SPEAKER PROFILES AND ABSTRACTS

Kate Burbury, Consultant Haematologist, Peter MacCallum Cancer Centre

Profile : Kate is a Tasmania graduate and completed her training and fellowship at John Radcliffe Hospital in the UK and Peter MacCallum Cancer Centre Melbourne, where she currently works as a Clinical Haematologist. She received her DPhil from Oxford University in 1999. She has a very active research and clinical program with an interest in epigenetics, the haemostatic dysfunction associated with malignancy, myeloproliferative disorders and flow cytometry in MDS – and is part of the European Leukaemia Network Flow Cytometry Working Party.

Topic : Epigenetics – The Changing Landscape

Epigenetics ("over or upon genetics") is one of the most promising and expanding fields in biomedical research, with implications in both normal and disease biology. It refers to the variability in gene expression, without underlying modification in the actual genetic sequence, but with these alterations being heritable through mitosis and potentially meiosis. This capacity for alteration in gene expression plays a fundamental role in normal development and differentiation, from conception to lineage commitment, as well as maintenance of tissue-specific gene expression patterns, biological and phenotypic diversity, and evolution. It offers an explanation for why genetic variations sometimes do not lead to phenotypic changes and equally why genes, without modification, can yield variable phenotypes. But more importantly the disruptions of epigenetic processes, through global dysregulation of gene function and expression profiles, are a hallmark of initiation and progression of cancer. Recent advancements in the rapidly evolving field of cancer epigenetics have shown extensive reprogramming of every component of the epigenetic machinery in cancer, including DNA methylation, histone modifications, nucleosome positioning and non-coding RNAs, specifically microRNA expression. The reversible nature of epigenetic aberrations has led to the emergence of the promising arena of epigenetic therapy. I will discuss the epigenetic landscape, various mechanisms of regulation and dysregulation, the progress in the field of cancer research, in terms of biomarkers of the disease and pharmacological strategies.

Matthew Jose, Professor of Medicine, University of Tasmania, Consultant Nephrologist, Royal Hobart Hospital

Profile : Matthew Jose qualified with FRACP as a renal physician in 1999 and awarded his doctorate (PhD) through Monash University in 2003 with a thesis titled "Macrophages in acute renal allograft dysfunction". He worked as a clinical nephrologist and physician-in-charge of transplantation at Monash Medical Centre, then was appointed Director of Renal Services for the Northern Territory and between 2004-2006 was responsible for the care of all people with kidney disease in the Northern Territory.
A change in career direction occurred in 2006 with a move to Hobart for family reasons where he was the Head of the Renal Unit at the Royal Hobart Hospital from 2007 to July 2011 and a member of the Menzies Research Institute Tasmania. In July 2011 he was appointed as Professor of Medicine at the University of Tasmania.

Current international standing:

- He is the current Honorary Executive Officer for the Australian and New Zealand Society of Nephrology (ANZSN)
- Member of council for the Australian and New Zealand Society of Nephrology (ANZSN),
- Member of the steering committee of the Australian and New Zealand Dialysis and Transplant Registry (ANZDATA)
- Convener of the Indigenous working group of the Australian and New Zealand Dialysis and Transplant Registry
- Australian coordinator for the International Society of Nephrology Renal Disaster Relief Taskforce
- Subject editor for international journal *Nephrology*
- Member of the Kidney Health Australia Chronic Kidney Disease education committee (KCAT).

Previous: In 2009 he was chair of the local organising committee of the 41st annual scientific meeting of ANZSN, was the ANZSN representative to the 2nd International CKD summit and an Australian representative to the International Society of Nephrology education tour of Indonesia. In 2010 he was the ANZSN representative to the Australian Creatinine Consensus Committee. In January 2011 he was the Australian representative for the International Society of Nephrology / Cross-regional exchange and education visit to Yangon, Myanmar.

Topic : Towards a Better Understanding of Uraemic Molecules

Chronic kidney disease (CKD) affect nearly 2 million Australians causing premature death. The treatment for end stage kidney failure (ESKF) is around $70,000 per patient each year on dialysis and unfortunately, the number of patients is increasing each year.
Although improvements in dialysis procedure can improve the quality and quantity of life among the patients, still half of the patients die within 3 years while they are under modern dialysis treatment. The main reason which causes premature mortality is cardiovascular disease. There are some toxins which aren't removed even with modern dialysis procedure and those molecules contribute to cardiovascular disease.
Among all chromatographic methods developed for the recognition of uremic molecules, capillary electrophoresis (CE) is very suitable for analysis of highly polar and charged compounds (most of metabolites). As metabolites often don't have UV absorbance, hyphenation of CE with MS has provided a strong tool for their analysis and provides us higher sensitivity. In addition, MS can provide structural information of unknown metabolites. The other advantage of CE is small sample and organic solvent requirement.
In this work, some of our efforts towards developing a robust and reproducible CE-MS method for monitoring low-molecular weight metabolites in serum samples of some patients will be presented.

Dr. Shanthi Kamatham, Consultant Clinical Biochemist and Head of Department of Laboratory Medicine at CARE Hospital, Institute of Medical Sciences, Hyderabad, India,

Profile : Shanthi graduated from medical college in 1979. Her specialization was in Clinical Biochemistry at Madras Medical College and obtained MD in 1983.

Her experience in diagnostics is widely varied. Over the past 2 decades, has been involved in the diagnostic laboratories in Kidwai Memorial Institute of Oncology, Bangalore, a premier state government tertiary care hospital – Nizam's Institute of Medical Sciences, Hyderabad and at CARE Hospital since the past 9 years. Though a clinical biochemist has established and runs a haemostasis laboratory, which is looked on as referral laboratory in the state of Andhra Pradesh.

She has been awarded a number of citations towards her contribution to teaching and diagnostics.

She has been an active member of the clinical chemistry bodies of India especially the Association of Medical Biochemists of India and is a member of the Indian Society of Nephrology and Haematology. She is a member of the Technical Committee and a Lead Assessor of National Accreditation Board for Calibration and Testing Laboratories (NABL), India, for accreditation process to the standard ISO 15189:2007.

Topic : Laboratory Physicians' Perspective Of Plasma Cell Dyscrasias – the Indian Scenario

A plasma cell dyscrasias (monoclonal gammopathies) involves the laboratory in fields of hematology and biochemistry to clinch the diagnosis.

At our hospital, a tertiary referral centre, the maximum number of references are from nephrology and cardiology divisions followed by intensive care and neurology, the latter two being in the elderly age group. The median age in the referrals is 60 years and there is a male predominance. Over the past couple of years a younger age group between 40 to 50 years is presenting to the laboratory for a complete workup for plasma cell dyscrasias.

The initial laboratory evaluation is either serum protein electrophoresis or immunofixation electrophoresis and over the past 2 years serum light chain assay. Urine electrophoresis is mandatory when amyloidosis or free light chain disease is suspected. Non secretory tumours which do not show significant laboratory evaluation are subject for a trephine biopsy to yield tissue diagnosis with immunohistochemistry stains. Radiological evaluation also plays a major role in evaluation. The clinical presentations which we encounter are mainly renal impairment, anemia, electrolyte imbalance, hypercalcemia and cardiomyopathy. Monoclonal Gammopathy of Undetermined Significance is prominent in our records followed by IgG kappa and IgG lambda.

Though of late, serum light chain have been of prognostic and diagnostic significance, the belief that it can do away with electrophoresis and bone marrow studies is not very strong at this centre at present. A lot of assays have shown a ratio alteration but no tissue or radiological findings or electrophoresis have shown a monoclonal protein and hence these patients are subject to follow up at regular intervals. The belief in our centre is that serum protein electrophoresis, immunofixation electrophoresis, serum light chains and bone

marrow evaluation along with radiology should form an initial evaluation when ever plasma cell dyscrasias is thought of.

Kazuhiko Kotani, MD, PhD; Research head, Department of Clinical Laboratory Medicine, Jichi Medical University, Japan.

Profile : Kotani is one of the lead researchers about the measurements of oxidised lipoproteins in Japan. He was graduated from Jichi Medical University, which has a mission to improve the rural medicine in Japan, so he conducted the community medicine for postgraduate 10 years. He has also worked in lipid and metabolism clinics, and have learned basic and clinical science in Research Institute of Diabetes and Metabolic Disease, National Hospital Organization Kyoto Medical Centre (as a Visiting Director, Japan), and Tottori University (as a Lecturer, Japan), as well as Glycation, Oxidation and Disease Laboratory, Toro University-California, (as a Visiting Prof., USA). He has worked in Clinical Laboratory Medicine, Jichi Medical University, since 2008. To date, he has developed various oxidized lipoprotein markers, and shown the clinical significance of these markers. He was awarded several prizes on this topic (Japanese Society of Laboratory Medicine, Japan Society of Clinical Chemistry, American Association for Clinical Chemistry, etc.).

Topic : The Potential of Oxidised Lipoproteins as an Atherosclerolic Biomarker

Cardiovascular disease (CVD), one of the atherosclerotic diseases, occurs frequently and remains the most common cause of death in the world; therefore, a deeper understanding of the pathophysiology of CVD, more sensitive and easier measurements of CVD risks in the clinical settings, and better development of preventive strategies, are necessary in order to control the development of CVD. In addition to the quantitative levels of low-density lipoprotein (LDL) cholesterol, much attention has been drawn to the qualitative features of LDL particles as a risk factor for CVD. Whereas oxidative modification of LDL, a crucial step in atherogenesis, occurs in the arterial sub-intimal space and oxidized LDL (oxLDL) is observed chiefly in arterial lesions, it has also been shown to exist in the circulation, where it can become a surrogate marker of CVD. Serum amyloid A**-**LDL (SAA-LDL) complex is currently considered as a novel oxLDL marker. There have been prior reports using SAA-LDL measurements in patients with dyslipidemia, the metabolic syndrome and coronary artery disease. These reports have shown that there are higher circulating SAA-LDL levels in the aforementioned disease status and that a reduction in the levels can be achieved by intervention treatments including lifestyle modifications and drugs such as highly purified eicosapentaenoic acid. Data also suggest a prognostic value of SAA-LDL on cardiac events in patients with coronary artery disease. We will summarize the current data that indicates the usefulness of SAA-LDL measurements as a potential biomarker for CVD. If possible, we will talk about the other new types of oxidized lipoprotein markers.

Alton Ma, Senior Radiation Therapist, Holman Clinic, Hobart

Topic : Pineal Germinoma Case Study

Purpose:

This presentation aims to share knowledge on radiation treatment planning and delivery using intensity modulated radiation therapy (IMRT) for a patient with a pineal germinoma. This tumour has incidence of 0.4%-3.4% of all intra-cranial tumours and is rarely seen in an adult.

Methodology:

This patient was planned for IMRT using Philips Pinnacle^3 (Version 8.0m) treatment planning system with direct machine parameter optimization (DMPO). The treatment plan consisted of two phases, nine 6MV fields for phase I and five 6MV fields for phase II with 13 and 12 increments respectively, treating 1.80Gy per increment in both phases.

The patient was treated with Varian Clinac iX with On-Board Imaging (OBI) version 1.4. The current departmental imaging protocol is daily kV imaging (2D/2D).

Result/Discussion:

Though the shape of target volume in Phase I was very irregular, 9-field IMRT was capable of shaping the isodose to conform to the CTV and limiting doses to critical structures as per table below:

The evenly spaced 9 fields beam arrangement resulted in a very homogeneous target dose distribution whilst minimizing dose to hair follicles (maximum dose 20.6Gy). The patient was reviewed at least weekly by a radiation oncologist/registrar. Mild headache, tiredness and loss of appetite were side effects reported by the patient. The patient experienced some alopecia.

Conclusion:

This case has proven that IMRT is capable of generating very conformal dosimetry while minimizing dose to adjacent tissues.

Alternate beam arrangements might be considered such as non-coplanar technique which may further lower the doses to the critical structures.
Though the maximum dose of hair follicle was low in this plan, the patient still experienced some hair loss. The dose tolerance of hair follicles is questionable.

Joseph McConnell, Laboratory Director, Chief Medical Officer, and Co-founder of Health Diagnostic Laboratory (HDL) Inc., in Richmond Virginia.

Profile : Dr. McConnell is currently the Laboratory Director, Chief Medical Officer, and Co-founder of Health Diagnostic Laboratory (HDL) Inc., in Richmond Virginia. Health Diagnostic Laboratory is a national clinical reference laboratory committed to personalized disease management with focus on identifying and reversing the health risks associated with cardiovascular diseases, diabetes, metabolic syndrome and fatty liver disease.

Until November of 2009, Dr. McConnell was an assistant professor in the Department of Laboratory Medicine at Mayo Clinic. In that role he served for 12 years as the Director of Cardiovascular Laboratory Medicine, and was the Chair of the Clinical Chemistry Fellowship Program at Mayo. He also held a joint appointment in the Cardiovascular Diseases Section of the Division of Internal Medicine. Dr. McConnell graduated high school *Magna Cum Laude*, received his Bachelors degree in Biology (with honors) from the University of Michigan in 1987, and completed Medical Technology training and certification (MT: ASCP) in 1988. Dr. McConnell received his M.S. degree in Chemistry and Ph.D. degree in Clinical Chemistry from Cleveland State University in 1990 and 1993 respectively. Dr. McConnell participated in the Clinical Chemistry Postdoctoral Training Program at Mayo Clinic from 1993 to 1995 and upon completion joined the faculty at Indiana University School of Medicine, where he served as associate director of the Special Coagulation Laboratory at Indiana University Medical Center. He was recruited back to the Mayo Clinic in 1998 to serve as Director of Cardiovascular Laboratory Medicine. He was on the faculty of the Mayo Graduate School of Medicine until November of 2009 when he left Mayo to establish Health Diagnostic Laboratory, Inc. in Richmond Virginia.

Dr. McConnell has been active in the American Association for Clinical Chemistry (AACC), participating as Chair of the Lipoproteins and Vascular Diseases Division in 2006 and 2007 and as past chair in 2008 and 2009. He has been a delegate to the Midwest section for 4 years and served as the Chair for the AACC House of Delegates in 2009. He has also participated as a member of several other AACC committees.

Dr. McConnell's primary research interest is in the field of atherosclerosis, specifically the use of novel risk factors to identify individuals at increased risk for developing cardiovascular disease and events, with a focus on prevention. Dr. McConnell has co-authored more than 80 manuscripts in the peer-reviewed scientific literature.

Topic : Cardiovascular Risk Profiling

Prof. Raymond Playford, Dean of the Faculty of Health Science, University of Tasmania.

Profile : Ray has recently joined UTas as Dean of the Faculty of Health Science. He was previously Vice Principal for NHS liaison and external relations at Queen Mary University of London in addition to being Professor of Medicine at Barts and the London Hospital. His previous roles include being Head of Gastroenterology Section at Imperial College London and also formally Professor of Gastroenterology, University of Leicester, UK 1996-2000. He was awarded the British Society of Gastroenterology Sir Francis Avery Jones Research Medal 1995 and has also been a member of BSG Council. His main clinical interests are Berrett's oesophagus, peptic ulceration and inflammatory bowel disease. Main research interests are importance of growth factors in gut health and disease and the use of bioactive natural products to prevent and treat gut injury.

Topic : Mechanisms of Intestinal Repair & Growth Factors in Inflammatory Bowel Disease

Peptide growth factors are a fascinating group of molecules with diverse effects. Recent developments have allowed us to gain much greater into their pathophysiological functions. In addition, the development of recombinant peptide technology, monoclonal antibody production and artificial small molecule receptor agonists and inhibitors now allows us to use these factors for the treatment of multiple conditions including gastrointestinal malignancy (particularly colonic carcinoma) , short bowel syndrome (where factors such as growth hormone, EGF and glucagon like peptide 2 show particular promise), and inflammatory bowel disease. This presentation provides a broad overview of where research in this area is heading and the pitfalls that need to be considered

Dr Phil Roberts-Thomson, Director of Cardiology, Royal Hobart Hospital.

Profile : Phil is a staff specialist in cardiology at the Royal Hobart Hospital. He is a graduate of the University of Tasmania and trained in cardiology in Adelaide before completing a PhD at Flinders University. He undertook further research and clinical training at the University of Iowa before returning to Hobart in 1999 to a conjoint appointment with the Royal Hobart Hospital, the University of Tasmania and the newly collocated Hobart Private Hospital. He is an interventional cardiologist and has been involved in clinical research that has included studies on AF, acute and chronic coronary artery disease, and heart failure.

Topic : Dabigatran in Atrial Fibrillation

Atrial Fibrillation (AF) is a frequent and often challenging problem for clinicians and their patients. The symptoms of AF are highly variable and consequently management needs to be individualised according to the patient's symptoms and comorbidities. AF has an adverse prognosis which is largely related to the presence of specific comorbidities, many of which contribute to the aetiology of AF. Thromboembolic complications of AF, in particular stroke, are a major part of the adverse prognosis of AF; and are a stochastic effect. Risk calculators for stroke complicating AF are in common use. Anticoagulant strategies can reduce the risk of stroke but inevitably carry a risk of bleeding. Bleeding complications in turn are a random event, the risk of which can be estimated. Several of the risk factors for stroke in AF are also risk factors for bleeding. Large studies provide information to guide the use and effectiveness of stoke prevention in AF with aspirin and warfarin. Alternative oral agents are now available for anticoagulation in AF, and have been studied in large clinical trials. Dabigatran is the first of these to become available in Australia. It is also the first agent to show superior effectiveness over warfarin in a trial of stroke prevention in AF. Aspects of the drug and its use will be discussed.

Dr Hari S. Sharma, PhD, DSc, Institute for Cardiovascular Research, VUMC, University Medical Centre, Amsterdam, The Netherlands

Profile : Hari Shankar Sharma, born at Kunwerpur in India obtained High School diploma in 1974 (with Distinction) and further studied Biological Sciences at A.M. University, Aligarh and obtained BSc (with Honours) and MSc in Biochemistry (with First Division). In 1980, he then joined V.P. Chest Institute, Delhi University and received MPhil and PhD degrees in Biochemistry. After a short working experience as a Biochemist at the Armed Forces Transfusion Centre, Delhi, he moved to Germany in 1985 to the prestigious Max-Planck Institute (MPI) for Biophysical Chemistry, Göttingen as a Post Doctoral fellow. In 1988, he accepted a junior group leader position at the MPI for Experimental Cardiology in Bad Nauheim where he worked for 5 years prior to move to the Netherlands in 1993 as a faculty at the Erasmus University Medical Centre, Rotterdam and established a research group on Cardiopulmonary Molecular Biology. Currently, he is the senior staff member at the Free University Medical Centre, Amsterdam. He is a visiting Professor to the Leuven University, Belgium and CSM Medical University, Lucknow, India. In 2005, he has been awarded DSc degree for his work on 'Angiogenesis and Tissue Remodeling in the Heart and Lung Diseases'. Dr. Sharma's area of research include: 'Role of growth factors/cytokines/vasoactive agents (FGF, PDGF, TGF ß, ET-1, ANG-II, VEGF, IL-1ß, serotonin etç in the pathogenesis of cardio-pulmonary diseases. Dr. Sharma has obtained a number of research grants, published 136 papers and cloned several genes including porcine VEGF and FGF-1. He has teaching experience of more than 20 years for Molecular and Cell Biology, Pharmacology and Laboratory Techniques to medical/Master/PhD students. He has supervised 10 MD/MSc and 9 PhD students for their theses. He has organized 17 international conferences/symposia and delivered 168 invited lectures worldwide. Dr. Sharma has been bestowed with numerous awards/medals including young Investigator Award of the International Society of Hypertension, Distinguished Service Award of Heart Care Foundation of India, Medal of Merit of the International Academy of Cardiovascular Sciences and Masters of Indo-European Intervention Council. Dr. Sharma serves as editor, editorial board member and referee for many reputed journals and funding agencies. He is a member of several Indian, European and International scientific societies.

Topic: Role of Angiogenesis in Airway Remodelling during Asthma and COPD

Chronic lung diseases, such as asthma and COPD are associated with airway remodeling, caused by epithelial shedding, airway smooth muscle (ASM) hyperplasia and hypertrophy and vascular changes. We have shown that different growth factors and cytokines result in differential gene expression and secretion of various proinflammatory cytokines and vascular endothelial growth factor (VEGF), an angiogenic molecule in cultured human ASM cells. To assess the role of airway smooth muscle (ASM) in bronchial angiogenesis and remodeling, we investigated the production of VEGF in ASM cells in relation to mediators of asthma, such as,

IL-1β, TNF-α, TGF-β, ANG II and ET-1. Time dependent release of VEGF protein in the conditioned medium was observed which in its turn induced proliferation and growth of pulmonary artery endothelial cells. We further investigated the effects of nitric oxide (NO) pathway on the pro-inflammatory cytokine; Interleukin-1β (IL-1β) induced expression and secretion of VEGF and PlGF from cultured porcine airway smooth muscle cells (PASMC). PASMC cultures were generated by enzymatic digestion of bronchial smooth muscle and maintained in DMEM. Serum deprived (for 48h) PASMC were stimulated with IL-1β (5 ng/ml), IL-1β + N^{w}-nitro-L-arginine methyl ester (L-NAME, 2 mM), IL-1β + L-arginine (10 mM) and IL-1β + L-NAME + L-arginine for 4 and 24 h. NO synthase inhibitor (L-NAME) was used 1h prior to IL-1β incubation in all experiments. IL-1β induced expression (1.8 fold vs control) of VEGF mRNA (quantitative RT-PCR) was attenuated by L-NAME (1.1 fold vs serum deprived control cells) and augmented by L-arginine (3.8 fold vs control) at 4h. L-NAME inhibited the secretion of VEGF (1208 vs 723 pg/ml) and PlGF (25 vs 5 pg/ml) (assessed by ELISA) in conditioned media of IL-1β treated PASMC at 4 and 24 h, respectively. Treatment of PASMC with IL-1β and L-arginine resulted in further increase in VEGF (1816 vs 783 pg/ml) but not of PlGF in conditioned media. By restoring NO pathway (L-arginine treatment) in L-NAME treated cells led to elevated (2.2 fold) expression of VEGF.

In another set of experiments, we employed cyclical strain using a Flexer Strain Unit (0.5 seconds stretch and 0.5 seconds relaxation; frequency 1Hz) to the human ASMC cultured on a collagen coated BioFlex plates. Protein profile using cytokine antibody arrays revealed enhanced stretch induced release of direct/indirect angiogenic molecules; vascular endothelial growth factor (VEGF), Angiogenin, interleukin (IL)-6 and IL-8 (2-5 fold) from cultured HASM cells. VEGF secretion, assessed by ELISA, was significantly higher after 8h ($p<0.02$) and 24h ($p<0.001$) as compared to controls. Western blot analysis showed robust phosphorylation of ERK1/2 after 15 min and Akt; P-Thr-Akt ($p<0.001$) and P-Ser-Akt ($p<0.004$) after 30 min of cyclical stretch. Respective blockers for Akt, ERK1/2 and Rho pathways revealed significant inhibition of VEGF release only with ERK1/2 inhibitor, U0261 after 8 h. Furthermore, cyclical stretch induced significant release of IL-6 ($p<0.05$) and IL-8 ($p<0.01$) after 24 h, which was blocked by inhibitors of ERK1/2 and RhoA/ROCK pathways at 8h.

Taken together, our findings suggest that a cytokine cascade involving mainly IL-6, IL-8 and VEGF operates in hyper contractile human ASM cells where NO pathway may modulate VEGF signaling during airway inflammation and subsequently contributing to bronchial angiogenesis and airway remodeling in patients with asthma and COPD.

James Sharman, Senior Research Fellow and Head, Blood Pressure Research Group, Menzies Research Institute Tasmania.

Profile : Jim completed his undergraduate and Honours degree at the University of Tasmania. His PhD was at The University of Queensland, with most studies conducted at the Wales Heart Research Institute, Cardiff, UK. He holds an NH&MRC Biomedical Career Development Award to investigate the clinical application of arterial pressure waveform analysis and has published >70 research papers in the field of blood pressure.

Topic : Blood Pressure : What are you measuring and why ?

The most common method to assess blood pressure is with inflation of a cuff at the upper arm. This method was introduced more than 100 years ago and is used to diagnose hypertension and determine the effect of therapy. Blood pressure values acquired by this method are used to indicate the pressure load experienced by the organs. However, recent evidence does not support this assumption, and the consequences of this may include inappropriate assessment of risk related to blood pressure. The aim of this presentation is to provide a detailed explanation of the pitfalls and problems, as well as the underlying physiology, associated with measuring arm cuff blood pressure. New methods to assess blood pressure control will also be presented.

Assoc Prof. Yahya Shehabi, Associate Professor, School of Medicine, University New South Wales, Medical Director, Acute Complex and Community Care Clinical Services Program and Director Intensive Care Services & Research, Prince of Wales Hospital, Sydney.

Profile : Yahya graduated in 1979 with his MBBS from the University of Jordan In 1988 he was awarded Fellowship from the Australian and New Zealand College of Anaesthesia and became a Fellow of the Faculty of Intensive Care in 1989. He is Foundation Fellow of the recently formed College of Intensive Care Medicine. He has an Executive Masters of Business Administration from the University of Technology Sydney (2003)

and a Graduate Diploma of the Australian Institute of Company Directors (2007). He is currently the Chairman of the Intensive Care Foundation of ANZ.

Topic : Use of Procalcitonin as a Biomarker of Infection and Sepsis

Systemic infections and sepsis are a leading cause of mortality in critically ill intensive care patients worldwide. Whilst it is essential that antibiotics are started early in this patient population, the indiscriminate and inappropriate lengthy use of antibiotics is unwarranted. Antimicrobials are one of the most common types of drugs prescribed for patients admitted intensive care. The daily defined dose (DDD) of antimicrobials in the Western Intensive Care population in 2008 – 2009 was 1650 DDD per 1000 occupied bed days much higher than that in hospital words. Beside the cost associated with the use of antimicrobials and the potential for patients to develop side effects due to their use, there is also a particular concern that widespread antibiotic use is contributing to the emergence of higher levels of antibiotic resistance and hospital acquired infections.

Clinicians are used to the conventional indicators of bacterial infection and sepsis to decide when to start and when to stop antibiotic therapy. Conventional biomarkers, such as white cell count, C-reactive protein (CRP) and systemic inflammatory response are very unhelpful. More targeted biomarkers like Tumour Necrosis Factor (TNF) and the Interleukins, IL6 and IL10, are neither independently sensitive nor specific for diagnosing infection.

Procalcitonin (PCT) has recently been utilized as a biomarker for bacterial infections and sepsis. PCT has fast kinetics and can be measured as soon as 2 hours after the onset of infection, has a half-life of 20-24 hours and highly stable in serum or plasma in vivo, and therefore daily blood sampling is adequate. It has a very high negative predictive value and reasonable positive predictive value.

Recently a number of studies have looked at the utilization of PCT measurements to guide antibiotic therapy compared with conventionally guided antibiotic therapy. These studies show that the patients randomized to have PCT guided therapy had less chance of being prescribed antibiotics, received antibiotics for a shorter time with shorter ICU stay and a reduced cost of care compared to those who received conventionally guided antibiotic therapy with no increased risk for adverse outcomes.

While a randomized controlled studies are currently underway in Europe and Australasia evaluating the efficacy of PCT in reducing antibiotic usage in ICU. A PCT guided decision making algorithm may improve the accuracy and appropriateness of antibiotic prescribing which may lead to a potential reduction in inappropriate antibiotic usage, and possible reduction in hospital acquired infections (HAI) including multi-resistant micro organisms (MRO's). It could also be of significant cost benefit.

Swapan Sinha, Calcutta Medical College, University of Calcutta.

Profile : Professor and Head Dept of Pathology since 1995. Chairman of PG Council for Pathology, Assessor Medical Council of India since 2004, Assessor of National Accrediatation Board for Laboratories since 2006. Member selection board for recruitment of Professors/Assoc Professors & Consultants in Pathology since 1999
Chaired and delivered CME lectures on atleast 100 scientific conferences, published more than 65 papers in indexed journal, written six chapters in four books on Medical Sciences; taken more than 80 PG(MD) examinations in Pathology; giuded/coguided/adjudicated more than 250 thesis. Worked as Consultant Haematologist at PMGH, PNG and Gabourne State General Hospital Gabourne and attended Hemophilia Conference at Goldcoast Australia in Oct, 1995 and received training in coagulation disorders at RBH Brisbane under J Rowell in Oct, 1995 .Awarded Fellow in Pathology at AFMC Pune in 2004 and Fellow Ind Soc of Hematology and TM at JIPMER 2008.

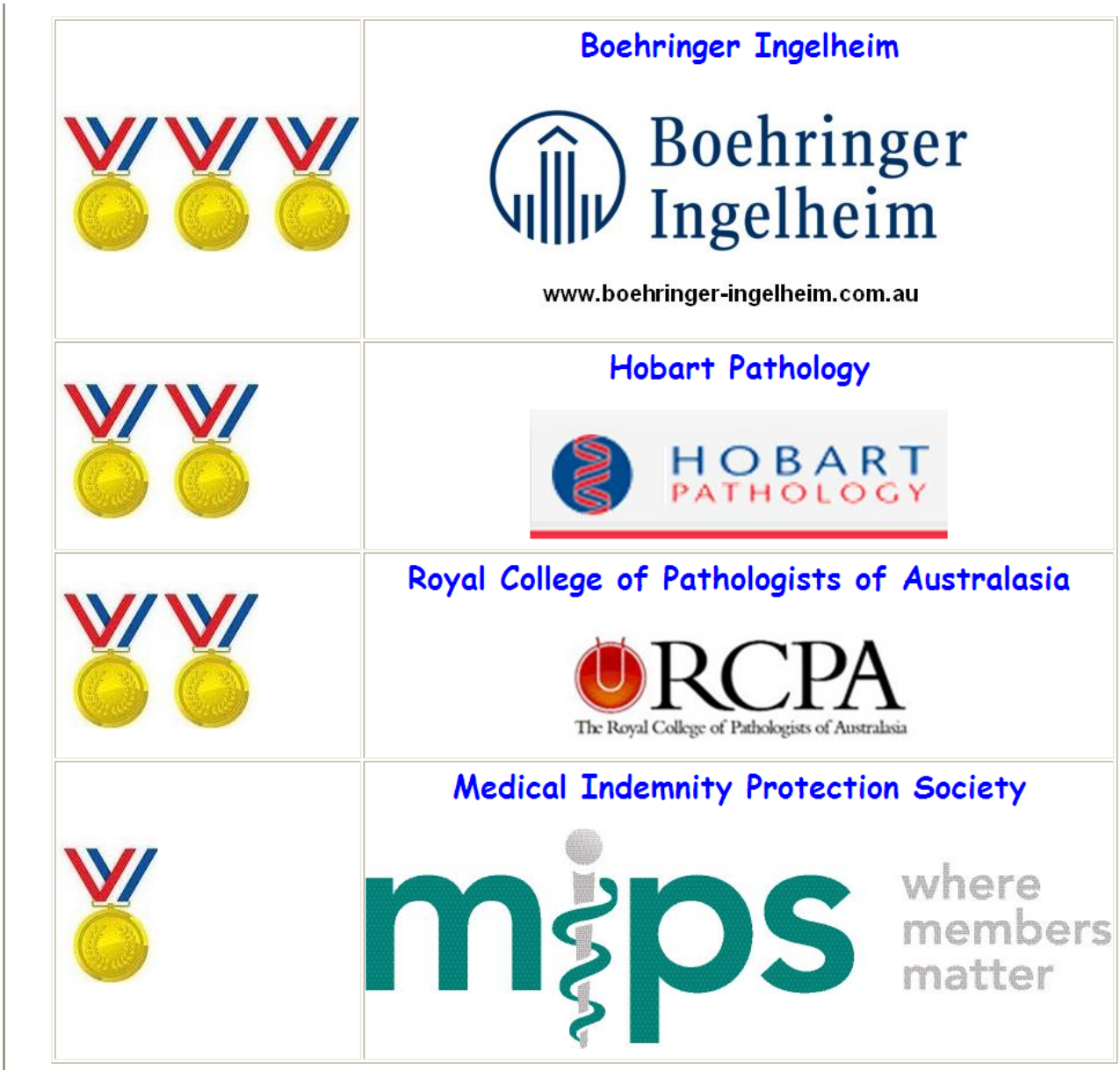
Topic : Hematological Aberrations in HIV/AIDs Patients in NE India

Haematological aberrations are quite common in HIV/AIDS patients. Primary marrow failure, Cytomegalovirus infection, B19 parvo virus, deranged iron metabolism, B12 deficiency, haemolysis may lead to anaemia. Neutropenia is relatively common in HIV infection. Lymphocytopenia due to enhanced apoptosis of CD4 and CD8 cells. Thrombocytopenia may be due decreased survival, immune destruction, and primary marrow failure. HIV infected endothelial cells may lead to thrombotic thrombocytopenic purpura.

117 HIV seropositive patients were subjected to haematological evaluation at ART Centre, N.B.Medical Collage, Darjeeling. 106 (90.6%) fulfilled CDC criterion of AIDS. Age ranged from 3-64 yrs; 75 males and 42 females. Their clinical, radiological and serological status of HBV, HCV, VDRL, Mantoux test, CD4 count was collected. EDTA samples were taken for haemogram, Reticulocyte% and ESR.

The results showed anemia in 47(43.9%), Leukocytopenia in 14 (13.1%), Thrombocytopenia in 8(7.5%), Pancytopenia in 3(2.8%), Neutropenia in 3 (2.8%), Eosinophilia in 10(8.5%) and raised ESR in 95(81.2%).

Anaemia (Hb<10gms/dl), Neutropenia (ANC<1,000/cu/.mm), Thrombocytopenia (50,000/cu.mm.) are poor prognostic parameter.



STUDENT PRESENTATIONS

Diane Lim

Profile : Diane is a final year medical student at the University of Tasmania. She is based at the Launceston Clinical School, where she has been actively carrying out research on age-related macular degeneration under the supervision of Clinical A/Prof Brendan Vote.

Topic : Intravitreal Ranibizumab Treatment for Neovascular AMD in a Regional Clinical Setting.

Michael Thompson

Profile : Michael is 4th Year Medical Student.

Topic : A Primer on Epigenetics

The study of genetics is revolutionising medical care, with targeted molecular therapies and use of genetic tests to determine an individual's predisposition to disease becoming increasingly prevalent. Genetic research

involves investigation of how changes in the DNA sequence, or genotype, affect gene expression and cell fate. Recently parallel field of research, epigenetics, has emerged as a vital determinant of cell phenotype and cellular fate. Epigenetics, literally “above genetics,” is the study of how hereditable, non-genetic alterations may bring about changes in gene expression. Such phenotype changes without a correspond genotypic modification are fundamental to the development of multicellular organisms, where every hepatocyte and neuron share a common genetic code, yet are each specialised to a specific function. Following development epigenetic modifications continue to play a fundamental role in human health with well recognised involvement in the process of carcinogenesis. Furthermore, medications targeted against epigenetic modifications have proven value as chemotherapeutic agents. This introductory level presentation will cover the basic mechanisms of epigenetic modification, their relevance to human disease and clinical application.

Steven van der Werf

Topic : A Study on the Pre-operative Fasting Plasma Glucose levels and Glycated Haemoglobin and the Post-operative Outcome of Elective Surgery