



## ASIA-PACIFIC FEDERATION FOR CLINICAL BIOCHEMISTRY AND LABORATORY MEDICINE

### Annual Report for 2013

#### 1. APFCB matters

##### ***Ordinary members***

The following National Societies are members of the APFCB:

1. Australasian Association of Clinical Biochemists (AACB)
2. Chinese Society of Laboratory Medicine (CSLM)
3. Hong Kong Society of Clinical Chemistry (HKSCC)
4. Association of Clinical Biochemists of India (ACBI)
5. Indonesian Association of Clinical Chemistry (IACC)
6. Japan Society of Clinical Chemistry (JSCC)
7. Korean Society of Clinical Chemistry (KSCC)
8. Malaysian Association of Clinical Biochemists (MACB)
9. Nepal Association for Medical Laboratory Sciences (NAMLS)
10. Pakistan Society of Chemical Pathologists (PSCP)
11. Philippine Association of Medical Technologists (PAMET)
12. Singapore Association of Clinical Biochemists (SACB)
13. Association for Clinical Biochemistry, Sri Lanka (ACBSL)
14. Chinese Association for Clinical Biochemistry, Taiwan (CACB)
15. Thailand Association of Clinical Biochemists (TACB)
16. Vietnamese Association of Clinical Biochemistry (VACB)

##### ***Corporate Members***

1. Abbott Diagnostics
2. Agappe Diagnostics Ltd
3. BD Diagnostics
4. Beckman Coulter
5. Bio-Rad
6. Diasorin Ltd
7. Diasys Diagnostic Systems, GmbH
8. Koprana Laboratories Ltd
9. Ortho-Clinical Diagnostics
10. PM Separations
11. Randox Laboratories
12. Roche Diagnostics
13. Sekisui Chemical Co
14. Shenzhen Mindray Bio-Medical Electronics Co Ltd
15. Siemens
16. Sukraa Software Solution Pvt Ltd

17. Sysmex
18. Technidata Medical Software

***Affiliate Members***

1. Chinese Association of Clinical Laboratory Management (CACLM)
2. Association of Medical Biochemists of India (AMBI)
3. Macao Laboratory Medicine Association (MLMA)

**Office Bearers (October 2010 till 31<sup>st</sup> December 2013)**

***Executive Board***

|                          |                                 |
|--------------------------|---------------------------------|
| President                | Leslie Lai (Malaysia)           |
| Immediate Past President | Joseph Lopez<br>(Malaysia)      |
| Vice-President           | Sunil Sethi (Singapore)         |
| Secretary                | Endang Hoyaranda<br>(Indonesia) |
| Treasurer                | Elizabeth Frank (India)         |
| Corporate Representative | Martin Fuhrer (Siemens)         |

***Chairs of Committees (November 2010 till 31<sup>st</sup> December 2013)***

|                                    |   |
|------------------------------------|---|
| Communications (C-Comm)            | Praveen Sharma (India)<br>Joseph Lopez (Malaysia)           |
| Congress and conferences<br>(C-CC) |   |
| Education (C-Edu)                  | Samuel Vasikaran<br>(Australia)<br>Tony Badrick (Australia) |
| Laboratory Management<br>(C-LM)    |   |
| Scientific (C-Sci)                 | Kiyoshi Ichihara (Japan)                                    |

***Honorary Executive Officer:*** Dr Johnson Wijaya (Indonesia)

**New EB (Term of office: 1 Jan 2014 till 31 December 2016)**

Elections for the new EB were held at the Council Meeting in Bali on 27<sup>th</sup> October 2013. The results of the elections are as follows:

|                |                              |
|----------------|------------------------------|
| President      | Leslie Lai (Malaysia)        |
| Vice President | Sunil Sethi (Singapore)      |
| Secretary      | Endang Hoyaranda (Indonesia) |

|                          |                         |
|--------------------------|-------------------------|
| Treasurer                | Elizabeth Frank (India) |
| Corporate Representative | Martin Fuhrer (Siemens) |

This means that Joseph Lopez from Malaysia remains as the Immediate Past President.

**Appointment of Chairs of Standing Committees (Term of office: 1 Jan 2014 till 31 December 2016)**

|   |   |
|---|---|
| Communications Committee (C-Comm)                     | Prof Praveen Sharma (India)             |
| Congress and Conference Committee (C-CC)              | Joseph Lopez (Malaysia)                 |
| Education and Laboratory Management Committee (C-ELM) | Associate Prof Tony Badrick (Australia) |
| Scientific Committee (C-Sci)                          | Prof Kiyoshi Ichihara (Japan)           |

**Memorandum of Understanding (MoU) between APFCB and World Association of Pathology and Laboratory Medicine (WASPaLM)**

An MoU between APFCB and WASPaLM was signed on 17 May 2011 during the IFCC WorldLab in Berlin by the Presidents of APFCB (Dr Leslie Lai) and WASPaLM (Prof Michael Oellerich). As an initial co-operation between APFCB and WASPaLM, WASPaLM granted its auspices to the 13<sup>th</sup> APFCB Congress in Bali and sponsored four speakers at the 13<sup>th</sup> APFCB Congress in Bali. A meeting was held between APFCB EB and WASPaLM EB at the APFCB Congress in Bali and it was agreed to have joint projects on laboratory accreditation and Chronic Kidney Disease (CKD) in the Asia-Pacific Region. The CKD project Chair is Graham Jones (Australia). This MoU will be renewed for a three year term in May 2014.

**Golden Jubilee Celebration**

VACB celebrated its Golden Jubilee in September 2013. Associate Prof Sunil Sethi, Vice President of APFCB represented the President of APFCB at this auspicious event where he handed the President of VACB, Prof Hoang Thi Bich Ngoc a memento from the APFCB.



VACB Golden Jubilee celebrations.

## 2. APFCB ACTIVITIES

### 1. APFCB Education Committee (C-Edu) Chair: Prof Samuel Vasikaran (Australia)

#### 1. APFCB Travelling Lectureships

The APFCB TL for 2013/14 is Prof Sunil Sethi of Singapore. Prof Sethi gave lectures on Managing Laboratory Informatics, Middleware and Process Control at the MACB Annual Scientific Meeting in June 2013, in Vietnam in September 2013 and at the APFCB Congress in Bali in October 2013. Other lectures are being planned in 2014.

#### 2. IFCC-Abbott Visiting Lecturer

Prof Howard Morris, (Vice President of IFCC) of the University of South Australia and South Australia Pathology has been nominated to be the IFCC-Abbott Visiting Lecturer for 2014. His topic is Vitamin D and Bone Metabolism. Those interested to host Prof Morris should contact the Chair of the Education and Laboratory Management Committee, Associate Prof Tony Badrick.

#### 3. APFCB Scholarships

Two APFCB scholarships of up to SGD 3,500 each were awarded for attendance at the APFCB Congress in Bali, October 2013. The recipients were Chi Mai of Vietnam and Surupa Basu of India. In addition, Saswati Das of India was awarded the APFCB-Abbott Travel Scholarship to the

value of up to SGD 5000, and Apilak Worachartcheewan, Wanvisa Treebuphachatsakul and Walanphorn Ungsawat of Thailand, Kisundeo Mehta of Nepal and Mu Yu of China were awarded APFCB-Siemens Travel Scholarships each to the value of up to SGD 3500 to attend the APFCB Congress in Bali in October 2013.

#### **4. Workshop at the APFCB Congress in Bali**

The Education Committee also organised the APFCB-sponsored workshop “Interpretation and commenting on laboratory results” at the APFCB Congress in Bali in October 2013. The speakers were Drs Gordon Challand, Ken Sikaris and Sam Vasikaran.

## **II. Scientific Committee (C-Sc)**

**Chair: Prof Kiyoshi Ichihara (Japan)**

### **1. Publication of papers on the 2009 Asian study for collaborative derivation of reference intervals.**

The Asian study conducted as a collaborative work of APFCB and the IFCC Committee on the Reference Intervals and Decision Limits (C-RIDL) was completed in 2009. The publication of two papers reporting the study results took a long time because of controversies over the new approaches employed in the study (The use of parametric method, latent abnormal value exclusion method, transference of centrally derived RIs by cross-comparison of common specimens, etc). With acceptance of a review supporting the study methodologies (Ichihara K, Boyd J. An appraisal of statistical procedures used in derivation of reference intervals. Clin Chem Lab Med 2010;48(11):1537–1551), the papers were finally accepted in 2013 as listed below. The Asian study in fact revealed evidence regarding the regional, age-, sex-, BMI related differences in a very conclusive way. The study also predicted the feasibility of expanding the study on a global scale by use of a panel of sera. The Asian study then led to the launch of the IFCC global study using the same methodologies coordinated by the C-RIDL.

1) Ichihara K, Ceriotti F, Tam TH, Sueyoshi S, Poon PM, Thong ML, et al. The Asian project for collaborative derivation of reference intervals: (1) strategy and major results of standardized analytes. Clin Chem Lab Med 2013; 51(7):1429–42

2) Ichihara K, Ceriotti F, Mori K, Huang YY, Shimizu Y, et al. The Asian project for collaborative derivation of reference intervals: (2) results of non-standardized analytes and transference of reference intervals to the participating laboratories on the basis of cross-comparison of test results. Clin Chem Lab Med 2013; 51(7):1443–57

## **2. Collaboration on the global study on reference values**

The study, planned and coordinated by C-RIDL (IFCC) was launched in December of 2011 after nearly two years of discussion by the committee, and a pilot study conducted in April of 2011. The objectives of the global study are 1) to establish country specific RIs in a harmonised way using the common C-RIDL protocol, and 2) to explore sources of variations of major analytes across the countries after alignment of test results through common measurement of a panel of sera prepared by C-RIDL. A total of 14 countries in five continents collaborate in the study. The following four Asian countries (members of the APFCB) are taking part in the global study.

The activity of each collaborating country from Asia as of August 2013 is as follows:

**Japan:** Leading the study with provision of data analytical service. 760 volunteers were recruited between 2012 and 2013 from Yamaguchi, Hiroshima and Osaka Universities. The measurement of 55 analytes was supported by Beckman-Coulter (BC) Japan.

**China:** In the first phase of the study, 480 volunteers were recruited in 2012 from Beijing National Hospital, coordinated by Dr. Jian Guo. The measurement of 35 analytes was supported by BC China. The second phase of the study was launched in March 2013, led by Dr. Ling Qiu of the Beijing Union Hospital, involving 7 provinces throughout mainland China. Recruitment of 2,800 (400×7) volunteers are to be completed by September 2013. The target analytes for the second phase were increased to 56.

**India:** Recruitment from 500 volunteers and the measurement will be completed by September of 2013 in P.D.Hinduja National Hospital and Medical Research Center, Mumbai, headed by Dr. Tester Ashavaid. BC, Abbott and Johnson & Johnson support the assay reagents for total of 55 analytes.

**Philippines:** 1,200 volunteers are being recruited by a team of 9 medical technologists in Iloilo city. The study is conducted under the auspices of the Philippine Association of Medical Technologists (PAMET), San Agustin University and the city municipal government. Siemens analysers are to be adopted for the measurement of 22 major biochemical analytes.

Meetings regarding the global study, including the Asian collaborators, were held over the past three years as listed below:

- 1) 15-16 May 2011 during the WorldMedLab in Berlin, Germany as the IFCC C-RIDL meeting
- 2) 26 July 2011 during the 2011 AACC in Atlanta, USA as the IFCC C-RIDL meeting
- 3) 4- 6 December 2011 in Beijing National Hospital in Beijing, China
- 4) 16 to 17 July 2012 during the 2012 AACC in Los Angeles as the IFCC C-RIDL meeting

- 5) 20-21 August 2012 in Hinduja National Hospital in Mumbai, India
- 6) 21-22 October 2012 in Iloilo city of the Philippines with a team of laboratory technicians
- 7) 25-26 February 2013 in Beijing with the team from the Beijing Union Hospital,
- 8) 19-20 May 2013 in Milan, Italy, as the IFCC C-RIDL meeting.
- 9) 28 July 2013 in Houston, USA, during the 2013 AACC as the IFCC C-RIDL meeting.

The results will be combined with those from the 2009 Asia study comprising test results of 72 analytes from 3,500 volunteers. The objective of the combined analysis is to obtain a comprehensive picture of evidence on sources of variations for commonly tested analytes (such as regionality, ethnicity, age, sex, BMI, smoking, alcohol, blood type related changes). An interactive web site viewing the study results is being built. The entire results from the last Asia study and the global study are to be presented and discussed during the 2013 Bali APFCB Congress scheduled on 29 October 2013.

Papers published as keynote papers on the global study are as follow:

- 1) Ichihara K, Ozarda Y, Klee G, Straseski J, Baumann N, Ishikura K. Utility of a panel of sera for the alignment of test results in the worldwide multicenter study on reference values. Clin Chem Lab Med 2013; 51(5):1007–25. 10.1515/cclm-2013-0248
- 2) Ozarda Y, Ichihara K, Barth J, Klee G. Protocol and standard operating procedures for common use in the worldwide multicenter study on reference values. Clin Chem Lab Med 2013; 51(5):1027–40.

### **3. Project on reference values (Project Lead: Dr Ronda Greaves)**

- 1) A joint project is under way on the standardisation of assays for testosterone and related analytes by use of mass spectrometry among the researchers in the APFCB region. In the RCPA Chemical Pathology QAP survey conducted in 2012 with participation of 130 labs, laboratories in the harmonisation working group attained very good results, all within the target ranges, thanks to the use of common calibrators and assay procedures.
- 2) A project on establishment of a mass-spectrometry based assay system for paediatric screening of neuroblastoma in Vietnam is also under way using the support fund provided by the APFCB in 2012.

The results of both projects were presented during the APFCB Congress in Bali.

### III. Laboratory Management Committee (C-LM) Chair: Associate Prof Tony Badrick (Australia)

#### 1. Quality Assurance/Quality Control Workshops

A workshop on pre-analytical errors was held in Hanoi (see Speciality Meeting under C-CC), Vietnam in March 2013. This was a day and a half workshop which attracted some 100 attendees from Vietnam, Thailand, the Philippines and Indonesia. The Workshop was planned and prepared by the APFCB and Becton Dickinson and was also very generously supported by Becton Dickinson.

#### 2. Environmental Initiative

One of the goals of the C-LM was to begin raising awareness amongst members of the APFCB of the importance of lessening the environmental impact of clinical laboratories. The aim would be to produce some detailed content for the new APFCB website and some planning has begun on this project.

Joseph Lopez and Tony Badrick have written a document “PROPOSALS FOR THE MITIGATION OF THE ENVIRONMENTAL IMPACT OF CLINICAL LABORATORIES” which will be the basis for further educational activities in the area of Environmental Awareness. A symposium on this topic was held at the Bali Congress in 2013.

#### 3. Needs Survey of Members for Quality/Accreditation Activities

This activity involved a Survey of the APFCB membership to determine their needs. The key findings are below.

#### APFCB Member Survey

| What educational activities would you like to see the APFCB provide? |                          |                |
|--|--------------------------|----------------|
| Answer Options   | Response Percent         | Response Count |
| Webinar  | 71.4%                    | 5              |
| Workshop   | 42.9%                    | 3              |
| Travelling Lecturer  | 57.1%                    | 4              |
| Specialty meeting  | 28.6%                    | 2              |
| Online activity  | 85.7%                    | 6              |
| Other (please specify)   |                          | 0              |
|  | <i>answered question</i> | <b>7</b>       |
|  | <i>skipped question</i>  | <b>0</b>       |



## APFCB Member Survey

What are the major topics you would to see covered in these activities?

| Answer Options                       | Response Percent         | Response Count |
|--------------------------------------|--------------------------|----------------|
| QA/QC                                | 71.4%                    | 5              |
| Management                           | 71.4%                    | 5              |
| Pre-analytical processes             | 28.6%                    | 2              |
| Laboratory Workflow                  | 42.9%                    | 3              |
| Result interpretation and commenting | 85.7%                    | 6              |
| Troponin                             | 14.3%                    | 1              |
| HbA1c                                | 42.9%                    | 3              |
| Quality management/ISO 15189         | 57.1%                    | 4              |
| Measurement of Uncertainty           | 71.4%                    | 5              |
| Accreditation and Certification      | 28.6%                    | 2              |
| Resource management                  | 28.6%                    | 2              |
| Quality improvement                  | 85.7%                    | 6              |
| Training and competence              | 42.9%                    | 3              |
| Quality indicators                   | 85.7%                    | 6              |
| Safety                               | 0.0%                     | 0              |
| Environmental impact                 | 0.0%                     | 0              |
| Renal markers                        | 57.1%                    | 4              |
| eGFR equations                       | 42.9%                    | 3              |
| Other (please specify)               |                          | 1              |
|                                      | <i>answered question</i> | <b>7</b>       |
|                                      | <i>skipped question</i>  | <b>0</b>       |

### 4. QA/QC Self-directed learning material for the APFCB Website

The committee is anxious to further develop the website and we are seeking material for the Committee website pages.

1. Quality management systems and ISO 15189
2. Leadership roles
3. Accreditation and certification issues
4. Resource management
5. Quality Improvement
6. Training and Competence
7. QC and QAP
8. Quality Indicators
9. Safety

#### **IV. Communications Committee (C-Comm)**

**Chair: Prof Praveen Sharma (India)**

##### **1. APFCB e-News**

The Chair of the Communications Committee is also the Editor of the APFCB e-News. As it was agreed by the Council, the committee started publishing the APFCB News as an online pdf copy from the 2010 issue. This has ensured wide reach of the APFCB e-News to all the members at no additional cost. The APFCB e-News 2010, 2011 and 2012 issues are available on the APFCB website. The 2013 issue will be out in the first quarter of 2014.

##### **2. APFCB Website**

The Chair of the Communications Committee was charged with the responsibility of launching the APFCB website and its coordination, maintenance and improvement ([www.apfcb.org](http://www.apfcb.org)). Dr MVR Reddy (India) has been assigned the responsibility of being the web editor. The site was successfully launched on 1 Nov 2011. Since then, it is regularly updated with comprehensive information on the organisation and activities of APFCB and its member societies. Access is made available through the website to the ongoing Scientific, Education and Laboratory Management Committee programmes of APFCB as well as the activities of the Communications and Congress Committee. There is also a photo gallery of relevant events. The website is also a source of information on the APFCB Congress and regional meetings as well as the APFCB Travelling Lecturer programme as well as future events. The APFCB e-News and annual reports are conveniently published online on this platform, making them readily available to all members. It also gives access to the APFCB webinars.

##### **3. Public Relations**

A power point presentation on the APFCB, its members and its activities has been developed by Mr Martin Fuhrer, Corporate Representative to the EB and is ready for use at member society conferences and at regional and international meetings to promote the APFCB. This presentation is being regularly updated by Mr Martin Fuhrer.

#### **V. Congress and Conferences Committee (C-CC)**

**Chair: Joseph Lopez (Malaysia)**

##### **1. 13<sup>th</sup> APFCB Congress**

The 13<sup>th</sup> APFCB Congress, held from 27<sup>th</sup> till 30<sup>th</sup> October 2013 at the Bali Nusa Dua Convention Center, was a huge success and feedback from participants has been very positive. There were 943 participants from 49 countries and 400 registrants from the corporate sector with 80 booths. IFCC, WASPaLM, EFLM, APFCB and several APFCB member societies

sponsored symposia and plenary speakers. Participants and accompanying persons from 49 countries played the angklung beautifully and melodiously in unison at the cultural night. The next APFCB congress will be in Taipei in 2016.



*Opening Ceremony, 27<sup>th</sup> October 2013.*



*Cultural Night, Garuda Wisnu Bencana Cultural Park, 29<sup>th</sup> October 2013.*

## **2. APFCB Speciality meeting**

In conjunction with the APFCB Committee for Laboratory Management and BD Diagnostics, the first APFCB Speciality Meeting was held in Hanoi from 18-19 March at the Melia Hotel in Hanoi. The theme of the meeting was “Quality Improvement in Laboratory Medicine through Pre-analytical Process Control”. There were approximately 80 participants in all with representation from Indonesia, the Philippines and Thailand, besides Vietnam. Despite the language difficulties faced by local participants, the real-time translation services organised by the sponsor appeared to have worked well. We thank BD for its sponsorship and excellent organisation of this meeting. They brought in participants from Thailand, the Philippines and Indonesia, besides the participants from Vietnam who formed the majority.

## **3. APFCB Auspices**

APFCB auspices were provided for the following meetings

- i. Research Workshop on “Inborn Errors of Metabolism & Metabolic Disorders” organised by the Department of Biochemistry, College of Medicine & JNM Hospital, India, March 7-8, 2013
- iii. EUROMEDLAB 2013, Milano, 19-23, May, 2013
- iv. 5th Vietnam Chemical Pathology Course. 2nd July 2013 (Melia Hotel, Hanoi) and 6th July 2013 (Intercontinental Hotel, Ho Chi Minh City)

## **4. Turning Science into Caring (TSIC)**

Abbott Laboratories has held TSIC meetings in the Asia-Pacific region over the past few years in conjunction with the IFCC. The purpose of these meetings is to bring laboratory and other healthcare professionals together to exchange information on trends in laboratory medicine. Following a discussion with a representative from Abbott at the EuroMedLab in Milan in May 2013, the APFCB was invited to become a partner of these meetings. An agreement to this effect was signed between the APFCB and Abbott on 22 July 2013 which will enable the APFCB to contribute to the planning of the scientific programme future TSIC meetings.

A TSIC meeting was held in Taipei, Taiwan on 23 and 24 September 2013. The APFCB Immediate Past President represented the APFCB at the opening of this meeting.

## **VI. Report by the Corporate Representative: Mr Martin Fuhrer, Siemens**

### **1. APFCB Specialty Meetings Opportunity**

APFCB Corporate members have become eligible to apply for APFCB auspices with the Congresses and Conferences Committee to promote meetings and attract a large professional participation. The guidelines and procedures for application can be accessed on the APFCB website under <http://apfcb.org/apfcb-guidelines.pdf>. The first Specialty meeting in this programme was organised by Becton Dickinson on 18-19 March 2013 in Hanoi, Vietnam covering the area of pre-analytical sample treatment.

### **2. IVD industry Management Information System**

EDMA (European Diagnostics Manufacturers Association) is cooperating with the APFCB to expand their very successful Management Information System (MIS) from Europe to Asia Pacific. This system will provide IVD companies with market data from the region. A first introduction of this system was held at the Corporate members meeting on 29 October 2013.

Report prepared by Dr Leslie Lai with contributions from Associate Prof Joseph Lopez, Dra Endang Hoyaranda, Mr Martin Fuhrer; Prof Kiyoshi Ichihara, Prof Sam Vasikaran, Associate Prof Tony Badrick, Prof Praveen Sharma and Dr July Kumalawati (Chair of the 13<sup>th</sup> APFCB Congress Organising Committee), 12 January 2014.

## Appendix 1. APFCB Speciality Meeting, Hanoi, Vietnam, 18-19 Mar 2013

### Scientific Programme

| Day/Time                  | Item   | Speaker                                   |
|---------------------------|--|---|
| <b><u>DAY 1</u></b>       |  |   |
| <b><u>18 Mar 2013</u></b> |  |   |
| 8.00-9.30                 | Registration   |   |
| 9.00-9.30                 | Opening – brief speeches by APFCB Vice-President, BD, VACB representative, Ministry of Health representative   |   |
| 9.30-10.00                | Introduction – laboratory errors and their impact on overall healthcare delivery system – new perspectives   | Adarshpal Singh                           |
| 10.00-10.30               | Choosing the right test and ordering tests: electronic versus paper  | Sunil Sethi                               |
| 10.30-11.00               | Coffee break   |   |
| 11.00-11.30               | Laboratory errors in the preanalytical phase – where and when do they occur?   | BD speaker                                |
| 11.30-12.00               | Informatics and automation in the preanalytical phase of clinical testing  | Sunil Sethi                               |
| 12.00 – 12.45             | Pre-analytical issues affecting clinical chemistry   | Joseph Lopez                              |
| 12.45-2.00                | Lunch  |   |
| 2.00-2.30                 | Pre-analytical issues affecting: <ul style="list-style-type: none"> <li>○ microbiology</li> <li>○ haematology</li> <li>○ transfusion medicine</li> </ul> | BD Speaker                                |
| 2.30-3.30                 | The ISO standard for the pre-analytical phase of testing   | Tony Badrick                              |
| 3.30-4.00                 | Coffee break   |   |
| 4.00-5.00                 | Standardization and new trends in preanalytical error prevention, detection, reporting and management – An interactive session                           | BD Speaker                                |
| <b><u>DAY 2</u></b>       |  |   |
| <b><u>19 Mar 2013</u></b> |  |   |
| 9.00-9.30                 | Quality Improvement in pre-analytical processes and measurement of QI improvements   | Tony Badrick                              |
| 9.30-10.00                | Key Incident Management and Monitoring (KIMM) in the pre-analytical phase  | Tony Badrick                              |
| 10.00-10.30               | Coffee break   |   |
| 10.30-12.30               | Interactive Workshop: Case studies of QI (using QI where participants work through some QI exercises)  | Facilitators: T Badrick, J Lopez, S Sethi |
| 12.30-2.00                | Lunch break  |   |

|           |   |                             |
|-----------|---|-----------------------------|
| 2.00-2.30 | Special lecture: Laboratory waste management                                  | Tony Badrick                |
| 2.30-3.30 | Capability building opportunities in Vietnam and<br>launch of new initiatives | BD and local<br>facilitator |
| 3.30      | Closing followed by coffee  |                             |