newborns have been treated with ECMO since 1975 and survival rates have improved, intracranial injuries remain a major complication. Despite a high frequency of abnormalities identified on neuroimaging, there appears to be little standardization of neuromonitoring protocols during or after treatment (Van Heijst 2014).

In light of these facts, we are surveying all ELSO pediatric programs to determine the landscape of clinical practice utilizing neurological testing in this patient population. The following anonymous survey will take **no more than 5 minutes to complete** and we greatly appreciate your participation in this research project.

Survey Link

This survey has been approved by our institution's IRB and does not include identifiers for your institution. The survey should be compatible with your mobile phone as well.

For further info, please contact the primary investigator of this study:

Jennifer Bain, MD PhD,
Assistant Professor Child Neurology
01(646) 426-3876
Neurological Institute of New York
180 Fort Washington Ave , Mail Code: 5th FL
New York, NY 10032 USA

We are conducting a quick 10 survey to understand what types of systems pediatric programs are using and if they use both roller pump and centrifugal systems, what criteria they use for that decision. We thank everyone for their participation and we look forward to sharing the answers in an upcoming newsletter.

Norton Children's Hospital

https://www.surveymonkey.com/r/SH6Z6QC

Start Survey

ELSO Neurological monitoring and Neurodevelopmental follow-up survey

The Euro ELSO Neuromonitoring and Neurologic Outcome Working Group is interested in understanding the current status of neurological monitoring on patients supported on ECMO, and the neurodevelopmental/neuropsychological follow-up currently in use in your institution. This is for the purpose of developing a common framework for neuromonitoring on ECMO and neurological outcomes and follow-up after ECMO support.

Patients supported on ECMO are at risk of neurological injury and need careful monitoring. However, there is wide variability in neuro-monitoring and neuro-imaging protocols across ECMO centres. The Extracorporeal Life Support Organization recommends regular follow-up of ECMO survivors. Understanding what the optimal follow-up should constitute in terms of the type of testing and frequency of testing remains unclear for children and adults, and there is no international consensus on optimal follow-up guidelines. Very few ECMO programmes offer multi-disciplinary longitudinal follow-up. This short survey should not take more than a few minutes to complete and will help us to understand and establish some guidelines for neuro-monitoring and identify a minimum follow-up schedule for patients supported on ECMO. As of now, although the survey is focused on ECMO centres in Europe, we would like responses from all the ELSO centres. We would prefer one response from each ECMO centre, please feel free to discuss with your team to submit a combined response. For any further information, please contact Dr Aparna Hoskote at aparna.hoskote@gosh.nhs.uk or Dr Melania Bembea at mbembea1@jhmi.edu or Dr Roberto Lorusso roberto.lorussobs@gmail.com

We would be grateful if you could kindly fill the survey below.

https://www.surveymonkey.co.uk/r/H9CMWWZ

You may also receive an email about this survey. We thank you for your time, and your support towards developing a consensus on neuro-monitoring and neurodevelopmental follow-up for those supported on ECMO is much appreciated. The results of the survey will be published when survey is completed.

Website Corner

We have lots of "eggs"cellent discussions going on right now!

Hop on over to the Discussion Board and lend your experience to your ELSO community!

Discussion Board Topics of the Month

These are the hottest topics. Stop by and provide your input!

Centrifugal Pumps on Neonates: Are you using CPs on neonates with success? We need to hear from you! Help your fellow ECMO-logists learn from your experience.

Bivalirudin on ECMO: What experience do centers have for this newly popular direct thrombin inhibitor?

Discussion Board Contributor of the Month

Congratulations to Timothy Bantle, RRT from UF Health Shands in Gainesville, FL. Thanks for your great questions and keep those posts coming!

Logging On

All ELSO Member institutions have an Administrative Account for your ELSO Registry data entry. This account can create separate accounts for your local physicians and ECMO Specialists. Contact your local ECMO Coordinator to get your accounts set up! Conversely, you can sign up for an individual membership to take advantage of discounts on Red Books and ELSO Conference Registration.

PerfShare Live!

In our Special Topics area of the Discussion Board, we are hosting a series by Gary Grist, CCP-Emeritus for live discussions that are recorded and available for viewing later. Gary is a great perfusionist with significant experience who has published on some great topics like oxygen pressure field theory and the failure modes and engineering analysis of ECMO (great data for you to justify your safety equipment or to estimate what the rate of failure you should expect from your ECLS equipment!). Please join the conversations or view the presentations if you aren't able to join live.

Platinum Center of Excellence Spotlight
NewYork-Presbyterian/Columbia University Medical Center

The ECMO program at NewYork-Presbyterian Hospital / Columbia University Irving Medical Center dates back to 1983, when under the leadership of Dr. Charles Stolar, we became the 3rd center in the world to successfully place a newborn on ECMO support. Dr. Stolar's original ECMO patient is now a healthy adult, married with two children of his own. The use of ECMO for adult patients at our center began in the 1990s, and our modern program was formalized in 2007. We now support patients with an array of severe respiratory and cardiac conditions.

Our combined program has become one of the largest in the world, supporting over 220 patients with ECMO in 2016, and has pioneered cutting edge practices including blood conservation protocols, neuromonitoring, as well as endotracheal extubation and ambulation of patients while receiving ECMO. Novel cannulation strategies have been developed here as well, including several allowing for upper-body venoarterial ECMO support. Our ECMO program has successfully completed over 250 ECMO transports – locally, regionally, nationally, and internationally with aeromedical transports of patients from as far away as the Middle East.

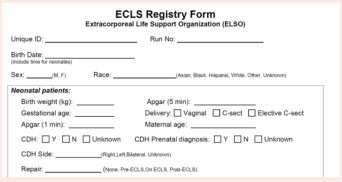
The goal of the New York-Presbyterian-Columbia ECMO program is to save lives through the delivery of cutting edge patient care. This is made possible by our exceptional multidisciplinary team. We work to continuously improve team performance through the use of high-fidelity simulation. Our institutional commitment to both patient and family well-being is unwavering, as is our aim to continue to advance the field in terms of innovation, research, and the delivery of the highest-quality clinical care.

The ECMO program at NYP-Columbia is one of five centers awarded a *Platinum Level Center of Excellence in 2017.*

Center of Excellence News

The Award Applications have been received and reviewed for 2017! We are pleased to announce that we have had a record 66 applications! While we understand that everyone is anxiously awaiting results, the committee is focusing on notifications of the Centers that wished to be announced at the upcoming EURO ELSO meeting in Maastricht. After the conference, we will be finalizing the Centers that have been chosen for site visits and sending letters of award status.

Registry News


ECLS Registry Form
Extracorporeal Life Support Organization (ELSO)

The Registry Committee is fast finalizing the definitions document for the Data Registry. The Committee appreciates that this document is very necessary for completion of your Registry Forms and sympathizes with those 'muddy' questions. Please continue to email Peter Rycus at prycus@elso.org with your questions and we will try our best to answer them.

ELSO MEMBERSHIPS

- ECMO clinicians, research scientists, and members of regulatory and public health institutions are now eligible for membership in ELSO
- Membership allows physicians, nurses, perfusionists, respiratory therapists, researchers and others healthcare professionals to become more directly involved in the world's largest ECMO community
- Affiliation with an ELSO Member Center is not necessary to apply
- Members receive benefits separate from Member Center privileges

Benefits of membership include:

- Direct participation in the world's largest ECMO community
- ELSO Member Newsletters
- ELSO Registry Data Reports– January 2017 Reports available on website!
- Discounts on one copy of the ELSO Red Book ($20 off list price) and one copy of the ECMO Specialist Manual ($5 off)
- 10% discount on Annual ELSO Conference Registration fee
- Official Certificate of ELSO Membership
- Admission to the Members-Only Business Meeting at the Annual ELSO Conference
- Discounted registration rates for global ELSO Chapter Conferences (EuroELSO, Asia-Pacific ELSO, Latin-America ELSO, South & West Asia ELSO)
- Access to the ELSO Online Discussion Board
- Access to ELSO Online ECMO Knowledge Assessment Examination (Certificate of Completion included upon successful completion)
- Eligibility to participate in ELSO Committees and Working groups

Please visit us at http://www.elso.org/members/individualMembership.aspx

Please note that for the 10% discount on the Annual North American ELSO conference it can take up to 2 weeks to import your discount code into the CVENT registration program.

Euro-ELSO 2017

5/4/2017 - 5/7/2017

http://www.euroelso.net/euroelso-2017.html

Location: Maastricht, The Netherlands

27th Annual Specialist Education in Extracorporeal Membrane Oxygenation (SEECMO) Conference

6/2/2017 - 6/4/2017

Location: Children's Hospital Colorado - Aurora, CO

https://cmetracker.net/CHCOL/Catalog

Alexandria Wilkinson 720-777-6948 at alexandria.wilkinson@childrenscolorado.org

AP-ELSO Adult ECMO Training Course 2017

07/17/2017 - 07/21/2017

https://goo.gl/forms/nd9ztDurl1GSuKnW2

Location: Hong Kong

Registration is now open. Deadline: 15 June 2017

Please contact **Peter Lai** at lck230@ha.org.hk or **Viann Yu** at yth184@ha.org.hk for further details.

ELSO Adult ECMO Training Course

06/21/2017 - 06/24/2017

https://www.elso.org/Members/Courses/June2017Philadelphia.aspx

Location: Philadelphia, PA

Kennethia Banks-Borden 734-998-6600 at kbanksborden@elso.org

28th Annual ELSO Conference

9/24/2017 - 9/27/2017

Location: Baltimore, MD

Peter Rycus, MPH 734-998-6601 at prycus@elso.org

http://www.cvent.com/d/x5qj6f

28th Annual ELSO Conference September 25-27, Pre-Conference Symposium September 24-25.

Venue: Hilton Baltimore

Asia-Pacific ELSO Conference 2017

10/12/2017 - 10/17/2017

Location: Gold Coast, Queensland, Australia

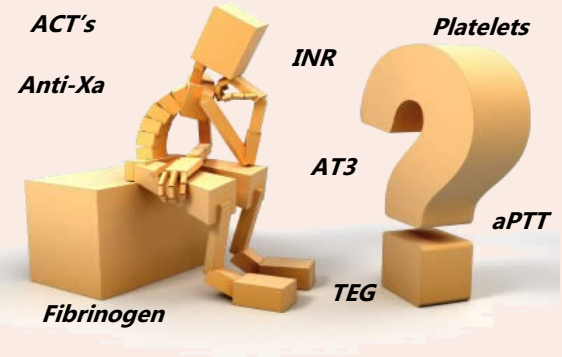
http://apelso.com/

EuroELSO ECMO Course: Adult ECMO for respiratory failure and septic shock

11/06/2017 - 11/09/2017

Location: Stockholm, Sweden

Bjorn Frenckner +46-70 722 61 15 at bjorn.frenckner@karolinska.se



What do all of these numbers mean and which one should I follow?

By Dr. Timothy Maul, CCP, Phd, Perfusionist, Senior Research Scientist, Nemours Children's Hospital, Department of Cardiac Surgery, Orlando, FL

ACT: This test has been around since the early days of cardiopulmonary bypass and our "ECMO industry" has been using this semi-incorrectly for years. It's advantages are that it is a whole blood test that gives a rapid result in the face of anticoagulation (that's why we use it in the OR for bypass). In order to give such a rapid result in the face of full anticoagulation, it has to use a very strong accelerant (usually diatomaceous earth, kaolin, silica, glass or some combination of these). For ECMO and it's low-dose heparinization, that was its Achilles heel; it cannot distinguish between 10 units/kg of heparin and 15 units/kg of heparin. It's like using a sledgehammer where a carpenter's hammer would be sufficient. The assay's standard deviation per sample of about 20-40 seconds is simply too large for this, and it wasn't designed to be linear at the doses of heparin we are using. Many folks have moved on to the ACT-LR which tries to bring it to a more linear range for low dose procedures (ECMO and cath lab). The fact we still target "180-200" like we did 20 years ago is ludicrous. In fact, manufacturer to manufacturer, that number doesn't hold. It's up to each institution to establish what is an acceptable range in a normal patient population exposed to specific range of heparin concentrations (here's where the Xa is useful and I'll get to it in detail in a minute). In summary, the ACT-LR better but still not great. Because the ACT is so greatly affected by platelet count, you may incorrectly interpret it to be related to heparin effect. This is why it cannot be used alone to monitor anticoagulation. My expected range for most ECMO patients is 170-230 seconds.

Anti-Xa: This test has become the test-d'jour for many institutions and is used as an anticoagulation test. It IS NOT a coagulation test. All that it measures is the amount of factor Xa that is bound by AT3 in a blood sample. It is basically a heparin concentration test, and should only be used as such. We know that for most patients, Xa levels of 0.3-0.6 units/ml of blood are sufficient to double a patient's clotting time. However, these are ideal, normal patients that do not have any other associated issues. We routinely have to go higher or lower depending on the actual coagulation state of the patient. That is why this test CANNOT be used as a sole coagulation test. We still use ACTs as a canary for patients who are having large changes in heparin levels (massive diuresis or hemofiltration), platelet counts, or fibrinogen levels. They should signal that we need to look more closely when they change by a lot.

aPTT: This is a staple of every hospital system, so it is a good one to use no matter where you are (you don't need to buy new equipment). The aPTT is a plasma based test using a mild coagulation stimulant (phospholipids and glass). It eliminates the effects of platelets from the results, and is much more sensitive (linear) to heparin dosing. Because it is collected in citrated tubes, the clotting cascade stops at factor X where calcium becomes a major co-factor for continuation of the cascade. It will give a narrower, more consistent result because of this...the plasma is starting from roughly the same point each time and it is looking at the rate of reaction of the intrinsic and common pathway and is not affected by platelet count or platelet function. We (and others) have published data that the aPTT gives a more correlative response to heparin dose (and therefore xa level) than the ACT. However, it's still not perfect. The aPTT only accounts for about 60% of the variability in the test...that leaves 40% variability to other factors. We have also demonstrated in the same paper that respiratory/sepsis patients have a poorer correlation than cardiac patients, which means that the inflammatory system plays a role in this additional error. We use the aPTT as the primary driver of our heparin dosing with a target of 70-90 seconds.

Fibrinogen: This is the binding agent at the end of the clotting cascade. It is also an acute phase reactant, meaning that it goes up when people are inflamed or sick. If you realize that the clotting cascade is a series of enzymes, then you realize that the more substrate you provide an enzyme, the more product you will get. The higher the fibrinogen level in a patient, the more likely they will be to form a clot somewhere, even when they are given anticoagulants like heparin. We see patients who have fibrinogen levels over 500 mg/dL require much higher doses of heparin (and therefore higher Xa levels) to achieve an aPTT of 70-90 seconds, which our standard starting point for patients that aren't a bleeding risk.

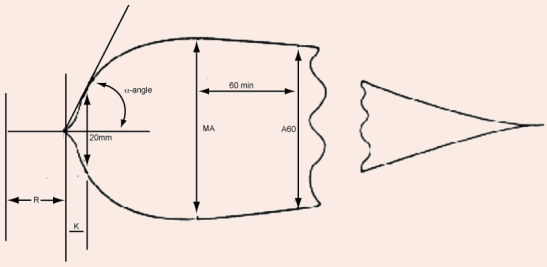
AT3 level: this is the molecule that heparin needs in order to work. The lower the AT3 level, the more heparin you will give

(Continued on page 10)

(Continued from page 9)

your patient because they aren't responding to it (either with ACT or aPTT increases). AT3 levels below 50% are most likely the problematic patients that show significant heparin resistance. There has been very little studied about heparin resistance in ECMO, but the studies that have been done show that if you replace it, at least it appears to be safe to do so. Whether it's effective, is still up for debate. My philosophy for anticoagulation is that you should have a completely normal underlying coagulation system and then perturb it with a specific agent(s) that you can control (heparin, direct thrombin inhibitors, platelet inhibitors) to achieve a desired effect. It is very difficult to control a drug when there are other factors affecting your interpretation of whether that drug is working. We wouldn't be able to accurately dose vancomycin if our vanco -troughs were affected by hematocrit, platelet count, or any of the other factors that play a role in clotting tests. We target AT3 levels above 60% in neonates (we know they have lower AT3 levels but yet have the same total bleeding time as an adult because of compensatory mechanisms in other areas) and above 80% in patients over 6 months of age.

TEG:



Thromboelastography is a great tool to look at the underlying clotting cascade and pinpoint where you might intervene to create the normal underlying system (long R or alpha- FFP; long K and lower MA- cryo; low MA-platelets). It's not available everywhere, and we can do a good job without it. I test every patient once per day with this to make sure that they're normal underneath the heparin and that I can demonstrate a heparin effect, which confirms my Xa and aPTT tests.

Platelets: The workhorse of our clotting system. They affect the ACTs and TEGs significantly, both in their numbers and their function (patients on aspirin or dipyridamole will also have ACTs and TEGs that are affected). Patients who don't have sufficient platelet counts are at risk for bleeding. We typically replace for less than 80K.

INR: This is a measure of the extrinsic pathway (tissue factor or body-based). It is not affected by heparin, but will be affected by vitamin k influenced coagulation factors (which is why it is used to measure vitamin K inhibitors like warfarin). INR is typically elevated during sepsis or when there is a dilution of all clotting factors. Treatment of prolonged INR is usually with FFP or in extreme cases plasma exchange.

That's a lot of information to look over and to understand. But, if you truly understand it, then anticoagulation isn't such a mystery (although there are inevitably patients that make us scratch our heads). As promised, our protocols:

-Measure aPTT and Xa q4-6 hours. Heparin is dosed based on aPTT levels. If a heparin change is made, you must wait 4 hours to test again. Target aPTT is 70-90seconds in >6 mos; 80-100 sec < 6 mos. Expected Xa level is 0.3-0.6. Patients that have high aPTTs, but no overt bleeding, keep at least 0.15-0.2 U/mL on your Xa to ensure that there is heparin around to help keep circuit healthy.

-Measure ACT q1-2 hrs. Only alert for strong deviations. Expected range is 170-230seconds -TEG q24 hrs with and without heparinase. Make sure that you see a difference in the tests and that the heparinase sample looks normal. Treat accordingly.

-platelet count q8 hrs with CBC. >80k for no bleeding. >100k for patients who are bleeding.

-AT3 levels q24 hrs. Target >60 in newborns, >80 in pediatric and adults. Replace with concentrated AT3 or FFP as needed.

-Fibrinogen: q6-8 hrs. target >150mg/dL to replace with cryo. Levels >800mg/dL consider plasmapheresis to reduce.

-IRN q4-6hrs with your aPTT. The INR should be absolutely normal (1-1.5) since heparin has no effect on it. Prolonged INR is often treated with FFP or plasma exchange as medically indicated.

N.B....plasmapheresis is done with albumin and plasma exchange is done with donor plasma; we went through a lot of confusion several years ago when our fellows were using them interchangeably and the transfusion medicine folks were the only ones that seemed to know the difference.

Sorry for the long rant...this is an area that I'm passionate about as a scientist and as a clinician. I think it's vitally important to understand to provide safe ECMO and our ability to control anticoagulation better is one of the reasons we've gotten better outcomes. I would encourage everyone to head over the ELSO.org website and look at the anticoagulation guidelines written by Dr. Laurence Lequier and the rest of the ELSO anticoagulation task force. I've learned a lot from him and his colleagues. The guidelines contain a lot of the same information that I've shared.

Facebook

If you use Facebook please visit our sites and "like" us! We intend to use Facebook as a way to present information to not only ELSO members but to anyone who is interested in our organization. www.facebook.com/ELSO.org

Euro-ELSO Facebook page:
www.facebook.com/EuroELSO

Twitter

Follow us on twitter!
www.twitter.com/ELSOOrg

It has been about six months since we started publishing the ELSO newsletter monthly and we want to hear from you. What do you like about the ELSO Newsletter? What could we improve on? Is there something you would like to see added to the current content? Your feedback is vital to the success of the newsletter. Please send all comments, good or bad, to newsletter@elso.org.

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The ELSO Newsletter editorial team's goal is to bring you a newsletter that is entertaining, informational, and educational. We are always looking for additional members to join our team. If you would like to join us or have any suggestions for improving the newsletter or would like to contribute content, please contact Joel Davis at jdavis@elso.org.

Thank you from the ELSO Newsletter editorial team

Joel Davis, Kennethia Banks-Borden, Teka Siebenaler, Omar Al-Ibrahim, Terri Wells, Nandini Nair