



APFCB News

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

2023

Issue 2

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of Committees, Elected 2023

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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.

Contact email: apfcbofficial@apfcbofficial.org

Cover page: A Beautiful View of the Three Gorges in China
Contributed by Dr. Tan It Koo, Founding and Past President
APFCB

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From the desk of Chief Editor, APFCB eNews



Prof. Pradeep Kumar Dabla
Chief Editor, APFCB eNews

My Dear Colleagues & Friends,

I am glad to present you with the 2nd issue of APFCB eNews, 2023. The APFCB executive board and council members with its conviction of promoting science and education in the region were always standing tall while promoting various programmes under different committees across all regions.

During the time, APFCB Committee–Communication & Publication (CP) has worked committedly to raise the communication standards and networking with the member societies & partners while updating addresses, office bearers, so that important information could reach to all members within time. Though not limited, we plan to extend communication via social media platforms, automated e–mailing and providing archived electronic information viz, webinars, educational videos and other modern tools.

In this issue we bring myriads of information, ranging from delineating reports from the members societies showcasing their efforts in adding scientific knowledge to the laboratory medicine, expert's opinion in laboratory quality management & artificial intelligence, special reports from IFCC Global Medical Lab Week celebrations 2023 & sustainable green labs. Industry partners have shown great enthusiasm while sharing reports for industry voice whether triage testing or non–invasive prenatal testing (NIPT).

It is always thrilling to share efforts by young scientists, the full report on 2nd IFCC Young Scientists' Forum organised in conjunction with IFCC World Lab Euro Med Lab 2023, and Rome is made available. APFCB Young Scientists Award Competition 2023 provided financial assistance to Young Scientists to show their abilities in IFCC congress. Lots of appreciations for the future leaders! APFCB auspices events calendar is also presented in this issue to promote scientific events under APFCB umbrella. Further, APFCB and the AACB are proud to host the APFCB Congress 2024 at Sydney Australia, so don't forget to visit the report.

However, APFCB eNews cannot be completed without the contributions of Dr. Tan It Koon, in the form of beautiful painting titled "A Beautiful View of the Three Gorges in China" and its mesmerising description.

Team APFCB C–CP thanks to APFCB family and invite contributions for the next issue, year 2024.

Happy Reading!!
Best Wishes
Team APFCB C-CP





From the desk of APFCB President



Dr. Tony Badrick
President, APFCB

Welcome to the second edition of the APFCB News letter for 2023.

The new Executive Board and Chairs of Committees have been working this year to provide more resources for the Federation to progress. The work of the APFCB is undertaken entirely voluntarily by the EB and Chairs. This includes all the secretarial services, the organisation of educational activities such as scholarships, and communications. This has been a labour of love by the officers for over thirty years. However, there have been problems, mainly relating to the transition when one officer takes over from another. The emails change and some documents are lost as they are held, often unknowingly, by the ex-office holder. To provide a better service to the APFCB and the officers, the EB has entered into an agreement with the AACB to supply a secretariat to the APFCB. This service will allow the EB to develop the organisation further. If you wish to contact the APFCB, please use the following

Email: secretariat@apfcg.org

APFCB Secretariat now available!

The Secretariat will provide a repository for essential APFCB documents and records.

The Secretariat will be developed to keep a database of Member Organisations and their key contacts and Office holders.

Member Organisations are invited to contact the APFCB Secretariat for enquiries related to APFCB activities, and to contact the APFCB Executive Board and Committees.

The APFCB Secretariat is run by AACB Services Pty Ltd on behalf of the APFCB.

The APFCB Newsletter showcases the activities of the member organisations, so please take time to read these.

In 2024, the APFCB Congress will take place in Sydney. This is the major activity of the APFCB. Please watch the progress of the developing program and see if you may be able to attend.

Best Wishes

President, APFCB

Dr. Tony Badrick



“Order of Australia” Award to Dr. Tony Badrick, APFCB President



Dr. Tony Badrick
APFCB President

The Asia Pacific Federation of Clinical Chemistry (APFCB) proudly announce that APFCB President, **Dr. Tony Badrick** has been awarded the **“Member of the Order of Australia” Award, the year 2023** for his distinguished services in the field of laboratory medicine, lab quality management, and education.

Currently, he is working as CEO of the RCPAQAP and the deputy Chief Examiner and Chair of the Faculty of Science of the Royal College of Pathologists of Australasia. He completed his services as President of the Australasian Association of Clinical Biochemists (2003– 2007), Chair of the Education and Laboratory Management Committee of the Asian Pacific Federation of Clinical Biochemistry, and Vice President of the Australian Institute of Medical Scientists.

The **Order of Australia award** is instituted by Her Majesty the Queen on 14 February 1975, was established as “an Australian society of honour for the purpose of according recognition to Australian citizens and other persons for achievement or for meritorious service”. It is the pre-eminent way Australians recognise achievements that benefit or bring honour to the Australian community. In the Australian honours system, appointments to and awards in the Order of Australia confer recognition for outstanding achievement and service.

Dr Tony Badrick truly deserves the honor of “Member of the Order of Australia” for his services and immense contribution towards the community and science.

Report by:

Prof. Pradeep Kumar Dabla
Chief Editor, APFCB eNews





APFCB 16th Congress 2024 in conjunction with the AACB 61st Annual Scientific Conference

The Asia-Pacific Federation for Clinical Biochemistry and Laboratory Medicine (APFCB) and the Australasian Association for Clinical Biochemistry and Laboratory Medicine (AACB) are proud to host the APFCB Congress 2024.

The scientific program will deliver the most recent scientific research related to laboratory medicine by world renowned experts. The scientific program enables those providing a clinical biochemistry testing service and users of biochemical analyses to update knowledge on recent developments and advances, share expertise and experience, as well as discuss problems in their field of practice.

Sydney is one of the world’s most picturesque cities that is surrounded by a majestic harbor and scattered with beaches, national parks and iconic buildings. It is a city that is inviting you to explore before, during and after the Congress. Catch a ferry across the harbor to take in a panoramic view of the iconic Sydney Harbour Bridge and Sydney Opera House, cuddle up to a cute Koala at Taronga Zoo Sydney or discover the city from above at the Sydney Eye Tower.

On our beautiful Sydney spring evenings we will deliver the unique experience of Australia; enjoy indigenous traditional dance; our superbly fresh food and extraordinary wine and a night-life of excitement with opportunities to socialise with old friends and to make new ones.

An exciting range of opportunities have been developed, each containing benefits that will ensure your Organisation receives maximum exposure. Sponsorship packages have been designed to suit a range of budgets. Early confirmation of your Conference sponsorship will ensure an even higher level of exposure.

For sponsorship opportunities visit our [website](#).

Key Dates

Call for Abstracts Open October 2023
Early Bird Registration Open October 2023
Call for Abstracts Close January 2024
Notifications to Authors May 2024
Standard Registration Open July 2024

APFCB
CONGRESS
Asia-Pacific Federation for Clinical Biochemistry and
Laboratory Medicine (APFCB) Congress 2024
31 October - 3 November 2024 | ICC Sydney, Australia

Contact Us

Are you interested to hear more? Chat with us!
APFCB 2024 Conference Secretariat
ICMS Australasia
GPO Box 3270
+61 (02) 9254 5000
info@apfcbcongress2024.org



APFCB Supports Young Scientists to show their Abilities in IFCC Congress

IFCC–EFLM WORLDLAB–EUROMEDLAB 2023 in Roma, Italy

Dr. Wei Cui
Chair, APFCB-Education Committee

APFCB Young Scientists Award Competition 2023 report:

“It was my first international conference and was a great pleasure for me to attend such an extraordinary event. All the sessions were well organized and very beneficial, I thoroughly enjoyed.” – Dr. Monica Irungbam, senior resident, Govind Ballabh Pant Institute of Postgraduate Medical Education and Research, New Delhi, India

“My Dream come true, with award from APFCB I can to take part in this event to gain scientific experience both personally and professionally from the experts and young scientists.”– Siska Darmayanti, product lead, PT. Prodia Widyahusada Tbk, Jakarta, Indonesia

“Attending the prestigious IFCC–Euro Med Lab 2023 in the enchanting city of Rome was an exhilarating experience that I will cherish for a lifetime”–Chandra Agung Purnama, faculty of pharmacy, Universitas Padjadjaran, Jatinangor, Indonesia.

“It was an amazing, memorable experience to be at the congress. All the scientific sessions were enriched with knowledge and provided me with a future vision for my academic work. “Dr. Taru Goyal, senior demonstrator, Department of Pediatrics, Postgraduate Institute of Medical Education & Research, Chandigarh, India.

As a scientific organization committed to promote a variety of scientific and educational programs for clinical biochemists in Asia–Pacific region, APFCB keeps up efforts on fostering the scientific potential of young scientists. In April, APFCB Education Committee organized a Young Scientists Award Competition, which could provide financial support for young scientists to attend IFCC–EFLM WorldLab/EuroMedLab in Rome, Italy, from May 21–25, 2023.

After a thorough assessment of applicants’ abstracts which have been accepted by the congress, ten winners were selected. They were invited to the congress and IFCC Young Scientists FORUM in Rome. The Competition Award could cover the winners’ expenses, including travel and hotel expenses. Eight of them finally attended the congress. They are Rina



Scientific journey. The congress, coupled with the warmth of international connections and the grandeur of Rome, left an indelible impression on my professional and personal growth. The knowledge gained, the insights shared, and the bonds formed have enriched my understanding of the scientific landscape and ignited a renewed passion for pushing the boundaries of knowledge. I am profoundly grateful for the opportunity to participate in this remarkable event and eagerly look forward to future endeavors that will continue to shape my path as a young scientist.” – Chandra Agung Purnama, faculty of pharmacy, Universitas Padjadjaran, Jatinangor, Indonesia.

“The conference also gave me the opportunity to meet colleague from other countries and it was a delightful experience discussing our research work. I have created some contacts which will help me to improve my research work. Thank you for this opportunity and looking forward to actively participate in any events or activities that will come.” – Dr. Monica Irungbam, senior resident, Govind Ballabh Pant Institute of Postgraduate Medical Education and Research, New Delhi, India

“The opportunity to be a part of the young scientist forum was especially wonderful, as it is such a great platform to have one-to-one interaction of your scientific ideas with the young scientists. The young scientist award is a great recognition for young scientists who want to participate in such grand conferences but are hindered due to lack of financial support and it surely is a motivation for the entire young scientist fraternity.” – Dr. Taru Goyal, senior demonstrator, Department of Pediatrics, Postgraduate Institute of Medical Education & Research, Chandigarh, India.

“My experience at the Euromedlab Rome Congress 2023 was transformative, invigorating my passion for laboratory medicine and inspiring me to reach new heights. I also thankful I had a nice time site seeing Rome City. By sharing my journey, I hope to empower young scientists to seize opportunities, push boundaries, and make a lasting impact in their respective fields. Let us embark on this collective journey towards scientific excellence.” – Rina Triana, Research Support Head, PT. Prodia Widyahusada Tbk, Jakarta, Indonesia.

“From the topics, those insights will help me better understand the important breakthroughs of Clinical Chemistry in Medical Laboratory applications, thus allowing me to share this with my colleagues and initiate applicable ideas for innovations in health-care. Furthermore, I aspire to use the new knowledge to contribute to my work and the society by implementing (digital) technology aspects for a more personal and precise health-care that aligns with my company's vision” – Siska Darmayanti, product lead, PT. Prodia Widyahusada Tbk, Jakarta, Indonesia.



Kawaguchi (Japan), Siska Darmayanti (Indonesia), Taru Goyal (India), Monica Irungbam (India), Rina Triana (Indonesia), Chandra Agung Purnama (Indonesia), Juliyatin Putri Utami (Indonesia), Aktaruddin Arief Santoso (Indonesia)

For all the winners, the meeting was impressive and fruitful. Most important, this experience is critically helpful for their scientific and career success in the future.



Photo courtesy: Dr. Taru Goyal



Photo courtesy: Chandra Agung Purnama

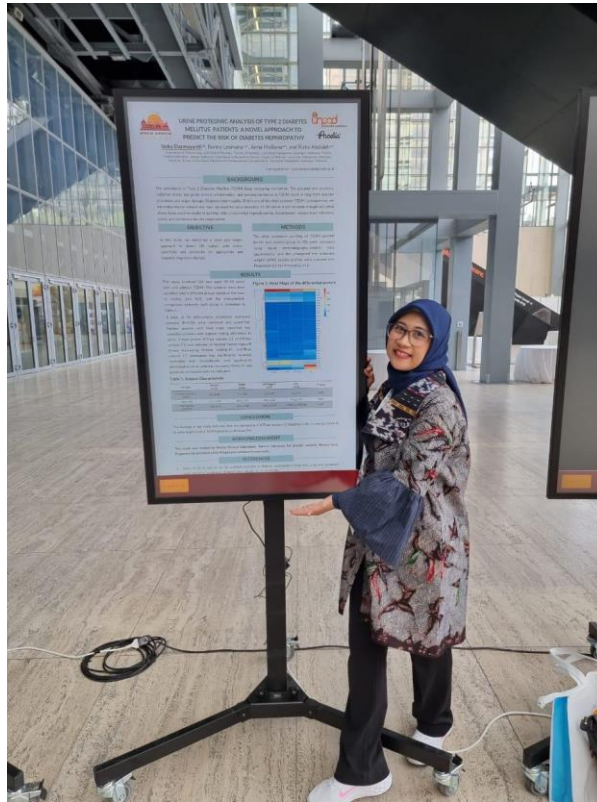


Photo courtesy: Siska Darmayanti



Photo courtesy: Rina Triana



Photo courtesy: Dr. Monica Irungbam



Photo courtesy: Chandra Agung Purnama

National Society Report – CACB Taiwan

Prepared by Dr. Ching-Ying Kuo, Secretary General, CACB-Taiwan

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NAME OF PRESIDENT & EMAIL ADDRESS	Sandy Huey-Jen Hsu sandyhsu@ntu.edu.tw
NAME OF NATIONAL REPRESENTATIVE TO APFCB & EMAIL ADDRESS	Woei-horng Fang whfang@ntu.edu.tw

REPORT ON SOCIETY ACTIVITIES



CACB held its annual conference and scientific symposium in conjunction with the 37th Joint Annual Conference of Biomedical Science (JACBS) at the National Defense Medical University Campus, Taipei on March 18th and 19th, 2023. The main theme for JACBS this year was “Metabolism in Human Health”. Four speakers were invited to present the progress on metabolomics and its clinical applications. Professor Andrew Hoofnagle, Director of Division of Chemistry, Department of Laboratory Medicine and Pathology University of Washington, delivered a keynote speech on “Clinical Metabolomics: Current state and future directions”. Professor Ming-Shi Shiao, Consultant and CRO, Geneon Link, and adjunct Professor, Graduate Institute of Traditional Medicine, National Yang Ming Chau Ton University, presented “Metabolomics Enables Precision Medicine”. Professor Jentaie Shiea from National Sun Yat-sen University talked about “Rapid Characterization and Imaging of Drugs and Potential Metabolic Disease Biomarkers on Human Skin with Ambient Ionization Tandem Mass Spectrometry”. Professor Tjin-Shing Jap, Physician, Division of Endocrinology and Metabolism, Taipei-Veterans General Hospital shared “The laboratory evaluation of glucose and lipid metabolism from Biochemical perspectives”. Following the symposium, student’s research oral presentation competition and poster contest were also held. Overall, the two-day conference was very successful and truly an enjoyable academic gathering for the attending members of CACB.

CACB also invited Professor Hoofnagle to give a lecture entitled "Clinical Mass Spectrometry" at the College of Medicine, National Taiwan University. In this lecture, Professor Hoofnagle introduced the application of mass spectrometry in clinical settings and compared it with immunoassays. Professor Hoofnagle's presentation provided important insights into the development of clinical mass spectrometry.



(Photo 1) Dr. Andrew Hoofnagle delivered a keynote speech at the Annual General Meeting 2023.



(Photo 2) CACB board members and the symposium speakers Drs. Tjin-Shing Jap (back, 2nd from the left), Ming-Shi Shiao (back, 3rd from the left), Jentaie Shiea (back, 3rd from the right) in Annual General Meeting 2023.



(Photo 3) Dr. Hoofnagle and the audience at National Taiwan University College of Medicine.

Upcoming events for 2023:

CACB is planning to hold an educational session to promote AACC Learning Lab. The session will be held in conjunction with the annual meeting of Taiwan Society of Laboratory Medicine in Taichung on November 18th, 2023.

National Society Report- SACB, Singapore

PRESIDENT (APFCb rep)	Dr Leslie Lam leslie.lam@parkwaylabs.com.sg
Secretary	Dr Tan Jun Guan
treasurer	Mr Johnson Setoh
Asst Secretary	Ms Siti Ramah
Council Members	Dr Kho Shu Hui Ms Joanne Lee Ms Chong Ai Teng
Co-opted Members	Ms Ummi Kulsum Ms Foo En Xin



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ANNUAL SCIENTIFIC MEETING 2023

The Singapore Association of Clinical Biochemists (SACB) held its Annual Scientific Meeting (ASM) on 11th March 2023 at M Hotel Singapore. This marked a remarkable milestone as not only was this the association's first in-person gathering since the onset of the COVID-19 pandemic, it was also the first scientific meeting led by a new President of SACB. Amidst an air of anticipation and camaraderie, over 200 delegates graced the event, with 11 industry partners lending their unwavering support. Presiding over the event was none other than the 4th President of SACB, Dr. Leslie Lam. He eloquently expressed the collective sentiments of the delegates who had looked forward to reconnect face-to-face after enduring a three-year hiatus.

A pivotal highlight of the event was the unveiling of the new SACB logo and the new SACB website [<https://sacb.org.sg/>]. In commemoration of this momentous occasion, we introduced our first Polo T-shirt featuring our new logo. With this new refreshed identity, it represents a fresh chapter and renewed commitment to advancing laboratory medicine in Singapore.



SACB Polo T-Shirt

ANNUAL SCIENTIFIC MEETING 2023

The heart of the Annual Scientific Meeting lay in its diverse array of expert speakers, totaling six accomplished individuals who delivered captivating presentations on a range of topics. Among them were esteemed College of American Pathologist (CAP) Inspectors, Dr. C. Robert Biased and Dr. Kailash B Sharma, who provided valuable insights on “Ensuring High Quality Laboratory Practices”. Additionally, Dr. Peh Bee Keow, Region Medical & Scientific Affairs Manager at Roche Diagnostics Asia Pacific, delved into the pressing subject of “Alzheimer’s Disease Now and in Future”, enlightening the audiences with studies and projections. Further enriching the scientific discourse, Dr. Poh Tze Wei, Scientific Marketing and Digital Marketing Leader at Beckman Coulter, offered a comprehensive overview of diabetes and its test panel. Meanwhile, Dr. Peter Deman, International Scientific and Professional Affairs Manager at Bio-Rad Quality Control Division, shared an insightful talk on “New Quality Control Trend in the Clinical Laboratory”. To complete this meeting, Mr. Norizhar Bin Mohamed Zakaria, Lab Consulting Manager at Siemens Healthcare shared the latest advancements in their programme in his presentation, “Solutions and Tools to Support Quality Management in the Laboratory. Digitalisation to Drive Quality”. Overall, the event can be deemed a resounding success, given the rekindling of valuable connections and the unmistakable sense of contentment expressed by the attendees.





SACB President, Dr Leslie Lam presenting tokens of appreciation to our guest speakers.

ANNUAL GENERAL MEETING 2023

The Singapore Association of Clinical Biochemists (SACB) also held its Annual General Meeting (AGM) concurrently with its Annual Scientific Meeting on 11th March 2023 at M Hotel Singapore. During our AGM 2023, Mr. Johnson Setoh, SACB treasurer, presented the association's summary of activities and financial statement of FY21. The council also had the opportunity to propose various constitution amendments and our Ordinary members were able to exercise their voting rights in favour of the proposed changes.



Our council members registering our Ordinary members to ensure sufficient quorum is met for proposed changes to the the Constitution.



SACB Treasurer, Mr. Johnson Setoh presenting the financial statements for FY21 to our members.

SACB EDUCATION PROGRAMME 2022

The Singapore Association of Clinical Biochemists (SACB) successfully concluded its annual ten-week education programme series, which took place every Wednesday, 7th September 2022 to 9th November 2022. The programme was conducted via a hybrid mode, utilising both Zoom and physical attendance. Notably, the education programme garnered significant interest, attracting 213 participants from various institutions across Singapore.

Focusing on the crucial domain of laboratory medicine, the comprehensive series delved into a diverse array of topics, skillfully curated to enhance participants' knowledge and proficiency in the field. Esteemed experts and practitioners were invited to share their insights and expertise, ensuring a high standard of educational content. The educational sessions featured distinguished speakers who led thought-provoking discussions, shedding light on critical subjects.

With a comprehensive and diverse range of topics Discussed in the annual education programme series. The participants were able to gain valuable insights into various aspects of laboratory medicine.



Physical attendees for our education programme

CELEBRATING IFCC 70TH ANNIVERSARY

In commemoration of IFCC's remarkable 70-years journey in advancing excellence in laboratory medicine, SACB proudly extends its felicitations. The 4th President of SACB, Dr. Leslie Lam, and the dedicated team show their appreciation by offering a photo to honour the IFCC's significant global leadership in this pivotal field of medical science.



SACB congratulates IFCC for 70 years of global leadership in laboratory medicine.

National Society Report- IACC, Indonesia



Indonesian Association of Clinical Chemistry Report
 Arwin Prasasto-hkki.secretariat@gmail.com

IFCC VISITING LECTURE

The President of the IFCC (International Federation of Clinical Chemistry and Laboratory Medicine), Prof. Khosrow Adeli Ph.D., FACB, DABCC, FAACC, visited Indonesia from March 23–25, 2023. The IACC (Indonesian Association of Clinical Chemistry) hosted a number of events during the course of the three-day visit.

On March 23, the IACC invited Perhimpunan Dokter Spesialis Patologi Klinik Indonesia- PDS PATKLIN (Indonesian Association for Clinical Pathologists and Laboratory Medicine) and Persatuan Ahli Teknologi Laboratorium Medik Indonesia-PATELKI (Indonesian Association of Medical Laboratory Technologists) to hear Prof. Khosrow discuss his experience on the launching of the Caliper Project, a study on laboratory reference range for children. The IACC intends to conduct a PIPER STUDY—research on the pediatric laboratory reference ranges in Indonesia in the future. The discussion which took place on the ninth floor of Prodia Tower was attended by 2 representatives from PDS PATKLIN, and 2 representatives from PATELKI.



Day 2 of Prof Khosrow Adeli's visit on March 24, 2023 morning, started with a visit to the RSCM (Cipto Mangunkusumo Hospital), accompanied by the IACC team, Dra. Endang W Horayanda, Dr. Thyrsa L Darmadi, SpPK and Mr. Krist Haksa together with 2 young staff from the RSCM Clinical Pathology Department, namely Dr. Reiva SpPK and Dr. Sanny, SpPK. We saw the flow of the newborn screening program at RSCM. RSCM is a national referral hospital and a teaching hospital of the University of Indonesia. Prof. Khosrow Adeli visited Building A which is an inpatient ward building, and he saw how the 48 hour old baby's dried blood sample on filtered paper was taken by the RSCM Laboratory Technologist. After leaving Building A, Prof. Khosrow went to the RSCM Clinical Pathology Laboratory to see how dried blood samples of neonates which were sent to RSCM from various locations outside of Jakarta were handled by the laboratory. Following that, Prof. Khosrow Adeli gave a lecture to the Clinical Pathology Specialist Residents on newborn screening exams and his working experiences at Sick Kids Hospital in Ontario, Canada. Over 50 residency students, 5 consultants, and members of the RSCM Clinical Pathology team attended the event. The participants were quite engaged and directly posed several questions to Prof. Khosrow. In the afternoon at the Grand Mansion Hotel, Menteng, IACC held a Round Table Discussion on the topic POCT in the Emergency Setting,

which was presented by 3 speakers, namely, Prof. Khosrow Adeli, Dr. July Kumalawati, SpPK (K), DMM and Dr. Antonius Pudjiadi, SpA (K). Prof. Khosrow Adeli spoke about POCT Management in Healthcare Setting: Experience Sharing from Canada, Dr. July Kumalawati presented POCT Management in Hospital: Experience Sharing and Perspective from Indonesia National Reference.

Hospital, and Dr. Antonius Pudjiadi presented the benefits of POCT from a Clinician Perspective. This RTD was guided by Prof. Dr. Marzuki Suryaatmadja, SpPK (K). The RTD event was held in a hybrid manner, with 60 offline participants and 37 online participants.



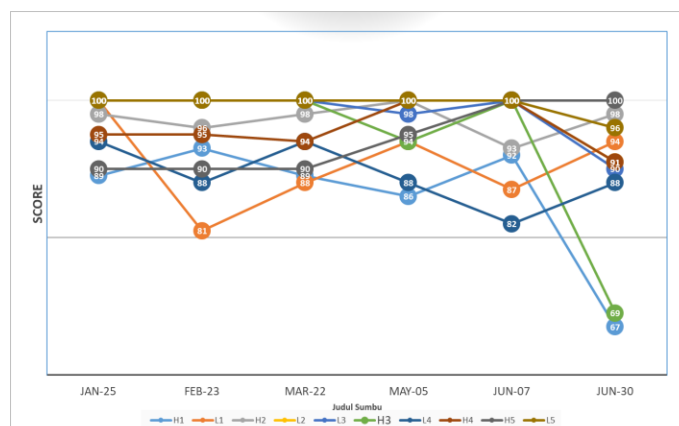
On the 3rd day, March 25, 2023, a symposium and panel discussion on newborn screening was held at the Grand Mansion Hotel, Menteng. The newborn screening symposium was opened with remarks and a plenary lecture by the representative of the Minister of Health, Dr. Lovely Daisy, MKM as Acting Director of Nutrition and Mother and Child Health. Dr Lovely Daisy presented the Indonesian Ministry of Health Policy on Newborn Screening Program for Congenital Hypothyroidism and Other Congenital Diseases. After that, Prof. Khosrow Adeli presented the IFCC Initiatives on Newborn Screening. The event continued with a presentation

by Prof. Dr.dr. Aman B PulunganSpA (K), FAAP, FRCPI (Hon) about the Opportunity of CAH screening in the Newborn in Indonesia. The next speaker was Prof. Aw Tar Choon, MBBS, MMed, MRCP, FRCPA, FRCP, FAMS, MPP who presented Neonatal Blood Screening Singapore Experiences: Using Cord Blood Specimen. The symposium session was guided by Dr. Lia G Partakusuma, SpPK (K), MM, MARS. After the industrial symposium and break, the event continued with a panel discussion consisting of 2 speakers, namely Dr.dr. Merci Monica Pasaribu, SpPK (K) and Prof. Khosrow Adeli. This panel discussion was hosted by Dr. Thyrza L Darmadi, SpPK. Dr Merci presented challenges in Newborn Screening from Laboratory Perspective, Prof Khosrow Adeli presented Experiences in Overcoming Laboratory Challenges of Newborn Screening. The symposium and newborn screening panel discussions were held in a hybrid manner, with 70 participants attending physically at the hotel and 51 online participants attending the zoom platform.



EXTERNAL QUALITY ASSURANCE PROGRAM FROM IFCC

This external quality assurance program from IFCC has been going on since 2022. This year, IACC added 5 more labs to this program. A total of 10 labs (3 private labs, 2 public labs, 2 private hospitals and 3 public hospitals) have joined this program. IFCC sends a sample in each quarter. The results are excellent, with 10 labs averaging 94 from 100 between January and June 2023.



RE-ANALYTICAL QUALITY IMPROVEMENT PROGRAM

One of the programs conducted by IACC is May I Help You Campaign MIHYC). This campaign has been going on since 2011. This campaign intended to improve the pre-analytical quality in Indonesian laboratories. From January to July 2023, MIHYC assessors have assessed 6 laboratories (1 private lab and 5 public hospitals). There are 4 more hospitals to be assessed this year.

A Pre-analytical Workshop was also held by IACC and ARSADA (Asosiasi Rumah Sakit Daerah – Indonesian Regional Public Hospital Association) on July 21-22, 2023. Speakers were IACC members. This workshop was attended by around 40 participants from Greater Jakarta, North Sumatera, and Lampung. Attendees are clinical pathologists and laboratory technicians.

**NEWBORN SCREENING WEEK:**

IACC held The Newborn Screening Week from June 23 to July 1, 2023. This campaign contained series of events, including social activities (free lab tests), seminars for congenital hypothyroid screening, workshops on pre-analytics and analytics for congenital hypothyroid screening, also Instagram Live to promote awareness for congenital hypothyroidism.

Workshop, Public seminar and social activities were held in Pasar Minggu Public Hospital on June 23-24, 2023 at 8 AM to 12 PM. There were 29 attendees, 2 speakers, 5 instructors, and 9 committees for workshops.

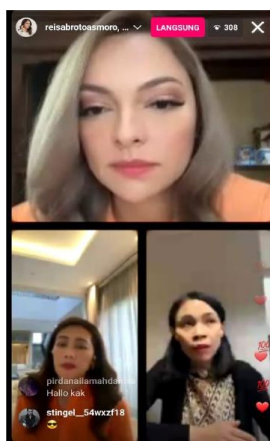


There were 48 attendees, 16 volunteers for social activities, 2 speakers (Dr. Stephanie Adelia, Sp.A and Dr. Nurbani, Sp.A) and 8 committees for public seminar and social activities.





Instagram Live was held on June 28, 2023. It was viewed by 650-690 people. The speakers were Dr. Yosanti Elsa, Sp.PK (K) and Dr. Frida Soesanti, Sp.A (K) with Dr. Reisa Brotoasmoro as the host.



The Newborn Screening Week activities were also carried out in various cities in Indonesia (Solo, Surabaya, Lampung, etc.). Activities carried out were seminars, social services and workshops.



In Lampung, IACC Lampung collaborated with Indonesian TV Station to do an educational program on hypothyroid screening awareness.



The final event was the Newborn Screening Webinar. This webinar was attended by 238 people (pediatricians, clinical pathologists, lab techs, medical doctors, etc.). There were 6 speakers for this webinar.



National Society Report- PSCP Pakistan

Chemiluminescence : The Queen of Immunoassays Series of Seminars Jointly Organized by Pakistan Society of Chemical Pathologists (PSCP) and SNIBE (China)

A series of seminars were jointly organized by PSCP and SNIBE (China) at various places in Pakistan on the topic "Chemiluminescence: The Queen of Immunoassay". In these seminars speakers highlighted the high analytical sensitivity of chemiluminescence technology and created awareness about the availability of a state-of-the-art chemiluminescence-based autoanalysers.



Seminar at Quaide Azam Medical College Bahawalpur



Prof. Aamir Ijaz Delivering Lecture



Dr. Sidra Ghazzanfar moderating a seminar in Sialkot



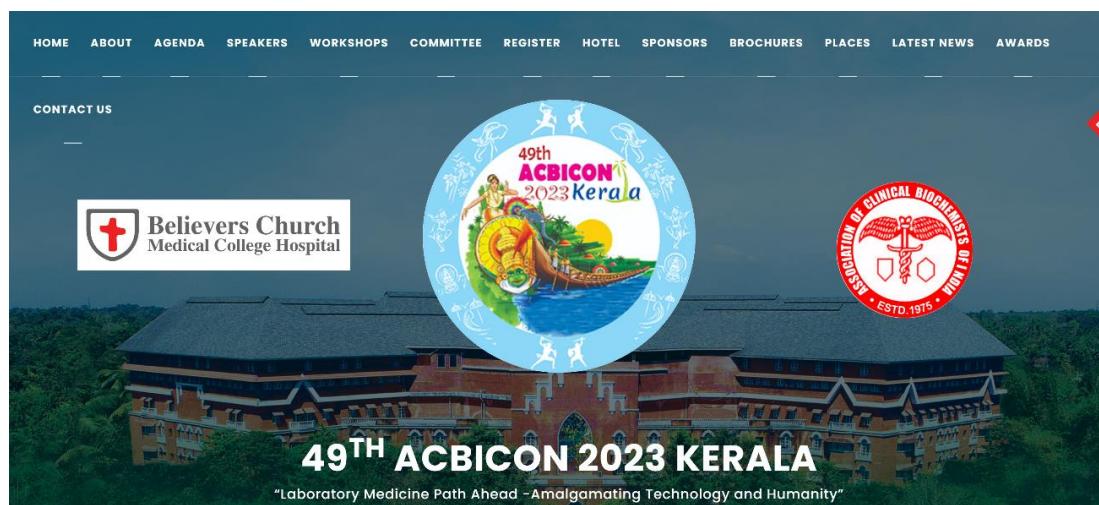
Two webinars and 26 Seminars were held during from 2021 to 2023 at Lahore, Peshawar, Rawalpindi, Karachi, Gujranwala, Multan, Faisalabad, Quetta, Hyderabad, Sukkur, Bahawalpur, Sialkot, Abbottabad and Sargodha (conducted even twice in some cities).

Some Posters of the seminars conducted are as below:

National Society Report- ACBI India

FORTHCOMING EVENT FOR 2023:

1. This year the Annual National Conference will be held in Thiruvananthapuram (Trivandrum) Kerala from 13th to 16th September 2023.



God's Own Country, Kerala, as it is known has figured this year in "New York Times Top 52 Destinations" in the world. Kerala offers a breathtaking backdrop for this conference. With its lush green landscapes, serene backwaters, and rich cultural heritage, it is the perfect destination to inspire creativity and foster scientific exchange. In addition to the scientific program, we have organized social events and excursions that will allow you to experience the vibrant culture, warm hospitality, and natural beauty of Kerala.

Welcome Message from Organizing Secretary, Dr. Kannan Vaidyanathan



It gives me great pleasure to invite you all for the 49th Annual Conference of the Association of Clinical Biochemists of India (ACBI) "49th ACBICON 2023 Kerala" organized jointly under the auspices of Believers Church Medical College Hospital (BCMCH), Thiruvalla and the ACBI in the capital city of Kerala, Thiruvananthapuram. The dates of the conference are 14th - 16th September 2023 with a number of exciting pre-conference workshops on 13th September 2023. The theme of ACBICON 2023 Kerala is "Laboratory Medicine Path Ahead -Amalgamating Technology and Humanity." Our goal is to provide an engaging and intellectually stimulating environment where experts from various subfields of clinical biochemistry can discuss the latest

developments, cutting-edge research, and innovative technologies. Through keynote lectures, plenary sessions, symposia, workshops, and poster presentations, we aim to create a vibrant platform for knowledge dissemination and networking. For the first time in the history of ACBI, this year we are opening the exhibition to the public.

The venue for the main conference is Al Saj Convention Center, Kazhakoottam, Thiruvananthapuram, which is only 20 minutes drive from International Airport Thiruvananthapuram.

I encourage you to actively participate in the conference, present your research findings, and engage in fruitful discussions with fellow delegates. ACBICON 2023, Kerala will not only provide you with a valuable learning experience but also offer ample opportunities to forge new professional connections and collaborations.

I would like to express my sincere gratitude to our esteemed speakers, sponsors, and the organizing committee members for their valuable contributions and support in making ACBICON 2023, Kerala a reality. Without their dedication, this conference would not have been possible.

Once again, I extend a warm welcome to all participants, both national and international, to ACBICON 2023 in Kerala. Let us come together, learn from each other, and create lasting memories.

See you in Kerala!

Dr. Kannan Vaidyanathan

Organizing Secretary, ACBICON 2023, Kerala

2. Scientific activities held in different parts of the country under ACBI banner:

a. ACBI WB Chapter had organized an outreach conference on “Translational Research and Diagnostics” at Gorumara Nest, Gorumara, Jalpaiguri District, West Bengal on June 16 and 17, 2023.



ACBICON ODISHA 2023



ACBICON ODISHA 2023



Winners, Post-graduate Immunology quiz



Runners-up, Post-graduate Immunology quiz



Group Photo with all delegates

c. The 3rd workshop on Basic Molecular Techniques was held in AIIMS Jodhpur from 14th to 18th March 2023. The workshop was organized by the Department of Biochemistry, All India Institute of Medical Sciences, Jodhpur under the aegis of the Rajasthan Association of Clinical Biochemists India. It was helmed by Dr. Mithu Banerjee, HOD Biochemistry, AIIMS, Jodhpur and Dr. Dharmveer Yadav, organizing secretary.



Report compiled by Dr. Rajiv R Sinha, General Secretary, ACBI.



National Society Report- JSCC, Japan

Hideo Sakamoto, Ph.D. International Exchange Committee of JSCC

The Japan Society of Clinical Chemistry (JSCC) has recently launched a new program called the Student Award from 2023 to acknowledge exceptional accomplishments by students in clinical chemistry.

The JSCC Student Award is a prestigious recognition bestowed upon student members of the JSCC who have demonstrated remarkable research skills in the field of clinical chemistry. This award highlights the outstanding contributions made by students toward the advancement of clinical chemistry and acknowledges their potential to make a significant impact in the field. The JSCC recognizes the importance of fostering and encouraging excellence in research amongst its student members and believes that this award will inspire future generations of clinical chemists to aim for excellence.

To be eligible for the JSCC Student Award, applicants must meet the following criteria: 1) They must be a "Student Member" of the JSCC. 2) They must be enrolled in a vocational school, junior college, university, or graduate school (including working graduate students). 3) Those who have received the JSCC Young Investigator Award (YIA) are not eligible. 4) Previous recipients of the JSCC Student Award cannot apply again. To apply, student members should indicate their interest in the award when submitting an abstract for the Annual Meeting.

The process of selecting the most deserving candidates involves several steps. Firstly, the Chair of the Annual Meeting will meticulously scrutinize the pool of applicants and identify a maximum of 10 potential awardees. The selected candidates will then proceed to the judging stage, which will take place during a dedicated session at the Annual Meeting. Finally, based on the scores garnered by each candidate, around 5-6 winners will be chosen.

The fortunate recipients of the esteemed awards will be granted a commendation certificate and a valuable prize presented by the President of JSCC, during the Annual Meeting. Furthermore, the distinguished recipients will also be extended an invitation to attend a special gathering held in their honor during the Annual Meeting's reception.

A total of 25 students applied for the esteemed Student Award in 2023, with only 10 being chosen as symposiasts. The highly anticipated Student Symposium will be held on October 28th, 2023 at the Ochanomizu Sola City Conference Center, Tokyo, Japan. The winner of the Student Award will be selected from this talented group of participants.



National Society Report- MACB, Malaysia

1. SNIBE-MACB Immunoassay Conference

The International Conference on Immunoassay that was held on 2nd March 2023 at the Aloft Hotel, Kuala Lumpur Sentral was jointly organized by the Malaysian Association of Clinical Biochemists (MACB), the International Federation of Clinical Chemistry and Laboratory Medicine (IFCC), and SNIBE. The conference was attended by more than 300 delegates from Malaysia and other Southeast Asian countries, including Indonesia, Philippines, Thailand, Myanmar and Vietnam.



Picture 1: International Immunoassay Conference organised by the MACB, IFCC and SNIBE at the Aloft Hotel, Kuala Lumpur Sentral on 2nd March 2023.

The conference covered a wide range of topics related to immunoassay. Among the topics discussed were “Free Testosterone: A Laboratory Test with Several Clinical Implications” that was delivered by renowned international speaker Prof. Maurizio Ferrari, “The Use of ANA/dsDNA in Clinical Practice” by Prof. Aw Tar Choon, “Clinical Application of PCT, hs-CRP and IL-6 in Inflammation Monitoring” by Prof. Anderson Amirthanathan, and “Autoantibodies for Type 1 Diabetes” by Dr.SaraswathyApparow.

The conference was a resounding success, with participants expressing satisfaction with the quality of the lectures and the organization of the event. The venue, the Aloft Hotel, Kuala Lumpur Sentral, provided an ideal setting for the conference, with spacious halls and modern amenities. The conference also received support from Biomed Global.

In conjunction with the conference, MACB signed a Memorandum of Understanding (MOU) with SNIBE. This MOU sets the terms and understanding between MACB and SNIBE to enhance mutual cooperation in promoting learning and research in clinical biochemistry in Malaysia.

2. Workshop on calibration & checking of measuring equipment

The Malaysian Association of Clinical Biochemists organized a workshop on “CALIBRATION & CHECKING OF MEASURING EQUIPMENT” on 21st-22nd March 2023. The event was a collaboration with the National University of Malaysia and was held at the Faculty of Health Sciences, UKM, Kuala Lumpur.



Picture 2: MACB Workshop on Calibration & Checking of Measuring Equipment in UKM, Kuala Lumpur on 21st -22nd March 2023.

The workshop provided training on the calibration and checking of measuring equipment, including thermometer, timer, balance, pipette and pH meter, according to MS ISO 15189:2014 Technical Requirement on Calibration & Checking of Measurement Equipment. Around 80 participants attended the workshop.

The training was conducted by experienced speakers who were well-versed in the subject matter. The participants received hands-on training in the calibration and checking of the measuring equipment. The speakers also provided guidance on troubleshooting equipment-related problems that can occur in clinical biochemistry laboratories. Overall, the workshop received a positive-feedback.

3) IFCC President Visiting Lecture Program

The Malaysian Association of Clinical Biochemists hosted the IFCC President, Prof Khosrow Adeli's visiting lecturer program to Kuala Lumpur Malaysia from 26th -28th March 2023. In conjunction with Professor Dr. Khosrow Adeli's visit, the MACB held a series of scientific programmes which included the Paediatric Pathology Symposium, a laboratory visit and 2 roundtable discussions.

a) Paediatric Pathology Symposium

The Malaysian Association of Clinical Biochemists (MACB) and the Pathology Department of Hospital TunkuAzizah jointly organized the Paediatric Pathology Symposium with the theme "Metabolic Syndrome in Children: Current Scenario & Challenges" at the Auditorium Perdana, Hospital TunkuAzizah on 27th March 2023.



Picture 3: The MACB Paediatric Pathology Symposium on 27th March 2023 in Conjunction with the IFCC President's Visit to Malaysia

The symposium provided the latest updates on metabolic syndrome in children and covered a range of topics. Prof. Dr. Khosrow Adeli presented 2 lectures: 1) Pathophysiology of Paediatric Obesity and Metabolic Syndrome and 2) Clinical Application of Cardiac Markers in Paediatrics. Other topics included Obesity in Children – Malaysian Scenario, The Changing Face of Paediatric Diabetes and Testing in Malaysia -Laboratory Perspective and Experience which were presented by local experts Prof. Dr. Muhammad Yazid Bin Jalaludin, a Senior Consultant Paediatrician and Consultant Paediatric Endocrinologist at the University Malaya Medical Centre (UMMC), Dr. Nalini M Selveindran, a paediatric endocrinologist from Hospital Putrajaya (HPJ) and Dr. Saraswathy Apparow, a Chemical Pathologist from Institute of Medical Research (IMR). The event was attended by approximately 200 healthcare professionals which include doctors, medical lab scientists, pathologists, paediatricians, and nurses..

b) Laboratory Visit

After the symposium ended, Prof. Dr. Khosrow Adeli visited the Pathology Laboratory at the Hospital Tunku Azizah to have further discussions with the paediatricians, pathologists and medical lab scientists there. The discussions involved topics related to the laboratory techniques used in diagnosing and monitoring metabolic syndrome and its associated conditions, such as diabetes and cardiovascular disorders.



Picture 4: Discussions during the IFCC President's laboratory visit to Paediatrics Hospital (Hospital Tunku Azizah), Kuala Lumpur on 27th March 2023

The hospital presented the newborn screening programme in Malaysia to Prof. Adeli who in turn shared his expertise on the latest research and developments in the field of metabolic syndrome and discussed potential collaborations between the hospital and his institution. These discussions were valuable for the hospital staff in improving their understanding and management of metabolic syndrome in children.

c) Roundtable Discussions

In conjunction with the visit by IFCC President to Malaysia, the MACB organised a roundtable discussion on “Training needs and research opportunities for Medical Lab Scientists” at the Faculty of Health Sciences, Universiti Kebangsaan Malaysia Jln Raja Laut, Kuala Lumpur on 28th March 2023. The roundtable discussion was attended by 30 participants which included lecturers, researchers, medical lab scientists, graduate and postgraduate students.



Picture 5: Roundtable discussion with Prof. Khosrow Adeli on the topic of “Training needs and research opportunities for Medical Lab Scientists” at the Faculty of Health Sciences, National University of Malaysia (UKM) on 28th March, 2023.

The focus of the discussion was on the current and future training needs for Medical Laboratory Scientists in Malaysia. The feedback obtained from Prof Adeli will be useful in developing learning modules for the biomedical science graduate and postgraduate students in line with the recent technological advancements in laboratory medicine. Potential research opportunities and international expert collaborations were also discussed.

Later in the afternoon on the same day, the MACB held another roundtable discussion on “Reference interval and the CALIPER Initiative” at Melati Room, Hotel Impiana, Kuala Lumpur.



Picture 6: A roundtable discussion with Prof. Khosrow Adeli on “Reference interval and the CALIPER Initiative” at Melati Room, Hotel Impiana, Kuala Lumpur on 28th March, 2023

This discussion was attended by thirty participants which included clinicians, paediatricians, researchers and medical lab scientists. The interactive session included the discussion on the initiative to conduct a study on paediatric reference interval in Malaysian children. It was a fruitful discussion with opportunities for collaboration in the near future.

4. NATIONAL ABG SYMPOSIUM: Updates on Latest ISO 15189 and iQM

The National ABG Symposium: Updates on Latest ISO 15189 and iQM was held at Royale Chulan Hotel, Kuala Lumpur on 12th July 2023. The symposium under the auspices of the Malaysian Association of Clinical Biochemists (MACB) was jointly organized by the Straits Scientific and Werfen. Over 70 people attended the Symposium which consisted of a virtual session, lectures and interactive discussions with Blood Gas users.



Picture 7: Participants at the National ABG Symposium at Hotel Royale Chulan, Kuala Lumpur on 12th July, 2023.

The main objectives of this symposium were to provide a continuous learning platform for ABG users in line with the requirements of the new edition of ISO 15189:2022, as well as to provide updates on blood gas technology and its intelligent Quality Management (iQM). Speakers included Professor Emeritus Sharon S. Ehrmeyer from University Wisconsin-Madison and Davide Columbo, the Global Acute Care expert with 35 years' experience in Blood Gas.





National Society Report- IACLD, Iran

Activities information

- Executing the External Quality Assurance Program for laboratories across Iran
- Publication of a Three-monthly printed Journal in Persian called Laboratory & Diagnosis
- Executing the education courses & education webinars medicine laboratory
- Holding meetings of the national assembly of laboratory science associations with the presence of representatives of associations in laboratory science, pathology and DCLS
 - Holding meeting with the following different organizations:
 - National Medical Device Directorate
 - Ministry of Health and Medical Education
 - Health Reference Laboratory
 - Medical Council of the Islamic Republic of Iran etc ...

International relations:

- International Federation of Clinical Chemistry and Laboratory Medicine (IFCC)
- Asia-Pacific Federation for Clinical Biochemistry and Laboratory Medicine (APFCB)
- Asia-Pacific Accreditation Cooperation (APAC)

Holding National meetings

The 14th International & 20th National Congress on Quality Improvement in Clinical Laboratories, 16-19 May 2023, Tehran-Iran.

Holding a tour of Dubai, especially for the exhibition of laboratory equipment (ARABLAB EXPO), 19- 21 September 2023

Holding Education Course

Free educational webinar on the interaction of laboratories with the General Directorate of Medical Equipment: how to report quality problems, declare shortages and high prices of laboratory products and equipment, July 2023.

Training seminar on intelligent quality assurance in medical laboratory, July 2023. Course Medical community tax information.

Practical theoretical and practical course of sampling in clinical laboratory, 2-3, 9-10 July 2023. Educational Webinar on Quality Management in the Department of Biochemistry (with emphasis on the checklist of health reference laboratory requirements, paragraphs 68 to 84), February and March 2023.

Educational webinar on laboratory diagnosis of superficial skin fungal infections, February 2023.

Scientific conference on principles of customer orientation, February 2023. Educational webinar on quality control in microbiology department, January 2023.

Educational webinar on basic instrument quality control in microbiology department, January 2023.



Educational webinar on the principles of interpretation and laboratory challenges of viral hepatitis, January 2023.

Educational webinar on immunopathology of viral and autoimmune hepatitis, January 2023.

Educational webinar on review and interpretation of EQAP results in the hematology department, January 2023.

Educational webinar on the review and interpretation of EQAP43 results in the biochemistry department, January 2023.

Educational webinar on quality control in antimicrobial susceptibility testing (antiprogram), January 2023.

Scientific conference of thyroid ology and management of laboratory challenges of thyroid tests, January 2023.

Publications:

Journal of Laboratory and Diagnosis No. 59, spring 2023. Journal of Laboratory and Diagnosis No. 58, winter 2023.



The Second IFCC Young Scientists' Forum – IFCC Worldlab Euromed Lab 2023 – Rome

Author: IFCC Task Force –Young Scientists (TFYS)

21 May 2023 in Rome, Italy: Following the successful inaugural “Young Scientists’ Forum” in Seoul, the second forum was conducted with more young scientist participation as a satellite meeting at the IFCC ROMA 2023 WORLDLAB EUROMEDLAB, on 21 May 2023 in Rome, Italy. There were 85 in-person and online participants at the forum representing 36 countries worldwide, especially with the help of many travel scholarships awarded to young scientists worldwide.



The opening of the second Young Scientists’ Forum got off to a great start with distinguished guests namely Prof. Khosrow Adeli, Prof. Tomris Ozben, Dr. Santiago Fares Taie, Dr. Tommaso Trenti, and Prof. Rajiv Erasmus delivering motivational speeches to the young scientists commending them on their activities and supporting them to continue young scientists’ activities for they are the future of the laboratory medicine. Prof. Adeli also mentioned that the number of scholarships for young scientists for this meeting has increased. Dr. Santiago Fares Taie, the current Chair of the TF-YS, addressed the young scientists reiterating the activities and objectives of the Young Scientist’s Task Force urging young scientists to continue their activities across the world.

The forum commenced with the session on “Digital technologies”, moderated by Aleksei Tikhonov (Gustave Roussy, France) and Marie Lenski (Lille University Hospital, France), featuring four presentations related to digital technologies in laboratory medicine. “Evaluating A Patient for A Monoclonal Gammopathy: The MG-Testing Shiny App” by John Gabriel Bautista Abcede (Australia) introduced a web-based application that can help clinicians and laboratory professionals to interpret and report serum protein electrophoresis and immunofixation results for patients with suspected monoclonal gammopathies providing recommendations for further testing and referral based on the International Myeloma Working Group guidelines. The next presentation was by Arnel Christian King Dy (Philippines) on “Enzymatic Correction of Jaffe Derived Serum Creatinine Interferences: A Machine Learning Approach”, which described a novel method to correct the interference of non-creatinine chromogens observed in the Jaffe method for serum creatinine measurement using a machine learning approach.

He demonstrated that by using these validated models, labs can easily correct Jaffe method interferences and approximate enzymatic method values online further stating that his method could be further improved for its accuracy and precision and is freely available online. Ronald Khunga (Malawi) presented a “Social Network Strategy: An Innovative Way of Identifying and Testing High-Risk Men” demonstrating how a social network strategy, a peer-driven recruitment approach, can be used to recruit peers of HIV-positive and high-risk HIV-negative men and increase the uptake of HIV testing and linkage to care among high-risk men in Malawi. The last presentation of the session was on “Digital Competence In Laboratory Medicine: Results Of A Survey Among Young Scientists” by Marie Lenski (France), reporting the results of a survey conducted by Young Scientists to assess the level of digital competence among young laboratory professionals worldwide. The survey revealed that there is a need for more training and education on digital skills and tools in laboratory medicine. Based on results from this survey, an international working group on digital competence for Young Scientists will be established, to build a learning environment and propose common international resources. The goal is to help the next generation of specialists to be ready to tackle the upcoming professional challenges. This session was a great opportunity to showcase the innovative work of young scientists in laboratory medicine and to foster networking and collaboration among them.



The second session of the forum was on interesting presentations about “Chronic Diseases” coordinated by Dr. Sean Campbell, (United States) and Dr. Tamar Ramishvili (Georgia). This session commenced with a great presentation by Mohammed YassineKaabar, (Tunisia) on “Evaluation of GPR score for non-invasive assessment of Liver Fibrosis in Chronic Hepatitis B Tunisian patients”. He and his team retrospectively studied the gamma-glutamyl transpeptidase-to-platelet ratio (GPR) as a novel biomarker in patients diagnosed with liver fibrosis in hepatitis B virus (HBV) mono-infection. The next speaker was Don MakwakiweMatshaz, (South Africa), who discussed an excellent study on “HHEX And MTR1B Gene Polymorphisms Associated with The Risk of Type 2 Diabetes Mellitus in A Mixed Ancestry South African Urban Population”. This cross-sectional study, conducted with a total of 1650 participants from South Africa and revealed SNPs that may increase the risk of developing Type 2 Diabetes Mellitus (T2DM).

Furthermore, Matshaz and his team have concluded that the mentioned SNPs may be used as screening targets to identify individuals in whom interventions may be useful to reduce the development of T2DM. Also, these SNPs may be alternative therapeutic targets once their role in the pathophysiology of T2DM is fully elucidated. A young scientist from Nepal, Sushant Pokhrel shared with us a study on the “Associated Non-Invasive Biomarkers for Risk of

Liver Disease in Type 2 Diabetes Mellitus Patients”. According to this study routine screening of Aspartate to platelet ratio index (APRI), gamma-glutamyl transpeptidase to platelet ratio (GPR), fibrosis-4 index (FIB-4), and triglyceride and glucose index (TyG) may be helpful in preventing progression of liver disease in T2DM patients. The last speech of this session was carried out by a young scientist from India, Shruti Gupta. She presented her study about the “Association Of Interleukin-22 Transmembrane Receptor and Binding Protein with its Levels in Tuberculosis”. According to her presentation, the upregulation of IL-22R1 and downregulation of IL-22R2 may be a host mechanism to combat the infection. It should be noted that this is the first study to check for the diagnostic efficiency of IL-22. The presentations of these studies generated great interest from the audience and the interaction between the speakers and YS from the audience facilitated sharing experiences and opinions about the research processes with each other.



The third session in the forum was on “Laboratory Management and Quality Control” chaired by Claudia Imperiali (Spain) and UdaraSenarathne (Sri Lanka). Serafeim Karathanos (Greece) discussed “Education and Training of Young Scientists in EQA Schemes Operation and Management” and stressed the importance of continuous professional development activities for young scientists to improve their understanding of quality assurance. The next talk was by Josep Miquel Bauça (Spain) on the “Past present and future of the reference intervals in medicine” providing a broader overview of reference values followed by a talk on the “Establishment of Age-Specific Reference Interval for Amino Acids in Dried Blood Spot by Tandem Mass Spectrometry” by Babu Vinodh Kumar (India). The last talk in the session was by Hamideh Ghazizadeh (Iran), who discussed about the Comparison of Biochemical and hematological markers Reference Intervals Derived by Direct and Indirect Procedures Based on The Isfahan Cohort Study. The session was interactive with many questions arising from the audience, allowing a better understanding of the concepts of reference interval establishment and laboratory quality management among young scientists.

The forum continued with the 4th session: Biomarkers of cardiovascular risk. The session was moderated by Dr. Marco Alfonso Perrone (corresponding member IFCC-YS for Italy) and Dr. Giulia Sancesario (Head of Italian YS and past member IFCC-YS). The first speaker was Dr. Marco Alfonso Perrone from Italy with the lecture entitled: "Cardiac Biomarkers during Exercise: from Patient to Professional Athlete". During the presentation, Dr. Perrone showed the use of cardiac biomarkers in response to exercise and the possible interactions between cardiac patients and professional athletes. of particular importance is the use of clinical biochemistry in the early diagnosis of myocardial injury compared to other imaging methods and the pathophysiology of cardiac troponin release during exercise. The second speaker was Dr. Judit Gonda from Hungary with the title of the lecture: "The Increase of Soluble Urokinase Plasminogen Activator Receptor in Heart Failure is Related To Disease Severity and To Cardiac Mortality". During the presentations, Dr. Gonda showed data from the study on the use of Soluble Urokinase Plasminogen Activator Receptor in patients with heart failure, showing how increased levels of the biomarker were correlated with heart disease severity and increased mortality. The third speaker was followed by Dr. Dharmasheel Shrivastav from India with the title of the reading: "Risk factors influencing left ventricular ejection fraction in patients with coronary artery disease: a tertiary care center experience in North India". In the presentation, Dr. Shrivastav showed how risk factors and biochemical markers correlated with left ventricular function in case series collected at his research center in Northern India. In particular, the study showed that cholesterol levels were more correlated with left ventricle function. At the conclusion, the 4th speaker was Dr. Marlena Aginieszka Olejnik from Poland with the title of the lecture: "Klotho And Fgf23 as Potential Biomarkers for Myocardial Infarction In Patients With Acute Coronary Syndrome". In the presentation Dr. Olejnik showed data from the study where they evaluated the levels of Klotho and FGF23 and demonstrated their possible use as biomarkers of acute myocardial infarction in patients with coronary artery disease. The session aroused great attention from the audience with subsequent questions and a rich discussion. Cardiovascular diseases (CVD) remain the leading cause of death in the world, but, thanks to clinical and biochemical innovations, today CVD also represent one of the fields in which there are major innovations available to the health of cardiac patients. Thanks to the IFCC and the YS for this beautiful session!



The closing remarks were delivered by Dr. Ashlin Rampul (South Africa), who commended the highly scientific program at the second young scientist forum. He urged the young scientists to continue activities and become part of the IPCC TF-YS activities. The forum participation has improved every year and the number of young participants in Dubai is expected to grow further. Prof. Damian Gruson also a former member of the Young Scientist Task Force at its inception also delivered concluding remarks stating “You will have good times in your career and not so good times but the most important fact is as a young scientist you should continue to work hard without letting failures hinder the progress in your career”. The young scientists were all thanked for their contribution to the forum and special thanks were noted to the Italian Society, especially Giulia Sancassaro and Marco Perroni who were excellent hosts and invited the young scientists to a spectacular get-together.



For more info, visit us at: <https://ipcc.org/task-force-young-scientists-tf-ys/>

Young Scientist Interview



Tewarit Sarachana, M.T., Ph.D.

Positions in the Faculty of Allied Health Sciences, Chulalongkorn University

- ***Deputy Dean***
- ***Head of Chulalongkorn Autism Research and Innovation Center of Excellence (Chula ACE)***
- ***Associate Chairperson of Medical Technology Program and Head of Medical Technology Education Subcommittee, the B.Sc. Program in Medical Technology***
- ***Assistant Professor, Department of Clinical Chemistry***

Positions in Thailand's significant organizations associated with Biomedical Laboratory Science

- Executive board member and Head of International Relations, the Association of Medical Technologists of Thailand under the patronage of Her Royal Highness Princess Soamsawali Krom Muen Suddhanarinatha
- Executive board member and Head of the Molecular Biology and Human Genetics Subcommittee, the Royal College of Medical Technology
- Secretary of Dean Consortium of Medical Technology Schools of Thailand
- Secretary of Academic Affairs Subcommittee, Medical Technology Council
- Technical Assessor for ISO15189, ISO15190, ISO22870, ISO20387 Accreditations, Department of Medical Sciences, Ministry of Public Health

1. Please introduce yourself

My name is TewaritSarachana. I was born into a low-income family. My parents were divorced when I was very young, and my sisters and I were raised by a single mother who worked as a seamstress and made additional money by selling food on the street. I would not have come this far without the incredible support from many people, including my family and teachers. I am forever grateful for their kindness and can firmly say that education and research in medical technology have entirely changed my life.

I received my bachelor's degree in medical technology with First-Class Honors, Gold Medal, from the Faculty of Allied Health Sciences, Chulalongkorn University, Thailand, and attained a master's degree in Genomics, Proteomics, and Bioinformatics, and a Ph.D. in Molecular Medicine majoring Neuroscience from the George Washington University, Washington, D.C., and USA. After finishing Ph.D., I worked for Food and Drug Administration (FDA), USA, as a post-doctoral researcher, and then came back to Thailand to join the Department of Clinical Chemistry, Faculty of Allied Health Sciences, and Chulalongkorn University, as a full-time lecturer in 2013.

I am now an Assistant Professor in the Department of Clinical Chemistry and Deputy Dean of the Faculty of Allied Health Sciences at Chulalongkorn University. I am also serving as Head of the Chulalongkorn Autism Research and Innovation Center of Excellence (Chula ACE), which is formerly known as the Chulalongkorn Systems Neuroscience of Autism and Psychiatric disorders (SYNAPS) Research Unit.

In addition to the university, I am very fortunate to have an excellent opportunity to work for multiple major medical technology organizations in Thailand, including the Association of Medical Technologists of Thailand, the Royal College of Medical Technology, the Dean Consortium of Medical Technology Schools of Thailand, Medical Technology Council, and Ministry of Public Health. In these organizations, I am engaged in developing national policies and guidelines and creating activities that help enhance the professional competencies of medical technology graduates and staff, assessing clinical laboratory quality according to international standards, and promoting the medical technology profession and life-long learning in medical technology in Thailand.

2. What is your main focus?

My research focus areas include) the development of innovative artificial intelligence and multi-omics approaches for screening and classifying people with autism to identify biomolecular markers and therapeutic targets for autism and each subtype of autism, ii) the investigation of environmental factors and molecular mechanisms related to the cause or the risk of autism and other psychiatric disorders, and iii) the development of innovative clinical biochemistry analytical techniques for biomolecules and chemicals that are environmental factors associated with the risk of psychiatric disorders. Our work involves expertise in systems biology, integrated multi-omics, neuroscience, clinical biochemistry, health informatics, and artificial intelligence in our team together with our national/international collaborative networks, including Genomics Thailand, the George Washington University, Karolinska Institutet, KTH Royal Institute of Technology, and Tohoku University.



3. What else is important to you?

In addition to research, I play multiple roles in student development and education, academic services, and management. I have been actively engaged in the promotion of outcome-based education in medical technology and the development of the new version of Chulalongkorn University's medical technology curriculum, which includes three specialized tracks which are Precision Health, Organization and Clinical Laboratory Management, and Data Science and Artificial Intelligence for undergraduate students in the medical technology program. I am also promoting the quality of medical technology education by utilizing the ASEAN University Network-Quality Assurance (AUN-QA) Standards in our undergraduate and graduate programs.

Moreover, international collaborations are much needed for the sustainable development of our society. I have worked with many colleagues worldwide to create international exchange activities for students, faculty members, and medical technologists/biomedical laboratory scientists. An example of international exchange activities I am actively involved in is the Tokyo Medical and Dental University-Chulalongkorn University Exchange Program for medical technology/biomedical laboratory science students and faculty members, which has been organized annually for several years. These international collaboration activities promote education and research for sustainable development and allow students to learn to work in a multicultural society, essential for becoming competent global citizens in the 21st Century.

Besides international exchange activities at the university level, I am strongly motivated to promote international collaborations for medical technologists/biomedical laboratory scientists. As an executive board member and the Head of International Relations of the Association of Medical Technologists of Thailand, I am engaged in creating a memorandum of understanding (MOU) between the Korean Association of Medical Technologists and the Association of Medical Technologists of Thailand to support exchange activities of medical technologists between the two countries. We also aim to create similar MOUs with other countries, including Japan and Taiwan. I am now an Assistant Professor in the Department of Clinical Chemistry and Deputy Dean of the Faculty of Allied Health Sciences at Chulalongkorn University. I am also serving as Head of the Chulalongkorn Autism Research and Innovation Center of Excellence (Chula ACE), which is formerly known as the Chulalongkorn systems Neuroscience of Autism and Psychiatric disorders (SYNAPS) Research Unit. In addition to the university, I am very fortunate to have an excellent opportunity to work for multiple major medical technology organizations in Thailand, including the Association of Medical Technologists of Thailand, the Royal College of Medical Technology, the Dean Consortium of Medical Technology Schools of Thailand, Medical Technology Council, and Ministry of Public Health. In these organizations, I am engaged in developing national policies and guidelines and creating activities that help enhance the professional competencies of medical technology graduates and staff, assessing clinical laboratory quality according to international standards, and promoting the medical technology profession and life-long learning in medical technology in Thailand.



4. What are your interests in biomedical laboratory medicine?

Biomedical laboratory medicine has progressed continuously and rapidly in recent years. Advanced, high-throughput technologies, including next-generation sequencing and mass spectrometry, have now been utilized in many clinical laboratories throughout the world, and the costs of molecular tests using these techniques, such as whole genome/exome sequencing, are now much lower, making them more and more accessible to many people. These high-throughput technologies have generated an enormous amount of data requiring experts in bioinformatics, health informatics, and data science to manage such big data and expand the use of data in the healthcare system. These global megatrends have brought a new perspective to healthcare, making emerging fields related to personalized medicine, such as pharmacogenetics and cancer genetics, possible and practical in many real-life situations. Artificial intelligence, robotics, and the Internet of Things (IoT) are increasingly applied in clinical laboratories. I think this is a wonderful opportunity and, simultaneously, a threat to medical technologists or biomedical laboratory scientists. New competencies in many areas, including advanced molecular biology, bioinformatics, health informatics, and data science, have become more critical for medical technologists or biomedical laboratory scientists in this personalized healthcare era. They need to have life-long learning skills and agility for technology. In addition, they also need to have humanity in healthcare as it cannot be replaced by artificial intelligence.

5. What are your future goals?

I have established the Chulalongkorn Autism Research and Innovation Center of Excellence (Chula ACE), formerly known as the Systems Neuroscience of Autism and Psychiatric disorders (SYNAPS) Research Unit. Chula ACE aims to solve significant public mental health problems in Thailand and worldwide by creating knowledge and innovations in personalized medicine that will lead to an understanding of genetic and environmental factors underlying the etiology or susceptibility of autism spectrum disorder and other psychiatric disorders. The ultimate goal is to design and develop innovative approaches for screening, diagnosis, classification, prognosis, treatment, and prevention of psychiatric conditions, which are the most effective and beneficial to the health care of patients in each particular group. Besides creating research and innovation, we also train undergraduate and graduate students and post-doctoral researchers to become medical technologists and scientists with the required competencies for the personalized medicine era.



Education in medical technology has changed my life. As an educator, I strongly hope to create an academic and research network between my university and national/international collaborators. We will join together to continue to change students' lives by providing quality education and innovation in medical technology/biomedical laboratory science, supporting each other in training medical technologists/biomedical laboratory scientists and teachers for the 21st Century, all of which will eventually improve the quality of life for all people around the world and lead to the sustainable development of our world.

Interviewer:

Dr. Ryunosuke Ohkawa, Ph.D.

*Professor of Analytical Laboratory Chemistry,
Graduate School of Medical and Dental Sciences, Tokyo Medical and Dental University.
Member APFCB Committee-Communication & Publications (CP)*



Heart Attack Diagnosis at The Bedside Can Now Take as Little as 20 Minutes

Curtis Marsh, Director of Global Product Management for Quidel Ortho, headquartered in San Diego, California



Several conditions, such as chest pain, have similar symptoms to a heart attack. Doctors need to be able to distinguish between them quickly and confidently.

When a person is experiencing a heart attack, every minute counts. Faster diagnosis means faster treatment and less tissue death. But the symptoms of heart attacks are similar to other conditions, such as panic attacks and gastroesophageal reflux disease. All these conditions may lead patients to the emergency department (ED) where they potentially wait hours for critical test results, while still unsure if they're having a heart attack. Quidel Ortho's latest cardiac test, Quidel®TriageTrue® High Sensitivity Troponin I Test (TriageTrue), can be used at the patient's bedside as an aid to diagnose a heart attack within 20 minutes. Curtis Marsh explains how this test benefits the patients, doctors, and healthcare system.

What does QuidelOrtho'sTriageTrue test measure?

Triage True measures a protein called Troponin I, found in heart muscle, which is normally present in the blood at extremely low levels. A damaged heart releases troponin, so elevated levels can mean the patient is having a heart attack. Since some small amount of troponin is always present in the blood, it's important that a test be sensitive enough to discern normal levels from those that indicate cardiac damage. Given that a heart attack is defined as a change in troponin over time with at least one measurement above the cutoff, multiple readings are required, reinforcing the need for a high-sensitivity test to detect true changes.

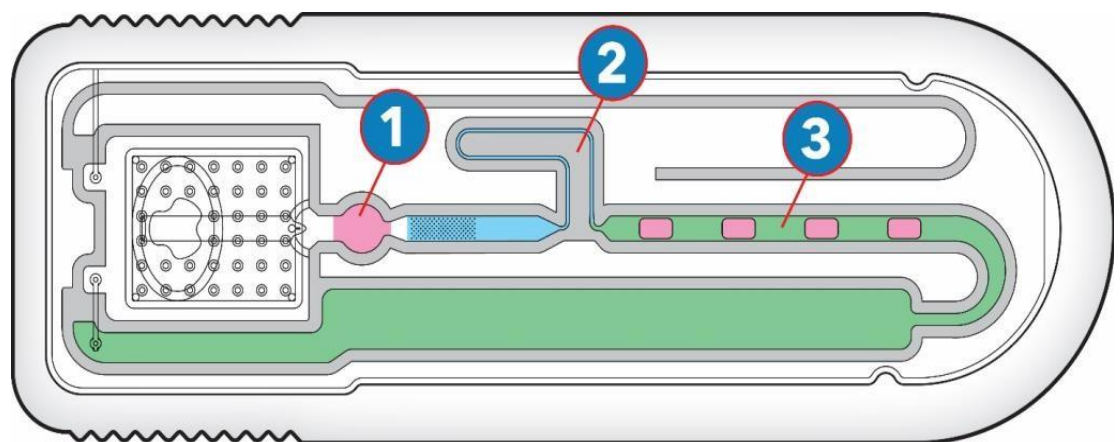
What makes TriageTrue a high-sensitivity troponin test?

Clinical organizations, such as the International Federation of Clinical Chemistry and European Society of Cardiology (ESC), have defined the requirements for a high-sensitivity troponin assay. These requirements include metrics to ensure that the assay performs at a high level of sensitivity, accuracy, and precision. TriageTrue was able to achieve the designation of high sensitivity by fulfilling such analytical requirements.

How is this test used at the patient's bedside?

TriageTrue runs on Quidel's near-patient instrument called the Triage MeterPro®, which can also analyze a full complement of cardiometabolic biomarkers and toxicology drugs. It's a compact, easy-to-use fluorimeter that provides quantitative biomarker concentrations.

The test cartridge runs a whole blood or plasma sample and works as a lateral flow immunoassay. When the patient sample is added, it flows through the cartridge by first mixing with the fluorescently labeled antibodies which bind to the biomarker (e.g., troponin). These biomarker-antibody conjugates are then captured on the diagnostic lane, where the meter's laser and photodiode determine the fluorescent signal, apply an algorithm, and ultimately the biomarker concentration. This process takes less than 20 minutes.



The high sensitivity comes from a redesigned cartridge, which includes a 'passive mixing well' (1) to homogenize the sample, a 'microfluidic pinch' (2) to physically slow the flow and increase the binding of troponin to the fluorescently labeled antibodies, and an improved normalization algorithm which takes place in the diagnostic lane (3).

How does Triage True achieve high sensitivity?

We redesigned several features of our cartridge. The improved filter pocket is extremely efficient separating red blood cells and conditioning the sample. We also added a 'passive mixing well' to make the sample treatment more homogenous.

The major contributors to the sensitivity and precision of the assay are the 'microfluidic pinch' and the normalization process. The pinch slows the flow of the sample, increasing the mixing and binding between troponin and the antibodies. This allows for significant signal, even with low levels of troponin.

Normalization works by comparing assay and control signals generated in the diagnostic lane. When these immunofluorescence signals are compared and then converted to a concentration, the result is normalized. Normalization is used in many immunoassays to adjust for any signal variation attributed to deviations in total available fluorescence, binding, interferences, etc.

Why does high-sensitivity testing at the point-of-care matter?

The benefit is the quick time to result for every patient, especially given the tightening guidelines. It used to be that two high-sensitivity troponin tests given three hours apart were adequate for diagnosing a heart attack; now the guidelines recommend two high-sensitivity tests, one hour apart. However, current troponin testing is often done in a hospital's central lab, which isn't close to the ED. Therefore, the time to get the troponin result can be an hour or more, hindering the doctor's ability to rapidly diagnose the patient.

Triage True replaces this time-consuming process, allowing doctors to quickly and reliably get high-sensitivity troponin results within 20 minutes and thereby accelerate the diagnosis. The earlier the diagnosis, the earlier doctors can give the correct treatment, leading to better outcomes.

The healthcare system also ultimately benefits from this advancement. Of all the patients in the ED with chest pain, most of them aren't having a heart attack. But until that diagnosis is made, these patients are taking up a bed in the ED, nervously waiting for a diagnosis. TriageTrue can improve ED workflow by quickly identifying low-risk or non-cardiac patients, who can then be triaged faster and more confidently.

What's the status of TriageTrue in Europe and the US?

TriageTrue was launched in Europe in 2019. In March 2020, TriageTrue performance in the APACE study cohort was published in the Journal of the American College of Cardiology by Dr. Jasper Boeddinghaus, who is part of Professor Christian Mueller's team at the Cardiovascular Research Institute Basel. The publication independently demonstrated that TriageTrue had very high diagnostic accuracy and clinical performance that's comparable to central lab assays. Also, the study validated a 0/1-hour algorithm for TriageTrue which was independently published in the guidelines of the ESC.

TriageTrue is not yet available in the U.S. The U.S. clinical trial to support an FDA submission is underway.

Report by:

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New ACMG guidelines shape NIPT uptake in Asia Pacific



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This article originally appeared on labinsights.com.

The rise of non-invasive prenatal testing (NIPT) has been one of the biggest success stories in laboratory medicine in recent decades. For many pregnant patients, a simple blood test targeting cell-free placental DNA can significantly reduce the need for invasive alternatives such as amniocentesis or chorionic villus sampling (CVS) that introduce a small but real risk of miscarriage.

If pregnant women are part of the patient population served by your clinical laboratory, NIPT is an important capability to add to your test menu if it has not yet been implemented. Recent updates to guidelines for prenatal screening from the American College of Medical Genetics and Genomics (ACMG) are likely to increase demand for NIPT around the world, including in Asia Pacific.

According to those guidelines, published late last year, ACMG makes a “strong recommendation” that all pregnant women carrying single babies or twins should be tested with NIPT instead of traditional prenatal screening methods. Specifically, ACMG recommends NIPT as the preferred method to screen for:

- Trisomy 21 (Down syndrome)
- Trisomy 18 (Edwards syndrome)
- Trisomy 13 (Patau syndrome)
- Sex chromosome abnormalities / aneuploidy

For each of these conditions, ACMG relied on evidence showing that detection rates are excellent better than 98% for trisomies 18 and 21 and sex chromosome abnormalities, with the detection rate for trisomy 13 around 93%.

While the guidelines indicate that additional screening targets, such as microdeletions and rare autosomal trisomies, are future areas of interest, the ACMG has not issued a recommendation for using NIPT for this purpose across all pregnant women.



NIPT uptake in South Korea and Singapore

In laboratories offering targeted NIPT products for prenatal screening, these tests have been welcomed by physicians and patients. At Seoul Clinical Laboratories in Korea, for example, Dr. Mikyeong Lee and Dr. Bryan Lee saw so much demand for NIPT results that in 2021 they shifted to a system that allows them to perform screening in their own lab without the need for extensive informatics support or expensive sequencing instruments.

In Korea, the average age of pregnant women has been steadily rising; today, at least a third of all expecting mothers are considered high-risk. That makes NIPT a critical alternative to invasive tests that could add to the risk.

“Literally every baby is precious,” says Dr Mikyeong Lee. “While NIPT is not a diagnostic test, it screens out low-risk pregnancies, so physicians can provide a rationale when performing invasive testing for chromosomal abnormalities. Having a low-risk result at screening will greatly reduce any stress a pregnant woman will have about her baby’s health.”

Dr Bryan Lee notes the value of selecting a test limited to the targets recommended by ACMG or other professional guidelines. “When only abnormalities included in practical guidelines such as the recent ACMG guidelines are tested, there is no need for lengthy consideration on whether the test is appropriate,” he says. “On the other hand, NIPT tests that utilize other less proven technologies or are not as widely used will inevitably incur higher costs and require more effort.”

Meanwhile, in Singapore, physicians at Singapore General Hospital have offered NIPT capabilities since 2017 and their patients have responded well. A local study published in 2022 showed that patients appreciated the higher detection rates and lower false-positive rates of this kind of testing. Physicians have also been happy, especially because NIPT has fewer timing restrictions compared to conventional tests that have to be done at very specific points in gestation.

“NIPT is a test with increasing demand and laboratories should consider if they can help with fulfilling this demand,” says Dr Tan Lay Kok at Singapore General Hospital. “Key factors to consider would be laboratory expertise, commercial viability, and clinical need in the patient pool.”

Addressing concerns from patients and clinicians

Even in the early years of NIPT availability, the technique rapidly replaced traditional invasive tests that had been used for decades. But NIPT is still based on a relatively young technology, and as such, it has encountered growing pains among clinical audiences and the general public.

Concerns about the use of NIPT are often based on a misunderstanding about the purpose of this kind of testing. NIPT is intended as a screening tool rather than as a diagnostic test; any positive findings should be followed up with traditional methods such as amniocentesis or CVS for confirmation.



While this is common knowledge within the clinical lab community, many obstetricians and general practitioners are not fully aware of this or may fail to explain it adequately to patients prior to testing. Without that valuable context, false positives can be seen as catastrophic by patients.

Those false positives tend to come from areas of testing that go beyond ACMG guidelines, such as microdeletions. Even though NIPT products that promise to test a much larger number of targets may be enticing to patients and physicians alike, choosing a test that only screens for the current ACMG targets — trisomies 21, 18, and 13 along with sex chromosome abnormalities — allows clinical laboratory teams to report the most relevant and reliable results without getting into problematic areas of lower accuracy and the possible onslaught of follow-up testing that ensues.

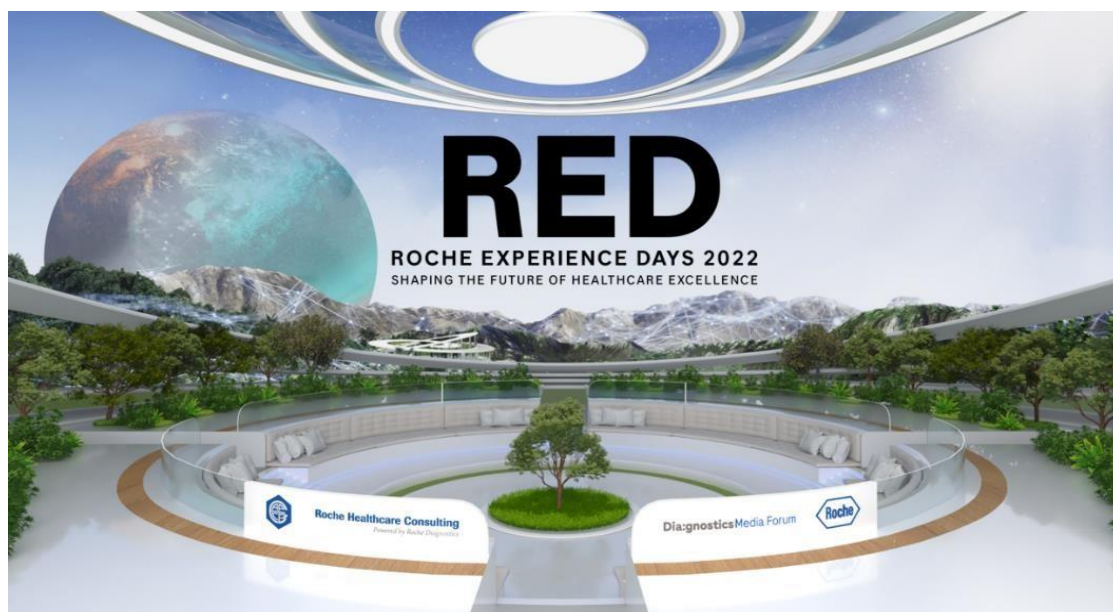
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Roche Experience Days (Red) 2022 Post-Event Summary Report

Wesley Wong, Consulting Team Manager, Application & Consulting, Roche Diagnostics Asia Pacific, Singapore



At last year's edition of Roche Experience Days (RED), an annual thought leadership conference hosted by Roche Diagnostics Asia Pacific, healthcare experts from across Asia and around the world came together to discuss key trends that will impact laboratory medicine. The event attracted thousands of attendees globally, making RED 2022 one of the largest and most impactful laboratory thought leadership events in the Asia Pacific region—and the world.

The theme of the event, which was held on 15-16 November 2022, was “Shaping the Future of Healthcare Excellence,” and the programme offered a glimpse of both the current and future needs of a rapidly changing healthcare landscape. This includes our ongoing transition to a post-COVID world, in which many healthcare organizations are shifting focus from pandemic management back to more routine operations, and looking to drive greater innovation and superior patient experience.

The Programme

Clinical labs are also transforming in order to cope with this new direction. To help the audience to get more insights on these topics, the programme included the following (click on the links to watch the full sessions):

Partnering Patients: Strengthening the Patient Voice within Health Systems in Asia Pacific
Speakers: Genevieve Woo (Presenter, Channel News Asia (CNA Singapore)), Lance Little (Managing Director, Asia Pacific Region, Roche Diagnostics Asia Pacific)

Labs Of The Future: Enablers for Patient-Centred Care

Speakers: Genevieve Woo (Presenter, Channel News Asia (CNA Singapore)), Dr. Robert Grenfell (Public Health Physician, Chief Strategy and Regions Officer, Grampians Health Australia), Dr. Kuldeep Singh (KS) Sachdeva (Regional Director, The Union South-East Asia, International Union against Tuberculosis and Lung Disease, India), Dr. DewiMuliaty (President Doctor, PT ProdiaWidyahusadaTbk, Indonesia)

Reduction, a new educational topic for medical technologists

Speaker: Dr. Raja Elina (President, Malaysian Association of Clinical Biochemists (MACB), Malaysia)

President of FET, a telecommunication company to talk about 5G and telemedicine

Speaker: Dr. Chee Ching (President, FarEasTone Telecommunications Co, Taiwan) New Technologies for diagnostic laboratories in logistics, instrumentation, and precision medicine

Speakers: Dheeraj Jain (Founder & Managing Director, Redcliffe Labs, India), Dr. Imran Nazir Ahmad (Chief of Pathology and Director of Laboratory, Shifa International Hospital, Pakistan), Prof Markus R. Wenk (Professor, Precision Medicine Translational Research Programme, Yong Loo Lin School of Medicine, National University of Singapore, Singapore)

APACMed shared their plans on how to shape healthcare ecosystems, including whitepapers published

Speakers: Chris Hardesty (Strategic Advisor, Asia Pacific Medical Technology Association, Singapore), Dr. Roberta Sarno (Director of Digital health, Asia Pacific Medical Technology Association, Qatar)

A4HPV and Singapore Heart Foundation - 2 non-profit organizations that had patient advocates come to share their stories

Speaker: Summer Ng (Patient Advocate, A4HPV, Singapore), Yvonne Ng (Founder, A4HPV, Singapore), Sandy Yzelman (Patient Advocate, Singapore Heart Foundation, Singapore)

Rare genetic disease and the diagnostic odyssey: a caregiver's journey

Speaker: Will Greene (Healthcare Engagement Lead, Roche Diagnostics Asia Pacific, Singapore)

Virtual reference site visit: Changi General Hospital Singapore

Speaker: Clinical Assistant Prof Jansen Koh (Chief, Department of Respiratory & Clinical Care, Changi General Hospital, Singapore)

Intellect - Start-up Company that discussed Mental Wellbeing and Resilience in the workplace

2022 was the third year in a row that RED was run as an almost exclusively virtual event. To help reach a multilingual audience from across Asia Pacific, we offered real-time language interpretation in Chinese, Korean, Thai, and Vietnamese. We also partnered with Channel News Asia (CNA), a Singaporean multinational news channel,

To co-create the 'Diagnostics Media Forum', which will be broadcast on TV in Q1 2023.

Since Roche believes strongly in social responsibility and environmental stewardship, the event also included interactive polling that allowed the audience to choose the location of where to plant 1000 trees by Eco Matcher, a social enterprise. Polling results chose the location of the 'Roche Forest' in KoSiboya, Thailand.

The Outcome

2022 was the biggest year yet in our annual RED event series. The sessions drew more than 21,000 registrants and over 5,000 viewers for our live event. The feedback also showed the success of the event with an average 64.9 net promoter score.


20,638
External Registrants
(21,788 in Total)


4,810
External Viewers
(5,485 in Total)


64.9
Net Promoter Score®
(RED 2021 NPS: 50)



Quality Control Systems



Dr. Tony Badrick
CEO, RCPAQAP Australia

Laboratory results are a key enabler of disease diagnosis and the management of effective treatment. Therefore, clinical laboratories have a responsibility, often mandated, to provide results that are fit for those purposes. This means the assays must have stable characteristics and produce consistent results from day to day. Quality systems such as ISO 15189 have been produced by the international laboratory medicine community to provide a management and technical structure to assist laboratories in achieving these goals [1]. The Quality system includes governance processes, document control, equipment maintenance, staff training, and competence requirements to provide the essential supporting framework to build the capability needed to create and produce consistent results. However, the essential process that must be understood and utilised every day by most technical staff to produce patient results is the principles of quality control (QC).

When we think of internal quality control, we usually consider putting the quality control samples onto the analyzer, reviewing the sample results using certain rules, and not much more. But there is more than this to a quality control system [2]. It consists of the following concepts; an understanding of error, a sample to use to determine if the analytical system is in control, a set of rules and acceptable ranges for the QC result, a process to follow if the QC sample is not in control including troubleshooting possible causes and subsequent rectification of the problem including verification that the problem is fixed, identification of any patient results which may need to be rerun, and a process to escalate these patient risk results.

Let us consider each of these components of the QC system.

Firstly, an understanding of error. We design a QC system to detect errors, but only the errors we expect to find. In analytical systems, we identify two types of error, a shift in the mean of the QC sample (bias) and an increase in the standard deviation (SD) of the distribution of QC results (imprecision). These two errors are related to the two components of the Gaussian distribution of the QC results, that is the mean and SD of repeated assays of the QC sample. This is a critical point to understand, as the success of the rules we will use ultimately depends on the accuracy of this mean and SD. There are guidelines that provide advice on how many QC samples are needed to determine these two parameters.

To assess if the assay is in control, we will run a sample, a QC sample that we expect will behave the same way that a patient sample behaves in the assay so that a change in the assay that affects patient results will be reflected in this QC sample [3, 4]. The QC sample is usually prepared from pooled human serum samples but has been modified by spiking to produce higher values, filtering, adding preservatives, and lyophilization [5]. These steps are necessary to make the material stable and useful, but they may impact the way the sample behaves in the assay compared to a patient sample.

Next, we select rules that will identify when a QC sample result is outside the expected statistically acceptable variation. We recall that the Gaussian (normal) distribution predicts that 95% of the results should lie within the mean plus or minus two SDs, and 99% will lie within the mean plus or minus 3 SDs. Using the properties of the Gaussian distribution, we can derive the probability of two or more QC sample results occurring in certain patterns, for example, two results occurring within the mean plus or minus two SD. These rules are the Westgard rules, and they rely on QC sample results following the Gaussian distribution [6–8]. Note that these rules are determined to identify statistically significant differences from the QC sample distribution when the assay is in control. For instance, these rules will not reduce patient harm from incorrect results if the statistically significant difference is greater than a clinically significant change! [9]

When a control rule alarms, meaning that the QC sample result is outside the statistically expected variation range, then, patient results may have an error that could affect their interpretation. Note that we are assuming that a shift in bias or SD that is statistically significant may not be clinically significant. There are common and uncommon causes of a change in the QC value. The most common cause is a problem with the QC material itself [10]. It may have been incorrectly prepared (reconstitution or thawing), maintained (evaporation or deterioration), or handled (wrong QC sample used). Other causes include reagent lot changes, calibrator lot, instrument malfunction, or inappropriate operator intervention. To determine which of these has occurred and if there has been an impact on patient results, there needs to be a documented and understood process of troubleshooting, rectification, and verification that the assay is back in control [11].

If there has been a problem with the assay that has been detected by the QC sample, then it is essential that any patient samples affected are identified. Again, there should be a documented process that may involve sample every fifth or tenth patient sample looking for a significant difference in the two results from the patient. Then these patient results should be amended, and the clinicians notified where this is deemed necessary in terms of patient risk.

The system above relies on several basic issues. The QC sample behaves the same way as a patient sample, there is a relationship between a statistically significant difference detected by the QC rule and a clinically significant result, and the frequency of QC samples used will detect an error in a timely manner. So how can we incorporate these concerns into our QC strategy?

The first problem relates to the commutability of the QC sample, does it behave as a patient sample does in the assay? This is difficult as many QC materials do not, and it is not an easy task to prove that the QC material is commutable. There are other approaches to QC [12], but conventional QC will be with us for some time, so we need to be aware of this issue. When changing reagent lots, it is worth using previous patient samples to ensure that these changes do not lead to drift in patient results that may not be detected by conventional QC.



The next problem is the frequency of QC samples [13]. Originally when the Westgard rules were developed, patient samples were bracketed by QC samples, and a 'batch' of patient results was not released until the QC sample at the end of the batch passed assessment. Now patient results are usually released as soon as they are analysed, so a QC failure will be detected after results have been sent to the referring clinician. This has occurred because modern instrumentation is extremely reliable and stable. There are a few times when there is an analytical failure. However, this can breed complacency in operators [14]. There are few QC failures and most of those occur because of the QC material itself. Operators will see few real failures due to the reagents or instrument. The infrequent failures lead to the risk that when a real failure occurs, it will not be detected or responded to.

There are some steps we can put into place to ensure laboratories build processes that can mitigate against these potential errors [15].

- Try to make the time between QC evaluations no longer than the time needed to correct results before they're acted on.
- Always end patient testing with a QC evaluation.
- Know the number of patient results between QC evaluations.
- If you're using a 1:2s QC rule and you get a rule failure, repeat it - but just once!
- Estimate your measurement procedure's reliability.
- Devote more QC to analytes with a high probability that erroneous results lead to patient harm.
- Devote more QC to analytes with high expected severity of patient harm from an erroneous result.

These can be useful to apply every day. But QC is poorly understood and practiced today [16]. We all need to think about what we do and why do it!

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A New Horizon of Biochemistry and Laboratory Medicine with Chat GPT

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Artificial intelligence (AI) is capable to simulate human intelligent behavior and critical thinking using computer and machine technology. At present, AI is transforming many fields of societies, including the medical field. One of the most recent topics in AI- based medicine is the Chat Generative Pre-trained Transformer, “ChatGPT” in brief, for generating human like text, which gives answers to queries in natural language processing. It led the world to the transformative potential of artificial intelligence (AI) with rare unexpected creativity. This is such a generative AI, and would be so helpful for building up knowledge and providing interpretations. It is part of the family of generative pre-training transformer (GPT) models that can engage with people to answer questions and uses natural language processing models. It is the largest publicly available language models in current state.

It is also expected to revolutionize the fields of biochemistry and laboratory medicine. On the other hand, the studies in the field have just begun. A study has been recently reported from the biochemical specialists of Indian institute (Ghosh A, 2023). That study examined the responses to biochemistry questions that require higher-order

Thinking. In total, 200 questions, which were selected from the question bank for the competency modules of a valid curriculum, were used for that study. When the specialists evaluated the responses on a 5-point scale, the score was mostly 4 out of 5 points. It implicates that ChatGPT has the potential to resolve questions on biochemistry.

Another study has been recently performed by the European Federation of Clinical Chemistry and Laboratory Medicine Working Group on Artificial Intelligence (CadamuroJ, 2023). That study examined the ChatGPT-v4.0’s interpretations of laboratory reports based on the popular test items. The specialists evaluated the ChatGPT’s interpretations of 10 cases the reference intervals and practical units of test items,as



well as the patient's age and gender attributes. The evaluation of interpretations was relatively high in terms of relevance, correctness, and safety, but not helpfulness. In some cases, there were incomplete interpretations of test items. Interpretation in considering therapy (e.g., drug dosing) appeared to be difficult. The authors have concluded that presently, ChatGPT may interpret laboratory reports on a test-by-test basis, but not the full picture. In research purposes, it has shown the importance of analyzing huge amounts of available literature beyond the scope of a single individual's expertise which helped to reduce the time, energy, and resources spent on experiments that may have a higher probability to obtain futile results (Cahan P, 2023).

Given the small number of studies, the value of ChatGPT is yet to be determined in the fields of biochemistry and laboratory medicine. However, the development of AI-related medicine continues and its apparent potential advantages cannot be denied including expediting research workflows by aiding in data management, candidate selection in trials, and supporting overall research activities. Thus, it can prove helpful in enhancing the productivity of research work. Extending further, the ChatGPT can potentiate the efficiency of academic publishing while helping to review the manuscripts and their editing. Inpatient care, its potential cannot be denied for patient education and assistance in clinical decision-making.

Further, ethical considerations are soon necessary. It cannot be neglected that the speed of technology evolution and adoption requires paying close attention to any medical, ethical, legal, and reputational risks. Human specialists-ChatGPT collaboration will become even more important for the future of biochemistry and laboratory medicine. In its current state, it lacks the capability to offer comprehensive diagnosis while giving critical thinking and originality which is importantly required in healthcare while removing potential biases involved. Thus, it still seems a distant approach while replacing the inherent human qualities and reasoning that are important to medical practice. Thus, instead of implementing the technology hastily; it should be inclined towards its careful introduction and to open a debate about its risks and benefits.

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Laboratories Need To Apply Green Principles



Dr. Endang Hoyaranda
Indonesian Association for Clinical Chemistry

We do not inherit the earth from our ancestors; we borrow it from our children

The world has been struggling for decades to preserve the earth. Despite the efforts of various governments, foundations, groups to lead greener movements, the earth is still suffering from increased global warming, pollution, North pole and Antarctic melting, and of course diseases in humans and animals.

We want to inherit a better world to our next generations. We need to ask ourselves, what we do NOW is going to improve the sustainability of the earth or will worsen the current situation of global warming. Mr. Barack Obama mentioned in his quote: "We are the first generation to feel the impact of climate change and the last generation who can do something about it".

The awareness of mankind to contribute to the preservation needs to be increased. All industry leaders shall be leaders in environmental preservation movements. In particular, industries utilising large amounts of natural resources or producing waste which contributes to the increased worsening of the environment, should contribute the most to the efforts of giving back to nature.

Where does the medical laboratory stand?

Medical laboratories are one of the main sources of energy consumers and waste generators. Clinical laboratories are said to consume 10 times as much energy compared to offices. It also consumes 4 times as much water than offices. Scientific laboratories in general produce 5.5 million tonnes of plastic waste alone every year, which is 1.8% of the plastic waste produced worldwide. Hardly any other place uses as much plastic as hospitals for hygienic reasons. Medical laboratories consume a lot of disposable plastics especially for use on patients, and with the same reasons: Hygiene which remains uncompromisable. Nothing may come as a higher priority than patient safety, which forces the laboratory to use disposables. And then comes safety in the workplace, which is also an important reason to use disposables. Considering those reasons, it seems not to be close to the horizon that plastics disposables will see a reduced utilization in the near future. Although said as not necessarily a utopia, the road to reducing the use of disposable plastics is still long. So what can we do as medical laboratory practitioners, to help the earth from getting worse?

The following, although not a Pandora's Box, may serve as ways for us to contribute.

There are at least four ways the medical lab practitioner can contribute to. Firstly: design a green building, if you have the liberty and access to it; secondly: create and implement policies on resource utilization and waste management; thirdly: implement environment best practices and habits in the workplace, and fourthly: imply policies on utilization of eco-friendly products.

1. Design of a green building

Not every lab can be designed according to green building principles, as many laboratories occupy already existing buildings, but if one has the luxury of starting a lab from anew, the following are some important features of a green laboratory building:

- Orientation of building towards sunrise, so that individuals working in the building will have access to morning sun.
- Easy to accessed be by public transport so workers and service users can reach the lab with minimal use of time and energy.
- Recycling facilities within premises Unused land and rooftops turned into gardens
- Utilisation of recycled materials for construction
- Maximum use of natural light, with low emissivity glass, high windows
- Water conservation by storing rainwater, and using water from sewage for toilets flushing and landscape irrigation

2. Creating and implementing policies on resource utilization and waste management

Lab management needs to understand more about what policies on resource utilization and waste management can be implemented?

- The most effective approach to green resource utilisation is to use eco-friendly equipment for air conditioning, lights, toilets. Motion sensor lights, which are switched on and off when people enter or leave, green air conditioning system using 'variable refrigerant volume' which can increase air conditioning efficiency by 30% or more, toilets which flush with 4.5 liter instead of 6 liter water, waterless urinoirs, motion sensor faucets, just to mention some.
- To minimise utilisation of clean water, use stored rainwater and waste water instead for toilet flushers and watering the gardens.
- Standard laboratory waste management shall be practiced, with as much recycled products used as possible.

3. Implementing environment best practices and habits in the workplace

- It has been a worldwide recommendation for all citizens of the earth since the last decade that people shall not use disposable plastic cups. A personal tumbler usage policy shall be a standard policy for all medical laboratories.

For all plastic use, it is mostly common to urge on usage of reusable plastic or other materials. However, although recycled materials are already a step forward, the recycling process itself in practice is not as easy and simple. That is why as long as reusable materials are available, this must be the choice before recycled materials.

- Each laboratory shall have a policy on paper consumption. Which documents are allowed for printing, how much paper in the kitchen or toilets are to be used, shall be policies implemented with enforcement.



- Whenever possible, laboratories shall implement the R5 policy and audit it periodically. R5 stands for: Reduce, Reuse, Recycle, Replace, Replant. Reduce everything possible to increase efficiency: waste, electricity, water, paper. Reuse waste like plastic bottles as plant pots, etc. Recycle whatever is recyclable. Replace as much eco-unfriendly materials with eco-friendly materials like fabric towels instead of paper towels. Replant, or reforestation as much plants in gardens and lands to serve as buffer.
- Implement a freezer usage policy: periodic defrosting, cleaning out of unneeded materials,

4. Implementing policies on utilization of eco-friendly products

What are categorized as eco-friendly products? In principle, eco-friendly products are products which cause minimal harm to people and the environment.

Some characteristics of eco-friendly products are:

- Products which are not produced using a lot of resources (electricity, water, pesticides, etc)
- Renewable energy from wind, solar, rain, waves, geothermal sources, plants, are good resources alternatives whenever available
- Products made of recycled material – yard waste, recycled glass-paper-plastic, rather than aluminum cans which needs 500 years to decompose.
- Products which are produced in a manner producing minimal harmful waste.
- Some features are: not containing chlorofluorocarbons, or hydro-chlorofluorocarbons, or other ozone-depleting substances; low embodied energy (energy required to produce and transport the materials and products)
- Some eco-friendly PPE: organic cotton or recycled material laboratory coats; nitrile gloves; reusable and biodegradable goggles, polyethylene shoe covers.

All the above are opportunities of individual labs. Apart from that, group of medical laboratory practitioners may start movements, perhaps in collaboration with the IVD industry in raising awareness of practitioners by conducting surveys, or creating self-assessments for laboratories. Self-assessments may serve as awareness tools and if followed with site visits may also serve as competition programs. Even a simple freezer usage competition may work as an effective tool in raising awareness. Greenlab leaders in the country/region may conduct webinars continuously as to keep the awareness at a high level.

The road to a green earth is still very long, and some may think is impossible, as mankind nowadays live with the comfortability of today's technology and convenience, but there is no other choice than striving for embitterment. Because we want the coming generations to live in a livable world, eating healthy food and breathing healthy air. To quote a saying from the Aborigines: "Look after the land and the land will look after you, destroy the land and it will destroy you".

Jakarta, 29 July 2023

Global Medlab Week 2023



Prof. Rajiv Erasmus

Dr. Maria Schroeder-Castagno

Dra. BQF. María del C. Pasquel

The Global Medical Lab Week celebrations is now in its second year. Its role is to highlight the vital role of the clinical laboratory professionals in health care, public health and the diagnosis of disease. The recent COVID19 epidemic highlighted the critical role laboratory professionals' played in the diagnosis and monitoring of patients with COVID19. This year the GMLW took place from 23rd to 29th April and was principally organized by the Committee on Public Relations (C-PR), a subcommittee of the Communications and Publications Division (C-PD Committee).

Like last year this was highly successful thanks to the collaboration of professionals from the 96 member countries that are part of the IFCC and that are within the 6 large federations that make it up: African Federation of Clinical Chemistry (AFCC), Arab Federation of Clinical Biology (AFCB), Asia Pacific Federation of Clinical Biochemistry and Laboratory Medicine (APFCB), Latin American Confederation of Clinical Biochemistry (COLABIOCLI), North American Federation of Clinical Chemistry and Laboratory Medicine (NAFCC).

The successful global Campaign was also possible because C-PR additionally received the fundamental support and tight cooperation from different IFCC Committees, Groups and Task Forces, to organize the GMLW 2023. For example, the Task Force of IFCC Young Scientists (TF-Ys) proposed the initial ideas and greatly promoted the making of the video "LiveMyLab" considering it a very valuable tool of easy communication of our role as lab professionals in patient welfare with public and health system-professionals. Furthermore, the Ibero-American Working Group on Nomenclature and Translation (WG-IANT), its Chair Dr. Raúl Girardi, from Argentina, held WhatsApp groups between the member responsible for the C-PR, Dr. Maria Pasquel. The National Representatives and the champions of each country also played a critical role introducing dozens of videos and podcasts that were made in which activities carried out by the clinical laboratory professionals were made known for the benefit of the general public and other non-laboratory healthcare professional groups.

The Internet and Digital Communications Committee (C-IDC) was very helpful and collaborative in this digital communication, while COLABIOCLI presented 24 videos and 2 podcasts, being the federation that contributed the most.

Several worldwide countries developed press releases, scientific activities, activities between scientific societies and the families of their members to publicize the profession of the clinical laboratory professional and such activities were also promoted on social networks in which photos, logos of the week and videos made by different professionals in their laboratories were shared.

In recognition of their time, effort, and co-operation those who collaborated in this year's GMLW 2023 activity received a certificate of participation.

IFCC is very appreciative of all the cooperation given to GMLW 2023, which has led to the increased activity on IFCC's social media on Facebook, Instagram, LinkedIn, and podcasts on Spotify. The immense support from the IFCC office through the efforts of Ms. Silvia Colli-Lanziis acknowledged and indeed this week would not have been a success had it not been for her daily input and support.

For next year's GMLW the theme of "LABS SAVES LIVES" has been proposed by the C-PR Committee. It is possible to continue sharing this important GMLW information from the following link.



Let's celebrate the Global MedLab Week 2023! - IFCC

Let's celebrate the Global MedLab Week 2023! The International Federation of Clinical Chemistry and Laboratory Medicine (IFCC) celebrates the Laboratory

ifcc.org

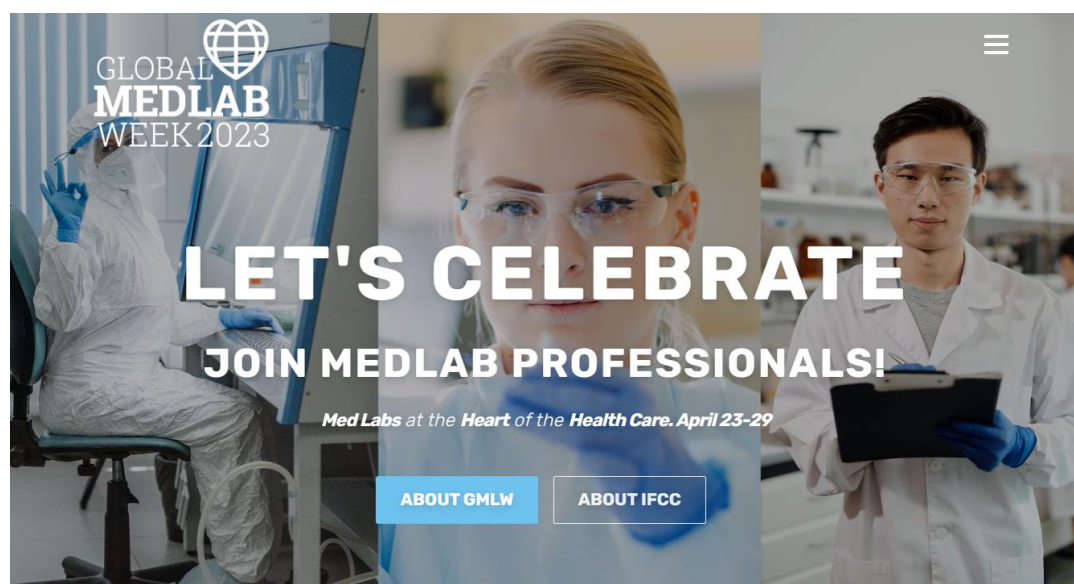
Dear all, could you please share these videos /podcasts etc in your social media Instagram/ Facebook, Twitter etc etc ? GMLW is only 23-29 April

<https://ifcc.org/ifcc-communications-publications-division-cpd/cpd-committees/public-relations-c-pr/happy-laboratory-professionals-week-2023/>

Attached are some clips announcing the GMLW for 2023? Also attached are the video clips and podcasts for GMLW 23



IFCC President, Prof. Khosrow Adeli, institutes the Global Medlab Week in Munich, April 11, 2022, during the Euromedlab.



Link GMLW 2023

Welcome – Global Med Lab Week 2023 – IFCC – Let’s Celebrate Med Lab Professionals around the World



7 Winner Videos -LiveMyLab during GMLW 2023 selected from roughly 50 videos sent by worldwide colleagues. Welcome – Global Med Lab Week 2023 – IFCC – Let’s Celebrate Med Lab Professionals around the World

Links to visualize “LiveMyLab” videos and Spotify PodCasts:

<https://ifcc.org/ifcc-communications-publications-division-cpd/cpd-committees/public-relations-c-pr/happy-laboratory-professionals-week-2023/>

IFCC Podcast



IFCC Podcast Welcome – Global Med Lab Week 2023 – IFCC – Let’s Celebrate Med Lab Professionals around the World

GMLW Organizers: Committee on Public Relations (C-PR), IFCC President Prof. Khosrow



IFCC Public Relations Committee during the meeting on May 22 held in Rome during the Euromedlab– World lab 2023: from left to right are:



Dr. Endang Hoyaranda (APFCB; C-PR Advisor), Dr. BQF. María Pasquel Moxley (Ec, C-PR member), Dr. Enrique Rodríguez Borja (Es, Corr. Member), Prof. Rajiv Erasmus (C-PR Chair), Prof. Khosrow Adeli (IFCC President), Dr. Peter Vervaat (AuC-PR member), Dr. Maria Schroeder-Castagno (C-PR member).

Committee on Public Relations (C-PR):

Dr Maria Pasquel Moxley (member)

Dr Maria Schroeder- Castagno (member)

Dr Peter Vervaat (member)

Prof Rajiv Erasmus (chair)



IFCC Public Relations Committee (C-PR) and Task Force Young Scientists (TF-YS) during the meeting on May 22 held in Rome during the Euromedlab- World lab 2023: from left to right and line below and above are:

C.B. Jessica Peña (Roche scholarship recipient Guest), Dr. BQF. María Pasquel Moxley (C-PR member), Dr. Maria Schroeder-Castagno (C-PR member & TF-YS Corr. member), Dr. Udara Senarathne (TF-YS member); Dr. Claudia Imperiali (TF-YS member); Dr. Francisco Josue Carrillo (TF-YS Guest); Dr. Enrique Rodríguez Borja (C-PR Corr. Member); Prof. Rajiv Erasmus (C-PR Chair); Prof. Okesina (C-PR advisor); Dr. Marie Lenski (TF-YS member), Dr. Peter Vervaat (C-PR member), Dr. Ashlin Rampul, (TF-YS member).



IFCC and IFCC Roche Scholarships recipients, with the IFCC President Prof. Khosrow Adeli and other C-PR and TF-YS IFCC Officers (Dr. Maria Schroeder-Castagno (C-PR member & TF-YS Corr. member), Dr. Claudia Imperiali (TF-YS member), Dr. Marie Lenski (TF-YS member), Dr. Elodie Lebretonchel (TF-NBS member & TF-YS Corr. member), Prof. Pillay (C-PR Chair) Supporting GMLW 2023 during the meeting on May 22 held in Rome during the Euromedlab- World lab 2023.

Sickle Cell Disease: Prevalence, Challenges And Road Map For Its Control In India By 2047



Prof. Hariom Sharma

Laboratory Director

Govt. Medical College & Sir T. Hospital

Bhavnagar - Gujarat - India

Hon. Scientific Coordinator of SCDIO - France

Introduction

Sickle cell disease (SCD) is first molecular disease known to mankind, and at the same time it is most neglected disease world over. Red blood cells become sickle shape as result of missense mutation in the HBB gene encoding the β -globin subunit of haemoglobin. An individual will have sickle cell trait due to one sickle mutation (usually sickle haemoglobin [HbS]), whereas sickle cell disease will arise due to mutation on both HBB genes (at least one of which is HbS). Sickle cell trait is largely a benign condition but on the other hand confers protection against severe malaria. Sickle cell disease patients will have a lifelong, severely-disabling disease with lower quality of life, high use of medical resources, increased economic burden, and nearly guaranteed early death. Sickle cell disease (SCD) is very complex in nature as it causes multiple complication like malformed, sickle-shaped red blood cells that occlude capillaries and prevent tissue oxygen delivery, leading to acute and chronic pain, severe anaemia, kidney dysfunction, acute chest syndrome, stroke and other cardiovascular diseases, increased susceptibility to infectious diseases (including malaria), pregnancy complications, and maternal mortality

The number of people living with sickle cell disease globally increased by 41.4% (38.3–44.9), from 5.46 million (4.62–6.45) in 2000 to 7.74 million (6.51–9.2) in 2021. According to one report cause-specific all-age deaths globally in 2021 was 34,400 (25000–45200), but total sickle cell disease mortality burden was nearly 11-times higher at 3,76,000 (3,03 000–4,67 000). In children younger than 5 years, there were 81,100 (58 800–108000) deaths, ranking total sickle cell disease mortality as 12th (compared to 40th for cause-specific sickle cell disease mortality) across all causes estimated by the GBD in 2021.

Different forms of Sickle Cell Disease (SCD) and its worldwide distribution

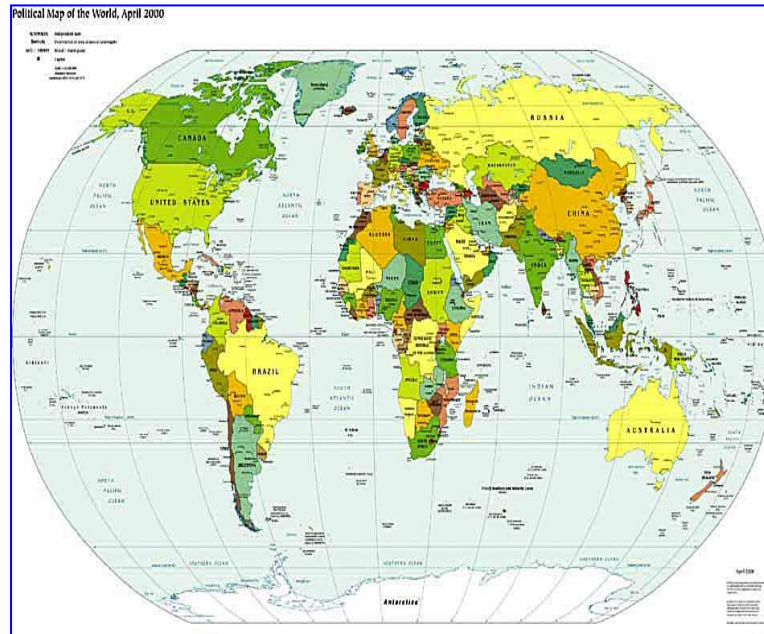
In Africa, Caribbean, North & South America, and Europe:

- Sickle Cell occurrence known as Haplotype
- Sickle hemoglobin (HbS)
- Sickle hemoglobin C (HbC)
- Beta thalassemia Sickle cell
- Homozygous Sickle cell (SS)



In Asia & Middle East:

- An additional Sickle Cell occurrence known as Asian Haplotype
- Shared by people in Asia, the eastern province of Saudi Arabia and throughout central India
- Asian Haplotype associated with high levels of fetal hemoglobin and frequent deletional alpha thalassaemia

Prevalence

155 countries concerned in 5 continents

The most widespread worldwide

100 Millions Sickle Cell traits carriers

500 000 newborn with sickle cell traits yearly

Evidence of life improvement for sick people in northern hemisphere

United States

The exact number of people living with SCD in the U.S. is unknown, but it is estimated that approximately 100,000 Americans are affected by the disease. One out of every 365 Black or African-American is born with SCD. Whereas one out of every 16,300 Hispanic-American are born with the disease. It is reported that 1 in every 13 Black or African-American babies carries sickle cell trait (SCT)

Africa and Asia

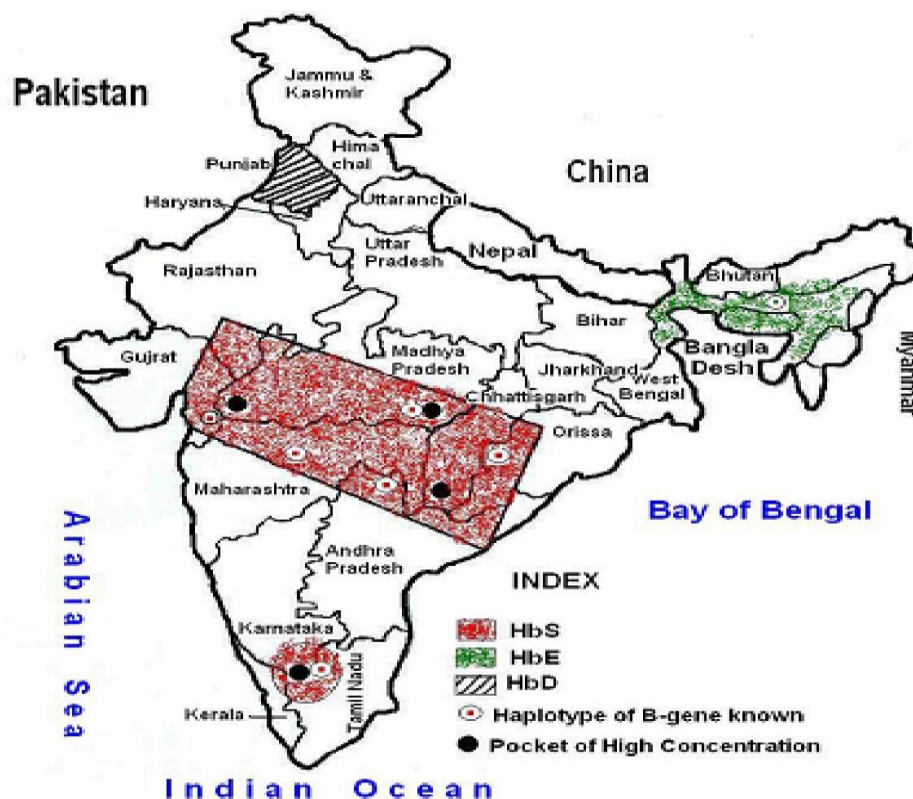
Half of the world's SCD population lives in three countries: Nigeria, India, and the Democratic Republic of Congo. The disease affects up to 2 percent of the population, and the carrier prevalence rate (sickle cell trait) is as high as 10 to 30 percent.

Nigeria alone has been estimated to have at least 150,000 newborns with SCD annually. Estimates are challenging because of the lack of federal newborn screening programs; however, approximately 700,000 births occur per year and the prevalence of SCD in newborns was 3 percent in a regional newborn screening program report.

India

India has the largest tribal population which is 8.6% /67 million of the total population. The prevalence of sickle cell carriers among different tribal groups varies from 1 to 40 per cent.

Distribution of Hb Variants in India



In spite of the fact that sickled red blood cells were detected in Assam as early as in the year 1952, the sickle cell hemoglobinopathy has remained a neglected field of research in India.

Challenges to control SCD

SCD is illness of ignorance, poverty & pain, it is necessary to destroy the myths that are sources of indifference and passivity. The comparison of the therapeutic possibilities between developed and developing countries is an example of more than unbearable inequality; troubling evidence emphasizes the tragic disparity among humans facing disease and death. In the developing countries, financial burden on the parents of the children suffering from SCD limits the quality of the daily medical care and sometimes results in their death for lack of available but expensive cares such as transfusion or antibiotics prophylaxis.

Role of clinical laboratories and healthcare system in the management of SCD

Laboratories can play a vital role in screening of the population for the disease diagnosis, whereas Primary Healthcare/Tertiary care hospital shall have facilities for immunization, necessary medicine and infrastructure for daycare to be affordable. Transfusion facilities can help primarily in management of the SCD patients and also in bringing down the burden of the disease.

Prenatal diagnosis

Although there are significant advances in the management of sickle cell disease, yet increased morbidity and early death are not infrequent. Thus, prenatal diagnosis remains an important option for couples at risk of having a child with homozygous sickle cell anemia, sickle β thalassemia or HbSD disease despite the fact that it is impossible to predict the severity of the disease and many individuals may have a milder clinical presentation. With increasing awareness in the community more couples are opting for prenatal diagnosis. It is reported that around 400 prenatal diagnosis for sickle cell disorders about 20 per cent were tribal couples mainly from South Gujarat, Maharashtra, Madhya Pradesh and Odisha. Chorionic villus sampling at 10 to 12 weeks of gestation and DNA analysis by reverse dot blot hybridization or allele specific priming were the methods of choice for prenatal diagnosis. This makes prenatal diagnosis simpler and more cost-effective in tribal populations. For couples who came late, the cordocentesis and foetal blood analysis by HPLC were done. These technologies have now been established at regional centers.

Role of laboratory in monitoring and management of SCD patient

There are numerous methods available to diagnose hemoglobinopathies. The first is hemoglobin fractionation and consists of separating hemoglobin species based on charge and/or size. Hemoglobin fractionation can be performed by high-performance liquid chromatography (HPLC) methods, capillary electrophoresis (CZE) methods, and gel electrophoresis methods (alkaline and acid gels and isoelectric focusing, IEF gels).

HPLC separates hemoglobin fractions based on charge, whereas with CZE and gel methods, separation is based on both size and charge. HPLC and CZE are high resolution quantitative techniques. Gel methods, on the other hand, are low resolution compared to HPLC and CZE, although they can be semi quantitative.

Mass spectrometry and molecular methods (sequencing and deletion/duplication) are extremely powerful techniques for diagnosing hemoglobinopathies and thalassemia, particularly those that are challenging to diagnose with HPLC, CZE, and gel methods. However, these methods are for qualitative identification and do not quantify hemoglobin species.

Patients with SCD have historically been managed by RBC transfusions and/or hydroxyurea. Managing and monitoring patients on these treatments requires discrimination and accurate quantitation of the various hemoglobin species; therefore, HPLC or CZE are the preferred methods for following:



Table 1: Technologies for SCD diagnosis and monitoring:

Technique	Sensitivity	Specificity	Accuracy	Advantages	Disadvantage	Result
Peripheral blood smear (PBF)	35.0%.	96.7%	90.5%	Simple preparation, inexpensive, Turnaround time (TAT) is 44 min.	Dependence on the pathologist's skills, does not differentiate between different types of SCD.	Detect sickle cells
Solubility and Sickling	Sickling: 65.0% Solubility : 45.0%.	Sickling: 95.6% Solubility : 90.0%.	Sickling: 92.5% Solubility : 85.5%.	Easy, inexpensive, fast, affordable, TAT 38 min for sickling, TAT for solubility 70 min.	Testing newborns shows false-negative result, does not differentiate between SCD types.	Detect the sickling event.
Capillary electrophoresis	Not reported	Not reported	Not reported	Reliable, ability to distinguish most types of sickle cell disease including heterozygous.	Expensive, requires skilled technicians.	Identify and quantify Hb F, Hb A, Hb A2, Hb S, Hb C, Hb Barts and other.
Isoelectric focusing (IEF)	Not reported	Not reported	Not reported	1) Detect Hb S and HbA easily in a high concentration of Hb F, 2) Hb D-Punjab easily separated from Hb S, 3) need small volume of the sample, 4) able to use dried blood spot, 5) TAT is 45 min	Expensive, requires highly trained staff to interpret the results.	Hb A, Hb F, Hb C, Hb S, Hb E and Hb O Arab.
High-performance liquid chromatography (HPLC)	Not reported	Not reported	Not reported	Reliable, ability to distinguish most types of sickle cell disease including heterozygous, fully automated.	Misdiagnoses the new variants that mimic Hb S, Expensive and needs trained personnel, not practical in limited resources	Detect Hb F, Hb A2, Hb S, Hb C, Hb Barts, and other Hb variants.

It is evident that there is availability of broad spectrum laboratory tools and techniques available for the mass screening of the population followed by confirmatory diagnosis and prognosis of the disease. A network of laboratories need to be created for the screening of population which is pre-disposed to SCD followed by strategic sickle cell control program planning and implementation will certainly will meet the nations goal to eradicate the disease.

Road Map

The **National Sickle Cell Anemia Elimination Program**, introduced in the Union Budget 2023, focuses on addressing the significant health challenges posed by sickle cell disease, particularly among tribal populations of the country. Sickle cell disease (SCD) is a chronic single gene disorder causing a debilitating systemic syndrome characterized by chronic anemia, acute painful episodes, organ infarction and chronic organ damage and by a significant reduction in life expectancy. Implemented in 17 high-focus states

Across the country, this program aims to improve the care and prospects of all sickle cell disease patients while reducing the prevalence of the disease. The 17 states are- Gujarat, Maharashtra, Rajasthan, Madhya Pradesh, Jharkhand, Chhattisgarh, West Bengal, Odisha, Tamil Nadu, Telangana, Andhra Pradesh, Karnataka, Assam, Uttar Pradesh, Kerala, Bihar, and Uttarakhand. The program is executed in a mission mode as part of the National Health Mission (NHM), aims to eliminate sickle cell genetic transmission by the year 2047, showing a long-term commitment to eradicating the disease. Over a period of three years, spanning from the fiscal year 2023-24 to 2025-26, the program targets screening approximately 7.0 crore people. This ambitious goal highlights the program's dedication to reaching a large portion of the population, promoting early diagnosis and intervention. All these exaggerated efforts will certainly eradicate the sickle cell disease in the population.

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APFCB AUSPICES EVENTS CALENDAR 2023

Dr. Woei-horng Fang, PhD
Chair, APFCB C-CC

EVENTS CONDUCTED			
Dates	Country	Theme	Organizer
23-25 March 2023	Jakarta, Indonesia	IFCC Visiting Lecture 2023 : Prof. <u>Khosrow Adeli</u> (IFCC President)	Indonesian Association for Clinical Chemistry
1 April 2023	Indore, India	<u>Snibe</u> Academic Conference on Immunology	<u>Snibe</u> Co., Ltd.
22 April 2023	Shenzhen, China	New Progress in Research and Application of International Laboratory Medicine	<u>Snibe</u> Co., Ltd.
16-19 May 2023	Iran, Tehran	14th International & 20th National Congress on Quality Improvement in Clinical Laboratories	Iranian Association of Clinical Laboratory Doctors
24 June 2023	Delhi, India	<u>Snibe</u> Academic Conference on Immunoassay	<u>Snibe</u> Co., Ltd.
9 July 2023	Dubai	International Conference on Immunology	<u>Snibe</u> Co., Ltd.
14-15 July 2023	Kandy, Sri Lanka	Annual Academic sessions CCPSL 2023	College of Chemical Pathologists of Sri Lanka (CCPSL)

UPCOMING EVENTS			
5 October 2023	Yokohama, Japan	Re-imagining Mass Spectrometry – A Convergence of ideation, innovation and integration	Roche Diagnostics Asia Pacific

CLINICAL CASE

Case History & Examination

A 45-year-old female presented to the Department of Medicine clinic at a tertiary care referral hospital, Delhi, India with the chief complaints of **fever, right loin pain** associated with **nausea** and **dysuria** since last 5 days. She gave the history of visiting a private clinic 3 weeks earlier with similar complaints and received parenteral antibiotics for the same, to which she responded initially but again developed fever and right flank pain and visited our hospital. She is a known case of Diabetes mellitus and is on regular oral hypoglycemic agents for the last 2 years. She also has a history of recurrent urinary tract infections in the past.

On physical examination, the patient was found to be **febrile** with oral temperature **39.5°C**, heart rate 93 bpm, and blood pressure 100/60 mm Hg. No signs of pallor, icterus or lymphadenopathy were seen. Chest and cardiac auscultation did not reveal any abnormality. On palpation, the abdomen was found to be soft and lax but there was **right renal angle tenderness**. The patient was admitted to medicine ward in view of **persistent fever** and **recurrent urinary tract** infections for further evaluation and laboratory investigations. The results as shown below (Table 1):

Laboratory Investigations

Blood investigation	Test result	Biological reference interval
Complete blood count		
Hemoglobin	12.5 gm/dL	12-15.5gm/dL
WBC-TLC	12 x 10³/μl	5-10 x10 ³ /μl
Neutrophils	82%	60-75%
Lymphocytes	20.0%	20-40%
Platelets	160 × 10 ³ /μL	150-400 × 10 ³ /μL
Renal function tests		
Urea	30 mg/dl	18-55mg/dl
Creatinine	2.7 mg/dl	0.5-1.1 mg/dl
Serum electrolytes		
Sodium	139 mEq/L	135-145 mEq/L
Potassium	4.8 mEq/L	3.5-5.3 mEq/L
HbA1c Value	7.5%	4.2%- 5.7%
C-reactive protein (CRP)	90 mg/L	< 5 mg/L

Routine investigations revealed **high HbA1c value** (7.5%) with normal serum sodium levels, normal levels of urea and haemoglobin. Serum **creatinine** was raised. **TLC** was also raised along with **CRP** depicting **infection**. Further blood culture test was ordered for which two sets of blood samples were collected in aerobic and anaerobic bottles; only one of the **aerobic** bottles was flagged **positive** in the after >48 hrs of incubation. The gram-stained smear of the sample from the positive blood culture bottle showed presence of **gram-negative bacilli in clumps**, and culture on blood agar plates also grew the same organism.



The isolate was positive for **indole** and **catalase**, whereas oxidase, citrate and urease were negative (Figure: 1).



Figure 1: Isolate positive for indole (marked)

Urine Examination

Urine routine and microscopic examination	Test result	Reference
Physical Examination		
Volume	20 mL	
Color	Pale yellow	Straw colored
Transparency	Clear	Clear
Deposit	Absent	Absent
Chemical Examination		
Urine glucose	Positive	Negative
Urine protein	0.25 g/l	(normal <0.1 g/l)- Dipstick
Nitrite	Positive	Negative
Microscopic Examination		
Leukocytes	70-80/hpf	Normal <0-4/hpf
Erythrocytes	55/ hpf	Normal <0-4/hpf
Bacteria	2+	Absent

Urine Routine/Microscopy revealedurine protein 0.25 g/l (normal <0.1 g/l) by Dipstick, while **glucose** and **nitrites were positive**. Microscopy–revealed **leukocytes 70–80/hpf** (normal <0–4/hpf), **erythrocytes 55/hpf** (normal <0–4/hpf) and bacteria 2+ (Table 2). Urine ketone bodies, bilirubin, urobilinogen, and leukocyte esterase were negative.

Urine sample was also collected for culture (clean catch mid–stream urine), which showed yield growth of **E. coli** on CLED agar plates after18 hrs of incubation (Figure: 2).



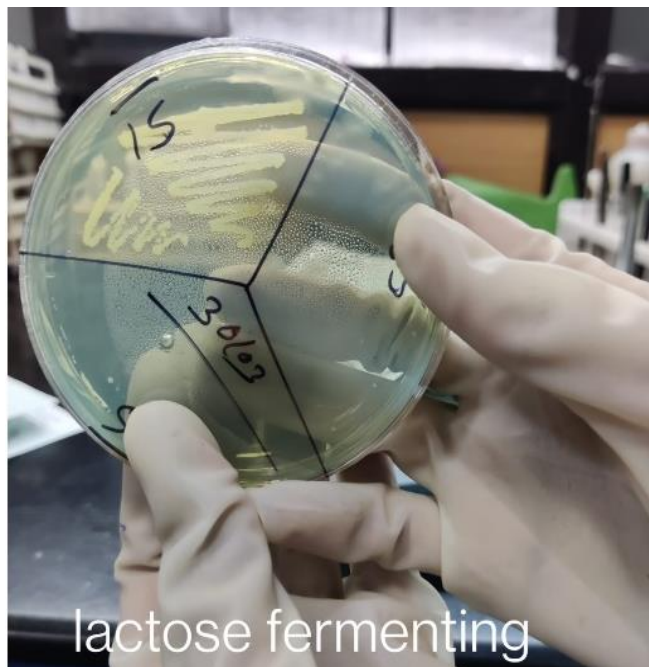


Figure 2: Colonies of lactose fermenting bacteria on CLED agar plates after 18 hrs of incubation

Antibiotic susceptibility testing (AST)

It was done by Kirby Bauer disk diffusion susceptibility test method on Mueller Hinton agar plates which showed the bacteria **resistant** to **ciprofloxacin** and **sensitive** to **1st generation cephalosporin's** (Figure 3).

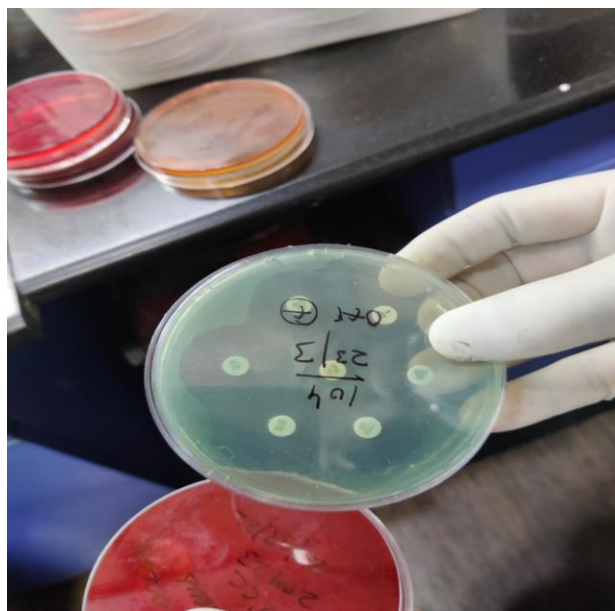


Figure 3: Mueller Hinton agar plates which showed the bacteria resistant to ciprofloxacin and sensitive to 1st generation cephalosporins

Radiological examination:

Ultrasound findings revealed **enlargement of kidney** in size with surrounding **perinephric fat stranding** along with ptheresence of **calculi** in the right kidney (Figure 4).

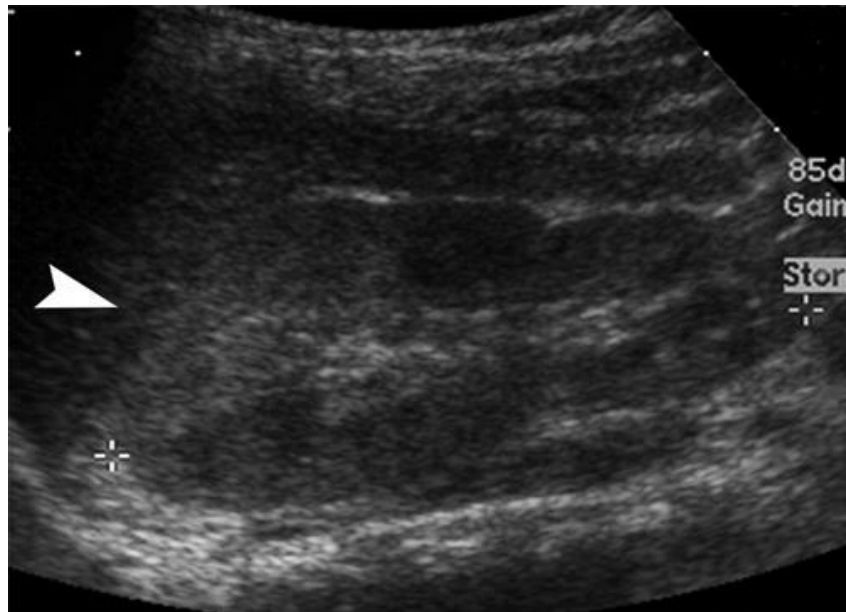


Figure 4: USG findings: Hypoechoic kidney with renal sinus fat lost.

Interpretation & Analysis

Major hospital admissions due to lower urinary tract infections have a high chance of progressing to upper urinary tract and cause pyelonephritis. Inflammation of the renal parenchyma brought on by bacteriuria that travels from the bladder via the ureters and up to the kidneys is the hallmark of acute pyelonephritis.

In this case study, urinary analysis, radiological results, together with the recognized presenting symptom triad of nausea, fever, and flank pain allowed the practitioner to make the diagnosis of acute pyelonephritis. The diagnosis for Pyelonephritis was mainly done on the basis of clinical history, urine microscopy and culture and blood culture. Radiological findings of ultrasound helped rule out other possibilities such as a renal abscess and emphysematous kidney. Complications were ruled out by other biochemical blood investigations.

Being a female, known diabetic patient with history of recurrent episodes of UTI made the patient more prone to develop pyelonephritis. Urine culture which showed yield growth of *E. coli* on CLED agar plates, also led the way closer to the diagnosis, as *E. coli* is the most common bacteria to cause pyelonephritis. Furthermore, antibiotic sensitivity testing helped us know that the patient was resistant to ciprofloxacin treatment.

So correct line of treatment was started during her inpatient stay: IV ampicillin +1 aminoglycoside until afebrile till 24 hours, then oral antibiotics for 3 weeks. These antibiotics were adjusted accordingly after monitoring of AST results. Patient's condition improved as reported in the follow up visits to the OPD.

Diagnosis:

ACUTE PYELONEPHRITIS

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A Beautiful View of the Three Gorges in China

By Dr Tan It Koon

I am so glad I had the opportunity to visit the Three Gorges three times before building of the dam by the Chinese Government. I also visited the Small Gorge which is narrower and accessible only by smaller boats. The narrow waterway required skillful boatman to navigate the rapids and shallow waters at parts of the journey. However, the views are much more spectacular than those on the main route.

At about 6300 km, Chang Jiang or Long River (长江) is the longest river in Asia and third longest in the world. It is the longest in the world to flow entirely within one country and plays a large role in the history, culture, and economy of China. For thousands of years, the river has been used for water, irrigation, industry, sanitation, transportation, boundary marking, and war. Passing through 10 provinces, it commences its flow from the Tanggula Mountains (唐古拉山) in ethnic Tibetan Qinghai (青海) Province in northwest China and ends at the East China Sea in Shanghai (上海). Along the middle reaches of the river, between the western upstream Baidi City (白帝城) of Chongqing (重庆) Municipality and Yichang (宜昌) city of Hubei (湖北) Province downstream, the river passes through 3 adjacent gorges, known as the Three Gorges (三峡): Qutang, Wuxia, and Xiling gorge (瞿塘, 巫峡, 西陵峡) cutting through the Wu Mountains (巫山). Spanning a distance of about 120 km, these gorges are noted for their natural beauty: unusual looking mountain peaks ranging from 800 m to 2000 m, precipitous valleys, dense forest, and spectacular landscape. Many ancient government officials, scholars, poets, and painters visited the Three Gorges and left their impressions and praises in writings. Archaeological discoveries in recent years have shown for the first time that the Three Gorges area should be recognized as the birthplace of Chinese civilization.

As the source of the river was not ascertained until modern times, different names were given to the lower and upstream sections of the river. "Yangtze River 扬子江" was actually the name of Chang Jiang only for the lower part from Nanjing (南京) to the river mouth at Shanghai. Yangtze is the local name for the Lower Yangtze in the region of Yangzhou (扬州). The name likely comes from an ancient ferry crossing called Yangzi or Yangzi Jin (扬子津). Europeans who arrived in the region applied this local name to the river. Due to the fact that Christian missionaries carried out their activities mainly in this area and were only familiar with the name of this part of the river, "Yangtze River" was consequently used to refer to the entire river in the English language by foreigners.

Prior to the building of a dam, rapids, strong currents and narrower passage ways with protruding rocks at some sections of the river used to pose difficulty of movement and risk of capsizing to boats and rafts sailing through. Men from the rural villages nearby used to work as trackers to help boats and barges manoeuvre safely through such dangerous passages. Working with little or no clothing, the nearly naked men used ropes to pull boats safely through the rough and rocky patches. Having to get in and out of water frequently caused clothing to be wet and heavy, and very uncomfortable

To wear. Wet clothing predisposed the men to become ill with a cold, resulting in loss of income due to illness. Furthermore, wearing clothes was impractical as the friction of ropes around the body invariably shred them to pieces.



In 1992 the development of a Three Gorges Dam was approved by the Chinese Government, and work began in late 1994. The reservoir dam was constructed at Sandouping (三斗坪), Yichang (宜昌) of Hubei (湖北) Province, in the middle of Xiling Gorge. The project was completed by the end of 2008. Several years later, a ship-lift was added. The dam became the largest hydroelectric power station in the world. The dam and reservoir have had a massive impact on the region's ecology and people, requiring the mass relocation of villages, towns, and industries. The higher water level has changed the scenery of the Three Gorges. As the river is wider, the mountains now appear lower. Nevertheless, the gorges continue to offer beautiful views of the surrounding cliffs. The increased width and depth of the river permits larger ships through the gorges, and there has been a significant increase in river traffic of all kinds, including bulk cargo and container barges. As the dangerous passage ways have disappeared with the building of the dam and rising water level, there is no longer a need for the trackers.

This painting is inspired by my experience of the 3 cruises I had through the Three Gorges and the Small Gorge prior to the building of the dam and reservoir.

With Best Wishes

Dr Tan It Koon

Founding President, SACB

Founding President, APFCB

Former IFCC, Executive Board Member

Former WHO Member of Expert Committees

