APFCB News

The Newsletter of the Asia-Pacific Federation for Clinical Biochemistry and Laboratory Medicine for circulation among APFCB and IFCC members only

2010

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APFCB Membership

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Chinese Society of Laboratory Medicine *(CSLM)*
Hong Kong Society of Clinical Chemistry *(HKSCC)*
Association of Clinical Biochemists of India *(ACBI)*
Indonesian Association for Clinical Chemistry *(IACC)*
Japan Society of Clinical Chemistry *(JSCC)*
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Submissions

The APFCB News welcomes suitable contributions for publication. These should be sent electronically to the Chief Editor. Statements of opinions are those of the contributors and are not to be construed as official statements, evaluations or endorsements by the APFCB or its official bodies.

Cover - Dr Tan It Koon Painting

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From the desk of Chief Editor...

Greetings!

I am deeply honored to be selected as the Chief Editor of APFCB News w.e.f. 2010. At this hour of joy and pride, I take this opportunity to thank APFCB Executive who supported me and has shown faith in me to carry forward the core objective of APFCB News.

It is my pleasure to come back to you with the great news that as per the decision taken in the APFCB Executive meeting held at Seoul in October 2010, the APFCB News will now be online and released in PDF format. In the same breath let me add that I will also be handling the Communication Division as Chair who is entrusted the responsibility of developing the APFCB website and publishing the News on the website.

Due to certain unforeseen circumstances, development of website was delayed which also affected the release of APFCB News 2010 on time. But now all the activities of APFCB, IFCC and Member Societies, Articles from Corporate Members and Scientific contribution from eminent scientists have been compiled and included in the News for which I extend my heartfelt gratitude to APFCB Executive Members and Editorial Board for their valuable suggestions and cooperation.

Endeavoring further to fulfill my commitment as Chief Editor, I shall steadfastly continue my dedicated efforts to raise APFCB News to the highest. Your feedback in the form of critically motivating and exclusive comments and unflustered support through news, reports and achievements of various activities, both within and beyond the national peripheries would be highly appreciated. I would request the members to send information worthy of sharing amongst us through news on time so that bringing out the issue will be a fruitful exercise.

With best compliments.

Prof Praveen Sharma
Chief Editor

From the Desk of the President, APFCB

Dr Leslie Charles Lai Chin Loy

It is with great pleasure that I 'say' a few words for the first online version of the APFCB News. I would like first and foremost to thank the Council Members for electing me unopposed as the President of the APFCB.

The Executive Board members as of 3rd October 2010 following the elections held in Seoul are as follows:

President	Dr Leslie Charles Lai Chin Loy (Malaysia)
Immediate Past President	Mr Joseph Lopez (Malaysia)
Vice President	Dr Sunil Sethi (Singapore)
Secretary	Dra Endang Hoyaranda (Indonesia)
Treasurer	Dr Elizabeth Frank (India)
Corporate Representative	Mr Martin Albert Fuhrer (Siemens)

The new Executive Board members have been hard at work and we have recently appointed the Chairs of our five Standing Committees, namely, Education, Scientific, Laboratory Management, Communications, and Congress and Conferences Committees. The Chairs of the Standing Committees are as follows:

Education Committee	Professor Samuel Vasikaran (Australia)
Scientific Committee	Professor Kiyoshi Ichihara (Japan)
Laboratory Management Committee	Dr Tony Badrick (Australia)
Communications Committee	Professor Praveen Sharma (India)
Congress and Conferences Committee	Mr Joseph Lopez (Malaysia)

Under the capable chairmanship of the newly appointed Chairs I am confident that our Standing Committees will be productive and go from strength to strength. Each Standing Committee will have a total of three or four members, including the Chair and Secretary. Each Member or Affiliate Member Association is also entitled to have one corresponding member on each of the committees. If your Association is not represented on our Standing Committees please do draw this to my attention or

that of the Secretary of the APFCB, Dra Endang Hoyaranda.

As per our strategic plan, there will be one regional meeting in each year except in the year of the APFCB Congress. The next regional meeting will be an AACC-APFCB Laboratory Automation meeting to be held in Jakarta in September 2011. Please make a note of this meeting in your diaries and I hope that many of you will be able to attend this event.

We are establishing a Developing Countries Project which aims to help our member societies with analytical quality (including quality control and quality assurance) and laboratory accreditation. This will be under the Laboratory Management Committee. Do feel free to email me (lesliecharleslai@gmail.com) or the newly appointed Chair of this committee, Dr Tony Badrick (Tony_Badrick@snp.com.au) if you have any needs relating to analytical quality or accreditation or would like to have workshops on these subjects.

I would like to remind you of two lectureships to be held in 2011/2012 in our Region. The IFCC-Abbott Visiting Lecturer for 2011 and 2012 will be Dr Gary Myers from the United States. The topic of his Visiting Lectureship is Current Markers for Cardiovascular Diseases which is a topic close to the hearts of many of us practising in the field of Clinical Biochemistry and Laboratory Medicine. Our next APFCB Travelling Lecturer is Dr Angela Wang, a nephrologist from Hong Kong, whose topic is Inflammatory Markers in Chronic Kidney Disease and Roche Diagnostics has very kindly offered to sponsor the air travel for this travelling lectureship.

Our APFCB website has had stops and starts. It is the aim of the current Executive Board to have a proper APFCB website. The Australasian Association of Clinical Biochemists (AACB) has very generously offered us the use of their website while developing our own website. The responsibility of developing the APFCB website comes under the Communications Committee.

Last, but not least, I would like to congratulate our new APFCB News Editor, Professor Praveen Sharma, for successfully producing the first online version of the APFCB News.

Dr Leslie Charles Lai Chin Loy
President, APFCB
21 November 2010

Name Changes at the APFCB

Joseph Lopez

Immediate Past President, APFCB

The APFCB Council Meeting held in Seoul on 4th October 2010, voted to change the name of the federation from the Asian and Pacific Federation of Clinical Biochemistry to the ***Asia-Pacific Federation for Clinical Biochemistry and Laboratory Medicine***. This was done to accept societies of laboratory medicine as members in countries did not have national societies of clinical (bio)chemistry. We also took our cue from the IFCC which has "Laboratory Medicine" it its name. The abbreviation ***APFCB,*** however, will still be retained.

The congress of the APFCB will no longer be called the Asian-Pacific Congress of Clinical Biochemistry (APCCB). Recognising that there was always confusion between the abbreviations of the federation and that of the congress, the Council decided that henceforth, it would be called the ***APFCB Congress***. The name would also enhance the APFCB brand. The 13th APFCB Congress will be held in Bali in November 2013.

A Decade of Progress at the APFCB

Joseph Lopez

President (Oct 2004- Oct 2010)

A measure of progress is the comparison of the present with some point in the past. From its founding in the early 80s to the 1999, the APFCB saw its membership grow from 5 to 12. The major activity of that period was its triennial congresses (the APCCBs). The surpluses from the congresses contributed to the healthy financial state with which we started the last decade. The table below shows what has been achieved between 2000 and 2010:

Item	2000	2010
Ordinary and affiliate membership	12 ordinary, no affiliates	16 ordinary and 2 affiliates
Corporate members	None	14; first meeting of EB and Corporate members held in Seoul, Oct 2010
Standing committees	Only 3 committees viz., Education (C-Edu), Science (C-Sci) and Congresses and Conferences (C-CC)	Currently 5; the additional committees are Laboratory Management (C-LM) and Communications (C-Comm)
Executive Board	Called Executive Committee; 5 members	Now the Executive Board with 6 members, with inclusion of Corporate Representative in 2007
IFCC	No agreement or joint activities	2 agreements; collaborative activities such as Visiting lectureships, workshops. IFCC APFCB agreement signed in August 2010
Travelling lectures	Rare	3 regular lectureships, (i) APFCB Travelling lectureships, (ii) IFCC Visiting lectureships and (iii) APFCB-Beckman Coulter lectureship.
Distance-learning introduced in 2010	None	Webinars (courtsey of Siemens),

Item	2000	2010
Scientific projects	None before 2000	(i) Asian reference intervals study, since 2006. Third study has been completed. Fourth study being planned. (ii) Scope of C-Sci has been expanded to include studies on harmonization of non-standardizable analytes. (iii) A new WG of mass spectrometry assays has been formed.
Laboratory management	Represented by a working group for QA	WG upgraded to a Committee (C-LM) which undertakes educational activities and regional QA projects
Scientific publications	None	3 based on results of APFCB projects
Philanthropic Fund for scholarships	None	Scholarships awarded from Fund
Specialty meetings in between triennial congresses	None	(i) QA workshops in conjunction with IFCC; (ii) lab automation meetings in conjunction with AACC
APFCB newsletter	Not regular; distributed only to members	Regular, on annual basis; distribution to members, corporate members and individuals outside region
Income streams	Mainly from surpluses of AFPCB congresses	More diversified; income currently is from: (i) surpluses from APCCBs (ii) we receive annual grants from IFCC (iii) corporate subscriptions, donations (iv) miscellaneous sources
APFCB administration	No office	Management office in Singapore for financial and regulatory matters. Accounts maintained by professional accountants
Linkages (formal and informal)	None	(i) with IFCC (formal, by way of 2 agreements) (ii) with AACC for organisation of lab automation conferences (iii) with WASPALM (to be shortly signed)

In addition, the APFCB's financial reserves have ***increased by about 80% during this period***.

The Strategic Plan approved by the Council in Seoul at its meeting on 4th October 2010 will serve as a road-map for the next six to ten years. Going into the future, it will provide a clear direction of where and how we should head. What we need to achieve the aims of the Plan are able and dedicated volunteers with a sincere desire to see the APFCB progress.

(J Lopez is currently APFCB Immediately Past President; he was Secretary from 1998 to 2004)

APFCB Activities, 2007-2010 in Education, Science and Laboratory Management

Joseph Lopez

President, APFCB (2004-2010)

Once every 3 years, the APFCB President reports to the Council Meeting on the activities of the preceding 3 years of the federation. This meeting is traditionally held on the opening day of the Asian-Pacific Congress of Clinical Biochemistry (APCCB).

There are 16 ordinary and 15 corporate members and 1 affiliate. The new ordinary members admitted during the period of reporting were the Philippines (PAMET) and Nepal (NAMLS), both admitted in 2008. The new Corporate Members admitted were all companies from our region; they were PM Separations (Australia, Nov. 2007), Beijing Wantai (China, 2008) and Agappe (India, 2010).

The following is the summary of the activities in education, science and laboratory management from Oct. 2007 to Oct. 2010.

Educational Activities

Travelling lectureships: The main educational activity of the APFCB consisted of the 3 regular travelling lectureships which are organised by the Education Committee. Dr Leslie Lai (Malaysia) concluded his stint as APFCB Travelling Lecturer with a plenary at the 11th APCCB in Beijing in October 2007. Dr Samuel Vasikaran of Australia who was the TL 2009 and 2010 concluded his series of lectures on interpretative commentary of laboratory results with a plenary at the 12th APCCB in Seoul.

The IFCC Visiting Lectureships to the APFCB region are a collaborative effort among the IFCC, the APFCB (C-Edu) and the national societies which are IFCC and APFCB members. The IFCC provides the speaker and covers travel costs, the APFCB arranges the itinerary of the speaker and national society play host and provides local arrangements. Professor Mauro Panteghini (Italy) visited the region twice in 2008 and 2009 as the Visiting Lecturer to speak on cardiac biomarkers.

We also organise travelling lectureships in conjunction with our corporate members. Speakers for the APFCB-Beckman Coulter Symposium lectures were Dr Sunil Sethi (Singapore) in 2007and 2008, and, Professor Gunther Weiss (Austria) in 2009. The

APFCB-Sekisui Lectureship of 2008 was undertaken by A/Prof Shinji Kihara (Japan) who spoke on adiponectins undertook a one-off lecture tour of 3 countries.

Webinars: The APFCB-Siemens webinars are a new activity that was organised by the APFCB Education Committee. The first session which conducted by Dr Ken Sikaris of Australia on 23rd July, was on Uncertainty Measurement.

Scientific and Laboratory Management Activities

The APFCB Scientific and Laboratory Management committees (C-Sci and C-LM) undertook a number of projects during the period of reporting.

HbA_{1c} (C-LM): The project to assess the proficiency of HbA_{1c} testing in the Asia-Pacific region which was concluded in 2007. The project, organised by Professor Shu-Chu Shiesh (CACB, Taiwan), used samples sent out from Taiwan. The results of the 3 annual surveys held since 2005 were published in Clinical Chemistry. Sponsorship for this activity was received from Bio-Rad and Dade Behring.

Asian Study on Reference Intervals (C-Sci): The 3rd Asian Study on Reference Intervals was completed. Papers on the study are under preparation for publication. Preliminary results were presented at meetings held in Osaka in September 2009 and at the 12th APCCB in Seoul in October 2010. The IFCC collaborated in this study. The 4th study which will cover a larger area of the Asia –Pacific region is at planning stage. IFCC has expressed its support for this study which has attracted interest outside our region.

Interpretative Comments Education Programme (C-LM): This project was undertaken in 2008, 2009. It examined the proficiency of participants to provide interpretive comments on laboratory results. About 50 participants in all from within and outside APFCB region registered for the project.. Expert comments were provided by 3 chemical pathologists and the comments of the participants were compared with these and scored. The results of 2008 have been published.

QA Workshop (IFCC, C-LM and ACBSL): As part of the IFCC's efforts in assisting developing countries and the APFCB's educational activities in laboratory management, a workshop on quality assurance was held in Colombo, Sri Lanka on 4-5 April 2009. It was organised jointly was IFCC(EMD), APFCB's C-LM and the Association of Clinical Biochemists of Sri Lanka.

WG on Mass Spectrometry: Following the conference on mass spectrometry held in Hong Kong in January 2010, a Working Group on Harmonisation of Mass Spectrometry (testosterone) was formed under the C-Sci by scientists from Hong Kong and Australia. The WG held its first meeting in Seoul during the 12th APCCB. It has formulated its terms of reference and action plans which are expected to be implemented in the near future.

APFCB Scientific Publications, Presentations

It is the practice of the APFCB to share our findings when a scientific project has been successfully completed. In keeping with this premise the following scientific publications emerged during the period of reporting from the APFCB's scientific activities:

1. Ichihara K, Itoh Y, Lam CWK, et al. Poon PMK, Kim J-H, Kyono H, Chandrawening N, Muliaty D and the Science Committee for the Asian-Pacific Federation of Clinical Biochemistry. Sources of variation of commonly measured serum analytes in 6 Asian cities and consideration of common reference intervals. Clin Chem 2008; 54: 356-65.

2. Shiesh S-C, Hsiao-Mei Wiedmeyer, Kao Jau-Tsuen, Vasikaran SD, Lopez JB and the Laboratory Management Committee for the Asian-Pacific Federation of Clinical Biochemistry. Proficiency Testing of HbA1c: A 4-year experience in Asian and Pacific Region. Clin Chem 2009; 55: 1876-80.

3. Vasikaran SD, Lai LC, Sethi S, Lopez JB, Sikaris KA. Quality of interpretative commenting on common clinical chemistry results in the Asia-Pacific region. Clin Chem Lab Med 2009; 47: 963-70.

The results of the 3rd Asian Study were presented at a symposium at the 12th APCCB in Seoul in October.

(J Lopez is currently APFCB Immediate Past President; email: jblopez@streamyx.com)

The APFCB Strategic Plan

Joseph Lopez

APFCB President, 2004 - Oct 2010

The APFCB has grown in both its activities and membership especially over the past ten years. However this growth has come about in an *ad hoc* manner. As a consequence, elected or appointed officers were often unaware or unclear of their roles or, at times, simply unwilling to perform as was expected of them.

Following a proposal made at the council meeting in Beijing in 2007, the Executive Board agreed to appoint a drafting team in 2009 to draw up Strategic Plan that would serve as a road-map for the next 6 to 9 years. This team consisted of the following persons:

- Joseph Lopez, President (Chair), APFCB;
- Professor Leslie Burnett, President, Australasian Association of Clinical Biochemists;
- Dr Leslie Lai, APFCB Vice-President, APFCB;
- Dr Samuel Vasikaran (Australia), Chair of the APFCB Laboratory Management Committee; and, Mrs. Endang Hoyaranda (Indonesia), Chair of the APFCB Education Committee.

The purpose of this meeting was also to institutionalise some of the practices that had been established in recent years so that they would not be lost with changes of leadership.

The drafting team met in Perth, Australia on 30 Jan 2010 (Mrs. Hoyaranda was unable to be present.). The meeting considered the future of the APFCB from the four themes of governance, activities, the APFCB congress and future directions. The following were some of the key points contained the Strategic Plan.

Governance

Most of the APFCB's members are national societies of the clinical biochemistry and the main thrust of the federation will continue to be in the discipline. Countries that did not have societies of clinical biochemistry could be represented by national societies of laboratory medicine which could act as proxies for this field. It was decide that the name APFCB needed to be changed to reflect the inclusion of such organisations in our membership. Taking its cue from the IFCC, the name would be amended to

include "and Laboratory Medicine" at the end of its full form. The abbreviation APFCB remains unchanged.

The drafting team recognised that as it was no longer possible for volunteers alone to carry out the APFCB's manifold activities, an administrator needed to be appointed. For now, that person would be a volunteer who would undertake the more mundane tasks and would be rewarded in kind for it.

A number of proposals were made to improve financial management. The APFCB has been a charitable organisation which had not charged a membership subscription since its inception. This has continued despite the growth in its activities and would be untenable in the long run since it would eventually lead to a budget deficit. The drafting team decided that a modest annual subscription needed to be levied on ordinary members and that of corporate members be increased. It was agreed that the recent practice of preparing an annual budget would become permanent. In addition Council will be provided with the annual instead of a triennial statement of accounts.

Activities

Several proposals were made to streamline the APFCB's activities. In the past the APFCB's standing committees consisted of the Chair and, nominally, individual members nominated by *each* of its member societies. As this has been ineffective in practice, it was decided that the IFCC model would instead be followed. The proposed committee structure would have 4 to 5 members, each chosen from individuals nominated by national societies. This would have the benefit of making membership competitive and ensure commitment from those selected. As has been the practice of recent years, each committee will be required to produce an annual Work Plan for approval by the Executive. Activity outcomes will now be measured at the year-end against targets in the Work Plan. The President's annual report on the activities of the APFCB to the Council, again, a practice of recent years, will now become a permanent feature.

The APFCB Congress

It was decided that the name of the federation's triennial congress, the APCCB (Asian-Pacific Congress of Clinical Biochemistry) needed to be changed, to provide a distinction between the congress and the Federation. The congress will henceforth be called the "APFCB Congress" thus ensuring the linkage of the APFCB brand with the congress. The congress guidelines will be revised. Several suggestions were made to ensure greater accountability and transparency of congress finances and for the improvement of its scientific quality. Remittance of the surpluses to the APFCB will be increased from 20% to 23% and to the IFCC increased from 5% to 10%.

Future Activities

Efforts will be made to increase corporate and ordinary memberships to include those companies and countries in the region which are currently not members. The APFCB will seek to establish relationships with sister organisations in the laboratory sciences such as WASPaLM. In addition, linkages will be established with inter-governmental agencies such as WHO Regional Offices in Manila (WPRO) and New Delhi (SEARO).

The detailed Strategic Plan was approved by the Council at its meeting in Seoul on 4th October.

(JL is Immediate Past President of the APFCB; he is a member of its Executive Board and that of the IFCC's)

Asia-Pacific Federation for Clinical Biochemistry and Laboratory Medicine (APFCB)

Annual Report for 2010

Greetings to all Member Societies of the APFCB and a Happy New Year to all.

The new Executive Board took office on 3rd October 2010 following the elections held in Seoul, Korea. The Executive Board Officers are:

President	Dr Leslie Charles Lai (Malaysia)
Immediate Past President	Mr Joseph Lopez (Malaysia)
Vice President	Dr Sunil Sethi (Singapore)
Secretary	Dra Endang Hoyaranda (Indonesia)
Treasurer	Dr Elizabeth Frank (India)
Corporate Representative	Mr Martin Fuhrer (Siemens)

The EB would like to thank the previous Executive Board members for their significant contributions to the APFCB, in particular, Professor Chris Lam (Hong Kong) and Mr Brian Smith (Becton Dickinson) who have now left the APFCB EB after having served the APFCB with distinction.

Following the election of the new EB, a call for nominations went out to all Member Societies for Chairs and Members of the five Standing Committees of the APFCB, namely, Education Committee, Scientific Committee, Laboratory Management Committee, Communications Committee and Congress and Conferences Committee. The Chairs, Secretaries and Members of the five committees have now been appointed. Each Member Society is also invited to have representation on the Committees through Corresponding Members. Many of the Corresponding Members for each committee have also been appointed. The President of the APFCB is an ex-officio member of all the committees.

The Committee membership of the five Standing Committees are as follows:

Education Committee

Chair	Prof Samuel Vasikaran (Australia)
Secretary	Dr Sun Fei (China)
Member	Prof Shu-Chu Shiesh (Taiwan)
Member	Prof Damodaran M Vasudevan (India)

Scientific Committee

Chair	Prof Kiyoshi Ichihara (Japan)
Secretary	Dr Sucheta Dandekar (India)
Member	Dr Ronda Greaves (Australia)
Member	Dr Chen Wen Xiang (China)

Laboratory Management Committee

Chair	Dr Tony Badrick (Australia)
Secretary	Marilyn Robles-Atienza (Philippines)
Member	Mr Tran Huu Tam (Vietnam)
Member	Dr July Kumalawati (Indonesia)

Communications Committee

Chair	Prof Praveen Sharma (India)
Secretary	Prof MVR Reddy (India)
Member	Prof Hwan Sub Lim (Korea)
Member	Prof H Weerawarna (Sri Lanka)

Congress and Conferences Committee

Chair	Mr Joseph Lopez (Malaysia)
Secretary	Dr Marian Tantingco (Philippines)
Member	Eric Martoyo (Indonesia)

Now that the committees have a proper committee structure with competent members and corresponding members it is anticipated that the activities of the APFCB will increase in both quantity and quality.

Report by the Education Committee

A. APFCB Travelling Lectureship

Dr Samuel Vasikaran was the 2009-2010 APFCB Travelling Lecturer. He covered the topics of Osteoporosis, Endocrine Laboratory Service and Interpretative Comments on Laboratory Results. In 2009, he delivered his lecture in India (December 2009), and, in 2010, in Hong Kong (January 2010) and Singapore (March 2010).

He completed his travelling lectureship with the first Plenary Lecture held at the APCCB, Seoul, Korea entitled 'Interpretative Comments on Laboratory Results'.

B. APFCB Webinar

The webinar is a newly developed APFCB-Siemens joint activity, sponsored by Siemens. This programme will be an attractive way of delivering lectures with a wide coverage, relatively easy to coordinate, convenient to the participants for not having to travel, can be equally as effective as classroom lectures, and are much more cost-effective than all other traditional educational activities.

The first webinar was conducted on 23 July 2010, with Dr Ken Sikaris as lecturer, on the topic of 'Uncertainty of Measurement'. The total intended participants (names collected for invitation) for the webinar program were more than 600 members, enrolled from 12 member associations: Australia, China, Hong Kong, India, Indonesia, Malaysia, Pakistan, Philippines, Singapore, Sri Lanka, Taiwan and Vietnam. For the event which lasted 106 minutes, 95 attended, more than 60% of the attendees stayed until the end or nearly the end, and 40% left after attending 50 minutes or less. A Question and Answer session was provided after the lecture. Not all interested members on the list collated received invitations to follow the lecture, resulting in less than 20% participation.

C. Lectureships planned for 2011/2012

1. APFCB Travelling Lecturer for 2011 – 2012:

   Dr Angela Wang (Hong Kong), whose topic is 'Inflammatory Markers in Chronic Kidney Disease', is scheduled to travel to Australia, Indonesia, Malaysia, Hong Kong and China over the two years

2. IFCC-Abbott Visiting Lecturers for 2011 – 2012:

   Dr Gary Myers (USA) is scheduled to travel to China, Hong Kong, Australia, Philippines, Indonesia, Malaysia. His topic is 'Current Markers for Cardiovascular Diseases'.

   Dr Zima (Czech) has been planned to travel to Pakistan, Malaysia and Philippines. Travel plans remain to be confirmed. His topic will be on 'ISO Accreditation'.

Report by the Scientific Committee

A. The 3rd Asian Multi-centre Study on Reference Intervals

The multi-centre study entitled 'Study of regionality in laboratory test results and derivation of reference intervals' was planned jointly with the IFCC Scientific Division (IFCC-SD) and JCTLM in 2008. The major parts of the study were completed in 2009. However, the scientific work associated with the large-scale study continued into 2010. They include the following: analyses for molecular heterogeneity, additional statistical/data analyses and writing up for publication.

1) Further analytical work

(i) Assays for isozymes (LDH, ALP, and amylase) for the entire available specimens, nearly 3500, were carried out in Yamaguchi University, and were completed in February 2010. The data analyses revealed many new findings.

(ii) Protein electrophoresis of all the specimens was carried out in Kochi University and was completed in the summer of 2010.

(iii) High molecular weight adiponectin was measured selectively in 840 specimens in Yamaguchi University to investigate the cause of heterogeneity.

(iv) The assays for NT-proBNP and heterogeneity analyses are being done in Kumamoto University.

2) Additional statistical/data analyses

(i) The reference intervals (RIs) which were derived by the centralised assays were converted into each lab's RIs based on the results of cross-check test results.

(ii) A service of a panel-of-sera-based conversion of RIs was provided to enable secondary participation of commercial labs and establishment of their RIs.

(iii) The RIs were also expressed and presented in International Units, in addition to the conventional units.

3) Publication

The manuscripts to report the findings of the 2009 Asian study are being written up. These consist of three parts:

(i) The strategy and major results in derivation of "common" RI.

(ii) Biological sources of variation for all the analytes measured.

(iii) The validity of the cross-check testing strategy in converting RIs obtained by the centralised assays.

Part one was submitted to the IFCC-SD on 5th November 2010 and is being evaluated by the members of SD. The other two parts will be completed soon in 2011.

Manuscripts on biological sources of variation and association analyses among related analytes are now being prepared as follows:

(i) Renal function tests: Dr. X. Wang, Beijing University

(ii) Inflammatory and nutritional markers: Prof. Y Itoh, Asahikawa Medical School

(iii) Thyroid function tests: Prof. Y Iwatani, Osaka University

(iv) Folate and Vitamin B12: Prof. H. Ihara, Toho University

(v) Isozymes and Adiponectin: Dr. Y. Shimizu, Yamaguchi University

The statistical procedures used in the 2009 Asian study were described in the following IFCC document.

Ichihara K, Boyd J. An appraisal of statistical procedures used in derivation of reference intervals. Clin Chem Lab Med 2010; 48(11): 1537–1551.

B. Planning for a new, worldwide study on reference values

Prompted by the success of the 2009 Asian study, a worldwide study targeting more analytes and covering a wider geographical area is currently being planned in collaboration with IFCC-SD and reference labs registered in JCTLM. Three discussion meetings were held in Corfu, Greece, in April 2010, in Anaheim, USA, in July 2010, and in Munich, Germany in December 2010. The study will be implemented region-by-region over the next two to three years.

C. Activities during the 12th APCCB 2010 in Seoul

1. APFCB-sponsored symposium

This symposium was organised by the APFCB Scientific Committee to report and discuss the objective strategy and the results of the 3rd Asian Project. The lectures delivered at this APFCB-sponsored symposium were:

'The Asian project for collaborative derivation of reference intervals and exploration of diagnostic evidence for laboratory medicine' Chair: K Ichihara (Ub, Japan)

(i) The strategy and an overview of the results - regionality and age/sex related changes in test results (K Ichihara, Japan)

(ii) Influence of environment and nutrition on inflammatory markers (Y Itoh, Japan)

(iii) Influence of gender and pituitary hormone on steroidogenesis (SC Shiesh, Taiwan)

(iv) Sources of variation of renal function markers (X Wang, China)

2. Pre-congress Educational Course by the Scientific-Committee

Through experiences in carrying out the 2nd and 3rd Asian Studies, the committee felt more strongly that multivariate analyses are essential tools to draw valid/meaningful conclusions from a vast array of data set. Therefore, the Scientific Committee offered the following paid pre-congress educational course.

Multivariate analyses for laboratory scientists

(i) Multiple regression analysis for sources of variation in test results.

K Ichihara (Ube, Japan)

(ii) Multiple logistic regression analysis for evaluation of diagnostic utility of laboratory tests.

H Yamanishi (Osaka, Japan)

Report by the Laboratory Management Committee

A. Planning for workshop on Laboratory Quality (IFCC-APFCB-PAMET) Manila, Philippines 23-25 March 2011

Planning has commenced towards a two-day workshop on Laboratory Quality to be followed (or preceded) by a Seminar on Interpretative Skills in Clinical Chemistry Diagnosis to be held in Manila, Philippines, 23-25 March 2011. The programme will be drafted by APFCB and IFCC in consultation with PAMET. The following speakers have agreed to attend: Janet Smith, Leslie Lai, Elizabeth Frank and Tony Badrick. PAMET will undertake all on-site organisations, including corporate sponsorship with any assistance from APFCB as needed.

The Quality Assurance workshop will cover principles and practice of analytical quality together with the fundamentals of accreditation, quality systems and ISO 15189. The Interpretative Skills Seminar will involve case presentations and discussions to develop interpretative skills among participants.

B. APFCB–Becton Dickinson Workshop on Pre-Analytical System in the Medical Laboratory

This may be a future activity based on the success of 2 prior experiences, the 'Pre-Analytical System in the

Medical Laboratory Workshop' held in Sri Lanka, 4 to 6 April 2009 (which was an activity of the APFCB Lab Management Committee together with the IFCC Education and Management Division) and in Indonesia (which was an initiative of IACC) and turned out to be a valuable educational activity. Becton Dickinson has agreed to sponsor this activity.

Report by the Communications Committee

The new Chair of the Communications Committee is also the Editor of the APFCB News. It has been agreed by Council that the APFCB News will in future be produced as an online pdf copy and sent electronically to all members of Member societies. It is anticipated that the 2010 online issue will be distributed to all members at the very latest by the end of February 2011.

The Communications Committee also has the responsibility of developing the APFCB website. Professor MVR Reddy, Secretary of the Communications Committee has agreed to be the Web Editor. It is hoped that the APFCB website will be up and running by the end of August 2011.

This committee will also promote activities of APFCB internationally, regionally and nationally.

Report by the Congress and Conferences Committee

A. 12th APCCB

The congress of the APFCB is the APCCB. The 12th APCCB was held in Seoul from 3rd - 7th October 2010. A statement of accounts is expected at a later date. The APCCB will in future be called APFCB Congress.

B. APFCB Auspices for Meetings in the Region in 2010

Auspices are provided for meetings in the region upon request. There were two meetings that were held in the region that received APFCB auspices in 2010:

(i) Asian Pacific Conference of Chromatography & Mass Spectrometry organised by HKSCC-AACB and the Hong Kong Society of Mass Spectrometry, in Hong Kong, 14 to 16 January 2010.

(ii) IFCC-EMD-IACC Workshop on ISO 15189 Accreditation Awareness, Jakarta, 5 to 8 February 2010.

Report prepared by Dr Leslie Lai (President) with significant contributions from

Mr Joseph Lopez
Dr Endang Hoyaranda
Prof Samuel Vasikaran
Prof Kiyoshi Ichihara
Dr Tony Badrick
Prof Praveen Sharma
Dr Sun Fei

APFCB- Becton Dickinson Distinguished Service Award 2010

APFCB- Becton Dickinson Distinguished Service Award 2010 is presented under the generous sponsorship of Becton Dickinson & Company, after which it is jointly named. It is the only honor within the gift of the APFCB, and is conferred once every 3 years if there is a suitable recipient.

The APFCB is a voluntary organisation. Its officers are senior academics or professionals with demanding responsibilities in their full-time paid appointments. The idea for a Distinguished Service Award was proposed in 2002 to recognize and honour colleagues who have made substantial and outstanding contributions to our Federation for the advancement of clinical biochemistry within our Asian and Pacific region and beyond.

For 2010 award, a committee was constituted under the chairmanship of Dr. Chris Lam and Professor Howard Morris, Dr Tan It Koon were members of the committee. Nominations were invited from the APFCB Council and the winner elected in October last year was Joseph Lopez of Kuala Lumpur, Malaysia.

Joseph Lopez has been a clinical biochemist since 1973 when he joined the Institute for Medical Research in Kuala Lumpur as a biochemist shortly after graduating from the University of Malaya. This was a time when quality control was being established in Malaysian laboratories and Joseph initiated a national QA program for government hospital laboratories in the country. In his 32 years at the IMR Joseph Lopez was actively and continuously involved in the tripartite responsibilities of a well-rounded

clinical biochemist: diagnostic services, teaching and research.

From the IMR Joseph Lopez continued to seek additional outlets of his prodigious energy and enthusiasm for his profession. Together with some like-minded colleagues he brought about the birth the Malaysian Association of Clinical Biochemists on 18 August 1990. He played a key role in organizing the 8th APCCB that was held in Kuala Lumpur. This did not escape the notice of the APFCB and he was elected its Secretary in October 1998, to be followed consecutively by his election to APFCB President for two terms since 2004.

Over the last 12 years as APFCB Secretary and President, Joe's energy, talents, motivation, sense of opportunity, and hands-on leadership have made substantial and outstanding contributions, in multiple directions, to the advancement of clinical biochemistry within our Asian and Pacific region and beyond.

He played a pivotal role starting the APFCB Travelling Lectureship and other educational activities between the triennial Asian and Pacific Congresses of Clinical Biochemistry. During his tenure the APFCB's full membership has risen from 12 to 16. In 2002, he proposed the idea for corporate membership. Today the APFCB has 15 corporate members. The expansion of activities created the need for more committees. Joe proposed the formation of the APFCB's Laboratory Management and the Communications Committees. Where activities had been initiated by others, he was always ready with encouragement and practical support, to ensure that these projects were carried through to their successful conclusion, such as publications in high-impact journals of clinical biochemistry.

From 2002 to 2009 he edited the APFCB News, which under his editorial leadership was significantly changed by way of expanded coverage and circulation. He initiated the formation of the Philanthropic Fund for APFCB's scholarships program, and authored or co-authored the guidelines for several APFCB committees and activities. Earlier this year, he led discussions for the development of a Strategic Plan that will serve as a roadmap for the APFCB for the next several years.

Joseph Lopez has also worked effectively in expanding the influence of APFCB beyond the region. He was instrumental in convincing the AACC to hold its automation meetings in conjunction with the APFCB. In addition, he was one of the key persons in bringing to the region workshops jointly organised with the IFCC.

In 2005 Joseph was elected as a member of the IFCC Executive Board. In this role, he further catalyzed a closer relationship between the APFCB and IFCC. A recent achievement of which he is especially proud has been signing of an updated APFCB-IFCC Agreement this year, a task that required him to painstakingly obtain the consensus agreement of all members of the APFCB. The APFCB has been the first federation to initiate such an agreement with the IFCC. These activities have enhanced the respect that the APFCB has earned in the world community of clinical biochemists.

Joseph Lopez has been closely involved in all APFCB achievements since he became a member of the Executive Board. Joe's distinguished services have taken our Federation to much greater heights, befitting that of the largest and fastest growing geographical region serving the largest patient population of the world. The APFCB is a voluntary organization. Joe's dedication to the APFCB and the tremendous personal efforts and contributions that he has made are a reflection of the finest spirit of volunteerism and altruism.

The APFCB-Becton Dickinson Distinguished Service Award was presented to Joseph Bercmans Lopez during opening ceremony of 12th APCCB on 3rd October, 2010.

Report of the APFCB Travelling lecturer 2009/2010

Sam Vasikaran

Chair, Education Committee APFCB

I was fortunate to be awarded the APFCB travelling lectureship for 2009/2010 and was delighted to accept it. It afforded me the opportunity to visit several countries in the region, meet scientists and pathologists working in laboratory medicine, make new friends and also see some beautiful places and enjoy a great variety of delicious dishes of the region. I am told that the travelling lectureship is the longest continuous educational activity of APFCB.

The first invitation I received was to speak at the Annual Scientific Conference of ACB India, (ACBICON) in Kochi in Kerala state, November 5-7,2009. I was thrilled to accept as I had not previously attended an ACBICON and also I had heard a lot about the natural beauty of this part of India. I was not disappointed. The conference was very well attended with over a thousand participants including many overseas delegates and speakers. For several Indian expatriates domiciled overseas this was an opportunity to return to their country of birth. I gave my lecture on the topic of bone turnover markers in the management of osteoporosis. In addition, I also participated in a "meet the experts" session on the same topic. The Gala dinner held in the open air on the banks of a canal on a balmy Indian night was a highlight for me.

The warm and generous hospitality of the hosts ably led by the conference president Prof Vasudevan made my visit very enjoyable.

I was also invited to speak at the Asian Pacific Conference of Chromatography and Mass Spectrometry, held in Hong Kong, January 14 - 16, 2010. The subject of the conference was very topical, and was of importance to me since our laboratory was moving into LCMSMS technology around that time. The world class speakers and the wide range of topics of the lectures and workshops made this a very useful conference for me. I gave my lecture titled "The endocrine diagnostic service from immunoassay to chromatography and mass spectrometry; a clinical perspective". I would like to thank Drs CS Ho and Michael Chan for the invitation and for their hospitality.

My next visit was to Singapore, an old favourite. I was the external examiner at the SACB membership exam, the viva for which was conducted on the 5th of March. The Annual Scientific Meeting of SACB followed the next day and I spoke on "The Endocrine Biochemistry Laboratory Service – Recent Advances and Current Issues" It was an enjoyable visit, catching up with many friends and sampling some the many culinary delights of the beautiful city state. I would like to thank Prof Sunil Sethi, Dr Moh Sim and Ms Siew Kim for this opportunity and for their warm hospitality.

My final lecture in this program was given as the opening plenary of the 12th APCCB in Seoul, Korea on the 3rd of October, and was titled "Interpretative commenting; a vital component of an effective laboratory service". The conference was a great occasion, and Seoul a very interesting city to visit with a long history and rich culture. The organisation of the conference was meticulous and efficient, which made our attendance a real delight. I wish to thank the organisers headed by Profs Oh Hun Kwon and Won-Ki Min for their hospitality.

Finally, I would like to thank the APFCB for awarding me the lectureship and to apologise to the Associations whose invitation I could not accept due a busy calendar. The Travelling Lectureship was a great learning opportunity for me; I hope I was able to contribute something through my lectures and discussions during my travels.

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REPORT

The 12th Asian-Pacific Congress of Clinical Biochemistry (APCCB 2010)

The 12th Asian-Pacific Congress of Clinical Biochemistry was successfully held from October 3 to 7, 2010 in Coex Center, Seoul, Korea under the theme of "Challenges in Future Diagnostics".

The societies gave the APCCB 2010 organizing committee a great to organize the congress are as follows.

Organizer: Korean Society of Clinical Chemistry (KSCC)

Sponsoring Societies & Organizations:

The Korean Society for Laboratory Medicine (KSLM)

Asian and Pacific Federation of Clinical Biochemistry (APFCB)

International Federation of Clinical Chemistry and Laboratory Medicine (IFCC)

Korean Medical Association (KMA)

Korean Academy of Medical Sciences (KAMS)

The Korean Association of Medical Technologists (KAMT)

The Korean Association of Quality Assurance for Clinical Korea Centers for Disease Control and Prevention (KCDC)

Korean Agency for Technology and Standards (KATS)

Venue

Located in the central business area, the Coex convention center is connected to the main congress hotel (Coex Intercontinental Hotel) and direct airport limousine bus services from both Incheon and Gimpo International Airports to the venue are operated. In addition, the Coex Complex features the Asia's largest underground

shopping mall, restaurants and entertainment facilities.

Registration

The participants registered for the congress through online (email and online system) and offline (fax) registration systems. Total number of participants and visitors were 1,952 from 49 countries.

Category	Domestic	Overseas	Subtotal	Total
Regular	484	487	971	
One-day	4	35	39	
Exhibitor	523	172	695	
Visitor	247	0	247	
Total	1,258	694	1,952	**1,952**

Scientific Program

At the APCCB 2010, a variety of stimulating and informative scientific programs were organized to cover the wide range of clinical biochemistry and laboratory medicine. There were 5 plenary lectures, 79 presentations from 26 symposia, 32 presentations from 8 society sponsored symposia, 20 presentations from 11 industry symposia and 7 presentations from 3 pre-congress workshops. In addition, special workshops of IFCC TF-YS workshop and KSLM were organized. Finally, 38 oral presentations and 293 posters were presented. Altogether, 483 research results from 67 sessions were presented during the APCCB 2010.

Scholarships & Awards

The APCCB 2010 organizing committee offered scholarships and awards to support the participation of young fellows and scientists. The APCCB 2010 Young Scientist Scholarships were presented to 6 winners (each USD 2,600), APFCB/Siemens Young Scientist Scholarships were presented to 5 winners (each USD 2,600) and Roche/IFCC Travel Scholarships were presented to 8 winners (each EU 1,250~2,250). Furthermore, the organizing committee presented 19 Research Awards to the best

presenters (5 oral and 16 poster presenters, each USD 500) and 37 Travel Awards (each USD 500). In total, 19 scholarship winners and 56 award recipients were selected.

Sponsorship & Exhibition

116 booths of 42 companies were exhibited at the APCCB 2010. Besides the below listed 35 companies, 7 academic societies (AACC, APCCB 2013, Asian Quality Assurance Survey, Clinical and Laboratory Standards Institute, College of American Pathologists, IFCC, and The Korean Society for Laboratory Medicine) joined the exhibition.

Social Programs

A variety of exciting social programs were organized during the APCCB 2010. The Opening Ceremony and Welcome Reception were held on October 3. Exhibition Tape Cutting Ceremony and Presidential Dinner were held on October 4. Also, The Movie Day was organized on October 5 to show the Korean movie. On October 6, Korean Cultural Experience and Gala Dinner were held. The Closing Ceremony was held on October 7 to celebrate the successful completion of the congress. Along with these events, Business Meetings, Lab Tours and User Meetings were organized for the participants.

Participants' Feedback

The APCCB 2010 conducted a survey on the congress. The APCCB 2010 was a very successful congress in terms of the feedback received from the participants. 310 participants were completed the survey and 85~90% of them responded to the items on congress programs, organization, value of the congress, presentation contents, logistics and services as Good~Very Good.

Congress Website

For more information, please visit our congress website at www.apccb2010.org

APFCB SCHOLARSHIP AWARDS 2010

Dra Endang Hoyaranda

Secretary, APFCB

For major international congresses in Laboratory Medicine, the APFCB offers scholarship awards to scientists in the region. At the 12th APFCB congress which was held in Seoul, Korea, last October 2010, the APFCB Philantropic Fund granted 5 scholarships to young scientists who were going to Seoul to present their outstanding research. This time, the scholarships were sponsored by Siemens, and 5 scholars from 22 candidates were chosen by the APFCB Executive Board to receive the awards. All 5 scientists presented their research at the APFCB congress in Seoul, Korea, last October 2010 with the following topics:

1. Lin Zhang (China) : Relationship between Apoliporotein AII Gene Polymorphisms and Type 2 Diabetes Mellitus with Coronary Heart Disease
2. Deepika Sharma (India) : Role Of Endothelial Dysfunction Markers And Inflammatory Cytokines In Preeclampsia- A Pilot North Indian Study.
3. Han Chern Loh (Malaysia) : Apolipoprotein H as Novel Biological Marker in Schizophrenia
4. Liu, Weiwei (China) : Quantitative Assessment of AKAP12 Promoter Methylation in Human Prostate Cancers Using Methylation-Sensitive High-Resolution Melting:Correlation with High Gleason Score
5. Prabin Gyawali (Nepal) : Gamma Glutamyl Transferase to Alkaline Phosphatase Ratio and De Ritis Ratio as a Diagnostic Marker of Alcoholic Liver Disease.

A special lunch was also organised by the sponsor for them. The APFCB President, Mr Joseph Lopez, APFCB Vice President, Prof Dr Leslie Lai as well as the Education Committee Chair, Dra Endang Hoyaranda were present at the lunch, Siemens Healthcare Diagnostics Asia Pacific /Japan Marketing Vice President, Dr Martin Fuhrer, was also present at the lunch, representing the sponsor of the scholarships.

APFCB Award Recipients

Young Scientist Scholarship Award by IFCC, APFCB and Organizing Committee was given to following Recipients

APCCB 2010 Young Scientist Scholarship Winners				
No.	Name	Organization	Country	Sponsoring Society
1	Aqel, Amin	Mutah University	Jordan	IFCC
2	Basu, Surupa	Amri Hospitals-Dhakuria	India	IFCC
3	El-Baz, Hatim	National Research Centre	Egypt	APCCB 2010 OC
4	Fattah, Miswar	Hasanuddin University / Prodia Clinical laboratory	Indonesia	IFCC
5	Gelal, Basanta	B. P. Koirala Institute of Health Sciences	Nepal	APCCB 2010 OC
6	Gyawali, Prabin	Dhulikhel Hospital, Kathmandu University Hospital	Nepal	APFCB
7	Intasai, Nutjeera	Chiang Mai University	Thailand	APCCB 2010 OC
8	Kimengech, Kenneth	Kenyatta National Hospital	Kenya	IFCC
9	Lee, Kaheng	Universiti Putra Malaysia (UPM)	Malaysia	APCCB 2010 OC
10	Liau, Yusmiati	Prodia Clinical Laboratory	Indonesia	IFCC
11	Liu, Weiwei	Huashan Hospital	China	APFCB
12	Loh, Han Chern	Universiti Tunku Abdul Rahman	Malaysia	APFCB
13	Mohan, Teena	All India Institute of Medical Sciences (A.I.I.M.S.)	India	APCCB 2010 OC
14	Popoola, Omolara	University College Hostpial	Nigeria	IFCC
15	Rasheed, Saima	International Center for Chemical and BiologicalSciences, University of Karachi	Pakistan	APCCB 2010 OC
16	Rodriguez, Maria Teresa Tablante	Philippine Association of Medical Technologists	Philippines	IFCC
17	Sharma, Deepika	Lady Hardinge Medical College	India	APFCB
18	Stefan, Lorena	Craiova County Clinical Emergency Hospital	Romania	APCCB 2010 OC
19	Ta, Hieu Minh		Vietnam	IFCC
20	Tosheska-Trajkovska, Katerina	Medical Faculty	Macedonia	APCCB 2010 OC
21	Zhang, Jun	Sir Run Run Shaw Hospital, Medical School ofZhejiang University	China	IFCC
22	Zhang, Lin	Peking Union Medical College Hospital	China	APFCB

APCCB 2010 Travel Award Recipients

No.	Name	Organization	Country
1	Abdurakhmonov, Farkhod	Samarkand State Medical Institute	Uzbekistan
2	Aggarwal, Shakti	Lady Hardinge Medical College	India
3	Albano, Pia Marie	University of Santo Tomas	Philippines
4	Amri, Manel	University of Sciences and Technology Houari Boumediene	Algeria
5	Ani, Alireza	Isfahan University	Iran
6	Anukool, Wichittra	Mahidol University	Thailand
7	Atef, Shereen	Ain Shams Univesity	UAE
8	Bucker, Firdaus Begum Mohd Abu	National University Hospital	Singapore
9	Chattopadhyay, Mrittika	Institute of Post Graduate Medical Education & Research	India
10	Cristina, Alexandra	Prodia Clinical Laboratory	Indonesia
11	Dabla, Pradeep	Lady Hardinge Medical College	India
12	Dansethakul, Prabhob	Mahidol University	Thailand
13	Dawar, Rajni	Lady Hardinge Medical College	India
14	Dayanath, Bolonghoge	Teaching Hospital Karapitiya	Sri Lanka
15	Deo, Pankaj	Tongji Medical College	China
16	Goh, Li	National University Health System	Singapore
17	Gupta, Monika	SMS Medical College	India
18	Jalali Far, Mohammad Ali	Ahvaz Jundishapur University of Medical Sciences	Iran
19	Jinda, Sayaka	Mie University	Japan
20	Kamimura, Yumiko	Niigata University of Pharmacy and Applied Life Sciences	Japan
21	Kapustian, Liudmyla	Institute of Molecular Biology and Genetics NAS of Ukraine	Ukraine
22	Kayadibi, Huseyin	Iskenderun Military Hospital	Turkey
23	Kim, Moon Sun	Herbal Medicine Research and Education Centre	Austrailia
24	Li, Heng	Sichuan Maker Biotechnology Co., Ltd	China

25	Mahto, Sunita	University College of Medical Sciences	India
26	Mamadalieva, Nilufar	Institute of the Chemistry of Plant Substances AS	Uzbekistan
27	Mokarram, Pooneh	Shiraz University of Medical Sciences	Iran
28	Nagila, Amar	Mahidol University	Thailand
29	Naidu, Jegathambigai	Universiti Sains Malaysia	Malaysia
30	Othman, Mohd Izani	Universiti Teknologi MARA	Malaysia
31	Phongpradist, Rungsinee	Chiang Mai University	Thailand
32	Pichinuk, Edward	Tel Aviv University	Israel
33	Poudel, Bibek	Magarajgunj Medical Campus, IOM, TUTH	Nepal
34	Rasmi, Yousef	Urmia University of Medical Sciences	Iran
35	Ray, Lopamudra	Institute of Post Graduate Medical Education and Research	India
36	Safari, Mohammad Reza	Hamedan University	Iran
37	Santoscoy-Ascencio, Guillermo	Hospital Civil de Guadalajara 'Fray Antonio Alcalde'	Mexico
38	Sawant, Apurva	P.D. Hinduja National Hospital & Medical ResearchCentre	India
39	Shah, Swarup	P.D. Hinduja National Hospital & Medical ResearchCentre	India
40	Shrestha, Rojeet	TU Teaching Hospital	Nepal
41	Siu, Wai-Kwan	Tuen Mun Hospital	Hong Kong
42	Sonongbua, Jumaporn	Mahidol University	Thailand
43	Sumiyati, Yati	Hasanuddin University / Prodia ClinicalLaboratory	Indonesia
44	Tima, Singkome	Chiang Mai University	Thailand
45	Vinokur, Vladimir	Hadassah Medical School – The HebrewUniversity of Jerusalem	Israel
46	Wijaya, Johnson	Hasanuddin University	Indonesia
47	Worachartcheewan, Apilak	Mahidol University	Thailand
48	Wu, Yonghua	Peking University Third Hospital	China
49	Yasue, Tomomi	Osaka Prefectural Medical Center for Respiratory and Allergic Diseases	Japan
50	Ziyadullaev, Shukhrat	Samarkand State Medical Institute	Uzbekistan

APCCB 2010 Research Award Recipients

No.	Name	Organization	Country
1	Ani, Mohsen	Isfahan University of Medical Sciences	Iran
2	Bae, Eunsin	University of Ulsan, Asan Medical Center	Korea
3	Berglund, Christian	Randox Laboratories Ltd	UK
4	Chan, Ho-man	Hong Kong Baptist University	Hong Kong
5	Cho, Sun Young	Kyung Hee Medical Center	Korea
6	Hansson, Lars-Olof	Karolinska University Hospital	Sweden
7	Hwang, Yusun	Ewha Womans University	Korea
8	Joseph, John	Pathwest Laboratory Medicine	Australia
9	Kaur, Jasbinder	Government Medical College & Hospital	India
10	Kim, Hyuk-Soon	Konkuk University	Korea
11	Kim, Hyungsuk	Seoul National University Hospital	Korea
12	Kim, Sollip	University of Ulsan, Asan Medical Center	Korea
13	Kim, Suk Ran	Sungkyunkwan University, Samsung Medical Center	Korea
14	Ko, Dae-Hyun	Seoul National University Hospital	Korea
15	Kwon, Min-Jung	Korea University Anam Hospital	Korea
16	Lo, Vanessa Man Har	Hong Kong Sanatorium and Hospital	Hong Kong
17	Munoz-Valle, Jose Francisco	Universidad de Guadalajara	Mexico
18	Park, Sang Hyuk	University of Ulsan, Asan Medical Center	Korea
19	Zima, Tomas	Charles University	Czech Republic

NEW AFFILIATE MEMBER

Last November 2010, the APFCB Council unanimously accepted the admission of *Macao Laboratory Medicine Association (MLMA)* as Affiliate Member.

The MLMA is the association of laboratory medicine registered in *Macao Special Administrative Region of China.* MLMA's President is Dr Anna Koon Kin Veng. We congratulate MLMA as a new affiliate member, and wish they may benefit from, and also participate in all APFCB activities.

Australasian Association of Clinical Biochemists (AACB) Report 2010

The Australasian Association of Clinical Biochemists (AACB) continues to enjoy a steady increase in membership with seventy new members joining in 2009.

The 2010/11 Executive of the AACB is:

Prof Leslie Burnett	President & APFCB Representative
Miss Jill Tate	Vice President, Scientific & Regulatory Affairs
Dr Peter Vervaart	Vice President, Education & Training
Mr Peter Graham	Vice President, Finance & Strategic Planning
Mr Tony Prior	Chief Executive Officer

Chairs of Standing Committees

Ms Sandra Klingberg	Publications
Ms Helen Martin	Board of Examiners

Current Concepts Lectures

The very successful 2009 Current Concepts topic was *Pharmacogenomics* and the speakers were Dr Keith Byron and Prof Les Sheffield. 2010 saw a webinar format with Prof Robert Norman speaking on *Reproductive Medicine*.

Chromatography & Mass Spectrometry Conference

The Asian Pacific Congress of Chromatography & Mass Spectrometry held on January 14-16, 2010 in Hong Kong was an enormous success.

W Roman Travelling Lectures

In July and August this year Dr Ken Sikaris presented the Roman Lecture, *Biochemistry on the Human Scale*. His ability to engage the audience with statistics was very well received.

Scientific Education Seminars

The first of the year's Scientific Education Seminars, *"Therapeutic Drug Monitoring"* was held in Brisbane on March 12, 2010. This was followed in May by, *"How Can Point of Care Testing Assist with Chronic Disease Management" and a Analytical Quality SES* in Sydney in June.

The Business of Pathology (TBOP)

In November 2009 the AACB hosted the second TBOP meeting, this time in Melbourne, with the collaboration of Robert Michel of the Dark Report. Speakers came from Canada, USA, New Zealand and Australia resulting in a stimulating program.

RCPA AACB Chemical Pathology Course

The annual Chemical Pathology Course was held in Hobart in February 2010 where delegates were welcomed from Australia, New Zealand and the region. Dr Peter Vervaart and his Organising Committee provided an excellent and varied educational program. The 2011 course will be in Adelaide, South Australia from 4-8 April.

Industry Education Course

In June 2010 AACB Services ran a third education course aimed at diagnostic industry support staff. The two day course, held in Sydney, was provided free of charge to our Corporate Members and was again well received by attendees.

Meetings with Other Societies

A satellite meeting of the annual CSANZ conference was held in August 2009, "*The Evidence for the Use of Low Troponin Levels"*.

In October 2009 the President, Prof Leslie Burnett spoke at the Laboratory Automation meeting in Kuala Lumpur.

We were fortunate to be able to sponsor Nobel Laureate, Prof Elizabeth Blackburn to return to Australia to speak at the RCPA Pathology Update meeting in late February 2010. We were also extremely pleased that she was able to provide two public lectures, one in Melbourne and another in Sydney before she returned to the USA.

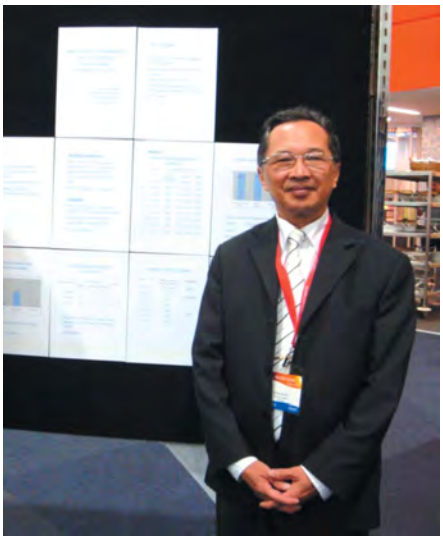
Annual Scientific Conference

A very successful meeting was held in Brisbane in September 2009 where we welcomed delegates from across the region including Prof Hoang Van Son from Vietnam a long standing member of the AACB. Dr John Whitfield was awarded his AACB Life Fellowship at the opening ceremony of the meeting.

Invited speakers from overseas included Dr Barbara Goldsmith (AACC President), Dr Larry Broussard (USA), Dr Graham Beastall (UK), Prof Jack Ladenson (USA) and the "Naked Scientist" Dr Chris Smith (UK).

The conference was followed by a one day Careers Workshop featuring Dr Graham Beastall.

Dr John Whitfield with Prof Leslie Burnett



Prof Hoang Van Son

Our annual meeting in 2010 was held in Perth, Western Australia and was a joint meeting with the Australian Institute of Medical Scientists attracting more than 700 delegates. The David Curnow Plenary Lecture was delivered by Prof Dennis Lo in addition to other overseas guest speakers Prof Catherine Hammett-Stabler, Prof Stefan Grebe and Dr Chris Price. The closing plenary was provided by Nobel Laureate, Prof Barry Marshall.

International Relations

A number of members attended the IFCC General Conference in Corfu, Greece in April of 2010 and some did not make it due to the volcanic eruptions in Iceland.

Two AACB Examination Prizes were awarded in 2009 and the recipients, Wade Clarkson and Chris Farrell attended the ACB Focus conference in Glasgow in May 2010.

12th APCCB, Korea

Prof Leslie Burnett attended the Congress and Council meeting on behalf of the AACB and acted as Chair of our society sponsored symposium *"Supporting POCT Outside of the Laboratory"*. Our speakers were Rosy Tirimacco, Paul Simpson and Cameron Martin. Other members contributing to the meeting were Prof Howard Morris, Dr Sam Vasikaran and Dr Ronda Greaves.

(Reported by : Prof. Leslie Burnett, President & APFCB Representative)

Hong Kong Society of Clinical Chemistry (HKSCC) (2009-10)

1. APFCB Travelling Lecture 2009 and 10th Annual General Meeting (15 January 2010)

a. It has been arranged to integrate the Travelling Lecture into the Asian Pacific Conference on Chromatography and Mass Spectrometry 2010 (APCCMS).

b. The Travelling Lecturer was Dr Samuel Vasikaran, Chemical Pathologist, Royal Perth Hospital, Clinical Associate Professor, School of Pathology & Laboratory Medicine, University of Western Australia. His presentation topic was "The endocrine diagnostic service, from immunoassay to chromatography and mass spectrometry: a clinical perspective".

c. The lecture was held at the Shaw Auditorium Hall in Postgraduate Education Centre at Prince of Wales Hospital and well attended by 138 participants.

d. The 10th AGM and APCCMS dinner was attended by 194 participants at the Star Seafood Floating Restaurant, Shatin.

2. Asian Pacific Conference on Chromatography and Mass Spectrometry (APCCMS) (14-16 January 2010)

a. The conference was held in Postgraduate Education Centre at Prince of Wales Hospital.

b. Conference is jointly organized by HKSCC, HKSMS and AACB, under the auspices of IFCC and APFCB.

c. There were 4 plenary lectures, 8 concurrent symposia and 4 concurrent industrial lunch lectures on 14-15 January 2010 presented by 27 experts in the field. There were 16 exhibitors participated in the industrial exhibition.

d. On 16 January 2010, 2 concurrent education workshops were conducted and attended by 42 participants.

e. The meeting was well-supported both in our region and internationally with attendance of speakers, delegates and sponsors from Australia, Canada, China, Germany, New Zealand, Singapore, The Netherlands, United Kingdom, USA, and Vietnam.

f. The conference was well attended by 188 delegates.

3. **New Developments in Immunosuppressive Drug Monitoring (9 April 2010)**

a. The speaker was Professor Michael Oellerich, Director, Department of Clinical Chemistry, George-August University, University Medical Center, Göttingen, Germany.

b. The dinner lecture was held at the Intercontinental Grand Stanford Hotel and well attended by 124 participants. The dinner was attended by 94 participants.

4. **HbA1c – The Sticking Point (30 September 2010)**

e. Dinner lecture was co-organized with the Hong Kong College of Pathologists.

f. The speaker was Dr Ken Sikaris, Director of Chemical Pathology, Melbourne Pathology, Australia.

g. The dinner lecture was held at the Intercontinental Grand Stanford Hotel and well attended by 151 participants. The dinner was attended by 111 participants.

5. **Colorectal Cancer – To Screen or Not to Screen (18 November 2010)**

   a. The speaker was Dr Lai Hin Harry, Resident Specialist & Honorary Clinical Tutor, Department of Medicine and Therapeutics, Prince of Wales Hospital, CUHK.

   b. The dinner lecture was held at the Intercontinental Grand Stanford Hotel and well attended by 150 participants. The dinner was attended by 110 participants.

6. **The 11th Annual Scientific Meeting (15 January 2011)**

   h. The ASM would be held at the Assembly Hall, 4/F, YMCA, Salisbury Road, Tsim Sha Tsui.

   i. Program: Recent Advances in DM: Clinical & Laboratory Medicine.

   j. The speakers would be Prof Kathryn Tan, Dept of Medicine, HKU, Prof Peter Tong, Dept of Medicine & Therapeutics, CUHK and 4 industrial representatives.

   k. The number of expected participants would be around 200.

(Prepared by Dr Eric Law, President, HKSCC)

ASSOCIATION OF CLINICAL BIOCHEMISTS OF INDIA

ACBICON 2009
The Annual Conference of ACBI at Kochi

36th Annual National conference of the association of clinical biochemists of India, held during November 6 -8 2009 amongst the lush green surroundings at Amrita Institute of Medical Sciences, Kochi, Kerala. The Medical Council of India had allotted Credit hours for delegates attending the conference, which was, 2 hours for Professional Course, 2 hours for Workshop/CME and 5 hours for all 3 days of the conference. I must congratulate Dr Vasudevan for this.

Three Pre-conference events included a Professional course, CME and 6 workshops conducted on 3rd. & 4th. November 2009. **The Professional course** was attended by 75 participants. Prof. D.M. Vasudevan, Prof. S. Srikumari, Dr V. Parmeswaran, Dr. Jayshree Bhattacharya, Dr Nibhriti Das, Dr Udayan Ray, Dr Shaymli Pal, Dr MVR Reddy, Dr B.K. Gupta, Dr C.V. Anand and Dr T. Malati were the resource persons in the course.

The Pre-conference Workshop that was attended by 200 delegates had 6 parallel sessions on different subjects was covered by Dr Kannan Vaidyanathan, Dr T. S. Ganesan, Dr K K Menon, Dr Claude Bernard, Dr Sujatha Bhaskaran, Dr S. Krishnan, Dr R Krishnaprasad, Dr A. S. Kanagasabapathy and others. **The Pre-conference CME** had 60 delegates who listened to a wide variety of speakers who spoke on the latest development in clinical biochemistry.

Professor T. Venkatesh, Professor-Emeritus, St. John's Medical College, Bangalore & Principal Advisor, Quality Council of India delivered the **Awadesh Saran Memorial Oration** on "Lead poisoning : current status in developing countries & the global perspective".

Dr. T. S. Ganesan, Chairman, Cancer Institute & Institute of Molecular Medicine, AIMS, Kochi delivered **K.L. Gupta Memorial Oration** on " Tyrosine Kinase : from basics science to therapy."

Seth G. S. Medical College & KEM Hospital Oration was given by Dr Shanti Kumar Nair, Dean of Research & Head, DST Centre for Nanotechnology, Amrita University, Kochi. He spoke on "Regenerative Nanomedicine : Prospect for diagnostics & Therapy using nanomaterials".

Dr Jayshree Bhattacharya, Director-Professor, Department of Biochemistry, Lady Hardinge Medical College, New Delhi delivered the **Mrs. & Dr G. P. Talwar Oration** on the Topic "Endothelial dysfunction with special reference to eNOS gene polymorphism: Another possible mechanism for CAD risk in post-menopausal women".

The **T. N. Pattabiraman Oration** was delivered by Prof.Brig. M. M. Arora , Prof. & Head, Department of Biochemistry, AFMC, Pune on "Laboratory overload : How to optimize."

Dr T. Vijayakumar, Director (retd) Centre for Health Sciences, University of Calicut, gave the **Taranath Memorial Popular Lecture Oration**.

Apart from the large number of eminent speakers from India, the Kochi conference also attracted many International speakers. Dr Samuel Vasikaran was the APFCB Traveling Lecturer and spoke on "The Role of bone turnover markers in clinical management of Osteoporosis". Dr Ghassan Shannan (Syria) was the IFCC-Abbot Visiting Lecturer and gave a talk on "Total Quality Management in Health Laboratories". We also had amongst us the President of the World Association of Societies of Pathology & Laboratory Medicine (WASPalm), Prof. Michael Oellerich, Dr. Angelo Azzi, President, IUBMB (USA), Dr. Claude Bernard (Australia), Dr Ross Barnard (Australia), Dr. Paivi Laitinen (Finland), Dr Endang Hoyaranda, Dr Udayan Ray, Dr Linsday Brown and Dr David Torres. Kochi also hosted an International symposia on High Altitude Disorders in which we had eminent speakers from Bolivia – a truly high altitude country !! Dr Zubeita Castillo & Dr Gustavo Calleja from LaPaz, Bolivia.

On the evening of 5th. November, we all enjoyed a lively culture programme put together by students of AIMS, Kochi, as well as a mesmerizing Kathakali performance. On the 6th all delegates sat thru an enchanting evening of Bharatnatyam, Kalaripayattu show, Theyyam and also witnessed a spectacular fire-work show after which the delegates let their haor down and enjoyed a lively DJ performance.

The Industrial Exhibition saw a large number of Corporate Houses displaying their latest offerings.

Office bearers of ACBI elected for 2010:

President: Dr. D. M. Vasudevan (Kochi), Vice-Presidents: (1) Dr Sucheta P. Dandekar (MUmbai), and (2) Dr. C. V. Anand (Coimbatore)), Advisor: Dr. K. P. Sinha, General-Secretary: Dr. Rajiv Ranjan Sinha (Patna), Joint Secretaries: (1) Dr. Harshvardhan Singh (Delhi), and (2) Dr. T. Vijayakumar (Mallappuram) and Treasurer: K. R. Prasad (Patna).

REGIONAL MEETINGS :

There were quite a large number of scientific meetings / workshops arranged by the State/Regional Chapter throughout 2010. The major ones were :

(1) **ACBI Working Group meeting for the Professional Course** was held in Delhi on 21st & 22nd February 2010. The meeting was presided over by the President, ACBI, Dr D. M. Vasudevan. A final decision was taken to start the **DIPLOMATE OF INDIAN BOARD OF CLINICAL CHEMISTRY (DIBCC)** under ACBI. A board was constituted to be named as the **Indian Board of Clinical Biochemistry,** to manage this course. The following were named as members of the Board.

1. Advisor – Dr K. P. Sinha
2. Director - Dr D M Vasudevan
3. Joint Director - Dr Praveen Sharma
4. Registrar – Dr Jayshree Bhattacharya
5. Members –
   a) Dr Sucheta Dandekar
   b) Dr M.V.R. Reddy
   c) Dr V. Mallika
   d) Dr T. Venkatesh
   e) Dr S. Selvakumar
   f) Dr T. F. Ashavaid

The eligibility criteria and other details for this course has been put up on the ACBI website and also an abridged version has been printed in the ACBI News Bulletin, September issue.

(2) **Delhi Chapter of ACBI** : Dr K. L. Ramesh & Dr Neera Sharma of Dr. Ram Manohar Lohia Hospital, New delhi arranged a Symposia entitled "Recent Advances in clinical Diagnosis" on 9th. January 2010. Experts from different institutes of Delhi including scientific experts from corporate houses spoke on his occasion. Dr. K. K. Srivastava, Dr. K. K. Ajmani, Dr. K. Krishnan, Dr. L. M. Srivastava & Dr. Bhavani Singh. 90 delegates from most of the government & Private hospitals of Delhi attended the scientific programme.

(3) **ACBI Kerala Chapter** and Amrita Institute conducted a National seminar cum workshop on Evidence Based Laboratory Medicine.

(4) **ACBI Tamil Nadu Chapter** : Dr R. Arivazhagan, State Representative of Tamil Nadu organized Two CME programmes at Cancer Institute, Adayar, Chennai during the year. The 1st. CME on Clinical Biochemistry had talk on Molecular Diagnosis & Markers in cancer cervix, Monoclonal Gamopathies: Daignosis & Management And Quality control & Pre & Post analytical errors in Laboratory Practice**.** The 2nd. CME was held on 30th. January 2010 with two main topics of Beta-2 intergrin & Cardioprotective signaling AND Obesity & dyslipidemia.

(5) **ACBI West Bengal Branch :** Dr Shyamli Pal, State Representative organized a Chapter meeting on 7th. April 2010 to discuss various aspects of Quality Control, QC management & Quality planning. AGM of the West Bengal Branch was also held where members elected Dr Ila Bhattacharya as President & Dr Shyamli Pal as Secretary for the year 2010 – 2011.

(6) **ACBI Punjab State Branch :** Dr Mridula Mahajan, Prof & Head at Govt Medical College, Amritsar organized a CME programme with the theme as " Recent Advances in Laboratory Medicine". The CME was inaugurated by the Vice-Chancellor of Bab Farid University of Health Sciences, Punjab. Apart from a plethora of eminent experts from different medical colleges & institutes of Punjab & Chandigarh, ACBI was represented by Dr. D. M. Vasudevan, President, Dr Rajiv R Sinha, General Secretary, Dr T. Venkatesh, Past- President & Dr. Praveen Sharma, Past President & Editor-in-chief of IJCB. A wide variety of topics were taken up to cover the whole gamut of laboratory medicine. The CME was accredited with 8 hours by the Punjab Medical Council.

(7) **ACBI Karnataka Branch :** A CME on "Recent trends in Clinical Biochemistry" was held on 18th. July 2010 at Bangalore, in the memory of the Late Dr. K. Taranath Shetty. A wide array of topics from CK-MB, Mass spectrometry, Measure of Uncertainty, Nephelometry & Point-of-Care-Testing. Dr T. N. Raghunath, clinical Biochemists & Director, Education, Narayana Hrudayalaya, Bangalore coordinated the programme.

(8) **ACBI Jharkand Branch :** Clinical Biochemists from Jharkand came together on 30th. January 2010 to form the Jharkand Branch of ACBI with Dr Laxman Lal of MGM Medical college, Jamshedpur as the interim President. Subsequently, the Jharkand branch hosted the 6th. East Zone Regional Conference & the 1st. Jharkand Branch conference on 27th & 28th. November 2010. More than a 100 delegates from Jharkand, Bihar, Orissa & West Bengal this meet which was held at M.G.M. Medical College, Jamshedpur. Dr D. M. Vasudevan, President ACBI inaugurated the conference. Amongst the many speakers were Dr Praveen Sharma, Editor-in-Chief, IJCB, Dr Sucheta Dandekar, Vice-President ACBI & a senior member of ACBI from Delhi, Dr. K. K. Srivastava. A GB meeting was also held and Dr Abhay Pratap (Bokaro) was elected President and Dr Vanita Lal was elected Secretary.

(9) 12th. **Asian Pacific Congress of Clinical Biochemistry :** The 12th APCCB was held in Seoul, South Korea from 3rd. to 7th. October 2010. A total of 2000 delegates & visitors from 52 countries participated in the conference. From India, 29 delegates attended the congress and presented papers & posters. ACBI also put together a symposia on "Metabolic Syndrome" in which Dr D. M. Vasudevan, Dr Praveen Sharma, Dr MVR Reddy, Dr Rajiv R Sinha & Dr T Malati spoke on different aspects of Metabolic syndrome affecting our population. It was heartening to note that 3 young scientists received the "Young Scientist Scholarship" to attend & Present their work. Also 9 young delegates were recipient of the APFCB Travel Award. And to add feather to our cap, Dr Jasvinder Kaur from Chandigarh was awarded the Best Poster Award. I on behalf of ACBI congratulate Dr Kaur & other young scientists for keeping the flag of our country & ACBI flying high.

Senior members from ACBI have played a vital role from the time that APFCB was formed and continuing in this strong tradition, I am very happy to convey to you that the following ACBI members were elected to the APFCB council,

1. Dr Elizabeth Frank – Treasurer
2. Dr Praveen Sharma, Chairperson, Communication Division & Also Chief Editor of APFCB news letter.
3. Dr. M.V. R. Reddy – Secretary, Communication Division
4. Dr. Sucheta Dandekar – Secretary, APFCB Scientific Division
5. Dr D. M. Vasudevan – member, APFCB Education Committee.

I congratulate all of them for their selection for this prestigious post.

AWARDS

1. Every year ACBI awards Fellowship to distinguished members of the association on the basis of their merit and achievement. In the last year the Fellowship of ACBI (i.e.FACBI) was awarded to (1) Dr Arun Raizada, Senior Consultant, Medicity, Gurgaon and (2) Dr Jayshree Bhattacharya, Director-Professor, Dept. of Biochemistry, Lady Hardinge Medical College, New Delhi.

2. ACBI has instituted K.P.Sinha- P.S. Krishnan Award for Best Paper published in the Indian Journal Of Clinical Biochemistry (IJCB). In 2009 this award was presented to Priya Gururajan, Prema Gurumurthy, Pradeep Nayar, Sai Babu, A. Sarasbharti, Dolcie Victor & K. M. Cherian of the K.M. Cherian Heart Foundation, Chennai.

3. A. J. Thakur Award for Distinguished Services was instituted by the Family of the Late Shri A.J. Thakur, founder of Accurex Biomedicals, & is given to honor a senior member of ACBI who has made immense contribution to the growth of Clinical biochemistry & Laboratory Medicine in India**.** This award for the year 2009 was presented to Dr. B. C. Harinath, Director, Jamnalal Bajaj Tropical Disease Research Centre, MGIMS, Wardha, who was also one of our distinguished Past President.

ACBI – CMC EQ PROGRAMME :

The ACBI-CMC External Quality Assurance Programme is being run smoothly by Dr. R . Selvakumar and his team at C.M.C. vellor. The Freeze-dried samples have gained wide acceptance and Dr Selvakumar's team is adding more parameters one by one. Thanks to Dr Selvakumar & the management of CMC Vellore for keeping this flagship project of ACBI moving smoothly.

INDIAN JOURNAL OF CLINICAL BIOCHEMISTRY

Four IJCB issues have been released in time with much improvement in Quality with the involvement of Springer India Pvt. Ltd. Apart from publication & distribution, Springer will now also be printing the IJCB. The Editor-in-Chief, Dr Praveen Sharma and his editorial team must be commended for keeping the quality of IJCB at the highest level.

ACBI NEWS BULLETIN

Two issues of the News Bulletin have been released from ACBI Head office. This year there has been a change with the General Secretary taking over as the Editor-in-Chief of the news bulletin. To make the news bulletin more interactive, a new column has been started, QC Forum with Dr A. S. Kanagasabapathy as its coordinator. This is for members to clear any doubts on various aspects of Quality Control. I thank Ms. Roopa Gonsalves of Accurex for submitting an article on – Cystain C -a new diagnostic test launched by them. More such articles are solicited from corporate members.

It has been a active year for the Association & it is heartening to note that many state branches are organizing CME & workshops. But still much more needs to be done to motivate other branches to organize educational activities.

(Report prepared by Dr. Rajeev Ranjan Sinha, Secretary, ACBI)

ACBICON 2010

The Annual Conference of ACBI at Mumbai

December 11- December 15 2010

37th ACBICON 2010, the 37th. Annual National Conference of Association of Clinical Biochemists of India was hosted by Seth G.S. Medical College and KEM Hospital from 13th December to 15th December 2010 at World Trade Center, Cuff Parade Mumbai. It was a five days event, beautifully segregated into pre conference workshops, CME & Professional course, orations, key notes, oral and poster presentations, quiz and lunch with experts.

A pre conference Professional Course in Clinical Chemistry was conducted by **Dr. T.F.Ashavaid** and **Dr. S.P. Dandekar** in P.D. Hinduja Hospital & Medical Research Centre, Mahim on 11th December 2010. **Dr. G. B. Daver**, Director, P.D. Hinduja Hospital & Medical Research Centre hosted the event and was the Chief Guest. This was followed by the inaugural speech on "Clinicians Dilemma in interpreting lab results" by **Dr. V. R. Joshi**. This was continued with a very informative speech given by **Dr. Sucheta Dandekar** on Preanalytical variation.

Dr. V.Parameswaran discussed about Obesity markers. Importance of Cardiovascular risk factors in Ischemia and congestive cardiac failure was explained by **Dr. T.F.Ashavaid**. This was followed by very elaborative lectures by **Dr.A.S. Kanagasabapathy** and **Dr. T. Malati** on *Point of care testing and tumor markers respectively.*

Dr. R. Selvakumar discussed about the pitfalls in immunoassay. **Dr. Padma Chavan** explained the correlation of Renal Function testing and e GFR. **Dr. Alpa Dherai** spoke on Laboratory evaluation of metabolic disorders. Later case studies were discussed by **Dr. Udayan Ray** on Anemia and iron metabolism.

The professional course concluded by the participants giving feedback and the valedictory function.

On 12th December 2010, a pre-conference workshop was held in both Seth G.S. Medical College and National Institute of Research in Reproductive Health, Parel, Mumbai. The Pre conference consists of morning and afternoon sessions. The morning session started with a common workshop organized by the IFCC Task Force for Young Scientists (IFCC-TF YS) for all the delegates with the theme of ***"Mapping Future of Laboratory Scientists".*** This pre conference workshop was a collaborative effort of ACBI and IFCC to create awareness about emerging trend in Laboratory Medicine and the current and future developments in the field of Quality and Technology amongst young scientists.

To conclude, this workshop provided a unique forum to the healthcare professionals to exchange ideas and develop a new vision for the future of laboratory sciences in India and abroad. Lab medicine is expanding vast with area of concern as impact on clinical outcomes in terms of quality, satisfaction and cost. Young Scientists have bright future ahead but they need to have proactive approach.

In the afternoon session the delegates where segregated in three groups for attending workshop on (1) Research and Beyond, (2) Molecular Biology workshop and (3) Quality Assurance & Quality Control workshop. **Dr. Nithya Gogtay** and **Dr. S.P.Dandekar** were the convener for Research and Beyond / Methodology workshop organized in Seth G.S. Medical College which focused on formulating a research question, principles of medical writing, ethic of research and ethics committees and ending with statistical investigations.

The Molecular Biology workshop organized in National Institute of Research and Reproductive Health consisted of four lectures on different molecular biology techniques. **Dr. Geetanjali Sachdeva** explained about the expression of recombinant proteins. **Dr. Bandivadekar** described the procedure of extracting proteins from tissue, cells and biological fluids. Later **Dr. M.I. Khatkhatay** and **Dr. Smita Mahale** explained about different protein assays and Protein purification techniques respectively.

In parallel to these workshops, a workshop on Newer Frontiers in Clinical Laboratory practice was held in Seth G.S.Medical College and KEM Hospital. The workshop convener was **Dr. S.A.Rane**. The workshop started with the lecture on update of QA/QC by **Dr. A.S. Kanagasabapathy**. This was followed by an introductory lecture on Biochip array technology was given by **Dr. Joseph John** from Randox.

The pre conference workshop concluded with group discussion between the eminent speakers and the delegates and ended with vote of thanks given by the participants.

The 37th ACBICON commenced with the key note speech by **Dr. Jocelyn Hicks,** Past President, IFCC on The *Past, Present and Future of laboratory Medicine*. This was followed by K.L. Gupta Memorial Oration delivered by **Dr. R. Badwe, Director,** Tata Memorial Hospital, Mumbai, on *Drug Discovery: A Clinicians View*.

This was followed by Plenary Sessions by eminent speakers such as **Dr. Alan Remaley** who spoke on *HDL: Update from Diagnostics to Therapeutics*, **Dr. Jay Karla on** *Quality care & patients safety: Strategies to reduce and disclose Medical error*, **Dr. Udayan Ray** on *Insulin resistance in Malignancy*, **Dr. Dipak Das** on *Regeneration of Ischemic heart*

with chronogenic stem cells, **Dr. Salil Das** on *Soy & Breast Cancer* and **Dr. Nelson Geraldino** on *Holistic living outside of the Laboratories*.

The next on the line were Industrial Workshops Parallel Sessions by Biosystems, Agappe, Accurex and CPC Diagnostics. Lunch with expert was coordinated by Dr. A.S. Kanagsabapathy and Dr. Sucheta Dandekar and the experts were **Dr. Micheal Oellerich, Dr. Ravinder Singh and Dr. V. Parameswaran** who deliberated on Pharmacogenomics, TDM and Six Sigma. Following the lunch with expert was poster and oral presentations.

This was followed again by Industrial Workshops Parallel Sessions by Transasia, Lifetech, and Abbott. A Session on Medical Education was conducted with **Dr. Suresh Chari** as the moderator and the Panelists where **Dr. Avinash Supe, Dr. Jogen Pramanik, Dr. Rohini Bhadre** and **Dr. Sucheta Dandekar**. They discussed the changes that need to be made in the medical biochemistry curriculum.

WELCOMING THE GUEST OF HONOR – Sri Jagjit Singh

Inauguration of the 37th ACBICON 2010 was done in presence of many eminent personalities. The chief guest was ***Padmabhushan Dr. G. B. Parulkar*** *and the Guests of Honor was* ***Padmabhushan Shri Jagjit Singh.*** *They were all welcomed by* ***Dr. Sanjay Oak,*** *Dean, Seth G.S. Medical College and K.E.M Hospital. The inauguration lecture was given by* ***Dr. M. Oellerich*** *on* Future of clinical biochemistry, laboratory Medicine and Pathology.

RELEASE OF SOUVENIR

Concluding the 1st day of the conference was Taranath Shetty Popular Lecture given by **Dr. Narendra Nayak**. Later the delegates enjoyed the dinner sponsored by Abbott.

December 14th commenced with the Key note Speech given by **Dr. Donald Young** on *What physicians do not know about laboratory testing*. The much awaited Seth G. S. Medical College & KEM Oration was given by **Dr. Sanjay Oak** on *The bath water needs a change but don't throw the baby out*. This was followed by Awadesh Saran Memorial Oration by **Dr. MVR Reddy** on *Elimination of lymphatic filiriasis: the development of novel diagnostic, therapeutic and prophylactic tools to meet the future challenges*. Thereafter, the Plenary Sessions where conducted in parallel with one another. These lectures where delivered by **Dr. Hari Sharma** on *Molecular Mechanisms of Angiogenesis in Cardiopulmonary Pathophysiology* **and by Dr. Wolter Jan Mooi** on *Oncogene induced cellular Scenescence: Halting on the road to cancer.*

Lunch with experts on 14th December 2010 was arranged with **Dr. Jocelyn Hicks, Dr. Donald Young and Dr. Ghassan Shannan** who discussed on *Lab errors: Striving for none, POCT, Quality Assurance*.

The ever popular **AFMC Quiz** was arranged and chaired by **Dr. T. Malati.** About 50 students participated in the quiz. This was followed by Poster and oral presentation. The day concluded with a grand Banquet. sponsored Transasia

The last day of the conference i.e. 15th December 2010 started with the key note speech by **Dr. Ghassan Shannan** on the *Total Qualiy Management in Health Facilities* followed by the Pattabhiraman Oration on oxidative stress and its association with metabolic syndrome and diabetes delivered by **Dr. Praveen Sharma** and G.P. Talwar Oration on *Estrogen receptor a journey from 1964-2010* by **Dr. P. D. Gupta**. This was continued with the lectures by invited speakers. Parallel to this oral presentations on recent trends were also made. **Dr. Jay Karla, Dr. Udayan Ray** and **Dr. Alan Remaley** were the experts called for lunch with experts on 15th December 2010 and the topic for deliberation was Angiogenesis, Endocrine Function tests.

"LUNCH WITH EXPERTS" Session

In all there were 290 poster presented by the delegates and 95 oral presentations held in the conference besides the invited lectures. A total 45 companies participated in the corporate exhibition. It was indeed a grand display and stood true to its theme of 'Frontiers of Diagnostics'. A total of nearly 800 delegates registered for the conference.

INDUSTRIAL EXHIBITION

Just as every good thing comes to an end the conferences also concluded by the awards given to the prize winners at the poster, oral and quiz competitions and the valedictory function. The conference indeed was very well attended!!!

Indonesian Association for Clinical Chemistry

2010 Activities Report

1. IACC-IFCC Workshop on ISO 15189

Theme	:	ISO 15189 : 2007 AWARENESS Accreditation Requirements for Medical Laboratory
Aim	:	Participant could has the knowledge of ISO 15189 trend and using it in their field.
Venue/Date	:	Jakarta, February 5-6, 2010
Sponsor	:	Gold Sponsorship:

1. PT. Abbott Indonesia
2. PT. Enseval Medika Prima
3. PT. Roche Indonesia
4. PT. Sysmex Indonesia
5. PT. Tawada Health Care

Other Sponsorship :

1. PT. Diastika
2. PT. Setia Guna Medika
3. PT. Sumber Mitra Agung Jaya

Participant : 126 persons (from clinical laboratory and hospital)

Speakers :
- Dr. Elizabeth Frank (IFCC)
- Dr. Janet Smith (IFCC)
- Dr. Herbert Stekel (Linz Hospital, Austria)
- Dr. Tjan Sian Hwa (Koja Hospital Indonesia)

Topic :

a. Overview of clinical laboratory accreditation in Indonesia

b. Accreditation and Understanding the standards – ISO 15189

c. Organisation & management responsibility

d. Monitoring and non conforming event management

e. Documentation - Policies, plans, processes, procedures and records

f. Managing resources

g. Pre examination, examination and post examination processes

h. Gap Analysis – Pre survey self assessment

i. The Assessment Process

j. Quality Indicators

k. Ensuring Quality of results (case studies included)

l. Role of Proficiency testing (case studies included)

m. Measurement Uncertainty

n. Traceability

o. Method Comparison

p. Reference Intervals

q. Validation of Procedure

2. Workshop : Preanalytical System in Medical Laboratory

Aim : Participant has understanding how important pre analytical steps

Venue/Date : Jakarta, August, 7, 2010

Sponsor : Main Sponsor : Becton Dickinson

Gold Sponsorship:

1. PT. Abbott Indonesia

2. PT. Sysmex Indonesia

3. PT. Tawada Health Care

Others:

1. PT. Biomerieux

2. PT. Setia Guna Medika

3. PT. Sumber Mitra Agung Jaya

Participant : 156 persons (Phlebotomists, lab technologists, pathologist)

Speakers :
- Dr. Demak L. Tobing, SpPK (Dharmais Cancer Hospital)
- Dr. Adarsh Pal Singh, Ph.D (Becton Dickinson Senior Manager-Medical Affairs China-India)
- Dr. Mansyur Arief, PhD, SpPK (Hasanuddin University)

Topic :

a. International Consensus or Guidelines for Competency and Qualification of Phlebotomy

b. Preanalytical Variables in Laboratory Medicine

c. Best Practices in Specimen Collection

d. Hands on Training

e. Patient Safety Strategy

Improve the accuracy of patient identification. A new goal Encourage the active involvement of patients and their families in the patient's care as a patient safety strategy.

f. Preanalytical Variables in Molecular Testing

3. Seminar and Workshop on Molecular Diagnostics

Theme : From Infectious Diseases to Personalized Medicine, part I

Venue : Jakarta, August 18-19th, 2010

Sponsor : PT. Genetika Science Indonesia

PT. ITS Science Indonesia

PT. Indoscience Leads

Others:

PT. Elokarsa Utama

PT. Roche Indonesia

PT. Genecrafts Labs.

PT. Diastika Biotekindo

Participants : Seminar → 41 persons
Workshop → 15 persons
(Lab. Technologists, Scientists, Pathologists)

Speakers : Prof. Yanto Lunardi, PhD (University of Maryland, USA)

Dr. Budiman Bela, PhD, SpMK (University of Indonesia)

Dr. Karthik S (Thermo Scientific)

Prof. Siti Boedina Kresno, SpPK (University of Indonesia)

Miswar Fattah, M.Si (Prodia Clinical Lab.)

Yusmiati, M.Kes (Prodia Clinical Lab.)

Topics :

1 Update in Molecular Diagnostics

2 Basic Techniques in Molecular Diagnostics

3 Setting up a Laboratory for Nucleic Acid Testing

4 Quality Control in Nucleic Acid Testing

5 Molecular Diagnostics for Cancer Treatment and Early Detection

6 Role of Molecular Diagnostics in Personalized Medicine

4. Attending 12th APCCB

IACC had a booth in 12th APCCB , October 3 -7, 2010 in Seoul. This booth was intended to give the information to all participants about next APFCB Congress in Bali Indonesia.

(Reported by: Tatat Novianti, IACC Secretary)

Japanese Society of Clinical Chemistry

Yukio Ozaki

The 50th Conference of the Japanese Society of Clinical Chemistry was held in the Yamanashi Municipal Culture Center, Kofu City, Yamanashi from September 23rd to 25th, 2010. The morning of September 23rd was visited by thunderstorms causing a halt of the Chuo Railway Line, which connects Kofu with Tokyo, and we were concerned with the number of attendees. However, the train transportation recovered after a few hours, and the final turn-ups amounted to over 500, which was a great relief for the organizers.

Since this conference was the 50th meeting for the JSCC members, we had a special symposium entitled "The progress of clinical chemistry in 50 years and the future prospect", and asked the precedent chairmen of the JSCC to elaborate on the history of the science related to clinical chemistry in Japan. I believe that the members of the JSCC, learning the hardship of their predecessors, were determined to enhance the activities of our society.

The local organizing committee planned the plenary lectures and the state-of-the-art lectures so that they would best represent the characteristics of the Kofu Basin and the Yamanashi Prefecture. The Department of Technology, University of Yamanashi, boasts of the top-class level in researches of fuel cells. Prof. Kazuhisa Higashiyama gave a comprehensive lecture entitled "Status of Fuels Cells, the present and the future". In the eco-conscious boom, many people are interested in fuel cells, and the audience enjoyed easy-to-understand and informative presentation on the most advanced study of the fuel cells. The Kofu Basin is famous for its grapes and wine production, and the University of Yamanashi has the only one research center in Japan, specialized in the production and quality of wine. Professor Toru Okuda gave an interesting talk on the various steps of wine production, which were entirely new to the audience, such as cold preservation of wine to remove tartaric acid, and the audience all felt mellow as if drinking actual wine of good flavor. In the welcome party, good-quality wines were served, and the attendees all agreed that wine tasted better after deep understanding of its history, production, and quality evaluation.

In addition to these, some of the outstanding scientists who belong to the JSCC also gave educational lectures, including those of the NF-kappa-beta-related diseases, the updates in renal diseases and their diagnosis, and the fundamental knowledge in epigenetics and related disorders. Thanks to the pains-taking work of the local organizing committee, we were able to plan symposia and workshops that are of

good-quality and updated, and the discussion on the floor was also quite active. We are to have the 51st Congress of the JSCC in Sapporo, and we look forward to having as many participants as possible.

(Prepared by : Yukio Ozaki, President of the 50th Conference of JSCC Professor, Department of Laboratory Medicine, Faculty of Medicine, University of Yamanashi)

Nepal Association for Medical Laboratory Sciences (NAMLS)

Proceeding of Annual General Meeting 2010

The annual general meeting of NAMLS was held on February 6, 2010 at C&W conference hall, Kings Way, Kathmandu with theme of "**Laboratory Medicine in Nepal: Achievements and Remaining Challenges**". There was 256 participant registered for the meeting throughout countries. There was ten IVD companies and distributers participated for clinical laboratory expo. The conference was divided into different sessions, namely the inaugural, Plenary, scientific, business and election sessions.

Inaugural Session

The meeting was preceded under chairmanship of Mr Birendra Raj Tiwari, President of NAMLS. Prof Bharat Jha, founder president of NAMLS, opened the inaugural Session as chief guest. Guest were high level dignitaries from Ministry of Health and Population, chairman of professional councils, presidents of different professional associations, representative from National Public Health Laboratory, prestigious professionals,

Prof Bharat Jha, founder president of NAMLS, opened the inaugural Session by lightening the candle.

professors and scientist of laboratory medicine and former presidents of NAMLS. The session started with the lighting of the traditional lamp by the Chief Guest, followed by the reading of the letter from president of APFCB by Ms. Jyoti Acharya. Prof Dr Shiba Kumar Rai, Past president of Nepal Health professional Council (NHPC) and NAMLS highlighted the some of the remarkable achievement we have made since 25 years in the field of laboratory medicine. Representatives from different professional associations have expressed their view about role of quality health laboratory and its importance in better patient care. Prof Dr S.K. Rai exposed official publication of NAMLS-Journal of NAMLS 2009 Vol 10 No1 on the occasion. Inaugural Session was completed after the work done by NAMLS was highlighted by the President. The vote of thanks was delivered by vice-president Shrawan Kumar Mishra to all supporting teams, the journal publication committee, IVD companies and distributer and organizing committee of annual meeting 2010.

Plenary Session

The plenary session was chaired by Prof Bharat Jha, Head of department of Biochemistry, TU Teaching Hospital and Co-chaired by Prof Dr N.R. Tuladhar, Assistant Dean of Kathmandu University, School of Medicine. Mr Binod Kumar Yadav, General Secretary of NAMLS presented on "Remaining Challenges in Laboratory Medicine: A long way to walk", where is emphasized adaptation of emerging laboratory techniques and automation as a very important aspects in the development of quality assurance in laboratory medicine. Mr. Rojeet Shrestha presented on "High-sensitivity C-reactive protein as a promising marker in risk prediction of cardiovascular diseases in hypertensive subjects", where he discuss some of the important sights to use hsCRP in the prediction of future coronary events. Mr Prajwal Gyawali highlighted on "Metabolic syndrome: where we are?". Similarly, Mr Manoj Sigdel presented on "prevalence of microalbuminuria in diabetic subjects from western region of Nepal" and Mr Prashant Regmi presented on "pattern of dyslipidemia in diabetic subjects in Eastern region of Nepal". The plenary session ended with lunch break.

Scientific Session

The Scientific session was chaired by Prof Dr S.K. Rai and Co-chaired by Mr Birendra Tiwari. There were altogether ten scientific paper scheduled to be presented from different parts of country. Time allocated for each paper was 8 minutes for presentation and 2 minute for discussion. Three scientific papers was also presented by students of laboratory Medicine from different colleges of Nepal.

Participants

Business session

General secretary Binod Kumar Yadav presenting the reports of NAMLS

The business session was started at 4:00 PM. All central committee members, regional members, Past presidents, organizing committee, editorial board, life members and general members participated the session. President Tiwari presented a briefing on the work and activities if the NAMLS in the year of 2009. Mr Binod K Yadav, general secretary, then presented his report followed by the financial report by Mr Rojeet Shrestha, Treasurer. There was active discussion among members to improve laboratory service in Nepal.

Election session

Election session started with the nomination of candidates, followed by election. Seventh Executive committee was formed with the election. Mr Binod K Yadav was elected as president of 7th central committee, Mr K.P. Singh was elected as vice-president. Mr Rajan Kumar Dahal and Mr Rojeet Shrestha were elected as general secretary and Secretary respectively. Miss Sarada Bajracharya was elected as treasurer. Seven central members and regional members for different part of countries were also nominated.

Closing ceremony

The annual meeting of NAMLS 2010 was officially closed with remarks and suggestions to newly formed body of NAMLS, from eminent personals in laboratory medicine including Mr Jayabin Singh, and Mr Ganesh Acharya.

(By: Rojeet Shrestha, Secretary NAMLS)

Pakistan Society of Chemical Pathology

OFFICE BEARERS 2010:

Patron-in-Chief

Lt Gen Syed Azhar Ahmad (retd)
Vice Chancellor Baqai University, Karachi

Patron

Maj Gen Farooq A. Khan
Commandant, AFIP Rawalpindi

President

Big Dr.Abdus Sattar

Vice President

Dr.Adnan Zubairi

Secretary/ Treasurer

Dr Asim Mumtaz

Council Members

Dr. M. Dilawar Khan
Dr. Salma Haq
Brig. Rizwan Hashim
Dr. Afsar Saeed
Lt. Col M. Aamir
Dr. Ayesha Habib
Dr. Ahmed Rafiq

Activities of the society:

1. **Third biennial course in Chemical Pathology and Endocrinology February 2010:**

   The course is a regular feature of the society and is attended by a large number of residents and post graduate students in chemical pathology from all over the country. This year the course was held at Armed Forces Institute of Pathology Rawalpindi with active participation from Chemical Pathologists from various parts of the country. The course serves a very useful purpose of helping trainees in preparation for their exams.

2. Workshop on Statistical Package for the Social Sciences(SPSS version 17) August 2010

A workshop was organized on SPSS in August 2010 and was held at University of Health Sciences Lahore. The workshop was a big success being attended by a number of junior and senior doctors from Lahore.

3. Workshop on Laboratory Instrumentation in Chemical Pathology November 2010:

The workshop was held at King Edward Medical College Lahore in November 2010. This was not fruitful for the postgraduate students but was also useful for the medical technologists. It provided a reasonable insight into the philosophy of working with instruments in Chemical pathology.

4. Meeting of Executive Council Pakistan Society of Chemical Pathology:

A meeting of the office bearers of the society was held after the workshop to plan and finalize the forthcoming 4th Biennial conference of the society.

5. Fourth Biennial Conference of Pakistan Society of Chemical Pathology February 2011:

Preparations are underway for the forthcoming conference. It will be held at Allama Iqbal Medical College Lahore on 25th-26th February 2011. In between the conference a meeting of the general body will be held

6. Integrated Clinical Chemistry:

A presentation was made by Prof Ejaz Ahmad Khan on automated integrated chemistry anlysis. The presentation was held at Shifa International Hospital Islamabad in December 2010. The meeting was attended by a large number of Pathologists from Rawalpindi Islamabad region.

7. National External Quality Assurance Pakistan (NEQAPP) Program

Extended NEQAPP programme was started in January this year. More than 130 labs were enrolled from all over the country.

(Reported by : Sameena Ghayur, Armed Forces Institute of Pathology, Rawal pindi and APFCB corresponding Member, Communication Division)

Philippine Association of Medical Technologists (PAMET) Report

(2009 Activities)

Each committee created programs to achieve the goals set. Progress reports of each committee are as follows.

Laboratory Management & Practitioners

Two general assemblies of laboratory management were held for 2009. The 1st was held at Cherry Blossoms Hotel last May 23, 2009. The activity was sponsored by Drake Marketing. Topics discussed were:

"People: The Challenge"	-	**Mr. Robert Vargas,** HR consultant of Drake Marketing & Equipment Corporation
"H1N1: The Global Challenge"	-	**Dr. Beatriz Puzon,** Chief-clinical Research Division, RITM
"Leadership: Surviving the Challenge"	-	**Mr. Hermi Rodil,** President ROD-PEN HR Consultancy
Product update	-	**Monzette Arboleda,** Product specialist of Drake Marketing

The 2nd activity was an APFCB-BC Education Forum held at Diamond Hotel, Manila last June 25, 2009. For years, the APFCB has had the privilege of having prominent lecturers from all over the world in several areas of biochemistry to share scientific updates to the member countries of the region. The events being named the APFCB Traveling lecture, has been invaluable in helping scientists as well as practitioners of the member associations. The APFCB is very much indebted to the diagnostic industries, which voluntarily supported the travelling lectures through the years. Beckman-Coulter TL supports the travelling lectures of Prof. Guenther Weiss to member countries. As the national association and particularly as member of APFCB, it is our responsibility to look after the guest lecturer. We are very thankful to have Marsman Drysdale Medical Products, Inc., the carrier of Beckman Coulter to help us in this matter. What we did to maximize the event was to invite other speakers to discuss related topics.

The topics during the seminars were:

"Prevalence of Anemia in the Philippines"	-	*Dr. Sonia Comia*
"Clinical Application of Cell Population Data	-	Dr. Marie Calderon Lopez
" Diagnostic Challenges in Chronic Anemia	-	Dr. Guenter Weiss, APFCB-BC Traveling Lecturer
"We are Better Together: Bringing Laboratory Science to the Bedside	-	Dr. Peter Heseltine

Prof. Guenther Weiss with other speakers, Marsmann Drysdale and Beckman-Coulter representatives, and PAMET board of directors.

Continuing Medical Technology Education (CMTE)

The committee was able to conduct three (3) CPE (continuing professional education) seminars for 2009. Schedule of CPE seminars which were all held in Bayanihan Center of United Laboratories, Inc. in Mandaluyong City were as follows:

March 24, 2009 - "Role of Laboratory Tests in Glycemic Control"

Speakers : Mr. Gamaliel A. Fulgueras - "Urinalysis : From Tradition to Automation"

Mr. Robert Sayo - " The Many Faces of Blood Sugar Testing: Focus on HBA1C"

Dr. Susan Quiaoit – " Lab Test and Diabetes Control: From the Eyes of An Expert"

Ms. Chita Celeste Angeles – " The Role of Nutrition in Diabetes Control"

July 21, 2009 -	**-**	**"Laboratory Advancements in Hematology"**
	Speakers :	Dr. Shirley F. Cruzada -"Hematopoietic Stem Cell Transplantation: From the Research Laboratory to Standard Care of Treatment"
		Mr. Arnold C. Billones – "Digital Cell Morphology"
September 18, 2009	**–**	**"Recent Techniques and Technologies in Immunohematology"**
	Speakers :	Dr. Grig Misiona - "Emerging Transmission Transmitted Infections"
		Ms. Rizalina S. Chua - "Cross-Matching vs. Antibody Screening"
		Ms. Heide P. Banan- "Erythrocyte Magnetized Technology"

Education

The scholarship program is through the "Dagdag Karunungan, Kinabukasan ng Kalusugan" program of safeguard (Proctor & Gamble) and PAMET. These Post-Graduate Courses are Master's/Doctorate programs in Medical Technology and related specialized fields of Medical Technology and specialized training course in the field of Medical Technology.

Research

The committee, after its training on research proposal last year with the collaboration of PCHRD and the institutions where the trainees came from, has undergone some researches which were presented during this convention as their paper presentation.

Last June 16, 2009, there was an International Seminar on Journal Publishing held at Pan Pacific Hotel where PAMET became a member of Asia Pacific Association of Medical Journal Editors (APAME) and Western Pacific Region Index Medicus (WPRIM). We submitted a letter of intent to PCHRD to join and have our research papers peer-reviewed.

Membership

A new e-mail address was created to be able to answer membership concerns and issues only. (pametmembership08@yahoo.com). The new e-mail address of PAMET is pametphilippines@yahoo.com.ph.

This year, we launched the new PAMET website, www.pametinc.org. All members can register and log-in to the website. They can interact dynamically with other members and get updates of latest news from the organization. Furthermore, all members will be logged in a Single Database for Member User Management for both ONLINE and/or OFFLINE use. Moreover, the system shall be able to facilitate a functional Online Registration for different events and accommodate the target range of attendees.

Chapters

The committee on chapters was very active this year as we had several activities including seminars,

conferences, convention and the launching of Kid Galing, a Safeguard sponsored activity.

The Mid Year Convention was hosted by Baguio-CAR Chapter which was held at the Baguio Country Club with an attendance of 860 delegates from all over the country.

The Regional Directors were also very much occupied as they have to organize their own Regional Conferences. First to hold its Regional Conference was the Visayas Region and it was hosted by Aklan in the famous island of Boracay. In early September, General Santos hosted the Mindanao Regional Conference in time for the Tuna Festival. The opening ceremony was highlighted with a Fish Dance performed by Teatro Ambahanon Philippines of Ramon Magsaysay Memorial College. We had the opportunity to discuss with Mindanao Chapter Presidents about issues of Medical Technologists. As expected, salary was the number one issue. Towards the end of September, just as Typhoon Ondoy was just devastated Manila and nearby areas, Batangas Chapter was unstoppable in their Regional Conference for South Luzon. Early in October, it was the turn of Ilocos Norte to host the North Regional Conference. The event was well attended as there were big delegations coming from Cagayan, Isabela, Nueva Ecija, Ilocos Sur, La Union and Pangasinan, despite the typhoon threat of signal number 3 in the area. The topics and the speakers were all interesting. All the delegates were motivated in the lectures and there were active participation from them.

There were also several seminars that the PAMET National had attended; the Nueva Ecija Seminar last March, Cavite and Laguna seminars last April and June seminar in Isabela. Pangasinan became very active with three seminars conducted and PAMET National was represented in these seminars. Zamboanga also conducted their seminar and despite being unsure of the peace and order situation, we were present to support them. Issues on Platelet count was the highlight of discussions. Camarines Sur was not to be outdone as a big group from the National Board graced their activity. Membership issues were discussed. Private practitioners also voiced their sentiments on lower salaries compared to government counterparts.

Advocacy

Activities: Posters showing Med. Techs performing laboratory work were positioned near high school buildings in Metro Manila and in the provinces by PAMET Chapters. Flyers were distributed to high school students during Med. Tech. Week and all year round to school campuses thru relatives and friends of committee members.

Impact: There was an observed increase in the number of enrolees in most Med Tech schools both in the provinces and in Manila.

Community Outreach

The first outreach activity was held in Barangay Moonwalk, Paranaque City on April 3, 2009 during the World TB Day Celebration. Laboratory examinations made available were Sputum Examination for symptomatic patients and free ABO with Rh Blood Typing. We also gave Personal Hygiene and Sanitation Lectures on Proper Hand Washing Technique.

The second outreach activity was held at the Professional Regulation Commission Auditorium on June 17, 2009 during the PRC Week Celebration. The third outreach activity was held on September 13, 2009 at the ABS CBN Garden – Salamat Dok episode. It was the launching activity of Medical Technology Week 2009. PAMET offered

different laboratory examinations such as Urinalysis, Complete Blood Count, FBS, Cholesterol, BUA, BUN, Creatinine, Triglycerides and Blood Typing. A total of 695 laboratory examinations were done.

Community Outreach during the Med Tech Week Celebration

Publication & Documentation

The aim of the Committee is to make sure that we provide all our colleagues with the latest happenings in the organization. As such, the Committee on Documentation and Publication was able to release three (3) issues of PAMETLINK for this year. his includes not only the National activities but it includes as well, the Regional and Sectoral Programs all over the Philippines. The International activities were also highlighted in the publication.

ASCPi (Philippines)

Globalization Task Force was formed to explore the possibility of providing an option for candidates to prove their competency in the laboratory. Later, it became Globalization Committee and its growth became exponential. Beneath the globalization Committee is the "International Consortium for ASCPi" which consists of established country chapters to include Korea, Philippines, Hong Kong, Singapore, India and more. The Philippines Chapter (advisory board) is headed by Ms. Agnes Medenilla. The members are Hon. Marian Tantingco, Ms. Erlinda Pijuan, Dr. Soledad Bautista, Dr. Nini Lim, Dr. Leila Florento, Ms. Luella Vertucio, Mr. Mark Love Yulores and Ms. Lourdes Gatbonton. The advisory board assists with confirming the eligibility of applicants.

MED TECH WEEK CELEBRATION

The Annual Med Tech Week was celebrated last September 13-20, 2009. Activities included Community Outreach, Advocacy lectures, CPE seminars, quiz show for the students and sportsfest activity.

PRC AWARD

Yearly, PAMET recommends nominees for Most Outstanding Professional Award in the field of Medical Technology to Professional Regulation Commission through the Committee on Awards. The prestigious

PRC award for 2009 was given to Ms. Jacinta B. Cruz, an Associate Professor from University of Santo Tomas.

PAMET AND SAFEGUARD

Handog ng Safeguard, Med Tech ng Kinabukasan

Another 15 undergraduate scholars were chosen nationwide for the year 2009. The awarding ceremony was held at The Manila Peninsula last October 29, 2009. This year marks the 20th year anniversary of the Scholarship Program. Representatives from different batches were invited to deliver messages. It was notable that the new graduates and board passers were also present and among them, 2 were board topnotchers. Ms. Judea Policarpio from MCU ranked number 1 while Ms. Robina Cesar from Riverside ranked number 10.

Dagdag Karunungan, Kinabukasan ng Kalusugan

With the re-structuring of the post-graduate scholarship program since 2007, two PAMET members graduated in 2008 with Masters degree in Medical Technology. As of this date, two post-graduate scholars are still in progress. We are in the process of selecting another scholar this year.

Kid Galing Project

PAMET adopted the "Kid Galing (formerly Laging Handa)" Project with the aim of encouraging proper hygiene among young children. The project recognizes school children who acknowledge that practicing proper hygiene is one step to performing better in school because they are protected from the five threats to health – colds, cough, pneumonia, skin rashes, and diarrhea.

The Project was reported during the recently concluded "3rd International Health and Hygiene Symposium" held in Beijing, China. Partners and stakeholders from different countries also presented their contributions in promoting health hygiene.

Participation in International and Regional Activities

PAMET is a member of:

ASIA ASSOCIATION OF MEDICAL LABORATORY SCIENTISTS (AAMLS)

Several business meetings were held prior to the conduct of the 3rd AAMLS Congress in Japan. One was during the 44th Annual Convention in Manila last December, 2008. Another was held in Kaohsiung, Taiwan during the 2009 Asia-Pacific Medical Laboratory Science Forum. The Presidents of each member country was requested to give lectures on topics related to the theme. It was supported by Taiwan Association of Medical Technologists (TAMT).

AAMLS Board of Directors in Taiwan during the 2009 Asia-Pacific Medical Laboratory Science Forum.

The 3rd AAMLS Congress was held in Yokohama, Japan. All Presidents of member countries were invited fully supported by Japan Association of Medical Technologists (JAMT). The Presidents were requested to moderate some presentations. Concurrent with the event, a business meeting was held and Dr. Rachana Santiyanont of Thailand was elected as the new President.

ASIAN & PACIFIC FEDERATION OF CLINICAL BIOCHEMISTRY (APFCB)

PAMET has been a member of APFCB since 2007. It is composed of different country organization in Asia particularly involved in Clinical Biochemistry. PAMET is now actively involved in the different activities of APFCB.

ASEAN ASSOCIATION OF MEDICAL LABORATORY TECHNOLOGISTS (AAMLT)

The 13th Asean Conference of Clinical Laboratory Scientists will be held in Malaysia on Sept. 25-28, 2010. PAMET, represented by the President L. Florento sits in the board who is now the 2nd Vice Pres. The Presidency is now chaired by the President of Brunei Association.

INTERNATIONAL FEDERATION OF BIOMEDICAL LABORATORY SCIENCE (IFBLS)

The 29th World Congress of Biomedical Laboratory Science will be on June 6-10, 2010. The venue will be in Kenyatta International Convention Center, Nairobi, Kenya with the theme " The Role of Biomedical Laboratory Science in Management of Global Health Burden with emphasis on HIV/AIDS, TB and Malaria".

INTERNATIONAL FEDERATION OF CLINICAL CHEMISTRY (IFCC)

PAMET has been recognized as the 36th full member of IFCC (IFCC number system 02.01.92). PAMET would like to thank the full support of Mr. Joseph Lopez, the President of APFCB and the unanimous approval of the IFCC members.

PAMET-USA

The Biennial Executive meeting was held in Los Angeles, California hosted by PAMET-Southern California. Incidentally, it was their 20th Chapter Anniversary. During the business meeting, Pres. Leila Florento was asked to recount on the activities of PAMET and on the dilemma of Med Techs in the Philippines. They were alarmed about the shortage of Med Tech and their low salary. Strategies on how to help Filipino Med Techs were devised.

PAMET'S REPORT 2010

It is PAMET's vision to make the Medical Technologists highly motivated, globally competitive and service oriented with excellent and quality performance. The goals set are based on the vision and mission of PAMET

To realize the goals, the Board of Directors together with the four Regional Directors and Advisers arranged program of activities during the Planning Session held at the start of the year. The committees were grouped to set strategies and plan of action, to review of what was done in the past and to make corrective actions. Also, the time tables and budget were discussed. It was such a formidable task but no matter how hard, we were determined to continue our programs infusing new strategies and a fresher outlook. We made sure to be more visible ensuring that we created and sustained our programs giving benefits for the members.

EDUCATION

Objectives:

1 To strengthen skills and develop high standard expertise through scholarships and training programs.

Scholarship:

Dagdag Karunungan, Kinabukasan ng Kalusugan is a post- graduate scholarship program supported by Safeguard for active members of the Philippine Association of Medical Technologists, Inc. (PAMET). The purpose of this program is to assist Medical Technologists in completing their higher educational goals and achieve higher level of competency in their professional practice. This scholarship is available on a competitive basis to Medical Technologists practicing in the Philippines and is an active member of PAMET.

Post-Graduate Scholarship was granted to the following members who have successfully completed the MS Medical Technology this year 2010. Application for the scholarship is open for new batch of scholars.

a Wilson Laranang –MS in Medical Technology at St. Louis University in Baguio City, graduated Cum Laude

b. Jessica Legaspi - MS in Medical Technology at the University of Santo Tomas, Manila

c. Jerold Alcantara – MS in Medical Technology at the St. Louis University in Baguio, graduated Cum Laude.

The scholarship grant supported the tuition fees of the qualified PAMET members taking MS in Medical Technology and related course.

Specialized Training Courses

a. A 2 day seminar on The ABC of Malaria Parasite Identification was held nationwide through the initiative of Dir. Lily Alquiza. It was a two-day hands-on-training. The 1st was held at Trinity University of Asia on March 26-27, 2010 which was participated by 49 members from North and South Luzon and NCR. The same training was held at Unibersidad de Zamboanga, Zamboanga City on June 3-4, 2010 with 23 participants. The workshop training was supported by PAMET-Nevada Chapter.

b. A workshop on "Laboratory Quality Control" was held at the Trinity University of Asia last August 27, 2010, sponsored by Lifeline (Bio-Rad). It was participated by quality officers and other representatives from the hospital/institution.

This activity is in preparation for the up-coming Advanced Laboratory Quality Workshop with EQA, audit, pre-analytics to post-analytics and Interpretative Commentary on March 23-25, 2011 to be conducted by IFCC visiting lecturers.

c. One of the major activities of PTSI-TB LINC Project is to expand the access to quality Direct Sputum Smear Microscopy (DSSM) services available for private sector by engaging private TB microscopy laboratories to participate in the DOTS network. The DSSM training for Microscopists was a 5-day training course held at the PTSI office at Santolan, Quezon City. Medical Technologists from 12 PTSI sites joined in this training on five different schedules. The training last September 27 to October 1, 2010 was participated by Medical Technologists. Representatives from PAMET and PASMETH (Phil. Association of Schools in Medical Technology & Public Hygiene) also joined the training. The objectives of the project are for PAMET to conduct training among its members nationwide particularly in the 12

key areas of the project in collaboration with PTSI until June, 2011 and for PASMETH to integrate the International Standards of Tuberculosis Care (ISTC) in the curriculum.

RESEARCH

Objectives:

1 To encourage members to be research-oriented and be able to contribute to the improvement of science and health.

2 To collaborate with other institution for the advancement of the Medical Technology profession

a. A Scientific Writing training workshop was held last May 15-16, 2010 at PAMET office. It was participated by the PAMET board of directors with the advisory council and some diagnostic representatives. The purpose of this workshop is to encourage everybody to write scientific papers.

b. A collaborative project between PAMET, Philippine Society of Pathologists (PSP) and Philippine Society of Reproductive Endocrinology and Infertility (PSREI) on Semen Analysis based on WHO Standards took place this year. A survey related to this matter was conducted on August 6, 2010 at Abbott Laboratories. The President of PSREI, Dr. Virgilio Novero was invited to discuss the purpose of the project. The result of the survey was presented during the conference of PSREI at Diamond Hotel. PAMET PRO Gamaliel Fulgueras attended the Semen Analysis Standardization Workshop for Laboratory Technologists which was conducted on October 15 and 16, 2010 by WHO consultant Dr. Daniel Franken of South Africa, a world renowned andrologist.

c. A Research Forum was held during the Med Tech Week Celebration. It was participated by students from San Juan de Dios University, Emilio Aguinaldo College, Trinity University of Asia and San Pedro College. The 1st and 2nd Prize went to San Pedro Colleges whereas the 3rd prize went to Trinity University of Asia.

CONTINUING MED TECH EDUCATION

Objective: To enhance professional growth and development of members

The committee on CMTE has been very active in conducting seminars on relevant topics, latest trends and modern technologies affecting the Medical Technology profession. PAMET members in Metro Manila and nearby provinces were able to update themselves which helped them improve the delivery of laboratory services in their respective workplaces. Throughout the year, the members of the committee worked very hard to come up with the following activities:

1st CMTE Seminar - March 23, 2010

Topic :	"Lipids: Facts, Issued and Trends"
Venue :	Emilio Aguinaldo College
Speakers :	Dr. Frederick Llanera – Philippine Heart Center Ms. Chita Celeste Angeles - Veterans Memorial Medical Center Ms. Heide Banan – Meakka
Sponsor :	Meakka Corporation

2nd CMTE Seminar - August 11, 2010

Topic :	Roles of Medical Technologists Beyond Lab Tests
Venue :	Veterans Memorial Medical Center
Speakers:	Dr. Noel C. Santos –Rizal Medical Center Dr. Editha Tria – San Lazaro Hospital
Sponsor :	Drake Marketing

3rd CMTE Seminar – September 17, 2010

Topic :	Customer Satisfaction in the Era of Automation
Venue :	Veterans Memorial Medical Center
Speakers:	Dr. Anacleta P. Valdez – Lyceum of the Philippines- Batangas Mr. Edgardo Teovisio – Confluent Learning
Sponsor :	OCD- Johnson and Johnson

The committee was also involved in the processing of applications for CPE units in Professional Regulation commission including those from different PAMET chapters and other health professional organizations.

LABORATORY MANAGEMENT & PRACTITIONERS

Objectives:

- To create an atmosphere of solidarity and camaraderie amongst Lab Managers and Practitioners
- To group together all lab managers from private, government and free standing for a more dynamic discussion and productive interaction in sharing and solving issues in the lab

The first Laboratory Management & Practitioners meeting was held on March 5, 2010 at Abbott Laboratories, A virtual symposium about Quantitation of HBsAg as an adjunct tool in monitoring antiviral therapy was shown. Issues and concerns were tackled by the group. The meeting was sponsored by Abbott Laboratories.

The 2nd Chief Med. Techs meeting was held at St. Luke's Global City on September 21, 2010. Dir. G. Noble took charge of the invitation. Grepcor sponsored the meeting. Mr. Lody Tonelete, the Lab Manager willingly obliged to tour the participants to the whole laboratory.

The 3rd meeting was held at the Max Restaurant at Timog QC on October 29, 2010. It was sponsored by Pediatrica who made product presentation.

PROFESSIONAL DEVELOPMENT

Objective: To build up leaders of the association and expand their foresight for the future

Professional development seminar is conducted every year for the board of directors, chapter presidents and some lab managers. This year, Ms. Judith Claridades was invited as the facilitator of the leadership seminar on "Unleashing the Power Within". It was held at the King's Royale Resort and Leisure Park at Bacolor, Pampanga on November 6 and 7, 2010.

WELFARE AND BENEFITS

Objectives:

1 To assist in the recruitment, career development and promotion of medical technologists

2 To provide assistance for active members who contracted dreaded disease or worse, death

The committee sponsored two job fairs for the year. These were held at the Manila Hotel during the oath taking ceremonies of the newly registered Medical Technologists. Hundreds of new medical technologists availed of this opportunity.

Another activity of the committee is the Bayanihan Program. The assistance extended by PAMET is given only to a certain member who has contracted a dreaded disease or disability. In case of death of a regular PAMET member, the bereaved family of the member will receive the benefit. The assistance is given only once in a lifetime. This year, we extended the assistance to the bereaved family of Fe Olayta of Quezon City General Hospital, Christian Denn Jeffrey Bondoc Yumang of Pampanga Chapter and another member from St. John Laboratory in Makati.

On the other hand, hundreds of our members availed the calamity assistance due to Typhoon Ondoy and Peping. With the financial assistance extended by PAMET USA, the association released additional Php 50,000.00 so that each victim could get Php 500.00. The affected chapters who availed were La Union, Baguio, Pangasinan, Cagayan, Rizal and NCR.

MEMBERSHIP

Objective: To maintain the database of the members and address issues and concerns of the members

During the first quarter of 2010, it was the PAMET secretariat who was printing the membership ID. A yearly expiration date is reflected in front of the ID. A membership ID is issued every renewal of PAMET membership. Inactive membership maybe reverted to active membership after payment of all appropriate dues and penalties. A 10% penalty is charged per year for inactive member. Furthermore, members who are 65 years old and above are given free lifetime membership.

Last year, PAMET members who were affected of typhoon ONDOY were given free membership dues.

In PAMET website, www.pametinc.org all members have the ability to register and to log in to the website and interact dynamically with other members and get updates of latest news from the organization. Furthermore, all members are logged in a Single database for Member User Management for both ONLINE and/or OFFLINE use. Moreover, the system is able to facilitate a functional Online Registration for such events and accommodate the target range of attendees.

CHAPTERS

15th PAMET Mid Year in Davao City

The Philippine Association of Medical Technologists, Inc – Davao Chapter hosted the 15th Midyear PAMET Convention on April 8-9, 2010 at the Grand Regal Hotel in Davao City. This year's theme focuses on "Profession, Proficiency, PASSION". The convention attracted more than 700 medical technologists from all over the Philippines. The keynote address was delivered by Dr. Paulyn Jean U. Rosell-Ubial, Assistant Secretary of Health-Field Implementation Management Office. At the closing ceremonies, the very energetic members of Davao Chapter treated the delegates to Malipano Island, Pearl Farm Beach Resort, the Island Garden City of Samal. Sumptuous dishes were served while the music of our times played on with a live band. Renewed camaraderie and rekindled friendship among many

colleagues were observed during this once a year gathering.

15th Midyear Convention	**" Profession, Proficiency, Passion"**
April 8-9, 2010	Speakers:
Grand Regal Hotel	**Imelda D. Soriano, MD, MCH**
Lanang, Davao City	**Arvin C. Faundo, MD, FPSP** **Marco Reza J. Hernando, RMT** **Jaganathan Sickan, MD** **Alejandro E. Arevalo, MD, DPSP** **Ferriza Maria Amparo Isaguirre, MD** **Hospicio C. Conanan Jr., DVM,MBM**

Regional Conferences

1. North Luzon – Pangasinan Chapter

   The North Luzon Regional Conference was held on July 23 and 24, 2010 at the Covelandia Family Beach Resort, Labrador, Pangasinan. The theme was "PAMETVILLE: Leveling Up". It was a successful event. All North Luzon chapters were in full attendance.

2. Mindanao – Zamboanga Chapter

   The Mindanao Regional Conference was held in Zamboanga City on September 3 and 4, 2010. The National Board members attended the conference. There were more than 100 participants.

3. South Luzon – Laguna Chapter

   The PAMET South Luzon Regional Conference was held at El Cielito Inn in Sta. Rosa,Laguna last September 24, 2010.

Each chapter conducted their own activities including continuing education, community outreach, Med Tech Week celebration and blood letting activities.

ISO 15189 series of seminars	*"ISO 15189 awareness seminar"*
June, July, August, 2010	*"ISO 15189 internal audit"*
Davao and Cebu City	*"ISO 15189 quality assurance"*

The newest chapter formed outside of the country and within the Asia-Pacific region is the PAMET-Singapore Chapter through the initiative of Ms. Zarlyn Banaña. After a series of meetings, the PAMET-SINGAPORE Chapter was inducted on June 26,2010 at Quality Hotel, Balestier Rd, Singapore. Distinguished guests from the Philippine Embassy-Singapore graced the occasion, with no less than Mr. Jed Martin LLona, the 3rd Secretary and Vice-Consul and Atty. Rodolfo Sabulao, the Labor Attache with the VIP's of PAMET National headed by Pres. Leila Florento, VP Romj Ignacio, Sec Ronnie Puno, Auditor Luella Vertucio and PRO Gammy Fulgueras. With them were Dr. Danny Giron, senior consultant pathologist from Tan Tok Seng Hospital, a former Chairman of the Board of Medical Technology and Dr. Eddie Ang, the President of Singapore Association of Medical Laboratory Scientists(SAMLS).

COMMUNITY OUTREACH

Objective: To enhance socio-civic awareness and professional relations thru community outreach activities.

The first outreach activity was held at the PRC Auditorium on June 17, 2010 during the PRC Week Celebration. PRC Officials and employees were very happy for the free laboratory services rendered by PAMET such as Urinalysis, Blood Sugar Determination, Complete Blood Count, and Blood Typing. A total of 169 patients were served while a total of 596 tests (blood typing, CBC, FBS and urinalysis) were done. The following partner diagnostic companies sponsored the activity such as: Sysmex Phils.- Zafire Distributors, Medical Trends and Meakka. The participation of Delos Santos Medical Center-STI Med. Tech. Interns is very highly appreciated. Present during the activity were Hon. Marian Tantingco, PAMET Pres. Leila M. Florento, Dir. Joycelynn L. Aman, Dir. Bernadette L. Salom, Dir. Georgene Jimenez, Ms. Armie Ponce, Ms. Evelyn Torres, Ms. Joan Creo, Mr. Morish Creo, and representatives from Zafire Distributors.

The second outreach activity was held on September 12, 2010 at the Bagumbayan Barangay Hall Grounds, Taguig City. It was the launching activity of Medical Technology Week 2010.

PAMET offered free laboratory examinations such as Fecalysis using Kato-Katz Technique, Urinalysis, Complete Blood Count and Blood Typing. Patients in need of medical consultation were attended by Dr. Eduardo Legaspi. The target population for the activity was the children coming from developing communities of Barangay Bagumbayan such as Laura Drive, Marcelo, Butas and Palayan. Laboratory test results were forwarded and properly endorsed to "Save the Children Foundation" program coordinator Ms. Glo Ramat for management, treatment and follow up.

PAMET Committee on Community Outreach extends its heartfelt gratitude to Sysmex-Zafire, Meakka, Drake, Delos Santos Medical Center-STI Med. Tech. Interns, Paranaque City Health Laboratory Staff, and Save the Children Foundation. Our sincerest appreciation also goes to PAMET Officers, Directors, members and all the staff of Zafire Distributors, Inc. and Meakka present during the activity including Barangay Bagumbayan Officials and Volunteers.

SPORTS AND PHYSICAL FITNESS

The "Palarong Pinoy" was held on June 13, 2010 at Amoranto Stadium. There were 51 participants in the said event. Sponsors were Sysmex, Diagnostika Pilipinas and Zafire.

PAMET conducts the yearly tournament among hospital laboratories and diagnostic centers as well as private laboratories to promote the spirit of sportsmanship and camaraderie among the medical technologists. The Veterans Memorial Medical Center bowling team bagged the championship title followed by San Juan de Dios as 1st runner up and Sysmex/Zafire team as the 2nd runner up in the PAMET 10-Pin Bowling Tournament. It was held at The Playdium in Quezon City last September 19, 2010.

Other teams were from Manila Adventists Medical Center, PGH-Global, The Medical City, Quezon City General Hospital, Victor R. Potenciano Medical Center, Delos Santos Medical Center, PAMET/MEAKKA/UST, Manila Doctors Hospital, and Far Eastern University-NRMF. Some pathologists like Dr. Gonzalo Roman and Dr. Susana Quiaoit joined the tournament.

SPIRITUAL DEVELOPMENT

Objective: To help uplift the spiritual morale of the leadership and its members

On March 20-21, 2010 in Antipolo City, the Board of Directors, Past Presidents, Standing Committee members, office personnel, representatives from the Diagnostics companies and Chief Medical Technologists took time to join in the Spiritual retreat.

The serene garden of the Shalom Retreat House in the background, the charismatic and spirit-filled Fr. Archie Guiriba, the retreat master, talked about "Restoring broken relationship with God and Salvation". The two day activity was filled with light-hearted moments and group interactions. The praise and worship team of the Shalom Ministry led the group in charismatic way of praising and worshipping God through songs and dances. The culminating activity was the Thanksgiving Mass which was highlighted with the powerful outpouring of the Holy Spirit and healing. Participants went back home enlightened and renewed ready to face the challenges in their journey called life.

SOCIALS

Objectives:

1 To help in the dissemination of information of all activities of the Association

2 To maximize participation of members in the activities of Association

3 To foster camaraderie among members

The Committee coordinated with all the Committee Chairs in disseminating information of the different activities of the Association.

The Committee together with the Committee on Sports Development organized the culminating activity for the year 2009 which was the Christmas Party and also the Thanksgiving Party given to our partners in the Diagnostics for their untiring support to all the Association's activities. The Party was held in Manila Hotel, Manila. It was a fun-filled day.

PROFESSIONAL PRACTICE AND ETHICS

Objective: Awareness of Responsibilities and Duties of Medical Technologist in relation to social obligation as a Professional Health Worker

There were several cases referred to the Committee. They were all addressed immediately. Upon thorough investigation and communication with the concerned people the cases were resolved. Most of the cases were also referred to proper forum since they were not within the scope of the committee.

The committee is now working on updating the Medical Technologists Code of Ethics to align with the present demands of the profession globally and its responsibility with our environment.

ADVOCACY

General Objective:

To promote the medical technology profession

Specific Objectives:

- To help increase enrollment in medical technology schools
- To help attain adequacy of medical technologists in clinical laboratories and other areas of work
- To increase awareness of the profession on the general public

Activities:

1. Career talk on the Medical Technology profession in high schools
2. Encouraged chapters to conduct promotion of Medical Technology course in the provinces

3. Med. Tech. Week – distributed information materials about the Medical Technology profession in Parañaque, Muntinlupa and Las Piñas high schools

4. Monitored enrollment status in Medical Technology schools

5. Created awareness of global demand and competitiveness of the Medical Technology profession through ASCPi advocacy.

PUBLICATION AND DOCUMENTATION

The aim of the Committee is to make sure that we provide all our colleagues with the latest happenings in the organization. As such, the Committee on Documentation and Publication was able to release three (3) issues of PAMETLINK for this year. The first issue was released last March 2010, followed by August 2010 and the last on November 2010. The whole year round activities of PAMET were documented and published. This includes not only the National activities but it includes as well, the Regional and Sectoral Programs all over the Philippines.

MED TECH WEEK

The Annual Med Tech Week celebration was held last September 12-19, 2010. It started with an Outreach Program at Taguig City, PAMET President and Board of Directors with the help of volunteers and friends provided free laboratory examinations to the children of a selected Barangay. Dir. Joycelynn Aman chaired this Committee.

The 2nd day was the Thanksgiving Mass at Delos Santos-STI Hospital. The mass was officiated by Father Dan, SVD from Sacred Heart Parish. It was a well- attended celebration with Med. Techs, Interns, Diagnostic friends and the PAMET officers and Board of Directors.

Another activity of the Med. Tech. Week was the Career Advocacy, Ms. Agnes Medenilla and Ms. Luella Vertucio promoted the Med.Tech profession by distributing flyers and posters in high schools in Muntinlupa through the help of Dr. Fe Martinez. The regional directors also conducted advocacy in their respective areas.

The Research Forum was held at the Trinity University of Asia on September 14. Students from different schools attended this forum. The Chairman of this Committee is Ms. Lily Alquiza.

Another highlight of the celebration was the PAMET-PASMETH Quiz Show which took place at the UST Medicine Auditorium on September 16, 2010. More than 20 schools participated in this event. Perpetual Help G. Tamayo students brought home the pride and honor, 2nd place was Adventist University of the Philippines while the 3rd place went to University of Sto Tomas. Dir. Gamaliel Fulgueras is the overall chairperson of the Quiz Show committee.

September 17, 2010 was the second CMTE Seminar. It was held at the Valdes Hall of the Veterans Memorial Medical Center. Almost 200 Medical Technologists attended the seminar with topic such as Customer Satisfaction in the Era of Automation. Exec. Sec. Ronnie Puno chaired this committee.

The last day of the Med. Tech Week Celebration was the Sportsfest. An inter hospital bowling tournament was held at the Playdium in Quezon City. Winners were Veterans Memorial Medical Center, 1st place, San Juan De Dios Hospital, 2nd and Sysmex Company, 3rd place. Dir. Georgene Jimenez, chaired this committee.

CONSTITUTION AND BY-LAWS

Objectives:

1 Effectively address the needs of the members

2 Protect their rights, privileges and interests by upholding and safeguarding the practice of the profession

The committee met several times to clarify issues regarding the implementation of the new constitution particularly whether the last 7 of the present board can still qualify to seek re-election. They sought lawyer's advice regarding this matter. The final decision was used for the opening of candidacy for the new board of directors for 2010-2011.

LEGISLATION

Objective: To participate in activities that will safeguard welfare of medical technologists and the profession

Activities:

1. Medical Technology Law (Republic Act 5527)
    a. The Committee gathered information on necessary revisions for the Med. Tech.Law. Meetings with the PAMET Board of Directors and PAMET Chapters were conducted. PASMETH and UP Public Health were consulted.
    b. Legal consultations and revisions on the Med.Tech. Law were done.
2. The Committee participated in discussions/ consultations regarding relevant issues and concerns of PAMET (e.g. PAMET Constitution, rules and regulations, other legislation problems).

WAYS AND MEANS

During PAMET 2009 Mid-Year Convention Chapter's Meeting hosted by Baguio-CAR Chapter, "Raffle for a Cause" was launched as a fund raising project of the Committee on Ways and Means. The purpose of the fund raising project is to support the activities of the Community Outreach. The raffle draw was originally intended during the PAMET 45th Annual Convention, but due to several calamities that hit our country, the raffle draw was postponed and was held during the fellowship night of the 2010 Mid-Year Convention hosted by Davao Chapter. A total of 125 booklets were sold totaling to P125,000.00 from which a portion was used to buy the prizes. The prizes consist of 3 laptop notebooks, 2 Nokia cellphones, 2 electric fans, 2 electric blenders, 2 oven toasters, 2 rice cookers and 2 electric flat irons. The amount of P42,000.00 was raised in this project.

PERSONNEL & OFFICE MANAGEMENT

O**bjective:** To establish guidelines with regards policies, procedures and code of conduct in the PAMET Office in order to effectively achieve its goals.

Activities:

1. Revision of Office Procedures and Code of Conduct.
2. Salary adjustment of office staff.
3. Replacement of resigning personnel.
4. Acquisition of new equipment.
    — two new laptops with two printers
    — external hard disk to back up files

FINANCE AND AUDIT/ BUSINESS DEVELOPMENT

Objective: To ensure that operating expenses is within the budget

Operating expenses through the years was projected during the planning session. Hence, it was clear to the board

of directors that expenses for 2010 should be within limited budget. Otherwise, each committee shall look for other resources to finance their projects.

PROFESSIONAL RELATIONS

Representation of PAMET has been done in various societies and organizations.

PRC (Professional Regulation Commission)

The PRC Outstanding Medical Technologist for the year 2010 is Prof. Winifrida U. De Leon. The awarding ceremony was held last June 18, 2010 at The Manila Hotel during the PRC Week Celebration. It was a week long celebration at PRC. Part of its activities is the outreach program where PAMET participated and gave free laboratory services.

CPEC (Continuing Program for Education Council)

CPEC chair Hon. Marilyn Atienza together with PAMET Pres. Leila Florento and Ms. Zenaida Cajucom representing PASMETH took oath of office with PRC Chairman Hon. Lapeña. The functions of the CPEC are to accept, evaluate and approve CPE applications, monitor the implementation by the CPE providers of their program, activities or sources and assess periodically and upgrade criteria for accreditation of CPE providers and CPE programs, activities or sources.

CHED (Commission on Higher Education)

The CHED Technical Panel for Med. Tech Education (TPMTE) is composed of Chairman Dr. Anacleta Valdez (Dean, Lyceum of the Phils-Batangas) and members Dr. Jurel Nuevo (Dean, Our Lady of Fatima University), Dr. Leila Florento (PAMET Pres.), Hon. Marian Tantingco (Member, PRC Board of Medical Technology & Mr. Ronaldo Puno (PAMET Exec. Secretary). Among the functions of the panel are to help CHED in developing policies that affect the profession, curriculum improvement and monitoring and evaluation of schools offering the course. It also accredits and monitors hospitals and laboratories involved in the internship training of students enrolled in Bachelor of Science in Medical Technology / Medical Laboratory Science.

PASMETH (Phil. Association of Schools of Medical Technology and Public Hygiene)

The PASMETH Annual Convention was held in Dumaguete City on April 23-24, 2010. Dirs. Lily Alquiza and Soledad Bautista represented PAMET. Newly-elected PASMETH Pres. is Prof. Magdalena Natividad of FEU. Dir Lily Alquiza was elected Asst. Secretary.

PCQACL (Phil. Council for Quality Assurance in Clinical Laboratories)

PAMET is a member and represented in Philippine Council for Quality Assurance in Clinical Laboratories (PCQACL). PAMET PRO G. Fulgueras was elected to the Board of Trustees on October 1, 2010 during the 8th Annual Convention and appointed as Asst. Secretary by President-elect Januario Veloso. Likewise, PAMET President Leila Florento was elected as Auditor while PAMET Director Virginia Silvestre is serving her 3rd term as a member of the Board of Trustees. PAMET Executive Secretary Ronaldo Puno served as Treasurer of PCQACL for the past years.

AAHON (Alliance of All Health Agencies of the Nation)

In 2009, PAMET was elected as PRO in the person of Gamaliel Fulgueras in the Alliance of All Health Agencies of the Nation. In behalf of the group of Medical Technologists, PAMET has aired its concerns to the presidentiable during the forum at Philippine Medicine Auditorium (PMA) in Quezon City last summer. PAMET addressed issues on salary standardization, exodus of medical technologists, centralization of blood services.and RA 5527.

SAFEGUARD SCHOLARSHIP

Another 15 Safeguard Scholars taking up Bachelor of Science in Medical Technology were awarded last October 29, 2010 in the "Handog ng Safeguard, Med Techs ng Kinabukasan" Scholarship Program. New graduates and board passers who maintained their scholarship until they graduate were also present to receive plaque of recognition.

DOH (Department of Health) Activities

PAMET is represented in the following DOH activities:

1. Participation in the 3rd National Human Resource Policy Forum. The Human Resources for Health Network (HRHN) Philippines in partnership with the European Commission-Technical Assistance held the 3rd National HRH Forum with the theme "Policy Adoption to Action: Stakeholders Synergy for HRH Development, Utilization and Migration Management". It was held at the Century Park Hotel, Malate Manila on May 28, 2010.
2. Second National Lymphatic Filariasis Elimination Forum" last September 1, 2010, at the Crown Regency Hotel in Davao City attended by Ms. Zenaida Banzon, the Mindanao region
3. Creation of a Technical Working Group (TWG) for the Implementation of the Standards on Quality Management System in the Clinical Laboratory under the DOH coordinating committee of the National Health Laboratory Network. Three committees were formed: Committee on Standards, Committee on Training and Committee on Assessment.
4. Assessment of NRLs in compliance to QMS by the trained assessors.
5. Creation of task force LABNET on the formulation of the framework and strategic plan for the National Health Laboratory Network.

HIV-Proficiency Training Course

SACCL partnered with PAMET in the conduct of HIV-Proficiency Training Course. Pilot testing of handling the training course was conducted during the October and November schedule in Manila. Memorandum of Agreement will be drafted later after careful evaluation of the 2 trainings.

INTERNATIONAL ALLIANCE

AAMLS (Asia Association of Medical Laboratory Scientists)

The founding members of AAMLS are MIMLS (Malaysia), BAMLS (Brunei), SAMLS (Singapore), AMTT (Thailand), PATELKI (Indonesia), PAMET (Philippines), JAMT (Japan), HKMTA (Hong Kong), VAML (Vietnam), KAMT (Korea) and AIMLTA (India). The AAMLS board had 2 meetings during the year. First was during the 3rd Asia-Pacific Forum on Biomedical Laboratory Science held in Taiwan on May 1-2, 2010 and 2nd was during the AACLS congress in Kuala Lumpur last October, 2010. The President is Dr. Rachana Santiyanont of Thailand Association of Medical Technologists. The board is finalizing the amendments to the constitution and working on several projects.

AACLS (ASEAN Association of Clinical Laboratory Sciences)

The 13th ACCLS Conference was held at Royale Chulan Hotel in Kuala Lumpur, Malaysia on September 25-27, 2010. Dr. Hj. Mohammad Hj. Kassim, the president of ASEAN Association of Clinical Laboratory Sciences welcomed the delegates. He expressed his gratitude to all the presidents and the council members for their strong commitment and concerted efforts that made the association as it is today. Two Med. Techs from San Pedro College namely Jasmen Pasia and Jeromil Lara attended the conference to present their research papers. The PAMET executive

board and the members of Med Tech PRC board attended the conference. The 14th ACCLS Conference will be held in Manila in 2012. PAMET will host the next event. The new President of AACLS is Mr. Woon Sung Thung of Malaysia, Dr. Leila Florento is the 1st VP while Dr. Eddie Ang is the 2nd VP.

IFBLS (International Federation of Biomedical Laboratory Sciences)

The IFBLS Congress was held on June 6-10, 2010 in Nairobi, Kenya, the first time in Africa. The theme was "The Role of Biomedical Laboratory Science in Management of Global Health Burden with Emphasis on HIV/AIDS, TB and Malaria". It was attended by 30 member countries (although there were few local delegates).

Pres. L. Florento and Exec. R. Puno represented PAMET. It took place at the height of World Cup and US VP's State Visit (thus, strict security). PAMET actively participated during the discussion of IFBLS top 5 projects: (Membership Recruitment, e-learning, e-journal, WHO collaboration, core curriculum & competencies). One of the highlights of the discussion was the membership fees and student membership. Elected New President was Dr. Vincent Gallichio from USA and the Pres-elect was Dr. Kyoko Komatsu from Japan. Other council members were from Canada, Croatia, India, Taiwan and Cameroon. Pres. L. Florento was invited to judge in poster presentation while Exec. Sec. R. Puno was appointed as one of the election canvassers. The next IFBLS Congress will take place 12-22 August, 2012 at the Kongresshotel & Conference Center, Potsdam, G ermany.

IFCC (International Federation of Clinical Chemistry and Laboratory Medicine)

The International Federation of Clinical Chemistry and Laboratory Medicine (IFCC) is the global professional organisation in the field. There are currently 84 national society members (Full Members), 40 company members (Corporate Members) and 5 Affiliate Members of IFCC. Together this membership represents the interest of >30,000 senior professionals from the field of laboratory medicine.

There were 7 awards made available for 2011 (nominations ended October 30, 2010) .

1. IFCC Distinguished Clinical Chemist Award
2. IFCC-Henry Wishinsky Award For Distinguished International Services
3. IFCC Award For Distinguished Contributions in Education
4. IFCC-Abbott Award for Significant Contributions in Molecular Diagnostics
5. IFCC Distinguished Award for Laboratory Medicine and Patient Care
6. IFCC-Robert Shaffer Award for Outstanding Achievements in the Development of Standards for Use in Laboratory Medicine Co-sponsored by NIST and CLSI
7. IFCC-Roche Young Investigator Award

IFCC has recently formed a Task Force for Young Scientists. The aim of this Task Force is to ensure that young scientists make a significant and growing contribution to the activities of IFCC and to the promotion of laboratory medicine at the center of healthcare.

PAMET is the 83rd full member of IFCC. One member of PAMET, Ms. Ma. Teresa Rodriguez, was one of the recipients of the IFCC/Roche Travel Scholarship Award to attend the APCCB in Seoul, Korea and present paper. The scholarship allows young scientists from developing countries to attend IFCC major Congresses and Conferences as well as other selected Congresses. Ms. Ma. Teresa Rodriguez of College of Medical Technology, Trinity University of Asia presented her paper "Serum Levels of Beta-2 Microglobulin in Diabetic Patients: As An Early Biochemical Marker of Renal Dysfunction" during the APCCB in Seoul, Korea.

PAMET-USA

Pres. Leila Florento was invited as the Guest of Honor and Keynote Speaker as well as one of the resource speakers during the PAMET-USA 12th Biennial National Convention last August 15 to 22, 2010.

Important activities during the convention were 9 CME lecture topics, business meeting and election of new officers.

The lecture topics were Transfusion Guidelines/Practices (Ricky Martinez, PAMET-Nevada), Challenge of Med Tech Profession in the Philippines and ASCPi (Leila Florento, Phils), Alzheimer's Disease (Shirley F. Cruzada, PAMET-Nevada), Myelodysplastic Syndromes (MDS) (Herminia Bigornia, PAMET-Michigan), Improving Laboratory Turnaround Time Using Percent Outliers (Judy Heng, PAMET-Texas), Overview Of Foreign And Out Of State Personnel (Joseph Mussalam, University of California San Francisco), Biochemistry Of Coagulation (Ester Buot, PAMET-Texas), The Uninvited Dinner Guests: A Potpourri Of Food-Borne Pathogens (Let Negado, San Diego), Stem Cell Transplantation: From Research Laboratory to Standard Care Of treatment (Shirley Cruzada, PAMET-Nevada).

Several issues were discussed during the business meeting: membership, better communication, job placement, continuing education, financial assistance to Filipino Med Tech students and resource sharing for Philippine hospitals/clinics and medical missions. Pres. Leila Florento reported the distribution of the PAMET-USA donation to Typhoon Ondoy victims, the medical mission and the workshop training in Malaria.

Looking on the association as a whole, our strategies, practical activities and performance as well as future directions, there is no doubt that our association has made significant strides in engaging our members in professional activities as envisioned. There are lots of things to carry out for our organization and opportunities keep pouring. Thank God for the blessings.

(Reported by : Dr Leila M Florento, President, The Philippine Association of Medical Technologists, Inc)

Association for Clinical Biochemistry-Taiwan, China (CACB)

CACB 2010 Activities Report

Scientific Activities:

Several activities completed a fruitful year 2010 for the CACB, Taiwan. Between the year 2009 to 2010, during the 24th Joint Annual Conference of Biomedical Science hosted by the then President Shu-Chu Shiesh in the National Defense Medical Institute on Mar., 2009, a distinguished professor Mr. Gwo-Bin Lee from the National Cheng Kung University gave an informative presentation on " A new microfluidic platform technology for fast diagnosis" enlightening the listeners on a new technology for diagnostic testing. On the same event, Dr. Po-Hsun Cheng talked about information technology that is very useful to the present operations in laboratories – " The Adopting Trend for Information Technology on Laboratory Automation Systems".

Election of new set of officers by the members of the association was held on Nov., 2009, with the unanimous choice of Dr. Min-Long Lai as the new President.

During the 25th Joint Annual Conference of Biomedical Science held this year, Prof. Parameswaran, Venkateswaran, an expert in Diabetes and Endocrinology from the Royal Hobart Hospital in Tasmania, Australia was invited to share his valuable experiences in the changes hormone testing methods, from using the radio-

Prof. Parameswaran met the CACB Council in 2010, at the 25th Joint Annual Conference of Biomedical Science.

immunoassay methods to the present new technology of hormone testing which contributed greatly to endocrinological practices.

On October of this year during the , Prof. Shu-Chu Shieh, and Prof. Tjin-Shing Jap headed for Seoul, Korea to attend the 12th Asian-Pacific Congress of Clinical Biochemistry in representing the association in bidding for the hosting of the 14th Asian-Pacific Congress of Clinical Biochemistry and came back with the good news of hosting the event in the year 2016. And also on this occasion, Prof. Shu-Chu Shieh talked about the "Influence of Gender and Pituitary Hormones on Steroidogenesis", while Prof. Tjin-Shing Jap shared his knowledge regarding the "Genetic analysis in Lipid disorders".

With the support of the Ministry of Economic Affairs, it will be the first time for Taiwan to host this international event gathering several respected speakers from whole of Asia. Through this important upcoming event, Dr. Lai will be working with all the members of the association in bringing and upgrading the standards in this domain.

(Prepared by : Dr Min-Long Lal, President, CACB)

IFCC – IACC WORKSHOP ON ISO 15189

Jakarta, 5-6 February 2010

Elizabeth Frank, Treasurer APFCB

It was a pleasure and honor to be a part of the team that conducted The IFCC Visiting lecture on ISO 15189, which was held in the Borobudur Hotel, Jakarta on the 5th and 6th of February 2010. The interest in this started when Dra Endang Hoyaranda and Dr tjan Sian Hwa participated in the ISO 15189 symposium at the IFCC – World lab Congress, Fortaleza, Brazil way back in September 2008. Dr. Hoyaranda suggested that Indonesia needed a similar workshop as there were less than 10 labs in the country that were accredited.

A three member team consisting of Prof Janet Smith, Dr. Herbert Stekel and I were shortlisted to facilitate this program. This workshop was conducted jointly by the IFCC and IACC, under the Auspices of the APFCB. The Workshop was well planned , every detail was looked into . The Number of participant were 126 . The audience had, clinical pathologists ,

senior medical technologists and University Graduates and Pharmacists working in clinical Laboratories. The program began with the introduction of the IFCC activities, by Prof Janet Smith chair of the EMD division of the IFCC.

The two day workshop covered , the need for Accreditation, Understanding the ISO 15189 standards. The workshop focused on practical aspects of how to do a Gap Analysis – Pre survey self assessment. The topics covered also case studies helping the labs to ensure the Quality of testing and Quality Indicators.

The audience participated intently with questions and clarification

The Hospitality of the Indonesian colleagues is worth mentioning. They took care of every little thing even before we asked and I must say they went out of the way to make the Indonesian experience incredible and memorable for all of us. From the time we landed to the time we left they took every little opportunity for us to taste the delicious Cuisine and their enchanting culture

The first evening, the committee took us to Harum Manis, an indigenous Indonesian restaurant with traditional Javanese 'Ningrat' (aristocratic) decorations. The second evening was a more old 'peranakan Chinese' (Chinese who have been adopting the Indonesian culture and traditions during generations) restaurant, named Dapur Babah,

where the ambience and food was again specific and traditional. And the third evening was a little bit of Japanese with a panoramic view to the important points of the city. We also had the chance to see Indonesian handicrafts, see a miniature of Indonesia at the Taman Mini Indonesia Indah (translated: Miniature Park of Beautiful Indonesia) the day before leaving back home, visited some pavilions of several Indonesian tribes at the miniature park, and had a Balinese lunch to close the whole event.

Our heartfelt thanks goes to all the office bearers of the IACC and all who took such great efforts to make our visit special. As always I came with the feeling of having received more than we had shared, with the warmth of friendship that is very special and wonderful memories...of the music, Cuisine and the lovely Indonesian Culture.

A Milestone - IFCC-Task Force Young Scientists Workshop

At 37th ACBICON 12th Dec, 2010, Mumbai, India

Educational Course Theme: Mapping Future of Laboratory Scientists

The International Federation of Clinical Chemistry's, Task Force of Young Scientists (IFCC-TF YS) created a Milestone by commissioning a one day workshop in 37th Conference of Association of Clinical Biochemists of India on Dec 12, 2010 at Mumbai, India. This Workshop aimed at creating awareness amongst Young Laboratory Scientists of India.

It was held at the prestigious Seth Gordhandas Sunderdas Medical College & King Edward VII Memorial) Hospital. The history of these institutions is closely related to India's struggle for freedom in early 19's. The medical college provides training to about 2000 students in undergraduate, postgraduate and super-speciality medical courses; Physiotherapy and Occupational Therapy; Masters and Ph.D courses in various allied specialities.

Over 200 healthcare professionals from across the country attended 1st IFCC-TF YS workshop in India. It was the collaborative effort of IFCC and ACBI; to create awareness about emerging trends in Laboratory Medicine and the current and future developments in the field of Quality & Technology. The conclave was addressed by eminent speakers from the IFCC & ACBI fraternity; including **Dr. Ghassan Shannan**, Treasurer, IFCC; **Dr. Bernard Gouget**, Executive Member, IFCC; **Dr. Gabriel Ko**,

Representative Europe, IFCC-TF YS; **Mr. Johnson Wijaya**, Asia Pacific Representative, IFCC-TF YS; **Mr. G. Galphy**, Marketing Manager-Cardiac Business Unit, Biorad; **Dr. D. M. Vasudevan**, President, ACBI; **Dr. K. P. Sinha**, Advisor, ACBI; **Dr. T. Malati**, National Representative, IFCC; **Dr. S. Dandekar**, Organising Secretary, ACBICON 2010 and **Dr. Pradeep K Dabla**, Member & National Representative, IFCC-TF YS and Convener of the workshop.

The welcome address was given by all senior members and continued with Task force introduction by Mr. J. Wijaya. He summarized the Task Force origin and its members in various countries stressing on educational activities conducted with motto to help young laboratorian. Dr. Gouget summarized networking of IFCC and Task Force introducing Gruson Damien, Chairperson, IFCC-TF YS and its various members. He also discussed objectives of TF to strengthen the knowledge and technical performance of YS. Dr Ghasan has told that how IFCC being an International Organisation is working towards raising scholarship and other funds for the international exposure of YS, especially from developing countries.

Mr. Johnson Wijaya explained the career graph for scientists in academic institutions and qualities needed for career progression. The involvement of YS is needed in various activities and discussions related to their career. **Speaking on the occasion, Convener workshop, Dr. Pradeep K. Dabla, said,** "India is emerging as a player with rising health awareness and its expanding $35 billion healthcare delivery market which provides services to1-1.25 millions patients/day. Globally we are putting more stress on technical performance instead of associated clinical information due to striking changes in automation and quality. But the true impact can be achieved only by improving patient's outcome and intervention. He briefed the guidelines for successful career progression with competency essentials." **Dr. Gabriel Ko** stressed on exchange of ideas at international level. He briefed the competition and requirements for participation.

Dr Bernard Gouget said "Quality is indispensable to a healthcare organisation and it is our responsibility to continuously raise the bar for quality standards. He discussed the organisation of Laboratory Accreditation Cooperation at International Level (ILAC, APLAC) and its National body (NABL) with importance of MRA. Due to APLAC and MRA status in India, NABL can exchange data amongst 52 accreditation bodies representing 45 countries."

Dr. D. M. Vasudevan and Dr. S. Dandekar discussed the ACBI vision towards the training and growth of YS. The Diplomat Course is started with an objective of professional training to young laboratorian about the techniques and details of clinical biochemistry. They exchanged their views towards the young scientist exchange programme which gives an experience to work in other laboratory and other potential online certification courses with the help of IFCC. This was followed by **Round table discussion** between speakers and young scientists. YS cleared doubts and queries related to subjects and the essentials for the enhancement of their career opportunities to progress further.

To conclude, this workshop provided a unique platform to the healthcare professionals to exchange ideas and to develop a new vision for the future of laboratory sciences in India and abroad. Lab medicine has become an essential branch of healthcare services, which not only impact clinical outcomes but quality, satisfaction and cost. With a proactive approach, Young Scientists have certainly a bright future ahead.

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Expanding Frontiers of Coagulation: A Window on Therapeutic advances

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Abstract

Limitations in the therapeutic use of traditional anticoagulants such as heparin, which exerts its effect through antithrombin, have led to the development of direct thrombin and factor Xa inhibitors. Likewise limitations in the use of aspirin (acetyl salicylic acid) have led to the development of drugs that target the platelet $P2Y_{12}$ ADP receptor. The use of orally administered drugs overcomes the necessity of parenteral administration of traditional anticoagulants. Pharmacogenomic variability associated with warfarin and clopidogrel adds another dimension to patient management. The influence of herbs on therapy has a bearing on the results of laboratory tests used for patient monitoring. The scope of the coagulation laboratory is expanding with the introduction of newer tests to assess efficacy of therapy.

Introduction

The first step in the formation of a coagulum is the adhesion of platelets to the exposed endothelial surface of the broken blood vessel. The platelets through glycoprotein Ib-IX-V receptor complex (or CD 42) adhere to von Willebrand (vW) factor, a multimeric protein on the exposed endothelial surface. In addition to vW factor other ligands such as, collagen are recognized by specific platelet membrane receptors during the process of platelet adhesion. The adhesion of platelets to ligands on the subendothelial matrix activates platelet membrane lipases resulting in the release of arachidonic acid from the platelet membrane. Arachidonic acid is further converted by cyclooxygenase-1 enzyme to prostaglandin cyclic endoperoxides (PGG_2 and PGH_2). The widely used drug Aspirin (acetyl salicylic acid) inhibits the enzyme cyclooxygenase-1 thus maintaining the fluidity of blood in an intact blood vessel. The cyclic endoperoxides, in turn are converted by thromboxane synthetase enzyme to thromboxane A_2. The latter triggers the release from the platelet dense granules of adenosine diphosphate (ADP) which promotes the aggregation of platelets through the platelet ADP $P2Y_1$ and $P2Y_{12}$ receptors. The activation of platelets initiates a series of intracellular signaling events leading to a conformational change in the platelet glycoprotein IIb/IIIa receptor that allows the receptor to bind fibrinogen readily leading

ultimately to the formation of a platelet plug and the initiation of coagulation. Monoclonal antibodies such as Abciximab (ReoPro) have been used therapeutically to target the glycoprotein IIb/IIIa receptor to prevent the blood from clotting.

As platelets are aggregated by strong agonists such as thrombin and collagen, the platelet membrane phospholipid, phosphatidyl serine is translocated to the outer surface of the platelet membrane upon which two major coagulation factor complexes (the tenase and prothrombinase complexes) are assembled. The tenase complex leads to the generation of activated factor X (Xa) upon binding of activated factors IXa and VIIIa in presence of calcium. The prothrombinase complex is formed upon binding of activated factor V (Va) in presence of calcium to Xa and prothrombin, which ultimately cleaves prothrombin to form thrombin. Thrombin generated on the surface of the platelet plug converts fibrinogen to fibrin and stabilizes it by activating factor XIII (XIIIa) to form a cross-linked fibrin clot (1,2).

This selective recapitulation of events leading to the coagulation of blood is primarily intended to set the stage for the discussion of contemporary therapeutic approaches to anticoagulation and platelet inhibition. A detailed recounting of other aspects of the coagulation mechanism, which is outside the scope of this paper, would have included, of course, a discussion of the tissue factor pathway involving factor VII (VIIa), the fibrinolytic pathway and the role of prostacyclin (PGI_2) in modulating platelet activation.

Therapeutic approaches to anticoagulation

Considering the fact that numerous new anticoagulant drugs have been evaluated in clinical trials, in this review I have chosen to discuss just a select few to highlight the activity in this field.

Indirect inhibitors

Unfractionated heparin (UFH) by binding to antithrombin (AT) and activating it has long served as an indirect inhibitor of coagulation. UFH with more than 18 pentasaccharide chains can inhibit both thrombin and factor Xa. However, the heparin-AT complex is unable to inhibit thrombin and factor Xa sequestered in the fibrin clot. Other drawbacks associated with UFH isolated from animal sources such as pigs' intestines is the potential for contamination as was seen in 2008 when batches of UFH produced in China had to be recalled since they were contaminated with chrondroitin sulfate. Additionally there is a risk of heparin-dependent antibodies directed to platelet factor 4 binding to platelets and causing heparin-induced thrombocytopenia (HIT).

Low-molecular weight heparins (LMWHs) prepared from chemical or enzymatic treatment of UFH since they have less than 18 pentasachharide chains can by binding to antithrombin inhibit only factor Xa. LMWHs have greater bioavailability and longer half-life making it amenable for once-or twice a-day dosing and do not unlike UFH require laboratory monitoring. They also have less interaction with platelets with a lesser risk for HIT. Synthetic LMWH preparations containing the AT-binding pentasaccharide region designed to inhibit factor Xa are of well defined purity in contrast to LMWHs prepared from UFH. They too have less interaction with platelets and can be administered once a day without the need for laboratory monitoring. LMWHs do not inhibit clot-bound factor Xa and like UFH must be administered parenterally (1, 3). A synthetic hexadecasaccharide has been reported to inhibit both factor Xa and thrombin. It does not bind to platelet factor 4 (PF4) or fibrin and hence can also inhibit clot-bound thrombin (3).

Direct inhibitors

In contrast to both UFH and LMWHs these inhibitors directed specifically to either thrombin or factor Xa can inhibit both free and clot-bound thrombin and factor Xa respectively.

Direct Thrombin inhibitors

The most potent thrombin inhibitor is **hirudin** originally isolated from the salivary glands of the leech *Hirudo medicinalis*. It binds to thrombin very tightly with an inhibition constant (K_i) of 10^{-15} M (femtomolar). Unlike heparin which dissociates from antithrombin upon binding of the complex to thrombin and is reutilized, hirudin binding to thrombin is mole per mole and is irreversible. While excess heparin can be neutralized with protamine sulfate no such antidote is available to neutralize either hirudin or recombinant hirudin. The latter designed for therapy was accompanied with bleeding episodes thus requiring careful dosing and laboratory monitoring by the Ecarin clotting time. The test is based on the fact that Ecarin, an enzyme isolated from venom of snake *Echis carinatus* can convert prothrombin to meizothrombin. Since hirudin inhibits meizothrombin as soon as it is formed, only after all the hirudin has complexed with meizothrombin can the additional meizothrombin generated convert fibrinogen to fibrin and clot the sample (1). Modifications of hirudin such as hirugen, hirulog and bivalirudin have been introduced.

Bivalirudin whose binding to thrombin is reversible has been found suitable for use in percutaneous coronary intervention (PCI) procedures. It also performed better than UFH plus abciximab (ReoPro), antibody toGPIIb-IIIa in patients with ST elevation in myocardial infarction (4). A small molecule called **argatroban** (M. wt. 532 Da) belonging to a class of thrombin inhibitors called peptidomimetics is a reversible inhibitor of thrombin (K_i 19nM) and has been used to treat patients with HIT. While these direct thrombin inhibitors have the advantage in terms of lack of reactivity with platelets they have to be administered intravenously.

A promising specific and reversible thrombin inhibitor is **Dabigatran etexilate** (M.wt. 627.7 Da), a benzamidine-based molecule, has the added advantage in that it can be administered orally. It is a pro-drug which is converted rapidly in the liver to the active Dabigatran with maximum plasma concentrations in plasma reached within 2 hours after intake. The drug has undergone clinical trials for the prevention of venous thromboembolism (VTE) in patients undergoing total hip and knee replacement surgery and for the prevention of stroke in patients with atrial fibrillation (5, 6). These studies demonstrated that a fixed dose of Dabigatran etexilate was just as effective as warfarin with a similar safety profile and unlike warfarin does not require laboratory monitoring. Indeed the Food and Drug Administration (FDA) in the USA approved Dabigtran in October 2010 for the prevention of stroke in patients with atrial fibrillation. Dabigatran, however, has gastrointestinal side effects since it stimulates the production of excess stomach acid. It may also be unsuitable for patients with renal disease since 80% of the drug is excreted by the kidney. It is sobering to note that the first orally administered thrombin inhibitor Ximelagatran, a pro-drug of the active melagatran, in spite of its efficacy, had to be withdrawn from the market due to its serious cardiovascular problems and hepatotoxicity.

Direct factor Xa inhibitors

Rivaroxaban and **apixaban** are examples of a few of the direct factor Xa inhibitors that have undergone extensive clinical studies. These inhibitors are small molecules which are highly specific reversible inhibitors of factor Xa and can be administered in fixed doses without the need for routine laboratory monitoring. They inhibit both free and clot-bound factor Xa and prothrombinase activity. As an inhibitory target factor Xa is very attractive since it blocks the thrombin burst considering that one molecule of factor Xa can generate 1000 molecules of thrombin. They have relatively short half-lives when compared to warfarin and have demonstrated their potential in the prevention and treatment of thromboembolic disease (deep vein thrombosis, pulmonary embolism). They are metabolized by cytochrome P-450 3A4 (CYP3A4) isoform and are substrates for P-glycoprotein. Hence drugs or herbs that either induce or inhibit either of these 2 pathways would have a bearing on the pharmacokinetics of these direct factor Xa inhibitors and would require adjustment of dose.

Rivaroxaban

The results of 2 major studies comparing Rivaroxaban, an oxazolidinone derivative (M.wt. 435.9 Da) with a low molecular weight heparin (enoxaparin) followed by a vitamin K antagonist (warfarin or acenocoumarol) one in patients with acute deep-vein thrombosis (DVT) and the other on patients with acute pulmonary embolism were recently published (7). Rivaroxaban at an initial oral dose of 15 mg twice a day for 3 weeks followed by a 20 mg dose once daily when compared with enoxaparin followed by warfarin or acenocoumarol proved to be safe and effective in the treatment of venous thrombosis. Rivaroxaban has a rapid onset of action with a half-life ranging from 7 to 12 hours compared to 20 to 60 hours for warfarin. The rapid onset of action while obviating the need for the administration of heparin also requires strict patient compliance given the short half-life of the drug. Rivaroxaban has already been approved in Europe for the prevention of venous thromboembolism in patients undergoing total hip and knee replacement. The continued use of Rivaroxaban in patients already being treated for either acute deep-vein thrombosis or pulmonary embolism is currently in progress together with a large scale study to assess its use in stroke prevention in patients with atrial fibrillation.

Apixaban

A recent study confirmed that this factor Xa inhibitor (M.wt. 459.5 Da) at an oral dose of 2.5 mg twice a day was more effective in patients undergoing total hip replacement when compared to enoxaparin (40 mg/day) (8). Treatment with apixaban while having a similar bleeding profile as enoxaparin was, however, associated with fewer thromboembolic events. The half-life of apixaban is 12 hours and like rivaraoxaban requires strict patient compliance. Apixaban is also the focus of other trials among which is a study for the prevention of stroke in patients with atrial fibrillation. However, this drug experienced a setback since a phase III trial for prevention of acute ischemic events-2 (APPRAISE-2) designed for high-risk acute coronary syndrome patients receiving antiplatelet therapy was halted in mid-November 2010 due to excessive bleeding associated with this drug.

Drugs that target the platelet ADP $P2Y_{12}$ receptor

Limitations in the use of aspirin (acetyl salicylic acid) which by inhibiting cyclooxygenase-1 enzyme prevents the conversion of arachidonic acid to prostaglandin cyclic endoperoxides (PGG_2 and PGH_2) and the subsequent generation of thromboxane A_2 thus keeping the blood from clotting, has led to the development of drugs that target the platelet ADP $P2Y_{12}$ receptor. Limitations of aspirin apart from its gastrointestinal side effects include the finding that some patients are resistant to aspirin. These patients can be managed with oral drugs that inhibit the binding of ADP to the platelet $P2Y_{12}$ receptor thus preventing the platelets from aggregating. The interaction of two platelet receptors $P2Y_1$ and $P2Y_{12}$ are required for the transduction of ADP signal. $P2Y_1$ activation leads to a change in platelet shape and a weak phase of platelet aggregation. However, it is the $P2Y_{12}$ activation that in turn leads to GPIIb-IIIa receptor activation and ultimately to the formation of a stable platelet aggregate. Thienopyridines are a class of molecules that irreversibly inhibit the ADP $P2Y_{12}$ receptor. The widely used drug in this class is **clopidogrel**. It is a pro-drug which is converted by cytochrome P450 (CYP2C19) isoform in the liver to its active form that inhibits ADP from binding to platelet $P2Y_{12}$ receptor thus preventing platelets from aggregating. It is slow in achieving maximum platelet inhibition taking as long as 4 to 5 days at the standard 75-mg dose, which can however, be reduced to 3 to 5 hours by giving a 300 to 600-mg loading dose. The inhibition is irreversible and persists throughout the lifetime of the platelet which is problematic for patients requiring coronary artery bypass grafting (CABG) procedure who would then be subject to increased risk of bleeding (9). The widespread use of this drug commercially called Plavix has uncovered that subjects with mutations in the alleles *2 to *5 of CYP2C19 are poor metabolizers of clopidogrel and present a risk of thrombosis compared to wild type *1 allele who are normal metabolizers. In contrast, persons with mutation in allele *17 of CYP2C19 are ultra rapid metabolizers in whom a smaller dose of the drug is required. This heighted awareness of the fact that clopidogrel therapy needs to be tailored to a person's

genotype has led to the clearance in October 2010 by FDA in the USA of an automated assay (by AutoGenomics) to detect CYP2C19 mutations in alleles *2,*3 and *17. In a meta-analysis of 9 studies of patients who had coronary artery stents and were on clopidogrel therapy, carriers with just one reduced- function CYP2C19 allele had a 167% increased risk for stent thrombosis compared to those who had wild type allele. The risk increases even more dramatically in carriers of 2 reduced-function alleles (10). Doubling the standard dose of clopidogrel in non-responders appeared to have little effect as was gleaned from the results of the GRAVITAS (Gauging responsiveness with a Verify Now Assay-Impact on Thrombosis and Safety) presented in November 2010 at the American Heart association meeting. (Verify Now Assay by Accumetrics is a platelet function testing assay that measures inhibition of the $P2Y_{12}$ receptor). The GRAVITAS, a multi-center placebo controlled study was designed to ascertain whether a high maintenance dose of clopidogrel therapy established on the basis of results obtained with the Verify Now assay reduces ischemic events post-percutaneous coronary intervention (PCI). In addition to CYP2C19 polymorphism the ABCB1 gene involved in drug transport may also have a bearing on patients' responsiveness to clopidogrel. Thus in spite of the wide use of Clopidogrel the FDA is poised to issue a warning in March 2011 that clinicians consider using alternative drugs to achieve platelet inhibition. This brings us to consider what options are out there for patients who are non-responders to clopidogrel.

Prasugrel : This drug also belongs to the family of thienopyridines. It, like clopidogrel, is a pro-drug. However, unlike clopidogrel, it achieves faster and more pronounced platelet inhibition at a relatively lower dose (60-mg loading dose and 10-mg maintenance dose for prasugrel, compared to 300 to 600-mg loading dose and 75 to 150-mg maintenance dose with clopidogrel). Like clopidogrel platelet inhibition is irreversible during the life time of the platelet. Prasugrel is converted by esterases to an intermediate metabolite which in turn is converted to an active metabolite by any one of the four different CYP isoforms. As such it is less affected by reduced function alleles of CYP2C19 as clopidogrel is. Indeed, FDA has approved prasugrel (trade name Effient) for use on patients with either reduced function alleles of CYP2C19 or those with high platelet reactivity. However, there was increased bleeding in elderly patients and in those with a history of transient ischemic attack and stroke when compared to clopidogrel (11).

While both Prasugrel and clopidogrel are pro-drugs and are irreversible platelet inhibitors other direct acting and reversible platelet inhibitors are on the scene. Two such drugs deserve mention. They are cangrelor and Ticagrelor.

Cangrelor: This is an ATP analogue which has an immediate onset of action upon administration of a bolus dose. It is a direct and powerful reversible inhibitor of the platelet ADP $P2Y_{12}$ receptor. Platelet inhibition is reversed 60 minutes after the administration of the dose. In addition to the drawback that it has to be administered intravenously, increased risk of bleeding was encountered in clinical trials and it offered no advantage over clopidogrel (12).

Ticagrelor: In contrast to cangrelor, this drug can be administered orally. However, like cangrelor, Ticagrelor is also an ATP analogue that inhibits the platelet ADP $P2Y_{12}$ receptor reversibly. Ticagrelor has been studied extensively including a trial that compared it favorably with clopidogrel on 18,624 hospital patients admitted with an acute coronary artery syndrome (13). Based on the results of this extensive trial, the FDA advisory committee on cardiovascular drugs in July 2010 voted 7-1 to recommend approval of Ticagrelor for patients with acute coronary syndrome conditions. In spite of this recommendation, the FDA in December 2010 declined to approve Ticagrelor since there were some questions on the interpretation of the results and requested additional analysis of data.

Despite the ups and downs of the emerging therapeutic drugs for anticoagulant and platelet inhibition therapy, clearly, there is a flurry of activity that portends the emergence of a better alternative to UFH, LMWHs and warfarin.

Pharmacogenomic Variability: We have already addressed the effect of mutations in some of the alleles of

CYP2C19 that influences the pharmacokinetics of clopidogrel. Warfarin therapy is influenced by variations in genes involved in its metabolism. Warfarin exists in two enantiomeric forms (R- and S- warfarin). R-warfarin is metabolized by CYP1A2 and CYP3A4 isoforms. S-warfarin which is two to five times more potent than the R-enantiomer is metabolized by the hepatic microsomal CYP2C9 isoform to the inactive S-7-hydroxywarfarin. Carriers of CYP2C9*2 and CYP2C9*3 variant alleles had a 30% and 80% decrease in enzymatic activity respectively subjecting them to an increased risk for overanticoagulation and bleeding unless the warfarin dose was reduced (14). Variations in vitamin K epoxide reductase complex subunit 1 (VKORC1) gene also affect the efficacy of warfarin. The efficacy of warfarin is dependent on its inhibiting vitamin K epoxide reductase enzyme. This enzyme is involved in the pathway of the production of the active form of vitamin K which is required to add gamma carboxyl groups to vitamin K dependent clotting factors II, VII, IX and X and thus facilitate the process of clotting (1). Variations in the VKORC1 gene dictated the warfarin dose required to maintain stable anticoagulation. Compared to wild type, the two variants of the VKORC1 gene (the CT and TT genotypes) required 27 % and 47% reduction in warfarin dosage repectively to maintain stable anticoagulation (15). This inter-individual genetic variability makes it imperative for warfarin dosage to be determined by montoring the patient's INR (international normalized ratio) derived from prothrombin time measurements. Ultimately determination of the patient's genotype is the best way to establish the stable warfarin dosage required to maintain anicoagulation without the risk of encountering overanticoagulation and bleeding or insufficient anticoagulation and clotting.

Influence of herbs on therapy: Herbs that induce or inhibit cytochrome P450 (CYP) isoforms affect anticoagulation therapy. The effects of herbs on warfarin therapy can range from loss of efficacy and clotting to life threatening complications such as bleeding as a result of overdosage.

St. John's Wort, the widely used herb to treat depression, by inducing CYP2C9, CYP1A2 and CYP3A4 isoforms affects the bioavailability of both R- and S-warfarin necessitating the adjustment of dose upward. The decrease in INR by as much as 50% can occur due to consumption of ginseng for two weeks with the INR normalizing after discontinuation of the herb. Decreases of INR have also been reported with the consumption of soy milk for four weeks. The Chinese herbs Dong quai, Quilinggao, Danshen and Go-qi-zi have been reported to increase INR. Some of the other examples of herbs or herb-based preparations that increase INR include chamomile tea and Royal Jelly (16). These few examples illustrate the need for the clinician and the laboratory to be aware of herb-anticoagulant drug interactions in order to optimize therapy.

Newer laboratory tests to assess therapeutic effectiveness: We have already addressed the use of molecular assays to genotype patients to identify polymorphisms in the CYP2C19 allele to be able to tailor dosage of clopidogrel to a patient's genotype. We also mentioned the use of genotyping to identify polymorphisms in the CYP2C9 and VKORC1 genes in order to effectively optimize warfarin dosage. While these tests are still not in the realm of the routine coagulation laboratory they do allow clinicians to optimize doses of drugs such as clopidogrel and warfarin and avoid life threatening situations of either bleeding or thrombosis. Furthermore, molecular testing needs to be performed just once to obtain a patient's genotypic profile to guide all subsequent treatments.

Cartridge-based microbead agglutination technology using turbidimetric-based optical detection has been used to determine resistance to aspirin and platelet ADP $P2Y_{12}$ receptor inhibitors such as clopidogrel (17). The automated system called Verify Now, designed for point-of-care testing, consists of an analyzer and disposable assay cartridges consisting of fibrinogen-coated beads, platelet activators and buffer. Separate cartridges with specific agonists are available to measure aspirin or platelet ADP $P2Y_{12}$ receptor inhibitor-drug resistance. As whole blood is added the platelet agglutination process results in an increase in light transmittance which is measured. Inhibition of platelet aggregation will result in decrease in light transmittance. Results are expressed either in "aspirin reaction units" (ARUs) for aspirin resistance or $P2Y_{12}$ reaction units (PRUs) for clopidogrel resistance. The assay, since it is based

on the agglutination of fibrinogen-coated beads by activated platelets cannot be used for patients who may be taking GPIIb-IIIa receptor inhibitors. Incidentally, the GRAVITAS trial (Gauging responsiveness with a Verify Now assay-impact on Thrombosis and safety) which we referred to earlier used this assay to study patients with high platelet reactivity while on clopidogrel therapy.

Aspirin inhibition can also be followed by measuring urinary 11-dehydro thromboxane B_2 levels.

The inhibition of platelet ADP $P2Y_{12}$ receptors by clopidogrel and other thienopyridine class of drugs can also be followed by flow cytometry measurement in whole blood of intracellular platelet vasodilator-stimulated phosphoprotein (VASP) phosphorylation (18). The rationale for this testing lies in the fact that the phosphorylation of VASP which is an intraplatelet actin regulator protein is dependent on the level of activation of the platelet ADP $P2Y_{12}$ receptor which is inhibited by thienopyridine class of drugs.

The insensitivity of activated partial thromboplastin time (APTT) to monitor heparin therapy has led to the increasing use of anti-factor Xa chromogenic assay to more accurately assess heparin levels. APTT is also inadequate to monitor direct thrombin inhibitors such as hirudin and has given way to the Ecarin clotting time which we discussed earlier. The many variables that affect the INR estimated by measurement of prothrombin time (PT), would hopefully be of historical interest if newer orally administered anticoagulants replace warfarin.

Conclusions: The flurry of activity in search of new orally administered anticoagulants is pushing the frontiers of coagulation. As new anticoagulant drugs are introduced we are learning that one dose doesn't fit all. Therapy has to be individualized based on a patient's genotype. The initial euphoria generated by promising new anticoagulant drugs must, however, needs to be tempered with caution as we have seen some of these drugs fail due to adverse life-threatening events such as bleeding. Lifestyle such as diet, medications and herb-based supplements can interfere with enzyme isoforms involved in the metabolism of anticoagulant drugs and both the clinician and the laboratory should be alert to such interferences. As new assays are introduced the laboratory has the challenge of validating such assays and delineating its performance characteristics including its limitations. The future as the scope of coagulation practice expands is at once exciting and challenging.

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First trimester screening

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Introduction

Prenatal diagnosis has an important role in the management of pregnancies. In family planning the current trend is toward smaller families and the average age at which women choose to have babies is increasing. Today women are more aware of the frequency and the importance of congenital disorders. Down's syndrome is the primary reason for families to seek prenatal counseling. It is caused by trisomy of chromosome 21. Down syndrome is associated with mental handicap, cardiac and gastrointestinal anomalies, vulnerability to infections and leukemia and later to Alzheimer-like dementia.

The prevalence of Down syndrome strongly increases with advancing maternal age. For example, the at term risk for a 20 years old woman is 1 in 1500 but for a 40 years old it is 1 in 100. The risk of Down syndrome is even higher at the time of screening at 12th week of pregnancy, because about 30% of affected pregnancies will miscarry before term.

Trisomies 18 and 13 are serious fetal conditions without long life-expectancy in newborns. Both conditions are associated with severe mental retardation, multiple malformations and congenital heart defects. Trisomy 18 or Edwards syndrome is a disorder in which a person is porn with three copies of dcromosome 18. Children with this condition are characterized by low birth weight, small head, abnormal finger positioning, and severe mental retardation. Most of the newborns die before their first birthday.

Trisomy 13 or Patau syndrome is caused by the presence of three copies of chromosome 13. Newborns with this trisomy have numerous internal and external abnormalities. Commonly, the front of brain fails to divide into lobes or hemispheres, and the entire brain is unusually small. Fewer than 20 % of live births survive beyond infancy, and such children remain severely disabled.

The mortality rate among infants with trisomy 18 and 13 is high as a result of cardiac and renal malformations, feeding difficulties, sepsis, and central apnea caused by central nervous system defects.

The actual prevalence of trisomies during pregnancy varies due to the varying

intrauterine lethality of the various conditions. This means that when screening women in early pregnancy, there are a significantly greater number of fetuses affected than at term or mid-gestation. Thus for trisomies 13 or 18, there is an 80% fetal loss between 12 weeks and term, and a 40% fetal loss between 16 weeks and term.

Prenatal screening

Prenatal screening is part of routines in ordinary maternity care. The standard of care has been to offer women biochemical screening test in the 15th-16th weeks of pregnancy. Benefits of having prenatal screening test earlier, in the first trimester are higher detection rates and the earlier diagnosis. Both the mothers and the medical profession wish this testing could be carried out reliably already in the first trimester. The reassurance can be given earlier, which is psychologically important, termination is easier earlier, if desired. Counseling has to be extensive because the participation in screening is one of the most urgent matters to be discussed when a pregnant woman visits a maternal clinic for the first time. Counseling should be neutral and non-directive, and the voluntariness of participation needs to be stressed. The woman has to be prepared for the decision making process if she chooses to attend screening, a mother has to make informed choice on her pregnancy.

Biochemical screening

The markers used for Down's syndrome screening in the first trimester are PAPP-A and free β-hCG. In the first trimester, the maternal serum level of PAPP-A is reduced and the level of fβ-hCG is elevated in pregnancies affected by Down syndrome. Maternal serum levels of PAPP-A and fβ-hCG are affected by many variables, such as maternal cigarette smoking, maternal weight, fetal gender, and parity. Combining free β-hCG and PAPP-A with maternal age and the gestational age by measurement of the crown-rump length by using mathematical algorithms allows detection rate to range from 55 to 83 percent for a false positive rate of 5 percent (Malone et al. 2005).

The first trimester screening of Down's syndrome combines the maternal age with biochemical markers of placental origin. The quantification of the maternal serum biochemical markers fβ-hCG and PAPP-A in clinical laboratories is standardized and automated, for which reason the tests are accurate and precise. The most important sources of error in biochemical screening are caused by sample collection and storage (Palomaki et al. 2005).

Combined screening

The combined screening is the golden standard in the first trimester because of its higher detection rate in comparison with biochemical screening or NT measurement alone. The first trimester ultrasound screening for Down's syndrome was first introduced in 1992 (Nicolaides 2004). The quality of the NT ultrasound scan is dependent on the skills of the health professional performing the measurement, and therefore susceptible to measuring errors as well as quality of the instrument (Palomaki et al. 2009). First trimester screening, which combines maternal age, fetal nuchal translucency thickness (NT), and maternal serum free ?-human chorionic gonadotropin (fß-hCG) and pregnancy associated plasma protein A (PAPP-A), can achieve a detection rate of 90% with the FPR of 5 % (Malone et al. 2005, Wapner et al. 2003).

We have been able to confirm this finding in a study of 7534 pregnant women during the 10+0-12+6 weeks of pregnancy. Every woman of the study group participated serum screening, and 4765 women participated in combined screening. In the serum screening-alone group, there were 30 cases of trisomy 21, of which 23 (76%) were detected. In the combined-screening group, there were 24 cases of trisomy 21 and 21 (87.5%) were detected. In the combined-screening group NT alone detected 15 cases of Down syndrome (62%) (Valinen et al. 2007).

The combined method is the golden standard in first trimester screening because of its higher detection rate in comparison with biochemical screening or NT measurement alone. However, different levels of performance in

younger and older women have been observed (Spencer 2001). A great challenge in Down's syndrome screening is to reduce the level of false negatives in younger women. In order to examine the influence of maternal age on first trimester biochemical screening, we divided 221 singleton Down's syndrome pregnancies, from a screened population of 76 949 pregnant women, into 5-year maternal age blocks. Biochemical markers detect Down's syndrome pregnancies poorly in young mothers aged < 35 years. Thus for younger women, for the majority of pregnant mothers, the combined screening is the method of choice. The biochemical first trimester screening has the highest performance in women aged with ≥ 40 years. In order to increase the detection rate of biochemical screening, the sampling should take place at gestational week 9.

New biochemical markers

Scientists constantly look for new markers which would help to improve prenatal screening. ADAM12 is one potential candidate and it has been studied intensicely. ADAMs (a disintegrin and metalloproteinases) are a new family of proteins which share the metalloproteinase domain with matrix metalloproteinases (MMPs). They are involved in the regulation of growth factor activities and integrin functions, leading to promotion of cell growth and invasion, although the precise mechanisms involved are not clear at the present time. In Down fetuses the development and growth of the placenta is impaired and the levels of placental proteins (like PAPP-A) are low compared to chromosomally normal fetuses. Both PAPP-A and ADAM12 have been identified as proteases to insulin-like growth factor binding proteins. In this role, they may have a regulatory function in controlling the amount of free bioactive insulin-like growth factor (IGF) (Laigaard et al. 2003)

In addition, an association has been found between reduced maternal serum ADAM12 levels and cases that subsequently develop pre-eclampsia and intrauterine growth retardation (Laigaard *et al*., 2006).

Our studies have shown that low maternal PAPP-A is associated with small-for-gestational age newborns and stillbirths (Marttala et al. 2010).

ADAM12 in trisomies

Studies have shown that in Down syndrome pregnancies the concentration of ADAM12 was markedly decreased in the first trimester (Laigaard *et al*., 2003). Reduced ADAM12 levels are also associated with trisomy 18 pregnancies during the first trimester (Laigaard *et al*., 2006). ADAM12 levels have been studied at 9-12 weeks of gestation and the results suggest that ADAM12 cannot be used in the late first trimester concurrently with PAPP-A, free β-hCG and NT. However, it is a potential marker for trisomy 21 and trisomy 18 in the early first trimester, prior to 10 weeks.

Our results demonstrate that, contrary to the expectations raised by a previous publication (Laigaard et al. 2006), the measurement of maternal serum ADAM12 at 11-13 weeks is not useful in screening for trisomy 21 (Valinen et al. 2007, Valinen et al. 2010). The finding that in trisomy 21 pregnancies the median ADAM12 MoM increases with gestation shows that at 14-19 weeks the levels in affected pregnancies are significantly higher than in euploid pregnancies. Thus this marker could potentially improve second-trimester serum biochemical screening. Similarly, before 10 weeks serum ADAM12 in trisomy 21 pregnancies is likely to be significantly lower than in euploid pregnancies, but the magnitude of this difference remains uncertain. In addition, we found that in both euploid and aneuploid pregnancies, there is a strong association between the levels of ADAM12 and both PAPP-A and free β-hCG, and therefore, the potential performance of biochemical screening by a combination of ADAM12, PAPP-A, and free β-hCG at 8-9 weeks is likely to be substantially lower than that suggested by Laigaard et al (2006) who predicted a detection rate of 92% at a false-positive rate of 5%.

In chromosomal abnormalities other than trisomy 21, the level of reduction in serum ADAM12 at 11-13 weeks is

similar to that reported by Spencer et al. (2007) However, in these chromosomal abnormalities, the magnitude of the reduction in ADAM12 is substantially smaller than the reduction in PAPP-A and free β-hCG. Furthermore, there is a strong association between the levels of ADAM12 and both PAPP-A and free β-hCG. Consequently, measurement of ADAM12 is unlikely to improve the performance of first-trimester screening for these abnormalities achieved by the combination of maternal age, fetal NT, fetal heart rate, and maternal serum-free β-hCG and PAPP-A.

Low PAPP-A

Extremely low PAPP-A is a good predictor of miscarriage and some women may benefit from its early diagnosis. Detecting delayed miscarriage at an early stage, possible complications of miscarriage might be avoided. In one study, low levels of PAPP-A were detected as early as 3 weeks before the diagnosis.

The results of our present study show that extremely low PAPP-A predicts adverse outcome of pregnancies including miscarriage. Most of the cases resulted in miscarriage, but in addition there were also preterm deliveries, malformations and fetal aneuploidia. Minority of cases (11%) was normal by terms of the outcome of pregnancy. In our study, findings are similar to the results of other studies (Marttala et al. 2010)

First trimester screening is assisted reproductive pregnancies

As women wanting to have children today are older than in the past, the number of problems with conception is increasing. More women need medical help in becoming pregnant. Thus women who have conceived after assisted reproductive technology (ART) usually prefer to avoid invasive diagnostic procedures, such as amniocentesis and villus biopsy, due to the risk of miscarriage. Rather, they choose non-invasive screening before making a decision about invasive testing. Previous studies have shown that serum markers in ART pregnancies differ from natural conceptions in the second trimester, leading to an increased false positive rate (Raty *et al.,* 2002; Lambert-Messerlian *et al.,* 2006). The effect of ART on first trimester combined screening has been examined, but contradictory results have been found. In our study we found the PAPP-A MoM was reduced in the overall ART group (0.83) vs. the control group (0.94). We also found a significant reduction in the PAPP-A concentration in pregnancies conceived with IVF or ICSI with ovarian stimulation compared with controls who conceived spontaneously. We also found no difference in the median fβ-hCG MoM concentrations between the ART and control groups. There was no difference in the measurement of NT in ART pregnancies compared to controls. In our study, the odds ratios for a false positive rate in the combined first trimester screening for Down syndrome by maternal age, NT, and PAPP-A and fβ-hCG were not increased in women who conceived following ART, after adjustment for maternal age (Matilainen et al. 2011).

Conclusion

First trimester prenatal screening is part of normal routines during pregnancy in many countries. Researchers actively look for new markers to improve the first trimester screening. Studies will show that the results of combined or biochemical screening can reveal more information of the unborn fetus and the pregnancy.

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GENE POLYMORPHISM AND CORONARY RISK FACTORS IN INDIAN POPULATION

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INTRODUCTION:

The term "**atherosclerosis**" as it is used today to describe disease of the coronary artery intima was coined in the first years of the twentieth century by Leipzig pathologist, Felix Marchand [1].

Economic development and urbanization have now become globalized thereby causing a worldwide epidemic of atherosclerosis. Coronary Artery Disease (CAD) / Coronary Heart Disease (CHD) is one of the most prevalent causes of morbidity and mortality in developed as well as developing countries like India, which is expected to face a phenomenal increase in the burden of CAD diseases in the near future. The overall age-standardized mortality rate for CHD in Asian Indians shows that the Asian Indians are four times more likely than the Chinese residents of Singapore and twenty times more likely than the blacks of South Africa to die due to CHD [2] According to India's National Commission on Macroeconomics and Health report, it projects that cases of CAD would increase from 359 lakhs in 2005 to 615 lakhs in 2015, representing

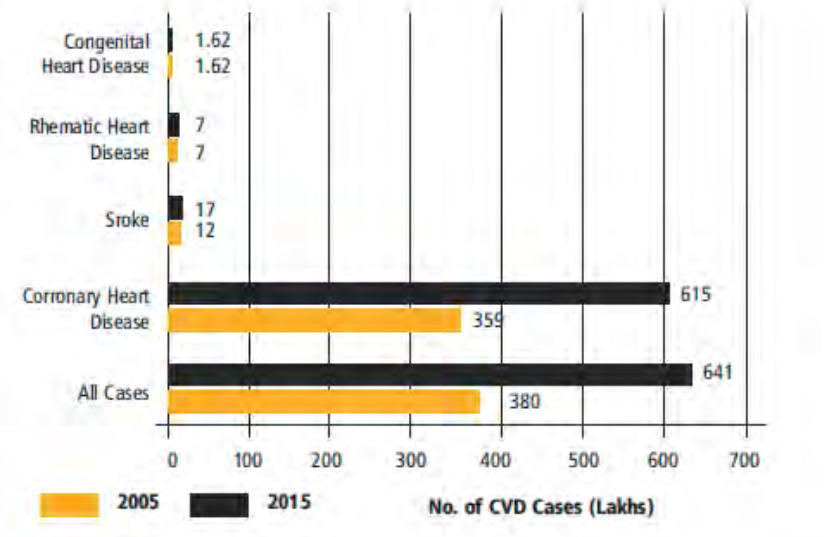

Figure 1: Burden of Cardiovascular Diseases (CVD) in India [3]

almost 95% of the total cardiovascular diseases cases in 2015 [3].

The same report also states that in 2015, out of the 663 lakhs cases of CVDs, almost 236 lakhs will be younger than 40 yrs of age, suggesting that the young India population is at a higher risk of developing coronary atherosclerosis. The likely cause of this epidemic lies in the country's epidemiologic transition [4]. This transition is characterized by rapid urbanization and its accompanying adverse lifestyle changes (eg, drug and alcohol addictions, unhealthy diet and physical inactivity).

Genetic studies which focus on identification of disease causing genes can provide new insights into the pathogenesis of CAD and myocardial infarction. Therefore in an attempt to identify atherosclerotic genes, whole genome scans for loci associated with hyperlipidemia, low concentration of high-density lipoprotein cholesterol (HDL-C), elevated lipoprotein (a) [Lp(a)], homocysteine, hypertension and vascular disorders have been carried out [5]. Numerous mutations and/or polymorphisms have been identified across the entire length of the genome that are known to be associated with CAD. Thus, identification of novel gene mutations and/or polymorphism is important for identifying individuals at risk for CAD. This review focuses on genetic variants identified in certain candidate genes that have shown significant or suggestive association or linkage with traits relevant to factors that promote coronary atherosclerosis.

1.1 GENETIC VARIATIONS ASSOCIATED WITH DYSLIPIDEMIA AND CAD:

Relatively few cardiovascular diseases are monogenic and even fewer are determined by one specific gene locus. In various populations a large number of rare mutations are known to be causative of conditions such as dyslipidemia, leading directly to the development of coronary atherosclerosis.

1.1.1 Low-density lipoprotein receptor (LDLR) genetic variations:

So far the best understood inborn error of metabolism determining elevated levels of plasma lipids and thus risk of CAD is the disorder familial hypercholesterolemia (FH). It is caused due to mutations in the Low - density lipoprotein receptor (LDLR) gene which is located on chromosome 19 and contains a total of 18 exons. It is characterized by elevated levels of LDL-cholesterol and skin xanthoma. FH is common autosomal dominant disorder with an estimated frequency of 1 in 500 in the general population.

Till date over 800 mutations have been identified across the entire length of the LDLR gene and more than 150 mutations have been characterized at the molecular levels [6]. No common mutations have been identified in the FH cases from India so far [7]. However a few point mutations have been reported in Indian immigrants residing in South Africa, of which P664L mutation in exon 14, designated as FH Gujarat, was found to be most common. In our previous study, we had screened 25 patients with clinical features of FH and an equal numbers of controls for four known point mutations, most reported among Indian immigrants in South Africa. These included W66G, E207K, E387K and P664L in exons 3, 4, 9 and 14 respectively. These mutations were however absent in all the samples screened, indicating the presence of other mutations in Indian FH cases [8]. Using heteroduplex analysis [9], we identified two novel single nucleotide G insertion mutation in exon 3 (242insG) and in exon 4 (397insG) [8] which are designated FH Bombay–1 & FH Bombay–2 and are registered at the UMD-LDLR database, INSERM Necker-Enfants Institute, France (www.umd.necker.fr/disease.html). Further screening using the heteroduplex-single stranded conformation polymorphism analysis, two class 5 mutations were identified in exon 9 of the LDLR gene. First, an E387K mutation was observed in a Gujarati family in which both parents were heterozygous for the mutation. Second, L393K mutation was observed in a 38 year old female [10]. The E387K mutation has been previously reported, designated as FH Algeria-

1 [6], and has been identified in an Asian Indian (of Gujarat origin) residing in the UK [11].

There is little information on monogenic disorder of hypercholesterolemia in India. Neither the prevalence of FH nor the types of LDLR mutations causing FH among the Indian subjects are known. In a highly heterogeneous population like in India, with various ethnic groups, it is not unlikely that there exists mutational heterogeneity of the LDLR gene among Indians, or likewise it is unlikely that a founder mutation could exist. However, considering the fact that India consists of various distinct communities (even in a Metropolitan city like Mumbai), which have remained segregated from each other over centuries, due to various religious, cultural or geographical reasons, it is likely that there might exist some common community-based mutations. The E387K mutation identified in our study could be one such mutation common among Gujarati community in India. A screening study in large number of clinically diagnosed FH patients for LDLR defects is needed to obtain genetic epidemiological information on Indians.

1.1.2 Apolipoprotein B-100 genetic variations:

In principle, increased LDL concentrations may results from inefficient clearance of LDL particles by the receptor (defect in the LDLR receptor) or from defects in its ligand, apolipoprotein B-100 (apoB-100). The former class of genetic disorder is called FH, and the later class familial defective apoB-100 (FDB). FDB is a dominant inherited genetic disorder causing primary hypercholesterolemia and premature CAD [12]. Both FH and FDB heterozygotes present same phenotypically and can be distinguish by molecular tests alone [13]. FDB is most commonly caused by a single nucleotide substitution (G to A) at position 10708 in exon 26 of the apoB-100 gene creating Arg to Gln change (R3500Q) [12]. Additionally, the R3500W and R3531C change in exon 26 are rare causes of FDB [14, 15]. In our previous study on 55 patients with clinical features of possible type IIa hypercholesterolemia and 76 normolipemic healthy subjects, we observed that none of the subjects showed the presence of the exon 26 apoB-100 mutations [10]. The prevalence of FDB in India is not yet known. From our study it appears that common mutations known to cause FDB are absent and possibly not associated with hypercholesterolemia among Indians. It has also been reported in general population that the signal peptide insertion/deletion (Sp Ins/Del) polymorphism located in the signal peptide region of ApoB, is associated with the lipid levels and risk of coronary artery disease [16]. Although the Del allele of Sp Ins/Del polymorphism has been reported as risk factor for CAD, there are still several uncertainties about their role. In our study, the distribution of Del allele was similar in both the angiographically verified CAD cases (26.4%) as well as the normolipidemic healthy controls (26.6%) *(Unpublished data)*, thus suggesting that the Sp Ins/del might not play an important role in the influencing serum lipid levels. However, the possibility of low rate or other unknown genetic variation at the apoB locus cannot be ruled out.

1.1.3 Apolipoprotien E genetic variation:

Genetic variation in the apolipoprotein E (apoE) gene influences lipid and lipoprotein levels and thus increases the risk of CAD. The apoE gene is known to be highly polymorphic and is located on chromosome 19, where it is closely linked to apoCI and apoCII genes and distantly linked to the LDLR gene. Three common alleles ε2, ε3 and ε4 exist, due to single nucleotide substitution at codons 112 and 158 in exon 4 of apoE gene, resulting in six different genotypes: E2/E2, E3/E3, E4/E4, E2/E4, E2/E4 and E3/E4. The most common allele is ε3 (frequency 0.75), followed by ε4 (frequency 0.15) and ε2 (frequency 0.1) [17]. The ε4 isoform is associated with increased levels of cholesterol and the apoE2 isoform with decreased levels of cholesterol but increased levels of triglycerides in homozygous form.

Based on the average impact of ε2 and ε4 on serum cholesterol, carriers of ε4 allele have been estimated to have a risk of developing premature CAD 1.4 times higher than the allele ε2 carrier [18]. Substantial data on apoE polymorphism is lacking in India. In our previous study [19], on ApoE polymorphism in cardiac risk groups consisting of hypercholesterolemic cases (n-50), CAD cases (n-50) and healthy normolipemic controls (n-90), the distribution of the allele frequencies in the normolipemic healthy population was 0.920 for ε3 and 0.040 for ε2 and ε4. Also ε4 allele was significantly more prevalent in both the hypercholesterolemic ($p<0.025$) and the CAD group ($p<0.05$) as compared to the controls. It was further observed that the ε4 allele significantly contributes to the increase in total cholesterol by 7.5% in the hypercholesterolemic group ($p<0.05$) and by 16.6% in the CAD group ($p<0.05$) as compared to the ε3 allele. It can therefore be inferred that the apoE isoform could explain 7-16% of variation in total cholesterol levels, thus make a small but significant contribution to the risk of developing CAD among the Indian population. A larger study would, however only strengthen this observation.

1.2 GENETIC VARIATIONS LEADING TO LOW-HDL-C AND CAD:

Decreased HDL-C is one of the common features observed in young Asian Indian. The Coronary Artery Disease among Indians (CADI) study showed that only 14% of Asian Indian men and 5% of women have optimal HDL-C levels [20]. Various epidemiological studies indicate that abnormalities in HDL-C metabolism play an important role in development of CAD in Indian population.

1.2.1 Genes involved in HDL-C biosynthesis:

The biosynthesis of HDL-C is complex and involves the synthesis and secretion of the major protein components of HDL-C followed by the largely extracellular acquisition of lipid (phospholipids and cholesterol) and the assembly and generation of mature HDL particle. The liver and intestine secretes the lipoprotein apolipoproteins A-I (ApoA-I), a major constituent of HDL which causes specific efflux of free cholesterol and phospholipids from peripheral blood cells particularly macrophages via ATP-Binding Cassette A-1 (ABCA-1) thus forming nascent discoidal HDL. Maturation of HDL-C requires the esterification of cholesterol to form cholesterol esters and hydrophilic lipid core of HDL, a process mediated by the action of enzyme Lecithin cholesterol acyltransferase (LCAT) [21]. Thus genetic variation identified in ABCA-1, APOA1 and LCAT genes which are involved in HDL-C biosynthesis could lead to low circulating plasma HDL-C levels causing attenuated antiatherogenic activity and thus favor accelerated atherosclerosis. So far, there have been no studies on complete genetic analysis of these genes involved in HDL-C biosynthesis in Indian population. In our current case-control study, we identified a total of 40 genetic variants in 3 genes (ABCA, APOA1 and LCAT1), out of which 4 novel mutations were identified in ABCA1 gene along with one novel mutation in APOA1 gene. Interestingly we observed that 3 mutations including a novel mutation in ABCA1 gene was observed in 40% of subjects with low HDL-C *(unpublished data)*; suggesting that these mutations might help to assess the CAD risk in young healthy asymptomatic individuals in Indian population.

1.2.2 Cholesterol ester transfer protein (CETP):

Cholesterol ester transfer protein activity is inversely associated with HDL-C levels. Located on chromosome 16q21, it encompasses 16 exons. It increases LDL- and very low-density lipoprotein (VLDL)-cholesterol levels by transferring from HDL in exchange for triglycerides and thus is proatherogenic. The relation between the plasma concentration of CETP and HDL-C and atherosclerosis is complex. It has been suggested that this association might be population specific and highly influenced by environmental factors such as alcohol consumption and tobacco smoking. Several

common polymorphisms have been reported in the CETP gene locus. The most studied has been Taq1B, a silent base change at the 277th nucleotide in the first intron of the gene [22]. The allele carrying the cutting site for Taq1 enzyme is called B1 and the one in which it is missing is called B2. The B2 allele has been associated with increased levels of HDL-C [23] and decreased CETP activity [24]. In our Indian normolipemic healthy subjects, B2 allele frequency was 0.49 similar to that reported for Sinhalese of Sri Lankans [25]. In our study, the HDL-C levels did not differ between the three genotypes in the normolipemic as well as the low HDL-C group [26]. However, B2 allele frequency in subjects with HDL-C <0.9065 mmol/l was found to be lower (0.4) as compared to B1 allele (0.6). Thus, though significant association of Taq1 polymorphism of the CETP gene with low HDL-C levels was not observed, decreased B2 allele frequency, one of the features documented in the low HDL-C group was observed in our study.

1.2.3 Apolipoprotein CIII (apoCIII):

ApoCIII, a major component of triglyceride-rich lipoprotein, chylomicrons and VLDL, and a major component of HDL is important in the regulation of plasma triglyceride concentration. It is non-competitive inhibitor of lipoprotein lipase (LPL) and thereby plays a role in reducing hydrolysis of triglyceride-rich lipoproteins. The apoCIII gene is flanked by the genes for apoAI and apoAIV in a 15-kb cluster on chromosome 11q23.3. It has been reported that overexpression of apoCIII gene results in hypertriglyceridemia with positive linear relation between apoCIII, triglycerides concentration and reduced HDL-C levels [27]. Miller et al [28] have reported a higher frequency of two promoter polymorphisms (C-482T & T-455C) in young Asian Indians that in Caucasians, especially in those with a family history of premature CAD and subjects with low HDL-C. However we did not find significant association of these promoter variants with low HDL-C levels. The frequencies of -482T and -455C in our study were 0.47 and 0.55 respectively, similar to those reported by Miller et al for Asian Indians. Thus in our population these promoter polymorphism were shown to make minor contribution in the polygenic context.

1.3 Genetic variations associated with Hypertension:

The renin-angiotensin system (RAS) plays a key role in the regulation of blood pressure. Angiotensin II, the main effector molecule of the system has direct toxic effects on the myocardial cells. In the past few years, therapeutic success has been achieved in reducing the risk of MI by using angiotensin I-converting enzyme (ACE) inhibitors [29] and the risk of hypertension is reduced by using ACE and angiotensin II type I receptor (AGTR1) antagonists. Genes that encode components of the RAS are thought to play a role in determining genetic susceptibility to hypertension and CAD.

1.3.1 Angiotensin I-converting enzyme (ACE):

To date the 287 bp insertion/deletion (I/D) polymorphism in intron 16 of the ***angiotensin-converting-enzyme (ACE)*** gene on chromosome 17 has received the most attention. Cambien et al [30] reported that the 287 bp deletion (D) polymorphism of the ACE gene as a potential risk factor for MI. In Indian population, a study carried out in our laboratory by Joseph et al [31], demonstrated that the D-allele of the ACE gene conferred no appreciable increase in the risk of developing CAD or MI. There was no significant difference between the ACE levels between the patients and the controls. Similarly no association was observed between the ACE polymorphism and subjects suffering from hypertension [37]. Similar studies were also performed with other RAS gene polymorphisms, most notably M235T of angiotensinogen (AGT) and A/C 1166 of AT1R.

1.3.2 Angiotensin II type I receptor (AGTR1):

AGTR1 A/C 1166 polymorphism was first described by Bonnardeaux et al [33] and shown to be significantly associated with essential hypertension. Subsequently it was shown to increase the risk of MI in subjects carrying the D allele of the ACE gene as well [34]. Although direct association of this polymorphism with CAD or MI was controversial, it was related to a number of coronary artery affected, coronary vasoconstriction, aortic stiffness, early onset of hypertension and dyslipidemia [35]. In our study on Indian population, C allele was also found not to increase the risk of hypertension and CAD [32].

1.3.3 Angiotensinogen (AGT):

Jeunemaitre et al [36] demonstrated the linkage between the primary substrate of the RAS system, AGT and essential hypertension in Utah and French Caucasians and also the association of two molecular variants of AGT gene in exon 2, M235T and T174M with blood pressure. Although these variants have not been documented to alter the kinetics of RAS, M235T was associated with higher plasma AGT levels. In Indian population, we did not find an association of the variants of AGT with neither CAD nor hypertension [37].

1.4 GENETIC VARIATION ASSOCIATED WITH HOMOCYSTEINE METABOLISM:

An elevated plasma level of the amino acid homocysteine (hcy) has been identified as an independent risk factor for coronary atherosclerosis [38]. A plasma hcy concentration exceeding 15 mmol per L is now termed as hyperhomocysteinemia (Hhcy) [39]. Elevated plasma homocysteine levels have been reported in patients with premature CAD lacking the traditional risk factors [40]. In Indians we have observed hyperhomocysteinemia to be 19.13% and 18.26% in patients with CAD and controls, respectively [41]. Although the majority of cases of HHcy are thought to be caused by interplay between dietary and genetic factors, the genetic disorders are associated with the highest plasma levels of hcy, with inherited deficiency of several enzymes. The most common being Methylene tetrahydrofolate reductase (MTHFR), Cystathionine B -Synthase (CBS) and Methionine Synthase (MS).

1.4.1 Methylene tetrahydrofolate reductase (MTHFR) gene:

Frosst et al [42] identified a missense mutation in the MTHFR gene wherein cystosine nucleotide at position 677 was replaced by thymine which resulted in the substitution of alanine and valine. In our previous study, the C/T heterozygous genotype was found in 48 % of the Hhcy patient as compared to 12% of control. The difference was statistically significant ($p < 0.05$) [43] and hence heterozygosity for the thermolabile MTHFR mutation was found to be associated with Hhcy. There is another variant documented in the MTHFR gene, A1298C. This genotype alone shows no effect on MTHFR activity but in combination with C677T genotype it causes significant decrease in the MTHFR activity [44].

1.4.2 Cystathionine-β-synthase (CBS) gene:

Homozygosity for defects in the enzyme CBS gives rise to the autosomal dominant recessive condition, hereditary homocystinuria [45]. Among various mutations reported so far in the CBS gene, 68 bp insertion, T833C and G919A variants are studied in CAD; 844ins68 variant is reported so far to be a neutral insertion [46]. In our study, 3.47% of the controls were heterozygous for the CBS T833C mutation [41].

1.4.3 Methionine synthase (MS) gene:

MS is a vitamin B_{12}-dependent enzyme catalyzing the remethylation of homocysteine to methionine. Reduced activity increases the plasma homocysteine. A point mutation in the encoding region of MS (A2756G) that results in the substitution of an aspartic acid for a glycine residue (D919G) has been reported. Our previous study shows that the A/G heterozygous genotype was found in 44 % of the Hhcy patient as compared to 16 % of control. The difference between the Hhcy patient group and controls was statistically significant ($p<0.0$) in our study [43].

1.4.4 Endothelial nitric oxide synthase (eNOS) gene:

Endothelial function, of which decreased vasodilator activity of Nitric oxide (NO) is a hallmark [47], and which is a component of early atherogenesis, including CAD, has been shown to be of prognostic significance [48]. Hence, factors that influence NO availability are likely to be of considerable clinical importance. The synthesis of endothelial NO from L – arginine is regulated by the enzyme, nitric oxide synthase (eNOS) and a number of polymorphisms in the eNOS gene sequence have been identified. The two polymorphisms in the eNOS3 gene that have been studied in association with Coronary Artery disease are, Glu298 Asp and T-786C. In vitro and animal models studies have demonstrated a relationship between HHcy, endothelial dysfunction and accelerated atherosclerosis [49]. In our previous study, association of Glu298Asp polymorphism of the eNOS gene was not significantly associated with the Hhcy in our group. As for the T-786 C polymorphism in the 5' flanking region of the eNOS gene was also not significantly associated with the presence of HHcy in our patients as well [43].

1.5 GENETIC VARIATIONS ASSOCIATED WITH THROMBOSIS AND FIBRINOLYSIS:

The main clinical manifestation of coronary artery disease involves the rupture of atherosclerotic plaque followed by the total occlusion of coronary artery which leads to myocardial infarction. Platelets play a critical role in normal blood hemostasis and thrombus formation in MI. Several genetic variations in genes involved in platelet activation and fibrinolysis have been reported to be associated with MI. Our recent study was to determine the frequency distribution and association of polymorphisms in these genes with coronary artery disease among Indian. A case-control genetic association study was performed for polymorphisms in platelet glycoprotein receptors (GPIIb/IIIa [HPA1a/1b], GPIb-IX-V [VNTR], and GPIa/IIa [C807T]), fibrinogen β-chain (BclI), α-chain (Aα312), tissue plasminogen activator (tPA) [I/D] and plasminogen activator inhibitor-I (PAI-1) [4G/5G] in 473 healthy controls and 446 patients with stable and unstable angina. The Insertion allele frequency of the tPA I/D polymorphism was significantly higher in our patients ($P<0.01$) and no other polymorphisms varied significantly between patients and controls. Also, none of the polymorphisms seemed to affect the severity of the disease, the only exception being the mutant alleles of ? chain of fibrinogen gene, which were significantly elevated in single vessel disease. This is the first study to evaluate the role of gene polymorphisms in both the thrombotic and fibrinolytic pathway in the Indian population and suggests that tPA I/D polymorphism confers CAD risk in our population [50].

Population variability, sample size and selection of sample, in addition to the environmental risk factors, complex nature of the disease and interaction of various genes overshadow the polymorphic influence of the single gene on the disease. Inspite of that, the strong genetic effects observed in small subgroups of patients emphasize the role of these polymorphisms on the disease. Future genetic studies will promise to revolutionize the early diagnosis, treatment, and prevention of CAD and MI. A unique advantage for the management of coronary artery disease is that a significant number of cases are potentially preventable. The early diagnosis

by genetic testing will force lifestyle modifications in individuals with risk genetic factors, which alone or in combination with other therapeutic options may delay the onset of the disease or prevent myocardial infarction and sudden death.

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A Case of Abnormally High Prolactin Level Due to Hypothyroidism

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A 23 year old married woman presented with secondary amenorrhea and galactorrhea in the Department of Gynaecology and Obstetrics, Institute of Medicine, Teaching Hospital. She was normotensive with a blood pressure of 135/90 mmHg.

A spot urine pregnancy test was done and the result was negative. She did not have a history of diabetes mellitus, hypertension or other chronic diseases and was not taking any medication.

The results of her laboratory investigations are shown below:

Analytes	Value	Reference range
Random blood glucose	4.2 mmol/L	3.5-7.6mmol/L
Urea	3.6 mmol/L	2.5-7.3 mmol/L
Creatinine	79 μmol/L	60-135μmol/L
Sodium	138 mmol/L	135-145 mmol/L
Potassium	3.9 mmol/L	3.5-5.0 mmol/L
Haemoglobin	11.3 g/dl	11-13g/dL
Total leukocyte count	7800 /cu.mm	4,000-11,000/cu.mm
Total protein	6.8 g/dL	6.3-8.0 g/dL
Albumin	3.9 g/dL	3.2-4.7 g/dL
FSH	6.0 mμ/ml	7.5-20.0 mμ/ml
LH	3.8 mμ/ml	12.0-82.0 mμ/ml
Prolactin	142.0 ng/ml	3.3-24.5 ng/ml
Free T3	0.7 pg/mL	1.2-4.2 pg/mL
Free T4	2.2 pg/mL	7.2-17.2 pg/mL
TSH	53.8 mIU/mL	0.6-4.5 mIU/mL

Question:

1. What is the biochemical basis of secondary amenorrhea in this case?

2. How does hypothyroidism lead to infertility?

Discussion:

Hyperprolactinemia is the most common hypothalamic-pituitary disorder encountered in clinical endocrinology[1]. Increased levels of prolactin inhibit the hypothalamic-pituitary-ovarian axis. Hyperprolactinemia inhibits gonadotropin releasing hormone (GnRH) activity by interacting with the hypothalamic dopaminergic and opioidergic systems through a short-loop feedback mechanism or by a direct effect on GnRH neurons, in which prolactin receptors are expressed[2]. This explains the subnormal values of FSH and LH in this case.

Moreover, hyperprolactinemia in this case may be associated with primary hypothyroidism. Primary hypothyroidism is often associated with anovulation for several of the reasons. The first mechanism involves the inhibitory effects of T_3 on thyrotropin releasing hormone (TRH) production and on TRH receptor expression. A decrease in T_3 feedback in hypothyroidism may induce an increase in hypothalamic TRH production and in the number of TRH receptors in the lactotroph. Increased TRH not only stimulates the production of Thyroid stimulating hormone (TSH) from an anterior pituitary as seen in this patient but also stimulates lactotrophs, which eventually leads to the increased concentration of prolactin[3]. Secondly, the clearance of prolactin tends to be decreased in hypothyroidism[4]. Lastly, the excess free estrogen (due to elevated total and free estradiol in some patients with hypothyroidism) stimulates the production of prolactin.

All in all, primary hypothyroidism leads to hyperprolactinemia which in turn decreases ovulation and resulted in infertility in this case.

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Randox multiplex biochip array technology and pharmacogenomics are re-defining personalised medicine

There is a quiet revolution underway in the pharmaceutical and healthcare sector that will influence the way we prescribe therapeutics and how we deal with each individual patient. Driven by the unravelling of the genetic code and a new era in molecular biology, this could not come fast enough. Only 30-60% of common drug therapies work as described and up to 7% of hospital admissions in the US are due to adverse drug reactions, many fatal. The trial and error approach applied to drug treatments is no longer a viable option for the industry, for medical practitioners, for healthcare payers or for patients.

One of the key breakthroughs in the post genomic era is the realisation that small genetic changes can greatly increase an individual's risk of developing disease, or can influence their response to therapy. This has led to the rapidly expanding field of pharmacogenomics (PGx), the branch of pharmacology which deals with the influence of genetic variation on drug response in patients by correlating gene expression or single-nucleotide polymorphisms with a drug's efficacy or toxicity.

In the field of pharmacogenomics, activity of the Cytochrome P450 group (CYP450) of enzymes is one of the most important factors influencing drug efficacy. These enzymes are responsible for the metabolism of a vast array of therapeutic and recreational drugs, with particular CYP450 enzymes acting on particular drugs. Not every patient metabolises drugs to the same extent, so these enzymes are being influenced by genomic factors – single nucleotide polymorphisms (SNP's). SNP's modify the genetic code of a gene to varying degrees, which ultimately determine how well that enzyme functions; if function is impaired, then drug metabolism will be affected.

For example, CYP2C19 has a number of well characterised SNP's, including those found in alleles 2C19*2, 2C19*3 and 2C19*4. These allelic mutations will determine the metabolism of some anti-ulcer drugs, specific anti-depressants and a number of anti-platelet drugs. The determination of the allele zygosity will also influence the efficiency of metabolism of the individual and this can be spread among patients from ultra-metabolisers to poor metabolisers. Other key CYP450 enzymes are CYP2C9, which influences the metabolism of 15% of all drugs and CYP2D6, responsible for the metabolism of 25% of pharmaceuticals. As with CYP2C19, the allelic variants responsible for drug failures have been well characterised for these enzymes, so

genetic profiling can determine the efficacy of response to specific therapies.

The consequence of these discoveries is that PGx testing is already being applied to preclinical investigations for drug response or drug-induced toxicity, including identifying genes with variations that may identify sub-populations. It is also being applied to Phase I studies to explain outliers or inter-patient variability, to stratify patients into response groups and in Phase II and III studies to exclude individuals at risk. This allows the development and prescribing of drugs for specific patient groups with differing genetic profiles. Where a genetic influence can be established retrospectively following a review of past clinical trial data/samples, it may also lead to the re-investigation of previously failed drugs. This has the potential to revitalise niche therapies, adding value to the pharmaceutical back catalogue at a time of dwindling drug pipelines.

Even more importantly, individuals who are unlikely to benefit from, or poorly metabolise a prescribed drug (hence suffering toxic accumulation and an associated adverse drug reaction) can now be readily and inexpensively identified. What's more, determining the genetic profile of enzymes known to influence metabolism, can, in combination with traditional indicators, such as age, weight, disease severity etc, facilitate the correct dose of the right drug that most suits the needs of the individual patient. This is the foundation for truly personalised medicine and is where screening for SNP's in genes can make a profound difference to clinical treatment and prognosis.

The importance of this area is reflected in the increase in the number of submissions to the Food and Drug Administration (FDA) and the European Medicines Agency (EMEA) involving pharmacogenomics. There are an increasing number of approved drugs on the market, including tamoxifen, warfarin, Plavix and 5-fluorouracil, which strongly recommended companion genetic profiling tests before treatment. It is envisaged (and included in FDA guidelines) that pharmacogenomics will become a standard component in drug development in the near future.

The genomics landscape is constantly changing, with publications daily describing new gene discoveries and novel SNP's with clinical application. Such is the speed of this discovery; versatility is required in the biomarker assays and associated platforms to ensure that tests are appropriate to clinical and pharmaceutical needs and available rapidly to meet the tight development programme of the pharmaceutical itself. This necessitates the selection of a diagnostic partner with a rapid development capability and a robust technology, without any loss of sensitivity and specificity to pass clinical scrutiny and obtain regulatory approval. This winning combination will enable rapid FDA approval for the companion diagnostic to facilitate widespread and early clinical adoption of the assay for the benefit of the pharmaceutical partner who is most interested in having their pharmaceutical prescribed.

A key component of the molecular revolution is the application of multiplex assays to provide greater information from a single patient sample as it is both faster and more economical. Single test assays are slowly being replaced by multi-analyte reactions that can simultaneously measure the levels of a suite of specific biomarkers (protein, DNA or RNA), designed to provide greater information than one test in isolation. In many cases, such tests do not require additional reagents or sample volume, so have benefits in all aspects of the procedure, from patient comfort, ease of use and cost-saving. With the advent of versatile platforms and assay procedures, such as Biochip Array Technology (BAT) from Randox, rapidly customisable arrays are possible.

Multiplexing is an enabling technology and benefiting the entire healthcare industry as biomarkers, aside from being viable drug targets themselves, are now invaluable as guides to disease predisposition and as indicators for therapy efficacy.

In short Biomarkers provide the ability to:

- Screen for a disease

- Confirm it diagnostically
- Assess severity
- Determine best therapy, prior to administration
- Base therapeutic dose on personalised metabolic and clearance profiling (PGx)
- Monitor the clinical course post-treatment

Developing such multiplex assays rapidly for routine clinical use can potentially save the worldwide healthcare sector billions of dollars, as a consequence of more efficient treatment regimes and fewer patients presenting with adverse drug reactions. This will allow greater focus on preventative medicine and early detection.

The key benefits are a faster pathway from drug discovery to clinical use, relying on genetic data at every stage of development. Diagnosed patients who have been genetically pre-screened for affecting SNP's will be more amenable to drug therapies in clinical trials, therefore increasing the rates of response and trial safety. This neatly combines diagnostic and genetic tests with pharmaceutical trials and clinical utility, providing a powerful combination for tailored medical care, again benefiting the patient.

In recognition of this paradigm shift into combined therapeutic and diagnostic solutions, so called *Theranostics*, partnerships are springing up between CRO's, pharmaceutical and diagnostic companies, leveraging the expertise of all parties to rejuvenate pharmaceutical R&D activities and drive a faster pathway from drug discovery through to clinical utility, both for the biomarkers themselves and pharmaceuticals. The ongoing development of sophisticated multiplex testing platforms such as the Randox Biochip Array Technology will be an essential, integral facet of this revolution and is already beginning to deliver the promise of preventative and personalised healthcare worldwide.

Controlling Preanalytical Variables in Analysis of Proteomics Biomarkers

The field of Proteomics has made tremendous strides over the past decade, lead by advancements in both mass spectrometry and bioinformatics. The increased sensitivity and throughput of mass spectrometers coupled with high powered software algorithms have enabled the identification of thousands of proteins from very complex mixtures and the performance of quantitative comparisons between different sample types.

During the biomarker discovery phase a wide variety of body fluids have been used ranging from blood, plasma, serum, bone marrow, urine, saliva, sputum, synovial fluid, and cerebrospinal fluid (CSF). Blood has been the biospecimen of choice. The use of blood specimens is, however, subject to several challenges which particularly effect proteomic studies, such as, the large dynamic range of plasma protein concentration, lipid concentration variability, intrinsic enzymatic activity, and many preanalytical variations arising from differences in the way blood is collected and handled. These challenges limit overall reproducibility, sensitivity and resolution in proteomics biomarker discovery efforts, and are even more critical for translating biomarker discovery into clinical application.

In the past five years an immense scientific effort has been placed on biomarker discovery research resulting in a surplus of potential biomarker candidates. Typically, researchers are taking a broad, 'shot gun' approach using mass spectrometry to identify and quantitate potential protein biomarkers from different sample types. This approach has the advantage of quantitatively looking at a large subset of proteins. Once a subset of proteins has been identified as either 'up' or 'down' regulated, the next common approach is to perform either MRM (multiple reaction monitoring), ELISA (enzyme-linked immunosorbent assay), or a hybrid of the two techniques.

Promising new biomarkers require further investigation before entering into the clinical setting for any specific application. Verification and validation phases are required. One of the major hurdles hindering the transition from bench to the clinic is preanalytical variability. Most notably, time and temperature have significant impact on the ability of blood enzymes to degrade specific analytes.

There are many preanalytical variables and alternatives that impact virtually every clinical study, and as more studies are performed, the more important these aspects are found to be with respect to proteomics and biomarker goals. Common variables during sampling and analysis include (i) the choice of plasma versus serum samples, (ii) the addition of protease inhibitors or other additives, and (iii) the processing and handling of blood specimens. Only with an understanding of the challenges associated with developing a reproducible proteomics measurement system can one begin to

understand the complexity involved in selecting, studying and optimizing a serum / plasma sample. To this end, a detailed pre-analytical strategy for sample handling is essential.

We have focused on the potential impact sample handling can have on protein and peptide stability and how this variability can be controlled through the use of protease inhibitors. Specifically, we have focused on the stabilization of GLP-1, GIP, Glucagon, and Ghrelin. These four peptides are of particular interest in the field of metabolic disorder research especially diabetes drug research. Using time-course mass spectrometry, we have characterized the kinetic digestion of each incretin peptide caused by active plasma endogenous enzymes. We further developed a cocktail of inhibitors to minimize this variability / instability in a new blood collection tube – the BD™ P800 tube*. This tube has a proprietary cocktail which includes a DPP-IV, esterase and other protease inhibitors that are optimized for blood while yielding high-quality hemolysis-free plasma. The plasma obtained by processing the P800 tube can be used immediately, transported, or stored frozen. Stabilization of plasma peptides, such as GLP-1, GIP, Glucagon, and Ghrelin, enable them to be used in pharmacokinetic and pharmacodynamic studies.

As the field of biomarker research continues to grow, the need for stabilizing proteins and peptides will be required through the three phases of discovery, verification, and validation, ultimately improving the success rate of transitioning biomarker candidates from discovery lists to clinical applications.

* For Research Use Only – Not for Use in Diagnostic Procedures

Article adapted from Next Generation Pharmaceutical, Q3, 2010. David Craft – 'Ask the Expert', Q3, 2010 (www.ngpharma.com)

Personalized healthcare – value based medicine

By Dr. Y Sammy Roche Diagnostics Asia Pacific

The potential of science to relieve human illness and suffering has long captured people's hearts and imaginations. In the quest to realize that promise, funding from public, nonprofit, and private sectors converged in the 1980s, boosting the budgets for biomedical research beyond that of engineering and the physical sciences for the first time ever. Fueled by a budget that has nearly tripled in the last decade, biomedical research has become an engine that is now driving the health care system toward new frontiers.

Personalized Healthcare (PHC) is based on the observation that patients with the same diagnosis react to the same treatment in different ways: while a drug can be highly effective for one patient, the same drug might not show the desired results when given to a second patient with the same diagnosis. Disease-related as well as disease-independent individual characteristics influence the way drugs work, and treating all patients diagnosed with a certain disease with a broad-brush approach disregards those differences.

Conventionally practiced healthcare is not as effective as it could be, with a considerable even cause adverse reactions in some cases. Personalized Healthcare thus has the potential to increase the efficacy and safety of treatment. It is an approach which capitalizes on our increasingly sophisticated understanding of differences among patients, the molecular basis of disease and of how medicines work.

Personalized Healthcare means targeting treatment to specific groups of patients who will respond best to those medicines. Rather than a 'one-size-fits all' model, it is a tailored approach that incorporates the reality that people are different and so are the diseases that affect them.

Personalized healthcare does not mean a specific medicine for every individual patient. It does mean that treatment will increasingly be tailored to specific patient sub-groups who share similarities, either in their genetic make-up or in the molecular nature of their disease. This has enormous potential to make healthcare better, safer and more effective for patients, physicians, payers, and society at large.

In the last few years there were major investments done in the area of genetics and molecular diagnostics which contributed to a discovery of large amount of variations in our genes and genetic variability in response to treatment.

The path in moving those benefits to work for the patient , is not without challenges.

The challenges include identifying the most relevant genes that have clinical significance, Public trust, translation of knowledge into clinical practice, conducting clinical trials that demonstrate the right gene with the drug response and lastly policy challenges that protect patients and at the same time stimulate innovation.

Personalized healthcare is already here. As for expample, woman with breast cancer now has the option of a predictive test that tells her whether her tumor bears a genetic signature. If she tests positive for the overproduction of a gene product called human epidermal growth factor 2 (HER-2), she is a good candidate for a companion drug called Herceptin, which reins in her excess HER-2 and nearly halves her risk of disease recurrence.

Similarly, a patient with chronic myelogenous leukemia (CML) has access to a diagnostic test that indicates the presence of a mutant gene, called Bcr-Abl. If a patient tests positive, he or she can take a drug called Gleevec, which binds specifically to the faulty gene's product and so inhibits its cancer-causing action. Early studies show a 90 percent initial response rate in patients with CML and the hope of complete remission.

Personalized healthcare, what are the implications?

With new tools in the hand of the physicians, the physicians can play a new role which is to provide molecular tools and information technology support to deliver care with greater precision, confidence, and individualization.

Such new role paves the way for a new doctor-patient relationship. Patients can have access to better communication tools. Interactive systems will allow patients to query electronically about health choices. Patients will have the opportunity to become more health literate and take more responsibility for their own health care. Experiencing fewer side effects and better efficacy of treatment, patients will be more likely to engage in their personalized treatment and management plans. They will be better enabled to view themselves as in control of their own health care. As such, they may be increasingly interested in assembling their own health care information, including individual genetic profiles, family history, past treatments, even personal preferences, into health portfolios – analogous to financial portfolios – to be managed with the help of health care planners, managers, and coaches. Doctors will be better positioned to work with teams of health care service providers who contribute and interpret complex information so they can better guide patients in their choices.

Leading examples in personalized healthcare

Gastric Cancer

Gastric cancer it has been shown to over-express HER2 in a subpopulation of about 15-18% of patients. Herceptin if added to the standard Chemotherapy treatment has also shown patient benefits. Diagnosis of the HER2 status of the tumor requires the staining of the tumor tissue with assays to detect the HER2 protein by immunohistochemistry (IHC) and the amplification of the HER2 gene by a technology called in situ hybridisation (ISH). The results of these tests have a huge impact on treatment and prognosis and it is therefore crucial that testing is robust and reliable in clinical practice.

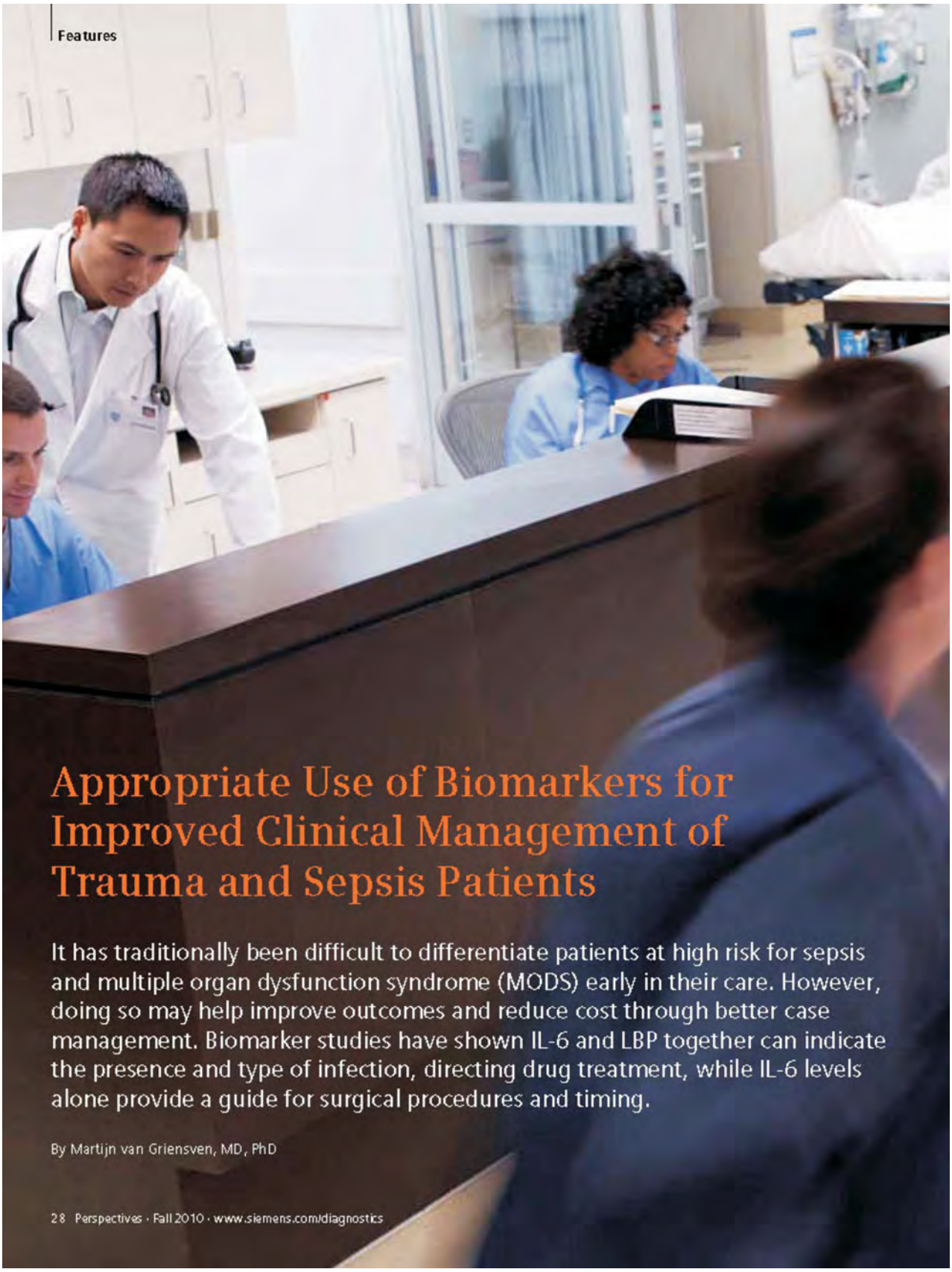
Hepatitis

Overall, as many as 2 billion people have been infected with the hepatitis B virus world-wide. While most of them clear the virus more than 350 million people continue on to having a chronic infection. Hepatitis B virus (HBV) infection is a major public health concern and is estimated to cause an estimated 600,000 deaths each year. It is also one of the principal causes of chronic liver disease, cirrhosis, and primary liver cancer.

Personalized healthcare in Hepatitis is a combination of effective medication with companion diagnostics that are able to differentiate between virus levels and forms, In order to successfully treat patients infected with the HBV, the is a need to combine the innovative Hepatitis B medication Pegasys (peginterferon alfa-2a), as well as high-

specificity diagnostic tests that identify virus in blood (HBV DNA test) and the subsets of its chronic forms (Elecsys HBsAg and Elecsys HBeAg).

The provision of healthcare in the developed and developing world is clearly changing. The rise in evidence-based medicine and the demands of payment decision makers, that benefit should be demonstrated before reimbursement is sanctioned, can only lead to a greater reliance on objective testing to identify patients most likely to benefit from an intervention in a cost-effective manner. Similarly, objective testing to monitor responses as a surrogate for long-term clinical outcomes will also become significantly more prevalent. While the technologies currently employed are likely to be superseded by Molecular diagnostics , additional factors such as decentralized and near-to-patient testing are predicate on the ability of the end users to willingly employ and interpret the tests.


Features
Appropriate Use of Biomarkers for Improved Clinical Management of Trauma and Sepsis Patients
It has traditionally been difficult to differentiate patients at high risk for sepsis and multiple organ dysfunction syndrome (MODS) early in their care. However, doing so may help improve outcomes and reduce cost through better case management. Biomarker studies have shown IL-6 and LBP together can indicate the presence and type of infection, directing drug treatment, while IL-6 levels alone provide a guide for surgical procedures and timing.
By Martijn van Griensven, MD, PhD
28 Perspectives · Fall 2010 · www.siemens.com/diagnostics


Features

Trauma- and sepsis-related organ dysfunctions with end-stage failures are among the major causes of death in intensive care units. They typically are associated with prolonged intensive care and hospital stay, and create a considerable economic burden on our healthcare systems. Therefore, early identification of patients at risk to develop sepsis and/or multiple organ dysfunction syndrome (MODS) using biochemical and/or immunological markers is mandatory.

During the early phase after trauma and after onset of sepsis, a hyperinflammatory condition is present. A rapid transition towards a hypoinflammatory phase can occur. Hyper- and hypoinflammation can even exist at the same time. In case of a persistent hypoinflammatory status, immunoparalysis is present and microorganisms can easily invade the patient. This, in turn, can lead to posttraumatic septic complications or even worsen existent sepsis. Thus, correct classification of the patient's immune system's status is of the utmost importance. This correct classification of the patient status, unfortunately, remains difficult. Despite this lack of knowledge and the limited monitoring possibilities, enormous resources have been invested in therapeutic studies. The outcome of these studies was often disappointing, partly because of the wrong classification and selection of patients as well as because no adequate monitoring is present at the moment to discriminate between good-responsive and poor-responsive patients. In other medical disciplines, treatment is only given upon associated measurements: e.g., insulin is given based on blood glucose measurements, and trauma patients or patients in septic shock are given vasopressors based on the presence of hypotension.

The current status illustrates the need to develop improved methods for classification and monitoring of septic patients to enable a better selection of the appropriate cases and more precise timing for therapeutic interventions.

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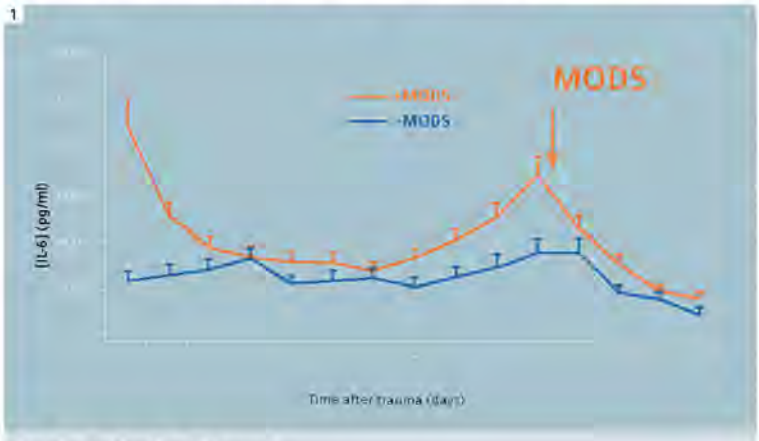
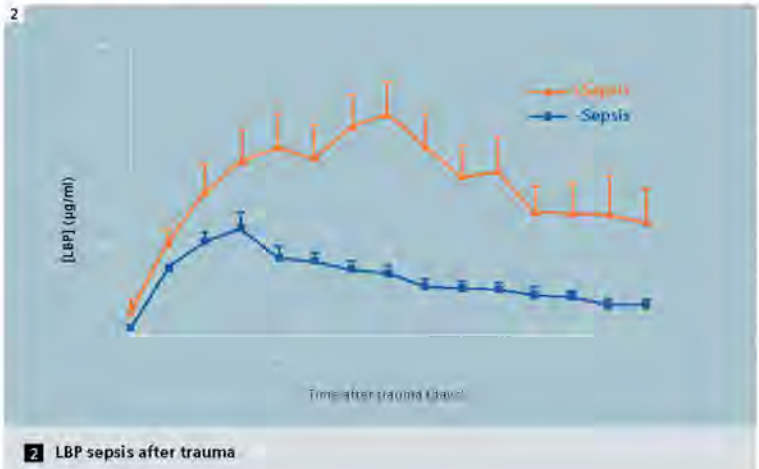


1 Interleukin-6 Pro-inflammatory

2



2 LBP sepsis after trauma

Classification Strategies

Determining inflammation and infection; Interleukin 6 (IL-6)

The most important secondary pro-inflammatory cytokine in trauma patients is IL-6.[1,2] In an increasing number of hospitals, IL-6 is used as a prognostic marker for outcome in trauma patients for systemic inflammatory response syndrome (SIRS), sepsis, and MODS. High IL-6 levels are typically associated with poor outcome.[3] Immediately after an accident as well as in the emergency room, IL-6 serum levels are increased and correlate with the injury severity score, the incidence of complications, as well as mortality.[4,5] IL-6 levels are even more increased in patients suffering from sepsis than from trauma only. A correlation exists with the development toward septic shock.[6] Significant differences in plasma levels are observed between survivors and non-survivors, with lower IL-6 levels in survivors.[7] A similar association is also observed in trauma patients developing acute respiratory distress syndrome (ARDS).[8,10] These observations show that IL-6 is a marker for the intensity of trauma. It can therefore be helpful in categorizing trauma patients in several risk groups. We studied this marker in multiple trauma patients, both with and without sepsis as well as with and without MODS.

Determining inflammation and infection; Lipopolysaccharide-binding protein (LBP)

Recent work has established that bacterial endotoxin (LPS) can bind to the plasma protein LPS-binding protein (LBP), forming high affinity complexes (LPS-LBP); that LBP is an opsonin for LPS-bearing particles; and that LPS-LBP complexes are potent agonists for monocytes. Monoclonal antibodies to the monocyte plasma membrane protein, CD14, inhibit LBP-dependent binding of LPS to monocytes, and LPS-LBP-dependent stimulation of cytokine release from monocytes.[11] Under physiological conditions, lipopolysaccharide (LPS) activation of cells involves the LPS binding protein (LBP) and either membrane or soluble CD14. Subsequent to complex formation and distinct from signal transduction, LBP and LPS internalize.[12] Plasma endotoxin and lipopolysaccharide-binding protein (LBP) levels are significantly greater than control levels in most septic patients. However, no correlation was found between endotoxin and LBP levels. The quantitative level of both endotoxin and LBP may therefore have prognostic significance in patients with severe sepsis.

Determining inflammation and infection: Procalcitonin (PCT)

Other markers like circulating levels of procalcitonin have been shown to provide early warnings in patients developing sepsis, especially in patients with a history of lower respiratory tract infections, community-acquired pneumonia or nosocomial acquired infections, increasingly caused by resistant bacterial strains, such as *Staphylococcus Aurus*. However, because trauma patients often suffer from significant soft tissue trauma and/or organ damage, systemic release of procalcitonin is frequently observed and therefore less suited as a discriminatory marker for the diagnosis of sepsis in these specific types of patients. In the study described in the next sections, we therefore decided to focus on IL-6 as a marker of inflammation, and LBP as a marker for infection and severity of sepsis.

The activation of inflammatory cascades by trauma and subsequent surgery may have important consequences for the trauma patient. Although the clinical condition may appear stable, it is necessary to evaluate and respect the inflammatory burden of the patient.

Patients and Methods

In a prospective study, 200 polytraumatized patients were included consecutively. Inclusion criteria were defined as follows: Injury Severity Score (ISS) >16, age 16–70 years, admission within six hours after the accident, survival >48 hours. Over a 14-day observation period, blood samples were drawn once daily for determination of the below mentioned parameters. The first sample was taken within the first 45 minutes after admission, but always before the first surgical treatment. The clinical course was also recorded once daily. The occurrence of MODS was evaluated using the Marshall-Score (MODS: >12 points on two consecutive days or on at least three days over the observation period). Sepsis was defined according to the American College of Chest Physicians/Society of Critical Care Medicine Consensus Conference (ACCP/SCCM) criteria with documented infection.

Results

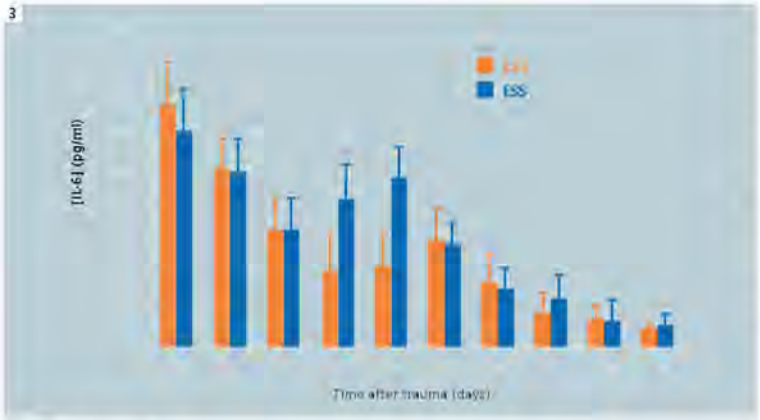
IL-6 serum levels were initially elevated in patients developing MODS (Figure 1). In the following days, these levels fell to levels observed in patients with an unproblematic posttraumatic course. However, these levels were significantly higher than those of normal volunteers. Two to three days before the clinical signs of MODS occurred, IL-6 levels were increasing to levels over 500 pg/ml. During septic periods, IL-6 levels also showed increased values. In patients dying from MODS or sepsis, IL-6 levels remained elevated and were prognostic.

In recovering patients, IL-6 levels gradually fell to normal levels in the subsequent weeks. LBP showed an increase in all multiply injured patients during the first three posttraumatic days (Figure 2). In those without sepsis, levels up to 40 µg/ml were observed during the first 14 days. In the group of patients suffering from sepsis, maximum levels of up to 300 µg/ml were detected. During successful treatment of sepsis, LBP levels gradually decreased, but remained highly elevated until the 14th posttraumatic day. However, this decrease can be used to monitor the course of treatment. In non-survivors, LBP levels remained at maximum levels until the end.

Discriminating inflammation and infection

These findings showed that inflammation due to trauma or due to infection shows elevated IL-6 levels. Therefore, IL-6 cannot be used to differentiate between trauma and sepsis. However, with the additional measurement of LBP, and in conjunction with the clinical background of the patient, such differentiation is possible. High IL-6 levels occurring with high LBP levels indicate the presence of a septic complication. Increased LBP levels without elevated IL-6 indicate the presence of a local infection. Each of these clinical etiologies requires a different treatment often, but not always, associated with timely start of antibacterial treatment. And as antibiotics are the most expensive drugs on an intensive care unit, avoidance of inappropriate use of antibiotics can decrease the economic burden.

Features



3 Interleukin-6

Stratification Strategies

Stratification in sepsis

Two prospective studies (RAMSES in Europe, MONARCS in North America) were initiated to evaluate the effect of anti-TNF antibody therapy in patients presenting a hyper inflammatory state, the diagnosis based on IL-6 plasma levels at the time of study entry. In the MONARCS study, of the 2,634 patients enrolled, 998 had IL-6 levels >1000 pg/ml and 1,636 did not. Patients with IL-6 > 1000 pg/ml had significantly higher mortality (47.7% vs 28.6%). In those with elevated IL-6 levels, TNF antibody reduced risk-adjusted 28-day mortality (6.9%) compared to placebo (41.5% vs 48.4%, $p = 0.041$). Mortality at 28 days was also reduced (3.6%) in the overall population (32.3% vs 35.9%, $p = 0.049$).[13] In other words, anti-TNF therapy was twice as effective in patients with IL-6> 1000 pg/ml indicating the potential of sepsis markers in risk stratification.

Stratification for OP management in trauma surgery

It is widely accepted that both blunt trauma and surgery induce inflammatory changes and other cascade responses. In the multiply traumatized patient, the relative contribution to the systemic inflammatory response by the accident (first hit) and by the subsequent surgery (second hit) continues to be debated.[14,15] These patients frequently have long-bone fractures, which contribute significantly to the subsequent morbidity. Although primary operative stabilization of these fractures reduces the overall frequency rate of posttraumatic complications, adverse changes in inflammatory mediators have been described with respect to primary intramedullary stabilization of fractures,[16] and especially for reamed nails.[17] Among the proinflammatory cytokines, it is recognized that interleukin-6 (IL-6) plays a pivotal role in determining the insult induced both by surgery and trauma.[5,18,19] Sustained alterations in these markers have been associated with systemic complications including organ failure.[5,20] Although these markers represent physiologic changes relevant to trauma management, the magnitude of skeletal injury and surgery has not been precisely defined. Moreover, surgery following trauma increases the immune response due to the surgical trauma.[21] This may trigger the development of a systemic inflammatory response syndrome (SIRS). Therefore, the type of surgical intervention is associated with the severity of the imposing immune response. More invasive procedures correspond to increased inflammatory responses. The biological load associated with open surgery is determined by its considerable operation time and blood loss, which may act as a "second hit" phenomenon.[22] Once the superimposed response results in a pronounced inflammation, the patient may become at risk for MODS. Therefore, the impact of different surgical procedures was investigated alone and in the context of multiple trauma. Furthermore, the time point of secondary surgery was also investigated. The focus in these studies was on femur fractures, as the most common long-bone fractured in multiply traumatized patients.

Patient population

Adult patients, aged 16–65, with multiple injuries were prospectively studied. Inclusion criteria were an injury severity score (ISS) of greater than 18 points without the presence of severe traumatic brain injury (though abbreviated injury scales (AIS) for head injury were included in the ISS) and primary admission to our institution. AIS for head of three or more was considered to be severe traumatic brain injury. Exclusion criteria were penetrating trauma, severe traumatic brain injury, and patients not directly admitted to our institution following the traumatic event. All procedures were in accordance with the Revised Version of the Declaration of Helsinki (41st general meeting 1989 in Hong Kong). The local Ethics committee approval was obtained for the study. First-degree relatives signed the informed consent for inclusion of the patient in the study, as the patients were intubated and anaesthetized.

Blood sampling

Multiply injured patients were followed up for 14 days, starting at admission to the emergency room (day 0). All other samples were drawn in the intensive care unit every day at 8:00 a.m. (day 1 through 14) from a central venous catheter. IL-6* was measured using an automated solid phase ELISA (IMMULITE, Siemens) (*Test to measure IL-6 on the IMMULITE is currently under development and not available for sale in the U.S.)

Clinical parameters

Demographic data were documented. Clinical parameters of organ function were collected during the course on the intensive care unit. The Denver-score was used to define the incidence of MODS. Four organ functions (pulmonary, hepatic, renal, and cardiac) were evaluated daily during the patient's stay in the intensive care unit. Organ dysfunction was graded on a scale from

0 to 3. MODS was defined as any organ dysfunction with a total score of > 4. This value was chosen before the study and data analysis to ensure that at least one of the organ systems was graded as a grade 2 organ dysfunction. Elevated scores within the first 36 hours after admission were not considered as indicating MODS, because during this period organ disorders may be reversible or may be caused by incomplete resuscitation. When patients revealed a Denver Score of greater than 4 on two consecutive or three nonconsecutive days during the 14-day observation period, however, they were assumed to have MODS.

In addition, these multiply traumatized patients were split into an early secondary surgery group (surgery at days 2–4) and a late secondary surgery group (surgery at days 5–8).

In order to be able to determine the burden of the femur fracture per se, patients with an isolated femur fracture were also investigated. Perioperatively, IL-6 serum levels were evaluated at start, 30 minutes, 7 hours, and 24 hours after initiation of surgery.

Results

The serum concentrations of IL-6 in the group of multiply traumatized patients were significantly elevated compared to those with isolated femur fractures. IL-6 values on admission were higher in group +MOF (891±87 pg/dl) than in group -MOF (327±57 pg/dl, p=0.02). Patients with isolated femur fractures demonstrated significantly elevated IL-6 concentrations compared with normal values. The surgical intervention, i.e., insertion of the femoral nail, resulted in a significant increase in IL-6 levels within the first 30 minutes. Thereafter, levels decreased within 24 hours to normal values. There was a statistically significant increase compared with baseline levels at 30 minutes, 1 hour, and 7 hours after insertion of the femoral nail. In the group of multiply traumatized patients, a similar course was seen, however, with an increased magnitude. Multiply traumatized patients with highest levels after surgery stayed longer on the ICU, had longer ventilation times, and showed a higher incidence of SIRS, sepsis, and MODS.

In the group of multiply traumatized patients, two subgroups were investigated according to the time point of secondary surgery. Patients undergoing secondary surgery between days 2 and 4 developed organ dysfunctions more often than those with secondary surgery between days 5 and 8 (46.5% vs 15.7%). The IL-6 secretion during surgery was more pronounced in those multiply traumatized patients undergoing early secondary surgery. Seven hours after insertion of a femoral nail, IL-6 levels were twice as high as in the late secondary surgery group. During the posttraumatic course, both groups show a comparable early secretion of IL-6 with similar declines over the first two posttraumatic days (Figure 3). Thereafter, patients with early secondary surgery demonstrated a further increase in the concentrations of IL-6, which is not observed in those with late secondary surgery. The latter group showed a subtle increase in serum IL-6 levels at days 6 to 8 (surgery). However, this increase was significantly less than that observed in patients with early secondary surgery. A combination of initial IL-6 values >500 pg/ml and surgery on day 2–4 positively correlated with the development of MOF (r=0.96, p<0.001), whereas initial IL-6-values >500 pg/ml and surgery on days 6-8 did not (r=0.57, p<0.07).

High IL-6 levels occuring with high LBP levels indicate the presence of a septic complication.

Discussion

This study showed that the inflammatory response is increased and more sustained in multiply traumatized patients in comparison to those with, for example, an isolated femur fracture. Surgical intervention for femoral fractures induced an adequate, but small, response as seen by transiently increased IL-6 serum levels. The increase was not as prominent as observed after surgical intervention in the multiply traumatized patient. Thus, surgery adds to the proinflammatory cytokine release induced by the initial injury. These increases are associated with the development of complications such as SIRS and MODS.

In patients with multiple injuries, the second-hit phenomenon has been discussed as an important cause for the development of systemic complications and organ dysfunctions.[15] It can be induced by a variety of factors such as blood loss, bacteraemia and infections, inflammatory cascade reactions, and surgical procedures. Experimental studies have demonstrated that repetitive activations of single pathomechanisms represent inadequate stimuli for the induction of organ dysfunction by a second hit. In contrast, a combination of different stimuli has been shown to augment the systemic damage. Therefore, it is important to choose the right time point for secondary surgery. When the

inflammatory response is still remarkable, because of the initial trauma, one has to think of the extra load imposed by surgery. Especially during days 2 to 4, patients are very vulnerable. On the one hand, this may be associated with the proinflammation; on the other, cellular dyssynergia may play an important role. Early secondary surgery may push the immune system over a certain personal threshold, and the overwhelming inflammatory response becomes detrimental. Cellular dyssynergia gives microorganisms the opportunity to survive. This can lead to septic complications, which worsen outcome and increase the already existent risk for developing MODS. At a later time point after the initial trauma (days 5-8), the body has a recovered immune system and secondary surgery can be performed with less risk.

Recognizing this led to a multicentre study trying to implement this knowledge[23]. Indeed, multiply traumatized patients undergoing direct nailing more often developed MODS. Patients treated initially with an external fixator and on the 6th until 8th day after admission with femoral nailing displayed significantly less complications like lung dysfunction (ARDS) or MODS. No changes in incidence of sepsis were observed. The activation of inflammatory cascades by trauma and subsequent surgery may have important consequences for the trauma patient. Although the clinical condition may appear stable, it is necessary to evaluate and respect the inflammatory burden of the patient. Further inflammatory loading by surgery may harm the patient. Considering the above, the time and type of primary and secondary surgery has to be evaluated very carefully.

Conclusion

Immune monitoring is of utmost importance in multiply traumatized patients. Based on simultaneous testing of IL-6 and LBP, one can determine whether the inflammatory status of the patient is solely due to the trauma or to underlying infectious complications. In the situation of a hyper inflammatory state, secondary major surgery such as femoral nailing should be postponed to avoid a second-hit phenomenon with subsequent severe complications.

For more information

www.siemens.com/sepsis

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Comprehensive Maternal Screening for Neural Tube Defects, Trisomy 13, Trisomy 18, and Trisomy 21—Without the Risk

Siemens Healthcare Diagnostics

Abnormally high or low levels of certain biochemical markers in maternal serum may indicate serious fetal anomalies. Siemens Healthcare Diagnostics' integrated maternal screening program helps doctors and clinicians reliably assess prenatal risk for chromosomal conditions[1] and neural tube defects—without the need for invasive procedures such as amniocentesis.

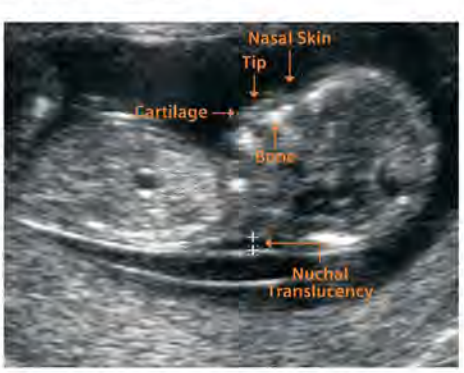
Siemens PRISCA 5.0 Prenatal Risk Calculation System processes data from maternal screening assays, ultrasound scans, and patient demographics to intelligently calculate risk and deliver detailed assessment reports with up to 95% detection rates.

Neural Tube Defects

Neural tube defects, including spina bifida and anencephaly, occur when the fetal spine, the brain, or the bone and skin that protect them do not develop properly. An abnormally high level of alpha-fetoprotein (AFP) in maternal serum can indicate a neural tube defect.

Trisomy 13, Trisomy 18, and Trisomy 21

Trisomy 13 (Patau syndrome), Trisomy 18 (Edwards syndrome), and Trisomy 21 (Down syndrome) result from cell division errors that produce an extra chromosome. The likelihood of such an error occurring increases with maternal age. Abnormal serum levels of various factors—including AFP, human chorionic gonadotropin (HCG), pregnancy associated plasma protein A (PAPP-A), and estriol—may indicate these fetal defects.



Siemens Maternal Screening Program

Siemens CE-marked PRISCA software consolidates and analyzes results from Siemens IMMULITE® maternal screening assays, patient demographic data, and ultrasound scans to assess prenatal risk during first and second trimesters.

First Trimester Screening

- Free β-HCG or Total HCG; PAPP-A, Nuchal Translucency

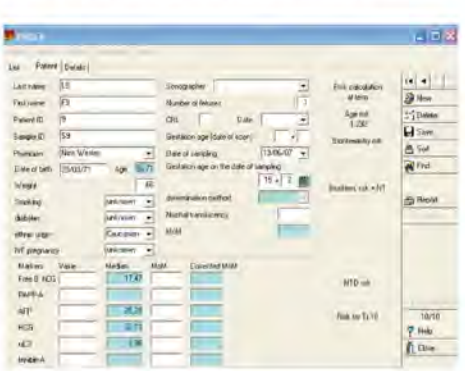
Second Trimester Screening

- Double test: AFP and HCG (Free β-HCG)[2]
- Triple test: AFP, HCG, and Unconjugated Estriol UE3
- Quadruple test: AFP, HCG, UE3, and Inhibin[3]

Siemens IMMULITE and IMMULITE 2000 XPI systems provide scalable, easy-to-use maternal testing solutions for laboratories of any size, volume, and clinical setting. Testing extends beyond maternal screening to include infectious disease, TORCH (congenital), diabetes, anemia, and thyroid conditions.

PRISCA 5.0 System

Siemens CE-marked PRISCA software processes data from maternal screening tests and automatically calculates risk to help doctors and clinicians evaluate risk for fetal defects. PRISCA provides a selection of different patient risk assessment reports for the first and second trimesters.



- Easy-to-use Windows® interface with graphic results display
- Corrections for maternal weight, smoking, diabetes, ART*, ethnicity, twins, and nasal bone assessment
- Flexible determination of gestational age
- Customizable quality control, including NT sonography QC
- Documentation for compliance requirements

PRISCA Shared Database

Included with PRISCA 5.0, the PRISCA Shared Database service provides interlaboratory quality control information in a quarterly statistical report.

- Compare laboratory performance to peer laboratories
- Monitors trends and identifies outliers
- Set up and control local medians

PRISCAConnect

PRISCAConnect automates communication between PRISCA and the hospital LIS, eliminating time-consuming and error-prone manual data entry.

- Automatically download patient data and IMMULITE test results for risk calculation
- Upload assessment results to the LIS
- Automate data validation and risk analysis, improving workflow

Improving Patient Outcomes

Siemens is committed to transforming healthcare by combining in vivo imaging technologies and in vitro diagnostics with leading-edge laboratory information technology. Our goal is to provide integrated, performance-driven solutions that improve patient outcomes, optimize clinical workflow, and bridge the path to personalized medicine for patients around the world.

A 30-day demonstration version of PRISCA 5.0 software is available.

For more information on Siemens Healthcare Diagnostics in vitro and in vivo maternal screening solutions, contact your local Siemens Healthcare Diagnostics Representative or visit:

www.siemens.com/PRISCA

References
1. Assays and software have not received FDA clearance for use in Down screening.
2. Has not received FDA clearance.
3. Inhibin is not an IMMULITE assay.

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P800 Preserves Metabolic Peptides

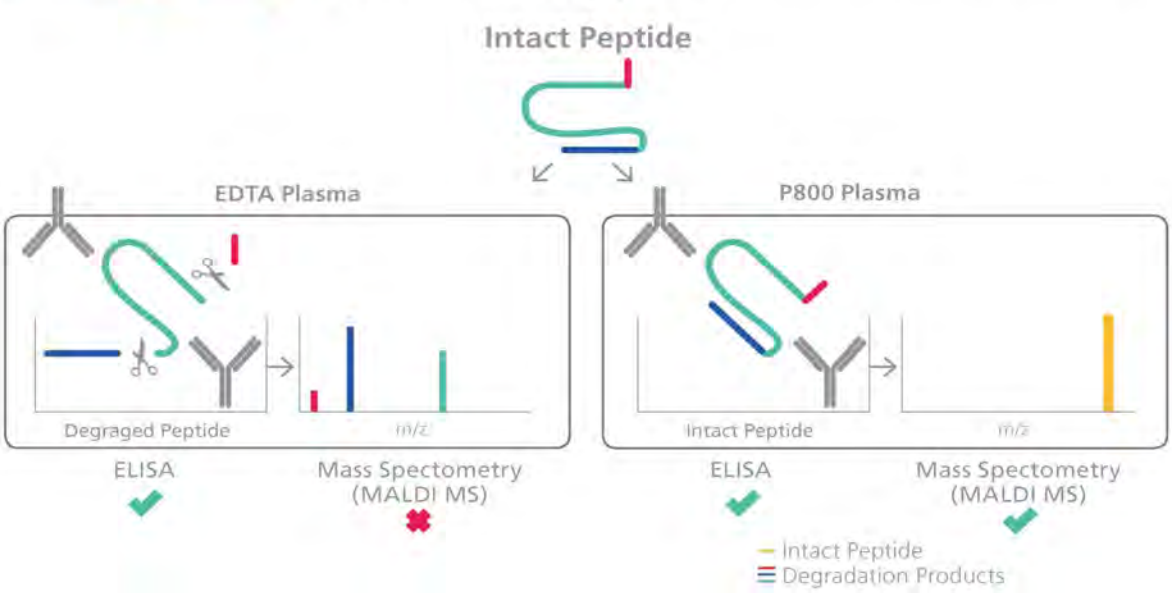
The search for proteomic biomarkers in human blood plasma holds incredible clinical potential. Rapid degradation of plasma proteins and peptides due to intrinsic proteolysis occurs within minutes of blood collection and handling. For example, the incretin hormones Glucagon-Like Peptide-1 (GLP-1), Gastric Inhibitory Polypeptide (GIP), and bioactive peptides Glucagon and Ghrelin have an extremely short half-life in blood making them very challenging for accurate analysis. Therefore, a significant preanalytical challenge is to preserve proteomic sample integrity.

The BD P800 is a sterile evacuated blood collection tube that offers a standardized method to collect and instantly preserve GLP-1, GIP, Glucagon and Ghrelin. The BD P800 tube has a proprietary cocktail which includes a DPP-IV, esterase and other protease inhibitors that are optimized for blood while yielding high-quality hemolysis-free plasma. The plasma obtained by processing the P800 tube can be used immediately, transported, or stored frozen.

Stability ($T_{1/2}$) of Metabolic Peptides in P800 and EDTA Plasma Samples

Peptide	EDTA (h)	P800 (h)
GLP-1 (7-37)	4-8	> 96
GLP-1 (7-36A)	5-23	> 96
GIP (1-42)	~ 5	> 96
Ghrelin	~ 15 h	> 48, 72
Glucagon	~ 5-15	> 48

For clinical research trials, it is highly desirable to have a standardized method to evaluate the metabolic fate of bioactive peptides in biological fluids. Approaches for quantitation of bioactive peptides include immunoassays and mass spectrometric techniques. Disadvantages of some immunoassays include their inability to distinguish between intact and fragmented peptides which may be biologically relevant. Quantification of peptides by this technique, therefore, should be cautiously interpreted. High resolution mass spectrometry is the method of choice for sensitive and selective detection of peptides.



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