

*Secretary*

**Annual Scientific Meeting on Intensive Care**

# ASMIC 2012

**28<sup>th</sup> – 30<sup>th</sup> SEPTEMBER 2012**

Shangri-La Hotel, Kuala Lumpur  
Malaysia



Souvenir Programme  
& Abstract Book



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## Message from the President, Malaysian Society of Intensive Care



It gives me great pleasure to pen a few words here.

First of all, I welcome all of you to this Annual Scientific Meeting.

The Malaysian Society of Intensive Care was established three years ago. This Annual Scientific Meeting has become its main activity and I take this opportunity to thank Dr Tai Li Ling and her team for tirelessly organising this meeting since its inception, allowing all of us to update ourselves and meet one another to share experiences.

Though a relatively young discipline, intensive care has progressed at a tremendous pace. The Society hopes to promote the art and science of Intensive Care in Malaysia in tandem with the world development. It also thrives to represent the profession in matters related to Intensive Care.

Thus far, the Society has put up a fee schedule for registered intensivists and has supported a proposal of three levels of care for the intensive care units. These suggestions have been accepted in principle by the authority and hopefully will materialise in the near future.

This year, the Society subscribes to three online international journals for its members. I hope the members find this subscription useful.

Intensive care provides continuous monitoring and high-intensity therapy, needing lots of both human and technical resources. I hope this scientific meeting will stimulate some of you to take up intensive care as your profession so as to contribute to the care of the critically ill patients.

I wish all of you a fruitful and pleasant meeting.

Dr Tan Cheng Cheng

## Message from the Organising Chairperson, ASMIC 2012



Dear friends and colleagues,

It is my distinct pleasure and honour to welcome you to the Annual Scientific Meeting on Intensive Care, ASMIC 2012, organised by the Malaysian Society of Intensive Care. This year, we will once again, be holding our annual meeting in Shangri-La Hotel, Kuala Lumpur.

Building on the success of previous meetings, the conference will feature plenary lectures, breakout symposia, "ask the expert", as well as oral and poster sessions. The conference will provide the ideal forum to stimulate ideas and establish collaborations as well as to initiate discussions in the various aspects of intensive care medicine with aims to further improve the quality of care and quality of life for the critically ill patients. In addition to the main conference, there will be a pre-conference workshop for those who are keen to gain experience in performing ultrasonography in the intensive care patients.

Again, welcome to ASMIC 2012. I hope that you will find the conference informative and enjoyable, that you will take the opportunity to meet new friends, catch up with old friends, and that you will have a great stay in Kuala Lumpur.

Sincerely yours,

Dr Tai Li Ling

## Malaysian Society of Intensive Care Office Bearers 2011 – 2013

President

Dr Tan Cheng Cheng

Vice-President

Dr Tai Li Ling

Secretary

Dr Shanti Ratnam

Assistant Secretary

Assoc Prof Dr Tang Swee Fong

Treasurer

Datuk Dr V Kathiresan

Committee Members

Dr Shanti Rudra Deva

Dr Jenny Tong May Geok

Co-opted Committee Members

Dr Noor Airini Ibrahim

Dr Ismail Tan Mohd Ali Tan

Dr Louisa Chan Yuk Li

## Organising Committee ASMIC 2012

Dr Tai Li Ling (*Chairperson*)

Datuk Dr V Kathiresan

Assoc Prof Dr Tang Swee Fong

Dr Shanti Rudra Deva

Dr Laila Kamaliah Kamalul Bahrin

Dr Kamal-Bashar Abu Bakar

## Invited Faculty

Australia

Anthony Slater

Belgium

Jean-Louis Vincent

Hong Kong

Gavin Joynt

India

Ram Rajagopalan

Italy

Claudio Ronco

Singapore

Manish Kaushik

United Kingdom

Carl Waldmann

United States of America

Nicole Shilkofski

Malaysia

Ahmad Jamal Mokhtar

Ahmad Shaltut Othman

Anis Suraya Ghani

Louisa Chan Yuk Li

Claudia Cheng Ai Yu

Chor Yek Kee

Goh Ching Yan

Ho Siew Eng

Ismail Tan Mohd Ali Tan

Kamal-Bashar Abu Bakar

Laila Kamaliah Kamalul Bahrin

Lee See Pheng

Lela Yasmin Mansor

Lim Chew Har

Mahamarowi Omar

Mariani Bachok

Mohd Basri Mat Nor

Mohd Ridhwan Md Noor

Nahla Irtiza Ismail

Nik Azman Nik Adib

Noor Airini Ibrahim

Noor Zaimy Azizan

Nor'azim Mohd Yunus

Raha Abdul Rahman

Razman Jarmin

Shahridan Mohd Fathil

Shanthi Ratnam

Shanthi Viswanathan

Shanti Rudra Deva

Suresh Venugobal

Tai Li Ling

Tan Cheng Cheng

Tang Swee Fong

Teh Keng Hwang

Teo Aik Howe

Teoh Sim Chuah

Thavaranjitham Sandrasegaram

Toh Khay Wee

Jenny Tong May Geok

Vanitha Sivanaser

Wan Nasrudin Wan Ismail

Zainisda Zainuddin

## Programme Summary

Date	28 <sup>th</sup> September 2012 Friday	29 <sup>th</sup> September 2012 Saturday	30 <sup>th</sup> September 2012 Sunday
0800 – 0830	Registration	LET'S ASK THE EXPERT 1	LET'S ASK THE EXPERT 2
0830 – 0900	PLENARY 1	PLENARY 2	PLENARY 4
0900 – 0930			
0930 – 1000	Opening Ceremony	PLENARY 3	PLENARY 5
1000 – 1030	Tea / Trade Exhibition	Tea / Trade Exhibition	Tea / Trade Exhibition
1030 – 1100			
1100 – 1130	SYMPOSIUM 1 Respiratory	SYMPOSIUM 7 Sepsis	SYMPOSIUM 13 Renal
1130 – 1200	SYMPOSIUM 2 Paediatrics I	SYMPOSIUM 8 Paediatrics II	SYMPOSIUM 14 Neurology
1200 – 1230	SYMPOSIUM 3 Miscellaneous	SYMPOSIUM 9 Organisation	
1230 – 1300			
1300 – 1330	Lunch	Lunch Satellite Symposium (Hospira)	Lunch
1330 – 1400	Friday Prayers		
1400 – 1430			
1430 – 1500			
1500 – 1530	SYMPOSIUM 4 Cardiovascular	SYMPOSIUM 10 Respiratory	SYMPOSIUM 11 Intensive Care for Nurses II
1530 – 1600	SYMPOSIUM 5 Intensive Care for Nurses I	SYMPOSIUM 11 Intensive Care for Nurses I	SYMPOSIUM 12 Miscellaneous
1600 – 1630			
1630 – 1645	Tea	Tea	
1645 – 1745	FREE PAPERS	Tea Satellite Symposium (Pfizer)	MSIC President Meeting With Members

## PRE-CONGRESS WORKSHOP BASIC ULTRASOUND FOR CRITICAL CARE

27<sup>TH</sup> SEPTEMBER 2012, THURSDAY

Venue: Sarawak Ballroom, Shangri-La Hotel

Faculty Members: **Adi Osman, Shahridan Mohd Fathil, Farina Mohd Salleh, Mahathar Abdul Wahab, Saiful Safuan Sani, Julina Md Noor, Lim Teng Cheow**

### INTRODUCTION

This compact one-day course is designed for the healthcare providers who manage the critically ill or injured. It is structured with lectures, interactive case studies and hands-on stations.

The programme is conducted by certified World Interactive Network focused on Critical Ultrasound (WINFOCUS) trainers.

### OBJECTIVES

To educate healthcare professionals on how to perform and interpret ultrasound examinations in the critical care setting.

1. Discuss the basic fundamentals of ultrasound physics/instrumentation and recognise image artifacts.
2. Demonstrate the operation of the ultrasound system controls and probe selection.
3. Perform routine scan protocols for evaluation of the lung, adult heart, fluid status and shock.
4. Recognise normal/abnormal image characteristics of the above.
5. Demonstrate ultrasound applications in the evaluation of the critically ill/injured unstable patient.

0800 – 0815	Registration
0815 – 0830	Welcome address <b>Adi Osman / Shahridan Mohd Fathil</b>
0830 – 0900	Basic ultrasound physics <b>Farina Mohd Salleh</b>
0900 – 0930	Lung ultrasound <b>Adi Osman</b>
0930 – 1000	Basic echocardiography <b>Mahathar Abdul Wahab</b>
1000 – 1030	Focused Assessment of Transthoracic Echocardiography (FATE) <b>Saiful Safuan Sani</b>
1030 – 1100	Tea
1100 – 1130	Extended Focused Assessment Sonography for Trauma (eFAST) <b>Shahridan Mohd Fathil</b>
1130 – 1200	Inferior vena cava and aorta <b>Julina Md Noor</b>
1200 – 1230	Ultrasound guided procedures <b>Shahridan Mohd Fathil</b>
1230 – 1300	Abdominal and Cardiac Evaluation with Sonography in Shock (ACES) <b>Adi Osman</b>
1300 – 1400	Lunch
1400 – 1630	PRACTICAL STATIONS Station 1: ECHO 1 Station 2: ECHO 2 Station 3: Airway, Lung Ultrasound Station 4: eFAST, IVC, Aorta Station 5: Procedures
1630 – 1700	Tea & Closing Remarks

Daily Programme  
28<sup>TH</sup> SEPTEMBER 2012, FRIDAY

0800 – 0845	REGISTRATION			Sabah
0845 – 0930	<b>PLENARY 1</b> Chairperson: Shanti Rudra Deva New advances in the treatment of severe sepsis and septic shock (page 14) Jean-Louis Vincent			Sabah
0930 – 1000	OPENING CEREMONY			Sabah
1000 – 1030	Tea / Trade Exhibition			Sabah
1030 – 1230	Sabah <b>SYMPOSIUM 1</b> <b>Respiratory</b> Chairperson: Louisa Chan Yuk Li	Kedah/Selangor <b>SYMPOSIUM 2</b> <b>Paediatrics I</b> Chairperson: Pon Kah Min	Sarawak <b>SYMPOSIUM 3</b> <b>Miscellaneous</b> Chairperson: Lee See Pheng	
1030 – 1100	Management of ARDS: What is really evidence-based? (page 14) Jean-Louis Vincent	Transfusion strategies in children (page 16) Tang Swee Fong	Skin fails too: Acute skin failure in ICU (page 19) Noor Zalmi Azizan	
1100 – 1130	Capnography from intubation to extubation? (page 15) Mohd Basri Mat Nor	Hyponatremia: Should we abandon hypotonic fluid (page 17) Teh Keng Hwang	Managing intra-abdominal hypertension in ICU Gavin Joynt	
1130 – 1200	Management of tracheostomy emergencies Laila Kamaliah Kamalul Bahrin	Infection control: What works and what doesn't? (page 18) Chor Yek Kee	Liver dysfunction in the ICU (page 20) Claudia Cheng Ai Yu	
1200 – 1230	Recruitment maneuvers: Are they safe after all? (page 16) Ram Rajagopalan	Critical care outside the PICU walls (page 19) Anthony Slater	Nutrition for the critically ill: How much, how soon (page 20) Shanti Rudra Deva	
1230 – 1430	Lunch / Friday Prayers			
1430 – 1630	Sabah <b>SYMPOSIUM 4</b> <b>Cardiovascular</b> Chairpersons: Noor Airini Ibrahim / Teh Sim Chuah	Sarawak <b>SYMPOSIUM 5</b> <b>Intensive Care For Nurses I</b> Chairperson: Foong Kit Weng	Kedah/Selangor <b>SYMPOSIUM 6</b> <b>Pharmacotherapy</b> Chairperson: Ismail Tan Muid Ali Tan	
1430 – 1500	Fluid management in the critically ill: The 5B approach (page 21) Claudio Ronco	Sedation and pain control in ICU (page 22) Wan Nasrudin Wan Ismail	Pharmacotherapy for the obese patient Jenny Tong May Geok	
1500 – 1530	Peri-operative haemodynamic optimisation Raha Abdul Rahman	Reducing central-line acquired blood-stream infection (page 23) Ahmad Jamal Mokhtar	Albumin in critically ill patients (page 24) Mahamarowi Omar	
1530 – 1600	Central venous pressure: Not so simple a measurement (page 21) Lim Chew Har	Nursing handover of critically ill patient (page 23) Mariam Bachok	Anticoagulants other than Warfarin and Heparin (page 25) Ahmad Shaltut Othman	
1600 – 1630	Vasoactive drugs revisited (page 22) Mohd Ridwan Md Noor	The role of nurses in end of life care in ICU (page 24) Nik Azman Nik Adib	N-acetylcysteine in non-paracetamol-induced acute liver failure (page 25) Tai Li Ling	
1630 – 1645	Tea			
1645 – 1745	<b>FREE PAPERS</b> (page 42-48) Chairperson: Kamal-Bashar Abu Bakar			Kedah/Selangor

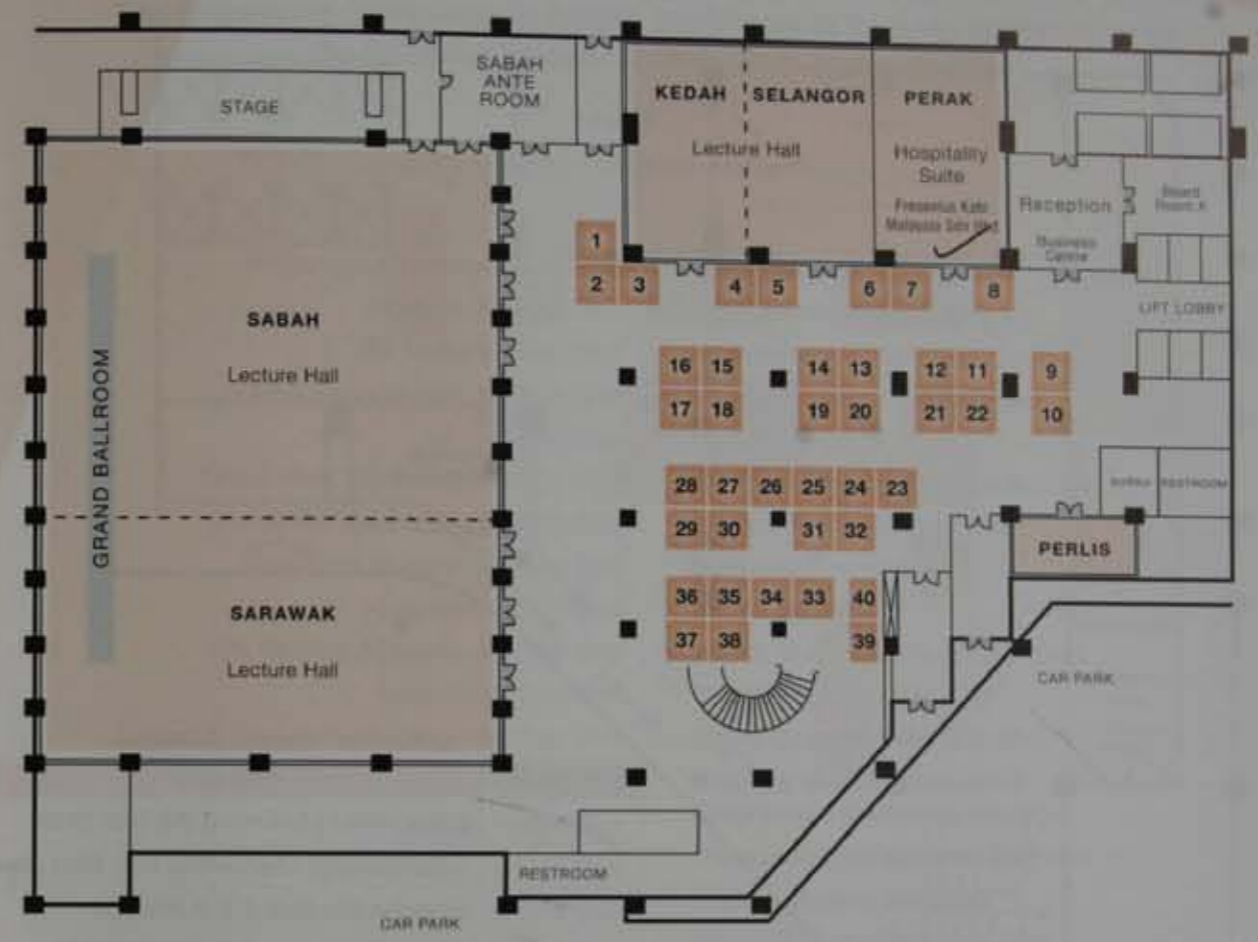
Daily Programme  
29<sup>TH</sup> SEPTEMBER 2012, SATURDAY

0800 – 0900	<b>LET'S ASK THE EXPERT 1</b> Chairperson: Foong Kit Weng How do I deal effectively with medical futility in ICU? Gavin Joynt			Sabah
0900 – 0945	<b>PLENARY 2</b> Chairperson: Shanthy Ratnam Evolution of extracorporeal organ support in critically ill patients (page 26-27) Claudio Ronco			Sabah
0945 – 1030	<b>PLENARY 3</b> Chairperson: Shanthy Ratnam Guidelines, standardization and outcomes in intensive care units (page 27) Ram Rajagopalan			Sabah
1030 – 1100	Tea / Trade Exhibition			
1100 – 1300	Sabah <b>SYMPOSIUM 7</b> <b>Sepsis</b> Chairpersons: Mohd Basri Mat Nor / Mohd Ridwan Md Noor	Kedah/Selangor <b>SYMPOSIUM 8</b> <b>Paediatrics II</b> Chairperson: Choong Phaik Sian	Sarawak <b>SYMPOSIUM 9</b> <b>Organisation</b> Chairpersons: Jenny Tong May Geok / Raha Abdul Rahman	
1100 – 1130	The septic clock: Timing of interventions in the management of sepsis Noor Airini Ibrahim	Managing the difficult paediatric airway Thavaranjitham Sandrasegaram	Cost reduction in ICU – What can we do about it? (page 29) Tan Cheng Cheng	
1130 – 1200	Fever in sepsis. Should we treat it? (page 28) Kamal-Bashar Abu Bakar	Inotropes and vasopressors in the ICU Anis Suraya Ghani	Patient safety: Medication errors and adverse drug event in ICU Lee See Pheng	
1200 – 1230	Empiric antibiotics in the critically ill: A double-edged sword? Louisa Chan Yuk Li	Updates and outcomes in paediatric resuscitation Nicole Shilkofski	Clinical trials in intensive care: Many disillusion (page 30) Jean-Louis Vincent	
1230 – 1300	Intraabdominal sepsis: A surgical perspective Razman Jarmin	Outcome assessment in PICU: What outcomes do we want? (page 28) Anthony Slater	Ethics in organ transplantation (page 30) Lela Yasmin Mansor	
1300 – 1430	Lunch Satellite Symposium (Hospira) ✓ US SCCM (Society Critical Care Medicine) 2012 International Sedation Guidelines: Pain, Agitation and Delirium – Video & Webcast Richard Biker			Sabah
1430 – 1630	Sabah <b>SYMPOSIUM 10</b> <b>Respiratory</b> Chairperson: Lim Chew Har	Sarawak <b>SYMPOSIUM 11</b> <b>Intensive Care For Nurses II</b> Chairperson: Ahmad Jamal Mokhtar	Kedah/Selangor <b>SYMPOSIUM 12</b> <b>Miscellaneous</b> Chairpersons: Ahmad Shaltut Othman / Wan Nasrudin Wan Ismail	
1430 – 1500	Ventilator dyssynchrony: The basics Gavin Joynt	Delirium in the ICU patients (page 31) Nahla Irtiza Ismail	Resuscitation goals in trauma: Haemodynamics, oxygenation and coagulation Teo Aik Hoon	
1500 – 1530	Non-invasive ventilation "The nitty gritty" (page 31) Toh Khay Wee	Prevention and treatment of hospital-acquired pressure ulcers (HAPU) (page 32) Zainisda Zainuddin	Balanced review of the balanced solutions (page 34) Nor'azim Mohd Yunus	
1530 – 1600	Pulmonary transfusion reaction: TACO vs TRALI Suresh Venugopal	Transport of critically ill patient: 10 key things to get the patient ready (page 32) Teh Sim Chuah	Ultrasound in resuscitation (page 34) Shahridan Mohd Fathil	
1600 – 1630	Chest X-rays in the ICU: Can we do with less? Shanthy Ratnam	The impact of nurses' role in health care improvement (page 33) Ho Siew Eng	ICU follow up and rehabilitation (page 33-37) Carl Waldmann	
1630 – 1645	Tea			
1645 – 1745	Sarawak Tea Satellite Symposium (Pfizer) ✓ Chairperson: Melor Mansor New Paradigms in the Management of Invasive Candidiasis in the ICU Asok Kurup		Kedah/Selangor <b>MSIC PRESIDENT MEETING WITH MEMBERS</b>	

Daily Programme  
30<sup>TH</sup> SEPTEMBER 2012, SUNDAY

0800 - 0900	<b>LET'S ASK THE EXPERT 2</b> Chairperson: <i>Kamal-Bashar Abu Bakar</i> How do I optimise fluid management in my patient? <i>Ram Rajagopalan</i>		Sabah
0900 - 0945	<b>PLENARY 4</b> Chairperson: <i>Tang Swee Fong</i> ICU admission when resources are limited - The moral basis and outcome triage <i>Gavin Joynt</i>		Sabah
0945 - 1030	<b>PLENARY 5</b> Chairperson: <i>Tang Swee Fong</i> Safety and quality in critical care (page 37) <i>Anthony Slater</i>		Sabah
1030 - 1100	Tea / Trade Exhibition		
1100 - 1300	<b>SYMPOSIUM 13</b> <b>Renal</b> Chairpersons: <i>Suresh Venugopal / Nik Azman Nik Adib</i>	<b>SYMPOSIUM 14</b> <b>Neurology</b> Chairpersons: <i>Laila Kamaliah Kamalul Bahrin / Nahla Irtiza Ismail</i>	Sabah / Kedah/Selangor
1100 - 1130	Renal replacement therapy in acute kidney injury. When and how much (page 38-39) <i>Claudio Ronco</i>	Intensive care unit-acquired weakness: An overview <i>Ismail Tan Mohd Ali Tan</i>	
1130 - 1200	Patient safety during renal support therapy in ICU <i>Manish Kaushik</i>	Improving outcome after cardiac arrest (page 40) <i>Ram Rajagopalan</i>	
1200 - 1230	Cardio-renal syndromes: What are they? (page 39) <i>Goh Ching Yan</i>	Neurological emergencies in the Intensive Care: A case study based approach (page 40) <i>Shanthi Viswanathan</i>	
1230 - 1300	Optimal antibiotic dosing in patients receiving CRRT <i>Manish Kaushik</i>	Intensive care management of subarachnoid haemorrhage (page 41) <i>Vanitha Sivanaser</i>	
1300 - 1400	Lunch		Sarawak

Floor Plan & Trade Exhibition  
(Basement 2)



BOOTH NO	COMPANY	BOOTH NO	COMPANY
<del>1</del>	<del>Pall Thai Medical Sdn Bhd &amp; Diagnostica Marketing Sdn Bhd</del>	<del>19</del>	<del>AstraZeneca Sdn Bhd</del>
<del>2</del>	<del>Hospira (M) Sdn Bhd</del>	<del>20</del>	<del>Terumo Corporation</del>
<del>3</del>	<del>Med 8 Sdn Bhd</del>	<del>21 &amp; 22</del>	<del>Suria-Medik Sdn Bhd</del> ⇒ 50% unpaid
<del>4 &amp; 5</del>	<del>Hospimetrix Sdn Bhd</del>	<del>23</del>	<del>Star Medic Sdn Bhd</del> ⇒ LAV ASMIC 12-088
<del>6 &amp; 7</del>	<del>Abbott Laboratories (M) Sdn Bhd</del>	<del>24</del>	<del>Nestlé Products Sdn Bhd</del>
<del>8</del>	<del>Norse Crown Co (M) Sdn Bhd</del>	<del>25, 26, 27, 28, 29, 30 &amp; 31</del>	<del>Malaysian Healthcare Sdn Bhd</del>
<del>9</del>	<del>Gambro Renal Care (M) Sdn Bhd</del>	<del>32</del>	<del>Biosensors International P/L</del>
<del>10</del>	<del>Primed Medical Sdn Bhd</del>	<del>33</del>	<del>Marpolig Sdn Bhd</del>
<del>11 &amp; 12</del>	<del>Covidien</del>	<del>34</del>	<del>Janssen</del>
<del>13</del>	<del>Marche World (M) Sdn Bhd</del>	<del>35 &amp; 36</del>	<del>Schiller (Malaysia) Sdn Bhd</del>
<del>14</del>	<del>Merck Sharp &amp; Dohme (I.A.) Corp</del>	<del>37 &amp; 38</del>	<del>IDS Medical Systems (M) Sdn Bhd</del>
<del>15 &amp; 16</del>	<del>Goodlabs Medical (M) Sdn Bhd</del>	<del>39</del>	<del>Anugerah Saintifik Sdn Bhd</del>
<del>17 &amp; 18</del>	<del>KL Med Supplies (M) Sdn Bhd</del>	<del>40</del>	<del>Lifetronic Medical System Sdn Bhd</del>

## Floor Plan & Trade Exhibition (Lower Lobby)



BOOTH NO	COMPANY
<del>1 &amp; 2</del>	<del>Dispo-Med Marketing (M) Sdn Bhd</del>
<u>3</u>	Pharmaniaga Marketing Sdn Bhd
<del>4</del>	<del>Draeger Medical S E A Pte Ltd</del>
<del>5</del>	<del>Shriro (Malaysia) Sdn Bhd/ Meditop</del>
<del>6</del>	<del>Baxter Healthcare (M) Sdn Bhd</del>
<del>7 &amp; 8</del>	<del>Philips Healthcare</del>
<del>9</del>	<del>Utas Maju Sdn Bhd</del>
<del>10 &amp; 11</del>	<del>3M Malaysia Sdn Bhd</del>
<del>12</del>	<del>Ideal Healthcare Sdn Bhd</del>
<u>13</u>	Alere Health Sdn Bhd
<del>14 &amp; 15</del>	<del>Pfizer (Malaysia) Sdn Bhd</del>
<del>16</del>	<del>Intermedex (M) Sdn Bhd</del>
<del>17</del>	<del>Schmidt Biomedtech Sdn Bhd</del>
<del>18</del>	<del>Hexamine Sdn Bhd</del>
<del>19</del>	<del>Aerotrach Sdn Bhd</del>
<del>20</del>	<del>Gemilang Asia Technology Sdn Bhd</del>
<del>21</del>	<del>Transmedic Healthcare Sdn Bhd</del>
<del>22</del>	<del>ITL Healthcare S E A Sdn Bhd</del>

## Thank You

The Organising Committee of ASMIC 2012 records its deep appreciation to the following for their contributions and support:

### Ministry of Health Malaysia

- |  |   |
|--|---|
| Malaysian Healthcare Sdn Bhd           | Hexamine Sdn Bhd  |
| Hospira (M) Sdn Bhd                    | Ideal Healthcare Sdn Bhd                                  |
| 3M Malaysia Sdn Bhd                    | Intermedex (M) Sdn Bhd                                    |
| Abbott Laboratories (M) Sdn Bhd        | ITL Healthcare S E A Sdn Bhd                              |
| Covidien                               | Janssen   |
| Dispo-Med Marketing (M) Sdn Bhd        | Lifetronic Medical System Sdn Bhd                         |
| Fresenius Kabi Malaysia Sdn Bhd        | Marche World (M) Sdn Bhd                                  |
| Goodlabs Medical (M) Sdn Bhd           | Marpoliq Sdn Bhd  |
| Hospimetrix Sdn Bhd                    | Med 8 Sdn Bhd   |
| IDS Medical Systems (M) Sdn Bhd        | Merck Sharp & Dohme (I.A.) Corp                           |
| Insan Bakti Sdn Bhd                    | Nestlé Products Sdn Bhd                                   |
| Jebsen & Jessen Technology (M) Sdn Bhd | Norse Crown Co (M) Sdn Bhd                                |
| KL Med Supplies (M) Sdn Bhd            | Pall Thai Medical Sdn Bhd & Diagnostica Marketing Sdn Bhd |
| Philips Healthcare                     | Pharmaniaga Marketing Sdn Bhd                             |
| Pfizer (Malaysia) Sdn Bhd              | Primed Medical Sdn Bhd                                    |
| Schiller (Malaysia) Sdn Bhd            | Schmidt Biomedtech Sdn Bhd                                |
| Suria-Medik Sdn Bhd                    | Shriro (Malaysia) Sdn Bhd / Meditop                       |
| Aerotrach Sdn Bhd                      | Star Medic Sdn Bhd  |
| Alere Health Sdn Bhd                   | Terumo Corporation  |
| Anugerah Saintifik Sdn Bhd             | Transmedic Healthcare Sdn Bhd                             |
| AstraZeneca Sdn Bhd                    | Utas Maju Sdn Bhd   |
| Baxter Healthcare (M) Sdn Bhd          | Diagnostica Marketing Sdn Bhd                             |
| Biosensors International P/L           | Roche (M) Sdn Bhd   |
| Draeger Medical S E A Pte Ltd          | Unipress Distributor Sdn Bhd                              |
| Gambro Renal Care (M) Sdn Bhd          |   |
| Gemilang Asia Technology Sdn Bhd       |   |



## NEW ADVANCES IN THE TREATMENT OF SEVERE SEPSIS AND SEPTIC SHOCK

J L Vincent

Department of Intensive Care, Erasme Hospital, Université libre de Bruxelles, Belgium

The treatment of sepsis can broadly be considered under three headings: Eradication of infection, hemodynamic resuscitation and organ support, and modulation of the sepsis response. With few new antimicrobial agents in the pipeline and organ support already of a fairly high standard, the area of most interest in terms of new advances lies in immunomodulation. Despite considerable amounts of research, and following the withdrawal of drotrecogin (activated) from the market, no intervention is currently available that specifically targets the immune response in patients with sepsis. Problems related largely to the difficulties conducting randomized clinical trials in the very heterogeneous, critically ill, septic patient population have led to many more negative than positive results with potential new therapies. But, with the large number of patients affected annually by sepsis and the high mortality rates, the search for new effective agents or interventions must continue. As the complex immune response to sepsis continues to be investigated, potential new pathways and targets for therapeutic intervention are being discovered. Importantly, the timing of therapies is important as the immune response varies over time. Current targets of specific interest include the apoptotic pathway, mitochondria-targeted antioxidants, and negative costimulatory molecules. The place of extracorporeal elimination techniques also needs to be further elaborated. Ultimately, it is likely that physicians will have a range of different therapies available to treat sepsis and the challenge then will be how to decide which approach(es) to use in which patient and when. Improved biological testing to allow accurate and repeated determination of a patient's pro-/anti-inflammatory balance will enable therapies to be targeted more specifically and adjusted according to response. In the future, sepsis therapy will thus be based on a much more personalized approach, with interventions selected for individual patients. Until such immunomodulatory therapies are available, the focus of management must remain on early appropriate antibiotic therapy and eradication of any infectious foci, adequate resuscitation with fluids and vasoactive agents as needed, and support of failing organs when required.

## MANAGEMENT OF ARDS: WHAT IS REALLY EVIDENCE-BASED?

J L Vincent

Department of Intensive Care, Erasme Hospital, Université libre de Bruxelles, Belgium

ARDS remains a major problem in the intensive care unit (ICU) and is associated with high mortality rates. Considerable effort has been put into determining how best to manage the patient with ARDS and into developing effective therapeutic strategies for these patients, but little evidence has actually been provided to support one management approach or another. No specific pharmacological intervention, including inhaled nitric oxide, surfactant, beta2-adrenergic agents or intravenous corticosteroids, has been consistently shown to improve outcomes. The underlying cause of the ARDS must be treated whenever possible, e.g., appropriate antibiotics for patients with sepsis. Studies have demonstrated that the use of high tidal volumes is clearly harmful and should be avoided, but the optimal tidal volume has not been clearly defined. Higher positive end-expiratory pressure (PEEP) levels may be beneficial in moderate and severe ARDS, but how to determine how much PEEP to use in individual patients is unclear. Nursing patients in the prone position may be beneficial and should be considered when feasible, but can be technically difficult. Fluid overload should be avoided, but not to the extent that the patient becomes hypovolemic. Short-term neuromuscular blockade may have a place in early ARDS, but later, sedation should be kept a minimum. High frequency ventilation and ECMO may have a role in some patients with severe ARDS. Despite considerable research, the evidence-base for management of patients with ARDS thus remains limited, and many questions remain unanswered, including how best to assess fluid needs and the specific place for various ventilator modes.

## CAPNOGRAPHY FROM INTUBATION TO EXTUBATION?

Mohd Basri bin Mat Nor

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In addition to clinical assessment, another important aspect of caring for mechanically ventilated patients is monitoring. Capnography which refers to continuous analysis and recording of the CO<sub>2</sub> concentration in respiratory gas, is considered a standard of care during anaesthesia. It has been suggested that capnography be available for patients with acute ventilatory failure on mechanical ventilation. The question is "should every mechanically ventilated patient be monitored with capnography from intubation to extubation?"

Capnography is a safe noninvasive monitoring and there are no absolute contraindications in mechanically ventilated patients provided that the data is interpreted with consideration given to the patient's clinical condition. Although there are few data to support continuous capnography in ICU, extrapolating the substantial data from the OR setting is reasonable. There are 3 broad categories of indications for capnography: verification of artificial airway placement; assessment of pulmonary circulation and respiratory status and optimization of mechanical ventilation.

Continuous capnography from intubation to extubation offers several advantages based on the following basic principles. The potential benefits of capnography clearly outweigh any potential risks, life-threatening airway disasters can be prevented, important changes in circulatory and respiratory status can be detected sooner than with pulse oximetry, and mechanical ventilation can be optimized while minimizing the duration of ventilation.

Capnography has few limitations and it is important to note that it is not a substitute for assessing the PaCO<sub>2</sub>. Both sampling errors and alterations in V/Q status can cause inaccuracy. Diseases and conditions that increase dead space, intrapulmonary shunt (e.g. parenchymal diseases) or extrapulmonary shunt (e.g. cyanotic heart diseases) increase the difference between PETCO<sub>2</sub> and PaCO<sub>2</sub>. Alterations in V/Q matching limit the accuracy of capnography in patients with abnormal pulmonary function. Certain situations may be associated with false negative and false positive readings. Inaccuracy may be caused by leaks in the ventilator circuit and clinical circumstances e.g. BP fistula and extracorporeal life support may prevent collection of expired gases.

**RECRUITMENT MANEUVERS: ARE THEY SAFE AFTER ALL?**

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While the widespread use of low-tidal volumes during mechanical ventilation has significantly improved outcomes in patients with acute lung injury and ARDS, it brings with it the risk of lung atelectasis. Alveolar recruitment, the process of re-aeration of atelectatic lung units, may be achieved by maneuvers which require the application of high trans-pulmonary pressures to increase the end-expiratory lung volume. While these maneuvers may improve oxygenation, their benefits may be countered by their tendency to enhance inflammation, induce alveolar barrier destruction and reduce alveolar fluid clearance, all of which may promote ventilator induced lung injury (VILI).

The efficacy of recruitment maneuvers in improving oxygenation is unpredictable and is affected by a large number of factors, including the methodology used for recruitment, the underlying pathology and duration of the lung injury and the basal pattern of ventilation. Additionally, recruitment maneuvers are expected to reduce regional variations in lung compliance. It is hoped that by opening up atelectatic segments and normalizing regional lung compliance, uniform gas flow during ventilatory support will not result in asymmetric hyper-aeration of non-atelectatic segments. However, recent studies show that regional elastance of atelectatic areas is largely unaffected by recruitment maneuvers & significant regional heterogeneity persists.

The questionable benefits on oxygenation and regional compliance are attained at a significant hemodynamic cost especially in hypovolemic patients and require close attention to vascular filling and right ventricular function. Significant effects on intracranial pressure and hepatic and intestinal perfusion are additional concerns during these maneuvers. Data on their safety and efficacy in humans is scanty.

Given their uncertain benefits on oxygenation and ventilation and considering the likelihood for VILI and hemodynamic compromise, it is difficult to recommend their routine use in the clinical setting today.

**TRANSFUSION STRATEGIES IN CHILDREN**

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The use of blood transfusions in the paediatric intensive care setting is common, as critically ill paediatric patients have a high incidence of anaemia at the time of admission, and throughout their stay in the paediatric intensive care unit (PICU). In certain situations such as severe anaemia, bone marrow failure and active blood loss, blood transfusions are medically necessary and may be life-saving. However, there are also risks associated with blood transfusions such as infections, transfusion reactions and fluid overload. Until recently, there has been little data to guide the use of blood transfusions in paediatric patients. Emerging data indicate that a haemoglobin transfusion threshold of  $>7\text{g/dL}$ , in haemodynamically stable children, does not yield improved outcomes for mortality or development of new or progression of multiple organ dysfunction. It has also been shown, in paediatric cardiac surgery and paediatric general surgery patients, that there is no increase in multiple organ dysfunction syndrome when a restrictive packed red cell transfusion strategy is followed. Furthermore, smaller studies have suggested that paediatric intensive care patients may be at an increased risk for morbidity and mortality when undergoing transfusions. Preventing or reducing the development of anaemia is an important strategy to reduce exposing patients to the risks associated with transfusions. Iatrogenic blood loss can be substantial in paediatric patients and efforts must be made to limit the frequency and quantity of blood draws. Further studies are required to establish an appropriate transfusion threshold for other patient subgroups such as those with sepsis, brain injury and acute respiratory distress syndrome. Until more data is available, it is advisable to evaluate each patient individually, taking into consideration that for haemodynamically stable patients, the evidence does not support transfusing until the haemoglobin level decreases to less than  $7\text{g/dL}$ .

**HYPONATREMIA: SHOULD WE ABANDON HYPOTONIC FLUID**

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Intravenous fluid therapy forms an integral part in the management of the ill child. Calculation of maintenance fluid requirement has traditionally been based on caloric expenditure equating 1ml of water with a fixed consumption of 1 kcal resulting in a convenient estimate of 100ml/100Kcal. Sodium and potassium requirement was based on urinary excretion in normal healthy breast fed infants developed more than 40 years ago by Halliday and Segar. And this has resulted in an overestimation of electrolyte free water.

However in hospitalised children there is a nonosmotic stimulation of antidiuretic hormone secondary to volume depletion, nausea, vomiting, respiratory or central nervous system disorder or the postoperative state. This leads to free water retention followed by a natriuresis that maintains fluid balance at the expense of serum osmolality.

With advances in medical care and our increasing ability to take care of very sick children, the prescription of intravenous therapy has become even more complex.

Hyponatremia is the commonest electrolyte abnormality in hospitalised patients. If PNa declines to less than 120 mmol/l brain swelling occurs resulting in herniation and devastating consequences. Children are most susceptible by having a larger brain to intracranial volume ratio than adults with less room for brain expansion. Over 60 cases of death or neurologic damage secondary to hospital acquired hyponatremia in children receiving hypotonic fluids has been reported from the past 20 years.

Multiple prospective studies in over 600 children have also demonstrated that hypotonic fluids cause acute hyponatremia and 0.9% NaCl prevents it. Hence it is important to adjust both the sodium composition and the rate of administration of intravenous fluids in order to prevent a disorder in serum sodium and volume status in the commonly encountered paediatric conditions.

The use of isotonic fluids will increase sodium intake by 2-3 fold. And this has cause concern of hypernatremia although it has not been shown in studies. Isotonic fluids have been used in adults with no problems and massive fluid bolus was not associated with hypernatremia.

In Paediatric practice the initial expansion of ECF volume is usually achieved by infusing isotonic saline but the subsequent maintenance therapy is still the use of hypotonic solutions i.e 0.18% saline despite reports of catastrophic outcomes. There is a need to change.

## INFECTION CONTROL : WHAT WORKS AND WHAT DOESN'T

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Before Louis Pasteur's Germ theory been recognized in 1864, 2 well known "infection control" measures have been well documented. Firstly, Dr Ignaz Phillip Semmelweis whom encouraged his colleague to washed their hand with 4% chlorinated lime solution which significantly reduced the mortality rate of puerperal fever. Secondly, Florence Nightingale (1820-1910), whom have taken care the wounded soldier during Crimean War. She had significantly reduced the death rate from 42 to 2% by emphasizing the sanitary condition in the care area.

In the era of advance technology and awareness of infectious disease, sadly, according to WHO, there are still 1.4 million patients worldwide are affected by healthcare-associated infections (HCAIs) at any time. In ICUs, the burden of HCAI is greatly increased. In Europe, prevalence rate of HCAIs vary from 9.7% to 31.8% and in USA from 9 to 37%, with crude mortality rate 12 to 80%. The use of invasive devices is one of the most important risk factor for the HCAIs. On the other hand, multidrug resistant pathogens are commonly involved in such infection and render effective treatment challenging.

Hand hygiene is the far easiest, cheap and effective way of infection control measure. Unfortunately, compliance is the main issue. According to WHO guideline on hand hygiene in health care, the average adherence of health care worker to recommended hand hygiene was 38.7%, worst especially for physician and intensive care staff. Increasing prevalence of Clostridium difficile and Norovirus infection are of concern.

Implementation of a VAP prevention bundle associated with reduced VAP. Is closed system suction alone will reduced VAP?

Is there difference in the rate of catheter-related bloodstream infection between subclavian, femoral and internal jugular? "Scrub the hub", the new concept?

De-escalation of antibiotic, are we doing enough?

## CRITICAL CARE OUTSIDE THE PICU WALLS

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A number of ICU outreach activities have developed from ICUs with the aim of early detection of the deteriorating patient, timely referral and safe transfer to the ICU. Paediatric experience with these strategies will be reviewed.

Rapid Response Systems (RRS) use routine nursing observation and triage principles to identify physiologically unstable patients in hospital wards to trigger a rapid systematic review. There are several reports describing improved outcome following introduction of a RRS to a children's hospital including reduced hospital mortality and a reduction of in-hospital respiratory and cardiopulmonary arrests. Recent attention has focussed on improved graphical charting methods and scoring systems with the aim of improving the sensitivity for detecting a deteriorating child.

Critically ill children that present to hospitals without an ICU experienced in the care of children require stabilisation and transport to a hospital that does have this expertise. There are a number of approaches to structuring specialist retrieval services, however, co-ordination of transport and the provision of experienced transport teams are tasks often undertaken by paediatric ICU staff. Transport of critically ill children by specialist teams is associated with reduced morbidity and improved survival.

Assessing the severity of illness and the risk of clinical deterioration where children are referred from remote locations is clinically challenging, particularly if the referral hospital has limited paediatric experience. Telemedicine, where the intensive care specialist has access to advanced audio and video telecommunication with the referral centre, has potential to improve the assessment and early resuscitation of children in remote locations.

The investment in ICU outreach activities needs to be balanced against the ICU resources and staff available. A potential negative effect of outreach activity is that ICU staff can be distracted from the patients that are arguably their primary responsibility – the children actually in the ICU.

## SKIN FAILS TOO: ACUTE SKIN FAILURE IN ICU

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Almost all of us have heard of or even have managed acute heart failure or acute kidney failure but not many of us have encountered "acute skin failure". Skin failure is a concept which is unfamiliar to many physicians even though the skin is the largest organ of the human body.

Acute skin failure is defined as the acute loss of normal functions of the skin with loss of temperature regulatory mechanism in maintaining core temperature, failure to prevent percutaneous loss of fluids, electrolytes and protein resulting in imbalance and failure of the mechanical barrier to penetration of foreign materials and infections. There are many causes of skin failure and it is of utmost importance to identify the underlying cause to be able to treat and manage this condition appropriately.

The management of patients with acute skin failure requires a multi-disciplinary team approach. This involves not only dermatologists and internists but well-trained, devoted nursing staffs are equally essential to reduce the mortality and morbidity associated with this condition. The important factors to be addressed in the management of such patients are nursing care, monitoring hemodynamic changes in terms fluid, electrolyte balance and nutrition, prevention of complication (e.g. sepsis), prompt identification of risk factors and attention to topical therapy.

SYMPOSIUM 3 | MISCELLANEOUS

LIVER DYSFUNCTION IN THE ICU

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Background

Liver dysfunction in critically ill patients is a common finding in the intensive care setting, and has direct and adverse effects on outcome. Clinical manifestations may range from asymptomatic cholestasis, to acute hepatitis, to life-threatening acute or fulminant liver failure. Fulminant liver failure is a hepatic emergency that can present with hemorrhage, cerebral oedema, multiorgan failure, increased risk of infection and is associated with a high mortality rate. This review will only cover conditions that occur in patients without pre-existing liver disease or cirrhosis.

Aetiology

There are multiple aetiologies that can contribute to liver dysfunction in the ICU population. The list may include hypoxic hepatitis (from conditions resulting in arterial hypoxaemia, hepatic ischaemia or passive congestion of the liver); drug-induced liver injury (eg. paracetamol, alcohol); as part of SIRS or sepsis-related multiorgan failure syndrome; infective causes (viral, bacteria, fungal, parasites); metabolic (eg. acute fatty liver of pregnancy); autoimmune hepatitis; or ICU therapy-related (eg. medications and parenteral nutrition).

Management

With limited access to transplantation in this country, the key to survival in patients with fulminant liver failure is based on intensive medical care. When dealing with such a myriad of aetiologies and often with very little information available to the intensivist, a structured approach to decision making with regards to diagnosis, management and prognostication is important in each case. Treating the causative factors, attention to organ support, and prevention of further hepatotoxic injury remains the cornerstone of therapy.

SYMPOSIUM 3 | MISCELLANEOUS

NUTRITION FOR THE CRITICALLY ILL: HOW MUCH, HOW SOON

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The last two decades has seen a number of trials on nutrition for the critically ill focusing on route and type of nutrition, timing of nutrition and outcome. The importance of nutrition in the critically ill is now a well-established fact. The term nutritional support, which connotes adjunctive care, is slowly being changed to nutritional therapy indicating the ability of nutrition to attenuate the metabolic response to stress, prevent oxidative cellular injury and favorably modulate the immune function.

Despite the number of studies done, the optimal amount of energy and protein continue to be a controversial issue. On one hand, observational studies have shown that a cumulative energy deficit or caloric debt is associated with adverse clinical outcome in the critically ill. While other observational studies suggest that less calories are associated with better outcomes. These diametrically opposite results put us in a dilemma on the amount of calories and proteins critically ill patients need.

How soon can the critically ill be fed? Barring contraindications, nutrition should be started as early as possible, within 24 to 48 hours of admission if favorable outcomes need to be achieved. Despite this recommendation in clinical practice guidelines the initiation of early enteral nutrition as some studies have shown is suboptimal.

Nutrition therapy has evolved as an essential component in the care of the critically ill. Guidelines for nutritional therapy in the ICU based on recent evidence should be followed where possible to achieve better outcomes.

SYMPOSIUM 4 | CARDIOVASCULAR

FLUID MANAGEMENT IN THE CRITICALLY ILL: THE 5B APPROACH

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Cardiorenal syndrome may occur as a result of either primarily renal or cardiac dysfunction. This complex interaction requires a tailored approach to manage the underlying pathophysiology while optimizing the patient's symptoms and thus providing the best outcomes. Fluid overload is a common result of cardiovascular disease (especially heart failure) and kidney disease. The diagnosis, objective quantification, and management of this problem is integral in attempting to improve clinical outcomes, including mortality, and quality of life. Many clinical conditions lead to fluid overload, including decompensated heart failure and acute kidney injury following the use of contrast media, the administration of nephrotoxic drugs (e.g., amphotericin B) drugs associated with precipitation of crystals (e.g., methotrexate, acyclovir), or shock due to cardiogenic, septic, or traumatic causes. Thus the clinical challenge becomes the utilization of all currently available methods for objective measurement to determine the patient's volume status. We suggest consideration of a "5B" approach. This stands for Balance of fluids (reflected by body weight), Blood pressure, Biomarkers, Bioimpedance Vector Analysis (BIVA), and Blood Volume. Addressing these parameters insure that the most important issues affecting symptoms and outcomes are addressed.

SYMPOSIUM 4 | CARDIOVASCULAR

CENTRAL VENOUS PRESSURE: NOT SO SIMPLE A MEASUREMENT

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Despite its common use, the physiologic meaning of CVP and its clinical application are frequently misunderstood. The use of central venous pressure to estimate cardiac preload and volume status has been much criticized because central venous pressure poorly predicts cardiac preload and volume status.

From a methodologic point of view, demonstrating that a parameter is sensitive to changes in volume status does not allow one to conclude that this parameter is useful in assessing intravascular volume, simply because intravascular volume is not the only determinant of central venous pressure. One of the most common misjudgements among practitioners is to rely on a single CVP measurement to guide volume therapy.

The clinical application of central venous pressure measurement requires a good understanding of the physiologic determinants and the potential errors of this basic and readily available measurement. The measurement of CVP for assessing preload is complicated by several factors. These include reference landmark (effect of levelling), transmural pressure, effects of respiratory cycle, effects of cardiac cycle, physiologic and anatomic properties of the heart. If careful considerations are given to the factors affecting CVP and its physiologic determinants, it can be of great clinical use and is still considered in our setting as the most practical and most commonly available way to assess the patient's preload and volume status.

## SYMPOSIUM 4 | CARDIOVASCULAR

### VASOACTIVE DRUGS REVISITED

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Fluid administration is the mainstay therapy in various form of shock. However, when it fails to restore adequate arterial blood pressure and organ perfusion, therapy with vasopressor or inotropic agents should be initiated. The goals of such therapy are to restore effective tissue perfusion and normalize cellular metabolism. Although the target goal of vasopressor therapy is to restore effective tissue perfusion and normalize cellular metabolism, the blood pressure, restoration of blood pressure does not always result in better tissue perfusion and cellular metabolism. The reasons are blood pressure is not equal to blood flow and the exact blood pressure to maintain perfusion in critically ill patient is unknown. There has been longstanding debates about which vasopressor is superior to another, particularly in septic shock. Despite negative results in numerous studies, the choice of best agent to be administered in given circumstances depends on different effects on pressures and flow. Certain agents are purely vasoconstrictor and have negative impact on cardiac performance; where as other agents behave as inotropes and vasodilator resulting in improved cardiac function and at the same time causing hypotension. Therefore, the effectiveness of therapy should be monitored by combination of clinical and hemodynamic parameters. Choosing the right agent and setting the specific endpoint of therapy to maintain organ perfusion remains the formidable challenge for clinician.

## SYMPOSIUM 5 | INTENSIVE CARE FOR NURSES I

### SEDATION AND PAIN CONTROL IN ICU

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ICU environment is very stressful to the patient physically and mentally. Providing the critically ill patient with sedatives to minimize anxiety and recollection of unpleasant events and providing adequate analgesia is an integral function of the critical care team. However, there is a fine balance between providing comfort and causing over-sedation with the possibility of adverse outcomes in both scenarios.

Pain is commonly encountered by intensive care unit patients. Not infrequently, pain is the primary cause of agitation in the ICU patient. Pain in the ICU setting is not limited to traumatic injuries or surgery. It can be triggered by the placement or presence of cannulas, catheters, or endotracheal tubes. Pain is also experienced during common procedures such as suctioning and turning of patients.

Inadequate analgesia and sedation may result in increased sympathetic tone, ventilator asynchrony, and unwanted removal of endotracheal tubes, intravenous access, and drains. Conversely, overmedicated patients may result in fewer ventilator-free days, longer ICU stays, and a higher incidence of other complications such as venous stasis, skin ulcerations, neuromuscular weakness, and ventilator associated pneumonia.

The practice of pain control and sedation in ICU must be individualized. Every patient must be assessed on how much pain they have. Various scale was introduced such as Visual Analog Score or Numeric Rating Score and so on. After the pain is been taken care of then the patient is been assessed on how much sedation they require.

The common drugs been used for analgesia is opioid such fentanyl, morphine or tramadol. For sedation, drugs such as benzodiazepines, propofol, dexmedetomidine are commonly used. have overlapping of the effects or potentiate the effects of concurrent drugs administered. The drugs can be administered as either intermittent or continuous infusion. Daily interruption of sedation should be practiced on most of the patient because studies showed decrease length of stay, reduce ventilator day and reduce risk of drugs accumulation.

Providing adequate sedation and analgesia to ICU patients is very important. Careful drug selection and frequent evaluation of the adequacy of sedation and analgesia can help minimize the risks of oversedation. Sedation scales, sedation protocols, and daily interruption of sedative can help minimize unwanted sedative effects, minimize the duration of mechanical ventilation, and may reduce ICU mortality.

## SYMPOSIUM 5 | INTENSIVE CARE FOR NURSES I

### REDUCING CENTRAL-LINE ACQUIRED BLOOD-STREAM INFECTION

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The objectives of this presentation are:

- To increase the knowledge on Central-Line Acquired Blood-Stream Infection
- To stress on the causes of Central-Line Acquired Blood-Stream Infection
- To highlight the strategies in reducing Central-Line Acquired Blood-Stream Infection

The methods used:

- Revision on definition, causes, pathophysiology and diagnosing
- To stress on the concept of prevention is better than cure
- Highlighting the importance of CVC Care Bundle

In a nutshell, in order to reduce, it is important to increase our knowledge, only then we would achieve a success in the strategies of reducing Central-Line Acquired Blood-Stream Infection.

## SYMPOSIUM 5 | INTENSIVE CARE FOR NURSES I

### NURSING HANDOVER OF CRITICALLY ILL PATIENT

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Passing over report or shift report is a task that very important to nurses. It is part of providing continuity of care from one shift to the next shift. It is also transferring critical information from one caregiver to another.

Nursing shift reports include information on what occurred during a nurse's shift. Information such as patient care, medication administration, fluids measurements, unfinished tasks, extraordinary occurrences and communication with other health care providers and physician orders are included in a nursing shift report.

For the critically ill patients, bedside reports can help nurses either on-coming nurses or off-going nurses aware of the plan of patient care. The off-going nurse introduces the on-coming nurse to the patient, and they discuss his plan of care. As a result, she is able to identify his needs and prioritize for the shift.

SYMPOSIUM 5 | INTENSIVE CARE FOR NURSES I

THE ROLE OF NURSES IN END OF LIFE CARE IN ICU

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Intensive care medicine was intended to provide life saving therapy for critically ill patients with severe but potentially reversible medical conditions. However, a certain number of patients treated in intensive care units (ICU) inevitably die due to progression of their illness, whilst sophisticated technological support may allow such patients to survive longer. However, at the same time, it is accepted, ethically, socially and religiously that continued aggressive care for such patients may not always be beneficial and necessary. Rather than hoping to cure, it is more of prolonging the suffering of the dying patient. Death in the ICU therefore now frequently follows limitation of life supporting therapies. As a result, the intensive care has expanded to also encompass the provision of the best possible care to dying patients and also their families – end of life care.

It is the facts that, nurses represents the largest workforce in the healthcare sector and often have closer and more prolonged contact with patients and their families. This may provide valuable insights into patient/family feelings and opinions. Although they should not be expected to take the responsibility in making end of life decisions, they are important collaborators who can facilitate the process and help patients/families to cope with their inevitable distress.

Optimal care for patients, both living and dying in the ICU involves focusing from the very beginning on comfort as well as cure. Care must begin from the moment the patient enters the unit. The goal is achievement of the best possible quality of life for patients and their families. For optimal care the ICU personnel must work as a team. Nurses must be involved in team efforts, they should be encouraged to voice concerns about specific patients and procedures and should be heeded when they do so. It is also important that nurses' rapport with families be appreciated and supported, since the comfort and satisfaction of family during the painful dying process often depends upon this relationship.

Caring and nursing the dying patient is as much the same or even perhaps more than nursing surviving patient. A dying person is still a living human being. Rather than just 'continue the same' plan, there are essentially a lot of thing to care of in symptoms management. Positioning, hygiene, pain and breathing pattern are needed to be planned and nursed. As such the roles of nurses in dying patients are still required and necessary.

SYMPOSIUM 6 | PHARMACOTHERAPY

ALBUMIN IN CRITICALLY ILL PATIENTS

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Purified human albumin has been used clinically since 1941, when US military first used after attack on Pearl Harbour. Albumin is the predominant product of hepatic protein synthesis and one of the more abundant plasma proteins. Among its multiple physiologic roles, it plays an essential part in the generation of colloid-oncotic pressure. In the United States, the indications for which albumin therapy are considered include hypovolemia or shock, burns, hypoalbuminemia, surgery or trauma, cardiopulmonary bypass, acute respiratory distress syndrome, hemodialysis, and sequestration of protein-rich fluids. The use of this relatively expensive therapy accounts for up to 30% of the total pharmacy budget in certain hospitals. The use of albumin therapy in different clinical situations and its influence in morbidity and mortality have been reviewed in multiple randomized controlled trials and meta-analyses. Despite frequent reviews, the use of albumin remains controversial in several clinical situations. At the same time, these valuable reviews seem to have documented the advantages of albumin therapy in the management of ascites and clarified the use of albumin in volume resuscitation. More studies have been recommended to investigate the use of albumin in different doses and its role in hypoalbuminemia. This discussion will provide an overview of albumin metabolism, use of albumin for volume expansion in hypovolemic shock. The potential therapeutic role of albumin in liver disease, sepsis, total brain injury (TBI), acute lung injury and ARDS.

SYMPOSIUM 6 | PHARMACOTHERAPY

ANTICOAGULANTS OTHER THAN WARFARIN AND HEPARIN

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Up to 15% of patients with acute medical illness develop venous thromboembolic disease and some of them suffer from serious and life-threatening complications such as pulmonary embolism. Although many associate venous thrombosis with recent trauma or surgery, 50% to 70% of symptomatic cases, as well as the majority of cases of fatal pulmonary embolism (PE), occur in medical patients.

The effectiveness of primary thromboprophylaxis, to reduce the frequency of DVT and PE, is supported by well-established scientific evidence. Heparin products that include Unfractionated heparin (UH), Low-molecular-weight heparin (LMWH), and Vitamin K antagonists (VKA) are the most commonly used prophylactic treatments and they have demonstrated good efficacy and cost effectiveness. While these agents have been used for many years, each class has its drawbacks and is far from being "ideal" anticoagulants.

For this reason, the search for new anticoagulants continues and these efforts have been concentrated on drugs focusing on two targets: thrombin and activated factor X (FXa). These novel agents, currently approved or under evaluation for management of VTE, act directly on the active sites of thrombin or FXa and they include the direct thrombin inhibitor (DTI) Dabigatran Etexilate, a selective FXa inhibitor Fondaparinux sodium and the direct FXa inhibitors: rivaroxaban, apixaban, edoxaban, and betrixaban.

These new anticoagulants are being currently evaluated for prevention and treatment of venous thromboembolism. Based on the initial results, these agents offer a great promise to be potential substitutes for the current heparin products and VKAs. Also oral route, ease of use, lack of need for routine monitoring, minimal food and drug interactions, and an acceptable safety profile make them attractive. However, they are more expensive and this has raised some questions about the cost effectiveness of these agents. Another concern is the lack of effective antidotes for quick and consistent reversal of anticoagulant effect. As more data emerges, these new agents will find wider applications; although, they are not likely to universally replace heparins and VKAs in the immediate future until the cost and reversal issues are better addressed.

SYMPOSIUM 6 | PHARMACOTHERAPY

N-ACETYLCYSTEINE IN NON-PARACETAMOL-INDUCED ACUTE LIVER FAILURE

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Acute liver failure (ALF) is a rare but often fatal condition. Liver transplantation has improved survival in these patients. However, this option is not readily available in many countries and alternative therapies need to be explored. *N*-acetylcysteine (NAC) is the acetylated derivative of L-cysteine and is a precursor of glutathione. It has proven to be beneficial in the treatment of paracetamol overdose by preventing hepatocellular necrosis via its action as an antidote through glutathione replenishment. Even when administered late, it has also shown significant improvement in the outcome of paracetamol-induced ALF and this is thought to be due to its antioxidant effect. Emerging data suggest that NAC may also have a role in non-paracetamol-induced ALF. The proposed mechanisms are: (1) As an anti-oxidant either directly as scavengers of reactive oxygen species and indirectly by replenishing depleted glutathione stores (2) Increase in blood flow by enhancing nitric oxide activity via formation of vasoactive S-nitrosothiol compound and by increasing intracellular c-GMP through activation of soluble guanylate cyclase. This improves oxygenation and oxygen utilisation in the microcirculation. There is current evidence to suggest that NAC may be beneficial in adults with early grades of encephalopathy resulting from non-paracetamol-induced ALF. However, it does not support the broad use of NAC in non-paracetamol-induced ALF in children.

## EVOLUTION OF EXTRACORPOREAL ORGAN SUPPORT IN CRITICALLY ILL PATIENTS

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CAVH (continuous arteriovenous hemofiltration) was discovered by Peter Kramer in 1977 and it became immediately an important alternative treatment for acute renal failure in those patients where peritoneal dialysis or hemodialysis were clinically or technically precluded. This opened the doors of ICUs to a dedicated dialysis technology that experienced a flourishing evolution in subsequent years. In the mid 80s, the technology of CAVH was extended to infants and children and newly designed hemofilters permitted the application of the technique even to newborns. CAVH presented important advantages over intermittent hemodialysis (IHD). These were particularly apparent in the areas of hemodynamic stability, control of circulating volume and nutritional support. However, CAVH also had serious shortcomings which included the need for arterial cannulation, and the limited solute clearance that could be achieved even under optimal operating circumstances ( $10 \pm 12$  ml/min for small solutes such as urea). Initial technical modifications, such as pre-dilution (i. e. the infusion of the replacement solution before the filter instead of after it), did improve creatinine clearance but the next major technical advance was the creation of an additional side port to the hemofilter. Through this port countercurrent dialyzate could be infused at slow flow rates (i. e. 1 l/h) to achieve additional diffusive solute clearance: this modified technique was named continuous arteriovenous hemodiafiltration or hemodialysis (CAVHDF or CAVHD). With the arrival of CAVHD-CAVHDF, IHD became even less utilized, as uremic control could be achieved in all patients irrespective of their weight or catabolic state simply by increasing countercurrent dialyzate flow rates to 1.5 or 2 l/h as necessary.

Arteriovenous therapies were simple because they did not require a peristaltic blood pump, but the morbidity associated with arterial cannulation was substantial. For this reason, veno-venous techniques utilizing a double lumen central venous catheter for vascular access were considered preferable and safer. Thus, within a few years, continuous veno-venous hemofiltration (CVVH) replaced CAVH because of its improved performance and safety. The advance was made possible by the use of blood pumps, calibrated ultrafiltration control systems and double lumen venous catheters. In this setting, an improved safety and reliability was then offered by

continuous veno-venous hemofiltration (CVVH) or continuous veno-venous hemodiafiltration or hemodialysis (CVVHDF - CVVHD). These treatments started to be widely utilized at the end of the 80s showing excellent uremic control utilizing high blood flows (150 ml/min or more) and large membrane surface areas (0.8 m<sup>2</sup> or more). To facilitate nursing care, ultrafiltration was soon controlled by devices with reasonable precision. Thus, for clinical purposes ultrafiltration and reinfusion could be fully regulated to achieve the desired therapeutic goals. In the late 1980s, specific machines for continuous renal replacement therapies (CRRTs) were designed and a new era of renal replacement in the critically ill patient began. The therapy started to be standardized and clear indications began to be defined. The evolution of technology did not stop, however, and the recent demand for higher efficiency and exchange volumes has spurred new interest in a further generation of machines with better performance, integrated information technology and easy to use operator interfaces.

Specific machines have now been designed to permit safe and reliable performance of the therapy. These new devices are equipped with a friendly user interface that allows for easy performance and monitoring. The apparent complexity of the circuit is made simple by a self-loading circuit or a cartridge which includes the filter and the blood and dialyzate lines. Priming is performed automatically by the machine and pre- or post-dilution (reinfusion of substitution fluid before or after the filter) can easily be performed by changing the position of the reinfusion line. These new machines permit all CRRTs to be performed by programming the flows and the total amounts of fluid to be exchanged or circulated as a countercurrent dialyzate at the beginning of the session.

A significant number of advances have taken place since the beginning of CRRT. In particular high volume hemofiltration and high permeability hemofiltration have been successfully experimented. The additional and combined use of sorbent has also been tested successfully. Progress has been made in the technology but also on the understanding of the pathophysiology of acute renal failure. New biomaterials and new devices are today available and new frontiers are on the horizon. We might however speculate that although improvements have been made, a lot remains to be done. For sure, the progress of technology in critical care nephrology has been enormous and more will come in the near future, with improvement in morbidity and mortality of the most severely ill patients.

The incidence of the multiple organ dysfunction syndrome (MODS) is rapidly increasing in the intensive care units (ICU). It usually combines with sepsis and is the most frequent cause of death in the ICU patients. The nature of the ICU patients had changed the last years. It includes a variety of severe cases due to major surgical interventions, trauma, hemodynamic instability, sepsis etc, but also older people than previous times. All these situations can easily lead to MODS. In the prior years the only available and efficient therapy was renal replacement therapy (RRT) for the acute renal failure, but the development of technology gives us devices to support also the other systems. The adequacy of any artificial organ support is evaluated by how closely it mimics the flexibility and efficacy of the organ systems it seeks to substitute or support.

In a sequence of events, such as that created by sepsis and MODS, all these criteria should be applied at the same time but for different organs and different tasks. RRT and especially continuous renal replacement therapies (CRRT) allowed extracorporeal treatment in critically ill patients with hyper catabolism and fluid overload with excellent hemodynamic stability. New techniques in CRRT as high volume hemofiltration (HVHF) have been applied in septic patients with very promising results. In the light of these observations a thought starts to arise. Can extracorporeal blood purification have a positive impact on different organ systems? A possible answer might come from the simple observation that all organs share one thing in common: contact with blood. All extracorporeal therapies also have one thing in common: treatment of blood. Based on these observations and knowledge of the molecular biology of sepsis, a "humoral" theory of MODS makes pathophysiological sense and its consequence becomes the need to consider extracorporeal therapies as multiple organ support therapies (MOST) and not just as single organ support.

## GUIDELINES, STANDARDIZATION AND OUTCOMES IN INTENSIVE CARE UNITS

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Critical Care is a complex process that is constantly evolving. Under these circumstances the existence of therapeutic guidelines enhances the standardization of care, and if these guidelines are based on appropriate experimental & clinical evidence, we may also expect to see significant benefits to patient outcome. Treatment guidelines and standard operating procedures (SOPs) have been developed for sepsis, glycaemic control, sedation, ventilatory support and weaning, among other areas of critical care. Recently many quality control organizations have emphasized the importance of such clinical guidelines and have required high compliance with recommendations as surrogate markers of quality in the intensive care unit. This transformation of a "therapeutic guideline" into a "performance indicator" requires robust scientific evidence of their positive influence on important clinical end points.

While most widely accepted guidelines are based on studies of high scientific value, some recommendations are also made on issues that have not been adequately studied. These low-grade, opinion-based recommendations are usually approved by consensus, which may make them more palatable, but do not increase their scientific validity. The application of guidelines which have low-grade recommendations will have little impact on outcomes or may even affect them negatively. Even when guidelines are developed from stronger scientific studies, it is important that we demonstrate their benefit by appropriate comparative trials before we make the big leap to sanctifying them as performance measures. The common "before-after" comparative studies have the drawbacks of historically-controlled trials and are likely to exaggerate benefits. High quality comparative studies have the drawbacks of historically-controlled trials and are likely to exaggerate benefits. High quality comparisons in RCTs are needed to establish the benefits of clinical guidelines.

The impact of scientifically rigorous protocols on outcome can further be diluted by numerous practical considerations. The appropriateness and quality of baseline care can affect the additive value of a guideline. The existence of a clinical guideline, by itself, is unlikely to affect outcome. Unless a guideline can be implemented and compliance can be documented by frequent audit it is unlikely to be of value. While we do have evidence that compliance with a guideline strongly correlates with better outcome, ensuring high levels of compliance is by itself an onerous task.

Clinical guidelines & SOPs are useful ways to bring evidence based therapies into common practice in the ICU, but caution should be exhibited prior to their use as performance indicators.

## FEVER IN SEPSIS. SHOULD WE TREAT IT?

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For decades, fever remains a common body response to both infectious and non infectious stimulus. Despite the perceived harmful effect, the fact that it had survived years of evolution suggest its benefit in terms of human survival.

Fever causes multiple physiological effects including tachycardia, increased oxygen demand and fluid loss. In addition it causes anxiety and discomfort to the patients. Theoretically, all these effects can worsen the outcomes of a septic patient. Not surprisingly, the practice of fever suppression is common place in ICU these days. The current evidence however does not support this notion. Apart from a sub group of critically ill patients such as brain injured and severe ischemic heart disease patient, there seems to be little evidence to suggest the benefits of fever suppression and its influence on a more favourable outcome. In fact, there have been numerous studies to suggest no effect and even a more detrimental outcome should aggressive fever suppression be employed in sepsis. It is argued that fever acts as an innate defence mechanism against the invading pathogens by inhibiting its growth and intensifying the immune response. The suppression of fever might also mask the brewing infection thus delaying diagnosis and treatment. Similarly, the side effects of anti pyretic used might contribute to a less favourable outcome.

The objective of this talk is to examine the pathophysiology of fever, its effect in sepsis and to examine the current available evidence to determine the appropriateness of fever suppression in sepsis.

## SYMPOSIUM 8 | PAEDIATRICS II

## OUTCOME ASSESSMENT IN PICU: WHAT OUTCOMES DO WE WANT?

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Is there a debate? We want children to survive, recover quickly, stay in PICU for a short time and leave without suffering a complication. Following PICU we want our patients to be free of physical and psychological morbidity related to their PICU stay, and we want their families to be satisfied with the care we deliver.

A more challenging question is how do we assess our success in delivering these outcomes?

The most commonly reported PICU outcome measure is *risk adjusted mortality*. Prediction models adjust for the severity of illness and case-mix of the population of patients admitted. If regional PICUs collaborate by sharing data, it is possible for each unit to track performance both within their own unit over time, and compared to other units in the region. Because outcome improves over time, it is important that the risk adjustment models are periodically updated.

A limitation of mortality as an outcome measure is that it provides no information about the quality of outcome for the large majority of children surviving PICU. To address this *length of stay* and *duration of respiratory support* can be used to assess between-unit variation in outcome. Similar principles are applied to develop models that adjust these outcome measures for patient risk.

Complication rates are also important to monitor, however, because it is difficult to standardise reporting and capture of events such as medication errors, and because other complications such as nosocomial infections occur at very low frequencies, it is more appropriate to monitor these events at local level rather than compare rates between PICUs.

Long term *functional status* following PICU discharge is clearly an important clinical outcome. At present most PICUs are not able to assess late *functional status* routinely due to the practical difficulties of undertaking the assessment in all children discharged.

## COST REDUCTION IN ICU – WHAT CAN WE DO ABOUT IT?

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The intensive care unit (ICU) is a resource-intense environment where expensive technologies and specialized clinical care are dedicated to the observation, care and treatment of patients with life-threatening illnesses, injuries or complications from which recovery is generally possible. It is thus not surprising that the ICU consumes a substantial portion of health care expenditure.

What can we do to reduce cost in the ICU?

After a search of the literature, here are ten strategies or approaches to reducing the cost of intensive care:

1. Institution of a closed ICU where all the patient care is directed by intensivists or full-time intensive care trained physicians
2. Institution of a dedicated multidisciplinary care team under the oversight of an intensivist
3. Institution of a big general ICU in a hospital rather than many speciality ICU
4. Increasing the number of intermediate care beds for patients who require only monitoring and intensive nursing
5. Diminishing the unnecessary variation in care that exists across regions via better standardisation of care practice through protocols and care pathways
6. Implementation of strict admission and discharge policy
7. Emphasising and enforcing strict infection control measures
8. Use of an alerting and reminding system
9. Limiting intensive care at end of life
10. Consideration of a program of television-guided remote intensivists

These strategies and approaches have been shown in various studies to reduce cost and clinicians and hospital managers should consider these cost containment strategies for the delivery of health care in the ICU.

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## CLINICAL TRIALS IN INTENSIVE CARE: MANY DISILLUSIONS

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Severe sepsis is still associated with considerable morbidity and mortality despite improved understanding of the underlying pathophysiology and the development of multiple potential new therapies. Large scale clinical trials of these interventions, which all showed promise in pre-clinical studies, have almost universally been negative. Perhaps the best known example of this is activated protein C, a drug that was shown to improve survival in patients with severe sepsis in a large multicenter, randomized controlled study, but was withdrawn 10 years later after the results were not confirmed in a repeat study. The role of adjunctive therapies, such as steroids, in patients with sepsis is also unclear with early studies suggesting benefit but a later larger multicenter failing to demonstrate a positive effect on outcome. The steady stream of negative trials has been disheartening, but rather than being disillusioned, we should try and understand the reasons why the early promise of these interventions has not translated into positive benefit in larger randomized studies. Indeed, these studies have generally included fairly heterogeneous populations of patients with "severe sepsis". Yet, there is no "typical" septic patient and study populations therefore include patients of different ages, sex, and comorbid states; with infections caused by different microbial agents and arising in different organs; and with the proposed treatments starting at different times in the course of the disease. It is therefore not surprising that for any given intervention some patients will respond positively, others will not respond at all, and some may even have a negative response. The overall trial result will thus depend on the specific population make-up as much as on the actual efficacy of the treatment being tested. The key challenge for the future of sepsis trials is, therefore, to improve study design and patient selection. We need to be able to identify more clearly which patients are most likely to benefit from a given treatment so that clinical trials can focus on those specific groups. We need to use the disillusion from the past to inspire us to perform better in the future if outcomes from sepsis are to improve.

## ETHICS IN ORGAN TRANSPLANTATION

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Organ transplantation has always and will continue to generate many ethical issues. This is not surprising as transplantation involves the use of human donors, who may be alive or dead, to provide organs for patients who would otherwise die without the transplant. Advancement in technologies, immune-suppression and critical care means more organ and tissues can now be transplanted with greater success to patients who would not have been eligible for transplantation before, further increasing the demand in the light of chronic organ shortage.

Living donation transplant has better outcome but is associated with some risks of morbidity and possible mortality, to the otherwise healthy donor who himself does not need the surgery. Dead donor rule is the fundamental ethical principle for removal of vital organs but there are still questions asked regarding when is death, be it for brain death or more recently cardiac death in the case of non-heart beating donation. Consent, particularly quality of the consent, is an important issue. Chronic shortage of organs leads to problems with allocation while the high demand has also led to the unsavoury practice of commercial transplantation and transplant tourism with all the attendant moral and ethical issues as well as the utilization of organs from ethically controversial donors such as executed prisoners, anencephalics and even animal sources. Likewise non-therapeutic ventilation of severely brain damaged patients with poor prognosis for the purpose of possible though uncertain donation in the presence of limited ICU resources present ethical dilemmas for the doctors caring for these patients. Ethical issues also arise when transplantation is performed for non-life saving or cosmetic reasons as this has to be weighed against the risk of putting the recipient on lifelong immune-suppressive therapy.

Central to the ethical practice of transplantation are the principles of *beneficence* (doing good), *non-maleficence* (avoiding harm), *autonomy* (respect for the individual's right to decide) and *justice* (promotion of fairness). Conflict can occur in trying to simultaneously apply to all four principles. In many situations "a least unsatisfactory" trade-off between principles to achieve best balance is the way to deal with the moral dilemmas.

## NON-INVASIVE VENTILATION 'THE NITTY GRITTY'

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Non invasive Ventilation (NIV) has been so successful in the past 20 years that for conditions like Chronic Pulmonary Disease (COPD) and Acute Pulmonary Oedema (APO), the majority are now managed on the ward. NIV reduces the intubation rate (IR), mortality and hospital stay in COPD and APO. NIV is as effective as continuous pulmonary airway pressure for APO but results in a more rapid resolution of symptoms. The greatest benefit derived from NIV were in patients who were hypercapnic ( $pCO_2 > 45\text{mmHg}$ ).

For conditions like adult respiratory distress syndrome (ARDS), asthma and pneumonia, NIV is listed only for optional use as there is insufficient evidence. There is a high failure rate of NIV use in ARDS (50-80%) and pneumonia (66%). NIV is more likely to fail in ARDS patients who are sicker (SAPS II  $> 34$ ,  $PaO_2/FiO_2 < 175$  after 1 hour use) and should be limited to those who are not too sick. In pneumonia, NIV improved the respiratory parameters (respiratory rate,  $PaO_2/FiO_2$ ) and in those who avoided intubation; there was a significantly reduced mortality and hospital stay. Therefore, a short trial of NIV can be considered in ARDS and pneumonia. In asthma, a single study showed improvement in spirometry and reduced hospital stay with NIV use. Due to the lack of trials, the Cochrane Group suggested NIV use should be limited to those who fail bronchodilator therapy.

NIV use to prevent weaning failure in those at risk showed a reduction in the IR, mortality and hospital stay especially in hypercapnic patients. However, the routine use of NIV in patients who had passed a spontaneous breathing trial was not useful. Hence, NIV should be limited to those at risk. NIV in established post extubation failure did not reduce the IR and may even be harmful (increased mortality due to delayed reintubation).

It is important that NIV is used early on (NOT DELAY STARTING) in the disease with close monitoring and early reintubation (NOT DELAY STOPPING) should NIV fail.

## DELIRIUM IN THE ICU PATIENTS

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Delirium is common in the ICU patients. The prevalence ranges from 20-80 percent. Based on the American Psychiatric Diagnostic Statistical Manual IV (DSM IV); delirium is defined as a disturbance of consciousness with inattention accompanied by a change in cognition or perceptual disturbance that develops over a short period of time, and fluctuates over time. There are three subtypes of delirium; the hypoactive, hyperactive and mixed delirium. It is important to identify and diagnose patient with delirium as delirium is associated with increase morbidity and increase length of hospital stays. There are multiple instruments used in the ICU to screen for delirium such as the Intensive Care Screening checklist (ISDC) and The Confusion Assessment Method in ICU (CAM-ICU). Once delirium is diagnosed, it should be treated. Haloperidol and Chlorpromazine has been used to treat delirium. The newer agent such Quetiapine, Olanzapine and Risperidone has also been found to be helpful. Unfortunately, the management of delirium went way before diagnosing, but the majority of the work lies in prevention. Preventative steps such as daily orientation, having a protocol for sleep and pain, early mobilization and timely removal of catheters have been found to be effective in preventing delirium.

## PREVENTION AND TREATMENT OF HOSPITAL-ACQUIRED PRESSURE ULCERS (HAPU)

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Among all hospitalized patients, the occurrence of hospital-acquired pressure ulcers as high as 14% to 42% in intensive care patients. Development of HAPU is complex and multifactorial. The first step in preventing HAPU is determining what constitutes appropriate risk. The Braden scale is most widely used risk assessment tool in most ICU. 6 subscales are used to measure risk for HAPU mainly sensory perception, activity, mobility, nutrition, moisture and friction/shear. Potential scores range from 6-23. Lower scores indicate greater risk. Stratification of risk can be useful for determining and implementing appropriate level of prevention. Other factors are advanced age, low MAP, prolonged ICU stay, high APACHE 11 score, comorbidities and usage of vasopressor.

Mainstay of treatment are multidisciplinary team approach which includes wound care nurse, physiotherapist, occupational therapist, dietician, medical and surgical expert with experience in pressure ulcer management.

Treatment modalities depends on staging of HAPU. Stage 1 and 2 are treated conservatively whilst stage 3 and 4 may require flap reconstruction. However some patients with stage 3 and 4 are treated conservatively due to coexisting medical problems. Choices are as below :

1. Positioning of patient
2. Mattresses and cushions
3. Dressings such as hydrocolloid, hydrogel, transparent, alginate and foams
4. Topical preparations
5. Maggots therapy
6. Non surgical debridement : pressure irrigation, ultrasound or laser beam
7. Surgical debridement

## TRANSPORT OF CRITICALLY ILL PATIENT: 10 KEY THINGS TO GET THE PATIENT READY

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Transportation of critical ill patient can be divided into pre-hospital, intra-hospital and inter-hospital. Reasons for transportation include diagnostic procedure, therapeutic intervention and continuation of care. However, it may associate with adverse effect and constant threat to patient. Risks and benefits of transfer must be assessed during the planning. Provision of qualified staff, well design equipments, constant monitoring and implementations of guidelines and protocol are essential to provide a safe transport.

## THE IMPACT OF NURSES' ROLE IN HEALTH CARE IMPROVEMENT

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In Malaysia, nurses represent the largest workforce in the health care system with approximately 70,000 of them. They are the main health care providers in the urban, rural and remote areas. Nursing contributes to the health and welfare of society through protection, promotion and restoration of health; the prevention of illness, and the alleviation of suffering in the care of individuals, families and communities (CPCN, 1998).

The essential attributes that contribute to inadequate delivery of care: an increase in chronic conditions, poorly organized systems for healthcare delivery, limited use of information technology, and the increased complexity of care as a result of medical advances. In the delivery of care, nurses reported to commit a high rate of errors and frequently fail to provide patients with quality healthcare. Working on the front line of patient care, nurses can play a vital role in helping realize the objectives set forth in the improvement of health care. These barriers need to be overcome to ensure that nurses are well-positioned to lead change and improve health of patients.

Nurses should practice to the full extent using the education and training they have attained. Nurses in fact should achieve higher levels of education and training through an improved education system that promotes seamless academic progression. Nurses should be full partners, with physicians and other health care professionals in redesigning health care. Their roles should involve as effective workforce planning and policy making that requires an evidence based practice.

In Malaysia, the opportunity to transform the health care system, nurses should play a fundamental role in this transformation. However, the power to improve the current regulatory, business, and organizational conditions does not rest solely with nurses; government, businesses, health care organizations, professional associations, and the insurance industry all must play a role. Working together, these many diverse parties can help ensure that the health care system provides seamless, affordable, quality care that is accessible to all and leads to improved health outcomes.

Nurses are being asked to care for more people with complex multiple geriatric syndromes, and this involves more than keeping these patients alive. In meeting the patients' need or helping people live their lives to the fullest extent possible. The healthcare organization also expects nurses to perform at a higher level, to participate and contribute to the quality and safety agenda of the organization.

In fulfilling their responsibilities in improving health care delivery, nurses need to be upgraded through education and training. For instance diploma nurses can be specialized in their fields through post basic courses. In the recent years most of the nurses are encourage to upgrade themselves to degree, master and doctorate levels and to be more specialized in their individual field. Monetary rewards and promotion are brought forward to JPA for better remunerations according to their qualifications. The IPTA (Institut Pelajaran Tinggi Awan) conjoined with Nursing Board of Malaysia are relooking into upgrading the status of nurses. In the event of merging of both nursing academia and nursing services, it provides strong platform for nursing profession in Malaysia. Eventually it will enhance better care to patients and the national as a whole in achieving a seamless academic progression in the nursing profession.

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## BALANCED REVIEW OF THE BALANCED SOLUTIONS

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Intravenous fluid therapy is ubiquitous in critical care medicine. It is so common and 'routine' that often not much thought is put in its prescription. Such attitude for what is administered to patients on a regular basis is a cause for concern.

The history of intravenous fluids could be traced back to the cholera pandemic in Europe in 1830s. The saline solution introduced to re-hydrate the cholera patients was deemed as a life-saving measure that helped to save thousands of lives. Interestingly, the saline solution used then was more physiological than the 0.9% saline presently available. Equally interesting is the fact that the historical and scientific basis of the present-day 0.9% composition of saline remains a mystery. Despite the long known association between the 0.9% saline and hyperchloraemic acidosis, since the 1920's, it remains the most commonly used intravenous solutions in the world, with an annual sales of 10 million and 200 million liters in the UK and USA, respectively.

The concerns with the non-physiological or supra-physiological contents of saline, chiefly its rich chloride property, had led to the introduction of the balanced intravenous fluids. These are solutions with electrolyte compositions that are closer to that of human plasma. Research is active in comparing the outcomes of these balanced solutions to the saline and the trend is clearly moving from animal studies to human clinical studies. The scope of research in this area has also shifted from the obvious hyperchloraemic acidosis, best understood through the Stewart physicochemical acid-base approach, to organ specific effects of the saline solutions. Of clinical interest are the recent findings that suggest worse renal outcomes with extensive saline use compared to balanced solutions. The task is now to look into this phenomenon through different and improved trial designs. This will help to confirm and to better understand why such changes in renal outcomes happen.

## ULTRASOUND IN RESUSCITATION

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Ultrasound in both cardiopulmonary resuscitation (CPR) and peri-arrest situations are facets of 'critical care ultrasound'.

Application of focused echocardiography in CPR has been proven as a useful tool of prognostication. Evidence of coordinated cardiac motion in all cardiac arrest states i.e. asystole, ventricular fibrillation / pulseless ventricular tachycardia and pulseless electrical activity (PEA) is associated with increased survival. Ultrasound examination i.e. focused echocardiography and lung sonography has been used as an effective diagnostic tool to identify causes of pulseless electrical activity (PEA) i.e. cardiac tamponade, severe hypovolemia, pulmonary embolus and tension pneumothorax.

Other usages of ultrasound in CPR include focused echocardiography for correlation with pulse check and ultrasound-guided femoral vein catheterization. Focused echocardiography in paediatric CPR allows for correlation with the presence or absence of a pulse. Ultrasound-guided femoral vein catheterization during CPR is faster, has a higher success rate and a lower rate of inadvertent arterial catheterization than the standard landmark-oriented approach.

Specific trauma ultrasound protocols e.g. focused assessment with sonography for trauma (FAST) and extended focused assessment with sonography for trauma (EFAST) can be used to detect hemoperitoneum and hemothorax in both traumatic and non-traumatic cardiac arrests and peri-arrest scenario.

The impact of routine ultrasonography in CPR on patient outcomes remains an exciting avenue for future research.

## ICU FOLLOW UP AND REHABILITATION

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A stay in an intensive care unit may be followed by a variety of problems for patients and their relatives as they try and rebuild their lives after what may have been regarded as a catastrophic incident. This is what the majority of this talk will focus on. However, an aspect of critical care that has received little attention is the impact that care for critically ill patients can have on the providers of intensive care; this will be the subject of the latter part of the talk.

In 1989 a Kings Fund report<sup>ref 1</sup> highlighted the need to look at morbidity as well as mortality following critical illness.

Two recent publications, one by the National Audit Commission<sup>ref 2</sup> and one published by the National Expert Group<sup>ref 3</sup> have emphasised the importance of following-up patients that have left the Intensive Care Unit.

In Reading, in 1993 we set up a Follow-Up programme by seeing our patients and their relatives on the ward post discharge and then inviting them to an informal visit. We have now developed this by seeing patients at a formal Out-Patient Clinic at two, six and twelve months after discharge.

### Cost

The annual cost for a Follow-Up Clinic is £36,000, this is made up of:

- Nursing = £ 21,000
- Medical = £ 7,000
- Administration = £ 5,000
- Lab tests and x-rays = £ 3,000

### Morbidity

Common problems initially discovered were; taste loss, poor appetite, hair loss, nail ridging, ill-fitting clothes and sexual dysfunction. However their were groups of patients who as a result of the severity of their illness and prolonged need for organ support whose lives were turned upside down and for whom the whole event was seen as a catastrophe. In an attempt to get their lives back on track they found problems especially with Mobility, Skin, Tracheostomy, Sexual Dysfunction, Psychological issues and Critical Illness Polyneuropathy.

In some instances treatment given before or in the intensive care unit may be responsible for the patients catastrophic aftermath.

### Memories of ICU

Very few patients remember anything about ICU.

There is an assumption amongst doctors, nurses and relatives that it is probably best that patients remember relatively little of their ICU stay.<sup>ref 5</sup> However when patients are recovering from critical illness if they have no memory of events in ICU, they may not understand why they are exhausted.

In most ICUs sedatives are infused continuously, however this practice is identified as an independent predictor of a longer duration of mechanical ventilation as well as a longer stay in the ICU and hospital.<sup>ref 6</sup>

In a study involving 128 adult patients receiving mechanical ventilation, it was discovered that ICU length of stay could be reduced from 7.3 to 4.9 days by daily interruption of the sedative drug regime,<sup>ref 7</sup> irrespective of the type of sedative drug used. The evidence surrounding the use of sedation in ICU is difficult to interpret, particularly because most data on drugs has been extrapolated from healthy individuals.<sup>ref 8</sup> In some Units, sedation is avoided where possible<sup>ref 9</sup> and many ICUs in England have taken to Aromatherapy and massage to try and reduce the use of sedative drugs.<sup>ref 10</sup>

There is no doubt that performing early tracheostomy has contributed to a reduction in the need for ICU sedation techniques. Using a percutaneous technique, performing tracheostomy in ICU is easier. We await the results of the TRACMAN trial to further

elucidate the issue around optimal timing of the procedure. Follow-Up of ICU patients with tracheostomy shows a very low morbidity<sup>ref 11</sup>. The use of Etomidate<sup>ref 12</sup> and Propofol infusions in children<sup>ref 13</sup> and in adults<sup>ref 14</sup> have been associated with unexpected mortality and we may see an upturn in the use of agents such as Lorazepam<sup>ref 15</sup> and Clonidine<sup>ref 16</sup>. Benzodiazepines may be associated with long-term dependency, depression and agoraphobia on withdrawal<sup>ref 17</sup>. Some authors are examining a possible role for Remifentanyl in the ICU<sup>ref 18</sup>.

Difficulty in weaning patients from ventilatory support may be due to Critical Illness Polyneuropathy (CIP) which can be easily overlooked in ICU<sup>ref 19</sup>. The development of CIP cannot only lead to delayed weaning, but have an adverse effect on rehabilitation. The part muscle relaxants could play in the development of CIP is uncertain, but muscle relaxants are now very rarely used in association with sedation in ICU.

The use of antidepressants in ICU is controversial. The diagnosis of depression in patients on ICU is often based on soft criteria.

There is no doubt that a physiotherapy directed graded exercise program can significantly improve the speed of rehabilitation in the first few months after intensive care<sup>ref 20</sup>. Rehabilitation studies have shown that exercise regimes and psychological intervention strategies do prove effective in aiding recovery in Chronic Obstructive Airway Disease<sup>ref 21</sup>.

Chronic Fatigue Syndrome<sup>ref 22</sup>, and Myocardial Infarction patients, but as yet they are not routinely used to aid recovery from multiorgan failure patients.

Even though the literature is beginning to increase on the catastrophic aftermath of critical illness it is rare to find healthcare organisations making provision for rehabilitation after critical illness; GPs rarely see the need to get involved and the onus is therefore left for the intensivists to run a follow up service to ensure patients in whom they have invested heavily continue to receive appropriate treatment. More information is appearing for cardiac rehabilitation after myocardial infarction demonstrating the clinical benefits of a graded exercise program<sup>ref 23</sup>.

The use of a graded exercise program has been shown to benefit patients after critical care<sup>ref 24</sup> and is now recommended by the National Institute of Clinical Excellence (NICE)<sup>ref 25</sup>.

ICU Follow up clinics are beginning to flourish in the UK in an attempt to identify patients that could benefit from rehabilitation and take various forms. To date the use of nurse-led clinics has not been shown to be of benefit<sup>ref 26</sup>.

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## PLENARY 5

### SAFETY AND QUALITY IN CRITICAL CARE

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The speciality of paediatric intensive care is just over 50 years old. Much has been achieved in improving our understanding of complex pathophysiology and techniques of supporting organ function. Despite obvious progress in the speciality, we are increasingly aware that there is still much to improve in the simple day to day activities and processes of care in our intensive care units.

It is important to acknowledge that adverse events and errors occur constantly in our work. The goal must be to minimise the frequency and impact of adverse events. To achieve this aim a comprehensive multidimensional approach is required. A critical step is to generate a culture of safety, with an agenda set by the unit medical and nursing leaders, and supported by the entire 'unit community'.

Learning from adverse events and errors requires a culture of open reporting, systematic disciplined enquiry, and a readiness and skill set to implement solutions and change.

A notable example of better outcome attributable to improved processes of care is the reduction in rate of central line associated blood stream infection resulting from improved aseptic techniques for insertion and maintenance of central lines. Daily check lists, structured clinical hand-overs and systems for medication reconciliation are all examples of interventions that acknowledge the risks of human error and omission, and provide a systematic process aimed at minimising risk.

Industry also has an important contribution to make to improve patient safety in intensive care. In particular, computer based clinical information systems and software contained within equipment can be used to design electronic algorithms to detect and prevent medication errors, or to identify defined clinical trigger points and prompt protocol based interventions.

Intensive care is safer now than it was in the past, however, there is still much to improve.

## RENAL REPLACEMENT THERAPY IN ACUTE KIDNEY INJURY: WHEN AND HOW MUCH

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While little consensus is present on when to start RRT in AKI, the concept of adequate dose has been debated and elucidated in several studies. The first formal assessment of the effect of dose on outcome was performed by us in 425 patients treated with post-dilution CVVH. Patients were randomized to one of three groups based on dose, for which the surrogate was ultrafiltration rate normalized to body weight. The prescribed doses were 20, 35, and 45 mL/hr/kg (Groups 1, 2, and 3, respectively). Survival at 14 days after the cessation of CVVH, the primary endpoint of the study, was significantly higher in Groups 2 and 3 versus Group 1. In addition, hospital survival was significantly higher both in Group 2 (57%) and Group 3 (58%) versus Group 1 (41%). When all patients were considered, no difference in survival was observed between Groups 2 and 3. However, in the septic AKI patient sub-group, a 45 mL/kg/hr dose was associated with higher survival than a 35 mL/kg/hr dose. A legitimate question about our trial is whether or not the same doses (based on normalized effluent rate) achieved with another CRRT modality would have similar effects on patient survival. In an attempt to address this question, Saudan et al treated approximately 200 patients with pre-dilution CVVH (mean prescribed dose of 25 mL/kg/hr) or pre-dilution CVVHDF (mean prescribed dose of 42 mL/kg/hr). Survival was significantly higher in the CVVHDF group than the CVVH group, both at 28 days (59% vs 39%, respectively;  $P=0.03$ ) and 90 days (59% vs 34%;  $P=0.0005$ ).

A single-center study from the Netherlands attempted not only to corroborate the dose findings of our trial but also to assess the effect of timing of CRRT initiation on patient survival. In this study, 106 patients were randomized to one of three groups: early high volume hemofiltration (EHV), early low volume hemofiltration (ELV), and late low volume hemofiltration (LLV). Neither treatment dose nor timing of treatment intervention had a significant effect on 28-day survival, which was significantly higher (75%-80% in all three groups) than has been reported routinely over the past several years for the critically ill AKI population. This study however has a number of shortcomings, including low patient enrollment number and a study population that does not reflect clinical practice with respect to illness severity. Moreover, not only do the dose results conflict with the above two studies but the negative data regarding timing of treatment initiation conflict with several recent studies suggesting early CRRT initiation improves patient outcome.

Schiff et al assessed the effect of different HD frequencies on patient survival in AKI. It should be noted that patients who had severe hemodynamic instability were not eligible for this study. In addition, the mean time-averaged azotemia data suggest the control group (alternate-day HD) received marginally adequate treatment at best. The low overall hospital mortality (37%) reflected the relatively low illness severity in the study's patient population. Hospital mortality in the alternative-day HD group was significantly ( $P=0.01$ ) higher (46%) than in patients treated with daily HD (28%). Recovery of renal function and frequency of intradialytic hypotension were also favorably impacted by daily HD.

As opposed to conventional HD and CRRT, no studies have assessed the effect of SLED dose on patient outcome. The SLED literature related to dose is limited to studies proposing methods to quantify treatment dose – this information suggests small solute clearances are similar to those achieved with CRRT. On the other hand, clearances of larger molecular weight substances in CRRT are superior to those provided by SLED, especially when SLED is compared to convection-based continuous therapies. This is an important point because both of the CRRT studies demonstrating a positive correlation between dose and survival involved convective modalities.

Finally, a recent meta-analysis of the four randomized controlled trials discussed above has confirmed the important effect of acute dialysis treatment dose on patient survival. The concluding statement from this paper is as follows: "Patients with AKI should be treated with at least 35 mL/kg/h of hemofiltration/hemodiafiltration or daily hemodialysis until or unless ongoing multi-center clinical trials show otherwise".

Therefore, two randomized controlled trials have established a threshold dose of 35 mL/kg/hr, beyond which patient survival is impacted favorably in CRRT. On the other hand, although one study indicates clinical outcome benefits for daily HD, the

results were achieved in patients with significantly lower illness severity than patients typically treated with CRRT. As such, for patients with high illness severity, the literature does not define the HD dose (or frequency) required to increase survival in the same manner that the two CRRT dose/outcome studies influenced survival. Furthermore, the literature suggests that HD, even when very aggressively prescribed, cannot match CRRT's solute removal capabilities, especially when convective CRRT modalities are considered.

Much as clinical investigations in chronic hemodialysis established the important effect of treatment dose on patient outcome during the 1990's, research in critically ill AKI patients recently has produced analogous findings. Indeed, randomized controlled trials have demonstrated survival is directly related to treatment dose in two different CRRT modalities. It should be emphasized that it is difficult to identify another clinical intervention in dialysis (chronic or acute) which is supported by two adequately powered, randomized controlled trials.

Investigation of the effect of CRRT dose on patient outcome in CRRT is not static, as two ongoing international trials are further exploring this issue. One study, the ATN Trial, has been performed in the United States and is comparing survival for CVVHDF doses of 20 and 35 mL/kg/hr. The other study, the RENAL Trial, has been conducted in Australia and New Zealand comparing survival for CVVHDF doses of 25 and 40 mL/kg/hr. None of them demonstrated differences in outcomes. Thus, within the next years, the potential clinical effects of different CRRT doses should be further discussed. However, strong consideration should be given to the adoption of CRRT prescription practices considering that delivery may be very different from the original prescription.

## CARDIO-RENAL SYNDROMES: WHAT ARE THEY?

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Cardio-Renal Syndrome (CRS) refers to the interactivity between the cardiovascular and renal system whereby acute or chronic dysfunction in one organ, may induce acute or chronic dysfunction (structural and/or functional abnormalities) to the other. It has recently been classified into five subtypes according to the initial organ of dysfunction and the chronicity of the disease. The coexistence of kidney and heart failure carry an extremely bad prognosis.

The pathophysiology of CRS is complex, multifactorial in origin and remains unclear. Hemodynamic changes, neurohormonal activation, inflammation, immune cell signaling, infections, fluid and electrolytes imbalance, iron and vitamin D deficiency, anaemia, traditional risk factors like diabetes mellitus, hypertension, and dyslipidaemia can all contribute to CRS.

Lately, many novel cardiac and renal biomarkers have emerged to aid in the early detection of organs dysfunction in CRS, which may allow timely initiation of treatment and possibly prevent or retard the progression of this disease. Ultimately, it might improve patient outcomes.

To date, there are no recommended guidelines for successful treatment of CRS but multidisciplinary approach between cardiologist, nephrologist and intensivist in management of this challenging group of patients is important. Good clinical judgment is essential for proper patient management. Furthermore, large-scale studies are needed to understand the pathophysiology of CRS and to determine an effective treatment.

## IMPROVING OUTCOME AFTER CARDIAC ARREST

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Survival after a cardiac arrest is strongly affected by the availability of early cardiopulmonary resuscitation (CPR). It has been recognized that the most influential components of effective CPR are the access to defibrillation, the quality of the chest compression and the appropriate delivery of post-resuscitation care.

The availability of automated external defibrillators (AEDs) has allowed the delivery of electrical therapy by untrained individuals including the lay public, but outcome studies have been equivocal. The incremental benefit and cost-efficacy of AED in community-based rescue systems has been questioned and a recent evaluation in the hospital setting implies no benefit overall, but with a potential to adversely affect survival in subsets of patients with non-shockable rhythms.

Greater benefit seems to be gained by focusing on CPR technique. Studies make it apparent, that besides the optimization of the rate and depth of chest compression, outcomes after CPR are adversely influenced by long interruptions in the chest compression during the resuscitation. Thus, a shortening of the "hands-off" time during CPR is strongly associated with better responsiveness to defibrillation and with a higher probability of a return of spontaneous circulation (ROSC). An extreme position that has been adopted is that rescue breaths administered during CPR interfere with the effective delivery of chest compressions and should be abandoned entirely in adult CPR after a non-asphyxial event. Randomized control studies and meta-analysis of clinical data seem to imply that "compression-only CPR (CO-CPR) has advantages over traditional CPR (that includes rescue breathing).

Finally, the importance of post-resuscitative care has been emphasized ever since two controlled trials demonstrated the significant benefit of mild hypothermia after resuscitation from a defibrillatable rhythm. Appropriate support of haemodynamics, avoidance of hyperoxia and good metabolic strategies, including glycaemic control, have been included in post-resuscitative support. However, evidence in support of these approaches remains rudimentary.

## NEUROLOGICAL EMERGENCIES IN THE INTENSIVE CARE: A CASE STUDY BASED APPROACH

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Neurological emergencies in the intensive care pose a challenge to the intensivist or anaesthetist. Neurological emergencies can be divided into those affecting the central nervous system or the peripheral nervous system. A systematic approach is needed in the assessment of these patients. This talk will cover some of the commoner neurological emergencies seen in the intensive care such as the management of raised intracranial pressure, acute stroke, status epilepticus, neuromuscular emergencies and central nervous system infections. At the end of this talk it is hoped that participants will have an idea on how to identify, approach and manage patients with the above neurological emergencies.

## INTENSIVE CARE MANAGEMENT OF SUBARACHNOID HEMORRHAGE

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Subarachnoid Hemorrhage (SAH) following an intracranial Aneurysmal Rupture is often and rightfully described as a neurological catastrophe.

Despite considerable advances in treatment options available (endovascular coiling and intracranial clipping), disability and mortality remains high.

Its presentation varies from sudden rupture with neurological deficit to an insidious finding planned for an elective intervention. Regardless of the presentation, a SAH, following the rupture of an intracranial aneurysm will follow with systemic manifestations affecting the cardiac, pulmonary and the renal system with electrolyte disturbances. Immediate neurological morbidity such as re-bleeding, hydrocephalus and seizures complicated the course of treatment. Delayed Ischemic Deficit as a consequence of vasospasm and autoregulatory failure are delayed neurological disturbances that prove challenging to diagnose and treat.

Suffice to say, Aneurysmal SAH is a complex disease compounded with a challenging and a prolong course. Multi organ involvement with high cardiac morbidity mandates critical care monitoring with intense neurological monitoring. This allows for prevention, detection and management neurological deficits and systemic complications that complicated the management of SAH.

This presentation will highlight the general principals, recommendations and the evidence base literature for the critical care management of patients following acute SAH.

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## FREE PAPER 1

### CRITICAL CARE NURSES' KNOWLEDGE AND PERCEIVED PRACTICES ON SEDATION ASSESSMENT AND MANAGEMENT

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#### Background

Sedation management is an integral component of critical care nursing and nurses' knowledge on sedation management is crucial for patient safety. However, there is no data available related to local nurses' knowledge and practice on sedation management.

#### Objective

To investigate intensive care nurses' knowledge and current practice related to sedation assessment and management for critically ill adult patients.

#### Methods

A cross-sectional survey design was employed using self-administered questionnaire. The sample comprised a convenience sample of 87 nurses from critical care units.

#### Results

Survey response rate was 95.6%. Mean score for the knowledge scale was 62.6% and only 2.3% of the nurses obtained a passing score of 80% or greater, indicating majority of the nurses have inadequate knowledge on sedation and sedation management practice. Though more than 82% of the nurses aware the availability of formal sedation assessment tools, only 67% of them used the formal tool for sedation assessment often or routinely. The three top conditions ranked as most important for the usage of sedation were "to improve patient-ventilator synchrony" (42%), "to reduce patients' anxiety" (24%) and "to enhance patient comfort" (16%). Nursing workload, patient's instability, lack of sedation assessment tool and low priority for sedation assessment were barriers considered to affect sedation assessment and management most frequently.

#### Conclusion

Our results indicate there is need to strengthen the nurses' knowledge and to improve the current sedation management practice. Educational programmes and initiatives to standardized sedation management practice could enhance nurses' knowledge and understanding on sedation management and possibly improve practices.

## COMPARING THE EFFECTIVENESS OF TOCOTRIENOL RICH FRACTION AND ALFA TOCOPHEROL WITH COMBINATION OF VITAMIN C IN THE MANAGEMENT OF SYSTEMIC INFLAMMATORY RESPONSE SYNDROME (SIRS)

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**Background**  
The pathophysiology of systemic inflammatory response syndrome (SIRS) had been described to involve various strong oxidative reactions affecting the status and progress of the patients. Antioxidant therapy had been suggested in many studies involving SIRS management.

**Objectives**  
The objective of this study was to compare the role of Vitamin E Tocotrienol and Vitamin E Tocopherol combined with Vitamin C as antioxidant therapy in the management of critically ill patients diagnosed with SIRS admitted to the intensive care unit and high dependency wards of Universiti Kebangsaan Malaysia Medical Centre (PPUKM).

**Methods**  
It was a single blind randomized clinical trial with a total of 72 patients in which 44.4% Malays, 34.7% Chinese, 19.4% Indians and 1.4% others with 59.7% males and 40.3% females were recruited. Patients in TRI E group received Tocotrienol with Vitamin C while Toco group received Tocopherol with Vitamin C and a control group did not receive any antioxidant.

**Results**  
The clinical parameters showed significant improvements in heart rate ( $P < 0.01$ ), respiratory rate ( $p < 0.001$ ), need of inotropic support ( $p < 0.02$ ), systolic blood pressure ( $P < 0.001$ ), diastolic blood pressure ( $p < 0.03$ ) and temperature ( $p < 0.02$ ). The laboratory parameters showed significant improvements in CRP levels ( $p < 0.03$ ), WBC ( $p < 0.01$ ) and 8-OHdG/creatinine ( $p < 0.001$ ).

**Conclusion**  
The study showed that patients whom received Vitamin E Tocotrienol showed a more significant improvement in most of the clinical and laboratory parameters as compared to patients whom received Vitamin E Tocopherol during the management of SIRS.

## COMPARISON OF IMMUNORESPONSES AND OUTCOMES IN PNEUMONIA PATIENTS BETWEEN GLUTAMINE SUPPLEMENTED ENTERAL FEEDING AND STANDARD ENTERAL FEEDING IN INTENSIVE CARE UNIT

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### Objectives

The aim of this study was to evaluate the beneficial effect of glutamine supplemented enteral feeding in comparison with standard enteral feeding with regards to Simplified Acute Physiological score II (SAPs II), septic parameters (TWC, CRP, CD4/CD8 ratio), PaO<sub>2</sub>/FiO<sub>2</sub> ratio and length of ICU stays between these two groups.

### Methodology

This was a prospective randomized controlled trial. A total of 50 patients who had fulfill the inclusion criteria were randomly allocated into two groups either receiving glutamine supplemented enteral feeding or standard enteral feeding (control group) for 5 consecutive days in ICU, HUSM. SAPs II scores was done within 24 hours of ICU admission and repeated after 5 days of treatment (D6). Then, enteral feeding was started and was continuously delivered by a pump for 24 hours. Inter and intra groups level for pre enteral feeding (baseline, day 0) and post enteral feeding (at day 6) of septic parameters (total white cells, C-Reactive protein, CD4/CD8) and blood glucose level were taken. The length of ICU stays and their survival status were also documented.

### Result

SAPs II improvement was statistically significant when compared in glutamine group between day 1 and day 6 ( $p = 0.002$ ) but not inter group. TWC count and CRP level were significantly improved ( $p = 0.002$ ) within glutamine group and CRP level ( $p = 0.014$ ) for the control group. The CD4/CD8 ratio did not show any significant changes. There was no different between glutamine and control groups in length of ICU stay but in glutamine group more than 50% of the patients extubated at day 6 post enteral feeding and lower mortality rate.

### Conclusion

In conclusion, giving glutamine supplemented enteral feeding for ventilated pneumonic patients have shown a significant improvement in terms of SAPs II, septic parameters (TWC and CRP) and survival status. Nevertheless, the length of ICU stay remains the same.



## TROPONIN LEVELS AS AN ISOLATED PROGNOSTIC FACTOR IN CRITICALLY ILL SEPTIC PATIENTS

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### Introduction

Cardiac troponin elevation is common in the ICU and can be observed in up to 40-50% of critically ill patients. An elevated troponin does not automatically equate with a diagnosis of myocardial infarct and may also be associated with a multitude of non ischaemic causes including septicaemia.

### Objectives

- i. To see if there is a correlation between troponin levels with patients length of stay (LOS) in ICU.
- ii. To study the association between troponin level and outcome rates (survival and mortality) in this group of patients at ICU and general wards in the hospital.

### Method

This was a cross sectional study conducted on 16 consecutive patients admitted to ICU with septicaemia. This included both medical and surgical patients. Patients with cardiac disease and chronic renal failure were excluded. Blood samples were collected for troponin level on day 1 and day 3 of illness in ICU. Subsequently, on transfer from ICU, patients were followed up in the general wards for outcome of disease.

### Results

- i. There was no correlation between troponin level at day 1 and day 3 of illness with the LOS of patients in ICU. (Troponin day 1,  $p=0.876$ ; troponin day 3,  $p=0.554$ ). Data was analysed using the Kruskal-Wallis test.
- ii. There was no association between troponin level at day 1 and day 3 of illness and ICU/ward outcome among this group of patients (troponin day 1,  $p=0.392$ ; troponin day 3,  $p=0.166$ ). Data was analysed using the Mann-Whitney test.

### Conclusion

More research is needed on the diagnostic and prognostic significance and possible clinical applications of troponin measurements in patients with sepsis and critical illness.

## VALIDATION OF THE BAHASA MALAYSIA VERSION OF THE CONFUSION ASSESSMENT METHOD (CAM-ICU) FOR DELIRIUM SCREENING IN THE INTENSIVE CARE UNIT

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### Objectives

Delirium is a common condition in the ICU and remained underdiagnosed. It is important to diagnose delirium as it warrants treatment. The CAM-ICU is the most widely used instrument for diagnosing delirium in the ICU and has been extensively validated. Versions of the CAM-ICU are available in various languages. In Malaysia at the moment, the CAM-ICU is not yet widely used and not yet validated. The aim of this study is to assess the validity of the Bahasa Malaysia translation of the CAM-ICU.

### Methods

This was an observational study conducted over a period of two months in the intensive care unit in Hospital Kuala Lumpur. There were two phases of the study: translation and validation phase. The translation of the instrument was done according to the guidelines suggested by The Translation and Cultural Adaptation group guidelines. The finalized version of the Bahasa Malaysia CAM-ICU was tested for its validity and reliability.

### Results

A total of 21 patients were evaluated in the study. 63 paired CAM-ICU assessments were carried out. The Bahasa Malaysia CAM-ICU assessments were performed by two investigators independently in the ICU between 1 and 5 pm. In the 63 paired assessments, inter-rater reliability was very good (kappa statistics  $>0.81$ ). The incidence of delirium in our cohort was 41.3%.

### Conclusion

The Bahasa Malaysia version of the CAM-ICU showed good correlation with the English version. Thus, it is applicable for used in the Malaysian intensive care unit setting. It is hopeful that the translated version will facilitate both nurses and physicians to screen for delirium and eventually improve overall patients' outcome.

## UNLIMITED VISITING HOURS IN THE ICU: A SURVEY ON ATTITUDE OF ICU STAFF PRE AND POST IMPLEMENTATION ONE YEAR LATER

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### Objective

To assess attitudes of staff working in Intensive care unit (ICU) on unlimited visiting hours prior to implementation and one year post implementation.

### Design

Questionnaire survey.

### Methods

A questionnaire was designed with 28 statements. All doctors and paramedics in ICU were given the questionnaire to answer and the completed questionnaire would be dropped into a box. After a year of implementation of unlimited visiting hours, the same survey was repeated.

### Result

There were 119 vs 64 respondents pre and post implementation. There were 6 statements with significant difference between the two surveys at  $P < 0.05$ . The staff disagreed with two statements: (i) unlimited visiting hours would not interfere with ICU procedures; (ii) it would not affect ICU rounds. They agreed with the following statements: (i) nurses would spend more time giving information to the relatives; (ii) it will interfere with direct nursing care; (iii) nurses would have less time caring for patients; (iv) open visiting hours gave nurses more control. Only a third agreed in both surveys that unlimited visiting hours should be implemented in our ICU. However, when asked if their relatives were admitted to ICU, about 50% would want open visiting hours.

### Conclusion

Generally ICU staffs are unable to accept unlimited visiting hours. They perceive that patient care will be compromised.

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## POSTER PRESENTATION 1

### JAPANESE ENCEPHALITIS, AN ATYPICAL PRESENTATION AND DIAGNOSTIC MRI. A CASE REPORT AND LITERATURE REVIEW

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Japanese encephalitis is the leading cause of viral encephalitis in Asia. To date, few major outbreaks had occurred in Malaysia with latest in 1999 in Kinta, Perak and Bukit Pelandok in Negeri Sembilan with average of 9-91 cases were reported each year. Less than 1% of infected JEV presented with acute encephalitis plus fulminant neurological deterioration. Mainly they presented in milder form of undifferentiated febrile illness. Due to this, high index of suspicion will be needed to differentiate this to other pathologies i.e meningitis, guillain barre or stroke. In the advancement of radiological field, MRI can be a diagnostic tool to aid our diagnosis with support of serology and clinical experience. This case report described a patient with Japanese encephalitis presented to ICU, Hospital Tuanku Ampuan Najihah with two days history fever with myalgia that progressive development of acute encephalopathies resulting to acute onset of respiratory depression requiring mechanical ventilation. Due to his vague presentation, difficulties in achieving a working diagnosis had been accoutered plus lumbar puncture was not consented to aid our working diagnosis. As CT brain shows normal result, we proceed to MRI to point to our clinical goals and it shows pathognomonic T2 hyperintense lesions. 2 case reports from Tuen Mun Hospital, Hong Kong and Sanjay Gandhi Post Graduate Institute of Medical Sciences, Lucknow, India will also be discussed due its similar presentation.

## POSTER PRESENTATION 2

### CASE REPORT: PLASMAPHERESIS IN SNAKE BITE

S P Lee

Hospital Tengku Ampuan Rahimah, Klang, Malaysia

In November 2011, a 64 year old lady presented to our hospital with a snake bite on her left calf. Her vital signs on admission were as follows: BP 90/55mmhg, PR 70/min, SPO2 100%. She was resuscitated with fluids and placed on noradrenaline infusion. There were no signs of neuromuscular weakness or bleeding tendencies. Blood investigations showed prolonged INR and APTT with low fibrinogen. She received a total of 35 vials of polyvalent anti-venom, as we were unsure of the species of snake that bit her. Despite treatment, her coagulation profile remained abnormal and Hb dropped from 15 to 8 g/dL. Unfortunately the anti-venom treatment had to be stopped when she developed severe anaphylaxis (hypotension and desaturation).

Internal bleeding became a real concern in her (intracranial, GIT). Plasmapheresis was initiated and FFP was used as replacement fluid. Her INR reduced from the highest reading of 6 to 1.4 after the third cycle of plasmapheresis and remained stable. She received Tazocin as antibiotic cover and her infected wound was debrided. She was discharged well after a 3 week stay in hospital.

#### Discussion

Snake bites in Malaysia are mainly due to: Malayan pit viper, Asian common cobra, shore pit viper, Wagler's pit viper, Malayan krait, and sea snakes. Treatment for snake bite is mainly supportive in addition to anti-venom, with reports of plasmapheresis being used. Plasmapheresis was initiated in this patient based on the potentially life threatening coagulopathy and anaphylaxis to the anti-venom. Plasmapheresis succeeded in improving her condition and coagulopathy. Plasmapheresis in patients who develop severe anaphylaxis or in the absence of anti-venom can be life saving and be part of treatment strategies for snake bites.

### POSTER PRESENTATION 3

## NORTH AMERICAN DIAMOND RATTLESNAKE BITE IN MALAYSIA

S P Lee

Hospital Tengku Ampuan Rahimah, Klang, Malaysia

In March 2011, a 19 year old man who worked in an exhibition center was bitten by a Diamondback rattlesnake. He presented with drowsiness, tachypnoea and frothy secretions from the mouth. Initial vital signs were BP: 105/68mmHg PR: 108/min O2 100%. His condition deteriorated requiring intubation. Treatment commenced with local polyvalent anti-venom but was ineffective. Treatment ceased due to an allergic reaction. His right hand became markedly swollen. Fasciotomy was performed after orthopaedic consultation.

The patient developed coagulopathy with PT > 120s, and APTT > 180s. He received massive blood transfusions with a total of 7 units packed cells, 16 units cryoprecipitate and 20 units of FFP. He bled continuously from the fasciotomy wound and the femoral puncture site. The local toxicology centre and zoos of Malaysia, Thailand and Singapore were contacted for appropriate anti-venom. A total of 6.0mg (90µg/kg) Recombinant Factor VII was given for the uncontrolled bleeding. Bleeding reduced significantly after its administration and repeated PT/PTT "clotted" in the test tube.

We were eventually able to obtain 6 vials of anti-venom from the Singapore Zoo. Coagulation profile normalized after Recombinant Factor VII and specific anti-venom therapy. His wound was closed later, and he was finally discharged well.

#### Discussion

*Crotalus atrox*, Western Diamondback rattlesnakes are found in the United States and Mexico. They are not indigenous to Malaysia and the only treatment for its bite is the specific anti-venom. Mortality can be high without treatment. The local authorities should be empowered through legislation to demand that appropriate anti-venom be available to protect the workers and the public when exotic snakes are imported. Unfortunately it was not the case here. Also, recombinant Factor VII can be life saving in such uncontrolled bleeding.

### POSTER PRESENTATION 4

## USE OF ANGIO-SEAL VASCULAR CLOSURE DEVICE IN A CASE OF INADVERTENT SUBCLAVIAN ARTERY CANNULATION

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Hospital Tengku Ampuan Rahimah, Klang, Malaysia

We present a case of an inadvertent placement of a triple lumen (7F) central venous catheter into the subclavian artery while attempting a venous access in a polytrauma patient. The patient was a 62 year old gentleman who suffered severe head injury and cervical spine subluxation. He had undergone emergency decompressive craniectomy at our hospital and transferred to the ICU postoperatively. Due to high vasopressor requirements, a triple lumen catheter was inserted over the right subclavian vein. Arterial cannulation was suspected after reviewing the chest X-ray. It was confirmed by the presence of arterial waveform using a transducer. Removing the catheter and applying pressure was not an option due to the high rate of complications. We opted for endovascular closure in lieu of open surgery due to his critically ill state. An interventional radiologist was consulted. With his assistance an Angio-Seal vascular closure device was placed in the subclavian artery. No haemothorax was demonstrated on repeat chest X-rays. His condition stabilised and eventually improved. He was discharged home after 3 weeks in hospital.

#### Discussion

Management of inadvertent arterial cannulation include open surgical repair and endovascular closure. Removal of the central line and compression is not recommended due to the high incidence of serious complications (up to 47%). In some patients who are unfit for major surgery, endovascular closure may be the only option as was the case here. It is beneficial for practitioners to be familiar with vascular closure devices because complications associated with central lines remain significant. Arterial punctures during central line insertions may occur in up to 10% of patients.

### POSTER PRESENTATION 5

## METHANOL POISONING, DID "BRANDY" SAVE HIM?

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A 23 years old Nepalese gentleman was found unconscious by his colleagues. He presented to emergency department 2 hours later with GCS of E4V1M5 and copious secretions from his mouth. He was intubated and admitted to ICU with the initial impression of organophosphate poisoning. In ICU, a strong sweet alcohol smell noted while inserting ryle's tube with clear fluid aspirated. His blood gas revealed severe metabolic acidosis with widened anion gap. Initial impression was revised and a diagnosis of methanol poisoning was made. He was started on ethanol therapy which was a "Brandy" with alcohol concentration of 40% and continuous renal replacement therapy as he was hypotensive with vasopressor support. He recovered fully after 4 days of ICU stay and admitted that it was a parasuicide attempt. It was confirmed later that methanol was detected both in his blood and urine. In conclusion, this case has demonstrated that methanol poisoning can be diagnosed in emergency setting without the availability of blood methanol level. Prompt initiation of ethanol therapy supplemented with continuous renal replacement therapy prevented the development of life-threatening complications of methanol poisoning.

### POSTER PRESENTATION 6

## EVALUATION OF A 5-LAYER SOFT SILICONE DRESSING FOR PREVENTION OF PRESSURE INJURIES IN AN ICU SETTING

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Hospital Ampang, Ampang, Malaysia

#### Objective

To evaluate the effectiveness of a 5-layer soft silicone dressing in reduction of Hospital Acquired Pressure Ulcer (HAPU) in an ICU setting

#### Method

- Patients who are considered high risk of developing pressure ulcers are given a Mepilex Border Sacrum dressing.
- Dressing change is done every 3 days or when the dressing is full/dirty from incontinence
- Evaluation will be stopped for patients who develop stage 1 PU, discharge from ICU or expire.
- N = 30

#### Results

Total 32 patients took part in the 3 month evaluation. Age range from 29 - 74, 22 males and 10 females. 22 patients transferred out of ICU and 10 died of natural causes. Number of days spent in ICU - 3 days: 5 Patients, 4 days: 7 Patients, 5 days: 4 Patients, 6 days: 1 Patient, 7 Days: 2 Patients, 8 days: 1 Patient, 9 Days: 1 Patient, 10 days: 2 Patients, 11 days: 2 Patients, 12 Days: 4 Patients, 14 days: 1 Patient, 16 Days: 1 Patient, 51 days: 1 Patient. Average days of dressing on patient = 8 days. No patient develop pressure ulcer with Mepilex Border Sacrum applied and the patient with the longest stay is 51 days.

#### Conclusion

A 5-layer silicone dressing has shown to be effective in reducing HAPU in sacrum by helping to relieve shearing, friction and microclimate on the skin which causes HAPU. Similar preventive should be considered for patients who are at high risk of developing HAPU or deemed too risky to be turned using conventional kinetic therapy in Pressure Ulcer prevention.

POSTER PRESENTATION 7

**MANAGING HEAT STROKE AND ITS COMPLICATIONS IN A DISTRICT HOSPITAL INTENSIVE CARE UNIT: A CASE SERIES**

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Heat stroke (HS) is a medical emergency characterised by a core body temperature exceeding 40.6°C, leading to severe metabolic disturbances, multiorgan failure and eventually death. Complications of heatstroke include altered mental status, seizures, acute respiratory failure, rhabdomyolysis, hypotension, severe hyperkalaemia, acute renal failure (ARF) and disseminated intravascular coagulopathy (DIC).

Situated in a military town, Hospital Port Dickson (HPD) has recorded 65 cases of heat related injuries, all involving military recruits, from 2002 – 2012. This poster aims to describe our experience in managing four HS patients in our Intensive Care Unit (ICU) since becoming fully operational in January 2012, discuss its complications and identify key interventions that can improve patient outcome.

The patients were aged between 20 – 25 years old with no underlying medical illnesses. All patients presented with poor GCS, seizures and recorded core temperatures of >40.6°C. None of them had any cooling measures and hydration initiated on presentation to the emergency department (ED). All had moderate to severe metabolic acidosis, severe rhabdomyolysis, acute kidney injury and moderate to severe liver impairment. Two patients developed DIC with one finally succumbing to it. The same two patients required assisted ventilation and haemodialysis (HD). Two patients had 2 – 3 days history of fever and being unwell prior to admission, which predisposed them to developing HS. Three patients were eventually discharged home, with two of them having persistent renal parenchymal changes on ultrasound.

In reducing morbidity and mortality associated with HS, emphasis should be made on early and rapid cooling of patients at the site of training. Ample fluid resuscitation at ED and early HD in ICU further improves outcome of severe heatstroke.

POSTER PRESENTATION 8

**BLUE IN ICU – A CASE OF METHAEMOGLOBINAEMIA**

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**Objective**

To report a case of dapsone-induced methaemoglobinaemia which was treated with IV methylene blue.

**Case Summary**

A 35-year-old lady was admitted with complaints of unilateral ptosis, lower limb weakness and unsteady gait, associated with fever. She was diagnosed as retroviral positive with severe arachnoiditis. Her condition deteriorated and she was treated in ICU for septic shock secondary to hospital acquired pneumonia.

She had received dapsone for *Pneumocystis Carinii* Pneumonia (PCP) prophylaxis.

In ICU, there was a discrepancy between oxygen saturation on pulse oximetry and arterial blood gas results associated with raised methaemoglobin levels. Dapsone was implicated and discontinued. Her methaemoglobin concentration reached a high of 19.9%. We optimized her oxygenation, started oral ascorbic acid and administered IV methylene blue 50mg (1mg/kg). She responded well, but required 2 more doses, given over the next 2 days, before her methaemoglobin levels stabilised.

**Discussion**

Dapsone has powerful oxidant properties that can oxidise haemoglobin. Dapsone-induced methaemoglobinaemia accounts for up to 42% of drug-induced methaemoglobinaemia. It has a long elimination half-life of 30 hours, thus its side effects may persist even after drug cessation, necessitating repeated dosing of methylene blue.

**Conclusion**

With increasing use of dapsone in retroviral positive patients, we need to be aware of the presentation and management of its side effects, in particular methaemoglobinaemia.

POSTER PRESENTATION 9

ICU CARE IN MYXEDEMA COMA

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Background

Myxedema coma is a severe life threatening form of decompensated hypothyroidism which is associated with a poor outcome. This endocrine emergency is usually precipitated by significant stress, including drug-induced, sepsis, systemic disorders or ingestion of large amount of raw "Bok Choy".

Case Description

We report a case of a 60-year-old obese Indian lady, with underlying hypertension and family history of hypothyroidism, presenting with signs and symptoms of hypothyroidism, including generalized fatigue, altered mental state, bilateral lower legs swelling and chronic constipation. Clinical diagnosis of myxedema coma was confirmed with biochemical results; extremely low free thyroxine 4 with remarkably high level of thyroid stimulating hormone and anti-thyroglobulin antibody. She was intubated in the ward for respiratory failure and later developed recurrence episodes of cardio-respiratory arrest which respond to cardio-pulmonary resuscitation.

In ICU, she was given intravenous thyroxine 400 microgram, followed by 100 microgram and maintained with oral thyroxine titrating to effect. On day 7 ICU admission, she developed a myocardial infarction which may be attributed to the high dose of thyroxine therapy. However, she currently recovers well.

Conclusion

Controversies arise on the types, triiodothyronine or thyroxine, and dosage of thyroid hormone used as myocardial infarction is a recognized complication. Thus, this report is to discuss the challenge in early recognition as well as the controversy of thyroid hormone replacement therapy in myxedema coma. Prompt interventions with thyroid hormone therapy, intensive care support and early treatment towards complications may reduce mortality and morbidity.

POSTER PRESENTATION 10

EMPHYEMA THORACIS FOLLOWING RIGHT FIRST RIB OSTEOMYELITIS

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Objective

To report a case of right first rib osteomyelitis with right apical empyema thoracis.

Case Summary

A 56-year-old gentleman with underlying hypertension, diabetes, chronic renal disease and chronic liver disease (Child-Pugh Class C) was admitted with complaints of right sided chest pain and swelling which was worsening over 2 weeks associated with progressive shortness of breath, fever, and weight loss. Examination revealed a firm, tender right upper chest swelling.

Contrasted CT chest showed a right apical lung mass extending superiorly to the thoracic inlet, with extension to the superior mediastinum. Parts of this mass appeared to be continuous with a separate mass deep to the pectoralis minor muscle. There was minimal bony invasion of the right first anterior rib close to the costochondral junction and right subclavian vein compression. Minimal right pleural effusion was noted.

Right chest tube was inserted, which drained purulent fluid. Pleural fluid culture yielded Methicillin-sensitive *Staphylococcus aureus*. The empyema failed to resolve with antibiotic treatment indicating surgical intervention.

Right posterolateral thoracotomy, drainage and decortication of the empyema was done, with incision and drainage of the anterior chest wall abscess. Intra-operatively noted a sinus over right anterior chest wall invading right first rib. Osteomyelitis of the right first rib was discovered.

Discussion

Etiologically non-traumatic empyema usually involves extension from an adjacent infected site, with 70% of cases associated with pneumonia. Multiple co-morbidities of this patient contributed to an immune-compromised state, predisposing him to infections. Osteomyelitis of ribs is rare. Whether the first rib osteomyelitis associated with costochondral abscess directly extended into the pleura, causing empyema thoracis or osteomyelitis extended directly to the chest wall resulting in the formation of a chest wall abscess subsequently involving the pleura could not be confirmed.

Conclusion

Severe case of empyema thoracis requires prompt diagnosis and surgical intervention for better outcomes.

## POSTER PRESENTATION 11

### NEUROLEPTIC MALIGNANT SYNDROME, THE GREAT MIMICKER: A CASE REPORT

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Neuroleptic Malignant Syndrome (NMS) is a life-threatening, idiosyncratic reaction to anti-psychotics which is characterized by severe muscle rigidity, autonomic dysregulation, altered thermoregulation and sensorium. We present an intriguing case of NMS, which diagnosis was masked by cerebral malaria. A 38 year-old man with underlying psychiatric illness presented to the casualty with altered sensorium (E4V2M6) and abnormal behavior with irrelevant speech. He was febrile at 38°C and weak looking; otherwise no other abnormalities were detected. A blood film done for malaria parasite (BFMP) revealed *Plasmodium falciparum*, hence a diagnosis of cerebral malaria was made. He was treated in the Intensive Care Unit (ICU) with anti-malarial drugs for two days prior to being transferred out to the ward following clinical improvement. A repeated BFMP on Day 2 of treatment was negative, however he subsequently developed episodes of stupor and refusal of feeding. Following evaluation by the psychiatrist, a diagnosis of catatonic schizophrenia was made and he was started on oral sulpiride and benhexol. Unfortunately his condition deteriorated despite being on anti-malarial drugs and he developed high grade fever at 40°C with muscle rigidity and fasciculation. The diagnosis of NMS was clinched only then and the anti-psychotics were discontinued. However he succumbed to NMS several days later due to multi-organ failure.

## POSTER PRESENTATION 12

### AN UNCOMMON COMPLICATION OF CENTRAL VENOUS CATHETER INSERTION: A CASE REPORT

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The first reported central venous catheter (CVC) insertion was done in 1929. Since then, CVC insertion has become a common procedure both in the Operating Theater and the Intensive Care Unit (ICU). Its indications include haemodynamic monitoring, administration of medications, transvenous cardiac pacing, haemodialysis and many more. However, this amazing device is not without complications. Infection, pneumothorax, arterial puncture, to name a few, can be fatal if not managed appropriately. We would like to present a case report of a mediastinal hematoma, which is a rare complication of CVC insertion. A 69 year old lady with periampullary carcinoma of the pancreas, and was planned for Whipple's surgery. Her surgery was postponed after she developed severe anaphylactic shock upon induction of anaesthesia. In the ICU, a CVC was inserted via her left subclavian vein. She was haemodynamically stable after the procedure. However two days later, she developed persistent desaturation, which did not respond to bronchodilators. A chest x-ray noted a widened mediastinum and a bedside bronchoscopy showed a collapsed trachea approximately 2 cm beyond the tip of endotracheal tube. The contrasted CT thorax was done, revealing a mediastinal hematoma. The hematoma was compressing more than 50% of the carina. Due to her haemodynamic instability and coagulopathy, the evacuation of hematoma by the cardiothoracic team was not done. The patient succumbed 2 days later.

## POSTER PRESENTATION 13

### SLIMMING TO DEATH

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#### Case report

We report of a case involving a 33 year old gentleman who smokes with no past medical illness. He presented to our casualty department with severe haemodynamic instability followed by cardiac arrest. Upon further inquiry revealed chronic use of sibutramine, a banned slimming pill in Malaysia. He was successfully resuscitated and subsequently managed in the ICU. Initially, he required three inotropic supports but was quickly weaned off and extubated within 72 hours. His initial ECHO in ICU showed poor myocardial contractility. A week later the repeated ECHO demonstrated marked improvement. An angiogram was performed during his hospital stay outlined normal coronaries and he was discharged well following 2 weeks of hospital stay.

#### Discussion

Sibutramine is a combined noradrenaline and serotonin reuptake inhibitor used as an anorexic agent in the treatment of obesity. It is well known to increase the risk of cardiovascular events and it is contraindicated in patients with history of cardiovascular disease. However, recovery of the cardiac contractility is difficult to estimate. In this case, we observed that the recovery of cardiac contractility is rather quick; therefore, we suggest supportive treatment should continue despite the initial grim outlook.

## POSTER PRESENTATION 14

### DIAGNOSTIC DILEMMA OF A PATIENT PRESENTING WITH ATYPICAL PNEUMONIA

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#### Objective

To report a case of late diagnosis of atypical pulmonary tuberculosis.

#### Case description

Our patient is a 75-year-old lady, ex-smoker with underlying hypertension, diabetic mellitus and ischaemic heart disease, who was found unconscious with a bottle of bleach next to her. On arrival, she regained conscious level and denied self-poisoning. Initial impression was acute poisoning with aspiration pneumonia as the chest radiograph findings showed right middle lobar pneumonia. CT brain revealed multifocal old infarcts with no evidence of intracranial bleed which ruled out stroke.

On day three of admission, she developed sudden onset of respiratory failure requiring intubation and ventilation. Workup for pulmonary tuberculosis (PTB) was performed in view of the history of chronic cough. Initial direct smears for acid fast bacilli results were negative for PTB but the Mantoux test was positive.

Despite being on optimal ICU treatment, her respiratory function worsened, progressing to multiorgan failure and she succumbed to death. Cultures of the initial three tracheal secretions which were reported 2 weeks later grew mycobacterium tuberculosis complex.

#### Purposes and Clinical Relevance

This case report demonstrates the difficulty in PTB diagnosis in the elderly due to atypical presentation which leads to delay diagnosis and treatment. The sensitivity of direct smear test for acid fast bacilli should be re-evaluated. It can well be concluded that early diagnosis of PTB is crucial with highly sensitive and specific tool.

POSTER PRESENTATION 15

**METHANOL INTOXICATION - CHALLENGES IN DIAGNOSIS AND TREATMENT**

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**Objective**

To present a case on methanol intoxication focusing on the challenges faced during diagnosis and the dilemma on initiating prompt treatment.

**Case Presentation**

35 years old Myanmar gentleman presented to emergency department complaining of sudden onset of difficulty in breathing. Initial examination noted GCS level 14/15, bradycardia, and tachypnea with generalized expiratory ronchi. History revealed that he was exposed to aerosolized pesticide (KAYAK 505) for 3½ hours one day before in semi-enclosed area. His friends also claimed that he took unknown amount of home brewed alcohol one day earlier. Blood investigation showed severe metabolite acidosis with high anion gap, osmolar gap of 66 mOsm/L, blood glucose 9.4 mmol/dl and hyperkalemia. Initial treatment given was nebulizer, hydrocortisone, lytic cocktail and sodium bicarbonate. However, he became very restless overtime and required intubation for airway protection. The ronchi resolved after the nebulizer, but metabolite acidosis and hyperkalemia persistent despite treatment. The initial diagnosis was ethanol/methanol toxicity with differential organophosphate poisoning. He was then admitted to ICU. During hemodialysis, he developed refractory status epilepticus which required thiopentone coma to terminate the seizure. CT brain showed cerebral edema with tonsillar herniation. Blood for methanol level was sent but he succumbed to death on the following day.

**Conclusion**

This case poses challenges in diagnosis as he was exposed to two poisons at the same time but no definite poison level available at that moment. The most prominent clue lies on the high osmolar gap which is highly suggestive of toxic alcohol poisoning. On the other hand, no specific treatment was given at the early phase as there is still doubt on the diagnosis which contributed to his rapid deterioration. High index of suspicion and prompt empirical treatment during the initial phase will change the course of this case.

POSTER PRESENTATION 16

**ROLE OF NEURAL TRIGGER IN PAEDIATRIC NON-INVASIVE VENTILATION**

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**Introduction**

Non-invasive ventilation (NIV) in children has gained increasing importance in the paediatric intensive care units. However, one of the common problems faced is leakage from the interface resulting in suboptimal triggering of ventilation. NIV using neural trigger (Neurally Adjusted Ventilatory Assist - NAVA) offers a potential solution to this common problem.

**Objective**

To review the impact of NIV NAVA in critically ill children in the region's first centre offering this mode of ventilation in children.

**Method**

Case series review of children who were on NIV NAVA since the implementation of this mode of ventilation in July 2011.

**Results**

A total of 5 patients were on NIV NAVA during the study period. The indication for NIV NAVA in two cases was failure of conventional NIV and in three cases; it was to facilitate the weaning process. All cases were successfully weaned off NIV NAVA after 2-27 days on this mode of ventilation. During the initial phase of NIV NAVA, oxygen requirement was increased in 3 of the patients but gradually reduced as the patients improved. There were good or better patient-ventilator synchrony and no wasted breaths (inefficient trigger) in all the patients in spite of the presence of interface leakage that ranged from 75-97%. In addition, oxygenation and ventilation were maintained or improved in all patients. There were no major complications during the use of NIV NAVA.

**Conclusions**

NIV NAVA is a safe mode of ventilation that provided improved triggering, good synchrony and maintained good ventilation in critically ill children in spite of leakage from the interface. NIV NAVA should be considered when there is significant interface leakage during NIV or failure of conventional NIV.



POSTER PRESENTATION 17

**NUTRITIONAL PRACTICE AND PATIENT'S OUTCOME IN INTENSIVE CARE UNIT (ICU), HOSPITAL SULTANAH NUR ZAHIRAH, KUALA TERENGGANU**

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Nutrition provision, used to be less significant in the management of critically ill has gradually gained attention as more adverse outcomes has been established to be associated with malnourishment. This is an observational prospective study to assess and analyze the energy provision in ICU patient and to evaluate the effect of nutrition on patient's outcome – length of stay, duration of ventilation and hospital mortality. Total of 51 patients who were admitted in May and June 2012 for more than 1 day duration have been selected and enrolled in the study.

Daily energy requirement of each patient was calculated based on quick method equation (25kcal/kg body weight). Daily energy intake and the outcome of every patients were recorded. Data were analyzed using SPSS version 16. Mean age of patients in this study is 54.2+19.3 years, mean SAPSII score is 51+ 19. The mean energy requirement and energy intake of patient is 1576 + 206 kcal/day and 767+371kcal/day respectively. Feeding has been initiated within first 24 hours in 34(66.7%) of our patient. 34(66.7%) achieved >70% energy target and most of them only achieved by day 5 of admission. Study showed that those whom feeding was initiated within 24 hours has mortality of 35.3% (those with late initiation, mortality 47%). Patients achieved energy target more than 70% has reduced rate of mortality (35%) compare with those who did not (47%). However, it is not statistical significant (p>0.05). We conclude that nutrition does influence the critical ill patient's morbidity and mortality, however statistical significance cannot be demonstrated in this study probably due to small sample size.

POSTER PRESENTATION 18

**MELIOIDOSIS IN ICU: ALOR SETAR EXPERIENCE**

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**Objective**

Aim of this audit is to look into the demographic data of patients admitted for melioidosis in ICU and also the mortality and its correlation with SOFA and SAPSII score.

**Methods**

This is a retrospective study of patients admitted to ICU for melioidosis with a positive blood culture for *Burkholderia pseudomallei*, from 1st January to 30th June 2012. The patients records were traced and reviewed by using E-HIS.

**Results**

There were a total of 13 admissions to ICU for melioidosis. All were Malays, 85% were male and 15% were female, with peak age group 40-49 years. The peak incident occurs in the month of April this year, in which there were 7 admissions to our ICU, coincides with the monsoon season in Kedah. 62% of the patients had underlying Type 2 Diabetes mellitus, 15% were schizophrenic and 22% had no comorbidities. 30% of the patients were farmers and rubber tapper, the remaining 70% were actually non agricultural workers.

Our study revealed mortality of 69%. 12 patients obtained SOFA score of more than 11 and SAPSII score of more than 40 points. These correlates with more than 50% mortality. Among the 4 patients who survived, the sofa and SAPSII score were similar with the deceased group.

**Conclusion**

Melioidosis confers a high mortality in ICU despite aggressive treatment with broad spectrum antibiotics. It has caused debilitation among immunocompromised patients regardless of their occupational status and socioeconomic background. Further studies in the future will be needed to improve outcome of the disease.

POSTER PRESENTATION 19

**NON TRAUMATIC LIVER INJURY**

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Spontaneous ruptured of liver capsule is a rare complication of HELLP syndrome. It is significantly associated with mortality to mothers as well as baby. The incidence is estimated at 1/45000 and the mortality of mother and child is very high. In view of the life threatening condition, it must be managed in tertiary center for prompt recognition and treatment with close monitoring of hemodynamic and coagulation parameters as well as treatment of underlying disorders. The modality of treatment is varied from conservative to surgical intervention including some center reported to do liver transplantation, depending on severity and hemodynamic stability. However most of the reported case opted for conservative management.

We reported a case of 37 year old lady, G7P4+2 at 34 weeks of gestation who presented to our center with high BP and eclampsia. She was subsequently intubated for airway protection and was admitted to ICU for ventilation and BP stabilization. In ICU, she progressed into normal vaginal delivery with fresh still birth baby. Two hours after delivery, she developed hypotensive episodes with coagulopathy. Transabdominal ultrasound showed presence of free fluid in peritoneal cavity and hematoma at liver capsule. Emergency laparotomy was performed and there was active bleeding from ruptured liver capsule and with the coagulopathic state, the bleeding was unable to be totally secured. Abdominal packing was done to control the bleeding. Post operatively, her condition was further deteriorating as she developed cardiac events and required massive and continuous blood and blood product transfusion to maintain hemodynamic. However her condition getting worse and clinically she did not response to resuscitation. She finally succumbed to death on second day post operation.

POSTER PRESENTATION 20

**A RELOOK AT INTENSIVE CARE REFERRAL AFTER 5 YEARS**

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**Objective**

To relook at referrals for intensive care and compare their outcome with those 5 years ago after an increase in the number of ICU beds in year 2010

**Design**

Cross-sectional observational study

**Methods**

A study on referrals for intensive care was carried out in April 2007 with the following data being collected and analysed: age, gender, referring unit, the doctor deciding on the referral, time taken to admit into intensive care unit (ICU) after referral if admitted, reasons for non admission to ICU and outcome. The same study was repeated in April 2012 and the results compared. The neurosurgical referral was excluded in the analysis.

**Results**

A total of 177 referrals were analyzed in April 2012, an increase of 19.6% from 2007. However there was no difference in terms of age, gender, the frequency of referring unit, the doctor deciding on the referral and the time of admission to ICU. The number of admissions almost doubled, 103 (58%) patients in 2012 versus 55 (37%) patients in 2007. There was an improvement in hospital mortality for those admitted to ICU in 2012 compared to 2007 (36.8% vs 49%). Reasons for denying ICU admission were the following with their respective mortality:

1. Patients in the grey area of prognosis: mortality 81.8% (2012) versus 84% (2007)
2. Patients with poor prognosis: mortality 84.2% (2012) versus 100% (2007)
3. Patients who are too well to benefit from ICU care: mortality 8.3% (2012) versus 0% (2007)
4. Unavailability of ICU bed: mortality 68.4% (2012) versus 85% (2007)
5. Care provided in other critical care area: mortality 62.5% (2012) versus 80% (2007)

**Conclusion**

An increase in the number of ICU beds has led to an increase in the number of ICU admissions with improvement in mortality. The overall care of the patients in general also improved with years.

POSTER PRESENTATION 21

**ATTITUDE AND PERCEPTION OF ICU DOCTORS IN WITHHOLDING AND WITHDRAWAL OF THERAPY: A QUESTIONNAIRE**

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**Objective**

The objective of the study was to determine the perception and attitude of ICU doctors regarding withholding and withdrawal of therapy.

**Design**

Cross-sectional survey.

**Methods**

A questionnaire survey was conducted in 2 teaching hospitals which were Pusat Perubatan Universiti Malaya and Hospital Kuala Lumpur. Total of 79 ICU doctors participated in this survey with the response rate of 71.8%.

**Results**

A minority of doctors think that withholding or withdrawal of therapy is unethical. Only 39.2% agreed that withholding and withdrawing of life supporting therapy are ethically the same. 79.8% of the ICU doctors would provide maximal treatment to patient before withdrawal of therapy. More than 80% of the doctors considered patient-centered factors as important in making decision of withholding or withdrawal of therapy.

**Conclusion**

Only one third of the intensive care unit doctors in our studies have views on end of life care that is in agreement with the consensus and recommendations adopted by national professional organizations. Therefore, guidelines, education and regular training in this issue are recommended.

POSTER PRESENTATION 22

**CASE REPORT OF AN INCIDENTAL FINDING OF DESCENDING AORTIC DISSECTION IN A POLYTRAUMA PATIENT**

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Aortic dissection caused by trauma is usually of Stanford type A. Rarely, in patients with trauma, Stanford type B dissection can be found.

Here, we present a 50 year old Korean gentleman with hypertension who was admitted to ICU following a motor vehicle accident. He sustained multiple injuries involving the brain, lungs, spleen and bones. On CT scan, a descending aortic dissection (Stanford B) between left subclavian artery bifurcation and the abdominal aorta at the level of T12 of vertebrae was incidentally found. He was intubated for lung contusion and was aggressively treated for his hypertension with IV labetalol. He made remarkable progress in ICU and was transferred back to Korea for further treatment.

Stanford type B aortic dissection is usually due to systemic hypertension. Trauma causing type B dissection is relatively rare. Surgical option for this type of dissection is indicated when there is intractable pain, leaking, ballooning or causing reduced perfusion to vital organs. This is in contrast to Stanford type A which requires primary surgical intervention.

In conclusion, trauma patients often presents with aortic dissection. Nevertheless, a finding of Stanford type B dissection warrants aggressive blood pressure management rather than primary surgical intervention.

## A CASE STUDY OF BRUGADA LIKE SYNDROME

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16 years old Malay boy with no known medical illness presenting with history of fever, vomiting and diarrhea for 3 days. Patient also had left knee swelling preceded by left ACL recon under general anaesthesia. Came into hospital in septic shock which required high inotropic support and intensive care unit admission. Patient was then intubated due to respiratory distress. ECG revealed ST elevation at V3 to V6, I and aVL, and partial right bundle branch block which resolved after administration of dobutamine. Hence, the impression was Brugada like Syndrome.

Brugada syndrome is a disorder characterized by sudden death associated with one of several electrocardiographic (ECG) patterns characterized by incomplete right bundle-branch block and ST elevations in the anterior precordial leads. It is a genetic disorder resulting alteration in the trans-membrane ion currents that together constitute the cardiac action potential involving voltage gated sodium channel. Many clinical situations have been reported to unmask or exacerbate the ECG pattern of Brugada syndrome. Many patients with Brugada syndrome are young and otherwise healthy. Diagnosis mainly achieved by ECG.