

The Hong Kong College of Pathologists, Incorporated in Hong Kong with Limited Liability

# PATHOLOGUE

#### NEWSLETTER OF THE HONG KONG COLLEGE OF PATHOLOGISTS



#### Cover:

Electronically designed cover by Dr KWOK Ka Ki. Photo taken by one of our editors, Dr Naomi CHENG.

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### **The Editorial Board**

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## **Message from the President**

I am happy to report that following the return of normalcy in Hong Kong, we have resumed connections with overseas colleagues via face-to-face meetings during overseas visits.

Together with representatives from the Hong Kong Academy of Medicine and the sister Colleges, I attended the 57th Singapore-Malaysia Congress of Medicine on 19 – 21 July 2024. This 3-day event offered a valuable platform for medical professionals from Hong Kong, Singapore and Malaysia to exchange ideas. It also provided an opportunity to reconnect with old friends I met at the International Liaison of Pathology Presidents (ILPP) 2023 Annual Meeting, as well as to make new connections.

Additionally, I represented the College at the 36th European Congress of Pathology on 7 – 11 September 2024, in Florence, Italy. I joined the European Society of Pathology (ESP) Advisory Board meeting to enhance cooperation with our European counterparts. Most importantly, the College signed a Memorandum of Understanding (MoU) on cooperation in Anatomical Pathology with the ESP, paving the way for future educational collaborations. This year, Professor Peter Schirmacher, the President of the ESP, and Dr Raed Al Dieri, the Chief Executive Officer of the ESP, joined our College Conferment Ceremony. Their visit underscores the cooperation between ESP and HKCPath. Professor Schirmacher delivered a webinar on "Liver Neoplasms and Mimickers" on 15 November 2024, and a T.B. Teoh Foundation Lecture on the topic "Third Generation Molecular Pathology – From Research to Diagnostic Implementation" on 16 November 2024. Many of us gave positive feedback on these events.



From left to right Dr Raed AL DIERI, Professor Peter SCHIRMACHER, Dr MAK Siu Ming, Professor Gilberto LEUNG (President of the Hong Kong Academy of Medicine) My last college overseas visit in 2024 concluded with the International Liaison of Pathology Presidents (ILPP) 2024. I attended the ILPP 2024 Annual Meeting, which was organized in London, U.K. Similar to last year's ILPP, which was hosted in Hong Kong, this one-and-a-half-day business meeting offered an excellent platform for discussing various challenges in Pathology. It was not surprising to learn that we have been facing similar challenges worldwide. Our discussion yielded insightful ideas and potential solutions to the current challenges, particularly concerning the adoption of artificial intelligence in image analysis and "big data" analysis.

As mentioned in the President's speech at the 2024 Conferment Ceremony, the College Council shall set a number of key priorities. The College Council has endorsed and published guidelines on "Implementation of Digital Pathology and Adoption of Artificial Intelligence" for our members' reference. Aligning with the Academy's initiatives for faculty development will be our College's primary focus in the coming few years. A proactive approach to Green Pathology will also be initiated.



Dr MAK Siu Ming President 2 December 2024

## **President's Overseas Visits**



Congress Dinner on 19 July 2024 with the Hong Kong Academy of Medicine delegates

57th Singapore-Malaysia Congress of Medicine and Induction Comitia 2024 from 19 - 20 July 2024 in Singapore



Congress dinner on 19 July 2024 with overseas sister Colleges of Pathologists delegates



Induction Comitia 2024 on 20 July 2024



International Collaboration on Cancer Reporting (ICCR)-related Activities on 8 September 2024 in Florence



36th European Congress of Pathology from 7 – 11 September 2024 in Florence



President attending the European Society of Pathology Advisory Board Meeting



Reunion Dinner with ICCR and ESP on 8 September 2024

International Liaison of Pathology Presidents 2024 in London, United Kingdom from 12 -14 September 2024

President attending International Liaison of Pathology Presidents 2024 meeting on 13 September 2024



Dinner Reception hosted by The Royal College of Pathologists and The Association of Clinical Pathologists on 13 September 2024

## **President attending HKAM-related activities**

2nd Competency-based Medical Education Seminar, organised by the Hong Kong Academy of Medicine on 31 August 2024



From left to right: Dr LAI Koon Chi, Christopher (Vice-President), Dr WONG Chi Kin Felix (TEC Secretary) and Dr MAK Siu Ming (President)

### Hong Kong Academy of Medicine Council Meeting



Photo with HKAM President Prof Gilberto LEUNG and other representatives from Academy and sister Colleges

## **President attending sister Colleges' activities**



The Hong Kong College of Obstetricians and Gynaercologists 36th Conferment Ceremony on 8th June 2024



The 37th Conjoint Fellowship Conferment Ceremony & The 34th Dr Sun Yat Sen Oration on 7th July 2024



The Fellowship Conferment Ceremony and EK Yeoh Oration on 28th September 2024



The Hong Kong College of Physicians Fellowship/Membership Conferment Ceremony on 12th October 2024



Hong Kong College of Emergency Medicine Fellowship Conferment Ceremony on 26th October 2024



## **President attending local activities**

One Day Workshop: An update on Diagnostic Parasitology by Dr Harsha Sheorey, co-organised by The Hong Kong College of Pathologists and The Royal College of Pathologists of Australasia. The workshop was organized on 3rd June 2024 at the Centre for Health Protection.



Speakers at the Centre for Health Protection





### Dinner with Hong Kong Symposium on Forensic Imaging 2024



Dinner with representatives from Department of Health, Forensic Pathology Service and speakers in the Hong Kong Symposium on Forensic Imaging 2024

First row, sitting, from left to right: Dr Brian KOT, Dr POON Wai Ming, Dr MAK Siu Ming, Prof Michael THALI, Dr CHIU Pui-yin, Amy, Dr Carlo TAPPERO, Dr LAI Sai Chak, Dr Garyfalia AMPANOZI and Dr SHUM Shui Fung, Bobby.

Second row, standing, from left to right: Dr CHIAO Wing Fu, Mr Henry TSUI, Dr Tabris CHUNG Yik-to, Dr FOO Ka Chung and Dr CHAN Ka Chi.



## Memorandum of Understanding (MoU) between European Society of Pathology (ESP) and The Hong Kong College of Pathologists (HKCPath)



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Memorandum of Understanding between European Society of Pathology and The Hong Kong College of Pathologists

Signing Memorandum of Understanding between Professor Peter Schirmacher, President of the European Society of Pathology and the College President Dr MAK Siu Ming

During the International Liaison of Pathology Presidents (ILPP) 2023, our College and the European Society of Pathology (ESP) began exploring the potential for collaboration between our two organizations. A virtual meeting between delegates from the ESP and the College was held shortly afterwards on 24 January 2024 to outline the details of this collaboration. Following this meeting, both organizations agreed to sign a Memorandum of Understanding (MoU) as a foundation for future cooperation. In this context, the College Council appointed the President to attend the 36th European Congress of Pathology to sign the MoU. The MoU was officially signed on 10 September 2024, by the College President on behalf of The Hong Kong College of Pathologists and by Professor Peter Schirmacher and Dr Raed Al Dieri, the ESP President and the ESP Director-General, respectively, on behalf of the ESP.

As part of the collaboration, ESP shall be one of the College's pre-approved overseas organisers for educational activities related to pathology under Anatomical Pathology. Presentations made at conferences organised by the ESP shall be recognised as fulfilling one of the mandatory presentation requirements for trainees registered on or after 16 October 2008.

This year, Professor Schirmacher and Dr Al Dieri attended our College's Conferment Ceremony and Annual Dinner. Professor Schirmacher served as one of the judges for the College's 2024 Trainee Presentation Session and conducted a webinar on "Liver neoplasms and mimickers - selected cases," coorganised by the Department of Pathology of The University of Hong Kong, Department of Pathology of Queen Mary Hospital and The Hong Kong College of Pathologists on 15 November 2024. He also delivered this year's T.B. Teoh Foundation Lecture on "Third Generation Molecular Pathology - From Research to Diagnostic Implementation" on 16 November 2024. During their visit, various collaborative opportunities were discussed. Further details will be announced in due course.





Webinar delivered by Professor Schirmacher on the topic of "Liver neoplasms and mimickers - selected cases" on 15 November 2024

he 32<sup>nd</sup> T.B. Teoh Foun

Professor Schirmacher delivered this year's T.B. Teoh Foundation Lecture on the topic of "Third Generation Molecular Pathology -From Research to Diagnostic Implementation" on 16 November 2024 at the Hong Kong Academy of Medicine Jockey Club Building

of. Peter Schirmacher



#### Editorial Note:

Viscoelastic haemostatic assays have emerged as a popular rapid point-of-care test to assess haemostasis in bleeding patients guide patient-tailored and serve to transfusion strategies. In this issue of Topical Update, Drs Joyce KWONG and Eudora CHOW share their valuable experience of using viscoelastic haemostatic assays to investigate and guide treatment in patients with challenging bleeding tendency. We welcome any feedback or suggestion. Please direct them to Dr Alvin IP (Email: ihw426@ha.org.hk), Education Committee, The Hong Kong College of Pathologists. Opinions expressed are those of authors or named individuals, and are not necessarily those of The Hong Kong College of Pathologists.

## **Topical Update: Viscoelastic Haemostatic Assays in Clinical Practice**

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#### Introduction

Viscoelastic haemostatic assays (VHAs), particularly thromboelastography, have a rich history dating back to their introduction in 1948 - predating the development of the activated partial thromboplastin time (aPTT) test. Originally, VHAs were utilized as research tools to comprehensively assess the haemostatic competence of whole blood samples. This technology then found its way into clinical practice, first seeing widespread adoption in cardiac surgery in late 1950s, and later during orthotopic liver transplantation procedures. Over the course of subsequent decades, VHAs have gained increasing attention as essential tools for goal-directed haemostatic resuscitation of trauma-induced coagulopathies. In this article, we would share our experience in applying VHA to optimize patient management.

#### **General Principles of Viscoelastic Haemostatic Assays**

Viscoelasticity, a key principle of these assays, denotes the ability of certain materials, including blood, to exhibit both viscous and elastic characteristics during deformation. During the process of coagulation, blood undergoes significant changes, transitioning from a viscous to an elastic state. The resultant complex clot structure enables clot to resist deformation under shear forces, measured by the elastic shear stiffness of a material known as shear modulus. Even though the term "clot strength" is used frequently in VHA systems, clot stiffness is measured either indirectly or directly. In various devices, such as TEG® 5000, ROTEM® delta and ClotPro®, shear modulus is assessed indirectly by submerging a pin in whole blood, whereas in Quantra®, it is assessed directly with sonographic method. A variety of activators are used for each device to examine different aspects of the haemostatic system and, as the blood clots, a graphical representation is made.

#### The normal TEG® / ROTEM® Tracing

At the beginning of the TEG®/ROTEM® tracing, no torque between the pin and the cup is transmitted producing two superimposed flat lines. When the blood starts clotting, the two lines progressively diverge until the maximal clot firmness is reached. Then, the lines start converging again as a result of clot lysis. The tracing has been traditionally described as having a 'glass of cognac' appearance (Figure 1). Five standard measurements are usually derived from this tracing. The time it takes for the trace to reach 2 mm of amplitude is called the reaction time (R time) for TEG® and the clotting time (CT) for ROTEM®. This precoagulation zone provides information about thrombin generation prior to the deposition of fibrin strands. Circumstances leading to impaired thrombin generation, such as clotting factor deficiencies and treatment with heparin or vitamin K antagonists, prolong this time. The time elapsed between 2 mm and 20 mm of amplitude is called the coagulation time (K time) for TEG® and the clot formation time (CFT) for the ROTEM®. The a angle (a) is most commonly defined as the angle formed by drawing a tangent line between the point where the two lines separate and the developing trace although other definitions have been used. The a angle and the K time or CFT provide information about how fast the clot forms and depend on clotting factors, platelets and fibrinogen level. The maximum clot firmness (MCF) for the ROTEM® and maximal amplitude (MA) for the TEG® correspond to the peak amplitude of the tracing and mainly depend on the platelets and the fibrinogen level. The amplitudes recorded after 5–10 min (A5-A10) are well correlated to the final clot firmness and therefore allows earlier decisions. Ly30 and Ly60 correspond to the percentage of reduction of the area under the TEG® curve observed, assuming a constant MA, at 30 and 60 min after MA is reached. For ROTEM®, the Clot Lysis Index at 30–60 min (CLI30-CLI 60) is the percent reduction in MCF observed 30–60 min after the CT. These latter parameters are used to quantify fibrinolysis.



Figure 1. TEG® and ROTEM® traces. Typical tracing obtained with a viscoelastic clotting analyzer.

#### **Pre-analytic Issues**

Thromboelastography was originally described using fresh whole blood, the test being performed within 4–6 min after blood sampling. Using citrated blood allows the analysis to be delayed by up to several hours but produces slightly different results so that an appropriate reference range has to be used.

#### **Comparison with Classical Clotting Assays**

Compared to traditional clotting assays that utilize platelet-poor plasma (PPP), viscoelastic haemostatic assays are conducted using whole blood samples. This methodological distinction is crucial, as it enables VHAs to provide a real-time assessment of the entire coagulation process, incorporating the dynamic contributions of platelets, coagulation factors, and fibrinogen levels. The absence or dysfunction of any single component within this "haemostatic jigsaw" becomes quickly apparent, often within just 5 minutes of analysis. VHAs further complement this rapid detection capability by delivering detailed insights into the patient's fibrinolytic activity as well.

#### Local Experience in Application of Viscoelastic Haemostatic Assays

In our centre, viscoelastic haemostatic assays are mostly conducted in the Blood Bank. The results are displayed real time in operating rooms and intensive care units. This approach involves close collaboration between the attending surgeon, anaesthetist, and haematologists, ensuring optimal delivery of blood products and guidance on haemostatic resuscitation based on the clinical situation and VHA results.

## Evaluation and management of bleeding in a patient with postpartum haemorrhage

#### Case 1

A 30-year-old woman underwent a caesarean section due to prolonged latent phase. The estimated blood loss during the procedure was less than 500mL. However, she experienced signs of shock 12 hours after the caesarean section, with haemoglobin level dropped to 6 g/dL. The platelet count was normal. Prothrombin time (PT) and activated partial thromboplastin time (aPTT) were mildly prolonged to 17.5 seconds and 36.6 seconds, respectively. She received two units of red cells, and empirical tranexamic acid was given. An emergency laparotomy revealed 750mL of fresh blood and clots with slow oozing over the vesicouterine fold. Haemoperitoneum was drained, and local haemostatic measures were performed. To assess the coagulopathy, a viscoelastic haemostatic assay (ROTEM®) was promptly performed. Initial results (Figure 2) were available within 5 minutes, showed a significant decrease in FIBTEM A5 and maximum clot firmness (MCF), indicating hypofibrinogenaemia. To correct the coagulopathy, six grams of fibrinogen concentrates were administered. The targeted intervention achieved effective haemostasis, and no further blood transfusion was needed.



Figure 2. Hypofibrinogenaemia and / or disturbed fibrin polymerization in ROTEM® FIBTEM

Postpartum haemorrhage (PPH) remains the leading cause of preventable maternal morbidity and mortality worldwide. According to a study conducted in Hospital Authority Obstetric Units in 2013, massive primary PPH occurred in 0.76% of all deliveries, with the majority (84.1%) occurred after caesarean sections. Data from VHA studies have enhanced our understanding of the coagulation profiles of patients who experience PPH. VHA can rapidly identify the presence, type, and severity of PPH-associated coagulopathy, in order to facilitate targeted or "goal-directed" therapy. Multiple studies indicate that low fibrinogen level detected during the early phase of postpartum bleeding is strongly associated with progression to more severe PPH. In an observational study of 356 patients with PPH, those who required massive transfusion had a median serum fibrinogen level of 210 mg/dL and a median FIBTEM A5 of 12 mm. Notably, FIBTEM A5 was found to be predictive of the need for blood transfusion, invasive procedures, blood loss >2500 mL, duration of bleeding, and length of intensive care unit (ICU) stay.

#### Evaluation and management of bleeding in patients with acute bleeding

#### Case 2

A 73-year-old man, previously in good health, was admitted to the Emergency Department with sudden severe abdominal pain and haematemesis. He was in a state of haemorrhagic shock with BP 72/38 mmHg and a pulse rate 113 beats per minute. His initial haemoglobin level was 9.3 g/dL. The patient received fluid resuscitation and inotropic support. An urgent endoscopy revealed torrential bleeding from a duodenal ulcer, which was initially treated with adrenaline injection. Although this slowed the bleeding and briefly improved the patient's blood pressure, the bleeding resumed with fresh, spurting blood, and the patient went into cardiac arrest. Fortunately, spontaneous circulation returned after 1 minute of cardiopulmonary resuscitation. His haemoglobin level dropped to 3.7 g/dL. Platelet count was normal, but his PT and aPTT were prolonged to 22.6 seconds and 76.5 seconds respectively. Fibrinogen level was not checked at this stage. He received 4 units of red cells and 4 units of plasma. To guide the ongoing transfusion strategy, a viscoelastic haemostatic assay (ROTEM®) was promptly performed. The initial results (Figure 3), available at 10 minutes, indicated a significant decrease in FIBTEM A10 and maximum clot firmness (MCF), suggesting hypofibrinogenaemia. He was given fibrinogen concentrates and cryoprecipitate. Further analysis of the ROTEM® data revealed the maximum lysis (ML) was 100% which was indicative of exaggerated fibrinolysis (normal ML <15%). The lysis index at 45 and 60 mins were 75% and 16%, respectively (data not shown in Figure 3), indicating partial clot dissolution 45 minutes after initial clot formation. Consequently, tranexamic acid (1 gram) was administered based on the VHA results. Haemostasis was achieved, and no further blood transfusions were required.



Figure 3. Combined hypofibrinogenaemia and / or disturbed fibrin polymerization and hyperfibrinolysis in (A) ROTEM® FIBTEM and (B) ROTEM® EXTEM.

Venomous snake bites can be life-threatening with coagulopathy being the most common and clinically significant complication worldwide. Venom-induced consumption coagulopathy (VICC) is particularly concerning, as it can lead to potential fatal bleeding. There have been limited reports on the use of viscoelastic haemostatic assays (VHA) for the assessment and management of snakebite cases. One of the largest series comes from South Africa, where a study reviewed 51 cases utilizing thromboelastography (TEG®). The authors found that TEG® was a more accurate predictor of snakebite disease severity compared to using the international normalized ratio (INR) alone. In Vietnam, a prospective observational study involving 41 patients with viper envenomation further demonstrated the utility of rotational thromboelastometry (ROTEM®) in this setting. The study showed that ROTEM® could effectively detect a state of hypocoagulability in patients suffering from viper snakebites. These limited but important studies highlight the potential value of incorporating VHA in the assessment and management of snakebite-induced coagulopathy.

#### Conclusion

In summary, viscoelastic haemostatic assays have become integral tools in the assessment and management of patients with active bleeding. Firstly, VHAs provide real-time insights into the complex, dynamic process of coagulation. Furthermore, the comprehensive nature of VHAs enables more targeted and personalized transfusion strategies. By identifying specific coagulation factor deficiencies or imbalances, clinicians can tailor the administration of blood products, coagulation factor concentrates, and other haemostatic interventions. This precision-based approach helps to optimize the use of limited blood resources and improve patient outcomes.

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## HKAM Council Dinner with Distinguished Young Fellows (19 September 2024)

**Dr CHEONG Renee Constance Yue-Kew** was nominated by the College for 2024 HKAM Distinguished Young Fellow. Dr Cheong has made significant contributions to the College and has served as the Honorary Treasurer since 2022/23.

The evening began with drinks and a casual discussion among the nominees for Distinguished Young Fellows of various specialties, together with Past Presidents of the Hong Kong Academy of Medicine, Professor Rosie YOUNG and Professor CS LAU, with a diversity of topics ranging from digitalization and artificial intelligence, to implementation of workplace-based assessments during training. The College Presidents and Members of the Academy Council joined us after their meeting, and we were treated to an enjoyable evening of inspiring speeches by Professor YOUNG and Professor Gilberto LEUNG, as well as a special salmon dish appointed by Dr Donald LI - a feast for the eyes and for our palates! It was a relaxed occasion to meet colleagues new and old across specialties, and to exchange ideas and share experiences.



**From left to right:** Dr MAK Siu Ming (President), Dr CHEONG Renee Constance Yue-Kew, and Professor Gilberto LEUNG (President of the Hong Kong Academy of Medicine)



## Hong Kong Museum of Medical Sciences (HKMMS)related activities

Medical History Interest Group – 28th Meeting held on 25 May 2024 in St. Paul's Hospital: Forensic Pathology Past, Present and Future





The Panel Discussion of the Medical History Interest Group - 28th meeting From left to right: Dr BEH Swan Lip, Philip, Dr HAU Kong Lung, Dr MAK Wai Ping (Past President), Dr WONG Koon Sang and Dr POON Wai Ming.

### Hong Kong Museum of Medical Sciences Fundraising Dinner 2024 held on 7 November 2024 in the Hong Kong Academy of Medicine Jockey Club Building



From left to right:

Dr LAI Koon Chi, Christopher (Vice-President), Dr CHEUNG Ho Kwan, Alvin, Dr LEUNG Ying Kit, President Dr MAK Siu Ming (President), Dr CHU Sin Yan and Dr YUK Man Ting.



## **Panel of Examiners 2024**



#### <u> Anatomical Pathology - Membership Viva</u>

Front row (from left to right):

Dr MAK Siu Ming, Professor Ian ELLIS (External Examiner), Professor TO Ka Fai (Chief Examiner)

Back row (from left to right):

Dr WONG Wing Cheuk, Dr KAN Chi Hang, Dr LAM Woon Yee, Polly, Dr FUNG Ngai Sheung, Dr LEUNG Ying Kit (Deputy Chief Examiner)



#### <u> Anatomical Pathology - Fellowship Viva</u>

Front row: from left to right Dr LEE Kam Cheong, Dr MAK Siu Ming, Professor Ian Ellis (External Examiner), Professor TO Ka Fai (Chief Examiner) Back row: from left to right Dr CHEONG Renee Constance Yue-Kew, Dr CHAN Shueng Wai, Gavin, Dr CHAN Bik Wan, Dr LEUNG Ying Kit (Deputy Chief Examiner)



#### <u> Chemical Pathology - Fellowship Viva</u>

From left to right: Dr LEE Han Chih, Hencher, Dr CHING Chor Kwan, Dr CHEN Pak Lam, Sammy (Chief Examiner), Dr LU Zhong Xian (External Examiner), Dr TAI Hok Leung, Morris, Dr LEUNG Mei Tik, Dr WONG Chi Kin, Felix, Dr CHONG Yeow Kuan

#### **Genetic and Genomic Pathology**

From left to right: Dr CHEN Pak Lam, Sammy (Chief Examiner), Dr LU Zhong Xian (External Examiner), Professor LAM Ching Wan





#### **Clinical Microbiology and Infection**

From left to right: Dr NG Ho Leung, Professor HUI Mamie, Dr LEE, Rodney Allan, Dr LO Yee Chi, Janice, Dr Robert NORTON (External Examiner), Professor HO Pak Leung (Deputy Chief Examiner), Dr LAI Wai Man, Raymond, Dr WONG Sai Yin, Samson, Dr LAI Koon Chi, Christopher, Dr CHEUNG Ingrid Yu Ying [Absent in photo: Dr TSE Wing Sze, Cindy (Chief Examiner)]



#### <u>Forensic Pathology</u>

From left to right: Dr LAM Wai kwok, Dr FOO Ka Chung, Dr KWOK Ka Ki, Dr BEH Swan Lip, Philip, Professor Michael POLLANEN (External Examiner), Dr LAI Sai Chak (Chief Examiner), Dr LAM Wai Man, Joey



#### <u>Haematology</u>

Back row (from left to right): Dr CHEUNG Sin, Dr CHAN Pui Ha, Natalie, Dr LEUNG Yuk Yan, Rock, Dr IP Ka Ling, Rosalina, Dr LEUNG Fung Shan, Kate, Dr YIP Sze Fai Front row (from left to right): Dr MA Shiu Kwan, Edmond, Dr CHOW Yu De, Eudora, Dr Anne TIERENS (External Examiner), Dr IP Ho Wan (Chief Examiner), Dr SO Chi Chiu, Jason

#### <u>Immunology</u>

From left to right: Dr Matthew BUCKLAND (External Examiner), Dr AU Yuen Ling, Elaine (Chief Examiner), Dr LAM Ki, Crystal, Dr Melanie WONG (External Examiner)



## Examiner Lecture/Workshop Series 2024



On 23rd September 2024, we had the honour of co-hosting an engaging seminar by Professor Ian Ellis, a distinguished Professor of Cancer Pathology, together with Department of Anatomical and Cellular Pathology, The Chinese University of Hong Kong and International Academy of Pathology Hong Kong Division (HKIAP). The topic was "Personal Reflections from Looking at Breast Cancer Over 40 Years." The venue was at Kai Chong Tong, G/F, Postgraduate Education Centre, Prince of Wales Hospital. There were more than 80 participants joining the seminar. Attendees expressed their appreciation for the insightful discussion, emphasizing how much they learned from Professor Ian Ellis's vast experience and expertise. Thank you to everyone who participated!



One highlight was the forensic pathology seminar on "Shaken Babies," presented by Professor Michael S. Pollanen. Despite the challenges posed by the typhoon that day, we were thrilled to have around 50 dedicated pathologists and pediatricians join us online via Zoom. Thank you to everyone participated who and contributed to this important discussion!



Around 50 trainees and fellows attended a highly informative Diagnostic Workshop on Myeloid Neoplasms, presented by our External Examiner in Haematology, Dr Anne Tierens. Attendees gained valuable insights from the session.



## College Guidelines on Implementation of Digital Pathology and Adoption of Artificial Intelligence

#### Introduction

Digital Pathology (DP) has gained popularity with the advances in Whole Slide Imaging (WSI) and Artificial intelligence (AI). WSI has the potential to revolutionise conventional pathology practice by digitising the glass slides for easy circulation, archival, diagnosis and image analysis. The adoption of DP is at an early phase in most parts of the world and is usually limited to a subset of specimens. Safe adoption will require concerted effort from pathologists, laboratory technologists, Information Technology team, hospital administrators and regulatory bodies.

These guidelines are highlights of aspects in the implementation of DP which need special attention, and are not meant to include details. The focus is on the application of DP in histopathology practice of Anatomical Pathology (i.e. biopsy specimens and surgical specimens). Pathology practice involving frozen section services, fine needle aspiration specimens and cytology specimens, and practices in other pathology disciplines will be considered for inclusion at a later stage.

#### A. Planning and selection of equipment

#### Information Technology

The deployment of DP requires substantial information technology support. Advice from the Information Technology department/service provider should be sought in project planning, medical system integrations, storage system design and continuous helpdesk support.

#### **Regulations on Medical Devices and Maintenance**

Currently, there is no specific legislation that regulates the manufacture, import, export and sale of medical devices in Hong Kong [1]. Some whole slide scanners and software packages (e.g. slide management system and image analysis system) opted to receive clearances for clinical use from other jurisdictions. Using a system not yet cleared for in-vitro diagnostics (IVD) use, such as equipment and/or platforms labelled "research use only (RUO)", shall require more proper validation to demonstrate the safety and effectiveness prior to clinical deployment. The equipment should receive regular maintenance and, if necessary, calibration according to a predetermined maintenance plan.

#### Workstation and Ergonomic

#### 1. Display Monitor and Workstation

The setting of the workstation is one of the important components in successful implementation of DP. The display monitor, the lighting and the other computer accessories should be properly proven to be suitable for implementation of DP, and in special cases, for subspecialty need. Similarly, it is essential to consider the interrelationship between various components of the DP system, such as slide scanner, to ensure optimal performance.

#### 2.Occupational Safety and Health

Pathologists employing a DP workflow will likely require prolonged use of display screen equipment. Provision of an ergonomic workplace should be in compliance with the relevant provisions of the Occupational Safety and Health Regulations [1], and the wellness of the users should be well considered. Useful information has been published by the Labour Department of Hong Kong SAR [2]. Occupational risk assessment should be considered.

<sup>[1]</sup> Department of Health of the Government of the Hong Kong SAR. Department of Health | Medical Device Division - Frequently Asked Questions [Internet]. [cited 2024 Sep 5]. Available from: https://www.mdd.gov.hk/en/useful-information/frequently-asked-questions/index.html

<sup>[2]</sup> Occupational Safety and Health (Display Screen Equipment) Regulation, (2022) Cap. 509, § 42 (H.K.)

<sup>[3]</sup> Labour Department of the Government of the Hong Kong SAR. Occupational Safety and Health (Display Screen Equipment) regulation [Internet]. 2003 [cited 2024 Sep 5]. Available from: https://www.labour.gov.hk/eng/news/dser.htm

#### **B.** Operation-related issues

#### Validation of WSI Devices

Meta-analysis [1] has shown DP with WSI to have good overall concordance\* (98.3%) and complete concordance (92%) when compared with light microscopy in diagnostic histopathology. Discordance reported in literature commonly involved assessment of nuclear atypia, grading of dysplasia and malignancy, challenging diagnoses and identification of small objects.4,[2] The overall performance of using WSI in routine diagnosis is affected by case spectrum, specimen preparation, hardware employed and user training.

In-house validation/verification involving reasonable case load and spectrum and with clear documentation prior to routine diagnostic work is highly recommended. The process should be relevant to the proposed areas of DP use in a real-world environment. Validation protocol should comply with local regulations and accreditation requirements for comparison of new technologies against the existing standards. Useful information, including the design of a diagnostic accuracy study, has been published by various organizations such as the College of American Pathologists (CAP) [3] and The Royal College of Pathologist (RCPath) [4]. Re-validation is necessary in case of significant change in slide production, image acquisition or image reproduction.

\*as defined by complete agreement along with clinically insignificant variations between DP and light microscopy reports

#### Training

DP deployment requires installation of specific equipment (such as slide scanners and servers) and competent operators. Pathologists as the laboratory leader, should take the primary role in the overall planning and implementation of digital pathology. Proper training for the pathologists, trainees and other laboratory personnel should be provided.

#### Storage

There is no current consensus on the legal status of WSI as a replacement of glass slides in archival. Compliance with regulatory guidelines and accreditation requirement by respective bodies is recommended.

#### Patient privacy

WSI images generated for diagnosis should be regarded as the patients' medical record and should be handled in accordance with professional standards [1], accreditation requirements and privacy legislation [2]. Cloud-based storage, image analysis, telepathology and remote work may pose additional challenges to data protection. The benefit and risks of such practices should be carefully balanced, with security measures added if practicable.

#### **Contingency Plan**

Laboratories and Information Technology departments should anticipate the possibility of a major Information Technology outage and a contingency plan should be in place and preferably tested from time to time.

[4] Azam AS, Miligy IM, Kimani PK u, Maqbool H, Hewitt K, Rajpoot NM, et al. Diagnostic concordance and discordance in digital pathology: a systematic review and meta-analysis. Journal of Clinical Pathology [Internet]. 2020 Sep 15;74(7):448–55. Available from: https://doi.org/10.1136/jclinpath-2020-206764

<sup>[5]</sup> Williams BJ, DaCosta P, Goacher E, Treanor D. A systematic analysis of discordant diagnoses in digital pathology compared with light microscopy. Archives of Pathology & Laboratory Medicine [Internet]. 2017 Dec 1;141(12):1712–8. Available from: https://doi.org/10.5858/arpa.2016-0494-oa

<sup>[6]</sup> College of American Pathologists. Validating whole slide imaging for diagnostic purposes in pathology [Internet]. College of American Pathologists. 2024. Available from: https://www.cap.org/protocols-and-guidelines/cap-guidelines/current-cap-guidelines/validating-whole-slide-imaging-for-diagnostic-purposes-in-pathology

<sup>[7]</sup> The Royal College of Pathologists. Best practice recommendations for implementing digital pathology [Internet]. https://www.rcpath.org/profession/digital-pathology.html. 2018 Jan [cited 2024 Sep 5]. Report No.: G162. Available from: https://www.rcpath.org/static/f465d1b3-797b-4297-b7fedc00b4d77e51/Best-practice-recommendations-for-implementing-digital-pathology.pdf

<sup>[8]</sup> Medical Council of Hong Kong. Code of Professional Conduct for the guidance of Registered Medical Practitioners [Internet]. DH2425 ed. 2022. Available from:

https://www.mchk.org.hk/english/code/files/Code\_of\_Professional\_Conduct\_(English\_Version)\_(Revised\_in\_October\_2022).pdf [9] Personal Data (Privacy) Ordinance (2013), Cap. 468 (H.K.)

#### C. Adoption of Artificial Intelligence

DP is a rapidly developing field with evolving technologies and standards. Currently, there are many medical AI solutions focusing on histopathology being proposed for cancer detection and various immunohistochemistry quantification. They are of significant potential value to the practice of histopathology. The adoption of AI should be carefully considered and evaluated before implementation.

#### Summary

- In-house validation/verification prior to routine diagnostic work is highly recommended.
- Pathologists and other laboratory personnel should be properly trained in the implementation of Digital Pathology.
- Thorough deliberation should be given to the choice of display monitor and workstation ergonomic setting. Occupational risk assessment should be conducted before implementation of Digital Pathology.
- Storage of the digital slides should comply with local regulatory requirements and accreditation requirements.
- Equipment should be properly maintained
- A contingency plan should be in place to respond to the possible event of Information Technology outage
- Digital slide and data storage should be implemented in line with prevailing policy.
- Adoption of AI solution in Digital Pathology should be carefully considered and evaluated before implementation.



Announcement from Training & Examinations Committee:

We are pleased to announce that the following candidates have passed the Fellowship Assessment or Membership Examination. Congratulations!

gratulations

Fellowship Assessment – Anatomical Pathology FONG Nga Yee

HO Cheuk Lam HO Tin Wai LAM Ping Hei LI Hung Wai LOONG Chi Wang NI Yunbi

Fellowship Assessment – Chemical Pathology CHAN Chun Hei SUBRAMANIAM Shreenidhi Ranganatha

Fellowship Assessment – Clinical Microbiology and Infection

CHENG Shui Kuen CHOW Kin Yi LEE Chung Ho WU Wing Gi

Fellowship Assessment – Haematology LAU Ka Ngai

Fellowship Assessment – Immunology CHIANG Valerie

Fellowship Assessment – Genetic and Genomic Pathology HUNG Ling Yin LI Ting Hon Stanford Membership Examination – Anatomical Pathology CHAN Oi Ting FU Man Chi Eric NG Chung Ho Tommy TANG Cheuk Yin TSAI Cho Wing

Membership Examination – Forensic Pathology YEUNG Pak Kwan

Membership Examination – Haematology CHAN Kwok Hei



#### In the eyes of the Pathologist...

Chasing the Tail of the Sun in Hong Kong

#### Introduction:

Many of us harbour a fascination with colour, landscapes and beauty.

Amidst the bustle and hum drum of living in a metropolitan city such as Hong Kong, sometimes with just a turn of our neck, we can breathe in a well needed gust of fresh air by looking up at the majestic vision of the sun and its associated golden, crimsony-orange and purple-blushy swirls as it segues into the sea.

And so, here I bring you into the enchanting world of beguiling sunsets and dreamy colourscapes in our very own city...



#### Tsing Yan Hill, Tsing Yi 10/7/2024

**Dr Naomi CHENG** 

The exact spot on Tsing Yan Hill slope nestled within the Tsing Yi Nature Trails to bring a virtually unobstructed view of the Tsing Ma Bridge, shown here to perfectly frame the golden rays of the sun.

#### Yam O, Lantau Island 18/11/2020

When the fireball dips right into the throne between the two hills.





#### Mount Davis, Western HK Island 15/11/2021

As the majestic phoenix spreads her wings to rain fire on the waves below.

#### Garden Hill, Sham Shui Po 29/12/2017

Whoever said that one cannot admire the setting sun in the heart of the city?





#### Tai 0 8/9/2021

Luscious golden ball reflections!



#### Cyberport Waterfront Park, Western HK Island 2/9/2021

The iconic palm trees gently brushing away the smoky clouds.

#### Approach Beach, Tsuen Wan 18/11/2021

Lampshade art!





#### Kwun Tong Promenade 18/5/2021

Celestial rays descending from the dark clouds.



#### Butterfly Beach Coastline, Tuen Mun 25/3/2021

You may be lucky to see this little egg yolk in the far west on a relatively less smoggy day.



### Causeway Bay Typhoon Shelter 26/10/2020

A moment to deeply dream.



#### Tsing Lung Rocky Beach, Tuen Mun 17/7/2024

Even the sun looks better when offset by beautiful rocky projections.

#### Ocean Terminal Deck, Tsim Sha Tsui 28/2/2022

Skies on fire!





South Horizons Promenade, Ap Lei Chau 9/5/2021

A fiery fire fighting through the inky clouds.

### Instagram Pier, Western HK Island 20/10/2020

The glorious rays from above.



#### Lau Fau Shan, Yuen Long 15/2/2021

Shadow art!

#### Lei Yue Mun 12/7/2021

The beguiling afterglow.





Chek Lap Kok South Perimeter Road, Lantau Island 5/7/2024

Bridge on fire!



#### Red Incense Burner Summit, Causeway Bay 8/7/2024

The perfect spot to capture breathtaking views of the fireball descending between IFC and ICC.

#### Pak Nai, Yuen Long 1/2/2017

Arguably the number one most scenic spot to admire the sunset in Hong Kong, especially if you're lucky enough to catch the fluffy sheepy clouds being mirrored on the sea and wetland on a clear day.





#### Brick Hill, Southern HK Island 15/11/2022

An eye-catching paintscape of warm tangerines melding into the blues and violets of the sea and sky.

> Concluding comment: Sweet dreams, everyone!



WARM GREETINGS FROM THE HONG KONG COLLEGE OF PATHOLOGISTS



Beautifully designed by our College Fellow, Dr NG Hoi Yan, Joshua