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Newsletter of the Malaysian Society of Anaesthesiologists and the College of Anaesthesiologists, Academy of Medicine of Malaysia

Editor : ***Dr Rafidah Atan***

Malaysian Society of Anaesthesiologists

College of Anaesthesiologists Academy of Medicine of Malaysia

19 Jalan Folly Barat, 50480 Kuala Lumpur, Malaysia
Tel: 603 2093 0100, 2093 0200 Fax: 603 2093 0900
email: acadmed@po.jaring.my
website: www.msa.net.my

To all members of the Malaysian Society of Anaesthesiologists and the College of Anaesthesiologists

Dear friends and colleagues

You may be aware that the Regulations to the Private Healthcare Facilities Act (1998) were recently passed, with the Act implemented on 1 May 2006. You may have also read and/or heard that there were many doctors who were unhappy with the Regulations, and that some groups of doctors had met with the Ministry of Health to address their unhappiness with the Regulations and the Act.

This letter is to point out to you that the Act has one important positive implication for anaesthesiologists in Malaysia.

Among many other provisions, the Regulations stipulate that the maximum professional fees chargeable by the anaesthetist follows the *MMA 4th Schedule of Fees, which states that anaesthetist's fees are separate from the surgeon's fees*. Therefore the Act (with its Regulations) recognizes Anaesthesia as a separate specialty, with separate charges; no longer a percentage of the surgeon's fee.

We would like members to note that this is something that anaesthetists had strived to achieve for many years. We do not want to be a mere appendage of the surgeon, charging a percentage of the surgeon's fee. We want to be recognized as professionals in our own right. Over the years, through the vision and hard work of our senior members, we had succeeded in getting a separate fee schedule for anaesthetists when the MMA fee schedule was published. To return to the "one third of the surgeon's fee" practice would be a step backwards – putting us at the mercy of surgeons and denying us our due recognition. We must stand together as a profession and support each other in this very important principle, that we are professionals in our own right.

We realize that until today, there are still anaesthetists whose charges are a percentage of the surgeon's fee and not according to the MMA fee schedule; this may occur for many reasons, some of which are beyond our control. However, those of you who agree that the anaesthetist's fees should not be a percentage of the surgeon's fee may want to use the new Act (and Regulations) as a valid reason to change your charges.

If you have any queries or problems with regard to this matter and wish to discuss this further, please contact us by email or through the Academy of Medicine secretariat at 03-20930100 or 03-20930200.

S H Ng
President MSA

Y K Chan
President, College of Anaesthesiologists

M Cardosa
Hon Gen Secretary, Malaysian Medical Association

In this Issue ...

Guideline For The Use Of Recombinant Activated Factor VII In Life-Threatening Massive Haemorrhage

By **Dr Norezalee Ahmad**

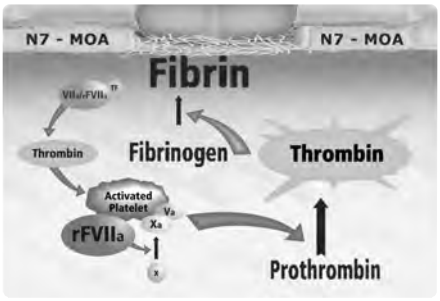
INTRODUCTION

Recombinant activated factor VII (NovoSeven® / rFVIIa / Eptacog alpha activated) is currently licensed for the treatment of bleeding episodes and prevention of excessive bleeding in connection to surgery in patients with inherited or acquired haemophilia with inhibitors to coagulation factors VIII or IX, and in patients with congenital factor VII deficiency and Glanzmann´s thrombastenia.

In recent years since the first report of rFVIIa use in a trauma patient, there has been a growing trend of out-of-license use of rFVIIa therapy in non-haemophilic patients with life-threatening haemorrhage resulting from trauma, surgery, post-partum, dengue haemorrhagic fever etc. This has spurred a few randomised controlled trials to evaluate rFVIIa use in trauma and nontraumatic intracerebral haemorrhage. Although it has been shown to reduce transfusion requirement in trauma patients, the study did not detect significant reduction in mortality. Further adequately powered studies are warranted to observe any survival benefit with the use of rFVIIa. Given the high cost of rFVIIa therapy, the cost-effectiveness of off-label use is still questionable. Therefore it is imperative to implement a guideline for the off-label use of rFVIIa therapy following the consensus recommendation.

MECHANISM OF ACTION

Factor VII is a natural initiator of haemostasis, which binds to Tissue Factor (TF) at the site of vascular injury leading to the generation of thrombin. rFVIIa activates factor X on the surface of activated platelets at the site of vascular injury, resulting in a localised thrombin burst, leading to a rapid formation of stable fibrin clots at the site of vascular injury.



INDICATIONS

Consider rFVIIa use in salvageable patient with life-threatening massive haemorrhage that fails to respond to *appropriate surgical interventions and conventional blood component therapy*. Do not use rFVIIa if overall outlook of patient is so poor that arresting haemorrhage is unlikely to improve the outcome.

DEFINITIONS

Massive haemorrhage is defined according to following criteria:

- replacement of the total blood volume within 24 hours (> 10 units of PRBC in 70 kg patient)
- loss of 50% of the circulating blood volume in 3 hours
- loss of 150 ml of blood per minute
- loss of 1.5 ml/kg/min of blood within 20 minutes

Appropriate surgical interventions:
Application of all accepted and available surgical measures (e.g. ligation of damaged vessels, tamponading, or packing of the bleeding site, and induction of localized thrombosis).

Appropriate blood component therapy:
Administration of adequate blood components as follows:

Fresh frozen plasma:
15 ml/kg
(4 – 6 U for a 70 kg patient)
Platelets:
1 – 2 U per 10 kg
(10 – 15 U for a 70 kg patient)
Cryoprecipitate:
1 – 2 U per 10 kg
(10 – 15 U for a 70 kg patient)

CONTRAINDICATIONS

Absolute

- Allergy to mouse, hamster or bovine proteins.

Relative

- Patients with known thrombotic tendencies.
- Patients with a history of recent thrombo-embolic events (e.g. pulmonary emboli, myocardial infarction, cerebro-vascular accident, deep vein thrombosis) within the previous 6 months.

PRECAUTIONS
Caution advisable in

- Patients with prosthetic heart valves in situ normally requiring warfarin therapy.
- Patients who has recently undergone coronary angioplasty and/or stent insertion.
- Patients with evidence of disseminated intravascular coagulation or sepsis.

PRECONDITIONS BEFORE rFVIIa ADMINISTRATION

Ensure on-going efforts to correct the following parameters:

- Fibrinogen level > 1g/L.
- Platelet level > 50x109/L (preferably 100 x109/L).
- If these two parameters cannot be measured, patient should receive empirical appropriate blood component replacement therapy as defined above.
- pH ≥ 7.2
- Core temperature ≥ 34°C

DOSE AND ADMINISTRATION

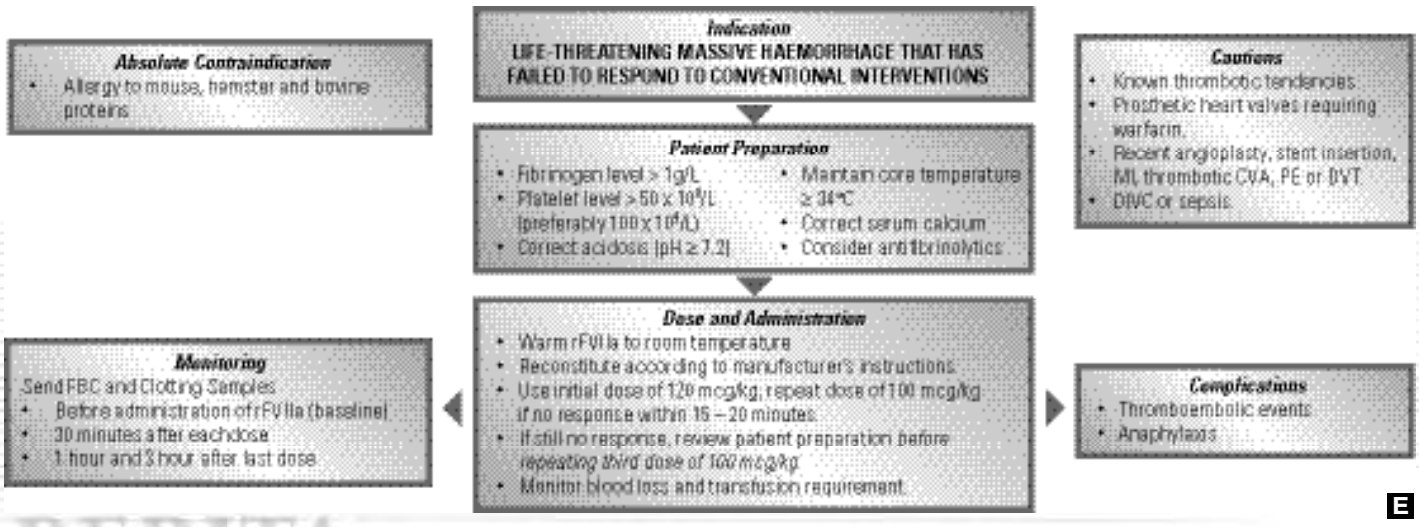
1. An initial dose of 120 mcg/kg (rounded up to the next whole vial) is reconstituted and given as slow IV bolus over 2-5 minutes.
2. The clinical effect should be monitored and recorded by measuring blood loss and transfusion requirement.
3. If haemostasis is not achieved, consider a second dose of 100 mcg/kg IV within a time interval of 15-20 minutes.
4. In case a third dose is required, consider the following actions:

a. Additional blood component therapy (PRBC, platelet, FFP, cryoprecipitate)
b. Correction of acidosis, hypothermia and serum calcium
c. Use of antifibrinolytic agents

COMPLICATIONS

1. Thromboembolic events – myocardial infarction, ischaemic CVA, pulmonary emboli and deep venous thrombosis.
2. Anaphylactic reactions.

SUMMARY GUIDELINES FOR USE OF NOVOSEVEN®



Message from Intensive Care Section (ICS), Malaysian Society of Anaesthesiologists

By **Dr Nor'azim bin Mohd Yunos**
Honorary Secretary, Intensive Care Section, Malaysian Society of Anaesthesiologists

The last few years had been very positive for the ICS with many of its activities achieving great success. Most importantly, these activities had succeeded in leaving a major impact on intensive care practices throughout the country. It is satisfying to note that there is now better acceptance across the board of the need to have standardised and evidence-based ICU practice.

The ICS 2006/7 Exco aims to continue the excellent efforts of its predecessors with many activities planned. For the coming year, a decision has been made to expand the ICS activities, encompassing several new areas. One of these includes the provision of financial support for attendance of overseas intensive care conferences. Similar to the existing scheme offered for anaesthesiology conferences, this scheme aims to provide its members with the opportunity to attend and present papers at reputable international meetings. Guidelines on criteria required to qualify for this financial support will be released soon.

Another area that the ICS hopes to look into is the issue of withdrawal of therapy. The ICS is greatly concerned with the lack of awareness among many clinicians regarding end of life issues and is looking into collaborating with the Ministry of Health to conduct a roadshow on the subject, involving speakers from various disciplines. Such a measure will hopefully clear common misconceptions surrounding the issue, thus allowing for better utilisation of intensive care resources.

All the time, while working through the two new projects mentioned, the ICS continues to be kept busy with other activities. A BASIC course was successfully held in June while the project on producing a guide to antimicrobial therapy in the intensive care unit (ICU) is now in its final stages. The guide will hopefully be ready for release during the coming 4th NCIC in September. On another note, the part II EDIC examination will be held for the second successive year in August with an increase in the number of candidates.

All in all, we are looking into another productive year for the ICS!

Congratulations

The Malaysian Society of Anaesthesiologists would like to congratulate the following candidates who passed the recent primary and final anaesthesia masters examinations.

PRIMARY EXAMS (PART I)

Dr Aktar b Abdul Rahman
Dr Ganesh a/l Peravy
Dr Mona Anggeraini bt Khalid
Dr Nazreen Ali bt Mohd Ali Jinnah
Dr Nora Azura bt Dintan
Dr Norsuhaila bt Mohd Amin
Dr Sheliza bt Jamil
Dr Susheela Subash
Dr Tengku Alini bt Tengku Lih
Dr Wan Rahiza bt Wan Mat
Dr Zarina bt Mahmood

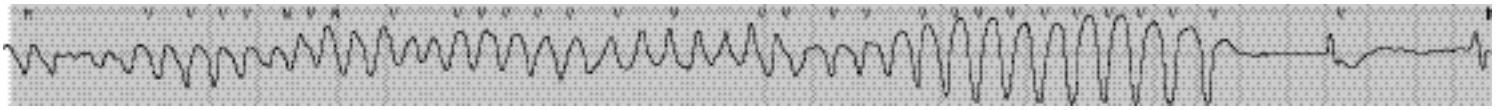
FINAL EXAMS (PART II)

Dr Adly b Abas
Dr Ahmad Suhaimi b Amir
Dr Azrina bt Shahdzul Bakri
Dr Farahah bt Osman
Dr Gunalan a/l Palari @ Arumugam
Dr Hari Krishnan a/l S K Puvaneswaran
Dr Hasmaliza bt Hasbullah
Dr Jayaraj a/l Manoharan
Dr Khairulamir b Zainudin
Dr Koay Tze-Howe
Dr Lakshmi a/p Thiyagarajan
Dr Ling Kwong Ung
Dr Mohamed Awad Elkaream Yousif Mohamed
Dr Mohamed Sayed Mohamed Hajnour
Dr Nas Shazli Amri b Nasruddin
Dr Nor Hafizah bt Mohd Yunus
Dr Oushpal Kaur Gill
Dr Premela Naidu Sitaram
Dr Rafidah bt Kasim
Dr Rathigah Marimuthu
Dr Remesh Kumar a/l S Balasingam
Dr Rohini Indra a/p Kanagalingam
Dr Suresh a/l Venu Gopal
Dr Vanitha a/p Sivanaser
Dr Yip Cheng Bee
Dr Yusnita bt Yusri

Dr Suresh a/l Venu Gopal also received the following awards:

(1) Anugerah Cemerlang Sarjana Perubatan (Anestesiologi) Profesor Emeritus Tan Sri Dato' Dr Mohd Rashdan Haji Baba
(2) The 'Esmeron' Award

Contest



>> 1. What is the rhythm shown?
2. Name a few possible causes.

The contest is open to all medical officers who are MSA members/associate members. The earliest and most correct answer will receive a copy of **'Clinical Anaesthesiology' by Morgan, Mikhail and Murray 4th edition** (Yummy!!)

Please e-mail your answers to the editor at rafidah10@hotmail.com or snail mail to the Academy at acadmed@po.jaring.my

ANSWERS TO THE PREVIOUS CONTEST

Only underlined parts of the answers are required; the rest are for the reader's information only. Even if you're only half correct, we will give the prize away. This is not an exam! So just relax and give it a try...

1. The blood gas analysis showed a mixture of metabolic (normal anion gap) and respiratory acidosis.

   pH 7.22: acidosis

   HCO_3^- 14 mmol/l and base excess -9 mmol/l: metabolic acidosis

   Anion gap = $[Na^+]$ - ($[Cl^-]$ + $[HCO_3^-]$) mmol/l
   = 136 - (109 + 14) mmol/l
   = 13 mmol/l (normal anion gap)

   Expected $PaCO_2$ in metabolic acidosis
   = (1.5 x $[HCO_3^-]$) + 8
   = (1.5 x 14) + 8
   = 29 mmHg

   Therefore the value of 36 mmHg indicated coexisting respiratory acidosis.

   Both urea (10.2 mmol/l) and creatinine (240 _mol/l) were raised. The urea:creatinine ratio was disproportionate. The normal ratio (with both urea and creatinine in the same unit, either mmol/l or _mol/l) is 50-100:1. In this patient, the ratio was 10.2 mmol/l / 0.24 mmol/l = 42.5.

   There was hypocalcaemia, with corrected Ca level = 1.6 + ([40- 26] x 0.025) = 1.95 mmol/l. This was accompanied by hyperphosphataemia, PO4- 2.4 mmol/l.

   The CK level, 14 460 IU/l was significantly elevated.

2. The renal impairment was caused by rhabdomyolysis. Pointers to the diagnosis were the clinical history of crush injury, blood gas analysis of normal anion gap metabolic acidosis and biochemical findings in keeping with muscle breakdown i.e. low urea:creatinine ratio, hypocalcaemia, hyperphosphataemia and significantly raised CK level.

   The coexisting respiratory acidosis in this patient could be explained by the right chest injury.
   The pathophysiology of renal impairment from rhabdomyolysis is as follows:
   1. volume contraction from fluid sequestration in damaged muscle
   2. aciduria resulting in urate crystallisation, myoglobin precipitation, free radical production and lipid peroxidation

   The principles of management for the first 24 hours should then be:
   1. Adequate volume resuscitation and maintenance to ensure good renal perfusion.
   2. Maintenance of diuresis. Mannitol is advocated as apart from its osmotic diuresis, it may also improve renal perfusion via intravascular volume expansion, may reduce muscle swelling and may minimise tubular toxicity via free radical scavenging. Frusemide, on the other hand, creates acidic urine which could worsen tubular toxicity.
   3. Urine alkalinisation. This can be achieved by administration of IV sodium bicarbonate, titrated to achieve urinary pH ≥ 7.0.

REPORT ON THE AMERICAN THORACIC SOCIETY INTERNATIONAL CONFERENCE

Dr Anselm Suresh Rao, Department of Anaesthesia and Intensive Care, Selayang Hospital, Selangor, Malaysia

I was privileged to be able to attend the above conference to present a free paper which was accepted for poster discussion.

The conference was organised by the American Thoracic Society (ATS) and is the largest, most prestigious scientific meeting devoted to the presentation and discussion of new research findings and the latest clinical developments in respiratory, critical care and sleep medicine. It attracted a total of 14,000 registrants from all over the world.It was the largest meeting I had ever attended. In fact, so large was the conference that it needed a daily news bulletin to report on all its events. Altogether, there were more than 5000 free papers presented.

Among the popular sessions during the conference were the *Clinical Year in Review, Clinical Topics in Pulmonary Medicine* and *Critical Care Tract*.

I attended the following notable events:-

20 May 2006 • 1.30 – 4.30 pm
International Poster Colloquium and Discussion

At this session, I presented my free paper entitled *"Reduction in Ventilator-associated Pneumonia (VAP) Rates following Implementation of Infection Control Protocols at Selayang Hospital Intensive Care Unit"*. The session was conducted as follows; there was a one-hour poster viewing session during which I had to stand by my poster and answer questions from the visitors. This was followed by a poster discussion session where the posters were grouped into themes and each of us had to present a summary of our paper when the topic of discussion was the theme concerned. The chairman of this session,Dr P Hopewell actually visited my poster and was very interested to hear about the NAICU (National Audit on Adult Intensive Care Units), which we have in Malaysia. He actually mentioned the NAICU during the poster discussion, and commented that this was a very interesting and useful audit that was probably the first one of its kind in the world! (For the uninformed, the NAICU is a quality improvement initiative established in 2002 by the Ministry of Health in order to evaluate the performance of intensive care services of the general ICUs of the 14 state hospitals in the country.)

There were poster presentations from all over the world and prizes were given to doctors from developing countries who presented papers. A total of 7 papers were awarded prizes;from Ghana,Nigeria, China, Bosnia, Ukraine, India and Malaysia (myself). The session was followed by an award ceremony with presentation of certificates of merit and award cheques. I was awarded a certificate of achievement, a cheque for US$1925 and a one-year training membership in the American Thoracic Society worth US$75.00.

Answering a query from the floor

21 May 2006 • 7.15 – 8.00 am
Breakfast meeting of the International Affairs Committee (IAC)

All awardees including myself were invited to this meeting in order to meet and get to know the members of the IAC who scored our applications for the awards. The IAC consisted of members from countries all over the world ranging from Europe, USA and South America.

22 May 2006 • 4.30 – 6.30 pm
Assembly of Critical Care of the ATS

Membership in the ATS is divided into 12 assemblies. Since my free paper and subspecialty was Intensive Care, I attended the Critical Care Assembly of the ATS which was basically the annual general meeting of the Critical Care Assembly. There were presentations of annual reports and election of office bearers. Interestingly, I noticed that even though this was the ATS, many of the committee members were from countries in South America and Europe. At this session, the award winners (including myself) were called upon and introduced to the rest of the membership.

22 May 2006 • 7.30 pm
Awardees Dinner

I attended the Awardees Dinner held at the Aubergine Restaurant together with the entire award winners and members of the International Affairs Committee. At the dinner, I even managed to meet the critical care physician who looked after the late Pope John Paul the Second. I was told that at the last stages, the Pope had made known his wishes that he did not want to be resuscitated in the event of cardiorespiratory failure!

23 May 2006, 130 – 415 pm
Nosocomial Infections Poster Discussion

I presented my paper for the second time here. This session was run on similar lines to the earlier poster discussion. There was a one-hour poster viewing session, followed by a poster discussion session. The chairmen for this session were Dr J E Chastre from France and Dr C M Luna from Argentina, both of them well recognised physicians in the field of respiratory and critical care medicine. Among the interesting questions I was asked at the poster viewing was the location of Malaysia. I answered this by saying that Malaysia was located between Thailand and Singapore.

Apart from the scientific sessions, I also visited the famous Seaworld and toured the aircraft carrier USS Midway in San Diego. While in Los Angeles I visited Hollywood, Kodak Theatre, Beverly Hills, Santa Monica Beach (where they used to film Baywatch) and also visited Universal Studios. I was there in Hollywood during the finals of the American Idol celebrations and managed to catch a glimpse of Taylor Hicks giving his interview after he won the American Idol title.

All in all,attending this conference had been a very interesting learning experience for me. I also created awareness about the health system in Malaysia,which can be considered up to international standards. I am also happy to state that the members of the ATS have passed me the message that they hope that closer ties can be forged between us in the near future, especially in the field of medicine. I would like to express my appreciation to the Director General of the Ministry of Health and the Ministry of Health for providing me with the funds to attend this conference and present my paper. E

UPDATES FROM THE AMERICAN THORACIC SOCIETY INTERNATIONAL CONFERENCE

19 – 24 May 2006 • San Diego, California, USA

Dr Anselm Suresh Rao
Department of Anaesthesia and Intensive Care, Selayang Hospital, Selangor, Malaysia

One of the most popular sessions at the conference was the *Clinical Year in Review*. This session was held daily, with different themes each day. During this session,each invited expert would summarize 4 – 5 significant clinical contributions to a particular discipline, while critically assessing the merits and limitations of each study.

The aim of these sessions were to provide an update, for members of the ATS, on important findings and landmark studies in each respective discipline. I attended the session on *Critical Care*, during which the most important contributions to the field of critical care in the preceding year were identified.

The speaker for the session on Critical Care was Dr R Philip Dellinger, Director of Critical Care Medicine at Cooper University Hospital,Camden, New Jersey, USA. He discussed the following papers in this session:

1. Abraham E, Laterre PF, Garg R et al. Drotrecogin alfa (activated) for adults with severe sepsis and a low risk of death (Administration of Dotrecogin Alfa in Early Stage Severe Sepsis - ADDRESS study trial) *N Engl J Med* 2005; 353:1332-1341

BACKGROUND

In 2001, based on the PROWESS trial[1], the Food and Drug Administration (FDA) approved drotrecogin alfa for use in adults with severe sepsis associated with high risk of death (multi-organ failure and APACHE II > 25).As part of the FDA's approval process, the sponsor of the study (Lilly) was required to perform a trial in lower risk of death patients, the ADDRESS trial.

METHOD

2640 adult patients with severe sepsis and low risk of death (APACHE< 25 and single-organ failure) were randomised to either drotrecogin alfa or placebo. Interestingly, if the investigator thought that the patient was at low risk of death despite high APACHE II score of > 25 or multi-organ failure, the protocol permitted enrolment of the patient.

FINDINGS

The trial was terminated early due to futility. There was no statistically significant difference between mortality in the two groups. Bleeding was greater in the drotrecogin group.

CONCLUSION

Drotrecogin alfa should not be used in patients with severe sepsis who are at low risk of death, such as single-organ failure or APACHE II < 25.

COMMENT

1. Subgroup analysis from the PROWESS trial showed the greatest reduction in mortality in patients with APACHE II > 25 and that was the reason drotrecogin alfa was approved for use in such patients. However there was no such mortality benefit in the similar group (APACHE II > 25) in the ADDRESS trial. This was probably because the risk of death was clinically thought to be low when assessed by the enrolling investigator (and that was why these patients were enrolled in the ADDRESS trial).Among the comments postulated here were:

   (i) Clinical assessment of risk of death is more important than APACHE II scoring in identifying patients at high risk of death from sepsis and thus the decision for drotrecogin alfa should be made clinically (i.e. septic shock, ARDS and multi-organ failure) rather than relying on APACHE II.

   (ii) The results of the PROWESS trial might not be so robust and the true beneficial effect in reducing mortality was probably more modest. The PROWESS trial was actually terminated prematurely after an interim analysis and this probably overestimated the treatment effect.

2. Harvey S, Harrison DA,Singer M,Ashcroft J et al.Assessment of the clinical effectiveness of Pulmonary Artery Catheter (PAC) in the management of patients in the intensive care (PAC-man); a randomised controlled trial. *Lancet* 2005; 366:472-77.

BACKGROUND

The PAC has been used for over 30 years. However doubts still exist over its safety and usefulness. This was especially so after the Connor's observational trial[2] using matched cohort analysis, which concluded that, the use of the PAC was an independent predictor of mortality.

METHOD

1041 patients from 64 intensive care units were randomised to being managed with or without a PAC. The timing of insertion and subsequent clinical management were at the discretion of the treating clinician.

RESULTS

There was no difference in hospital mortality thus no clear benefit or harm in using a PAC.

COMMENTS

Another nail driven into the coffin of the PAC. However further efficacy trials may be needed to see whether following certain management protocols could lead to an improvement in outcomes, and to identify if there are certain groups of patients who could benefit from management with a PAC.

3. Wheeler AP, Bernard G, Schonfield D et al. Pulmonary-artery versus Central Venous Catheter to Guide Treatment of Acute Lung Injury. N Engl J Med 2006 354; 21: 2213-24.

BACKGROUND

This study was part of the Fluids and Catheter Treatment (FACT) trial and was done to look at the usefulness of the PAC in the treatment of acute lung injury.

METHOD

1000 patients randomised to haemodynamic management guided by either a PAC or central venous catheter (CVC).

Study personnel were trained in the performance and interpretation of measurements of pressure obtained by a PAC and in addition to this there was a rigorous treatment algorithm in place to guide treatment response.

FINDINGS

1. There was no difference in outcomes between both groups
2. There was a higher incidence of catheter-related complications (arrhythmias) in the PAC group.

COMMENTS

One more study against the use of the PAC. However the study was limited to patients with acute lung injury only. Patients with severe COAD or conditions requiring complex fluid management e.g. renal failure were excluded from the study and thus we have no evidence if the PAC is useful in these groups of patients.

Continued on page 7

Continued from page 6

4. van den Berghe G, Wilmer A, Hermans G et al. Intensive Insulin Therapy in the Medical ICU. *N Engl J Med* 2006; 354:449-61.

BACKGROUND

This group earlier published a landmark paper in 2001[3] targeting strict glycemic control (BSL 4.4-6.1 mmol/L) in postoperative surgical ICU patients. There was a marked improvement in survival that extended to at least half a year.

METHOD

1200 adult medical ICU patients were randomised to either a target BSL of 4.4-6.1mmol/L with a similar insulin protocol used previously or to a conventional target BSL of 10-12 mmol/L.

FINDINGS

There was no difference in mortality. There was significantly reduced kidney injury and accelerated weaning from mechanical ventilation and discharge from the ICU. Post-hoc analysis showed those patients staying more than 3 days in the ICU seemed to benefit from tight glycemic control.

COMMENTS

1. The benefit seems to be less in this population compared to the surgical population and if there is a mortality benefit it would probably be smaller than the surgical group.
2. The Surviving Sepsis Campaign recommends a target glucose level of 8.3 mmol/L to minimize the occurrence of hypoglycemia.

5. MERIT study investigators. Introduction of the medical emergency team (MET) system:A cluster-randomised controlled trial. *Lancet* 2005;365:2091-97.

BACKGROUND

Previous studies have showed that the MET system reduces the incidence of unplanned ICU admissions, cardiac arrests and deaths. However these studies were limited by the fact that historical controls were used plus the absence of randomisation.

METHOD

23 hospitals in Australia were randomised to either function as usual (as control) or to implement a standardised MET system.Analysis was by intention to treat.

RESULTS

1. Introduction of the MET increased the overall calling for emergency teams (3.1/1000 admissions in the control hospital vs. 8.7/1000 in the MET hospitals).
2. Effect on composite primary outcome (cardiac arrest, unexpected death or unplanned ICU admission) was similar in both groups.

COMMENTS

1. The inability of this cluster randomised trial to show benefit,although discouraging,should not prevent further research.
2. This is because it makes sense that, despite the significant consumption of resources in setting up a MET, early intervention by trained teams should improve patient outcomes.
3. Possible reasons why this trial failed to show benefit were:-
   (a) a possibility that the MET system is an ineffective intervention
   (b) possible contamination of hospital controls as a result of their being in the study
   (c) the MET was only called in 30% of cases when criteria for calling was fulfilled, suggesting that many opportunities for early intervention were missed.
   (d) there might have been inadequate MET implementation as no efforts were made to reinforce MET concepts or to assess how well the MET concept was implemented
   (e) the study did not have enough statistical power. An adequate power would have required 100 hospitals instead of the 23 hospitals studied.

6. Grasso S, Fanelli V, Cafarelli et al. Effects of High versus Low PEEP in ARDS. *Am J Respir Crit Care* 2005;17(9):1002-8.

BACKGROUND

The ALVEOLI (Higher vs. Lower PEEP in Patients with ARDS) study[4] showed improved oxygenation and decreased oxygen requirements with the higher PEEP strategy but no difference in outcomes between targeting higher PEEP vs. lower PEEP in patients with ARDS. The arguments against the results of this trial were that patients were randomly allocated to either a high PEEP strategy or a low PEEP strategy. However when patients are subjected to a high PEEP strategy, they can either respond positively with an increase in lung recruitment that leads to an increase in end-expiratory lung volume and improved oxygenation or they can respond negatively with minimal lung recruitment and lung overinflation.

METHODS

19 patients were subjected to both a lower PEEP (9 ± 2 cm H_2O) and higher PEEP (16 ± 1 cm H_2O). The aim of the study was to look at the effect of high PEEP on these 19 patients looking at the percentage of them obtaining significant alveolar recruitment and improved oxygenation.

FINDINGS

In 9 patients (recruiters), the higher PEEP strategy resulted in significant alveolar recruitment,improvement in oxygenation and reduced static lung elastance.

In 10 patients (non-recruiters), alveolar recruitment was minimal, no improvement in oxygenation and increased static lung elastance.

CONCLUSION

Higher PEEP strategies should only be targeted in patients who have recruitable lungs.

COMMENTS

1. The ALVEOLI study was flawed in this aspect because in this study all patients were randomised to either a high or low PEEP strategy. Some of the patients who were randomised to high PEEP strategy might have been non-recruiters and thus the higher PEEP would have lead to lung overinflation.
2. Alveolar recruitment was not used in the ALVEOLI study. This brings into question the relevance of the use of the recruitment maneuver to enhance the amount of lung that is opened and remains open with PEEP.

REFERENCES

1. Bernard GR, Vincent JL et al.Efficacy and safety of recombinant human activated protein C for severe sepsis (Recombinant human protein C Worldwide Evaluation in Severe Sepsis –PROWESS study group). *N Engl J Med* 2001;344:699-709.
2. Connors AF, Speroff TS et al. The effectiveness of right heart catheterisation in the initial care of critically ill patients. *JAMA* 1996;276:889-97.
3. Van den Berghe G, Wouters P et al. Intensive insulin therapy in the critically ill patients. *N Engl J Med* 2001;345:1359-67.
4. ARDS Clinical Trials Network. Higher vs. Lower PEEP in patients with ARDS (ARDS Network Assessment of Low Tidal Volume and Elevated End-expiratory Lung Volume to Obviate Lung Injury – ALVEOLI study). *N Engl J Med* 2004;352:327-36. E

JOURNAL IMPACT FACTOR – WHAT DOES IT MEAN?

Dr Anselm Suresh Rao

Department of Anaesthesia and Intensive Care, Selayang Hospital, Selangor, Malaysia

A journal's impact factor (JIF) is based on 2 elements:-

A. The numerator – the number of citations in the current year to items published in the previous two years. In other words, the number of times a paper in any journal, for that current year of assessment,makes a reference to items published in that journal in the previous two years.

B. The denominator – the number of substantive articles and reviews published in that particular journal the same two years.

Thus, JIF = A / B

For example if you look a Table I, for the *New England Journal of Medicine*:-

Numerator = 28,696

Denominator = 744

JIF = 28,696 / 744 = 38.6

Sorting by impact factor allows the inclusion of many small (in terms of number of issues or articles published) but influential journals. This is because by dividing the number of citations by the denominator, it enables comparison between journals that publish a few issues or a small number of articles every year to journals that publish a large number of papers or articles per year. (Table II)

It is normal practice for medical departments and libraries to decide which journals to subscribe based on Impact Factor listings. In addition to this, it helps authors to decide where to submit their articles. As a general rule, a journal with a high impact factor would be among the more prestigious ones.

Thomson Scientific (formerly Thomson ISI) produces Journal Citation Reports (JCR) with published rankings of journals by impact factor. Today, the JCR includes every journal citation in more than 5000 journals; about 15 million citations from 1 million source item per year.

The main shortcoming of the JIF is that there may be many citations from a particular journal but the scientific data may not be clinically relevant or the scientific quality not of a high standard. There is also the issue of self-citation where articles from a particular journal are frequently cited just to increase its impact factor. Although JIF has some shortcomings, it still is regarded as a quality ranking of journals and the results are anticipated every year.

Another method used to look at the quality or the clinical relevance of a particular article is by looking at the methodology of the research. The general consensus is that meta-analyses and systematic reviews of randomized controlled trials (RCT's) support the highest level of evidence.

The amount of research available from major anaesthetic journals is rising.When applying the results of this research in daily practice, apart from looking at journal quality in terms of impact factor per say, one should also use, if available, only highly validated research using level I or II evidence. (Table III)

REFERENCES

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2. Journal Citation Reports ISI (http://scientific.thomson.com/products/jcr/) 2005
3. Lauritsen J and Moller AM.Clinical relevance in anesthesia journals. *Curr Opin Anaesthesiol* 19:166-70,2006.
4. Centre for Evidenced-based Medicine Levels of Evidence (http://cebm.net) 2005

TABLE I
Selected journals ranked by impact factor in 2004

		Published Articles		Citations done in 2004	
Journal	2004 impact factor	2004	2002 + 2003	To 2002 + 2003 articles	To all articles ever published
NEJM	38.6	316	744	28,696	159,498
Nature	32.2	878	1748	56,255	363,274
Science	31.9	845	1736	55,297	332,803
JAMA	24.8	351	751	18,648	88,864
Lancet	21.7	415	1020	22,147	126,002
Annals of Int.Med.	13.1	189	396	5193	36,932
Ann Rev of Med.	11.2	29	65	728	3188
Am J Resp. CC	10.8	-	-	-	-
Arch of Int.Med.	7.5	282	567	4257	26,525
BMJ	7.0	623	1222	8601	56,807

TABLE II
Impact factors of anesthesia journals (2004)

Name of journal	Impact factor
Pain	4.061
Anesthesiology	4.055
Clin J Pain	3.058
Br J Anaesth	2.469
Anesth Analg	2.180
Anaesthesia	2.163
Anaesth Analg	2.180
Eur J Pain	1.811
Reg Anesth Pain Med	1.600
Acta Anaesth Scand	1.413
Can J Anaesth	1.208
J Clin Anesth	1.208
J Neurosurg Anesth	1.163
Eur J Anaesth	1.156
Pediatr Anesth	1.105
J Cardiothorac Vasc Anesth	1.000

TABLE III
Level of evidence for ranking the validity of evidence

Level of evidence	Description
1a	Systematic review of Randomized Controlled Trials (RCTs)
1b	Individual RCT (with narrow confidence interval)
1c	All or none case-series (when all patients died before the prescription Rx became available, but some now survive on it; or when some patients died before the Rx became available, but none now die on it)
2a	Systematic review of cohort studies
2b	Individual cohort study (including low quality RCT)
2c	'Outcomes' research; Ecological studies
3a	Systematic review of case-control studies
3b	Individual case-control study
4	Case-series
5	Expert opinion without explicit critical appraisal, or based on physiology, bench research or 'first principles'