National Pathology Conference (NPC) Melaka 2025: Transformation in diagnostic pathology: shaping the future of healthcare, organised by Pathology Department Hospital Melaka and held on 10th – 11th September 2025 at Courtyard by Marriott, Melaka, Malaysia. Abstracts of plenary, talk, symposium and paper presented are as follows:

Plenary I: Transformation in diagnostic pathology: shaping the future of healthcare

Dr Tengku Norita Bt Tengku Yazid
Hospital Selayang, Malaysia

Diagnostic pathology plays an integral part of patient care and its role has evolved tremendously. There is a growing need for an enhanced role of diagnostic pathology in patient care. The advancements in automation, molecular diagnostics, digital technology and artificial intelligence have brought on major changes in the pathology service delivery. These innovations in diagnostic pathology are revolutionising the disease detection, diagnostic accuracy, timeliness and precision medicine. Good governance is very important in transformation. It plays a key role in optimisation of procedures, human resources, equipment, assets, and infrastructure for an effective and efficient utilisation of the facility valuable resources. These are crucial steps to meet the growing diagnostic pathology service demands but also with many challenges especially in limited resources environment. Pathology services need to move forward in tandem with the requirement and advancement of clinical patient care. It must always be part of the requirement in providing safe, efficient, effective, timely, equitable and patient-centred healthcare systems. Medical laboratories must continue to be visible in playing pivotal role in clinical decisions making through disease screening, diagnostics, treatment or disease progress monitoring and prognostication.

Plenary II: Navigating MDA Requirements in Malaysia on In Vitro Diagnostic Medical Devices: Understanding the Requirements, Responsibilities, and Impact on Clinical Practice

Nur Izzati binti Haris Fadzilah
Medical device authority, Ministry of Health Malaysia Registration, Licensing & Enforcement Division

The regulation of In Vitro Diagnostic (IVD) medical devices in Malaysia is governed by the Medical Device Authority (MDA) under the Medical Device Act 2012 (Act 737) and its subsidiary regulations. This abstract provides an overview of the key regulatory requirements and stakeholder responsibilities that influence the development, registration, and use of IVD devices within clinical settings in Malaysia. It highlights the classification system for IVDs, conformity assessment procedures, the role of conformity assessment bodies (CABs), and post-market obligations including vigilance reporting and recalls. The discussion also explores the responsibilities of manufacturers, importers, and healthcare professionals in ensuring compliance with safety and performance standards. Furthermore, this examines the practical implications of these requirements on clinical laboratories and diagnostic practices, especially in relation to quality management systems, clinical evidence, and product labelling. Key points addressed include the harmonization of MDA regulations with international frameworks, challenges faced by stakeholders during regulatory submission, and the impact of evolving requirements on innovation and patient safety. By understanding the regulatory landscape, healthcare providers and industry players can improve readiness for audits, enhance compliance, and ultimately ensure the availability of safe and effective diagnostic tools in the Malaysian healthcare system.

TALK

Updates on Bladder Cancer Staging and Reporting

Dr Suhaila binti Abdullah
Pathology Department, Hospital Tengku Ampuan Afzan Kuantan

Accurate pathological staging of bladder cancer is critical for guiding management, particularly when using transurethral resection of bladder tumour (TURBT) specimens. The presence and assessment of muscularis propria (MP) are essential for staging adequacy and treatment decisions. However, several diagnostic challenges may compromise accuracy, including histo-anatomical variations, specimen fragmentation, and morphological mimics. This presentation outlines key pitfalls in staging, such as misinterpretation of carcinoma in situ (CIS) as high-grade papillary lesions and vice versa, difficulties distinguishing inverted growth from lamina propria invasion, and errors in assessing tumours at anatomically complex sites like the trigone or bladder diverticula. Particular attention is given to the need for subcategorization of T1 tumours, which are often understaged and show prognostic heterogeneity. Both histoanatomic and micrometric subtyping approaches are discussed, alongside their limitations. The utility of immunohistochemical markers, including smoothelin and desmin, in distinguishing muscle layers is also reviewed. Emphasis is placed on the importance of correlating histological features with cystoscopic findings and the need for clear reporting of MP status. Where staging is uncertain, a second resection may be warranted. By recognising these issues and adopting a systematic approach, pathologists can improve diagnostic accuracy and contribute to better clinical outcomes in bladder cancer care.

Prostate Cancer Reporting: Update and Challenges

Dr Zahrah bin Tawil
Department of Pathology, Hospital Selayang

Prostate carcinoma presents ongoing diagnostic and reporting challenges for histopathologists and uropathologists amid evolving grading systems, clinical expectations, and technological advances. The review on key updates and unresolved issues in prostate cancer reporting, beginning with an epidemiological overview and the expanding role of pathology in personalized medicine. Innovations such as MRI-targeted biopsies and multiparametric imaging have improved sampling accuracy but introduced new interpretive complexities. Grading dilemmas—particularly in distinguishing cribriform and intraductal carcinoma—remain critical, influenced by recent updates in the WHO 2022 and ISUP classifications. The presence of variant histologies and histologic mimics adds further complexity. Immunohistochemical markers provide essential diagnostic support but require context-sensitive interpretation. Molecular findings are increasingly incorporated into pathology reporting, though implementation is often hindered by infrastructural and workflow limitations. Emerging technologies like digital pathology and AI-assisted diagnostic platforms offer potential for improved reproducibility and standardization, though challenges in validation and clinical integration persist. Case-based scenarios will be used to highlight common diagnostic dilemmas and practical approaches, emphasising the importance of multidisciplinary collaboration and continuous education. The persistent gaps in current reporting practices and future opportunities are addressed, and hopefully the development of personalized reporting templates and integration of molecular data into standardized diagnostic workflows are few things to look forward to in future with a focus on enhancing accuracy, consistency, and adaptability in the age of precision pathology.

Salivary Gland FNA and the Milan System for Reporting Salivary Gland Cytopathology

Dr Farveen Merican binti Abu Backer Maricar
Department of Pathology, Hospital Sultan Abdul Halim, Kedah

Fine needle aspiration (FNA) cytology has become a vital tool in the evaluation of salivary gland lesions, offering a minimally invasive approach to differentiate non-neoplastic, benign, and malignant pathologies. The introduction of the Milan System for Reporting Salivary Gland Cytopathology (MSRSGC) has standardized reporting by categorizing FNA findings into six distinct categories, each associated with a defined risk of malignancy and management guidelines. Recent updates to the Milan system, particularly the second edition (2023), have refined category definitions, enhanced the reproducibility of diagnoses, and incorporated molecular and ancillary studies to improve diagnostic accuracy. Notable changes include clearer criteria for "Atypia of Undetermined Significance (AUS)," updates to the "Neoplasm—Benign" and "Neoplasm of Uncertain Malignant Potential (SUMP)" categories, and greater emphasis on risk stratification. These advancements aim to reduce diagnostic ambiguity, align cytologic findings with histologic outcomes, and support more precise clinical decision-making. The integration of these updates into practice enhances the diagnostic utility of salivary gland FNA and promotes better communication between pathologists and clinicians.

Current Reporting System of Urine Cytology & It's Challenges

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Urine cytology is a routine work in cytopathology laboratory that provides significant contributions to patient's management, including the surgical outcome and prognosis in bladder cancers. The complexity of cases with difficult interpretations is contributed by many factors in either pre-analytical or analytical phase. As current use of reporting system has been developed for many cytopathology specimens, The Paris System were first developed in May 2013, a collaboration by the American Society of Cytology & International Academy of Cytology. This system's main aim is to reduce the rate of unnecessary atypia and has been widely accepted for use, including among the clinicians. The current version (2.0) provides an insight into low grade carcinoma; urothelial tumour of the upper tract and pitfalls associated with degenerative changes. The main challenges in the system are mainly the over-independence of interpretation, borderline/atypical characterisation, interobserver agreement, as well as evolvement of ancillary testing to improve the risk of malignancy.

Lupus Nephritis: An Update

Dr Ireen Razini Ab. Rahman
Department of Pathology, Hospital Tengku Ampuan Rahimah, Klang

Lupus Nephritis (LN) remains one of the most serious manifestations of systemic lupus erythematosus (SLE), with renal biopsy being pivotal in diagnosis, classification, and tailoring its management. The International Society of Nephrology/Renal Pathology Society (ISN/RPS) classification for LN, first established in 2003, was revised in 2018 to enhance diagnostic clarity and better reflect clinical correlations. The 2018 ISN/RPS update offers a more unified and detailed approach. The ISN/RPS 2018 update introduced significant changes: it emphasised activity and chronicity indices using a modified NIH scoring system for all classes, moving beyond class III and IV alone. Other key improvements include standardization of lesion terminology, and clarification of

criteria. The removal of segmental vs global subclassification in class III and IV and the shift away from the absolute requirement of subendothelial immune deposits streamline classification without sacrificing diagnostic precision. Beyond the formal classification, renal biopsies in lupus may reveal histopathological findings not captured in ISN/RPS criteria, including vascular lesions (e.g., thrombotic microangiopathy, lupus vasculopathy), tubulointerstitial inflammation, and chronic interstitial fibrosis, which carry significant prognostic implications. These changes may be disproportionate to glomerular findings and often under-recognised in routine assessment. This presentation will explore the practical implications of the 2018 revision compared to the 2003 version, while highlighting under-recognised but clinically meaningful findings not encapsulated within the current classification. Emphasis will be placed on a holistic histopathological approach that aligns with emerging data and supports individualized treatment strategies in LN.

From Cells to Clues: Exploring the Histopathology of Paediatric Germ Cell Tumours

Dr Siti Zarqah binti Omar
Department of Pathology, Hospital Sultanah Nur Zahirah in Kuala Terengganu

This presentation provides an essential overview of paediatric germ cell tumours (GCTs), a rare but biologically diverse group of neoplasms that present unique diagnostic challenges. Emphasising the pivotal role of histopathology, we will trace the diagnostic journey, from cellular morphology to molecular clues, highlighting how integrated pathology informs accurate diagnosis and effective treatment strategies. Attendees will be guided through the key histological features of major paediatric GCT subtypes, including yolk sac tumours, teratomas, embryonal carcinomas, and mixed germ cell tumours. Practical approaches to immunohistochemistry, age-specific considerations, and insights into emerging molecular markers will be discussed to enhance diagnostic precision. The presentation also features illustrative case studies that underscore common diagnostic pitfalls and demonstrate the importance of a multidisciplinary perspective in paediatric oncology. Designed for pathologists and clinicians alike, this session aims to deepen understanding, improve diagnostic confidence, and translate microscopic findings into meaningful clinical insights.

Towards Autovalidation in Haematology: Sharing Experience

Dr Mardziah Mohammad
University Malaya Medical Centre

Autovalidation is an increasingly important tool in modern haematology laboratories, aimed at improving efficiency, reducing turnaround time (TAT), and minimising human error. This presentation outlines our laboratory's journey towards implementing autovalidation, sharing practical experiences, challenges, and solutions developed along the way. Autovalidation is a rule-based system that automatically verifies and releases laboratory results without manual intervention, provided all predefined criteria are met. In haematology, this includes reference ranges, delta checks, instrument flags, and sample integrity indicators. We describe the stepwise approach to building the rule sets, integrating them into the middleware, validating them against real data, and establishing continuous monitoring for quality assurance.The importance of morphology correlation is emphasised, particularly in cases involving abnormal scattergrams, platelet histograms, or critical clinical conditions such as suspected leukaemia or malaria. We also present key situations where manual review is non-negotiable, underscoring the continued importance of medical laboratory technologists in interpreting complex or atypical cases. Data from our institution (Oct–Dec 2023) demonstrates an autovalidation rate of 62.2%, with over 57,000 results autovalidated. The implementation led to measurable improvements in workflow efficiency and a reduction in manual validation burden. Future directions include expanding our rule set, enhancing LIS integration, incorporating AI-assisted morphology screening, and strengthening staff competency programs. While autovalidation supports faster and safer reporting, human oversight remains critical for ensuring diagnostic accuracy in complex haematological cases.

Inhibitor testing in Haematology: Essential Good Laboratory Practise for Reliable Outcome

Dr Sri Rahayu Sabtu
Department of Pathology, Hospital Melaka

Inhibitor testing plays a critical role in the management of patients with bleeding disorders, particularly haemophilia, where the development of factor VIII or IX inhibitors can significantly impact treatment outcomes. This presentation will explore the principles and application of good laboratory practice (GLP) in inhibitor testing within haematology, emphasising the importance of accuracy, reliability, and consistency in laboratory results. The session will begin with a brief overview of the objectives and clinical relevance of inhibitor testing, focusing on its role in diagnosis, monitoring, and guiding therapeutic decisions. Key testing methods such as the Nijmegen-modified Bethesda assay (NBA), a gold-standard approach for quantifying inhibitors, will be discussed in detail. Attention will be given to critical pre-analytical procedures, including pre-heat treatment of plasma samples, which is essential for neutralising residual factor activity and ensuring valid results. Furthermore, the presentation will address common challenges and pitfalls encountered in inhibitor testing, such as assay interference, sample handling errors, and variability between laboratories. Strategies to mitigate these issues and enhance assay reliability through adherence to GLP principles will be highlighted. By incorporating practical insights and established laboratory guidelines, this talk aims to underscore the need for standardization and quality assurance in inhibitor testing. Attendees will gain a clearer understanding of how GLP can be effectively applied to improve the diagnostic accuracy and clinical utility of inhibitor assays in haematological practice.

Next-Generation Sequencing in Haematological Malignancies: Advancing Diagnosis, Prognosis, and Treatment

Yuslina Mat Yusoff
Haematology Unit, Cancer Research Centre, Institute for Medical Research, National Institute of Health

Next-Generation Sequencing (NGS) is a powerful tool that has changed how we diagnose and treat blood cancers. It helps detect genetic mutations, fusion genes, and changes in cancer cells that are often missed by traditional tests. By providing detailed genetic information, NGS improves how we classify diseases, detect minimal residual disease early, and choose more targeted and effective treatments for patients. This session will highlight how NGS is used alongside standard diagnostic methods to better predict disease outcomes and support more personalised treatment decisions. It will also share experiences from the Institute for Medical Research, including current diagnostic services and research using multi-gene panels for myeloid leukaemia. Despite its promise, using NGS in routine clinical settings comes with challenges. These include issues related to data interpretation, assay validation, cost-effectiveness, and the need for robust bioinformatics support. The session will discuss these issues and explore practical ways to address them. Overall, this presentation will show how NGS is shaping the future of blood cancer diagnosis and care, helping improve outcomes through more precise and personalised approaches.

Navigating the Maze: Overcoming Challenges in Implementing Quality Assurance in Haematology

Dr Ehram Jamian
Department of Pathology, Hospital Sultanah Aminah, Johor Bahru

ISO 15189 serves as the international benchmark for quality and competence in medical laboratories, ensuring reliable, consistent, and patient-centred results across the globe. This presentation will highlight the importance of ISO 15189 adoption worldwide and its relevance within the Malaysian healthcare system. Particular emphasis will be placed on its incorporation as a requirement in the National Pathology Policy 2022, underlining its role in strengthening laboratory standards and patient safety. The session will also cover the basic concepts of accreditation, providing practical examples to illustrate implementation, as well as an introduction to risk management principles within ISO 15189. Together, these insights aim to provide participants with a clear understanding of how ISO 15189 supports continuous improvement and quality assurance in laboratory practice.

Pitfalls In Bone Marrow Pathology: Avoiding Errors In Bone Marrow Trephine Biopsy Diagnosis (Sharing Experience)

Dr. Syirah Nazirah Binti Mohd Tajuddin
Department of Pathology, Hospital Tunku Ja'afar

Histological examination of the bone marrow trephine biopsy requires multiple factors, including good specimen quality, good technical support during sample processing, collaboration between clinician and laboratory haematologist, and, most importantly, pertinent clinical information. Additionally, ongoing communication between the healthcare team can lead to improved patient outcomes and a better understanding of the underlying conditions affecting the bone marrow. The processing of the good specimen requires competent laboratory technical staff and scientific officers. The specimen must be processed as best as possible and investigated properly. It is important to note that, a systemic approach must be used while examining each bone marrow component to avoid missing the abnormalities. In addition, appropriate utilisation of immunohistochemistry staining is also fundamental in the diagnosis of trephine biopsy. The conclusion must be correlated with bone marrow aspirate findings and its ancillary tests, such as flow cytometry, molecular, and cytogenetic where available with regard to clinical context. This comprehensive strategy ensures that any potential haematological disorders are accurately identified and characterised. By integrating various diagnostic modalities, healthcare professionals can develop a more effective treatment plan tailored to the patient's specific needs.

Behind the Lab Door – A Sneak Peek into HTA Stem Cell Services

Dr. Shenaz Banu Said Khan
Department of Pathology, Hospital Tunku Azizah

Hospital Tunku Azizah (HTA) Kuala Lumpur serves as a National Referral Hospital and a centre of excellence in providing specialised services for women and children since February 2019. HTA also serves as Malaysia's main referral centre for paediatric haematopoietic stem cell transplantation (HSCT). The HTA Stem Cell Laboratory plays a pivotal role in supporting a wide range of transplant modalities, including matched sibling transplants, major and minor ABO-incompatible sibling transplants, and haplo-identical transplants for both haemato-oncology and non-haemato-oncology patients. In close collaboration with the Paediatric Bone Marrow Transplant Unit, the laboratory ensures the coordination, execution, and optimisation of transplant protocols to ensure successful transplant outcomes. Core services include diagnostic testing such as CD34+ cell enumeration and post-transplant chimerism analysis, as well as stem cell processing which encompass red blood cell / plasma depletion, T-cell depletion, cryopreservation, and long-term storage of stem cell products for future therapeutic use. This presentation will provide an overview of the operational workflow, technical capabilities, and collaborative framework that define HTA's stem cell services, offering insights into the laboratory's role in paediatric HSCT outcomes in Malaysia. Emphasis will also be placed on the laboratory's ongoing commitment to continuous quality improvement and innovation in delivering safe, efficient, and high-standard transplant support services.

Emerging Psychoactive Substance: An overview

Hanisah Abd Hamid
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The rising prevalence of New Psychoactive Substances (NPS) in Malaysia presents a growing public health and diagnostic challenge. These chemically diverse compounds including synthetic cannabinoids, cathinones, novel benzodiazepines, and hallucinogens are designed to mimic traditional illicit drugs while evading legal control. Their rapid emergence, unpredictable toxicity, and varied formulations complicate clinical management, forensic detection, and enforcement. Laboratories face persistent difficulties in keeping pace with evolving NPS including the need for advanced analytical platforms . These challenges are further compounded by regulatory gaps and resource constraints, method development and cross-sector collaboration to address the dynamic NPS landscape.

Challenges in Running Clinical Toxicology Services with Current Available Laboratory Resources

Dr Anisah binti Adnan
Jabatan Kecemasan & Trauma, Hospital Melaka

Toxicology services play a critical role in the timely diagnosis and management of poisoning and overdose cases. Lack of comprehensive laboratory support presents significant challenges. Among the difficulties faced in delivering effective clinical toxicology care when laboratory resources are scarce or absent are reliance on clinical diagnosis without confirmatory toxicology testing, limitations in monitoring treatment efficacy, inability to identify uncommon or mixed toxidromes. Case examples highlights how clinicians are often required to make high-stakes decisions based on limited information and data, emphasising the importance of clinical acumen, toxicovigilance, and multi agency collaboration.

MS ISO 15189:2022 and Risk-Based IQC – Meeting the Accreditation Standard

Dr. Nurulamin Abu Bakar
Fakulti Sains Kesihatan, Universiti Kebangsaan Malaysia

The release of MS ISO 15189:2022 has reinforced the importance of risk-based approaches in medical laboratory quality management, particularly within internal quality control (IQC) systems. This lecture explores how laboratories can align their IQC practices with the new standard by incorporating risk-based quality control (QC) strategies that are designed to reduce patient harm and optimise resource utilisation. Using guidance from CLSI EP23-A and C24-Ed4, the presentation will outline both qualitative frameworks, such as the Individualized Quality Control Plan (IQCP), and quantitative tools, including Sigma metrics and the Parvin risk model. Special emphasis will be placed on integrating moving average control procedures as a real-time, patient-based QC method that complements traditional bracketed QC, particularly for analytes with high Sigma performance or in low-volume laboratory settings. Real-world examples and practical tools, including the use of Westgard QC frequency calculators and Risk Management Index (RMI) software, will be presented to demonstrate how risk can be systematically assessed and controlled. The session aims to equip clinical laboratories with actionable strategies to meet accreditation requirements while ensuring high-quality and safe patient results.

Analytical Performance Specifications in Medical Laboratory - meeting the standards

Rozita Abdullah
Department of Pathology, Hospital Sungai Buloh

Since its introduction in Malaysian pathology laboratories seven years ago, the Analytical Performance Section (APS) has been integral to quality assurance activities, partly driven by accreditation requirements aligned with ISO 15189:2022. Based on a recent survey and my own experience as an assessor, it is evident that many laboratories have understood and implemented APS across various quality assurance activities such as method verification, method comparison, new reagent lot verification, internal quality control (IQC), and measurement of uncertainty (MU). However, several concerns have been raised regarding its application. There were issues regarding the assignment of analytes to specific models, particularly in cases where the biological variation (BV) is either too large or too small. When BV is excessively large, the APS becomes too permissive; conversely, when BV is very low, it results in an overly stringent APS. Additionally, some analytes lack BV data, leading to their classification under the third model—the “state of the art” model. This model also faces challenges in defining the highest attainable quality and exhibits significant variability in APS values across different EQA providers. These issues have contributed to confusion within the laboratory community. Recent opinion papers by EFLM experts have offered some recommendations for addressing these challenges, and these proposed updates and way forward on how best to determine and implement APS will be discussed.

Emerging Infectious Diseases - Role of Chemical Pathology

Dr Nada Syazana binti Zulkufli
Beacon Precision Diagnostic

The evolving landscape of infectious diseases highlights the critical role of chemical pathology in aiding diagnosis, therapeutic monitoring, and clinical decision-making. This presentation discusses the significance of biochemical tests in identifying infections, tracking disease progression, and optimising antimicrobial stewardship. The combination of molecular techniques with biochemical assays further emphasises the advancing role of chemical pathology in precision medicine for infectious diseases. This presentation aims to reinforce the importance of chemical pathology in multidisciplinary management of infectious diseases, supporting prompt and targeted clinical interventions.

Islet Autoantibodies: The Gate Keepers Of Autoimmune Diabetes

Dr Saraswathy a/p Apparow
Pusat Diagnostik Khas, Institut Penyelidikan Perubatan

Islet autoantibodies (IAA, GADA, IA-2A, ZnT8A, ICA) serve as early biomarkers, defining presymptomatic stages of Type 1 Diabetes. The disease progresses through three stages—from autoantibody positivity with normal glucose to symptomatic diabetes requiring insulin. Islet autoantibodies are essential for diagnosing type 1 diabetes and identifying individuals at risk before symptoms appear. While the presence of multiple autoantibodies strongly predicts disease progression, however the rate of progression varies widely. Improved prediction is needed to target individuals who likely benefit from early intervention and as screening expands to broader populations, including Latent Autoimmune Diabetes in Adults (LADA). Research has shown that beyond simple counts, features such as titer changes, autoantibody reversion, and type-specific risk profiles can enhance predictive accuracy. Advances in autoantibody assay technology now offer greater sensitivity, reproducibility, and automation, supporting more precise risk stratification. Despite advancements in treatment, managing T1D remains challenging. Heterogeneity in disease progression and treatment response suggests different underlying mechanisms. Therefore, precision diagnostic approaches are essential to identify subtypes and optimise disease-modifying therapies.

Innovative Microbiological Approaches to Paediatric Infectious Disease

Dr Nor Akmal Mokhtar
Department of Pathology, Hospital Teluk Intan

The challenges associated with the diagnosis of paediatric infectious diseases commence even prior to a child's birth, as transmission can occur in utero. Unlike adults, children frequently present with nonspecific symptoms and encounter difficulties in providing diagnostic samples. Their unique anatomical, physiological, and immunological characteristics render them particularly susceptible to infectious diseases, often resulting in rapid deterioration and devastating sequelae. Advancements in diagnostic technologies are essential to overcome these impediments. This presentation highlights paediatric infectious disease clinical cases encountered at Starship Children's Hospital and the diagnostic laboratory testing provided by Labplus Laboratory in Auckland, New Zealand. These case studies exemplify the implementation of innovative strategies within a clinical context to mitigate diagnostic delays, optimise therapeutic interventions, and prevent both complications and the spread of resistant organisms. In addition, this presentation emphasis innovations in selective media use for bacterial cultures, multiplex rapid molecular PCR and the most current molecular diagnostic advancement includes bacterial PCR 16S. By bridging clinical practices and laboratory science, this session aims to provide an insight to improve diagnostic modalities and outcomes in this vulnerable populations.

Lab warriors: Battling Tuberculosis with cutting edge diagnostics

Dr Roshalina binti Rosli
Department of Pathology, Hospital Tengku Ampuan Rahimah

Tuberculosis (TB), caused by bacteria of the Mycobacterium tuberculosis complex, is one of the oldest known human diseases and remains a major cause of death worldwide. It continues to pose a significant global health threat. Early diagnosis and successful treatment are crucial to preventing further spread of the bacteria and the emergence of drug-resistant strains. Laboratories play a pivotal role in combating TB by providing rapid and accurate detection, identifying drug resistance, and guiding effective treatment. The use of cutting-edge diagnostic technologies, such as rapid molecular tests, significantly enhances the sensitivity, specificity, and speed of TB diagnosis, including the detection of drug resistance which is critical for effective treatment and control.

Challenges and Solutions in Laboratory Diagnosis of Sexually Transmitted Infection (STI)

Dr Siti Fazilah binti Situ
Department of Pathology, Hospital Kajang

Laboratory diagnosis of STIs in Malaysia faces multifaceted challenges that compromise patient care and public health surveillance. The emergence of non-culturable pathogens, notably *Mycoplasma genitalium* presents substantial diagnostic hurdles as conventional culture methods fail, necessitating molecular detection platforms that remain unavailable in many healthcare facilities. Traditional diagnostic methods demonstrate significant limitations, particularly RPR testing for early syphilis diagnosis, which exhibits reduced sensitivity compared to enzyme immunoassay approaches. The clinical significance of *Ureaplasma urealyticum* and *Mycoplasma hominis* in high-risk populations remains controversial with European STI Guidelines indicating that asymptomatic carriage of these bacteria is common potentially causing unnecessary antibiotic treatment and eventually leading to the selection of antimicrobial resistance. Surveillance gaps for ceftriaxone-resistant *Neisseria gonorrhoeae* represent a critical concern, as genomic surveillance studies from neighbouring countries demonstrate expanding multidrug-resistant lineages across Southeast Asia. Malaysia's limited participation in regional genomic surveillance networks hampers early detection of emerging resistance patterns and treatment failure monitoring. The implementation of automated CLIA-compliant molecular platforms, while requiring substantial budgetary commitment, offers rapid, accurate diagnosis with integrated resistance detection capabilities. Additionally, other essential solutions include developing regional laboratory partnerships for shared genomic data, establishing quality assurance programs for molecular STI testing, implementing point-of-care molecular diagnostics in high-volume clinics and creating standardized reporting systems for antimicrobial resistance surveillance. These initiatives will enhance diagnostic accuracy, improve patient outcomes, and strengthen Malaysia's capacity for evidence-based STI management and public health response.

Breaking Barriers: Innovative Diagnostic Approaches To Combat Carbapenamase Producing CRE Infections

Dr Adilatul Bushro binti Zaini
Department of Pathology, Hospital Sungai Buloh

The global spread of carbapenemase-producing carbapenem-resistant Enterobacteriaceae (CP-CRE) presents a critical challenge for clinical microbiology and infection control. Conventional culture-based methods, while essential, often lack the speed and sensitivity required for timely therapeutic decision-making and effective containment. Recent advances in diagnostic technologies have introduced a range of innovative tools aimed at improving the rapid detection and characterisation of CP-CRE in clinical settings. These include molecular assays such as multiplex real-time PCR, LAMP as well as enhanced phenotypic tests like the modified carbapenem inactivation method (mCIM), Carba NP, and lateral flow immunoassays. Additionally, whole genome sequencing (WGS) and metagenomics are emerging as powerful tools for surveillance and epidemiological investigations. This topic highlights the strengths, limitations, and clinical utility of these novel diagnostic approaches, emphasising their role in guiding antimicrobial stewardship, improving patient outcomes, and strengthening infection prevention strategies. Accelerated adoption and integration of these technologies in routine diagnostics are essential to break current barriers in combating CP-CRE.

Fungal Frontier: Pioneering Diagnostic Innovations for Rapid Pathogen Detection

Dr Sahlawati binti Mustakim
Department of Pathology, Hospital Sungai Buloh

Invisible yet deadly, fungal pathogens claim millions of lives each year because they are notoriously difficult to diagnose. High mortality rates are primarily driven by the slow, insensitive, and non-specific nature of conventional diagnostic methods like culture and histopathology. This critical delay leaves clinicians to treat patients blindly. This piece delves into the new frontier of fungal diagnostics, highlighting revolutionary technologies that are changing the game. From advanced molecular assays that identify species within hours to novel biosensors that promise point-of-care results in minutes, these innovations are pioneering a faster, more accurate path to diagnosis. By enabling lifesaving, targeted treatment at the point of need, these advances are not just improving outcomes - they are redefining our defence against an emerging global health threat.

Method Verification in Microbiology Diagnostic: A Quick Guide

Rusmah Yusof
Department of Pathology, Hospital Raja Permaisuri Bainun

In microbiology diagnostics, maintaining the accuracy, reliability, and consistency of testing methods is fundamental to effective disease detection, patient management, and public health protection. Method verification is a vital quality assurance process that confirms a diagnostic method performs according to the manufacturer's claims and is fit for use within the specific conditions of a laboratory. In diagnostic microbiology, method verification applies to a wide range of procedures, including qualitative methods, quantitative methods, microbial identification systems (MIS), antimicrobial susceptibility testing (AST), and blood culture systems. This process ensures that newly introduced methods meet predefined performance criteria before being implemented in routine testing. A comprehensive method verification involves assessing key performance characteristics such as accuracy, precision,

linearity, and limit of detection, followed by the establishment of clear and measurable acceptance criteria. These evaluations are guided by recognised standards such as CLSI guidelines and ISO 15189 requirements, ensuring results are both scientifically valid and clinically relevant. By adopting a structured, evidence-based approach to method verification, laboratories can strengthen the quality, dependability, and credibility of their diagnostic services. This, in turn, supports more accurate clinical decision-making, optimises patient outcomes, and contributes to the timely detection and control of infectious diseases—ultimately safeguarding community health.

ABSTRACT

AP01 Osteochondrolipoma

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Introduction: Osteochondrolipoma is an extremely rare histological variant of lipoma with osseous and chondroid differentiation. To date, only a few cases have been reported, involving the head, neck and upper part of the body, but rarely in the lower half of the body. Case presentation: A 58-year-old lady presented with a one-month history of right knee swelling that slowly increased in size. A firm mass was palpated at the inferolateral aspect just distal to the patella. MRI showed a well circumscribed lobulated heterogeneously enhancing mass measuring 2.9 × 5.0 × 3.2cm, suggestive of soft tissue tumour of the right knee with differential diagnosis of synovial sarcoma, undifferentiated pleomorphic sarcoma or liposarcoma. Tru-cut biopsy revealed a low-grade cartilaginous neoplasm without a fat component. Excisional biopsy was performed and the cut surface of the tumour showed multiple whitish irregular lesions in between pale yellowish area. Histologically, the tissue is composed of fat with prominent areas of variably mature hyaline cartilage associated with endochondral ossification. *Discussion:* The pathogenesis of osteochondroma remains uncertain with one theory suggesting metaplastic process of pre-existing lipoma into cartilaginous and osseous components. Location of the lesion that is in the proximity with bone, joint, tendon or periosteum might induce the mesenchyme to produce chondroid ground substance, which then leads to chondro-osseous metaplasia of a lipoma. *Conclusion:* Prompt diagnosis of osteochondrolipoma is important because it can resemble malignant tumours on imaging due to its mixed composition leading to inappropriate intervention.

AP02 Invasive Stratified Mucin-Producing Carcinoma (i-SMILE) of Endocervical Adenocarcinoma. First Case Reported in Negeri Sembilan.

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Introduction: Invasive stratified mucin-producing carcinoma (i-SMILE) represents a newly described Human Papilloma virus (HPV)-associated subtype of endocervical adenocarcinoma (ECA). We aim to provide clinical and pathological data for this rare entity which was limited. *Case presentation:* We report a case of a 40-year-old female presented with intermenstrual bleeding. The initial pap smear was negative for intraepithelial lesions or malignancy. However, subsequent endocervical curettage and endometrial tissue biopsy revealed malignant glandular structures containing intracytoplasmic mucin. Immunohistochemistry staining showed positivity for Cytokeratin7 and p16, and negativity for ER, PR and Cytokeratin 20. The patient underwent a radical hysterectomy which confirmed the histopathological diagnosis of Invasive stratified mucin-producing adenocarcinoma of the cervix, HPV associated with Silva Pattern Classification B and FIGO staging 1B2 with no lymph node involvement. The patient completed chemotherapy and radiotherapy with no recurrence reported after six months. *Discussion:* i-SMILE is included in the 2020 World Health Organisation (WHO) Classification of Tumours of Female Reproductive Organs as a distinct subtype of endocervical adenocarcinoma associated with high-risk HPV infection. In small studies, i-SMILE has been reported to have a higher rate of lymph node metastasis, early recurrent disease and substantial risk of distant metastatic disease, especially in the lungs. Histologically it shows variation of morphologic patterns, but is frequently characterised by having destructive stromal invasion with immunohistochemical staining shows block-like expression of p16. *Conclusion:* It is important to recognise the morphologic spectrum of i-SMILE as it is known to have a poorer prognosis which prompts for cautious postoperative follow-up.

AP03 Optimising Histologic Correlation of Suspicious Calcifications in Mammographic Lesions: A Novel Protocol at Hospital Al-Sultan Abdullah, UiTM

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Introduction: Biopsies of suspicious calcifications in mammographic lesions are frequently performed; however, discrepancies between radiologic and histologic evaluations remain a concern. While suspicious calcifications are a reliable indicator of malignancy, the risk of false-negative interpretations persists. This study introduces a structured protocol to improve the correlation between histologic and radiologic findings in mammographically detected suspicious calcifications, aiming to enhance specimen handling and histologic interpretation. *Materials & Methods:* Capturing tissue mammographic images post-tomosynthesis vacuum-assisted breast biopsy (VABB) with sponge placement and markings before transfer to the cassette and formalin container. Processing biopsy specimens with specific orientation in tissue blocks (guided by markings) to optimise histologic sectioning and Haematoxylin & Eosin (H&E) slide preparation. Correlating histologic findings with the specimen's mammographic image for precise localisation

of suspicious calcifications and associated lesions. Performing deeper sectioning of tissue blocks when suspicious calcifications are not initially visualised to ensure accurate detection. *Results & Discussion:* From October 2024 to mid-2025, 28 biopsies were performed using the protocol. Most cases were BIRADS 4A, and multiple cores were typically sampled. Compared to similar biopsies in 2023, the new protocol significantly increased histologic confirmation of calcifications (Pre-protocol: 31.82% vs Post-protocol: 83.33%). This structured approach improved diagnostic precision, minimised false-negative and false-positive interpretations, and reduced the need for repeat procedures in screening mammography.

AP04 Renal Immunofluorescence Study on Formalin-Fixed Paraffin-Embedded Tissues: Hospital Al-Sultan Abdullah's Perspective

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Introduction: Direct immunofluorescence (DIF) is a laboratory procedure that demonstrates antibodies which are bound to antigens *in vivo*. DIF on frozen sections (IF-F) is the gold standard for renal diseases. Formalin-fixed paraffin-embedded DIF (IF-P) serves as an alternative when frozen tissue is inadequate. *Objective:* This study aimed to evaluate IF-P diagnostic accuracy, sensitivity and specificity against IF-F for IgA deposits in renal biopsies. Methods: In this comprehensive study, 44 renal biopsies were processed at Hospital Al-Sultan Abdullah in 2024, with 2µm paraffin sections, digested with Proteinase K, and manually stained for IgA deposits. Immunofluorescence was independently assessed by two pathologists, considering ≥1+ intensity as positive. IF-P sensitivity and specificity were evaluated based on clinical diagnosis, light microscopy, and IF-F findings. *Results:* Out of 44 renal biopsies, 38 were confirmed positive for IgA deposits by the gold standard (IF-F), and IF-P also correctly identified 35 of them. IF-P achieved 92% sensitivity, 92% specificity, and 95% for confidence interval. It accurately identifies true positives and differentiates true negatives from false negatives. This study emphasises the diagnostic performance of IF-P as a reliable alternative to IF-F for diagnosing renal diseases. High sensitivity minimises false negatives, while high specificity minimises false positives, and the confidence interval estimates the precision and reliability of test outcomes. *Conclusion:* The findings suggest IF-P could be a valuable tool in renal pathology when frozen tissue is unavailable. This offers greater flexibility and accessibility for clinical settings. Future work could explore optimising the technique for broader use and potential standardisation.

AP05 Solid Pseudopapillary Neoplasm beyond the Pancreas: A Histopathological Perspective on a Paediatric Case.

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Introduction: Solid pseudopapillary neoplasm (SPN) is a rare, low-grade malignant tumour typically arising in the pancreas, primarily affecting young females. Extra-pancreatic SPN are extremely uncommon, often posing significant diagnostic challenges due to their atypical location and overlapping histologic features with other neoplasms. Case Presentation: We report a 14- year-old girl who presented with lower abdominal pain and a palpable right sided mass. Imaging revealed a large heterogeneous mass in the right sub hepatic region. Laparoscopy showed a tumour arising from the transverse mesocolon, adherent to the pancreas and omentum. Histologically, the tumour was encapsulated, composed of proliferating neoplastic epithelioid cells arranged around gland-like spaces containing mucoid material. The cells had clear to eosinophilic cytoplasm with some nuclear variability and most nuclei appeared dark with irregular membranes. Focal area of discohesive cells with papillary-like architecture, exhibiting monotonous nuclei without prominent nucleoli. PAS-D staining highlighted hyaline globules. Immunohistochemistry showed strong nuclear and cytoplasmic β-catenin positivity, with co-expression of CD56, cyclin D1, vimentin, CD10, and PR. Molecular analysis confirmed a CTNNB1 p.Ser33Pro mutation. *Discussion*: Extra-pancreatic SPN are uncommon, however they should be considered in the differential diagnosis of intra-abdominal tumours in adolescents. Histopathology evaluation with immunohistochemistry, and molecular testing are required for an accurate diagnosis. *Conclusion:* We report this case of extra-pancreatic SPN to highlight diagnostic challenges associated with this rare entity. Our findings emphasise the importance of integrating histopathological features with immunohistochemical and molecular studies, notably the identification of a CTNNB1 mutation, to ensure accurate diagnosis and optimal clinical management.

AP06 Lucio's Phenomenon: A Case Report from Negeri Sembilan, Malaysia

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Introduction: Leprosy is a chronic infectious disease caused by *Mycobacterium leprae*, predominantly affecting the skin and peripheral nerves. Lucio's phenomenon (erythema necroticans) is a rare reaction pattern that occurs in untreated pure primitive diffuse lepromatous leprosy (PPDL) and is described as acute cutaneous necrotising vasculitis. It primarily occurs in Mexico and Central America; however, isolated cases are being reported worldwide. Case report: We described a case of a 23-year-old gentleman presenting with multiple painful ulcers over fingertips and bilateral lower limb. Histopathological examination of skin biopsy showed groups of acid-fast bacilli with vasculitis and diagnosis of Lucio's phenomenon was made in the background of lepromatous leprosy. *Discussion:* The exact pathogenesis of Lucio's phenomenon (LP) is unknown. It has been postulated that the immune response towards uninhibited multiplication of *M. leprae* caused necrotising vasculitis of the small vessels in the upper and mid-dermis associated with epidermis infarction; or endothelial swelling and thrombosis leading to vascular occlusion. It may not be easily recognised because of its rarity in non-endemic countries, as well as its similarity with other causes of vasculitis. Lucio's phenomenon necessitates the usual multidrug regiment as the first-line treatment with systemic corticosteroid to be included in the regimen for severe situations. *Conclusion*: A delayed diagnosis can result in severe disabilities and contribute to disease transmission within the community. Hence, primary care practitioners, including those in non-endemic regions, should remain vigilant about this atypical feature of leprosy to prevent complications.

AP07 SSTR2A and SOX10 Expression in Concurrent Cerebellopontine Angle Tumour: A Case Report
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Cerebellopontine angle (CPA) tumours account for 6–10% of all intracranial tumours, with vestibular schwannomas and meningiomas comprising the majority. Their concurrent occurrence is rare and typically associated with genetic syndromes such as neurofibromatosis or von Hippel-Lindau disease. We report a case of a 38-year-old woman who presented with a right-sided headache of three months' duration, accompanied by vomiting and progressive hearing loss on the same side. She had a one-year history of right-sided hearing impairment. Magnetic resonance imaging revealed synchronous extra-axial CPA and right frontoparietal lesions with perilesional oedema. Histological examination showed two morphologically distinct tumours, supported by differential immunohistochemical staining: one tumour expressing epithelial membrane antigen (EMA) and somatostatin receptor 2A (SSTR2A), consistent with fibroblastic meningioma, and another expressing S100 and SOX10, confirming schwannoma. This dual pathology, in the absence of syndromic features, is exceedingly rare. The case highlights the importance of including SOX10 and SSTR2A in the immunohistochemical panel when evaluating CPA tumours with ambiguous morphology, particularly to distinguish fibroblastic meningiomas mimicking schwannomas. In conclusion, this case underscores the diagnostic value of SOX10 and SSTR2A expression in identifying concurrent CPA tumours and preventing misdiagnosis, which is crucial for appropriate management and prognosis.

AP08 Cardiac myxoma with extramedullary haematopoiesis: An unusual phenomenon in a rare tumour.
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Introduction: Cardiac myxoma is a benign primary cardiac tumour most commonly affecting the left atrium. Most cases are sporadic and less than 10% are associated with Carney complex. Apart from the characteristic myxoma cells, various metaplastic and heterotropic elements can be present. Extramedullary haematopoiesis is reported in only 7% of cases. *Case presentation:* A 57-year-old lady, presented seven years ago with chest pain and Wellens Syndrome on echocardiogram. Echocardiography and cardiac MRI revealed a right atrial mass. She had been asymptomatic since and follow-up echocardiography showed no significant increase in tumour size. Complete blood count is unremarkable. Eventually, she agreed to surgery and underwent open thoracotomy and excision of right atrial mass. Grossly, it is a polypoid circumscribed mass with smooth and bosselated surface attached to a broad-based stalk. It has a heterogenous and haemorrhagic surface with areas of calcification. Microscopic examination showed a myxoma with prominent fibrosis, haemorrhage and numerous Gamna-Gandy bodies from matrix iron encrustation into elastic fibres. Foci of osseous metaplasia and extramedullary haematopoiesis are evident. The latter consists of haematopoietic progenitor cells of different lineages namely megakaryocytes, erythroid precursors and granulocytes precursors mixed with their mature forms. *Discussion:* Cardiac myxoma may be heterogenous histologically following degenerative and metaplastic changes. Extramedullary haematopoiesis probably is a result of intralesional inflammatory changes that release cytokines and stimulate haematopoietic cell activity. *Conclusion:* Surgical removal is essential to prevent severe complications of embolisation.

AP09 Thoracic SMARCA4-deficient Undifferentiated Tumour: A Case Report
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Introduction: SMARCA4-deficient undifferentiated tumour (SMARCA4-dUT) is a recent entity added into the WHO classification of tumour, known for its highly malignant nature with extensive immunohistochemical testing posing challenge to pathologists. *Case presentation:* We present a case of a 63-year-old gentleman who was a chronic active smoker with no known illness. Patient presented with insidious onset and worsening respiratory distress associated with constitutional symptoms. Imaging showed anterior mediastinal mass progressively increasing in size with mediastinal lymphadenopathy. Ultrasound guided mediastinal biopsy showed strips of predominantly necrotic tumour tissue with scattered viable epithelioid, round, and spindle cells exhibiting enlarged, hyperchromatic nuclei and prominent nucleoli. An extensive immunohistochemistry (IHC) panel showed positivity for EMA, CD99, BCL2, Vimentin, CD10, SALL4, focally faint for Claudin-4. Other markers like pancytokeratin, calretinin, SMA, S100, TTF1, STAT6, MDM2, CD34, SS18-SSX, Myogenin, NKX 2.2 and MNF116 were negative with INI1 retained. There is loss of nuclear expression SMARCA4(BRG1) together with presence of SALL4 hence favours the diagnosis of thoracic SMARCA4-deficient undifferentiated tumour. The patient ultimately succumbed given the grave prognosis and progression of the disease. *Discussion:* In conclusion, SMARCA4-dUT is a rare, highly aggressive malignant entity which poses a diagnostic challenge to pathologists. Understanding of SWI/SNF complexes and their role in carcinogenesis will broaden our view on future potential chemotherapeutic strategy.

AP10 The Dark Side of the Spine: A Rare Malignant Melanotic Nerve Sheath Tumour
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Introduction: Malignant melanotic nerve sheath tumour (MMNST), previously known as melanocytic schwannoma is a rare variant of a peripheral nerve sheath tumour, making up <1% of all nerve sheath tumours. *Case presentation:* This case highlights a 38-year-old male with progressive bilateral lower limb weakness, acute bowel and urinary retention, and worsening mobility from walking stick dependence to wheelchair use. MRI confirmed a T7 posterior element bony lesion with soft tissue component causing nerve root compression. Microscopic section shows syncytial appearance of tumour cells, melanin-containing spindled to epithelioid

cells featuring pleomorphic, vesicular nuclei and frequent conspicuous nucleoli. Mitotic activity was 4 per 10 high power fields (HPFs). Immunohistochemistry (IHC) demonstrated strong positivity for S-100, SOX-10, HMB45 and Melan-A. They are negative for EMA, AE1/AE3 and Brachyury. Ki-67 proliferative index is around 5%. *Discussion:* MMNST develops from nerve roots with clonal Schwann cell proliferation and melanin pigment production. Based on the latest 2020 World Health Organisation (WHO) Classification of Soft Tissue Tumours, this tumour is reclassified into malignant, due to high rate of recurrences and metastasis despite the histologic features appearing benign with a low proliferation index. *Conclusion*: MMNST is a rare, aggressive, and diagnostically challenging tumour of spinal nerves. This tumour can occur sporadically or in patients with an underlying familial predisposition syndrome called Carney's complex (PRKAR1A mutations). Future research on the biology and genomics of this tumour will help uncover potential therapeutic targets.

AP11 Digital Transformation of LTAT Data Collection in Medical Laboratories: A Process Improvement Initiative

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The Laboratory Turnaround Time (LTAT), a key indicator in medical laboratories, measures the interval from specimen receipt to report issuance, directly influencing clinical decisions and patient care. Previously, LTAT data collection relied on a manual, paper-based process that was time-consuming, prone to human error, and inefficient in tracking performance in real time. The traditional method involved multiple stages, including manual entries on TAT forms and laborious calculations, which also demanded considerable physical storage. To address these issues, a digital transformation project was implemented, replacing the manual system with an online solution using Google Spreadsheets. This shift enabled authorised personnel to input data directly into a shared digital platform, automating calculations and allowing real-time access to laboratory performance metrics. The innovation resulted in significant operational improvements, including reduced paper usage, lower storage requirements, and more efficient workflows. Additionally, the automation of data collection enhanced staff productivity, accountability, and time management, leading to timely submissions and better adherence to deadlines. Overall, the digitalisation of LTAT monitoring has streamlined laboratory operations, improved the accuracy and timeliness of results, and positively impacted the quality of healthcare services by enabling quicker, more reliable patient care and boosting overall satisfaction.

AP12 Mimicry and Malignancy: A diagnostic challenge for Polymorphous Adenocarcinoma of the Parotid.

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Introduction: Polymorphous adenocarcinoma (PmA) of the parotid gland is a fascinating, rare, slow-growing, and low-grade malignant tumour, as it usually affects the minor salivary glands, making its diagnosis a challenging yet intriguing task. This case report exclusively examines the clinical, unique histopathological, immunohistochemical features, surgical management and prognosis of PmA. *Case presentation:* A 62-year-old female presented with painless, slowly enlarging mass on the right parotid gland for more than 1 year. However, there is no pain or facial nerve dysfunction. Computed tomography (CT) scan revealed a heterogeneous, enhancing lesion in the outer portion of the right superficial parotid gland, measuring 1.7 × 2.2 × 2.0 cm. The histopathology result was a polymorphous adenocarcinoma of the parotid. Immunohistochemistry (IHC) stains show strong positivity for CK5/6, CK7, S100, SOX10, and P63. They do not express HER2 and p53. *Discussion:* Due to its rarity, the diagnosis of polymorphous adenocarcinoma of the parotid gland remains challenging, as the tumour exhibits diverse histological patterns and is commonly found in the minor salivary glands, rather than in major salivary glands, such as the parotid gland. To distinguish PmA from other malignancies, PmA usually has a polymorphism pattern, low mitosis and absence of necrosis or lymphovascular invasion. Additionally, IHC is a primary diagnostic tool for PmA, with tumour cells commonly positive for CK, EMA, and S100. *Conclusion:* This case report aims to compile the existing evidence on polymorphous adenocarcinoma of the parotid, especially in Malaysia, and to outline additional research to refine treatment plans for these patients.

AP13 Diagnostic Challenges in Primary Low-Grade Chondrosarcoma of the Rib: A Case Report

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Primary chondrosarcoma arising from anterior chest wall is relatively rare. Biopsy at the chest wall tumour is routinely performed for diagnostic purposes. However, it poses challenges in differentiating between low grade chondrosarcoma and benign cartilaginous tumour. We describe a case of primary low-grade chondrosarcoma of rib. A 33-year-old man presented with a slow growing and painless right 9th rib tumour for 5 years. Clinically, the tumour appears well-defined and non-mobile. CECT thorax concluded the tumour was likely chondrosarcoma. Tumour's biopsy was taken and the histopathological examination revealed mildly increased cellularity of chondrocytes. There is no binucleation, mitosis and bone entrapment. The biopsy's interpretation is well-differentiated cartilaginous tumour. Subsequently, he underwent excision of tumour. Macroscopically, tumour size is 100 mm in largest dimension. Microscopically, mild to moderately increased in tumour cellularity with binucleation and bone entrapment. The final diagnosis is primary chondrosarcoma, Grade 1. Benign anterior chest wall tumours are more prevalent than malignant tumours. Diagnosing low grade chondrosarcoma in biopsy samples presents significant challenges especially when tumour's yield is low and exhibits minimal nuclear pleomorphism. Distinguishing between enchondroma and low-grade chondrosarcoma requiring careful evaluation of specific histological features like bone entrapment and absence of encasement. The challenges are observed in this case. The final diagnosis is made after excising the entire malignant tumour. Given the rarity and challenges in diagnosing low grade chondrosarcoma of the rib, a proper histological evaluation and multidisciplinary team approach is recommended to

achieve accurate diagnosis and guide appropriate management strategies.

AP14 Pseudomelanosis Intestinalis in Patients with End Stage Renal Failure

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Introduction: Pseudomelanosis of the gastrointestinal tract is characterised by an accumulation of iron laden macrophages in the lamina propria. Pseudomelanosis intestinalis is a rare entity. Its aetiology and clinical significance are still not fully understood. *Case report:* We describe two cases of pseudomelanosis occurring in 2 elderly women, 71 and 78 years old, respectively. They were found to have terminal ileum pseudomelanosis by colonoscopy which was confirmed by histopathological examination. Incidentally, both had end stage renal failure, complicated with anaemia. They were prescribed with oral iron supplements. Colonoscopy findings were unremarkable and terminal ileum biopsy was taken. Microscopically, there are scattered brown pigments within macrophages in the lamina propria at the tip of the intestinal villi. Hemosiderin pigments are evidenced by positive Perl's stain for iron. *Discussion:* Brown pigments in the intestines can be due to several pigments such as hemosiderin, melanin and lipofuscin. Perl's stain is one of the common stains used to detect hemosiderin pigment and can differentiate hemosiderin from melanin and lipofuscin. Pathologists should be aware of this entity while investigating brown pigments in gastrointestinal biopsy specimens. *Conclusion:* Clinical history of oral iron supplements in patients with end stage renal failure could be an additional supportive information of pseudomelanosis of gastrointestinal tract.

AP15 A retrospective analysis data of non-conformance data in Anatomic Pathology Unit, Hospital Al-Sultan Abdullah UITM (2021–2024)

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Introduction and Objectives: Non-conformance (NC) in histopathology laboratories refers to any deviation from standard operating procedures (SOPs), regulatory requirements, or quality assurance protocols that could compromise diagnostic accuracy, laboratory safety, or patient outcomes. NCs may occur across pre-analytical, analytical, and post-analytical phases. This study aims to identify the types of NCs documented in our unit alongside with the contributing factors, and to suggest appropriate corrective and preventive actions. *Methodology:* All documented NCs (n:87) data between 2021 to 2024 in the Anatomic Pathology Unit, Department of Clinical Diagnostic Laboratories, Hospital Al-Sultan Abdullah, Universiti Teknologi MARA (UiTM) were included. The incident reports, their corrective and preventive action records were analysed. *Findings:* A total 87 NCs were identified. The most frequent problems were specimen mishandling (29.5%), minor documentation discrepancies (20.5%), typographical and labelling errors (15.9% each), and Laboratory Information System (LIS) errors (11.7%). Less common problems included staining variations (2.3%), dysfunctional control tissues (2.3%), and accidental finger cuts during microtomy (2.3%). All reported (n:87) NCs were resolved, and appropriate preventive measures were introduced for several recurring NCs, with improved outcomes. *Conclusion:* NCs in histopathology laboratories present risks to both diagnostic reliability and workplace safety. Timely identification, reporting, and addressing the corrective and preventive measures are suggested to minimise NCs in the laboratories.

AP16 A Path Less Travelled: Myxoid liposarcoma metastasizing to the breast

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Introduction: Myxoid liposarcoma (MLS) is the second most common type of liposarcoma and is known for its aggressive behaviour and potential for distant metastasis. Common metastatic sites include the retroperitoneum, extremities, thorax, and subcutaneous soft tissue. *Case report:* We report a rare case of a 42-year-old Chinese female who presented with a progressively enlarging right thigh mass over one year, associated with bilateral breast lumps, additional firm, mobile masses in right lumbar region, left thigh, and abdomen. Histopathological examination of the bilateral breast lump biopsy showed a neoplastic hypocellular lesion composed of bland mesenchymal spindle cells within a myxoid stroma rich in thin walled and arborising vasculature forming chicken wire fencing. The spindle cells have stellate to ovoid shape nuclei, dispersed chromatin, occasional prominent nucleoli and moderate eosinophilic cytoplasm. The mitotic count is 1 per 10HPFs. There are a few scattered signet-ring and multivacuolated lipoblasts with mature adipocytes seen throughout the lesion. Immunohistochemical studies show the lesional cells are focally positive for S100. They are negative for PanCK, Oestrogen receptor, Progesterone receptor, Smooth muscle actin and CD34. These findings favoured a diagnosis of Metastatic Myxoid Liposarcoma. *Discussion:* This case highlights the rare metastatic pattern of myxoid liposarcoma, emphasising the need for vigilance in atypical metastatic presentations. *Conclusion:* During the diagnosis of metastatic sarcoma in an unusual site, careful histological evaluation must be integrated with radiological and clinical findings.

AP17 Unmasking a Rare Entity: Pulmonary Hyalinising Clear Cell Carcinoma Mimicking Squamous Cell Carcinoma

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Pulmonary hyalinising clear cell carcinoma (HCCC) is an exceptionally rare primary lung tumour of salivary gland origin constituting less than 1% of all lung tumours, with only 12 cases reported to date. Its rarity and distinctive clinicopathological features pose significant diagnostic challenges. We present a case of a 75-year-old man with a history of nasopharyngeal carcinoma, in whom a

hypermetabolic perilobar bronchial lesion of the right middle lobe (RML) was incidentally discovered during surveillance PET-CT scan. Bronchoscopy revealed an occlusion of the RML by an endobronchial mass. Histologically, the mass was composed of monotonous neoplastic cells arranged in nests and trabeculae within a hyalinised stroma. The tumour cells displayed round hyperchromatic nuclei with moderately abundant eosinophilic to clear cytoplasm. Immunohistochemically, these cells were diffusely positive for CK5/6, CK7 and p40 while negative for TTF1, CD10, GATA3, SMA, S100, Synaptophysin and Chromogranin A. Fluorescence in situ hybridisation (FISH) demonstrated an *EWSR1* gene rearrangement, supporting the diagnosis of HCCC. HCCC expresses squamous differentiation markers, leading to potential misdiagnosis as squamous cell carcinoma with clear cell change of the lung. However, its bland histomorphology, absence of keratinisation and characteristic stromal hyalinisation argue against that diagnosis. Furthermore, the presence of *EWSR1* rearrangement and *EWSR1–ATF1* gene fusion detected by fluorescence in situ hybridisation are crucial in differentiating both entities. This case underscores the importance of integrating histopathological examination, immunohistochemistry and molecular testing in accurately diagnosing pulmonary hyalinising clear cell carcinoma (HCCC).

AP18 The Spindle Cell Enigma: Unravelling A Rare Renal Neoplasm

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Introduction: Renal solitary fibrous tumours (SFTs) are extremely rare, accounting for fewer than 2% of all soft tissue tumours, with just over 100 cases reported. While solitary fibrous tumours are thought to arise from CD34-positive mesenchymal cells, the exact origin remains uncertain. *Case report:* We report a case of a 71-year-old woman who presented with visible haematuria. Imaging revealed a heterogeneous left renal mass with necrosis and renal vein involvement. Following radical nephrectomy, histological analysis revealed spindle to ovoid cells in storiform architecture with haemangiopericytoma-like vasculature. Higher-grade areas showed tumour cells with marked nuclear atypia, with frequent bizarre multinucleated forms, brisk mitotic activity (19/10 HPFs) and necrosis. Immunohistochemistry study demonstrated diffuse CD34 and nuclear STAT6 positivity while negative for PAX8, S100, HMB45, and MDM2. *Discussion:* These tumours typically present as heterogeneous, contrast-enhancing renal masses on imaging, closely mimicking renal cell carcinoma and complicating preoperative diagnosis. STAT6 immunohistochemistry is a highly sensitive (~98%) and almost perfectly specific immunohistochemical marker for SFT and can help distinguish this tumour type from other histologic mimics. Although renal SFTs often follow an indolent course, up to 15% exhibit malignant behaviour with potential for recurrence or metastasis. Radical nephrectomy is typically curative for localised disease. However, no consensus exists on follow-up intervals or adjuvant therapy. *Conclusion*: Due to its rarity and overlapping imaging features, malignant renal SFT demands high diagnostic suspicion. Timely recognition through integrated morphology and targeted immunohistochemistry is essential to avoid delay in diagnosis and ensure optimum patient care.

AP19 Sellar/suprasellar meningioma mimicking pituitary adenoma: Report on 2 cases

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Sellar and suprasellar meningiomas are rare intracranial tumours that can closely mimic pituitary adenomas in clinical presentation and imaging, complicating accurate diagnosis. Differentiating these meningiomas from pituitary adenomas based on standard magnetic resonance imaging (MRI) can be challenging. We report two cases illustrating this diagnostic challenge. The first case involves a 68-year-old woman presenting with dizziness and postural anosmia; MRI revealed a sellar-suprasellar mass initially suggestive of pituitary macroadenoma. Surgical resection and histopathology confirmed a meningothelial meningioma, WHO Grade 1. The second case describes a 42-year-old woman with visual disturbances and headaches; MRI showed a lobulated sellar-suprasellar lesion with mass effect, initially interpreted as a pituitary macroadenoma. Histopathological evaluation identified an atypical meningioma, WHO Grade 2. These cases underscore the importance of considering meningiomas in the differential diagnosis of sellar masses and highlight the limitations of imaging alone in distinguishing these entities.

AP20 Beyond the Tumour: Unmasking Paraneoplastic Glomerulopathy Associated with Renal Cell Carcinoma

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Introduction: Paraneoplastic glomerulonephropathy (PGN) is a rare but significant secondary cause of glomerulonephritis associated with underlying malignancies. It can present as nephrotic or nephritic syndrome or unexplained renal insufficiency, often complicating timely recognition and management. *Case report:* We report a case of a 64-year-old Chinese man with a decade-long history of frothy urine and bilateral lower limb swelling. He had elevated creatinine levels (266 μmol/L) and a deteriorating estimated glomerular filtration rate (eGFR) (21–23 mL/min/1.73m²). While preparing for a renal biopsy, bedside ultrasound incidentally detected a suspicious left renal lesion, later confirmed via imaging as a renal mass. The patient subsequently underwent left open partial nephrectomy, and histopathology revealed clear cell renal cell carcinoma (WHO/ISUP Grade 3) with concurrent membranous nephropathy in native renal tissue. *Discussion:* This case highlights the diagnostic challenges posed by PGN, where clinical suspicion is paramount. Importantly, it underscores the necessity of tumour screening in patients presenting with unexplained glomerulopathy, as renal malignancies can be diagnosed incidentally. Timely detection and intervention are crucial in improving prognosis, particularly renal function. PGN associated with renal cell carcinoma remains rare but clinically significant, with membranous nephropathy being the most commonly linked glomerulopathy. The underlying pathogenesis likely involves tumour-induced immune dysregulation and immune complex deposition in glomeruli. *Conclusion:* Clinicians should remain

vigilant for concurrent renal pathology in malignancy cases, as early diagnosis and tumour resection can markedly enhance renal and overall outcomes. Surgical resection, combined with immunosuppressive therapy where indicated, remains the cornerstone of managing malignancy-associated glomerulopathies.

AP21 The Hidden Intruder: A Case Report of Paratesticular Liposarcoma

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Paratesticular liposarcoma (PLS) is a rare malignant tumour arising from adipose tissue in the spermatic cord, epididymis, or testicular tunics. It accounts for 3–7% of all paratesticular tumours and often mimics benign scrotal masses, delaying diagnosis and management. We report a case of a 31-year-old man with a painless left scrotal swelling progressively enlarging over one year. Physical examination revealed a 10×8 cm paratesticular mass with mixed consistency. Ultrasonography showed a left paratesticular mass measuring 13×10×9 cm, while CT imaging revealed no distant metastasis. Tumour markers (AFP, β-HCG, LDH) were within normal limits. He underwent scrotal exploration and excision of the tumour, which was noted to be subcutaneous and separate from the testis. Histopathology confirmed a well-differentiated liposarcoma. Well-differentiated PLS typically presents as a slow-growing, painless mass and is often mistaken for lipoma or hernia. Diagnosis relies on imaging and histopathology, as clinical findings are non-specific. Wide local excision remains the mainstay of treatment, with orchidectomy performed if testicular involvement is suspected. Although low-grade, these tumours carry a risk of local recurrence if not excised with adequate margins. Long-term follow-up is essential due to recurrence potential. Paratesticular liposarcoma is exceedingly rare in young adults and may clinically mimic benign scrotal conditions. This case highlights the importance of considering malignancy in persistent scrotal swellings even in younger patients. Early imaging, surgical intervention, and histopathological confirmation are critical for accurate diagnosis and management. Long-term follow-up remains essential due to the risk of recurrence.

AP22 Primitive Myxoid Mesenchymal Tumour of Infancy: A case report

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Introduction: Primitive Myxoid Mesenchymal Tumour of Infancy is a rare soft tissue neoplasm with intermediate malignant potential. Its molecular hallmark is BCOR-internal tandem duplication. *Case presentation:* A 3-month-old male presented with right frontal scalp tumour since birth. Initial USG revealed an encapsulated homogeneously hypoechoic soft tissue lesion within the subcutaneous layer with intralesional vascularity. MRI/MRA showed internal septation, hypointense on T1W, hyperintense on T2W & STIR, homogeneous enhancement post contrast, restricted diffusion in DWI/ADC. Intracranial and vertebral arteries are normal. Surgical excision revealed a lobulated scalp mass extending to subfrontalis fascia measuring 110×95×30mm with greyish tan myxoid cut surfaces. Histologically, the tumour is focally infiltrative with myxoid-rich stroma, associated with plexiform and dilated medium sized vascular channels. Areas with alveolar oedema-like microcystic mucin pools are also frequently seen. The tumour cells have monomorphic primitive round hyperchromatic nuclei with fine nuclear chromatin, inconspicuous nucleoli and ill-defined cytoplasmic processes. BCOR, TLE1, SATB2 and CyclinD1 were diffusely positive. Molecular analysis detected BCOR internal tandem duplication at exon 15. *Discussion:* PMMTI predominantly affects infants and rarely older children. Common sites include deep soft tissues of the trunk, extremities, head, and neck. It is associated with long clinical courses with frequent relapses and rare metastases. The cells demonstrate strong and diffuse nuclear BCOR and BCL6 positivity and may also express SATB2, TLE1, cyclin D1, FLI1, BCL2, CD 10, CD99, CD117, nestin and H3K27me3. *Conclusion:* Consensus treatment protocols are lacking. The understanding of BCOR alteration as tumour driver might facilitate targeted therapy for better outcomes.

AP23 Rare Presentations of T-cell/Histiocyte-Rich Large B-Cell Lymphoma: Insights from Female Genital Tract Involvement

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T-cell/histiocyte-rich large B-cell lymphoma (THRLBCL) is an aggressive B-cell lymphoma with less than 10% large neoplastic B cells scattered in a diffuse background rich in T cells and histiocytes. THRLBCL is predominantly a nodal disease with extranodal involvement, such as bone marrow, spleen, and liver. The rare presentation of T cell/histiocyte-rich large B cell lymphoma in the female genital tract (FGT) is highlighted in this case. The case involves a 67-year-old female with underlying multiple medical illnesses who presented with bilateral iliac fossa pain, abdominal distension, reduced effort tolerance, and associated weight loss and appetite. Initially, she was investigated for obstructive uropathy; however, the radiological evaluation revealed an incidental finding of a pelvic mass (6.5×6.3×7.7 cm), with transvaginal sonography confirming a lower uterine mass (4.9×3.5 cm). Clinical examination revealed vaginal atrophy and a firm, irregular nodule (3×3 cm) in the right lateral fornix. Histopathological examination of the endometrium, cervix, and vagina biopsy specimens showed a diffuse infiltration of atypical lymphoid cells, composed of scattered large B-cells within a background of small T-cells and histiocytes. Immunohistochemical examination showed that interspersed large atypical lymphoid cells were positive for pan-B cell markers CD20, CD79a, PAX-5, MUM1, and BCL6. The patient was treated with R-CHOP chemotherapy, which led to significant improvement in radiological findings after six cycles. THRLBCL can occur in the female genital tract, but it is a rare presentation. Prompt and accurate diagnosis, along with appropriate treatment, is crucial for managing this aggressive lymphoma.

AP24 An Audit of Reporting Breast Carcinoma on Mastectomy Specimen

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Background: The histopathology report carries all the essential information that is critical for the management of patients with breast cancer. Datasets published by the Academy of Medicine Malaysia in Clinical Practice Guideline (CPG) of Management of Breast Cancer (3rd ed.) 2019 define the core data items that are to be included in the histology reports. Objective: This clinical audit was conducted to evaluate the quality of pathology reporting using the datasets as a benchmark as well as to evaluate the completeness of histopathology reports for breast cancer reporting. *Methods:* A retrospective audit was conducted on the histology reports of all mastectomy specimens at Hospital Melaka from January to December 2022. All the parameters in the core data listed in the CPG should be recorded in the final histology mastectomy report and standard set at 100%. A structured proforma was used to collect data. *Result:* A total of 68 reports were reviewed. All parameters—including maximum diameter of invasive tumour, tumour location, type, grade, stage, margin status, lymph node involvement, lymphovascular invasion, hormone receptor status, and HER2—were fully documented, achieving 100% completeness. However, the parameter for non-neoplastic breast changes was documented in only 86.7% of the reports. A re-audit was performed, and all parameters achieved 100% completeness. *Conclusio*n: The audit revealed a suboptimal degree of adherence to clinical practice guidelines, suggesting an area for improvement. Interventions and periodic audits, including proforma, help to ensure completeness of histopathology reports, improve compliance, and enhance reporting quality.

AP25 Case Report of a Parasitic Fibroid in Women Above Menopause Age.

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Introduction: Parasitic fibroids present a notable diagnostic challenge in the evaluation of pelvic masses, especially in postmenopausal women with a history of gynaecological surgery. These tumours detach from the uterus and establish an independeight-monthupply, frequently mimicking malignant ovarian or peritoneal lesions and leading to potential misdiagnosis. *Case presentation:* A 61-year-old postmenopausal woman with an eight-month history of progressive abdominal distension. She had a prior abdominal hysterectomy. The current imaging studies suggested advanced ovarian cancer. Laparoscopic exploration revealed two parasitic fibroids and a mesenteric cyst, all confirmed benign in nature based on histopathological examination. The patient's postoperative course was uneventful. *Discussion:* This case underscores the need for clinicians to maintain a high index of suspicion for parasitic fibroids when assessing pelvic masses, particularly in patients with prior uterine surgery. Imaging and thorough histopathological analyses are essential to differentiate these benign lesions from malignancies ensuring appropriate management. *Conclusion:* Surgical excision remains the definitive treatment for parasitic fibroids, with histopathology examination confirming the diagnosis. Clinical awareness and multidisciplinary collaboration are vital to optimise the management.

AP26 Desmoplastic Melanoma in an Unusual Acral Location: Diagnostic Challenge in a Diabetic Foot Ulcer

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Background: Desmoplastic melanoma (DM) is a rare variant of malignant melanoma, typically occurring in sun-exposed areas of elderly patients. It is histologically characterised by spindle-shaped melanocytic cells in a collagenous stroma, often lacking melanin pigment, and is frequently amelanotic. These features contribute to its diagnostic difficulty, particularly when arising in unusual sites or mimicking non-malignant processes such as chronic ulcers. *Case Presentation:* We report a 69-year-old Malay woman with underlying diabetes mellitus, hypertension, and hypothyroidism who presented with a chronic non-healing ulcer on the plantar-lateral aspect of her right foot. Initially managed as a diabetic foot ulcer, she underwent ray amputation of the fifth toe and four-quadrant biopsy. Histological examination revealed an infiltrative ulcerating spindle cell tumour extending to multiple margins, composed of fascicles of spindled cells within a dense desmoplastic stroma. No melanin pigment, lymphovascular, or perineural invasion was seen. *Discussion:* The histopathological differential diagnosis of DM includes both benign and malignant cutaneous proliferations composed of spindle-shaped cells, and immunohistochemical staining would be beneficial for differentiating between DM and other diseases. DM was diffusely positive for S100 and SOX10 but negative for Melan A, HMB45, and other lineage markers. The Ki-67 proliferation index was approximately 50%. These findings supported the diagnosis of desmoplastic melanoma, a malignancy that can mimic soft tissue tumours or chronic inflammatory lesions. *Conclusion:* This case underscores the importance of considering malignant neoplasms like DM in atypical diabetic foot ulcers and demonstrates the pivotal role of histopathology and immunohistochemistry in establishing a definitive diagnosis.

AP27 An Atypical Metastatic Site of Papillary Thyroid Carcinoma: A Case Report

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Introduction: Papillary thyroid carcinoma (PTC) is the most common thyroid malignancy and generally carries a favourable prognosis. While lymph node metastases are common, distant spread is rare and typically involves the lungs or bones. Cutaneous metastases are exceedingly rare, reported in less than 1% of cases, and often signify advanced disease. *Case Presentation:* We

present a case of a 73-year-old male who underwent total thyroidectomy and radioactive iodine therapy for PTC and had no evidence of disease recurrence for seven years. He later developed multiple, non-tender, erythematous nodules on the anterior chest wall. An incisional biopsy was performed. Histopathological examination revealed irregular nests and papillary structures composed of atypical epithelial cells within the dermis and subcutis. Immunohistochemistry was positive for TTF-1, corroborating the thyroidal origin of the metastatic lesion. *Discussion:* The rare presentation of cutaneous metastases from PTC poses significant diagnostic challenges, particularly in patients with no recent evidence of active disease. In the absence of a known thyroid malignancy, such lesions may be mistaken for primary skin adnexal tumours due to overlapping histological features. Immunohistochemistry plays a critical role in establishing the diagnosis. *Conclusion:* This case highlights the importance of considering metastatic disease in patients with a history of PTC who present with new skin lesions, regardless of time since primary treatment. Cutaneous presentations may be the first or only sign of recurrence and should prompt a thorough diagnostic workup.

AP28 DICER1-Associated Sarcoma of the Uterine Cervix: An Emerging Neoplasm That Mimics Malignant Peripheral Nerve Sheath Tumour

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Introduction: DICER1-associated sarcoma (DICER1-AS) of the uterine cervix is exceptionally rare but increasingly recognised. Diagnosis is challenging because of non-specific gynaecological symptoms, the unusual location, and marked histological overlap with malignant peripheral nerve sheath tumour (MPNST). *Case presentation:* A 14-year-old girl presented with intermittent vaginal discharge and bleeding after minor trauma. Pelvic MRI suggested an infected haematoma filling the vaginal cavity. Intra-operatively, a friable mass was seen arising from the anterior cervix. Histology revealed a high-grade spindle-cell sarcoma. Classic MPNST-type architecture; long fascicles with alternating hypo-/hypercellular "marbling" and perivascular accentuation was prominent. Immunohistochemistry showed complete loss of H3K27me3 while negative for S100 and SOX10. Targeted next-generation sequencing identified two pathogenic *DICER1* variants: truncating p.L781* with a variant allele fraction (VAF) of 55% and hotspot missense p.E1813Q with a VAF of 23%, confirming DICER1-AS. *Discussion:* Cervical sarcomas account for only ~1% of cervical malignancies, and DICER1-AS constitutes a distinctive molecular subset. Its MPNST-like morphology and frequent H3K27me3 loss predispose to misclassification as conventional high-grade MPNST. Accurate recognition is clinically important: emerging data suggest DICER1-AS follows a more favourable course (~78 % five-year overall survival) and warrants treatment strategies that differ from those for MPNST. Molecular confirmation therefore prevents overtreatment and prompts surveillance for other DICER1-related tumours. *Conclusion:* DICER1-AS should be considered in any adolescent cervical or vaginal spindle-cell mass displaying MPNST-like histology with H3K27me3 loss. Molecular testing for *DICER1* mutations refines classification and guides management tailored to its unique biological behaviour.

HM01 When a Isn't So Strong: ABO Discrepancy in a Weak Subgroup

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Introduction: ABO discrepancies refer to unexpected reactions in forward or reverse blood grouping. We present a case of ABO discrepancy caused by a weaker variant of the A subgroup. *Case presentation*: A 57-year-old male presented to the emergency department with abdominal distension and mild anaemia (Hb 10.8 g/dL). Anticipating a possible need for transfusion, a blood sample was sent for Group Screen and Hold. An ABO discrepancy was noted between cell and serum grouping, which was performed using ID-Card DiaClon ABO/D+ Reverse Grouping and the Tube method with monoclonal antisera. Forward grouping revealed mixed-field agglutination with anti-A and a strong (4+) reaction with anti-B. Reverse grouping showed no agglutination with either A or B reagent cells. Additional testing with anti-A_1 lectin yielded a negative result, while anti-H lectin showed a strong 4+ reaction. These results are consistent with an A subgroup. The patient was safely transfused with cross-matched, group O-compatible packed red blood cells without complications. *Discussion*: The A_3 subgroup is identified by mixed-field agglutination (MFA) with anti-A, showing an incomplete agglutination pattern due to heterogeneous A antigen expression on red cells. In this case, reverse grouping failed to detect anti-A or anti-B antibodies, distinguishing A_3 from weaker subgroups like A_x and A_m. Strong anti-H reactivity further supported the A_3 subgroup diagnosis. *Conclusion*: A_3 subgroup diagnosis is confirmed by the combination of MFA with anti-A, negative reaction with anti-A_1, and strong anti-H reactions. Identifying A_3 is crucial to resolving ABO discrepancies and ensuring safe transfusion practices.

HM02 The Curious Case of Spurious Thrombocytosis.

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Introduction: Spurious thrombocytosis is a rare cause of thrombocytosis which may occur due to presence of red cell fragments, inclusion bodies, haemolysis, burns or cryoglobulinemia. Modern haematology analysers enable initially high platelet counts to be rechecked by utilising different methods to verify results prior to validation. Platelets can now be measured by impedance, optical and fluorescence methods. *Case presentation:* 39 years old female, with history of multiple admissions, mainly for obstetric issues. First presentation in 2014 with symptomatic anaemia and incidental finding of thrombocytosis and splenomegaly. FBC upon first admission: Hb8.6, MCV50.5, MCH16.1, Platelet ++++(unrecordable), WBC10.5. FBP reported as thalassaemia/ haemoglobinopathy with normal platelet morphology while Hb analysis showed Beta thalassaemia trait. CRP and ESR were elevated with normal iron

profile. Autoimmune screening and tumour markers were negative. Molecular analysis JAK2V617F not detected. Bone marrow examination not performed. Throughout admissions (from 2014 to 2021), platelet counts were constantly raised with highest reported 2829. PLT-O however, were normal, ranging between 300 to 400. Presence of red cell fragments due to underlying thalassaemia was attributed to the false thrombocytosis. *Discussion:* This case highlights the importance of utilising newer platelet counting technology for accurate counts to avoid unnecessary, expensive and potentially invasive further tests. Role of laboratory personnel is crucial to recognise histogram, scatter plots, flags and perform reflex testing when necessary to deliver accurate results.

HM03 Beyond Plasma Cells: Bone Marrow Involvement in a Case of AL Amyloidosis

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Introduction: Bone marrow (BM) examination is crucial in AL amyloidosis to assess plasma cell (PC) burden and guide treatment. However, morphologic features in core biopsies are subtle, and detecting monoclonal PC can be challenging due to their low burden. This report shares our experience with BM evaluation in a renal AL amyloidosis patient. *Case Presentation*: A 60-year-old woman presented with sub-nephrotic proteinuria. Examination was unremarkable. Serum electrophoresis revealed IgG lambda paraproteinemia (3.9 g/L), free light chain differential of 18.2 mg/L. Renal biopsy confirmed AL amyloidosis, lambda subtype. Peripheral smear showed mild rouleaux without lymphoplasmacytoid cells. BM was normocellular with 3% PC and 14% lymphocytes. Trephine biopsy revealed mainly scattered CD138+, MUM1+, cyclin D1+ PC, lambda restriction, Congo red-positive amyloid deposits in vessel walls. No lymphoid aggregates seen. *Discussion*: AL amyloidosis is caused by a small PC clone producing unstable light chains deposited in organs causing dysfunction. Although BM is the source of amyloid, biopsies often show mild increased, mature PC arranged singly or in small clusters. AL cases commonly show interstitial and vascular deposits in BM, while ATTR more often involves periosteal soft tissue. Congo red is the gold standard for diagnosing amyloid, but PAS stain can also aid diagnosis. *Conclusion:* Although AL amyloidosis is a subtle PC dyscrasia, a detailed histopathology examination of the BM biopsy provides essential diagnostic insights.

HM04 Haematological Manifestations of Epstein-Barr Virus-Associated Infectious Mononucleosis: A Case Series

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Introduction: Epstein-Barr virus (EBV)-associated infectious mononucleosis (IM) is classically known for its triad of fever, pharyngitis, and lymphadenopathy. While its clinical presentation is well-characterised, haematological findings can vary widely and may lead to diagnostic uncertainty. The haematological manifestations are equally significant and often pivotal in diagnosis and management. *Case presentation:* We present a series of three patients aged 3 to 7 years who presented with fever, pharyngitis, lymphadenopathy, and hepatomegaly, associated with poor oral intake. Peripheral blood smears revealed leucocytosis and marked lymphocytosis with more than 10% atypical lymphocytes in all cases. Thrombocytopenia was observed in one patient, and one had mild anaemia. All were diagnosed with EBV-associated IM based on serology. Two patients were found to have co-infection with Mycoplasma pneumoniae. All patients experienced complete clinical recovery of IM with supportive care. Haematological parameters normalised by follow-up. *Discussion:* EBV-associated IM is most commonly seen in adolescents and young adults. However, its presentation in younger children, as illustrated in our case series, is less frequently reported. Haematologic complications were relatively mild in this series. Thrombocytopenia and anaemia, both of which are known and typically transient features in EBV-associated IM. Co-infections in EBV-associated IM have been reported and may contribute to clinical severity and influence the haematological findings observed. In conclusion, this case series reinforces the importance of recognising atypical lymphocytosis and other haematologic changes in EBV-associated IM. A strong clinical and haematological correlation can facilitate timely diagnosis and guide appropriate management.

HM05 Blastoid Variant of Mantle Cell Lymphoma, A Leukemic-like presentation: A Case Report.

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Introduction: Blastoid B-cell neoplasms include B-lymphoblastic leukaemia/lymphoma (B-ALL), blastoid mantle cell lymphoma (MCL), and high-grade B-cell lymphoma with blastoid features, posing diagnostic challenges due to overlapping morphology. *Case presentation*: A 66-year-old man presenting with spontaneous gum bleeding, hypertrophy, and limb bruising. Initial labs revealed leukocytosis and bicytopenia with presence of circulating blast cells suggesting acute leukaemia. However, bone marrow aspirate revealed two abnormal lymphoid populations: one small-to-moderate with clumped chromatin and inconspicuous nucleoli, and another blastoid population with fine chromatin and prominent nucleoli. Immunohistochemistry on trephine biopsy showed abnormal lymphoid cells that are positive for CD20, Cyclin D1, SOX11, p53 with a Ki-67 >60%. These findings supported a diagnosis of blastoid variant MCL. Subsequently patient was started on Rituximab and CHOP induction therapy. *Discussion*: MCL accounts for 3–10% of mature B-cell non-Hodgkin lymphomas, typically affecting older males and often presenting at advanced stages with extranodal involvement. The blastoid variant is more aggressive and morphologically mimics other B-cell malignancies. Hallmark genetic features include t(11;14)(q13;q32) leading to IGH:CCND1 fusion and Cyclin D1 overexpression, best confirmed via FISH or molecular studies. As a conclusion, accurate diagnosis of blastoid B-cell neoplasms requires integration of morphology, immunophenotyping, and molecular studies to distinguish among overlapping entities and guide appropriate management.

HM06A Diagnostic Conundrum: Unravelling a Blastoid B-Cell Neoplasm

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Introduction: Blastoid B-cell neoplasms encompass B-lymphoblastic leukaemia/lymphoma (B-ALL), blastoid mantle cell lymphoma, and high-grade B-cell lymphoma with blastoid morphology (blastoid HGBL). Diagnosis becomes particularly challenging when these entities present primarily in the bone marrow. Accurate distinction between B-ALL and blastoid HGBL is essential, given their markedly different treatment approaches and prognostic outcomes. *Case presentation***:** We report a case of blastoid HGBL with leukaemic presentation in a 65-year-old male presented with fever, lethargy, epigastric discomfort, and bruising. On physical examination, no lymphadenopathy or organomegaly. Laboratory investigations showed leukocytosis (WBC 91.04 × 10^9/L), anaemia (Hb 11.3 g/dL), thrombocytopenia (PLT 118 × 10^9/L), hypercalcaemia (Ca 3.73 mmol/L), markedly elevated uric acid (1193 µmol/L), and LDH (>7325 U/L). Infective screening was unremarkable. Peripheral blood smear and bone marrow aspirate demonstrate numerous medium-sized blastoid cells with no Auer rods. Trephine core shows diffuse infiltration by blastoid cells. Flow cytometry identified a clonal B-cell population expressing CD19, CD20, CD22, CD10, CD38, cyCD79a, CD79b, HLA-DR, CD81, with kappa light chain restriction. The population was negative for CD34, TdT, and myeloid/T-lineage markers. Immunohistochemistry showed positivity for CD20, CD10, BCL2, BCL6, c-MYC, and MUM1 with high Ki-67 proliferation index (>90%), but negative for cyclin D1, CD3, CD23, CD30, and EBER-ISH. *Discussion*: This case underscores the diagnostic complexity of blastoid B-cell neoplasms with bone marrow involvement. A comprehensive diagnostic approach by integrating morphology, immunophenotyping, immunohistochemistry, as well as cytogenetic and molecular analyses is essential. Accurate classification is critical to guide appropriate treatment selection for these aggressive malignancy.

HM07 Unmasking Dual Malignancy: Diagnostic Complexity in a Case of B-ALL and Pulmonary Adenocarcinoma

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Introduction: Multiple primary malignant neoplasm, defined by coexistence of distinct malignancies in individual, particularly involving lung and haematological origin, remain rare but exhibit a rising incidence. *Case presentation:* We present a diagnostically challenging case of synchronous B-cell acute lymphoblastic leukaemia (B-ALL) and metastatic lung adenocarcinoma in a 68-year-old man with left hypochondriac pain, low-grade fever, and chronic bilateral hip discomfort. Initial laboratory investigations revealed leukocytosis with absolute lymphocytosis and monocytosis. Peripheral blood smear revealed 44% blasts, moderate in size, irregular nuclei, prominent nucleoli, and scanty cytoplasm, prompting bone marrow aspiration which showed 62% blasts alongside tumour clumps composed of moderately sized cells with clumped chromatin, inconspicuous nucleoli, and gritty eosinophilic cytoplasm raised suspicion of other non-haematologic malignancy. Flow cytometry confirmed CD10-negative B-ALL (PAX5+, CD34+, TdT+, CD45+, CD3−). Trephine biopsy confirmed extensive infiltration by CK7+/TTF-1+ cells, negative for AMARC and CK20, consistent with metastatic adenocarcinoma of pulmonary origin. Contrast-enhanced CT demonstrated a lower lobe lung mass, multiple nodules, and widespread osteolytic lesions. CT-guided biopsy confirmed non-small cell lung carcinoma, favouring adenocarcinoma. *Discussion:* Recent data showed increase in incident rate of multiple primary malignancies in primary lung cancer with haematological malignancy with 11.2% of multiple primary cancer cases presenting synchronously. Our case underscores the importance for thorough diagnostic workup in atypical marrow findings, particularly given the growing recognition of such dual pathologies. This case underscores the need for heightened clinical vigilance and rapid multidisciplinary coordination. Prompt recognition enables timely, targeted intervention and remains vital to improving an otherwise grim prognosis.

HM08 Diffuse large B cell lymphoma mimicking acute leukaemia.

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Introduction: Diffuse large B cell lymphoma (DLBCL) is a group of aggressive B cell non-Hodgkin Lymphoma, accounts for 54% to 65% of lymphoma cases. Due to its complexity, it's challenging for both diagnosis and management. DLBCL, particularly germinal centre B-cell (GCB) subtype, typically presents with prominent lymphadenopathy or extranodal masses. Presentation with hyperleukocytosis and minimal lymphadenopathy is exceedingly rare and can mimic acute leukaemia. *Case presentation*: This is a case of 70 years old woman presented with B symptoms and peripheral blood film showed hyperleukocytosis with a total white cell count of 198 with 80% abnormal mononuclear cells. These cells were small to moderate in size with high nuclear cytoplasmic ratio, basophilic cytoplasm, some having open chromatin pattern of nucleus and prominent nucleoli resembling blasts while some were smaller in size with finely clumped nuclear chromatin and inconspicuous nucleoli. Peripheral immunophenotyping showed 96.2% abnormal B lymphoid population that were CD10+ and CD5- with no expression of kappa and lambda. A single small lymph node was biopsied, confirming GCB-type DLBCL. Bone marrow examination could not be performed due to rapid clinical deterioration, and the patient succumbed shortly after presentation. *Discussion*: This case highlights an unusual and aggressive presentation of GCB-type DLBCL with progressive hyperleukocytosis and minimal nodal disease. Such a leukemic presentation may resemble acute leukaemia and delay definitive diagnosis. Early recognition and comprehensive immunophenotyping of this rare manifestation are essential to guide appropriate management, although prognosis may remain poor in fulminant cases.

HM09 Diagnostic Challenges in Renal Osteodystrophy with Superimposed Infection: A Mimic of Plasma Cell Neoplasm

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*Background***:** Plasmacytosis in the bone marrow, particularly in patients with chronic kidney disease (CKD), may pose a diagnostic

challenge when mimicking plasma cell neoplasms such as multiple myeloma (MM). This report describes a case of reactive plasmacytosis secondary to renal osteodystrophy and infection, initially raising clinical suspicion for MM. *Case Presentation*: A 64-year-old Malay male with underlying CKD stage 3, diabetes mellitus, and hypertension presented with a diabetic foot ulcer complicated with osteomyelitis. Laboratory investigations revealed severe anaemia, leukocytosis, thrombocytosis, and rouleaux formation on peripheral blood film. Biochemical findings included a reversed albumin-to-globulin ratio and elevated alkaline phosphatase, suggestive of systemic inflammation or plasma cell dyscrasia. Bone marrow aspiration and trephine biopsy demonstrated a normocellular marrow with 3.8% polyclonal plasma cells. No cytogenetic abnormalities were detected. Serum protein electrophoresis showed no monoclonal gammopathy, and immunophenotyping confirmed reactive plasma cells. The clinical picture was ultimately attributed to reactive plasmacytosis in the setting of renal osteodystrophy and infection. *Discussion*: This case highlights the importance of integrating clinical, laboratory, and histopathological data to distinguish reactive plasmacytosis from clonal plasma cell neoplasms. Inflammatory and metabolic changes in CKD, particularly those seen in renal osteodystrophy, may mimic features of MM. Careful interpretation of marrow findings and ancillary studies is essential to avoid misdiagnosis and unnecessary treatment.

HM10 Retrospective Evaluation of APTT Mixing Studies: Patterns, Pitfalls, and Diagnostic Accuracy in Identifying Coagulation Disorders

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Introduction: The activated partial thromboplastin time (APTT) mixing study is a key diagnostic tool used to differentiate between factor deficiencies and inhibitors in patients with prolonged APTT. Despite its utility, interpretation can be challenging due to variability in protocols and subjective analysis. *Objective:* To evaluate the pattern of correction, the prevalence of inhibitors vs. factor deficiencies, and the consistency of interpretation with final diagnoses. *Methods:* A retrospective review was conducted on 34 patients with isolated prolonged APTT who underwent mixing studies between 01 January 2024 until 31 December 2024 at Haematology Laboratory Hospital Melaka. Data collected included patient demographic, baseline and post-mixing APTT values, interpretive comments (correction/no correction/partial), and final diagnosis based on confirmatory assays (e.g., factor assays, lupus anticoagulant testing). *Results:* Out of 34 cases, 44% showed complete correction suggesting factor deficiency, 53% showed no correction indicating inhibitors, and 3% showed indeterminate or partial correction. Among non-correcting cases, 85% were later confirmed as lupus anticoagulant, 15% had specific factor inhibitors (e.g., FVIII inhibitor). Interpretation discrepancies were noted in 28% of corrected cases which are related to factor deficiency when compared to confirmatory results. *Conclusion:* APTT mixing studies remain a valuable screening tool, but variability in interpretation can lead to diagnostic delays. Rosner Index is accepted as measurement standard for correction measurement and result interpretation. Further evaluation by integration with clinical data and confirmatory tests is essential for improving diagnostic accuracy. This study highlights the need for ongoing training and possibly algorithm-based interpretation support.

HM11 From Incidental Finding to Haematologic Emergency: A Case Series on the Varied Presentations of Acute Promyelocytic Leukaemia

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Introduction: Acute promyelocytic leukaemia (APML) is a subtype of acute myeloid leukaemia characterised by the t(15;17) translocation and PML-RARA fusion gene. It represents a haematological emergency due to the high risk of coagulopathy and rapid clinical deterioration if not treated promptly. Despite its urgency, APML can present with a wide range of clinical manifestations, often leading to diagnostic delays. *Case Presentations*: In 2024, we diagnosed three cases of APML, two of which presented atypically. The first case involved a 77-year-old male who presented with fever and cough, initially treated for pneumonia and coagulopathy. Full blood count (FBC) showed pancytopenia, and the full blood picture (FBP) revealed 28% abnormal promyelocytes, prolonged prothrombin time, low fibrinogen, and elevated D-dimer levels. The second case was a 64-year-old asymptomatic male undergoing routine follow-up for heart disease, incidentally found to have leukopenia and thrombocytopenia. FBP revealed occasional abnormal promyelocytes. Neither patient exhibited bleeding symptoms. Bone marrow aspirates from both cases showed >80% abnormal promyelocytes with strong myeloperoxidase positivity. Diagnosis was confirmed by immunophenotyping, detection of t(15;17) translocation, and PML-RARA fusion gene. Immediate treatment with all-trans retinoic acid (ATRA) was initiated. *Discussion:* These cases highlight the diverse clinical spectrum of APML from systemic illness to incidental findings. Early morphological examination is crucial for prompt detection, followed by immunophenotyping, molecular analysis, and cytogenetic studies for diagnosis confirmation. *Conclusion*: APML should be considered in the differential diagnosis of unexplained cytopenia. Prompt diagnosis is crucial for initiating timely treatment and improving outcomes in this highly treatable leukaemia.

HM12 Baseline Red Cell Distribution Width Predicts Early Molecular Response in Chronic Phase CML Treated with Tyrosine Kinase Inhibitors

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Introduction: Chronic myeloid leukaemia in a chronic phase (CML-CP) is effectively managed with tyrosine kinase inhibitors (TKIs), and early molecular response (EMR) is a key predictor of long-term outcomes. However, accessible and cost-effective biomarkers to support early response prediction remain limited. Red cell distribution width (RDW) has shown prognostic significance in various malignancies but is underexplored in CML. This study evaluates the association between baseline RDW and molecular

response at 3, 6, and 12 months in CML-CP patients undergoing TKI therapy. *Methods:* A retrospective cross-sectional study was conducted involving 280 CML-CP patients treated with TKIs between 2016 and 2022 at a tertiary centre in Malaysia. Baseline full blood count (FBC) parameters and BCR-ABL1 transcript levels were analysed at 3, 6, and 12-months post-treatment. Logistic regression and ROC curve analyses assessed the predictive value of RDW. *Results:* RDW at diagnosis was significantly associated with suboptimal molecular response (MR<3) at all time points. At 3 months, RDW ≥16.95% predicted MR<3 with an AUC of 0.937, 82% sensitivity, and 95.2% specificity. Similar predictive performance was observed at 6 and 12 months using a cut-off of ≥15.95%. RDW outperformed haemoglobin and platelet count as an independent predictor of molecular response. *Conclusion:* Elevated RDW at diagnosis is a potential predictor of early molecular response failure in CML-CP patients receiving TKIs. Given its wide availability and low cost, RDW incorporation into prognostic assessment could support early therapeutic decision-making. Further validation in prospective cohorts is warranted.

HM13 Automated Peripheral Blood Film Analysis Using SigTuple AI100: A Comparative Study with Conventional Microscopy

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*Background***:** Peripheral blood film (PBF) analysis is essential in haematology but limited by manual effort and variability. SigTuple AI100 offers an automated, AI-based alternative. This study compares its performance with conventional microscopy across diverse haematological conditions to assess accuracy and efficiency. *Methods***:** One hundred peripheral blood films, including normal and abnormal cases, were analysed using SigTuple AI100 and conventional microscopy. Statistical comparisons employed correlation coefficients and Bland-Altman analysis. *Results***:** White blood cell correlations between AI and microscopy were strong for neutrophils ($R^2 = 0.92$), lymphocytes ($R^2 = 0.89$), and monocytes ($R^2 = 0.87$), with moderate correlations for eosinophils ($R^2 = 0.75$), basophils ($R^2 = 0.68$), and blasts/abnormal lymphoid ($R^2 = 0.65$). Bland-Altman analysis showed minimal bias for neutrophils and lymphocytes, with broader limits for basophils and blasts/abnormal lymphoid. For red blood cell morphology, AI showed perfect sensitivity for normocytes (100%), moderate for microcytes (78.79%), and low for macrocytes (22.95%). Fragmented red cells showed moderate sensitivity (50%) but high specificity (100%), accurately predicting absence when reported as negative. Platelet analysis showed strong correlation with the full blood count (FBC) analyser ($R^2 = 0.98$), with minimal bias (mean = 0.13). AI accurately detected normal and large/giant platelets but misidentified debris as platelet clumps, lowering specificity. *Discussion***:** SigTuple AI100 demonstrated strong agreement with microscopy for common leukocyte subsets and platelets, with high specificity. However, it showed limitations in detecting rare or atypical cells and certain red cell morphologies, suggesting a need for further refinement to improve sensitivity.

HM14 Jumping Translocation in Myelodysplastic Syndrome

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Introduction: Jumping translocation is a rare cytogenetic aberration defined by translocations involving one donor chromosome and multiple recipient chromosomes. It has been reported in multiple myeloma, lymphoproliferative disorders and myeloid malignancies. *Case presentation*; A 63-year-old male, presented with pancytopenia. Full blood count result was haemoglobin 5.6g/dL, platelets 58×10^9/L, and leukocytes 2.5×10^9/L. Blood smear showed macrocytic red cells and presence of occasional blast. Bone marrow examination (BMA) was haemodiluted with mild dysplasia and presence of 16% myeloblast, suggestive of Myelodysplastic syndrome with excess blast-2 (MDS-EB2). Cytogenetic showed 46,XY,add(9)(p11)[4]/46,XY[26]. After three month of treatment, the BMA showed reduced blast count (1%), but gradually increased to 11% after one year and up to 16% one and a half year later. Repeated cytogenetic showed 46, XY, add (3)(q26)[1]/45, idem,Y,der(14) t(1;14)(q12;p11.2)[16]/ 45,idem, -Y,der(15) t(1;15)(q12;p11.2)[9]/45, idem, -Y,der(13)t(1;13)(q12;p11.2) [2]/45, idem,-Y,der(12)t(1;12)(q12;p11.2)[1]/46,idem,-Y,+der(16)t(1;16)(q12;q11.2)[1]. Patient developed recurrent neutropenic sepsis, hence opted for supportive care and succumbed soon after that. *Discussion*: Clonal cytogenetic abnormalities present in 50-70% of patients with MDS-EB-2. The common high-risk aberrations are 7q deletion, monosomy 7 and complex karyotype. Jumping translocation of 1q is rare cytogenetic abnormalities, indicate chromosomal instability and contribute to complex karyotype. Complex karyotype is associated with a very poor IPSS-R score, well correlated with patient's poor response to treatment in this case. The initial clone was not detected on the repeated sample, probably disease was partially responded to the initial treatment before the emergence of new clones. Jumping translocation of 1q associated with poor prognosis thus warranted more aggressive treatment.

HM15 Supplement Use and Acquired Vitamin K Deficiency Bleeding in a Child: A Case Report

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Introduction: Vitamin K, a fat-soluble vitamin, is essential for activating clotting factors II, VII, IX, X, protein C and protein S. Supplement-induced vitamin K deficiency is an emerging concern. *Case presentation*: A 3-years-old boy presented with recurrent bruising for two weeks after a fall, along with spontaneous bleeding from the lips and gums. Multiple bruises were seen on his trunk and limbs. CT brain showed a frontal haematoma without intracranial bleeding. Investigations revealed moderate anaemia (Hb 8.6 g/dL), normal platelet count, prolonged prothrombin time (>70 seconds) and activated partial thromboplastin time (140.3 seconds). A mixing study revealed corrected PT and APTT, factor assays showed reduced activity in all vitamin K-dependent coagulation factors (FII 16.7%, FVII 8.3%, FIX 16.3%, FX 16.8%). He has been taking a supplement ('M') containing probiotics

and Ginkgo biloba extract, which he discontinued upon admission. After three months of vitamin K treatment, his coagulation profile normalised and symptoms resolved. *Discussion*: Vitamin K deficiency is usually rare in children due to adequate dietary and gut flora sources. Although probiotics promote vitamin K production, study shows certain bacterial strains can lower vitamin K. Ginkgo biloba, used for cognitive enhancement and circulation, may inhibit platelet aggregation, has been linked to increased bleeding risk, especially with anticoagulants such as warfarin (vitamin K antagonist). This case shows the potential for acquired vitamin K deficiency with use of supplement containing probiotics and Ginkgo biloba. Hence, highlights the importance of thorough history-taking in early diagnosis and treatment for better outcome.

HM16 A First Report of Hb Evans in a Malay Family Presenting with Unexplained Low Oxygen Saturation Mimicking Methaemoglobinaemia

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Introduction: Haemoglobin (Hb) Evans is an unstable haemoglobinopathy, resulting from a valine to methionine substitution at position 62 of the alpha1 globin chain encoding HBA1. It has been reported in patients presenting with mild haemolytic anaemia. We describe the first report of this variant in a Malay family of six, in which four of them were presented with low oxygen saturation detected from pulse oximeters. *Case presentation*: Index case, a six-year-old boy was admitted for bronchopneumonia. He had normal respiratory rate. However, his oxygen saturation from pulse oximeter remained 90% despite high flow oxygen 10L/min. He was hyperoxygenated, evidenced by pO2 197mmHg on arterial blood gas, which is brownish in colour. Methaemoglobin was 3.8% and reduced to 2% post-methylene blue infusion. His oxygen saturation remained 90% with and without oxygen support throughout admission. Laboratory investigations including full blood picture, osmotic fragility test, Hb analysis and DNA study were carried out and expanded to the entire non-consanguineous family. The subject together with the mother, sister and brother had a heterozygous state of alpha1 Codon 62 (GTG>ATG) Hb Evans mutation. *Discussion*: Unstable haemoglobin sometimes difficult to diagnose as in this case, whereby the red cells indices and Hb analysis were normal. Discrepant blood gas analysis and pulse oximetry saturation values are the indication of Hb variant. Thus, molecular analysis of globin genes should be performed for diagnosis confirmation. In conclusion, this unstable haemoglobin shows autosomal dominant inheritance pattern that causes falsely low pulse oximetry values among the affected family members.

HM17 Rare Genetic Trio: A Case of Alpha Globin Gene Triplication Co-Inheritance with IVS 2-654 Mutation and Hb Zurich-Langstrasse Variant

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Introduction: Alpha globin gene triplication occurs when extra copies of the α-globin gene are present on chromosome 16, which may not cause significant clinical symptoms on its own. However, its co-inheritance with heterozygous β-thalassaemia can lead to an α-β globin chain imbalance and alter the clinical presentation. *Case Presentation*: A 32-year-old Chinese lady, Para 4, was diagnosed with β-thalassaemia trait at age 20. Her baseline haemoglobin ranged from 8 to 9 g/dL but dropped further in each pregnancy, requiring multiple blood transfusions. Upon presentation with dengue fever, her bloodwork revealed haemoglobin of 8.4 g/dL, MCV of 64.9 fL, MCH of 20.2 pg, and a normal iron profile. Blood film showed nucleated red cells and basophilic stippling. HPLC demonstrated elevated Hb A2 of 5.4%, consistent with β-thalassaemia trait. However, given her moderate anaemia and normal iron status, co-inheritance of α-globin gene triplication was suspected. DNA analysis confirmed the heterozygous IVS 2-654 (β^+), with second mutation found in *HBB* gene, heterozygous Codon 50 Hb Zurich-Langstrasse mutation, likely in *cis*. Further testing identified co-inheritance of an α-globin gene triplication ($\alpha\alpha\alpha^{anti\text{-}3.7}$). *Discussion:* While the clinical significance of the rare Hb Zurich-Langstrasse variant remains uncertain, β-thalassaemia trait generally presents as mild or asymptomatic anaemia. However, co-inheritance of an additional α-globin gene may exacerbate symptoms, as seen in this patient. This case emphasises the importance of recognising subtle phenotypic clues to identify thalassaemia genetic modifiers, allowing appropriate follow-up and consultation. Ultimately, family segregation study serves to enable rare variant classification and confirm its inheritance pattern.

HM18 A case report of infantile AIHA: A rare cause of severe anaemia in late infancy

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Introduction: Autoimmune Haemolytic Anaemia (AIHA) in infants is a rare but serious condition with an incidence of 0.2 per 100,000 in individuals under 20 years. It often presents as severe, transient anaemia in children. *Case Presentation:* An 8-month-old infant with normal G6PD status presented with a 4-day history of fever, poor feeding, vomiting, and lethargy. The child had no significant medical history. Examination revealed pallor, jaundice, and mild hepatomegaly. The laboratory results showed severe anaemia (haemoglobin at 2.7 g/dL), low RBC count, high reticulocyte count (24.8%), and elevated bilirubin with indirect was predominant and lactate dehydrogenase. The direct and indirect Coombs tests were strongly positive, and monospecific Coombs confirmed the presence of auto-IgG antibodies. The blood film revealed polychromasia, spherocytes, and nucleated RBCs without agglutination. The Infective screenings, including EBV, CMV, mycoplasma, influenza and others, were negative, as were autoimmune markers. Initially managed as infection-triggered AIHA, the patient received antibiotics and multiple blood transfusions with no significant improvement. Following a re-evaluation a few days later, immune suppression therapy with prednisolone and IVIG was started, and antibiotics were discontinued. Haemoglobin levels subsequently improved despite not achieving normal range, and the infant was discharged on prednisolone. *Discussion:* AIHA is rare in infants, and pathologists and clinicians need to consider the

diagnosis, especially in cases presented without an identifiable infection. Prompt diagnosis and appropriate treatment are critical to minimise unnecessary interventions, reduce hospitalisation time, and improve outcomes.

HM19 In-Situ Simulation to Strengthen Resuscitation Teamwork, System Safety, and Massive Haemorrhage Protocol Implementation

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Introduction: Timely and coordinated activation of the Massive Haemorrhage Protocol (MHP) is critical for trauma survival. In-situ simulation offers an opportunity to rehearse clinical responses and identify safety threats in real-world environments. *Objective:* To identify human and system-level errors during trauma simulations, assess the impact of simulation training on staff understanding of the MHP, and evaluate interdisciplinary teamwork and real-time decision-making. *Methods:* A mixed-method cohort study was conducted over two months at the Emergency Department of Hospital Labuan. Eight unannounced high-fidelity trauma simulations were performed to activate the MHP. Interdisciplinary teams were observed for communication errors, role ambiguity, and protocol deviations. Structured PEARLS debriefings followed each session. Pre- and post-simulation assessments used Likert-scale surveys and teamwork checklists. *Results:* Nine system-level errors were identified (mean 1.1 per session), including equipment misplacement and delayed verbal orders. Staff understanding of the MHP significantly improved (mean score: 13.8 to 17.0, $p = 0.001$). Teamwork performance scores rose from 58% to 76%. Decision-making clarity improved by 28%, particularly among junior staff. *Conclusion:* In-situ simulation effectively identified safety threats and improved staff confidence, protocol knowledge, and interdisciplinary collaboration. It is a practical, low-cost strategy to enhance emergency preparedness and system resilience in trauma care.

HM20 Paroxysmal Cold Haemoglobinuria in a Child with Duchenne Muscular Dystrophy: A Diagnostic and Therapeutic Challenge

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Introduction: Paroxysmal cold haemoglobinuria (PCH) is a rare subtype of autoimmune haemolytic anaemia (AIHA), typically triggered by infections and characterised by intravascular haemolysis mediated by Donath–Landsteiner antibodies. It is more common in children but may pose diagnostic challenges due to its abrupt presentation and overlapping features with other haemolytic conditions. *Case Report:* A 4-year-old boy with Duchenne muscular dystrophy presented with fever, pallor, tea-coloured urine, and hypotension. There was no history of recent infection, cold exposure, or prior haemolytic episodes. Examination revealed hepatomegaly, hypotension, and severe anaemia. Investigations showed Hb 6.2 g/dL, leukocytosis, raised bilirubin (44.7 µmol/L total, 30.1 µmol/L indirect), and positive urine haemoglobin without red blood cells. Peripheral smear showed spherocytes, polychromasia, and erythrophagocytosis. The direct antiglobulin test was positive for complement C3d only. Donath–Landsteiner testing confirmed PCH. Infective workup was negative. He was managed with thermal protection, red cell transfusion, and supportive care in PICU, with complete recovery on follow-up. *Discussion:* PCH should be considered in the differential diagnosis of acute haemolysis in children, especially when DAT is positive for complement alone. Although the Donath–Landsteiner test is diagnostic, it is not widely available, highlighting the importance of clinical suspicion and supporting lab features. *Conclusion:* PCH is a self-limiting but potentially severe cause of haemolysis in children. Early recognition and supportive care are key to favourable outcomes, particularly in complex cases with comorbidities.

HM21 Atypical Morphology in Paediatric Acute Promyelocytic Leukaemia: Importance of Serial Peripheral Blood Films

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Introduction: Acute promyelocytic leukaemia (APL) is a haematological emergency with a high risk of coagulopathy. The hypogranular (microgranular) variant, more common in children, often presents with subtle morphology, making early diagnosis challenging. *Case presentation:* A 4-year-old girl presented with fever, upper respiratory symptoms, and haematemesis. Examination revealed cervical and inguinal lymphadenopathy without hepatosplenomegaly. Initial full blood count showed pancytopenia with normal coagulation parameters. The first peripheral blood film (PBF) revealed only occasional suspicious mononuclear cells, and immunophenotyping was deferred due to the low abnormal cell burden. A subsequent PBF showed 20% blasts with bilobed nuclei and hypogranular cytoplasm, without Auer rods or faggot cells. Myeloperoxidase (MPO) staining at that stage showed variable positivity. Fibrinogen was later found to be low, suggesting evolving coagulopathy. ATRA therapy was initiated empirically. Upon transfer to a tertiary centre, repeat PBF revealed faggot cells, and MPO staining showed strong diffuse positivity. Immunophenotyping demonstrated 73% abnormal promyelocytes, and t(15;17)(q24;q21)(PML::RARA)(S, bcr3) fusion transcript was detected. *Discussion:* This case highlights the diagnostic challenge of hypogranular APL in children, where early morphology and MPO staining may be subtle. Although leukocytosis is typically associated with this variant, early or paediatric presentations may show atypically low counts. Serial blood films and repeat cytochemical analysis were essential in guiding early therapy and confirming diagnosis. *Conclusion:* In children with unexplained cytopenias and bleeding, APL must remain a differential even without classical features. Recognising morphological variants, interpreting supportive stains, and initiating timely serial investigations are key to reducing diagnostic delay and improving outcomes.

HM22 Heterozygous IVS 1-1 (G>A) Splice Site Mutation: A Case of 'Silent' α-Thalassaemia Uncovered Through Sequencing

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Introduction: In Malaysia, this incident is the first recorded case of "silent" heterozygous IVS 1-1 α thalassaemia, where the haemoglobin levels are normal but the red blood cells are hypochromic microcytic. *Case presentation:* An 11-year-old Malay boy was screened for thalassaemia in view of a normal haemoglobin level with a mean corpuscular volume (MCV) of 69.8 fl and a mean corpuscular haemoglobin (MCH) of 22.7 pg. Molecular testing was done due to the low MCH value with normal Hb analysis findings. Initial tests did not show alpha-thalassaemia mutations using Multiplex Polymerase Chain Reaction (PCR) and Amplification Refractory Mutation System (ARMS) PCR. However, Sanger sequencing revealed a heterozygous IVS 1-1 (G>A) mutation. *Discussion:* This case shows that certain rare types of alpha-thalassaemia, like the IVS 1-1 (G>A) splice site mutation, can appear as mild red blood cell changes even when the overall haemoglobin levels are normal. This result underlines the need for using molecular diagnostics, such as Deoxyribonucleic acid (DNA) sequencing, instead of depending just on common methods for deletions and mutations when thalassaemia is highly suspected, even if tests for haemoglobin and blood counts show no anomalies. *Conclusion:* Future Malaysian epidemiological data could be much improved with accurate genetic counselling and the clinical management of this approach. Through improved, informed preventive strategies and genetic counselling, the expansion of such surveillance will be enhanced, and rare gene interactions for thalassaemia or haemoglobinopathy will be identified, lowering the future disease burden.

HM23 Diagnostic Challenges in Congenital Anaemia with Blueberry Muffin Rash

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Introduction: Congenital anaemia can result from bone marrow failure, leukaemia, or infections. Association with the "blueberry muffin" rash, commonly due to leukaemic cutis, is rare. *Case Presentation:* We report a Malay neonate delivered via emergency caesarean section at 35 weeks following maternal complaint of reduced foetal movement and subsequent detection of pathological CTG. His birth weight was 1.6kg, and he presented jaundiced, non-vigorous, with extensive petechial rash and hepatosplenomegaly. FBP at 18 hours showed severe anaemia, poor reticulocyte response, ovalostomatocytosis, thrombocytopenia, and immature granulocytes, including 1-2% blasts, suggestive of congenital infection. Thalassaemia and membrane disorders were considered. Peripheral blood for immunophenotyping was planned, but multiple exchange transfusions for severe jaundice resulted in subsequent FBPs showing no blasts. Skin biopsy revealed scattered atypical cells with open chromatin and prominent nucleoli, focally positive for CD117 but negative for CD34, LCA, TdT, CD61, and CD1a. Haematopoietic cells were also present. The findings were interpreted as extramedullary haematopoiesis; however, leukaemic cutis could not be confirmed due to the paucity of atypical cells. Initial TORCH IgM was negative, and a repeat TORCH showed high titres of CMV IgG (> 250.0 AU/mL), Rubella IgG (25.2 IU/mL) and grey zone for Toxoplasmosis IgG (2.6 IU/mL). CMV DNA was detected at 33,740 IU/mL. *Discussion:* Congenital infections causing severe anaemia and bone marrow suppression may present transiently with circulating blasts and atypical cells histologically. In this case, it led to multi-organ failure, including severe IVH. *Conclusion:* Early recognition and treatment of congenital infections is critical to improve clinical outcomes.

HM24 Unmasking a Silent Mutation: Homozygous β^+/β^+ Poly-A Signal Mutation (AATAAA→AATAGA) Presenting as Thalassaemia Intermedia Mistaken for Trait

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Introduction: Heterozygous β-thalassaemia trait was diagnosed, but severe anaemia and atypical red cell morphology necessitated HBB sequencing, revealing a homozygous poly-A mutation. *Case presentation:* A 33-year-old Malay woman with severe anaemia with haemoglobin levels ranging from 4.5 to 5.5 g/dL who had received multiple packed red cell transfusions. Her haemoglobin analysis revealed 2.9% of Hb F and 6.3% of Hb A2, originally misdiagnosed as having heterozygous β-thalassaemia. Severe anaemia, atypical red cell shape, and ongoing transfusion reliance all strongly suggested thalassaemia intermedia. Extensive HBB gene sequencing thus confirmed β-thalassaemia intermedia by revealing a homozygous β^+ mutation in the poly-A signal (AATAAA→AATAGA). Molecular analysis, prompted by this phenotypic-genotypic discordance, identified the homozygous β^+/β^+ mutation, representing such a homozygous case reported in this population. This underscores the need for a thorough genetic investigation in cases of severe anaemia mislabelled as a trait. *Discussion:* When clinical severity exceeds expectations, our case report emphasises the need for extended HBB gene analysis, especially poly-A signal mutations. Especially, the Hb F level stayed remarkably low for a β^+/β^+ genotype, suggesting underlying genetic modifiers like BCL11A or HBS1L-MYB polymorphisms that might downregulate Hb F expression. Additionally, the presence of transfusion history might have masked endogenous Hb F production. These factors contributed to misinterpretation as the β-thalassaemia trait in the absence of molecular confirmation. *Conclusion:* By sharing this case, we emphasise that mild β^+ alleles that, in homozygosity, can present as clinically significant disease and alter genotype phenotype expectations in β thalassaemia.

HM25 A Rare Case of Compound Heterozygosity Involving --SEA Deletion and Hb O-Indonesia Mutation in Sabah

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Introduction: The Southeast Asian (--SEA) deletion is the most common α^0-thalassaemia mutation in Southeast Asia, causing a complete loss of alpha-globin production. Variant Haemoglobin O Indonesia (Hb O-Indonesia) caused by a mutation at codon 116 of the α1-globin gene, substituting glutamic acid with lysine (GAG → AAG). Individuals who carry both the --SEA deletion and a non-deletional variant like Hb O-Indonesia can result in a distinctive haematological profile. *Case Presentation*: A 16-years-old asymptomatic boy was identified through a routine Form 4 school screening. He had no notable family history, no parental consanguinity, and an unremarkable physical examination. Full blood count revealed a normal haemoglobin level with hypochromic microcytic indices. Capillary electrophoresis (CE) showed reduced HbA and HbA_2 levels, a small HbA_2 variant peak (0.7%) in Zone 1 and an abnormal peak (31.9%) in Zone 5. High-performance liquid chromatography (HPLC) detected abnormal peaks at retention times of 4.01 minutes (1.4%), 4.47 minutes (1.6%), and 4.87 minutes (30.5%), suggestive of the presence of a haemoglobin variant. DNA analysis confirmed the (--SEA) deletion and Hb O-Indonesia mutation. *Discussion:* Haemoglobin analysis, supplemented by DNA testing, is crucial for identifying rare haemoglobin variants, particularly in genetically diverse populations like Sabah. This case highlights the role of screening and genetic counselling in regions with diverse haemoglobin disorders. *Conclusion:* Although the patient is asymptomatic, detecting these mutations is crucial, as offspring may be at risk of developing Hb H disease if the partner carries α^0-thalassemia. Early screening facilitates timely genetic counselling and preventive measures.

HM26 A Tale of Two Lymphomas: Coexisting Activated B Cell DLBCL and CD5 Negative SOX11 Negative Mantle Cell Lymphoma

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Introduction Mantle cell Lymphoma (MCL) is known to express CD5 and SOX11. Double negative MCL (CD5-/SOX11-) represents a rare entity and poses a diagnostic dilemma. We report a case of discordant lymphoma with activated B cell subtype diffuse large B cell lymphoma (DLBCL) in an axillary lymph node and coexisting CD5/SOX11 double negative MCL in the trephine biopsy. *Case Report* A 68-year-old Chinese female with a background of Barrett's esophagus presented with progressive left axillary swelling, bilateral limb edema and significant weight loss. CT imaging revealed a large left axillary mass with extensive lymphadenopathy and lung nodules. Biopsy of the axillary mass confirmed DLBCL with MYC and BCL2 co-expression. Bone marrow trephine showed abnormal lymphoid cells positive for CD20 and Cyclin D1 (>50%) but negative for CD5 and SOX11 with a low Ki 67 index, suggestive of an indolent variant of MCL. Planned chemotherapy was postponed due to sepsis. Unfortunately, the patient died before regime initiation. *Discussion* Cyclin D1 protein expression with CD5-, SOX11- immunophenotype may be seen in both DLBCL and pleomorphic MCL. A recent study proposes a strong Cyclin D1 expression in >50% of neoplastic cell as seen in our case strongly correlates to CCDN1 gene rearrangement and genetic expression profile of MCL rather than DLBCL. *Conclusion* Knowledge on IHC expression characteristic of specific and rare types of lymphoma is crucial in accurate diagnosis and management of any lymphoproliferative disease.

HM27 Red Cell Antibody Prevalence Among Patients in Hospital Sultan Ismail, Johor Bahru: A cross-sectional analysis.

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Objectives: To investigate the prevalence, demographic, and relevant clinical history of patients with unexpected red blood cells antibody admitted to Hospital Sultan Ismail Johor Bahru in the span of 2023-2024. Methods: This was a cross-sectional study that involved retrospective data collection of 517 patients with positive antibody screening from 1st January 2023 to 31st December 2024. Data regarding age, gender, discipline, history of pregnancy, history of blood transfusion, and type of antibody were collected. *Results:* The prevalence of patients with antibody screening positive was 0.95%. Most of the patients were age ranging from 21-40 years, mostly in female patients with no history of pregnancy and no history of blood transfusion. The commonest antibody identified was anti- Mia (25.8 %), followed by anti-Lea (16%), non-specific auto antibodies (14.9 %) and anti-E (13.1%). *Conclusions:* Identifying the specificity and clinical significance of red blood cell antibodies can prevent immunisation-related complications, immune-mediated complication, facilitate the selection of antigen-negative blood through targeted screening, and enhance the efficiency of blood supply management.

HM28 A Case Series of β-Thalassaemia Trait with Uncharacterised α-Globin Gene Duplications

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Introduction: Beta-thalassaemia trait typically presents with a mild phenotype. However, co-inheritance with rare α-globin gene duplications may exacerbate disease severity and complicate screening and genotype–phenotype interpretation. *Case presentation:* We report three unrelated adults with heterozygous β-thalassaemia, confirmed by β-globin gene sequencing, and uncharacterised α-globin gene duplications identified by multiplex ligation-dependent probe amplification (MLPA). All presented with moderate hypochromic microcytic anaemia (Hb 8.6–8.9 g/dL, MCV 60–78 fL, MCH 18.6–24 pg). Patient 1 was a 76-year-old Malay woman initially presumed to have hereditary persistence of fetal haemoglobin (HPFH) or δβ-thalassaemia, based on normal Hb A_2 (2.9%) and elevated Hb F (7.8%). She carried heterozygous Hb Malay with a large duplication spanning from the telomere of chromosome 16 to the *DECR2* gene. Patient 2, a 16-year-old Malay boy suspected of borderline Hb A_2 β-thalassaemia (Hb A_2 3.5%, Hb F 20.6%), was heterozygous for the IVS 1-1 [G>T] (β^0) mutation, with a duplication spanning from *NPRL3* to *HBQ1*. Patient 3 was a 38-year-old Indian man with suspected β-globin variant (Hb A_2 5.3%, Hb F 9.7%). He had received a blood transfusion two years prior to screening and was heterozygous for the Codon 15 [TGG>TAG] (β^0) mutation, with a duplication spanning the intergenic *HBAP1–HBPA2* to *HBA1–HBQ1* region. *Discussion:* These cases highlight the importance of incorporating MLPA in patients with discordant haematological and genotypic findings, particularly in cases where PCR has excluded common α-globin duplications such as $\alpha\alpha\alpha^{anti3.7}$ and $\alpha\alpha\alpha^{anti4.2}$.

HM29 Hb Dhonburi in Disguise: The Value of Reflex Molecular Testing in Borderline β-Thalassaemia Screening

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Introduction: Borderline HbA_2 levels (3.3–3.9 %) and hypochromic microcytic red-cell indices based on Mean Corpuscular Volume (MCV) and Mean Corpuscular Haemoglobin (MCH) may indicate silent β thalassaemia traits, especially in regions like Malaysia that have diverse haemoglobin variants. Incorporating molecular analysis is vital to avoid misdiagnosis. Case Presentation: A 16-year-old Chinese Malaysian female underwent form four thalassaemia screening that showed Hb 11.0 g/dL, MCV 78 fL, and MCH 26 pg, with haemoglobin analysis showing HbA2 3.6% and Hb F 0.6%, which these parameters suggestive of borderline β thalassaemia. DNA sequencing identified a heterozygous GTG→GGG substitution at codon 126, indicating Hb Dhonburi (Val→Gly). This variant, although clinically silent in many individuals, subtly alters the β-globin structure in a manner that renders it invisible to conventional screening methods. *Discussion:* Hb Dhonburi carriers often exhibit near-normal Hb levels with mild microcytosis, hypochromia and borderline HbA2, making routine diagnostics insufficient. This early molecular confirmation of Hb Dhonburi in Malaysia, while not the first of its kind, highlights the uncertainty that such variants often face in routine diagnostics. *Conclusion:* This case demonstrates the importance of reflex molecular testing, especially in those with haematological findings falling in borderline ranges. When haemoglobin A2 levels and red cell indices hover at diagnostic thresholds, an underlying genetic cause is easy to miss. The outcome supports the need for matching haemoglobin analysis with molecular tools in particular situations so that clinicians can provide meaningful genetic counselling, make a more accurate diagnosis, and prepare ahead for more general public health needs.

HM30 A Rare Haemoglobinopathy in a Schoolboy with Polycythaemia: Diagnostic Value of Electrophoresis and Molecular Analysis in Identifying Hb Tak

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Introduction: Polycythaemia in adolescents is uncommon. While primary causes such as polycythaemia vera are typically considered as primary causes, secondary causes particularly those involving rare high-affinity haemoglobin variants are frequently overlooked. One such variant, Haemoglobin Tak, results from a codon 147 [+AC] insertion in the β-globin gene. This mutation increases haemoglobin's oxygen affinity, creating a state of functional tissue hypoxia that stimulates erythropoiesis. *Case Presentation:* A 16-year-old Malay boy was flagged during a routine Form 4 school thalassaemia screening due to elevated haemoglobin (16.9 g/dL) and red blood cell count (6.29×10^{12}/L). Red cell indices were normochromic normocytic. Capillary electrophoresis revealed reduced HbA (59.7%), elevated HbA2 (3.6%), and strikingly high HbF (36.7%). HPLC further showed an abnormal peak at the D-window (25.1%; RT 4.12), in addition to HbA_0 (49.5%), HbA_2/E (7.9%), and HbF (0.7%). DNA sequencing confirmed a heterozygous Hb Tak mutation. *Discussion:* This case underscores the importance of considering rare haemoglobin variants in the differential diagnosis of unexplained polycythaemia in teenagers. Interestingly, this case was discovered through a routine school screening highlighting the hidden diagnostic value of national health programs not only in identifying common thalassaemia traits but also in surfacing uncommon and clinically relevant haemoglobinopathies. *Conclusion:* In adolescents with erythrocytosis, high-affinity haemoglobin variants like Hb Tak should be part of the diagnostic workup. Timely identification prevents unnecessary investigations, guides appropriate genetic counselling, and illustrates the broader benefits of structured population-based screening programmes in uncovering silent yet significant haematologic conditions.

HM31May-Hegglin Anomaly in a 6-year-old Boy: A Rare Cause of Chronic Thrombocytopenia

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Introduction: May-Hegglin Anomaly (MHA) is a rare autosomal dominant disease due to MYH9 gene mutation, which encodes the non-muscle myosin heavy chain IIA (NMMHC-IIA). MHA is characterised by variable degrees of thrombocytopenia, giant platelets, and distinctive basophilic inclusions (Döhle-like bodies) within granulocytes. *Case report:* A 6-year-old boy was initially investigated for thrombocytopenia at age one and was treated as immune thrombocytopenic purpura (ITP) with oral prednisolone. Despite treatment, thrombocytopenia persisted (baseline 63–97 × 10^9/L), and no family workup was conducted. He was later lost to follow-up but re-presented with URTI symptoms and a platelet count of 2.5 × 10^9/L. Physical examination was unremarkable.

Peripheral blood film showed large and giant platelets with Döhle-like inclusions in neutrophils, suggestive of May-Hegglin Anomaly (MHA). Bone marrow aspirate and trephine biopsy confirmed normal megakaryopoiesis, Döhle-like inclusions within granulocytes, and budding of large platelets from mature megakaryocytes. No dysplasia or infiltration was seen. Genetic testing for *MYH9* mutation was not performed due to unavailability in Malaysia. *Discussion:* This case highlights the diagnostic challenge of May-Hegglin Anomaly (MHA), a rare inherited thrombocytopenia often misidentified as immune thrombocytopenic purpura (ITP). Key morphological features include macrothrombocytopenia and Döhle-like inclusions within granulocytes. Poor steroid response supports a non-immune cause. Treatment is generally supportive unless complicated by significant bleeding. *Conclusion:* Early recognition of May-Hegglin Anomaly (MHA) prevents unnecessary immunosuppressive therapy and prompts monitoring for associated MYH9-related complications such as nephropathy, hearing loss, and cataracts. May-Hegglin Anomaly (MHA) should be considered in chronic paediatric thrombocytopenia with characteristic morphological features.

HM32 Not Just Another Thalassaemia: When Delta Meets Beta – First Two Reported Malaysian Cases of Hb Lepore-Hollandia, a Globally Rare δβ Fusion

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Introduction: Haemoglobin (Hb) Lepore is a rare type of haemoglobinopathy that mimics β-thalassaemia trait, as it presents with microcytic, hypochromic red blood cells and an apparent elevation of HbA2 levels on high-performance liquid chromatography (HPLC). To date, only the Washington–Boston subtype has been reported in Malays. We now report the first two confirmed cases of Hb Lepore Hollandia in the Malaysian population, both affecting Indian individuals from the same family. *Case Presentation:* Case 1 involves a 42-year-old Indian male with a haemoglobin level (14.7 g/dL), microcytic hypochromic indices (MCV 65.2 fL, MCH 21.9 pg). Capillary electrophoresis (CE) revealed Hb A 85.9%, Hb A2 2.2%, Hb F 2.1%, and an abnormal peak at Zone 6 (D) (9.8%). HPLC showed a broad abnormal peak overlapping the HbA2 window. DNA confirmed a heterozygous Hb Lepore Hollandia mutation. Case 2, his 17-year-old son, presented with mild anaemia (Hb 11.6 g/dL), MCV 59.3 fL, and MCH 19.2 pg. CE showed Hb A 86.3%, Hb A2 2.4%, Hb F 5.9%, and a similar Zone 6 peak (10%). HPLC mirrored the father's findings. Molecular testing confirmed the same mutation. *Discussion:* Hb Lepore Hollandia remains an exceptionally rare δβ-globin fusion. Its ~10% fraction overlaps with Hb A_2 on HPLC, often causing misclassification as the β-thalassaemia trait without DNA confirmation. *Conclusion:* The detection of these cases in a non-Malay family illustrates how rare haemoglobin variants may remain undetected in diverse populations without comprehensive diagnostic strategies. Combined Hb analysis and molecular testing are essential to ensure accurate diagnosis.

HM33 Hb Phnom Penh in a Malaysian Teenager: A Rare α-Globin Variant.

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Introduction: Haemoglobin variants are increasingly reported globally. Hb Phnom Penh, previously found in Southeast Asians, was recently identified in a Malaysian teenager. *Case Report:* The proband, a 16-year-old Malay girl, presented with mild hypochromic microcytic anaemia, with no significant family history or clinical abnormalities. Her haemoglobin was 11.9 g/dL, mean corpuscular volume 71.5 fL, mean corpuscular haemoglobin 22.2 pg, and red cell distribution width 15.2%. Capillary electrophoresis showed a predominant HbA fraction (98.7%) with a reduced HbA2 level (1.3%). High-performance liquid chromatography revealed a similar pattern, with HbA at 85.3% and HbA2 at 1.8%. Both HbA and HbA2 peaks demonstrated shouldering, suggesting an abnormal haemoglobin variant. Multiplex gap-polymerase chain reaction detected heterozygosity for Southeast Asian (--SEA) α^0-thalassaemia deletion. Alpha-globin gene sequencing identified a mutation at codons 117/118 (+ATC) of the α1-globin gene, confirming Hb Phnom Penh. This case represents the first reported instance of compound heterozygosity for α^0-thalassaemia and Hb Phnom Penh in this region. *Discussion:* Hb Phnom Penh is a rare α-globin variant caused by the insertion of isoleucine between codons 117 and 118, a region considered a hotspot for nucleotide insertions within exon 3 of the α1-globin gene. Previous reports have classified Hb Phnom Penh as a non-deletional form of α-thalassaemia. Its co-inheritance with α^0-thalassaemia may lead to a more severe clinical phenotype, such as HbH disease. The detection of Hb Phnom Penh underscores the need for increased awareness of rare haemoglobin variants in Malaysia and their potential clinical implications, which can be mitigated through appropriate genetic counselling and management.

HM34 A Rare Case of Fibrotic Stage of Primary Myelofibrosis Evolution to B-cells Acute Lymphoblastic Leukaemia in Malaysia

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Introduction: The evolution of B-cells acute lymphoblastic leukaemia (B-ALL) from fibrotic stage of Primary Myelofibrosis (PMF) is extremely rare. To the best of our knowledge, evolution of B-ALL from underlying PMF has not been reported yet in

Malaysia. Case presentation: We presenting a 63-year-old male developed Philadelphia-positive B-ALL after five years of having fibrotic stage of PMF with JAK2V617F mutation. He presented with fever, upper respiratory tract symptoms and lethargy. He had worsening severe anaemia (Hb of 5.2g/dL), moderate thrombocytopenia and leukocytosis with 78% blast cells in peripheral blood. Immunophenotyping of peripheral blood showed HLA-DR, CD34, CD99, nTdt, CD79a, CD19, heterogenous CD10 expression, CD38, CD58 and CD66c positivity. Molecular study revealed t(9;22) (q34;q11) (BCR::ABL1) (m-bcr, P190). Unfortunately, he succumbed to death after one month of diagnosis of B-ALL. *Discussion:* 14-20% of PMF cases progress to acute leukaemia with almost all cases progressing to acute myeloid leukaemia. Only a few cases transformed to ALL.

HM35 SF3B1-Mutated MDS/MPN with Ring Sideroblasts and Thrombocytosis: A Case Series Highlighting the Role of Molecular Diagnostics

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Introduction: Myelodysplastic/myeloproliferative neoplasms with SF3B1 mutation and thrombocytosis is a newly recognised classification in the WHO, redefined from MDS/MPN with ring sideroblasts and thrombocytosis. Early recognition is crucial to prompt molecular testing, which supports accurate classification and treatment planning. *Case presentation:* We present two cases evaluated for anaemia and thrombocytosis. The first case, a 76-year-old male, showed no organomegaly or lymphadenopathy. Full blood picture revealed moderate macrocytic anaemia, normal leukocyte counts and platelet anisocytosis. The second case, an 84-year-old female with hepatomegaly and a history of JAK2 positivity, showed mild anaemia, leucocytosis, a leucoerythroblastic picture and platelet anisocytosis. Both patients demonstrated hypercellular marrow with >15% ring sideroblasts and dysplasia, predominantly involving megakaryocytes. Morphologically, differential diagnoses of MDS/MPN with SF3B1 mutation and MDS with isolated 5q deletion were considered. *Discussion:* Molecular testing seldom pursued in our setting confirmed SF3B1 and JAK2V617F co-mutations in both cases. SF3B1-mutated MDS/MPN with thrombocytosis can mimic essential thrombocythaemia, especially in cases with significant thrombocytosis and minimal dysplasia. Unlike isolated SF3B1-mutated MDS, this subtype often co-occurs with mutations in signalling pathway genes, contributing to its proliferative phenotype. Misclassification as ET may obscure subtle dysplastic features and anaemia, while labelling as MDS alone underestimates thrombotic risk. *Conclusions:* Molecular confirmation of SF3B1 mutation is essential for accurate diagnosis and may support consideration of targeted therapies such as Luspatercept.

HM36 Blast with a Twist: A Rare Case of B-Lymphoid Transformation in Chronic Myeloid Leukaemia.

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Introduction: Chronic myeloid leukaemia (CML) is a myeloproliferative neoplasm characterised by clonal expansion of the myeloid lineage cells. The 2022 World Health Organisation classification delineates two primary phases: chronic phase and blast crisis. Although transformation to acute myeloid leukaemia is more commonly observed, progression to B-cell acute lymphoblastic leukaemia (B-ALL) is rare. We report a case of chronic-phase CML that progressed to B-ALL. *Case Presentation:* A 28-year-old male presented with a history of fever, lower back pain, and unintentional weight loss. He had previously been suspected of having CML in chronic phase based on peripheral blood film (PBF) findings nine months earlier but defaulted follow-up and remained untreated. Upon admission, he was hemodynamically stable, with physical examination revealing hepatosplenomegaly. Laboratory investigations demonstrated marked hyperleukocytosis, with white cell count (WCC) of 120.46 × 10^9/L. PBF showed 65% lymphoblasts, and bone marrow aspiration revealed 84% lymphoblasts. Immunophenotyping confirmed a B-cell lineage, with 8.7–21.4% B-lymphoblasts positive for CD34, cytoplasmic TdT, CD79a, CD19, CD22, and CD10. Molecular analysis detected the BCR-ABL1 fusion gene, establishing a diagnosis of CML with blast transformation to B-ALL. The patient was initiated on imatinib, vincristine, and dexamethasone. His WCC subsequently declined to 13.47 × 10^9/L; however, he developed thrombocytopenia-induced intracranial Haemorrhage. *Discussion:* Blast transformation to B-ALL in CML is uncommon and associated with a poor prognosis. In this case, delayed diagnosis and absence of treatment likely facilitated disease progression. Early recognition, including bone marrow examination and flow cytometry, is critical to guide timely management and mitigate life-threatening complications.

HM37Acquired Hemophilia A (AHA) Diagnosed at the Pathology Department, Hospital Tunku Azizah (HTA): A Six-Year Retrospective Case Series (2019 - June 2025)

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Objective: To describe the demographic characteristics, clinical presentations, diagnostic challenges, treatment and outcomes of patients diagnosed with Acquired Haemophilia A at Hospital Tunku Azizah. *Methods:* Retrospective data over six-and-a-half-year were reviewed. Data collected included demographic details, clinical presentations and associated conditions, laboratory findings, treatment, and outcomes. Diagnosis was based on isolated prolonged APTT not corrected by mixing test, reduced FVIII activity, and presence of FVIII inhibitors. *Results:* Eight cases of AHA were identified. Patients ranged from 27 to 81 years old (mean: 66),

with five females and three males; three were Malay and five Chinese. Presenting symptoms included ecchymosis or postoperative bleeding (n=6), postpartum bleeding (n=1), and one asymptomatic case. Four cases were autoimmune-related, one postpartum, and three were idiopathic. Seven patients had isolated prolonged APTT. FVIII activity was undetectable in four patients (mean 3.6%, range: <1–14.1%), with inhibitor titres ranging from 0.8 to 121.6 BU (mean: 51.1 BU). Four cases were diagnosed within 24 hours of admission. Most patients were admitted under the medical department. All received treatment including bypassing agents, steroids, or immunosuppressants. Most showed clinical and laboratory improvement, evidenced by absence of new bleeding, normalization of APTT, improved FVIII activity, and undetectable inhibitors. Two patients died post-diagnosis, and one was lost to follow-up. *Conclusion:* Timely diagnosis of AHA requires high clinical suspicion, close clinician–pathologist collaboration and effective multidisciplinary coordination. Enhancing awareness and continuous medical education are essential for early recognition, prompt diagnosis and Optimised management, thereby improving outcomes in this rare but serious bleeding disorder.

HM38 Thrombotic Stroke as the First Manifestation of JAK2-Positive MPN: A Diagnostic Dilemma Between Pre-PMF and ET

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Introduction: Pre-fibrotic primary myelofibrosis (pre-PMF) and essential thrombocythaemia (ET) are subtypes of Philadelphia-negative myeloproliferative neoplasms (MPNs) with overlapping clinical features but differ in prognosis and management. Accurate differentiation is crucial, particularly in early disease. *Case Presentation:* A 59-year-old Malay woman with a background of type 2 diabetes mellitus, hypertension and hyperlipidaemia who presented with sudden-onset left-sided numbness upon waking. Neurological examination revealed isolated sensory deficits without motor involvement. Laboratory investigations showed persistent thrombocytosis (platelets 1099–1359 $\times 10^9$/L), mild leucocytosis and stable haemoglobin levels. Peripheral blood film confirmed marked thrombocytosis, prompting evaluation for an MPN. Bone marrow aspiration was inconclusive due to suboptimal sampling. However, trephine biopsy revealed hypercellular marrow with atypical megakaryocytic proliferation and mild reticulin fibrosis, consistent with pre-PMF. A JAK2 V617F mutation was detected. Neuroimaging confirmed a lacunar infarct consistent with a pure sensory stroke. The patient was commenced on hydroxycarbamide with good clinical response, although follow-up counts showed cytopenias indicative of a cytoreductive effect. *Discussion:* Trephine biopsy plays a key role in diagnosing MPNs when aspirate findings are inconclusive, particularly in differentiating pre-PMF from ET. The 2022 World Health Organisation (WHO) classification emphasises the diagnostic value of bone marrow histology, especially megakaryocyte morphology and stromal fibrosis. Given the higher risk of fibrotic progression and leukaemic transformation in pre-PMF, timely and accurate diagnosis is vital for prognostication and guiding therapy. *Conclusion:* This case further illustrates the potential for cerebrovascular events as a presenting feature of MPNs, warranting haematological evaluation in stroke patients with unexplained thrombocytosis.

HM39 Extreme Thrombocytosis as the Predominant Features in a Case of Chronic Myeloid Leukaemia

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Introduction: Chronic Myeloid Leukaemia (CML) is a myeloproliferative neoplasm (MPN) defined by the presence of *BCR-ABL1* fusion gene. Morphologically, it shows leukocytosis with peaks in myelocytes and neutrophils. Here, we present a case of CML who was noted to have increasing platelet, predominantly, during health checkup. *Case presentation*: A 27-year-old woman, incidentally found to have thrombocytosis (platelet 764×10^9/L). Otherwise, patient is well. No hepatosplenomegaly. Subsequent Full Blood Counts (FBC) show normal haemoglobin with extreme thrombocytosis (platelet range $1386\text{-}2072\times10^9$/L), mild neutrophilia (range $7.4\text{-}16.6\times10^9$/L) and basophilia (range $0.5\text{-}1.02\times10^9$/L). Peripheral blood film (PBF) shows neutrophilia with no peak in myelocytes. Bone marrow aspiration (BMA) revealed hypercellular marrow with granulocytic (predominant neutrophils) and megakaryocytic hyperplasia. Dysplastic megakaryocytes (hypolobated, separated nuclei megakaryocytes), dwarf and micromegakaryocytes were seen. Trephine biopsy also shows granulocytic and megakaryocytic hyperplasia with no increase in immature granulocytic precursors. No abnormal localization of immature precursors (ALIPs). Megakaryocytes show similar morphological findings as in BMA. No megakaryocytes clustering. These overlapping morphological findings between subtypes of MPN together with the presence of significant dysmegakaryopoiesis, present a diagnostic challenge. Further investigation by molecular testing identified major *BCR-ABL1* fusion transcript (P210), and cytogenetic analysis confirmed the presence of Philadelphia (Ph) chromosome, thereby establishing the diagnosis of CML. *Discussion:* Thrombocytosis is common in CML, but platelet count $>1000\times10^9$/L are rare. With the absence of bipeak increase in neutrophils and myelocytes, typical findings in CML, makes Essential Thrombocythaemia a close differential. This case highlights the necessity of *BCR-ABL1* testing in patient with extreme thrombocytosis lacking typical CML morphology.

HM40 An audit of appropriate requests for platelet count in citrated tubes for thrombocytopenia cases

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Introduction: Full blood count is a fundamental test in healthcare setting and usually sent in Ethylenediaminetetraacetic acid (EDTA) tube. However, EDTA can induced platelet aggregation and lead to pseudothrombocytopenia. Alternatively, citrate tube is used

to resolve this problem. However, we noticed that in our setting there are many requests of platelet count in citrate tube in cases of true thrombocytopenia which deviates from its main purpose. Objective: To determine the appropriateness of platelet counts in citrated tube requests and to ensure the requests are only for cases of pseudothrombocytopenia as confirmed morphologically by lab personnels. *Methods:* Baseline data of platelet in citrated tube requests over 6 months duration (July to December 2022) in Hospital Melaka was analysed and aimed for 80% compliance of its indication. In view of the shortfall, intervention was conducted and monitor over 12 months duration (February 2023 till January 2024). *Results:* The baseline data collected showed only 9% of the requests was suggested as presence of pseudothrombocytopenia which confirmed morphologically. Lack of knowledge of the requestor and no proper laboratory procedure in screening the requests were found as the root causes, intervention was implemented to tackle the causes. Awareness memo was circulated to the requestors and new screening procedure was implemented among laboratory personnels. We noticed inappropriate requests declined tremendously and requests processed based on indication improved up to 94%. *Conclusion:* Proper screening procedure and continuous education helps in promoting judicious laboratory requests to ensure proper treatment to patients.

CP01 Elevated Beta-Human Chorionic Gonadotropin (BHCG) In Advanced Breast Carcinoma: A Case Review

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Introduction Beta human chorionic gonadotropin (BHCG) is most commonly used for the detection of pregnancy. However, elevated B HCG levels have also been reported in conditions such as testicular and ovarian tumours (germ cell tumours) and gestational trophoblastic disease. *Case Presentation* RMA, a 42-year-old lady, gravida10 para 7+2 with a known history of left breast carcinoma with liver metastasis, presented at 3 weeks of amenorrhea. Her last childbirth was 7 years ago. She presented with right hypochondriac pain for a week. A pregnancy of unknown location was suspected as her urine pregnancy testing was weakly positive with high serum B HCG levels, possibly attributable to a paraneoplastic syndrome. A dilation and curettage procedure were performed, followed by laparoscopic bilateral salpingectomy. *Investigation* Bedside ultrasound scan revealed free fluid seen in the Pouch Of Douglas with no intrauterine gestational sac, and endometrial thickness of 0.45cm. Dilation and curettage procedure laparoscopic bilateral salpingectomy done. HCG levels measured with Beckman & Coulter DXI show an initial level of 4291mIu/L which decreases to 4044mIu/L after 48 hours. The last measurement after 48 hours showed 52411mIu/L. Histopathological examination revealed no product of conceptus. *Discussion* HCG can be produced by tumours of pancreas, liver, stomach, cervix and breast leading to false-positive pregnancy tests. *Conclusion* In this case, elevated B HCG levels were associated with advanced breast carcinoma resulting in false-positive pregnancy test. Appropriate investigations and management were undertaken as part of the patient's overall treatment plan.

CP02 Negative Low Density Lipoprotein Result in Patient with Septic Shock Secondary to Intraabdominal Sepsis: A Case Review

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Case Presentation: Mr S.R 69-year-old Malay male with a complex medical history presented with septic shock secondary to intra-abdominal sepsis from multiple anastomotic leaks. His surgical history includes multiple laparotomies and bowel resections for jejuno-ileal anastomotic leaks, strangulated hernia, bowel gangrene, and upper gastrointestinal bleeding. *Investigation:* A fasting serum lipid profile revealed notably low levels of total cholesterol (1.4mmol/L), high-density lipoprotein (HDL) cholesterol (0.2mmol/L), and an undetectable low-density lipoprotein (LDL) cholesterol (-3mmol/L). Triglycerides were elevated at3.2mmol/L. These findings are unusual, particularly the negative LDL cholesterol level, which likely represent a laboratory artifact compounded by a severe acute phase response from the underlying infections and critical illness. *Discussion:* The patient's very low total cholesterol and undetectable LDL levels are notable in the clinical context of multiple major surgeries, sepsis, and organ dysfunction. Lipid profiles can be significantly altered in acute illnesses, particularly sepsis, due to inflammatory cytokines affecting lipid metabolism. The findings may indicate a dysregulated lipid response commonly seen in critically ill patients. Further genetic and metabolic investigations are warranted to explore potential underlying lipid metabolism disorder and guide future management. *Conclusions:* This case highlights the importance of cautious interpretation of lipid profiles in critically ill patients. Abnormal results may stem from the acute-phase response or reveal an underlying metabolic disorder warranting further investigation.

CP03 Optimising Procalcitonin Utilisation: A Cost-Effective Strategy in a Tertiary Hospital

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Background: Procalcitonin (PCT) is a valuable biomarker for bacterial infection, but its indiscriminate use increases laboratory expenditure. In our setting, C-reactive protein (CRP) and PCT are frequently co-requested, underscoring the need for evidence-based testing guidelines. *Objectives:* This audit aims to evaluate the PCT request patterns, assess the financial impact of unnecessary testing and explore a cost-effective CRP-based triage strategy to Optimise PCT testing. *Methodology:* We retrospectively reviewed all PCT requests from 1st August 2024 to 31st January 2025 using data extracted from the Sistem Pengurusan Pesakit and Laboratory Information System. Confirmed bacterial infections were identified via microbiological culture. Negative PCT results were considered potentially unnecessary. Cost analysis was based on the cost-per-reportable test. Receiver Operating Characteristic curve analysis

using SPSS identified an optimal CRP cut-off for guiding PCT testing. *Results:* Among 668 PCT requests, 56.0% were for adults. Mean CRP and PCT levels were 105.1 mg/L and 9.3 ng/mL, respectively. Most requests came from paediatrics (39.2%) and medical wards (30.1%). A modest but significant positive correlation was observed between CRP and PCT ($r = 0.3$, $p < 0.01$). A CRP cut-off of >237.8 mg/L yielded an Area Under Curve of 0.704 and 89.2% specificity in predicting bacterial infection. Estimated avoidable costs from unnecessary PCT tests totalled RM8,966.03. *Conclusion:* Implementing a CRP-based triage strategy before PCT testing may significantly reduce unnecessary laboratory expenditure without compromising clinical care.

CP04 False Positive Urine Pregnancy Test Due To Interference of Erythrocytes

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Introduction: Urine human chorionic gonadotropin (hCG) assays are commonly used point-of-care tests (POCT) for pregnancy detection, particularly in emergency settings. While generally reliable, these tests can occasionally yield false-positive results, leading to diagnostic confusion and unnecessary interventions. *Case presentation:* A 21-year-old female patient presented with right iliac fossa pain, described as a pricking, and non-radiating. Two rapid urine hCG tests were positive. However, patient reported being on day 2 of her menstrual cycle. Subsequently, a quantitative serum hCG assay was negative. Initial urinalysis demonstrated 3+ erythrocytes, negative leukocytes, and 2+ protein. A repeat urine sample was obtained, showed negative erythrocytes and leukocytes, 1+ protein and yielded a negative urine hCG result. *Discussion:* Although manufacturers state that erythrocytes do not interfere with urine hCG assays, this case suggests potential interference, as the false-positive result coincided with significant hematuria. The exact mechanism remains unclear, but abnormal urine composition may affect assay reliability. The negative serum hCG and repeat urine test support a false positive initial result. This highlights the need for careful interpretation of POCT results. *Conclusion:* This case emphasises the importance of batch acceptance testing, adherence to POCT protocols, and confirmatory serum hCG testing when urine results are discordant with clinical findings to prevent misdiagnosis and unnecessary interventions.

CP05 When β-hCG Doesn't Mean Pregnancy: A Pituitary Tale in Pancreatic Cancer

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Introduction: Human chorionic gonadotropin (hCG) is most commonly associated with pregnancy but may be elevated in various non-gestational conditions, including trophoblastic disease, ectopic production by tumours or physiological secretion from the pituitary. Identifying the source of low-level hCG patient with non-gynaecologic malignancies can be diagnostically challenging. *Case Presentation:* A 45-year-old woman presented with epigastric pain, weight loss, and a palpable abdominal mass. A pre-imaging urine pregnancy test was unexpectedly positive led to further evaluation. Serum β-hCG levels remained persistently low (10.73–12.92 mIU/mL). Pelvic imaging ruled out pregnancy and gynaecological pathology. Serum FSH was significantly elevated (111.98 mIU/mL), consistent with menopausal status. Imaging revealed a large pancreatic tumour with local mass effect which was surgically resected. Histopathology confirmed moderately differentiated pancreatic ductal adenocarcinoma (Stage IIB, pT3N1). *Discussion:* Although pancreatic adenocarcinoma has occasionally been associated with ectopic hCG production, such cases typically present with higher or progressively rising hCG levels. In this case, the stable, low β-hCG levels, menopausal FSH range, absence of gynaecologic and tumour-associated hCG production strongly suggested pituitary origin. *Conclusion:* This case highlights the need to consider pituitary hCG secretion as a benign cause of low-level hCG elevation in perimenopausal women. Recognising this physiological phenomenon can prevent unnecessary investigations and ensure appropriate management in patient with concurrent non-gynaecologic malignancies.

CP06 Optimisation of Turnaround Time for High-Sensitivity Troponin I Reporting at Hospital Pakar Sultanah Fatimah Muar

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Background: Cardiac troponin (cTn) has been recommended as an emerging cardiac marker to manage myocardial infarction by the 4th Universal Definition Myocardial Infarction (UDMI). Timely reporting high-sensitivity Troponin I (hs-cTnI) results within 60–90 minutes is essential for the effective management of Acute Coronary Syndrome (ACS). To address this, we implement strategies to optimise our Laboratory Turnaround Time (LTAT) for hs-cTnI. *Objective:* This study aims to evaluate the effectiveness of our optimisation strategies in improving LTAT performance and their impact on cost efficiency. *Methods:* This cross-sectional study using Laboratory Information System (LIS) data from March 2024 to February 2025. Data were analysed using Excel and SPSS software. The strategies include: (1) daily internal quality control (IQC) implementation, (2) monthly LTAT performance monitoring during unit assemblies, (3) transitioning from cost per test (CPT) to cost per reportable (CPR) to pricing to enhance hs-cTnI LTAT performance and cost-effectiveness. *Results:* The mean percentage of hs-cTnI result reported within target LTAT increased from 72.9% (pre-intervention) to 88.9% (post-intervention). Implementing daily IQC instead of on-demand IQC showed statistically significant improvement in LTAT performance ($t=-6.268$, $df=5$, $p<0.001$). The shift to CPR yielding substantial cost savings, reducing expenses from RM 51,188.40 (pre-intervention, including cost for IQC and calibration) over 6 months period to RM 48,820.33 (post-intervention) only over 6 months. *Conclusion:* The optimisation strategies successfully improved hs-cTnI LTAT performance, achieving reporting rate exceeding 85% while enhancing the cost-effectiveness of the test.

CP07 Clinical Utility of Procalcitonin Over a Two-Year Period: A Clinical Audit at Hospital Sultanah Nur Zahirah

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Objective: This clinical audit aimed to evaluate the usage patterns, clinical indications, and diagnostic yield of serum procalcitonin testing at Hospital Sultanah Nur Zahirah (HSNZ) over a two-year period. *Methods:* A retrospective review on all serum procalcitonin requests from June 2022 to June 2024 were conducted. Clinical indications, procalcitonin levels, and request volumes were extracted and analysed. *Results:* A total of 1,002 procalcitonin tests were performed. The leading indications were sepsis/septicaemic shock (172 cases; mean procalcitonin: 7.15 ng/mL), pneumonia (136 cases; mean 11.18 ng/mL), and multisystem inflammatory syndrome in children/ newborn (100 cases; mean 2.52 ng/mL). Notably, 206 tests (20%) lacked a documented clinical indication. The highest mean procalcitonin levels were observed in gastrointestinal infection (15.87 ng/mL) including infected diarrhoea, pancreatitis, gall bladder empyema and enterocolitis While procalcitonin was primarily used for infection-related assessments, inconsistent documentation and variable interpretation indicate suboptimal diagnostic stewardship. *Conclusion:* Procalcitonin is widely used at HSNZ for managing suspected infections, especially sepsis and pneumonia. However, a significant proportion (1 in 5) of tests lacked clear clinical justification, raising concern about diagnostic efficiency and resource use. Strengthening test-ordering practices through clearer guidelines, clinical education, and stewardship initiatives are needed to enhance diagnostic accuracy, therapeutic value of procalcitonin testing and cost-effectiveness.

CP08 Retrospective Analysis of Urine Mitragynine Testing: Demographic Characteristics and Positivity Rates in Drug and Toxicology Laboratory, Hospital Kuala Lumpur (January to June 2024)

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Introduction: Kratom (*Mitragynine speciosa*) is commonly used in Southeast Asia for its psychoactive and medicinal effects; raising addiction concerns despite controls under Poisons Act 1952 [Act 366] in Malaysia. *Objective:* To describe the urine mitragynine results and their demographic characteristics for samples received by its Drug & Toxicology Laboratory, Hospital Kuala Lumpur from January to June 2024. *Method:* A retrospective analysis was performed using Laboratory Information System and analyser data. A total of 1796 completed data were included. *Results:* The analysed samples were predominantly from male (90.1%), Malay race (78.1%), medicolegal cases (83.4%), Non-Utara requestor (76.5%) and age between 20-49 years (88.3%). Mitragynine was detected in 694(38.6%) urine samples detected with median concentration of 1090.3 ng/mL (Q1: 277.0 - Q3: 3181.4). 99% of positive samples were from individuals in the working-age group (15-64 years). Statistically significant difference ($p < .001$) in median mitragynine concentration were observed based on type of case (medicolegal vs clinical), requestor's locations (Utara i.e. Kedah, Kelantan, Perlis state vs Non-Utara) and Ethnicity, with higher concentration seen in medicolegal cases, Utara and Malay individuals (median of 1131.1, 1784.5, 1147.6 ng/mL respectively). Concurrent detection of active metabolite (7-OH mitragynine) was found in only 84(12.1%) of positive samples. *Conclusions:* Mitragynine was detected in 38.6% of urine samples, mainly among working-age, males and medicolegal cases. Concentrations varied significantly based on case type, requestor location, and race.

CP09 Trimester Specific Reference Intervals for Thyroid Function Tests in Pregnant Malaysian Women

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Introduction: Thyroid dysfunction during pregnancy can adversely affect both maternal health and foetal development, necessitating precise assessment of thyroid status. Current international guidelines advocate the use of population-, trimester-, and assay-specific reference intervals (RIs) to enhance the interpretation of thyroid function tests (TFTs) in pregnant women. The objective of this study was to determine trimester-specific reference intervals for serum thyroid-stimulating hormone (TSH) and free thyroxine (fT4) among healthy pregnant women in Malaysia. *Methodology:* A total of 1,347 samples from pregnant women received by Hospital Sungai Buloh were evaluated. The study excluded individuals with pre-existing medical conditions or positive thyroid autoantibodies. TSH and fT4 levels were measured using the Roche Cobas Pro immunoassay analyser. Reference intervals were calculated using non-parametric analysis (2.5th–97.5th percentiles) following outlier removal. *Result:* The trimester-specific RIs for TSH were 0.093–3.321 mIU/L (first trimester), 0.067–3.589 mIU/L (second trimester), and 0.193–3.600 mIU/L (third trimester). The corresponding RIs for fT4 were 9.0–19.1 pmol/L, 8.6–16.8 pmol/L, and 8.3–17.5 pmol/L, respectively. *Discussion:* A progressive increase in TSH and a corresponding decline in fT4 were observed across trimesters, consistent with physiological adaptations during pregnancy. *Conclusion:* These reference intervals serve as vital population-specific parameters to facilitate improved diagnostic precision and optimised therapeutic strategies for thyroid disorders during pregnancy in the Malaysian population.

CP10 Establishing Medical Decision Limits Database in Hospital Sungai Buloh

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Introduction: Medical Decision Limits (MDLs) are essential thresholds in laboratory medicine that guide diagnosis, clinical decision

making, and therapeutic interventions. Unlike reference intervals that reflect normal values in a healthy population, MDLs are based on clinical outcomes, guidelines, and expert consensus. Given the scarcity of region-specific data, this study aimed to establish a local MDL database for selected chemical pathology tests in a specialist hospital in Selangor, Malaysia. *Methods:* MDLs were compiled using three established approaches: the Bayesian approach, which utilises assumptions about clinical sensitivity and specificity, exemplified by cardiac troponins; the epidemiological approach, which relies on population outcomes and clinical intervention thresholds, such as lipid parameters and diabetes markers; and the pathophysiological approach, which identifies critical values indicating life-threatening conditions, including neonatal hypoglycaemia and tumour marker prognostics. These methodologies, supported by clinical guidelines and research, formed the basis for the MDL database. *Results:* The resulting database includes 68 analytes across biochemistry, endocrinology, and therapeutic drug monitoring, with each entry detailing clinical thresholds for diagnosis, monitoring, or critical alerts. *Conclusions:* Establishing a regional MDL database enables faster, evidence-based interpretation of test results and decision making, enhances diagnostic accuracy and patient care, and aligns with the objective of the International Federation of Clinical Chemistry and Laboratory Medicine (IFCC) Committee on Reference Intervals and Decision Limits (C-RIDL), promoting future harmonization of MDLs in Malaysia.

CP11 Comparative Analysis of Laboratory Turnaround Time in the Chemical Pathology Unit, Hospital Al-Sultan Abdullah

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Introduction: Turnaround Time (TAT) refers to the duration required to complete a process cycle. In a laboratory setting, TAT starts when a sample is received and ends when the result is reported. Laboratory TAT (LTAT) is a crucial performance indicator as it directly affects patient care and clinical decision-making. *Aim:* This study compares LTAT performance in 2023 and 2024 for the Chemical Pathology tests at Hospital Al-Sultan Abdullah. It aims to evaluate improvements or delays and identify the contributing factors. *Results:* The laboratory experienced a 16.9% increase in specimens received from 95,450 in 2023 to 111,592 in 2024. Despite this, LTAT performance remains largely stable. A slight decline was noted in inpatients Renal Profile tests from 100% to 99%, and urgent Troponin I test from 97% to 96%. Notably, blood gases testing maintained a 100% LTAT achievement in both years, indicating consistent reliability in this category. *Discussion:* A key goal of the laboratory's Quality Management System is to maintain over 90% LTAT compliance. The data indicate that this target was consistently met. Factors that may influence LTAT include staffing limitations, increased workload, analyser breakdowns, and downtime of the Laboratory and Hospital Information System (LIS/HIS). *Conclusion:* These findings showed that the laboratory achieved its quality management goals while maintaining the efficiency of laboratory services.

CP12 Evaluation of Specimen Rejection in Chemical Pathology Unit, Clinical Diagnostic Laboratories, HASA UiTM

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Introduction: The pre-analytical phase is a critical component of the laboratory testing process, encompassing activities from test ordering to specimen preparation. Specimen rejection refers to the exclusion of samples that do not meet the laboratory pre-analytical quality criteria. *Methodology:* Data on received and rejected samples in the Chemical Pathology Unit for the year 2024 were extracted from the Laboratory Information System (LIS). Rejection rates, frequencies and causes were assessed biannually to monitor trends and ensure quality control. *Discussion:* In 2024, the Chemical Pathology Unit received 111,593 samples, of which 982 samples were rejected resulting in a rejection rate of 0.88%, which is below the rejection limit of 1%. From January to June 2024, haemolysis was the leading cause of rejection (272 out of 461 or 59%), whereas from July to December 2024, clotted samples were most common (272 out of 521 or 52%). Serum (plain tube) specimens accounted for the majority of rejected samples in both halves of the year (684 out of 982 or 69.65%). *Conclusion:* To reduce specimen rejection rates further, healthcare personnel must receive ongoing training in proper phlebotomy and specimen handling techniques. Minimising delays in specimen transportation is essential to ensure reliable and accurate laboratory results.

CP15 Increasing the Effectiveness in Critical Value Notifications in Chemical Pathology, Hospital Teluk Intan

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Objective: This clinical audit aimed to improve the communication of critical laboratory results in the Chemical Pathology Unit, Hospital Teluk Intan. Timely communication of critical laboratory results is essential for timely clinical interventions to reduce patient morbidity and mortality. *Method:* The audit was conducted from November 2023 to August 2024 in the Integrated Laboratory, Hospital Teluk Intan. It focused on five critical test parameters— sodium, potassium, calcium, bilirubin (paediatrics) and ammonia (paediatrics)— according to Ministry of Health (MOH) guideline (Lampiran A). Data was extracted monthly from the Laboratory Information System (LIS) and analysed using Microsoft Excel. *Results:* A baseline audit (October–November 2023) revealed the notification rates and the common causes of failures. Based on these findings, interventions were implemented, including issuing memos on the forms completeness, introducing standard notification procedures, continuous medical education

(CME) and enhanced documentation. A re-audit from December 2023 to August 2024 evaluated the effectiveness of these changes. The initial data showed that only 70–71.6% of critical values were successfully notified. Key barriers included incomplete request forms, unanswered phone lines and lack of staff awareness. Post-intervention analysis demonstrated significant improvement, with notification rates consistently rising above 90%, reaching 98.8% by July 2024. *Conclusion:* These improvements showed that staff are more compliant and have better system efficiency. Structured interventions, including standardized procedures, education and improved communication protocols, have significantly increased notification rates for critical values. The audit underscores the importance of continuous monitoring, staff training and clear guidelines in ensuring patient safety and effective laboratory practices.

CP16 Vitamin B12 And Folate Deficiency: Report from A District Hospital in Malaysia

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Introduction: B12 and folate deficiencies are preventable and reversible conditions but remain prevalent in some regions and can lead to severe haematological and neuropsychiatric complications if left untreated. This study aimed to determine the proportion of vitamin B12, folate, and combined deficiencies in patients undergoing laboratory investigation at Hospital Teluk Intan (HTI) and the association with demographic factors and macrocytic anaemia. *Methods and Materials:* A retrospective study was conducted between January and October 2025 using data from laboratory information system from June 2023 to May 2024. *Results:* A total of 1463 patients were included. Among them, 6% of patients had B12 deficiency, 17.4% had folate deficiency, and 2.9% had combined deficiency. Indian (OR 11.83, 95% CI 6.36,22.01, $p<0.05$) and Chinese (OR 4.6, 95% CI 2.17,9.74, $p<0.05$) ethnicity were associated with a higher likelihood of B12 deficiency than Malay ethnicity. On the other hand, individuals aged 12-19 years (OR 21.09, 95% CI 9.12,48.76, $p<0.05$), 20-29 years (OR 3.01, 95% CI 1.67,5.43, $p<0.05$) and 30-39 years (OR 1.83, 95% CI 1.06,3.16, $p=0.02$), male gender (OR 2.22, 95% CI 1.65,2.99, $p<0.05$) and Indian (OR 2.63, 95% CI 1.91,3.62, $p<0.05$) ethnicity were associated with a higher likelihood of folate deficiency. The Indian population (OR 15.88, 95% CI 6.09,41.42, $p<0.05$) was associated with a higher likelihood of combined deficiencies. All three types of deficiencies ($p<0.05$) were significantly associated with macrocytic anaemia. *Conclusion and discussion:* The proportion of vitamin B12, folate and combined deficiencies were higher in our centre than in Western countries, but lower than in Asian countries. increased awareness, screening, and targeted supplementation strategies for at-risk groups could reduce the clinical and public health burden of these deficiencies.

CP17 A Rare Case of Milky Peritoneal Fluid

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Introduction: Chylous ascites is a rare form of ascites that appears milky due to its high triglyceride (TG) content. It behaves like lipemic serum or plasma which interferes with biochemistry measurement. *Case Presentation:* We present a case of 58-year-old female with hypertension, dyslipidemia and ovarian carcinoma stage 4 diagnosed in 2021. She had completed neoadjuvant chemotherapy, underwent surgery and is currently undergoing another regime of chemotherapy. At last admission, chylous ascites was detected and confirmed with TG level of 61.52 mmol/L (> 2.26 mmol/L). Lactate dehydrogenase (LDH) measurement was only possible after removal of the lipid layer by high-speed centrifugation at 10,000g for 10 minutes. The serum ascitic albumin gradient (SAAG) was 9.95g/L indicating exudative fluid. Other biochemistry tests were unremarkable. *Discussion:* Chylous ascites is a rare presentation and can significantly interference with biochemistry analysis. There are few methods to overcome the lipemic interference including removal of lipid layer. This is best done by ultracentrifugation, but high-speed centrifugation showed no statistically significant difference between the two methods for most of biochemistry analytes. Our centre uses high-speed centrifugation as in our case, for LDH. All results biochemistry analysis of body fluid are consistent with malignant effusion. *Conclusion:* Although the occurrence of lipemic interference is uncommon, all laboratories should have a protocol for removing the lipid layer. This will ensure that the results produced are helpful to the clinicians in managing the patient.

CP18 A Five-Year Study of Urine Amino Acid Profiling at the Institute for Medical Research, Malaysia for Targeted Inborn Errors of Metabolism Diagnostics

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Introduction: Diagnosing Inborn Errors of Metabolism (IEMs) is challenging due to their diverse and varied nature, demanding a comprehensive correlation of routine lab testing, IEM screening, and specialised tests. While challenging, targeted testing is essential for accurate diagnosis and treatment initiation. As Malaysia's national referral centre, the Institute for Medical Research (IMR) utilises ion-exchange chromatography with ninhydrin detection to analyse urine amino acids (UAA) for identifying inborn errors of renal transport and few specific metabolic diseases. UAA patterns are profiled against age-appropriate reference ranges in conjunction with relevant clinical and laboratory findings. *Methods:* This retrospective study (January 2020 to February 2025) analysed UAA data and diagnostic yield. *Results:* Of 436 requests, 173 were excluded by clinical gatekeeping. Among the 263 analysed cases, 238 (90.5%) yielded non-specific aminoaciduria, reflecting the complexity of IEM diagnosis. Conversely, 25 of 263 (9.5%) yielded positive profiles: 4 cystinuria, 2 lysinuric protein intolerance (LPI), 1 hyperornithinemia-hyperammonemia-homocitrullinuria (HHH) syndrome, 1 homocystinuria, 1 argininosuccinic aciduria (ASA), 2 iminoglycinuria, 3 suspected molybdenum cofactor/sulfite oxidase deficiencies, and 11 suspected dibasic aminoacidurias (e.g., LPI or HHH). Positive findings prompted molecular analysis and geneticist consultation were recommended for patient management and counselling. *Conclusion:*

This study confirms targeted UAA, when judiciously applied and clinically gatekept, is an effective screening tool for IEMs in Malaysia, notably inborn errors of renal transport. Despite IEM's diagnostic complexity and metabolomics advancements, UAA profiling effectively supplements primary screening for targeted specific disorder.

CP19 Clinical Audit on Incorrect Location Entry for External Laboratory Requests in Hospital Sungai Buloh

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Introduction: Accurate test transcription during the pre-examination phase is essential to ensure the accurate routing of patient samples and correct reporting of laboratory results. The International Federation of Clinical Chemistry and Laboratory Medicine (IFCC) recommends laboratories to monitor and minimise such errors as part of quality assurance and patient safety initiatives. An audit was initiated following repeated incidents in which external samples were assigned the incorrect location, affecting result tracking and delaying patient care. The aim was to evaluate the effectiveness of interventions in reducing these errors. *Methodology:* A retrospective audit was conducted from August 2024 to May 2025. Pre-Laboratory Transcription Data Entry Error (Pre-LabTDE) was calculated as the percentage of requests containing incorrect data entered by laboratory personnel over the total number of requests entered. The standard was set at <0.117% in accordance with IFCC criteria. *Result:* During the pre-intervention phase (Aug 2024 – Jan 2025), 19 errors were recorded among 13,497 requests (0.141%). Contributing factors included Laboratory Information System (LIS) defaulting to incorrect location settings, manual entry requirements, and inconsistent stamping practices due to multiple external stamps on request forms from different Klinik Kesihatan (KK). The first-phase intervention, implemented in January 2025, included sample segregation by location, submitting an IT request to remove the LIS default setting, and memos to KK to standardize stamping practice. The second intervention, in April 2025, involved posting location summaries at registration computers. Error rates fell to 0.116% (6/5162). These errors were recorded after the first intervention phase, and zero errors were recorded in March 2025, achieving high standard performance. *Conclusion:* The findings confirm the effectiveness of structured interventions in improving laboratory quality and supporting patient safety.

CP20 Breaking the Code: Elecsys GAAD Score in Hepatocellular Carcinoma Surveillance

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Background The study aimed was to evaluate the diagnostic performances of the Elecsys GAAD which incorporates gender, age, alpha fetoprotein, decarboxy prothrombin/PIVKA II) score for hepatocellular carcinoma (HCC) surveillance among patients with HCC, chronic liver disease (CLD) and healthy controls (HC) in northeastern Peninsular Malaysia. *Methods* This single-centre cross-sectional study measured serum PIVKA-II and AFP using the Elecsys electrochemiluminescence immunoassay. The Elecsys GAAD score derived using an online calculator. Diagnostic performance was assessed using the area under the curve (AUC), optimal cutoff levels, sensitivity and specificity. *Results* Of 128 patients, 99 were included in the analysis: 33 HCC, 33 CLD, and 33 HC. Median (IQR) serum PIVKA-II and AFP levels in HCC subjects were significantly higher measured 197.3(2864.9) and 20.0(767.5) ng/ml, respectively ($p<0.05$) compared to the CLD and HC subjects. The median (IQR) Elecsys GAAD scores for HCC, CLD, and HC were 9.59 (5.37), 1.2 (2.7), and 0.21(0.39), respectively, showing significant differences between groups ($p<0.05$). Using a cutoff value of 2.36, the GAAD score distinguished HCC form CLD with an AUC of 0.87, sensitivity of 84.8% and specificity of 100%.. To discriminate HCC from HC, the same cutoff of yielded AUC, sensitivity and specificity of 0.99,87.9% and 100% respectively. *Conclusion* The diagnostic performances of Elecsys GAAD score demonstrated excellence performance in distinguishing HCC from both CLD and HC, supporting its potential as a reliable surveillance tool in this population.

CP21 Enhancing reliability of paraquat detection: verification of C95 cutoff and selection quality control concentration for the urine sodium dithionite test

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Introduction: Paraquat poisoning is a significant public health issue, especially in developing countries, due to its high toxicity and fatality rates. The urine sodium dithionite test is a widely used qualitative method for rapid paraquat detection in urine, indicated by a characteristic colour change from blue to green. However, this test relies on subjective visual interpretation, which can be influenced by factors such as urine turbidity, lighting, and individual colour perception. This subjectivity compromises accuracy near the 1.0 µg/mL detection threshold, increasing the risk of false negatives and delayed treatment. Despite its frequent use, no standardized quality control (QC) concentrations exist to ensure consistent performance. *Materials & Methods*: Paraquat solutions were prepared in pooled clear urine at concentrations of 0.5, 1.0, and 2.0 µg/mL using certified reference paraquat dichloride (42% w/w), with 20 replicates per concentration. For each test, 2 g sodium hydrogen carbonate was mixed with 10 mL urine, followed by addition of a small amount of sodium dithionite. The resulting colour changes was visually assessed to determine the presence of paraquat. *Results:* At 0.5 µg/mL, 10 out of 20 replicates tested positive. All replicates at 1.0 and 2.0 µg/mL were positive, meeting the 19/20 acceptance criterion for the C95 cutoff, confirming its reliability. Based on this, a high QC level of 20.0 µg/mL and a low QC level of 2.0 µg/mL were selected, as the test relies heavily on subjective visual interpretation, necessitating the use of

higher concentrations. *Discussion*: This verification study establishes 1.0 µg/mL as the C95 cut off. QC concentrations of 2.0 µg/mL (low) and 20.0 µg/mL (high) were selected to improve quality control, addressing the test's subjective nature and enhancing paraquat detection reliability in clinical settings.

CP22 Clinical Audit on Appropriateness Tumour Markers Request in Pathology Department, Hospital Raja Perempuan Zainab II

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Background: The appropriateness of tumour markers request is essential for delivering high-quality health service, ensuring patient safety, and minimising unnecessary financial burden on the health system. Limited sensitivity and specificity of the majority tumour markers hinder their role in the screening and diagnosis of many tumours. This study was undertaken to evaluate the pattern of tumour markers request in our setting and to identify potential areas for improvement. *Objective:* To determine the workload of tumour marker test requests and to evaluate their appropriateness, including the financial impact. *Methods:* A clinical audit was conducted using data extracted from Sistem Pengurusan Pesakit (SPP) between 1st January 2024 to 31st January 2024. Data were analysed using Microsoft Excel. The appropriateness of tumour markers request was determined based on two published guideline; "A Quick Guide: Requesting for Serum Tumour Markers in MOH Facilities In Penang State (Hospital Pulau Pinang 2021)" and Clinical Practice Guideline on Serum Tumour Markers published in 2003 by Ministry of Health. *Results:* A total of 611 tumour marker requests were recorded. Of these, 50.14% were deemed inappropriate, representing a cost of RM 17,330.16. The remaining 49.86% were appropriate, with total cost of RM 16,822.78. *Conclusion:* This clinical audit highlights a significant proportion of inappropriate tumour marker requests contributing to avoidable financial strain on the healthcare system. We recommend strict adherence to existing guidelines, and regular Continuing Medical Education (CME) sessions to promote evidence-based ordering practices among clinicians.

CP23 Empty Sella on Brain Imaging: Navigating an Incidental Finding with Clinical Significance

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Introduction: Radiographic studies have gradually become accessible and widely utilised, leading to an increase in incidental findings. One such finding is empty sella. Case presentation: A 65-year-old lady with underlying hypertension, type II diabetes mellitus, congestive cardiac failure and atrial fibrillation presented with a one-week history of bilateral lower limb swelling, intermittent chest pain and reduced effort tolerance. Patient had a fall and sustained periorbital haematoma, prompting a computed tomography (CT) of the brain. The CT scan showed no evidence of acute intracranial haemorrhage but identified an incidental finding of empty sella. An endocrine panel tests demonstrated hyperprolactinaemia (960 mIU/L). Other parameters including thyroid function, FSH, LH and ACTH were within normal limits. Ophthalmic examination was unremarkable aside from bilateral eye cataract. *Discussion:* Empty sella is characterised by empty sella turcica containing no pituitary tissue. The causes can be primary—typically due to cerebrospinal fluid herniation—or secondary, following prior pathology (e.g., postpartum pituitary necrosis) or intervention (e.g., surgery, radiotherapy). Most cases are asymptomatic. However, when associated with endocrine, ophthalmic or neurological symptoms, the condition is termed empty sella syndrome (ESS), which may require pharmacological or surgical interventions. *Conclusion:* As empty sella become more common, establishing clear diagnostic criteria is essential to guide correct diagnosis and management. Due to limited number of documented cases, it is difficult to establish evidence-based recommendation. Thus, patient management should be individualised to avoid overdiagnosis and unnecessary stress, while ensuring appropriate treatment for symptomatic cases.

CP24 Pituitary Microadenoma and Rising Prolactin Despite Dopaminergic Therapy: A Case-Based Discussion

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Introduction: Hyperprolactinaemia is a prevalent endocrine disorder of the hypothalamic-pituitary axis, characterised by elevated serum prolactin levels. Case presentation: A 33-year-old lady with underlying hypertension, dyslipidaemia and obesity was referred to Endocrine Clinic for persistent hyperprolactinaemia. She presented with a one-month history of generalised pulsatile headaches, which worsened at night and irregular menstrual cycle. Otherwise, she denied symptoms suggestive of thyroid or intracranial pathology. She had been empirically started on Bromocriptine for 2 months but the prolactin level remains high (2939 mIU/L to 4315 mIU/L). Pituitary MRI showed a non-enhancing tiny round lesion within the right aspect of the anterior lobe of the pituitary gland suggestive of microadenoma. Due to persistent hyperprolactinaemia, polyethylene glycol (PEG) precipitation test was done to rule out macroprolactinaemia. However, the result was inconclusive, with a post-PEG prolactin recovery of 54%. *Discussion:* Hyperprolactinaemia may result from a range of etiologies. Key treatment goals include resolution of symptoms, normalization of prolactin level and if applicable, reduction of tumour mass. The treatment of choice is dopamine agonists as these drugs are effective in restoring menses and reducing tumour mass in up to 90% of patients. *Conclusion:* This case highlights the diagnostic complexity and therapeutic challenges in managing hyperprolactinaemia. An individualised approach involving repeat hormonal testing, consideration of cabergoline, and ongoing radiological surveillance is recommended to guide optimal management.

CP25 Diagnostic Challenges in Immune Complex Membranoproliferative Glomerulonephritis: A Case of Type 2 Cryoglobulinemia with Severe Thrombocytopenia

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Introduction: Immune complex-mediated membranoproliferative glomerulonephritis (MPGN) is a rare kidney disease characterised by the deposition of immune complexes in the glomeruli resulting in impaired kidney function. *Case presentation:* We present a case of 48-year-old female with a history of Hepatitis C infection who had achieved sustained virologic response. She was initially evaluated for nephrotic range proteinuria and a renal biopsy revealed immune complex-mediated MPGN. She presented with severe thrombocytopenia and petechial rashes for 3 weeks. Laboratory findings included elevated serum Creatinine (152 umol/L), urinalysis showed 2+ proteinuria and 3+ blood, and a urine protein-to-creatinine ratio of 279.92 mg/mmol. *Discussion:* Patient was suspected of having cryoglobulinemia due to underlying Hepatitis C and clinical manifestation. Cryoglobulin screening was performed by centrifuging the blood sample at 37°C followed by refrigeration at 4°C for 72 hours, which revealed precipitates at 4°C in both serum and plasma. Serum protein electrophoresis showed an IgM kappa paraprotein of 1.9 g/L and polyclonal IgG. Rheumatoid factor was markedly elevated (>1500IU/mL), with decreased C3 level and normal C4 level. Immunofixation of the cryoprecipitate unveiled IgM kappa paraprotein and polyclonal IgG. Antibody screening was negative. The patient was treated with intravenous immunoglobulin and steroid. *Conclusion*: This case highlights the association between previously treated Hepatitis C with the development of immune complex-mediated MPGN secondary to type 2 mixed cryoglobulinemia. Awareness of its clinical spectrum and prompt relevant laboratory evaluation benefit patient's management and ongoing monitoring of cryoglobulin-related renal and haematologic complications.

CP26 Macroprolactinemia Masquerading as Hyperprolactinemia during Frozen Embryo Transfer (FET) Evaluation.

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Introduction: Macroprolactinemia is characterised by high-molecular-weight prolactin-immunoglobulin complexes, which may cause falsely elevated serum prolactin levels. The mechanism of autoantibody formation remains unclear, but several cases were reported in women during prolactin testing. *Case presentation:* We report a case of a 38-year-old nulliparous woman diagnosed with severe endometriosis and primary infertility. During routine hormonal monitoring in preparation for frozen embryo transfer (FET), she demonstrated persistent hyperprolactinemia ranging from 678 to 1656 mIU/L. She remained asymptomatic with regular menstrual cycles and normal levels of other hormonal profiles. Polyethylene glycol (PEG) precipitation testing was performed, yielding a recovery of 34% (<40%), strongly suggestive of macroprolactinemia. FET proceeded as planned. *Discussion:* Macroprolactinemia occurs in approximately 18.9% of patients with hyperprolactinemia. It is not associated with autoimmune diseases. As macroprolactin has minimal bioactivity, most patients remain asymptomatic. It may be missed by standard immunoassays due to its inability to distinguish between monomeric prolactin and macroprolactin, which can lead to misdiagnosis, unnecessary treatment and delays fertility care. PEG precipitation testing is a reliable method to detect macroprolactin and is considered comparable to the reference method, gel filtration chromatography (GFC). The utilisation of GFC in routine diagnostic practice is limited due to its considerable cost, labour-intensive nature and time-consuming. *Conclusion:* This case highlights the need for macroprolactin screening in patients with asymptomatic hyperprolactinemia during fertility evaluation. Routine macroprolactin testing should be part of the diagnostic workup can prevent misdiagnosis and Optimise fertility treatment options.

CP27 Verification of Accuracy and Precision of Drug of Abuse Point-of-Care Test (POCT) Device in Hospital Kuala Lumpur

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Introduction: The rising incidence of drug abuse in Malaysia in recent years underscore the need for rapid and reliable screening tool of drug of abuse (DOA) using urine point-of-care (POC) testing. This study aimed to verify manufacturer's claims of accuracy and precision of POC CITEST™ in detecting four drugs: Cannabis (11-nor-delta-9-tetrahydrocannabinol-9-carboxylic acid), Buprenorphine, Synthetic Cannabinoid JWH-018 Pentanoic acid and JWH-073 Butanoic acid. Methods: POC verification was conducted in accordance with CLSI EP12-A2 guidelines. Drug-free urine samples from laboratory personnel were spiked with certified reference materials. Accuracy was assessed at the manufacturer's cut-off concentration, and precision was evaluated at ±25% of the cut-off. For each drug, 40 replicates were tested using CITEST™ dipsticks. *Results*: For JWH-018 Pentanoic acid, accuracy was verified at the stated cut-off, yielding 35% positive results (95%CI: 20-50). However, precision at +25% cut-off was not met, with only 45% positive results (target ≥87.5%). Neither accuracy nor precision for Buprenorphine, Cannabis, and JWH-073 Butanoic acid could be verified due to high proportion of negative results at the cut-off concentration (87.5%, 100%, and 100%, respectively). *Conclusion:* Accuracy of CITEST™ is acceptable for Synthetic Cannabinoid JWH-018 Pentanoic acid. However, its performance for Buprenorphine, Cannabis, and JWH-073 Butanoic acid, were not verified at the current cut-offs. Further studies are needed to determine the cut-off concentration and verify its performance prior to routine clinical use.

CP28 Laboratory Diagnosis of X-Linked Adrenoleukodystrophy: A Case Report

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Introduction: X-linked adrenoleukodystrophy (X-ALD) is a rare genetic disorder affecting males, resulting from mutations in the *ABCD1* gene on the X chromosome. These mutations impair peroxisomal function, leading to the accumulation of very-long-chain fatty acids (VLCFAs) and progressive neurological and adrenal dysfunction. *Case Presentation:* This case highlights a 13-year-old boy with a seven-year history of generalised skin pigmentation, neuroregression, and behavioural changes. Neurological examination was unremarkable., His parents exhibited non-consanguinity. Routine biochemical tests showed normal electrolyte and blood glucose levels. However, endocrine analysis revealed markedly elevated ACTH levels (2329 pg/ml; reference range: 0-46 pg/ml) and profoundly low serum cortisol (26 nmol/L; reference range: 145-619 nmol/L), consistent with adrenal insufficiency. Brain MRI showed demyelination in the parieto-occipital region, raising suspicion of a peroxisomal disorder. To further investigate metabolic abnormalities, acylcarnitine profiling was performed, revealing elevated VLCFA ratios (C24:0/C22:0 and C26:0/C22:0), a finding consistent with X-ALD. Genetic sequencing confirmed a pathogenic *ABCD1* gene mutation, solidifying the diagnosis of juvenile-onset cerebral ALD with adrenal involvement (adrenomyeloneuropathy). Following diagnosis, hydrocortisone therapy was initiated. However, after six months, his behavioural symptoms worsened, with MRI scans indicating further disease progression. *Discussion:*X-ALD remains a devastating neurodegenerative disorder, with no definitive cure. Although haematopoietic stem cell transplantation shows potential in slowing progression, early biochemical and genetic testing remains crucial for timely intervention. *Conclusion:* This case highlights the diagnostic importance of specialised laboratory testing, particularly acylcarnitine profiling and genetic analysis, in establishing an accurate diagnosis of X-ALD.

CP29 Persistent Hyperglycerolaemia and Hypertriglyceridaemia: Unmasking Glycerol Kinase Deficiency in an Asymptomatic Infant

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Introduction: Glycerol kinase deficiency (GKD; OMIM #307030) is a rare X-linked disorder caused by pathogenic variants in the *GK* gene. It results in the accumulation of free glycerol in plasma and urine, and it is sometimes discovered incidentally during a subtle clinical presentation. *Case presentation:* We report a case of a male infant under follow-up since birth for a preauricular skin tag, with otherwise unremarkable perinatal and developmental history. At 8 months of age, he was admitted for rotavirus gastroenteritis requiring fluid resuscitation. There were no episodes of hypoglycaemia or seizures. Physical examination was unremarkable, with no dysmorphic features, hepatosplenomegaly, or neurological signs. Growth and developmental milestones were age-appropriate. Laboratory investigations revealed elevated serum triglycerides and persistent transaminitis. Hepatitis serology, TORCH screening, and abdominal ultrasound findings were unremarkable. Inherited errors of metabolism screening were performed due to the persistent transaminitis. Urine organic acids analysis by Gas Chromatography Mass Spectrometry (GCMS) revealed elevated lactic acid and significantly elevated glycerol. Repeat urine testing confirmed persistent glyceroluria, excluding contamination from topical agents. Plasma organic acids analysis by GCMS also showed elevated plasma glycerol, effectively ruling out artefactual causes. *Discussion:* The elevated serum triglycerides were attributed to pseudohypertriglyceridaemia. The biochemical triad of elevated plasma glycerol, persistent glyceroluria, and unexplained hypertriglyceridaemia strongly suggested GKD. *Conclusion:* This case highlights the diagnostic value of comprehensive metabolic testing in the evaluation of persistent transaminitis and hypertriglyceridaemia to prevent unnecessary intervention. Molecular confirmation of a *GK* gene variant is recommended for diagnosis and appropriate genetic counselling.

CP30 Persistent Hyperhomocysteinemia in Dialysis-Dependent Atypical Haemolytic Uremic Syndrome: Revisiting a Diagnostic Consideration

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Introduction: Atypical haemolytic uremic syndrome (aHUS) (OMIM 612923) is a rare, life-threatening thrombotic microangiopathy (TMA) characterised by microangiopathic haemolytic anaemia, thrombocytopenia, and acute kidney injury. It results from uncontrolled activation of the alternative complement pathway or, less commonly, from remethylation disorders. Elevated plasma total homocysteine (tHcy) is a useful biomarker for identifying metabolic causes of aHUS, particularly cobalamin C (cblC) disorder. *Case presentation:* We report a 10-year-old boy presented with fever, hypertension, anaemia, thrombocytopenia, and acute kidney injury. Peripheral blood smear showed 3–4% schistocytes, low haptoglobin, and elevated lactate dehydrogenase. Renal biopsy confirmed TMA. He was diagnosed with aHUS and treated with plasma exchange and six doses of eculizumab. Despite therapy, he remained dialysis dependent. Screening for metabolic causes was pursued. Plasma tHcy measured via high-performance liquid chromatography with fluorescence detection (HPLC-FLD) was moderately elevated at 42 µmol/L (reference: 5–16 µmol/L), prompting investigation for a cblC disorder. However, urine organic acid analysis by gas chromatography-mass spectrometry (GC-MS) revealed normal methylmalonic acid and plasma amino acids analysis by ion-exchange chromatography (IEC) revealed normal methionine level, strongly excluding cblC disorder. Serum vitamin B12 was normal, and follow-up tHcy decreased to 23 µmol/L without B12 or folate supplementation. *Discussion:* Persistent hyperhomocysteinemia in this case was attributed to dialysis-dependent renal failure, with reduced renal clearance of tHcy. *Conclusion:* While tHcy may serve as a useful

biomarker in aHUS, elevated levels must be interpreted in context, notably in patients with renal dysfunction, where secondary causes may mimic primary metabolic disorders.

CP31 Choosing the Right Formula: A Comparison of LDL-C Calculation Methods for Clinical Practice

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Introduction: Accurate estimation of low-density lipoprotein cholesterol (LDL-C) is critical for effective cardiovascular risk assessment. The Friedewald formula, though widely used, is less reliable in individuals with elevated triglyceride. *Objective:* This study aimed to compare the performance of the Friedewald, Martin/Hopkins, and Sampson methods for LDL-C estimation in patients with varying triglyceride levels at Hospital Bentong, Malaysia. *Method:* A retrospective cross-sectional study was conducted using lipid profile from 300 patients. LDL-C was calculated using all three formulas. Patients were categorized into two triglyceride groups: normal (<2.26 mmol/L) and elevated (≥2.26 mmol/L). Descriptive statistics and the Mann-Whitney U Test were used for analysis. *Results:* The Friedewald formula showed no significant difference in LDL-C estimates between the two triglyceride groups (p=0.527). In contrast, both the Martin/Hopkins and Sampson methods demonstrated statistically significant differences (p<0.001), indicating their superior accuracy in estimating LDL-C, particularly in patients with hypertriglyceridemia. *Discussion:* These findings underscore that the Martin/Hopkins and Sampson methods provide more reliable LDL-C estimations compared to the Friedewald formula in patients with elevated triglycerides. We advocate for the adoption of these alternative LDL-C estimation methods in clinical practice, especially for patients with hypertriglyceridemia, to enhance the precision of cardiovascular risk stratification and improve patient management.

CP32 Evaluation of salivary cortisol level using different methods of saliva collection among healthy adults in HUSM, Kelantan

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Objective: This study aimed to assess the agreement of salivary cortisol levels collected using three methods—Salivette® (commercial), passive drooling (standard), and cotton roll (potential substitute)—among healthy adults to determine their interchangeability. Introduction: Salivary cortisol reflecting the free, biologically active form of cortisol, is a convenient, non-invasive alternative to 24-hour urine cortisol measurement. Given the limited availability and high cost of the Salivette® collection device, simpler and cost-effective alternatives are needed. *Method:* A total of 64 healthy adults aged 18–59 years from Hospital USM were recruited. Saliva was collected from each participant using all three methods. Cortisol level was measured using the Roche automated immunoassay platform. *Results:* The cotton roll method showed excellent linear correlation with the Salivette® method ($R^2 = 0.90$), while passive drooling also showed a strong correlation ($R^2 = 0.89$). The highest inter-item correlation was found between Salivette® and cotton roll methods ($r = 0.95$). The intraclass correlation coefficient (ICC) across all three methods was 0.91, indicating excellent agreement and reliability. *Conclusion:* These findings suggest that both the passive drooling and cotton roll methods are reliable alternatives to the Salivette® for salivary cortisol testing. These findings support the adoption of these simpler, more accessible techniques, particularly in resource-limited settings where commercial devices may be unavailable or unaffordable.

CP33 Optimising Troponin Utilisation: A Retrospective Audit of Request Appropriateness, Documentation Quality, and Diagnostic Yield in Suspected Acute Coronary Syndromes

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Introduction: Cardiac troponin testing is essential for diagnosing of acute coronary syndromes (ACS). However, inappropriate test requests and incomplete clinical documentation can lead to misinterpretation, diagnostic delays, and resource inefficiencies. This audit assessed (1) the adequacy of clinical history provided on troponin request forms, (2) the appropriateness of test requests based on established clinical criteria, and (3) the association between request appropriateness and test positivity. *Methods:* A retrospective audit was conducted at Hospital Sultan Ismail Petra over a three-month period in 2024 involving 133 adult troponin I requests. Appropriateness was evaluated against local clinical guidelines. Request forms were reviewed for relevant clinical history; in cases of incomplete documentation, electronic medical records were consulted to determine true appropriateness. Statistical analysis was performed using the Fisher Exact test (SPSS). *Results:* Based solely on request form data, 84% (n=112) of troponin requests were appropriate. Review of clinical records increased the true appropriateness rate of 96% (n=127). Relevant clinical history was documented in 84% (n=112) of forms. Among appropriate requests, 67 (53%) yielded positive troponin, while no positive results were observed in inappropriate requests. A significant association was observed between request appropriateness and test positivity ($p < 0.05$). *Conclusion:* Most troponin requests were clinically justified, incomplete documentation on request forms remains a challenge. Improved clinician training and standardized request protocols may enhance documentation practices, support accurate test interpretation, and ultimately improve patient outcomes.

CP34 Unreviewed Special Biochemistry Tests Ordered in the Emergency Department of Sultan Haji Ahmad Shah Hospital: A Clinical Audit

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Introduction: Appropriate utilisation of laboratory investigations is essential for optimal patient care and efficient resource management. Unreviewed laboratory tests represent potential waste and may indicate gaps in clinical processes. *Objective:* This audit aimed to evaluate the utilisation patterns and financial implications of unreviewed special biochemistry tests ordered from the Emergency Department (ED) of Sultan Haji Ahmad Shah Hospital. *Method:* A retrospective review was conducted over a six-month period, (July to December 2024), encompassing 2,054 special biochemistry tests requested for ED patients. Test ordering and result review status were retrieved from the laboratory information system and analysed descriptively. Findings were compared against the adopted benchmark of 0% unreviewed tests. *Results:* Of the total tests performed, 19% remained unreviewed at the time of audit. The most frequently unreviewed tests were C-reactive protein (134 tests), Ferritin (61 tests), and iron profile (54 tests). *Discussion:* The estimated cost per reportable ranged from RM 0.72 to RM 62.13 per test. The total financial loss associated with unreviewed tests during the study period was RM 4,484.81. Contributing factors included early patient discharge prior to result availability and the absence of an post-discharge result tracking system. *Conclusion*: The findings highlight the need for strengthened test ordering governance, timely result review, and implementation of systematic tracking protocols. Enhancing clinician awareness and ongoing education are essential to promote optimise test utilisation, minimise wastage, and support evidence-based patient management.

CP35 Appropriateness of High Sensitivity Troponin I testing at Hospital Banting: A Clinical Audit

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Introduction: Troponin I serves as a highly sensitive and specific cardiac marker crucial for diagnosing myocardial infarction, particularly in emergency settings for ruling out Acute Coronary Syndrome (ACS). At Hospital Banting, High Sensitivity Troponin I (Hs-Troponin I) is routinely used as a cardiac biomarker. *Objective***:** This audit aimed to evaluate the appropriateness of Hs-Troponin I test request, in orders to better understand the high laboratory workload associated with this assay. *Methods***:** A retrospective analysis was conducted on patient records for all Hs-Troponin I tests received between June 1st and 15th, 2023. Patient data, including medical notes, were retrieved from Laboratory Information System and Medical Record Unit. *Results***:** A total of 188 patients with cardiac symptoms were included. Of these, with 125 (67%) were initially suspected of having ACS. Among those with an initial non-ACS diagnosis, 38 patients exhibited symptoms or ECG changes suggestive of ACS that warranted investigation. Overall, 73 (40%) of Hs-Troponin I requests resulted in a final diagnosis related to ACS. *Conclusion*: These findings show that a significant proportion (67%) of Hs-Troponin I testing requests were appropriate, aligning with previous literature reporting appropriateness rates ranging from 51.5% to 76.6%. The rate of eventual ACS confirmation was appreciable. While cardiac troponin is a critical diagnostic tool in the absence of typical symptoms or clear ECG findings, its elevation can occur in non-ACS conditions. Inappropriate use in the absence of clinical suspicion for ACS may contribute to unnecessary investigations, overdiagnosis, superfluous treatment, and increased hospital costs.

CP36 Milky Serum due to Hypertriglyceridemia

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Introduction: Severe hypertriglyceridaemia (HTG) can cause significant analytical interference in laboratory testing, resulting in delayed or missed diagnoses. *Case presentation:* A 50-year-old man with no known medical history presented with acute chest pain. He was a smoker with a strong family history of cardiovascular disease (CVD). He was haemodynamically stable and had no other symptoms. Full blood count showed elevated haemoglobin (21 g/dL) and haematocrit (50%), raising concern for polycythaemia. However, all biochemical tests were uninterpretable due to grossly lipaemic serum. He was treated as unstable angina and showed clinical improvement, but no fasting samples were obtained, nor was further investigations into the cause of HTG pursued. Weeks later, he re-presented with similar symptoms. Once again, his blood samples were grossly lipaemic. Venesection revealed strikingly milky serum. Fasting samples were sent to another centre, where high-speed centrifugation (13,000 rpm, 15 minutes) partially cleared the lipaemia, enabling biochemical analysis. His triglyceride level was markedly elevated at 41.4 mmol/L with a total cholesterol of 9.9 mmol/L. Fasting blood glucose was 8.0 mmol/L, while liver and renal function tests were normal. *Discussion:* In addition its association with CVD, extreme HTG is associated with acute pancreatitis, which the patient fortunately did not develop. His strong family history should have prompted earlier metabolic evaluation. This case highlights the diagnostic challenges posed by severe lipaemia and the limitations of routine laboratory methods. High-speed centrifugation was essential for obtaining valid tests results. *Conclusion:* Prompt recognition of HTG, appropriate sample processing, and clinical vigilance are essential for achieving accurate diagnosis and timely management.

CP37 Streamlining POCT Through Digital Integration and Pathology Oversight

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Background: Point-of-care testing (POCT) continues to evolve in response to increasing clinical demands and digital health

technologies. *Objective:* This study describes a service transformation initiative led by the Chemical Pathology unit, aimed at enhancing operational efficiency, real-time data monitoring, and supply chain governance through digital health tools. *Method:* A retrospective evaluation was conducted from February to May 2025 following the transfer of POCT oversight from the Pharmacy to the Pathology Department across multiple clinical settings. The intervention involved transitioning from a manual, paper-based indenting system to a QR code–enabled platform linked to a Google Form. A dedicated WhatsApp group was established to support user engagement and provide real-time communication. Key performance indicators included indenting frequency, preparation time, workload distribution, and query response time. *Results:* Following implementation, the average number of monthly indenting events decreased from 12 to 4 times, indicating a 66.7% reduction. Mean preparation time per indent dropped from 30 minutes to under 5 minutes, reflecting an 83.3% improvement in efficiency. Structured digital tracking eliminated missed or delayed indentations. Workload analysis revealed consistent utilisation across wards, with glucose being the most frequently requested test and peak demand observed during weekends. More than 50% of user queries were resolved within 30 minutes, with users reporting high satisfaction with the support responsiveness. *Conclusion:* This laboratory-led, digitally integrated POCT model enhanced diagnostic efficiency, optimised supply chain management, and improved user experience, highlighting the expanding leadership role of chemical pathology in decentralizing testing beyond the central laboratory.

CP38 Unveiling Hirata Disease In Clinical Practice: A Retrospective Cohort Study of Insulin Autoimmune Syndrome

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Background: Insulin Autoimmune Syndrome (IAS), or Hirata disease, is a rare cause of spontaneous hypoglycaemia characterised by elevated insulin levels, preserved C-peptide, and positive anti-insulin antibodies without recent exogenous insulin use. Although often drug-induced or associated with autoimmune conditions, IAS poses diagnostic challenges due to its overlap with factitious hypoglycaemia. This study aims to describe the clinical and biochemical characteristics of IAS patients. *Methods:* A retrospective review was conducted on all insulin autoantibody (IAA) test requests received between January 2022 and March 2025 at Institute for Medical Research. Clinical and biochemical data were extracted. Inclusion criteria were IAA levels >20 IU/mL(positive), symptomatic post prandial hypoglycaemia, and absence of exogenous insulin administration. *Results:* Among 883 IAA requests, 110 (12.5%) were IAA-positive associated with autoimmune diabetes. Eight patients presented with postprandial hypoglycaemia and met the full diagnostic criteria for IAS. The median age was 62 years (range 44–74), with 60% being male. Median blood glucose was 2.3 mmol/L (IQR 2.0–2.7), Insulin 6944 pmol/L (IQR 1361–6944), and C-peptide 2950 pmol/L (IQR 2804–3496). Most patients had a maximum IAA of 175 IU/mL contribute to immune-complex-mediated. Among the associated factors are alpha-lipoic acid supplementation, probiotics and autoimmune thyroid disease. Comorbidities included hypertension and dyslipidaemia. Most patients received diet modification or pharmacotherapy and demonstrated resolution of hypoglycaemia at follow-up. *Conclusion:* IAS remains an under recognised cause of hypoglycaemia in insulin-naive individuals. Identification of triggers such as alpha-lipoic acid and recognition of autoimmune background are essential for prompt recognition and avoidance of unnecessary imaging and invasive procedures.

M01 Unique Case Report on Leclercia adecarboxylata Bacteraemia in a Gastrointestinal Cancer Patient Post Oesophagogastroduodenoscopy

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Introduction: Leclercia adecarboxylata is a Gram-negative, motile bacillus within the Enterobacteriaceae family. Initially described by Leclerc in 1962 as *Escherichia adecarboxylata*, it was reclassified in 1986 based on nucleic acid and protein electrophoretic analyses. This organism is commonly found in the environment and has been isolated from the human gastrointestinal tract. *Case Report:* We report a case involving a patient with antral adenocarcinoma presenting with gastric outlet obstruction. An oesophagogastroduodenoscopy (OGDS) was performed, after which blood cultures from a central venous line grew *L. adecarboxylata* and *Acinetobacter soli*; peripheral cultures yielded only *L.adecarboxylata*. Antibiotic susceptibility testing revealed an extended-spectrum beta-lactamase (ESBL) phenotype, a resistance pattern previously documented in *L.adecarboxylata*. The patient was successfully treated with intravenous meropenem. *Discussion: L.adecarboxylata* is considered an opportunistic pathogen, with infections typically occurring in immunocompromised individuals. In this case, bacteraemia likely resulted from mucosal disruption due to malignancy. The potential for bacterial translocation following invasive procedures such as OGDS, especially in patients with compromised mucosal integrity, should be considered. While rare, gastrointestinal sources have been implicated in *L.adecarboxylata* infections. *Conclusion:* This case underscores the importance of recognising *L.adecarboxylata* as a potential pathogen in immunocompromised patients, particularly following invasive gastrointestinal procedures. Awareness of its ability to produce ESBLs is crucial for guiding appropriate antimicrobial therapy.

M02 A Rare Fungal-Bacterial Synergy in Burn Wound Infection: A case of *Fusarium Solani* co-infection with Dual Gram-Negative Pathogens

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Introduction: Fusarium solani, a prominent pathogen within the *Fusarium solani* species complex (FSSC), is responsible for

40–60% of human fusariosis. While commonly associated with onychomycosis and keratitis, invasive fusariosis is increasingly observed in immunocompromised individuals. *Case presentation:* A 75-year-old man with diabetes mellitus and hypertension sustained second- and third-degree burns (6% TBSA) on his feet, soles, and right hand. Initial treatment with Moist Exposed Burn Ointment (MEBO) was unsuccessful, resulting in necrotic patches and whitish lesions suggestive of fungal infection, necessitating surgical debridement and split-thickness skin grafting (SSG). Tissue cultures revealed *Enterobacter cloacae* and *Fusarium solani*. He was started on intravenous cefepime and amphotericin B. Due to dry gangrene and persistent fever, a second debridement was performed, and *Stenotrophomonas maltophilia* was isolated, prompting a change to trimethoprim-sulfamethoxazole. Nephrotoxicity from amphotericin B led to a switch to oral voriconazole. He was discharged in stable condition on day 26, completing a one-week course of oral voriconazole. *Discussion: Fusarium* species can cause infections ranging from superficial to disseminated, depending on the immune status and infection site. Burn injuries provide an entry point for these pathogens, complicating diagnosis. Tissue biopsy and culture are essential for accurate diagnosis. Treatment involves surgical debridement and antifungal therapy, with amphotericin B or voriconazole as effective options. Early recognition, prompt debridement, and tailored antimicrobial therapy are crucial for improving outcomes. *Conclusion:* This case underscores the need for high suspicion of fungal infections in burn patients with delayed wound healing or necrosis, even in the absence of severe immunosuppression.

M03 Unveiling the Mold Behind the Mask: A Rare case of *Histoplasma capsulatum* Peritonitis

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Introduction: Histoplasma capsulatum, is a dimorphic fungus, capable of causing severe systemic mycosis, particularly in the immunocompromised patient with reduced cellular immunity. It causes symptomatic infection in only 1% of those exposed to this fungal spore. *Case presentation:* A 48-year-old woman with systemic lupus erythaematosus (SLE) and end-stage renal disease (ESRD) on continuous ambulatory peritoneal dialysis (CAPD) presented with a three-week history of diarrhoea and a two-day history of cloudy dialysis effluent. The patient had a history of three prior admissions for peritonitis however previous cultures failed to isolate any organism. On examination, she appeared lethargic but was hemodynamically stable. Peritoneal fluid was turbid with an elevated white cell count of 380 cells/mm³, showing lymphocytic predominance. Fungal cultures were performed on Sabouraud dextrose agar (SDA), yielding a white, cottony mold after 5 days of incubation at 30°C. Microscopic examination of the mold using lactophenol cotton blue (LPCB) staining revealed large, thick-walled, tuberculate macroconidia, but microconidia were not visualized, thus leading to a diagnostic dilemma in differentiating *Histoplasma capsulatum* from *Sepedonium* species. Due to the diagnostic uncertainty, the isolate was referred to the Institute for Medical Research (IMR), where identification via molecular method confirmed the isolate as *Histoplasma capsulatum.* The patient was successfully treated with itraconazole for three months. *Discussion:* This case report highlights the importance of considering fungal etiologies in culture-negative peritonitis, particularly in immunocompromised patients and those under immunosuppressive therapy. *Conclusion:* A high index of suspicion, appropriate culture techniques, and interdisciplinary collaboration are essential for timely diagnosis and effective antifungal treatment.

M04 Rapid Identification of Mycobacterium abscessus in Catheter-Related Bloodstream Infection: Advancements in Diagnostics and the Need for Improved Susceptibility Testing

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Catheter-related bloodstream infections (CRBSIs) caused by *Mycobacterium abscessus*, a multidrug-resistant non-tuberculous mycobacterium, present significant clinical challenges. Although matrix-assisted laser desorption/ionization time-of-flight mass spectrometry (MALDI-TOF MS) allows rapid identification, antimicrobial susceptibility testing (AST) remains slow and complex. A 43-year-old male with end-stage renal failure on haemodialysis via an internal jugular catheter (IJC) developed post-dialysis fever and chills. Blood cultures from both central and peripheral sites turned positive after four days, showing dry, off-white colonies on blood agar. MALDI-TOF MS rapidly identified the isolate as *M. abscessus*, confirmed later by molecular methods at a reference laboratory. Empirical intravenous ceftazidime and cefazolin were initiated but escalated to intravenous amikacin, imipenem, and oral azithromycin after identification. The IJC was removed. After 12 days of inpatient care, the patient was discharged on oral azithromycin and linezolid, with intravenous amikacin continued during dialysis to complete a four-week course. Follow-up blood cultures were negative. AST results remained pending due to the complexity and time-consuming nature of susceptibility testing. This case highlights the diagnostic utility of MALDI-TOF MS in enabling early identification of *M. abscessus* and guiding prompt intervention. However, the prolonged wait for susceptibility results limits precision in antimicrobial selection. Incorporating molecular resistance assays and artificial intelligence–based prediction models into laboratory workflows could enhance speed, reduce dependency on external labs, and support personalized treatment strategies. To optimise patient management, integrating rapid resistance testing with diagnostic advances is essential.

M05 *Phialemoniopsis curvata* Fungemia in a Full-term Neonate: A Successful Outcome

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Introduction: Phialemoniopsis is a new genus of Sordariomycetes along with other species, *Phialemonium* and *Sarcopodium* species. This organism is commonly distributed in soil, water, and sewage. Here we present a case of obscure fungus isolated from a blood specimen in a major specialist hospital in Malaysia. *Case presentation:* A full-term baby with complicated spontaneous vaginal delivery presented with severe meconium aspiration syndrome, persistent pulmonary hypertension, and bilateral pneumothorax.

Multiple courses of broad-spectrum antibiotics were given, including cefepime and vancomycin. The patient developed fungaemia, evident from 2 different sets of blood culture specimens despite being on antibiotic therapy for two weeks. Direct gram stain of the blood culture broth revealed fungal elements stain and whitish to creamy, moist, suede-like colony was isolated using conventional culture method. The fungus was identified using MALDI-TOF MS (Biotyper, Bruker-Daltonics, Germany) as *Phialemoniopsis curvata* with a score of 2.15 using the research-use-only mode. Isolates were sent to the reference laboratory and the isolate was successfully identified as *Phialemoniopsis curvata* using inter transcribed spacer (ITS) sequencing. *Discussion:* Phialemoniopsis was first identified as a new species as it was found to be morphologically different from Phialemonium spp. by Perdomo et al. (2013). The key differentiating features of Phialemoniopsis are the phialides and adelophialides with collaretes, while Phialemonium lacks the collarettes and conidiomata. Phialemoniopsis causes a wide spectrum of phaeohyphomycosis commonly associated with skin or trauma to soft tissue. Fortunately, the baby responded well to treatment with amphotericin B and was thriving at the time of discharge.

M06 Innovative Approach of Point of Care Needs, Sample to Diagnosis of HIV Infection

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Malaysia has developed the National Strategic Plan Ending AIDS epidemic by 2030 with the aim of 90% reduction of new HIV cases from 2010. 4-95% targets to be achieved include 95% of key populations tested for HIV and know their results, 95% of people with diagnosed HIV+ receive ART, 95% of people on ART achieve viral suppression and 90% of key populations are reached by combination prevention services. Malaysia also has also released a guideline on the HIV self-test in August 2023. The effort may further contribute to early diagnosis of HIV among the key populations and leads to the achievement of the Ending AIDS plan in 5 years. The objective of the study was to evaluate 9 rapid HIV test kits to be used as self-testing at the HIV clinics at one of the major hospitals in Klang Valley. The study was conducted from 2023 to 2024. 3 of the 9 (33.4%) kits were evaluated using the oral fluid or swab while the remaining were tested using the blood. The results were compared to the ELISA HIV antibodies results based on the samples that we collected from the patients. The sensitivity and specificity of the kits ranged between 72% to 100% and 98% to 100%, respectively. With the good rates of sensitivity and specificity of the test kits, the kits can be used by the person at high risk of getting HIV infection to check their status at their own convenient and link themselves to care for further management.

M07 Subcutaneous Alternariosis in an Immunocompetent Child: Diagnostic and Therapeutic Consideration

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Subcutaneous fungal infections caused by *Alternaria* spp. are uncommon, particularly in immunocompetent paediatric patients. Treatment of these dematiaceous fungi typically requires both antifungal therapy and surgical intervention. The case was referred from Klinik Kesihatan with a 6-year-old child who was previously well without any medical or surgical conditions. He presented with a skin lesion of two weeks' duration that was not responding to a total of two courses of oral antibiotics. When he was reviewed at the skin clinic, a skin biopsy was ordered and sent for histopathological examination (HPE), fungal culture and sensitivity (C&S), as well as tuberculosis (TB) C&S. HPE revealed suppurative granulomatous inflammation, and fungal culture grew *Alternaria* spp. which was identified through colony and microscopic morphology. The patient was managed exclusively with oral itraconazole 100 mg once daily for 3 months, without surgical debridement. The lesion resolved with no recurrence on follow-up. We report a case of a previously healthy, non-immunocompromised child who presented with a chronic subcutaneous nodule. Infection was possibly introduced through a cat scratch. This case illustrates that itraconazole monotherapy can be effective even in the absence of surgical intervention, especially in localized infections in immunocompetent hosts. This case highlights the importance of considering deep fungal infections such as alternariosis in chronic skin lesions in children. Early diagnosis through biopsy and effective antifungal treatment alone may suffice, avoiding invasive procedures. Itraconazole remains a viable first-line option in paediatric subcutaneous *Alternaria* infections.

M08 The Environmental Microbial Diversity and Its Correlation with the Healthcare Associated Infections in Intensive Care Unit: A Metagenomics Approach

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The hospital environment may act as a reservoir for pathogens responsible for healthcare-associated infections (HCAIs) and can harbour antimicrobial resistance genes transmissible via human contact. This study aimed to explore the microbial diversity of the intensive care unit (ICU) environment and assess similarities with pathogens commonly associated with HCAIs. HCAI data were extracted from WHONET 5.6, while environmental microbiome profiling was performed using 16S rRNA amplicon sequencing of DNA extracted from swabs of various inanimate surfaces (bed area, cardiac table, ventilator machine and tubing) in the ICU. Findings revealed that ventilator-associated pneumonia (VAP) was the most common HCAI (52.9%), followed by bloodstream infection (BSI) (26.5%) and hospital-acquired pneumonia (HAP) (8.8%). Over half of the HCAIs were caused by Gram-negative bacteria, with *Klebsiella, Pseudomonas*, and *Acinetobacter* species as the predominant genera. Environmental samples also showed a predominance of Gram-negative bacteria, particularly *Acinetobacter spp*., followed by *Klebsiella, Enterobacter,*

Escherichia-Shigella, and *Citrobacter*. Gram-positive genera identified included *Staphylococcus, Enterococcus*, and *Streptococcus*. Notably, *Klebsiella* and *Acinetobacter spp*., which were major HCAI pathogens, were also among the most frequently detected from environmental samples. Other overlapping genera included *Enterobacter, Enterococcus, Escherichia*, and *Staphylococcus*. Interestingly, although *P. aeruginosa* was a top HCAI pathogen, it was not detected in the environmental samples via 16S rRNA analysis. These findings highlight the potential role of environmental contamination in the development of nosocomial infections, particularly in ICUs. The insights may guide infection control strategies and support further research into environmental-patient microbiome correlations in disease transmission.

M09 Gardnerella Vaginalis as A Causative Agent in a Right Foot Abscess: A Case Report

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Gardnerella vaginalis is a facultative anaerobic, Gram-variable bacterium classically associated with bacterial vaginosis. However, extragenital infections involving this organism are exceedingly rare. This report highlights an unusual case of *G. vaginalis* isolated as the sole pathogen from a right foot abscess in an immunocompromised host, aiming to emphasise its potential role in soft tissue infections outside the genital tract. A 62-year-old woman with diabetes mellitus, hypertension, and chronic kidney disease presented with a one-week history of painful swelling in the right foot. Physical examination revealed erythema and a fluctuant abscess in the right foot. Radiographic imaging excluded osteomyelitis. Surgical deroofing and deblistering were performed, and purulent material were sent for microbiological evaluation. Bacterial identification was carried out using matrix-assisted laser desorption/ ionisation time-of-flight mass spectrometry (MALDI-TOF MS). Culture of the aspirated pus yielded a pure growth of *Gardnerella vaginalis*. No other organisms were isolated. The patient responded well to combined surgical and targeted antimicrobial therapy. This case report adds to the limited literature documenting extragenital infections caused by *Gardnerella vaginalis*. It underscores the importance of considering uncommon pathogens in soft tissue infections, especially in immunocompromised individuals, and highlights the value of modern microbiological diagnostic techniques for accurate pathogen identification. *Gardnerella vaginalis*, though rare, should be considered a potential pathogen in abscess formation, particularly in cases with no clear etiology. Further research is needed to understand its extragenital pathogenic mechanisms.

M10 Salmonella Serotyping Among Hospitalised Patients in Batu Pahat: a 5-year Retrospective Review

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Salmonella infection (salmonellosis), a major global foodborne illness caused by *Salmonella* spp., has shown a notable rise in recent years. Salmonellosis continues to escalate, underscoring the need for a deeper understanding of its epidemiology and pathogenesis. This study aimed to investigate the distribution of Salmonellosis among Hospitalised patients at Hospital Sultanah Nora Ismail (HSNI) based on their demographic data, serotypes, clinical features and antibiotic resistance patterns. A retrospective cross-sectional study was carried out from January 2018 to December 2023. All specimens were cultured on blood agar and MacConkey agar, followed by standard biochemical testing for identification. Isolates confirmed as *Salmonella* spp. were subsequently referred to the National Public Health Laboratory (NPHL) for serotyping. Among 57 Salmonella isolates, 71% were from stool and the rest were from blood, urine, pus, and slough. Sixteen serotypes were identified, with *Salmonella Enterica serovar Enteritidis* (32.8%) and *Salmonella Weltevreden* (27.6%) being most frequent. Children under 15 years old accounted for 52.6% (30/57) of the cases. Gastrointestinal symptoms were the most common presentation (81%) across all age groups followed by lymphatic (lymphadenitis) , musculoskeletal system and other sites involvement. The highest rate of antibiotic resistance observed across all serotypes was to ampicillin (39.6%), followed by resistance to cotrimoxazole, ciprofloxacin and ceftriaxone. Most patients (91.4%) were discharged without known complications. Thus, continuous surveillance of salmonellosis among Hospitalised patients is essential to prevent the emergence and spread of multidrug-resistant Salmonella infections globally.

M11 A Case of Catheter-Related Bloodstream Infection Caused by *Leifsonia aquatica*

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Catheter-related bloodstream infections (CRBSIs) are a significant concern in healthcare settings, often leading to increased patient morbidity, prolonged hospital stays, and escalated healthcare costs. *Leifsonia aquatica*, a gram-positive, aerobic bacterium, has recently emerged as an uncommon but noteworthy causative agent of CRBSIs. We presented a CRBSI case caused by *L. aquatica* in a 20-year-old female patient with multiple comorbidities admitted to a tertiary care hospital. The patient had an internal jugular catheter (IJC) for haemodialysis. Clinical manifestations of the patient are nonspecific. Blood cultures obtained from the patient and the catheter revealed the presence of *L. aquatica*. Antimicrobial susceptibility testing showed susceptibility to vancomycin; however, the patient was started on intravenous piperacillin-tazobactam 2.25g every 6 hours. The treatment was unsuccessful, as it was not optimised, and the catheter was not removed due to the haemodialysis requirement. The patient did not survive and succumbed to her illness before the antibiotic susceptibility results were available. There is limited information on *L. aquatica* as a pathogen in CRBSIs, highlighting the importance of enhanced surveillance and reporting for a better understanding of its clinical significance, risk factors, and optimal treatment strategies. Clinicians need to consider *L. aquatica* as a potential causative agent in CRBSIs, especially in patients with persistent bacteraemia despite appropriate empirical therapy.

M12 Comparison of the Automated Vitek 2 Advanced Expert System with the Modified Carbapenemase Inactivation Method (mCIM) for Detecting Carbapenemase in Clinical Isolates

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Carbapenemase detection is critical for managing antimicrobial resistance, particularly in Enterobacterales. The modified carbapenem inactivation method (mCIM) is a reliable phenotypic assay, but it is time-intensive. The Vitek 2 Advanced Expert System (AES) offers a rapid, automated prediction of carbapenemase production based on minimum inhibitory concentration (MIC) profiles. This study compares the performance of Vitek 2 AES with mCIM for detecting carbapenemase production in clinical isolates. A total of 50 carbapenem-resistant Enterobacterales isolates—comprising *Klebsiella pneumoniae*, *Escherichia coli*, *Enterobacter cloacae complex*, *Klebsiella aerogenes*, and *Serratia marcescens*—were tested using the Vitek 2 N-374 card. Vitek 2 AES predicted carbapenemase production in 46 isolates (92%), while mCIM confirmed carbapenemase activity in 35 isolates (70%). PCR testing conducted at the Institute of Medical Research (IMR) identified 24 isolates (49%) harbouring the NDM-1 gene; the remaining 26 (51%) had no detectable carbapenemase gene. Compared to PCR results, Vitek 2 AES demonstrated a sensitivity of 100% but a specificity of only 16%. While Vitek 2 AES provides rapid and highly sensitive detection, its low specificity may lead to overestimation of carbapenemase producers, resulting in unnecessary infection control measures and treatment escalation. In conclusion, Vitek 2 AES is a valuable screening tool for carbapenemase detection, but confirmatory testing using molecular methods remains essential for accurate diagnosis and antimicrobial stewardship.

M13 Cerebellar Abscess Caused by *Nocardia otitidiscaviarum* in a Post-Transplant Multiple Myeloma Patient: A Diagnostic and Therapeutic Challenge

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Introduction: Nocardia species are rare, opportunistic bacterial pathogens that primarily affect immunocompromised individuals. Central nervous system (CNS) involvement is uncommon but can be life-threatening. We report a case of a cerebellar abscess caused by *Nocardia otitidiscaviarum* in a patient with multiple myeloma post-autologous stem cell transplant. *Case presentation:* A 53-year-old Indian man with multiple myeloma post-autologous stem cell transplant presented with altered consciousness and gait instability. Brain magnetic resonance imaging revealed a left cerebellar abscess with obstructive hydrocephalus. Gram stain from an intraoperative brain lesion sample showed beaded and branching gram-positive bacilli. Matrix-assisted laser desorption/ionization-time of flight mass spectrometry identified the organism as *Nocardia otitidiscaviarum*. Antibiotic susceptibility testing revealed sensitivity to imipenem, linezolid, and trimethoprim-sulfamethoxazole (TMP-SMX). Initial therapy with TMP-SMX was discontinued due to cytopenia. The patient received intravenous imipenem for 28 days, followed by oral linezolid for 12 months and twice-weekly TMP-SMX for the first three months. Follow-up imaging showed a reduction in abscess size. *Discussion:* Due to the variable resistance patterns, species-level identification of *Nocardia* is essential. Although *N. otitidiscaviarum* is generally considered resistant to imipenem, our isolate was sensitive, reflecting methodological differences in susceptibility testing methods as per Clinical and Laboratory Standards Institute (CLSI) recommendations. Linezolid was an alternative treatment due to its excellent CNS penetration and oral bioavailability. *Conclusion:* This case highlights the importance of accurate species identification and individualized treatment in managing *Nocardia* brain abscesses. Linezolid is a viable alternative when first-line agents are contraindicated. Further studies are needed to establish clear treatment guidelines for cerebral nocardiosis.

M15 Beauty and the Threat: A Case of Chromobacterium violaceum Urinary Tract Infection

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Introduction: Chromobacterium violaceum is a Gram-negative organism commonly found in soil and water in tropical and subtropical regions. Though it is generally environmental and not frequently pathogenic, *C. violaceum* can cause opportunistic infections in humans. *Case presentation:* A 55-year-old woman with underlying diabetes mellitus presented with a 3-day history of fever, dysuria, right flank pain, vomiting, and loose stools. Physical examination revealed a positive right renal punch. Laboratory investigations showed leukocytosis, elevated C-reactive protein, and a deranged renal profile. An ultrasound of the kidneys, ureters, and bladder (KUB) reported isoechoic kidneys suggestive of early bilateral renal parenchymal disease. She was diagnosed with right-sided pyelonephritis and started empirically on intravenous cefuroxime. Urine culture subsequently grew glistening, deep violet to purple colonies on agar, which were identified as *C. violaceum* via biochemical testing and MALDI-TOF. The patient was also treated for *Enterobacter cloacae* bacteraemia and was discharged in good condition upon completion of appropriate antibiotic therapy. *Discussion: Chromobacterium violaceum* is a striking microorganism, often admired for its vivid purple colonies produced by the pigment violacein, giving it a beautiful and almost harmless appearance in the lab. Though rarely pathogenic, *C. violaceum* can lead to life-threatening infections such as septicemia, abscesses, and multiple organ failure, necessitating prompt and appropriate treatment. *Conclusion:* Despite its beauty, *C. violaceum* serves as a potent reminder that appearance can be deceiving—even in microbiology.

M16A A Predator in the Incubator: Devastating Serratia marcescens Sepsis with Cerebrospinal Involvement in a Preterm Neonate

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Introduction: Serratia marcescens has emerged as a formidable opportunistic pathogen in neonatal intensive care units (NICUs),

particularly among preterm infants. Its capacity for rapid systemic invasion, including central nervous system involvement, makes it a critical cause of late-onset sepsis and meningitis with potentially devastating outcomes. *Case Presentation:* We report a case of a preterm neonate born at 25–26 weeks gestation with a birth weight of 855 grams, who developed signs of sepsis on day 8 of life and subsequently exhibited persistent clinical deterioration. Initial blood cultures were negative. However, on day 18, amidst worsening abdominal distension and failure to extubate, repeat blood and CSF cultures were performed. Gram-negative bacilli were isolated and identified as *Serratia marcescens* by MALDI-TOF mass spectrometry. Antimicrobial susceptibility testing guided the escalation to meropenem. The baby responded favourably to targeted therapy, along with supportive respiratory and nutritional management. *Discussion:* This case illustrates the diagnostic and therapeutic challenges of managing *Serratia marcescens* in preterm neonates. The delayed culture positivity highlights the limitations of early diagnostic workup, underscoring the need for repeated sampling in clinically evolving cases. The use of advanced microbiological tools such as MALDI-TOF enabled timely organism identification and antimicrobial precision. The successful outcome was achieved through rapid therapeutic adaptation based on susceptibility patterns and multidisciplinary neonatal care. *Conclusion: Serratia marcescens* is a stealth pathogen in NICUs. Timely diagnosis, advanced microbiological methods, and susceptibility-driven therapy are essential in preventing adverse outcomes in vulnerable neonates.

M17 Prevalence of Methicillin-Resistant *Staphylococcus aureus* (MRSA) Isolated from Various Clinical Specimens in Hospital Al-Sultan Abdullah (HASA), UiTM Puncak Alam, Selangor

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Staphylococcus aureus is part of the normal flora of the skin and mucous membranes (most often the nasal area). However, it can lead to more serious and potentially life-threatening infections, such as bacteraemia and infective endocarditis. Thus, this study aimed to analyse the prevalence of Methicillin-Resistant Staphylococcus aureus (MRSA) in our setting. A retrospective study was conducted from January 2024 to December 2024 from various types of clinical specimen received in Medical Microbiology and Parasitology (MMP) unit, Clinical Diagnostic Laboratories (CDL), Hospital Al-Sultan Abdullah (HASA), UiTM Puncak Alam. All the specimens received were processed and identification of *S. aureus* was done by observing colonial morphology, performing catalase test, performing tube coagulase test and identifying using Vitek 2 system. MRSA isolates were identified by the Cefoxitin disc (30µg) disk diffusion method according to CLSI guidelines. Out of 20,937 specimens received, 237 *S. aureus* isolates were obtained. Among *S. aureus* isolates, 21% were identified as Methicillin-Resistant Staphylococcus aureus (MRSA) whereas 79% were found as Methicillin-Sensitive Staphylococcus aureus (MSSA). The implementation of preventive measures should be continuous and strictly applied in order to control and prevent further increases in the MRSA rate in a tertiary hospital.

M18 *Mycoplasma pneumoniae* diagnostic test: qualitative or semiquantitative method?

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Mycoplasma pneumoniae infection is commonly caused by a fastidious pathogen affecting the respiratory tract. Although the semiquantitative method for detecting *Mycoplasma pneumoniae* is routinely used, it faces competition from the qualitative method using an immunochromatographic procedure. This study aims to correlate the results between these different methods and to assess the performance of the kits. A total of 40 serum samples were used and tested using Novatest Mycoplasma Antibody IgM and SERODIA Myco II Fujirebio Japan. The Nova brand *Mycoplasma* IgM antibody test uses an immunochromatographic method, and the result is interpreted within 20 minutes. It is a qualitative assay to detect *Mycoplasma* IgM antibody. In contrast, the SERODIA Myco II test uses a particle agglutination method that provides both qualitative and semi-quantitative results. The test was done concurrently between these two kits within the same time frame. Positive Predictive Agreement (PPA), Negative Predictive Agreement (NPA), Percentage of Agreement (POA) are determined. A total of 34 out of 40 samples produced the same qualitative results in which 10 samples were positive, and 24 samples were negative. Six samples were discordant between both kits. The POA of *Mycoplasma* IgM Nova was 85% and was evaluated within the acceptable range. Cohen's Kappa shows good agreement, with a value of 0.71. Both the POA and Cohen's Kappa value indicate that the Novatest *Mycoplasma* Antibody IgM kit is suitable and approved for testing samples from patients infected with *Mycoplasma pneumoniae*.

M19 Weighing Cost Against Accuracy: Rethinking HCV Diagnostic Approaches — Insights from a Tertiary Healthcare Setting

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Diagnosis of hepatitis C virus (HCV) infection currently relies on serology assay, HCV core antigen (HCVcAg), and molecular assays, HCV ribonucleic acid (RNA). These diagnostic tools are essential not only for confirming infection but also for guiding treatment decisions and monitoring virological response. HCV RNA testing demonstrates superior sensitivity (detecting viral loads as low as 15 IU/mL), enables earlier detection following infection, and supports treatment response monitoring and sustained virological response (SVR) assessment. In contrast, HCVcAg testing is more affordable and widely accessible; however, its lower sensitivity (≥3,000 IU/mL) limits its utility for treatment monitoring. This study presents the experience of Hospital Melaka in utilising HCVcAg for the confirmation of HCV infection, with emphasis on cost implications and test accuracy. Data from 2021 to 2024 were extracted from the Laboratory Information System (LIS), comprising both HCVcAg reactive and non-reactive cases. Of the HCV antibody-reactive samples, 70.9% were confirmed positive with HCVcAg, allowing early diagnosis without further testing. However, 29.1% of HCVcAg non-reactive cases required reflex testing with HCV RNA. Among the HCVcAg non-reactive cases,

HCV RNA was detected via reflex testing in 14.6% of cases, and notably, 39.2% of these had viral loads exceeding the HCVcAg detection threshold of 3,000 IU/mL. Furthermore, laboratory expenditure for the reflex testing pathway rose consistently from 3.7% to 5.0% annually, highlighting a rising cost trend compared to direct HCV RNA confirmation. These findings highlight the limitations of HCVcAg as a standalone confirmatory test and support the consideration of HCV RNA as the primary diagnostic tool for improved accuracy and long-term cost-efficiency in managing HCV infection.

M21 Diagnostic Pitfalls in *Talaromyces marneffei* Infection Mimicking Lymphoma in Undiagnosed HIV: A Fatal Case Report
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Talaromyces marneffei is an emerging dimorphic fungus that causes life-threatening infections in immunocompromised individuals, particularly those with undiagnosed human immunodeficiency virus (HIV) infection. It frequently presents with non-specific symptoms such as fever, anaemia, weight loss, and lymphadenopathy, closely mimicking haematological malignancies like lymphoma. A 45-year-old Malay man with underlying anaemia presented with progressive generalised abdominal pain, significant weight loss, and loss of appetite over several weeks. Computed tomography revealed marked intra-abdominal lymphadenopathy, initially raising clinical suspicion for lymphoma. Oesophagogastroduodenoscopy showed duodenitis without ulceration, and initial investigations failed to identify a definitive cause. Blood cultures subsequently isolated *Talaromyces marneffei*, identified by MALDI-TOF but this result was only available posthumously. Retrospective HIV serological testing via Electrochemiluminescence immunoassay (ECLIA) and immunochromatographic assay confirmed HIV infection in this patient. This case highlights the diagnostic challenges posed by talaromycosis, which can be easily misdiagnosed as lymphoma due to overlapping clinical and radiological features, particularly in regions where both conditions are prevalent or among patients with risk factors for immunosuppression. Literature underscores the importance of considering opportunistic infections such as *Talaromyces marneffei* in the differential diagnosis of unexplained lymphadenopathy, and advocates for early HIV screening and prompt microbiological investigations to avoid fatal delays in diagnosis and treatment. Clinicians should maintain a high index of suspicion for opportunistic infections in patients presenting with unexplained lymphadenopathy and constitutional symptoms. Early incorporation of HIV testing into lymphoma workups can facilitate accurate diagnosis and reduce preventable mortality.

M22 A Rare Case of *Streptococcus pneumoniae* Prosthetic Knee Joint Infection in an Immunocompetent Patient
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Prosthetic joint infections (PJIs) complicate 1–2% of total knee replacements (TKRs), predominantly due to *Staphylococci* species. *Streptococcus pneumoniae,* commonly a respiratory tract pathogen is a rare etiology of PJI. We report to our best knowledge the first case of *Streptococcus pneumoniae* PJI caused by serotypes 10A and 32A in an immunocompetent patient in Malaysia. An 81-year-old male with a left TKR 10 years ago, presented with 6-days history of pyrexia and left knee pain, rendering him non-ambulatory. His co-morbidities included hypertension, dyslipidaemia, gouty arthritis and ischemic heart disease. Clinical findings revealed knee effusion, erythema and tenderness, with elevated C-reactive protein. Urgent left knee aspiration showed purulent synovial fluid with gram-positive diplococci bacteria. Cultures confirmed penicillin-susceptible *Streptococcus pneumoniae,* identified by Matrix-Assisted Laser Desorption/Ionization Time-of-Flight (MALDI-TOF). Further history revealed he had resolved respiratory tract infection one week prior to the current symptoms. Management entailed debridement, polyethylene insert exchange, vancomycin-impregnated spacer placement, intravenous penicillin for 12 days and adjunctive rifampicin. Subsequently, patient was discharged with oral amoxicillin for 10 weeks with further follow up under orthopaedic clinic. *Streptococcus pneumoniae* PJI in this case is likely haematogenous and diagnostically challenging without evidence of primary focus at presentation. His treatment aligned with current local and IDSA guidelines, combining surgical intervention with prolonged antimicrobial therapy. The rapid identification of atypical pathogens such as *Streptococcus pneumoniae* by MALDI-TOF in late onset PJI has allowed early initiation of appropriate antimicrobial therapy and prompt surgical management which improved the patient's outcome.

M23 From Soil to Soil: Case Series of Paediatric Mortality in Melioidosis
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Melioidosis, caused by *Burkholderia pseudomallei*, is an endemic and life-threatening infection in Southeast Asia, including Malaysia. Despite its severity, paediatric data remain scarce, particularly in Sandakan, Sabah. This case series highlights four fatal paediatric melioidosis cases to underscore the clinical variability and diagnostic challenges in children. *Case 1***:** A 3-year-old girl presented with bronchopneumonia and progressed to septic shock, ARDS, and multi-organ failure. Despite intensive care, she succumbed within days. *B. pseudomallei* was isolated from tracheal, CSF, and intracardiac cultures. *Case 2:* An 8-day-old neonate presented with fever and poor feeding, progressing rapidly to septic shock and respiratory failure. Despite broad-spectrum antibiotics and inotropic support, the outcome was fatal. Blood and intracardiac cultures grew *B.pseudomallei*. *Case 3:* A 10-month-old girl with obesity presented with fever, respiratory distress, and was diagnosed with severe pneumonia. She developed ARDS and septic shock requiring intubation and multiple antibiotics. Blood and tracheal aspirate cultures confirmed melioidosis. *Case 4:* A 3-year-old boy with recurrent bronchiolitis presented with fever, gastrointestinal symptoms, and respiratory distress. He developed respiratory failure and bradycardia, eventually died within 24 hours of admission. Postmortem CSF and blood cultures yielded *B.pseudomallei*. These cases illustrate the aggressive nature of paediatric melioidosis, often mimicking common infections but progressing rapidly. In endemic areas, melioidosis should be considered in febrile children with sepsis or pneumonia. Early empirical antibiotics (e.g., ceftazidime/meropenem) may be lifesaving. Timely diagnosis is challenging, especially in young children with nonspecific symptoms. Prompt recognition and treatment in endemic regions are key to improving outcomes.

M24 Misidentified but Not Missed: A Case of Talaromycosis Revealing the Limits of MALDI-TOF and the Value of PCR
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Talaromycosis is an opportunistic fungal infection endemic to Southeast Asia, predominantly caused by *Talaromyces marneffei*, while infections with other species are rare and poorly characterised. Accurate species identification is essential for epidemiological insight and clinical management. However, morphological differentiation is challenging, and thermal dimorphism testing is often infeasible due to biosafety restrictions. A 42-year-old man, newly diagnosed with HIV, presented with fever, oral ulcers, dysphagia, chronic diarrhoea, and necrotic papular skin rashes. Fungal cultures from blood and skin tissue yielded suede-like, red-wine-coloured colonies. Microscopy revealed septated hyphae, flask-shaped phialides, and chains of conidia—features consistent with *Talaromyces* species. Matrix-assisted laser desorption ionization time-of-flight mass spectrometry (MALDI-TOF MS) identified the isolate as *T. duclauxii wortmanni* (score 1.75), but polymerase chain reaction (PCR) performed by a reference laboratory confirmed *T. marneffei*. This case highlights the limitations of current diagnostic modalities. MALDI-TOF MS accuracy depends on protein extraction methods and the breadth of its spectral database. PCR, although regarded as the gold standard for fungal speciation due to its sensitivity and specificity, also has limitations, including accessibility and technical constraints. Morphological identification remains useful, but species-level differentiation is restricted. In settings where thermal dimorphism testing is not feasible, clinical awareness and targeted molecular diagnostics are crucial. Integrated approaches enhance accuracy and support timely management. Clinicians and pathologists must recognise the diagnostic challenges posed by rare fungal infections. Combining morphology, clinical context, and advanced molecular tools remains essential in achieving accurate identification and improving patient outcomes.

M25 *Staphylococcus aureus vs. Staphylococcus argenteus:* Twin Trouble or Just Lookalikes?
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This study aims to evaluate the necessity for routine identification of *Staphylococcus aureus* complex species alongside preventive measures for methicillin-resistant *Staphylococcus argenteus* (MRS*Arg*). This retrospective study included all *Staphylococcus argenteus* isolates identified by MALDI-TOF MS (score >2.0) from specimens submitted to Hospital Duchess of Kent between August 2024 and January 2025. Specimen types, clinical presentations, and antimicrobial susceptibility were analysed. A total of 391 isolates from 271 patients were studied: 89 blood, 91 tissue, 104 pus, 73 swab, 19 sputum/tracheal aspirate, 11 genital, 2 urine, and 2 peritoneal fluid. Among these, 27 were identified as *Staphylococcus argenteus*, including 6 MRS*Arg.* The remaining included 285 *Staphylococcus aureus* and 73 methicillin-resistant *Staphylococcus aureus* (MRSA). The predominant clinical presentation in *Staphylococcus argenteus* cases was skin/soft tissue infections (35%), followed by bacteraemia and vaginal discharge (15% each), urinary tract infections and community-/ventilator-associated pneumonia (11% each) with peritonitis, ophthalmic and joint infection each accounting for 1%. All MRS*Arg* isolates were susceptible to vancomycin, with MIC values ≤1.5. *Staphylococcus argenteus* poses diagnostic and epidemiological challenge due to its phenotypic similarity to *Staphylococcus aureus* and limitations of routine diagnostic methods to distinguish them. Study suggests that *Staphylococcus argenteus*-related bacteraemia has higher mortality than *Staphylococcus aureus*. Emerging evidence indicates that MRS*Arg* harbours virulence and resistance genes similar to MRSA, suggesting comparable pathogenic potential. Given current uncertainty regarding clinical outcomes and infection risks, MRS*Arg* should be managed in accordance with MRSA guidelines to prioritise patient safety. Further studies warranted to better define *Staphylococcus argenteus* and optimise diagnostic approaches.

M26 PVL Gene Detection Among Suspected Community-Acquired MRSA: A Five-Year Surveillance Study (2020–2024)
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This study aimed to assess the prevalence of the Panton-Valentine leukocidin (PVL) gene among suspected community-acquired methicillin-resistant *Staphylococcus aureus* (CA-MRSA) isolates and examine annual and specimen type trends over a five-year period. A retrospective analysis was conducted at the Microbiology Unit, Hospital Melaka, from January 2020 to December 2024. CA-MRSA isolates were identified based on resistance to oxacillin, with or without additional resistance to penicillin and/or fusidic acid and were referred to the national reference laboratory for PVL gene detection via polymerase chain reaction (PCR). A total of 550 suspected CA-MRSA isolates were submitted for PVL testing, with 46 testing positive for the PVL gene (8.4%). Annual PVL-positive detection was as follows: 2020: 74 tested, 9 positive (12.2%); 2021: 57 tested, 6 positive (10.5%); 2022: 106 tested, 8 positive (7.5%); 2023: 157 tested, 7 positive (4.5%); 2024: 156 tested, 16 positive (10.3%). The majority of PVL-positive isolates were derived from skin and soft tissue infections, particularly tissue, wound swabs, and pus (73.9%), followed by blood and respiratory specimens. The highest number of PVL-positive cases was recorded in 2024, with a positivity rate of 10.3%. PVL-positive CA-MRSA isolates were consistently detected throughout the five-year period, emphasising their clinical significance. Consistent detection of PVL-positive CA-MRSA over five years underscores the value of accessible molecular diagnostics and routine surveillance to better characterise resistance patterns and virulence factors.

M28 A Rare Case of Nontyphoidal Salmonella (NTS) Bacteraemia Mix Abscess Mimicking Ovarian Tumour
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Ovarian abscesses caused by non-typhoidal *Salmonella* (NTS) are rare clinical entities, whereas ovarian tumours are more frequently observed in older individuals. We report a case of a 61-year-old woman with a history of hypertension and dyslipidaemia who was

referred for evaluation of an ovarian mass. She had a one-month history of intermittent fever, lethargy, and weight loss without abdominal pain. Examination revealed a distended abdomen with a palpable mass corresponding to a 36-week gestation. Ultrasound confirmed the presence of a large ovarian mass, and she was scheduled for outpatient imaging to rule out malignancy. A month later, she presented to the Emergency Department with acute abdominal pain, nausea, and vomiting, raising suspicion of a ruptured ovarian tumour. Emergency laparotomy revealed a ruptured right ovarian cyst measuring 20 cm, with approximately 1.8 litres of greyish ascitic fluid. She underwent total abdominal hysterectomy with bilateral salpingo-oophorectomy. Intraoperative cultures from ascitic fluid and pus revealed growth of *Salmonella apeyeme*. She was treated with intravenous Ceftriaxone 2g OD followed by oral Ciprofloxacin 750mg BD to complete a six-week antibiotic course. Diagnosing intra-abdominal NTS abscesses can be challenging due to non-specific symptoms, often requiring imaging for localisation. Effective management involves both surgical source control and appropriate antimicrobial therapy. Prognosis is favourable with timely diagnosis and treatment.

M29 From Foot to Heart: A Fatal Journey of *Streptococcus anginosus* in a Diabetic Patient: A Case Report

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Introduction: Diabetic foot infections are common, but in high-risk individuals, they can lead to serious, life-threatening complications. The *Streptococcus anginosus* group (SAG), usually a harmless commensal, is well recognised for its association with deep abscess formation and, in rare cases, infective endocarditis. This case highlights a fatal progression from soft tissue infection to cardiac involvement, underscoring the hidden risks of diabetic infections. *Case Presentation:* A 57-year-old Malay woman with poorly controlled diabetes presented with abscesses on her left thigh and foot, accompanied by fever. Cultures from both blood and abscess tissue isolated *Streptococcus anginosus*, which was sensitive to penicillin. Transthoracic echocardiography revealed a large (4 cm) vegetation on the mitral valve. Despite treatment with intravenous penicillin G and intensive care support, she developed multi-organ failure and succumbed on the sixth day of admission. *Discussion:* This case demonstrates how SAG, although often considered a commensal, can act as an aggressive pathogen in immunocompromised patients. Diabetic soft tissue infections can serve as entry points for systemic spread of infection. The large mitral vegetation reflected a fulminant course of the disease. Early microbiological identification and cardiac imaging are critical when managing severe infections in diabetic patients. Prompt intervention may alter the clinical trajectory. *Conclusion:* SAG infections arising from diabetic abscesses can escalate rapidly with devastating consequences. Accurate identification and early recognition of systemic involvement, along with close collaboration between microbiology and clinical teams, are key to improving patient outcomes.

M30 Hidden in Hindsight: A Rare Case of Tubo-ovarian Abscess with *Fusobacterium necrophorum* Bacteraemia

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Fusobacterium necrophorum is a gram-negative anaerobic rod which inhabits the oral cavity, gastrointestinal tract, and female genitourinary tract. It is an agent of Lemierre's syndrome, a pharyngeal infection characterised by sepsis, septic emboli, and neck vessel thrombophlebitis. This case report details a case of septic shock secondary to tubo-ovarian abscess with *Fusobacterium necrophorum* bacteraemia. A 38-year-old woman, Para 0+1, with a history of pelvic inflammatory disease (PID) complicated with complete miscarriage two months prior, presented with general malaise and abdominal pain. In the high-dependency unit, she had one fitting episode, thus requiring intubation and vasopressor support. Her initial white cell count was 85 x 10^9/uL, and C-reactive protein (CRP) was 25. The plain CT brain was unremarkable. An urgent CT abdomen and pelvis showed a left adnexa multiloculated cystic lesion measuring 7.4 cm x 4.5 cm x 6.7 cm (AP x W x CC) with hydrosalpinx, suspicious of abscess. A transvaginal aspiration was performed, yielding 50 mL of frank pus. Pus culture was negative, but blood culture grew *Fusobacterium necrophorum* and was susceptible to amoxicillin/clavulanic acid, ampicillin/sulbactam and metronidazole. The empirical intravenous vancomycin and meropenem were de-escalated to amoxicillin/clavulanic acid and metronidazole. Her condition improved, and she was discharged uneventfully. The fitting episode is likely sepsis-related. She has no history of worsening pharyngeal infection. There was no evidence of neck abscess or neck vessel thrombophlebitis. *F. necrophorum* may present as a life-threatening infection and should be considered when dealing with tubo-ovarian abscesses

M31 Toxigenic *Corynebacterium diphtheriae* in a Vaccinated Patient: A case for Vigilance in Routine Culture

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Corynebacterium diphtheriae is the aetiologic agent of diphtheria, a potentially fatal infection. While *Corynebacterium* species are often dismissed as upper respiratory tract commensals, accurate identification is critical, particularly when clinical presentations are atypical. We report a case of a 12-year-old fully vaccinated girl who presented with non-specific symptoms: three days of fever, dry cough, sore throat, and odynophagia. She was lethargic and dehydrated due to poor oral intake. Physical examination revealed a pseudomembrane on the hard palate, an unusual finding that raised concern. Throat culture showed small, grey-white, non-haemolytic colonies on blood agar. Gram staining demonstrated Gram-positive bacilli, suggestive of *Corynebacterium* species. MALDI-TOF identified *C. diphtheriae*, and Elek testing later confirmed the presence of the diphtheria toxin gene. Despite pending confirmatory results, antitoxin and antibiotics were promptly administered based on clinical suspicion. The patient improved significantly and was discharged after 14 days without complications. This case underscores the diagnostic challenge in distinguishing toxigenic *C. diphtheriae* from non-pathogenic *Corynebacterium* species, particularly when classic signs are absent. This highlights the importance of not disregarding *Corynebacterium* isolates in symptomatic patients, even if vaccinated.

Advanced diagnostic tools such as MALDI-TOF and toxin testing (Elek or polymerase chain reaction) are essential for accurate identification and timely intervention.

M32 Scrub Typhus in Child: A Rare Case of Septic Shock and Pancytopenia in Batu Pahat, Malaysia
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Scrub typhus is a mite-borne infection endemic to Southeast Asia and is often underdiagnosed especially in children due to its non-specific symptoms and limited diagnostic testing. An 8-year-old Malay girl was admitted with five days of fever and poor oral intake. She had no travel or jungle exposure. Upon examination, she was lethargic, dehydrated, febrile and presented with a 2 × 2 cm eschar on her right upper abdomen. Blood investigation showed pancytopenia, and raised inflammatory markers. Common infectious tests like dengue, leptospirosis, melioidosis and chikungunya were negative. Scrub typhus was confirmed positive by detection of a rise in the patient's serum IgG antibody titre from negative to 1:3200 and also positive to rickettsia PCR. Initially treated for suspected dengue, her condition worsened into septic shock and acute respiratory distress syndrome (ARDS) with pleural effusion, hence requiring inotropic and breathing support. Empirical therapy with IV meropenem was initiated in this patient and later deescalated to IV ceftriaxone for a total duration of two weeks. She also received a combination therapy with IV doxycycline to cover for scrub typhus. The patient recovered fully after two weeks of treatment. This case highlighted the need to consider scrub typhus in children with prolonged fever, even in areas where it is not commonly diagnosed as it could lead to several complications if not properly treated. Diagnosis remains challenging due to the limited availability of specific tests, often relying on clinical suspicion and basic serology. Early recognition and appropriate antibiotic therapy are crucial for favourable outcomes.

M33 Fast-Tracking CRE Detection: Performance Evaluation of NG-Test CARBA 5 Against Molecular Gold Standard
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Carbapenem-resistant Enterobacteriaceae (CRE) represent a growing global health concern due to limited treatment options and rapid transmission potential in healthcare settings. Prompt and accurate identification of carbapenemase-producing organisms is essential for effective infection control, surveillance, and targeted antimicrobial therapy. This study evaluates the diagnostic performance of the NG-Test CARBA 5, a lateral flow immunochromatographic assay capable of detecting five major carbapenemases (KPC, OXA-48, VIM, IMP, and NDM), in comparison with the polymerase chain reaction (PCR) reference method. A total of 39 isolates were analysed, including 25 PCR-positive and 14 PCR-negative samples. The NG-Test CARBA 5 correctly identified 24 out of 25 PCR-positive samples, and all PCR-negative samples were accurately reported as negative. The test demonstrated a sensitivity of 96.15%, specificity of 100%, and overall diagnostic accuracy of 97.5%. The Cohen's kappa value of 0.9459 indicates an almost perfect agreement between both methods. In addition to its strong concordance with molecular testing, the assay offers rapid turnaround time and ease of use without requiring complex instrumentation or highly trained personnel. These advantages make it particularly suitable for use in clinical microbiology laboratories, especially in resource-limited settings where molecular methods are not readily available. Furthermore, early detection of carbapenemase-producing CRE is critical for implementing timely infection prevention and control measures, as well as guiding appropriate antimicrobial therapy. The findings support the use of NG-Test CARBA 5 as a reliable and practical screening tool that contributes to improved laboratory workflow, enhances antimicrobial stewardship, and ultimately supports better patient management and hospital outbreak containment.

M34 The 72-Hour Rule: Evidence for Safe Antibiotic De-escalation in Bloodstream Infections
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Empirical broad-spectrum antibiotics are often continued for up to five days while awaiting blood culture results. However, the majority of true bloodstream infections (BSIs) are detected earlier. This study aimed to evaluate the timing and nature of blood culture positivity to support antibiotic de-escalation at 72 hours in the absence of microbiological evidence of infection. A retrospective analysis of blood cultures collected between March 2024 and May 2025 was undertaken. Cultures were categorised by time to positivity (≤72 hours vs >72 hours) and stratified by age group (adult vs paediatric). Organisms detected after 72 hours were grouped as Gram-positive, Gram-negative, fungal (yeast or mould), or *Mycobacterium* species. Of 4,035 adult and 207 paediatric blood cultures analysed, 95% of adult and 99.5% of paediatric positive cultures were detected within 72 hours. Only 5% of adult and 0.5% of paediatric positive cultures occurred after this time. Among late-positive adult cultures, 60.6% were Gram-positive (65% of which were skin flora contaminants), 25.2% Gram-negative, 13.3% fungal, and 0.9% *Mycobacterium* spp. In children, the sole late-positive result was a Gram-positive contaminant. Blood culture positivity beyond 72 hours is uncommon and predominantly due to contaminants or organisms of low pathogenicity. As most significant pathogens are detected within 72 hours, antibiotic de-escalation at this point in clinically stable patients appears safe. These findings support early antimicrobial review and discontinuation, reinforcing the importance of timely microbiological assessment in stewardship efforts.

M35 A Case Report on False Positive Point-Of-Care HIV Test in A Pregnant Woman
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Introduction: Point-of-care (POC) HIV testing is critical for preventing mother-to-child transmission, yet false-positive results in pregnancy pose diagnostic and psychological challenges. *Case presentation:* A 22-year-old primigravida presented with a

reactive POC HIV test during antenatal screening. Serial confirmatory tests (fourth-generation HIV Ag-Ab ELISA, RNA viral load, qualitative PCR) confirmed non-reactive results, with an invalid particle agglutination assay due to technical interference. *Discussion:* Pregnancy-associated immunological changes and assay limitations may contribute to false reactivity. *Conclusion:* This case underscores the necessity of confirmatory algorithms in antenatal care. Molecular testing remains indispensable to exclude HIV definitively in pregnant women with discordant POC results, ensuring accurate diagnosis and mitigating harm.

M36 Detection of Human Herpesvirus 6 in the Cerebrospinal Fluid of an Immunocompetent Child: Pathogen or Bystander?
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Introduction: Human herpesvirus 6 (HHV-6) is a recognised cause of meningitis and meningoencephalitis, though it is rare in immunocompetent children. When detected, it is essential to distinguish true pathogenic infection from incidental viral reactivation. *Case Presentation*: An eight-year-old previously healthy boy presented with a three-day history of fever, severe headache, vomiting, lethargy, and reduced oral intake. There was no history of trauma, and physical examination was unremarkable. A cranial CT scan was normal. Cerebrospinal fluid (CSF) analysis revealed elevated protein (0.938 g/L), normal glucose (2.8 mmol/L), and pleocytosis (290 cells/mm³) comprising 200 lymphocytes/mm³ and 90 neutrophils/mm³. The QIAstat-Dx® Meningitis/Encephalitis Panel detected HHV-6 DNA. Based on clinical presentation and laboratory findings, a diagnosis of HHV-6 meningoencephalitis was made. The patient was treated with intravenous acyclovir and ceftriaxone and was subsequently discharged in good condition after seven days of hospitalisation. *Discussion:* Most children are exposed to HHV-6 early in life, resulting in lifelong seropositivity. Following primary infection, HHV-6 establishes latency in peripheral blood mononuclear cells and neural tissues, with potential reactivation during immunosuppression or physiological stress. Detection of HHV-6 in the CSF without corresponding clinical features has been reported and may represent asymptomatic reactivation. However, in this case, the presence of symptoms and CSF abnormalities supported a diagnosis of active HHV-6 meningoencephalitis rather than incidental reactivation. *Conclusion:* Correlation between HHV-6 detection in CSF and the clinical context is crucial to differentiate between viral reactivation and true HHV-6 meningoencephalitis.

M38 Polysensitisation in Atopic Dermatitis: Signal or Noise? A National Allergy Laboratory Perspective
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*Introduction***:** Polysensitisation in atopic dermatitis (AD) presents a diagnostic and therapeutic challenge. Although sensitisation does not necessarily indicate clinical allergy, allergen-specific immunoglobulin E (IgE) testing remains a commonly used tool to guide clinical management. Thus, interpreting multiple sensitisations, especially in the paediatric population, risks overdiagnosis due to false positives results and non-clinically relevant sensitisations. *Objective:* To describe allergen sensitisation patterns in children with AD and highlight interpretation challenges in clinical decision-making. *Methods:* Laboratory records of 235 children (aged 0–17 years) with AD who underwent allergen-specific IgE testing using ImmunoCAP (Phadia) in 2023 were reviewed. All were tested for dust mites; subsets were tested for food and aeroallergens based on clinical indications with sensitisation considered at ≥0.1 kUA/L. *Results:* Sensitisation to dust mites was found in 190/235 (80.9%), cow's milk sensitisation in 184/197 (93.4%), egg white in 171/190 (90.0%), wheat in 147/176 (83.5%), peanut in 99/131 (75.6%), cat dander in 35/62 (56.5%), and Bermuda grass pollen in 32/56 (57.1%) of AD children. A total of 212 children (90.2%) were polysensitised to two or more allergens, 17 were monosensitised, and 6 showed no sensitisation towards allergens tested. *Conclusion:* The high rate of polysensitisation among AD children raises interpretative dilemmas, particularly in distinguishing true clinical allergy from asymptomatic sensitisation or false positivity. Overreliance on allergy results without clinical correlation may lead to unnecessary dietary restrictions. A precision-based approach by integrating clinical history, utilising immunoassays that minimise false positivity and targeted testing with component resolved approach is essential for appropriate management in AD.

M39 Syndromic Molecular Detection of Paediatric Respiratory Pathogens in a Malaysian Tertiary Care Setting (2023 -2025)
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Respiratory tract infections are a major cause of hospitalisation among children, particularly those under five years of age. In tropical settings such as Malaysia, year-round viral circulation and overlapping symptomatology complicate clinical diagnosis. This study aimed to describe the epidemiological trends of respiratory pathogens among paediatric patients using syndromic multiplex molecular testing. A retrospective review was conducted on 216 respiratory specimens collected from patients under 16 years of age between January 2023 and April 2025 at Hospital Sultan Idris Shah, Serdang. Testing was performed using the QIAstat-Dx Respiratory Panel. Data were analysed for detection rates, age-specific distribution, co-infections patterns, and the prevalence of bacterial pathogens. Of all specimens, 123 (56.9%) tested positive for at least one respiratory pathogen. The most frequently detected viruses were Enterovirus/Rhinovirus (31.7%), Respiratory Syncytial Virus (RSV) (17.1%), and Influenza A (14.6%). Infants under one year accounted for the largest number of samples (n = 109) and 47 positive detections (43.1%), followed by children aged 1–5 years (n = 68, 49 positive; 72.1%) and those aged 6–15 years (n = 39, 27 positive; 69.2%). While the older group showed the highest positivity rate, this may reflect more targeted testing due to smaller sample size. Co-infections were identified in 25.2% of positive cases. Mycoplasma pneumoniae (n = 9) was the most commonly detected bacterial pathogen. RSV detection did not vary significantly by age ($p = 0.43$). Syndromic multiplex testing enhances diagnostic accuracy, facilitates earlier clinical intervention, and strengthens infection control in paediatric respiratory care.

M41 Beyond the Gut: Isolation of *Collinsella aerofaciens* from Intracardiac Blood in a Case of Intrauterine Foetal Death
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Collinsella aerofaciens is a Gram-positive obligate anaerobic bacillus commonly found as part of the normal human gut microbiota. Its clinical significance is limited and extraintestinal isolation, particularly from sterile sites, is exceedingly rare. We report a case of intrauterine foetal death (IUFD) at 31 weeks and 5 days of gestation in a 30-year-old woman with gestational diabetes. The patient presented with absent foetal movements and IUFD was confirmed via ultrasound. Intracardiac blood was collected under aseptic conditions. Anaerobic blood culture flagged positive after 20 hours of incubation, while aerobic culture remained negative. Gram stain showed Gram-positive rod, but no growth was obtained on blood agar despite prolonged incubation. Molecular testing via PCR conducted at the Institute for Medical Research identified the organism as *C.aerofaciens*. Antimicrobial susceptibility testing was not performed due to the lack of established breakpoints. This case underscores the diagnostic limitations in identifying rare or fastidious organisms using conventional culture methods. The presence of *C.aerofaciens* in foetal intracardiac blood, although unusual, may represent translocation from maternal gut microbiota via haematogenous spread, possibly facilitated by immunological or vascular compromise. While its pathogenic role remains uncertain, this finding warrants further exploration into the organism's potential for systemic invasion and the relevance of microbiome disruption in adverse pregnancy outcomes.

M42 An Unusual Culprit: Asaia spp. Identified in Blood Culture of a Terminally Ill Cancer Patient
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Asaia spp. are aerobic Gram-negative rods of the family Acetobacteraceae, typically associated with environmental sources and known for their biofilm-forming capabilities. Clinical infections are rarely reported. We present a case involving a 62-year-old man with metastatic prostate adenocarcinoma who was admitted with fever and cough. He had multiple comorbidities and was undergoing palliative therapy. Blood cultures were taken prior to antibiotics. The conventional aerobic and anaerobic bottles showed no growth; however, the Mycolytic Fungal culture bottle flagged positive after 48 hours. Subculture yielded tiny grey colonies on blood agar after 48 hours, but no growth was seen on MacConkey agar. Identification via MALDI-TOF was unsuccessful. The isolate was subsequently confirmed as *Asaia* spp. by the Institute for Medical Research. No antimicrobial susceptibility testing was performed due to the absence of established guidelines. Although the patient showed brief clinical improvement, he deteriorated and passed away two days later. This case underscores the diagnostic challenges posed by rare environmental organisms in immunocompromised hosts. The inability to detect *Asaia* spp. through standard culture and identification methods may result in under-recognition of this potential opportunistic pathogen. Reference laboratory support remains crucial in confirming rare or fastidious organisms. Increased awareness and reporting are needed to better understand the clinical significance and therapeutic implications of *Asaia* spp. infections.

M43 Rare Isolation of *Leclercia adecarboxylata* from Pus Specimen in Sabah, Malaysia: Clinical and Microbiological Insights
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Leclercia adecarboxylata, formerly known as *Escherichia adecarboxylata*, is a gram-negative bacillus belonging to the Enterobacteriaceae family. It is typically isolated as part of polymicrobial infections in immunocompetent patients and as a pure culture in immunocompromised hosts. Although rare, it is an emerging opportunistic pathogen. A 40-year-old woman with a known history of generalised pustular psoriasis, on a background of plaque psoriasis presented with a one-week history of erythematous, scaly plaques accompanied by pustular eruptions. Clinical examination revealed thin, erythematous, scaly plaques with pustules distributed over the face, trunk, and both upper and lower limbs. A swab from pustule on the left thigh was obtained for culture and sensitivity. At the time of sample collection, the patient was on oral acitretin and had recently completed a 10-day tapering course of intravenous hydrocortisone. The sample showed mixed growth on blood agar with golden creamy colonies and pink mucoid colonies, while MacConkey agar yielded pure growth of lactose fermenters. Identification by VITEK-MS revealed *S.aureus* and *L.adecarboxylata* with 99.9% confidence. Both isolates were sensitive to most antibiotics tested. The polymicrobial nature of the infection makes it difficult to determine whether *L.adecarboxylata* is a primary pathogen or merely a colonizer. However, given its emerging pathogenic role, especially in immunocompromised patients, its isolation should not be disregarded. Isolating *L.adecarboxylata* is challenging because it resembles other Enterobacteriaceae and often appears in mixed cultures. Accurate identification using MALDI-TOF MS, VITEK-MS, or molecular methods is essential. Its clinical relevance depends on immune status, culture purity, and antibiotic sensitivity.

M44 Beyond Immunosuppression: *Talaromyces marneffei* as a Cause of Osteomyelitis in an Immunocompetent Individual
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Talaromyces marneffei (formerly *Penicillium marneffei*) is a thermally dimorphic fungus endemic to Southeast Asia. It primarily affects immunocompromised individuals, particularly those with acquired immunodeficiency syndrome (AIDS), causing deep-seated infections. However, infections in immunocompetent individuals are rare and pose a diagnostic challenge. We report a case of a 26-year-old male with a history of childhood tuberculosis (TB) who had completed treatment and tested negative for human immunodeficiency virus (HIV). He presented with a one-week history of left knee pain and swelling. Imaging and clinical evaluation led to the diagnosis of acute-on-chronic osteomyelitis of the left proximal tibia, with multiloculated intraosseous, subcutaneous,

and suprapatellar collections. Microbiological investigations confirmed *Talaromyces marneffei* through fungal culture and polymerase chain reaction (PCR). Additionally, histopathological examination concluded fungal arthritis and osteomyelitis. This case highlights a rare presentation of *Talaromyces marneffei* osteomyelitis and fungal arthritis in an immunocompetent individual. Given its endemicity in Southeast Asia, clinicians should maintain a high index of suspicion for this fungal pathogen, even in patients without apparent immunosuppression, to ensure timely diagnosis and appropriate management.

M45 Early Diagnostic Challenges in Paediatric Systemic Lupus Erythematosus: A Case Highlighting the Strength of Immunopathology

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This case report aims to highlight the diagnostic challenges and the pivotal role of immunopathology in recognising non-classical paediatric systemic lupus erythematosus (SLE). An eight-year-old girl was admitted multiple times for severe thrombocytopenia, petechiae, and mucosal bleeding. Initial management focused on post-infectious thrombocytopenia in the context of concurrent influenza B and CRE *Klebsiella pneumoniae* urinary tract infection. Despite treatment with intravenous immunoglobulin and repeated platelet transfusions, she showed poor clinical response. Investigations revealed a negative antinuclear antibody (ANA) by ELISA, but a strongly positive ANA immunofluorescence (1:1280, speckled pattern). Anti-dsDNA and extractable nuclear antigen antibodies were negative. The patient also had a positive direct Coombs test, persistent cytopenias, and isolated low C4 levels. Based on these findings and her evolving clinical picture, she was referred to the paediatric rheumatology team at Hospital Selayang, where a diagnosis of SLE was made and treatment with corticosteroids and azathioprine was initiated. A subsequent relapse was complicated by pancytopenia, neutropenic sepsis, and features of disseminated intravascular coagulopathy. This case demonstrates how SLE in children may present with subtle, non-specific signs and atypical serology. It reinforces the importance of pathology in identifying key immunological patterns—specifically, the discrepancy between ANA testing methods, complement consumption, and autoimmune cytopenias. In conclusion, early recognition of non-classical paediatric SLE requires careful interpretation of pathology results in clinical context, and a high index of suspicion to avoid misdiagnosis and delayed treatment.

M46 Uncommon Culprit in Acute Cholecystitis: Identification of *Kosakonia cowanii* Using MALDI-TOF

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Introduction: Kosakonia cowanii is a rare human pathogen from the *Enterobacterales* order, typically associated with plants and soil. *Case presentation:* We report a case of acute perforated suppurative cholecystitis caused by *K.cowanii* in a 56-year-old man with diabetes mellitus and hypertension. The patient presented with a one-week history of right upper abdominal pain and vomiting following the consumption of chicken curry noodle dish. Clinical examination revealed a positive Murphy's sign. Laboratory findings showed elevated white blood cell count with predominant neutrophils, CRP, ALT, ALP, and AST. Ultrasonography demonstrated a thickened, distended gallbladder with pericholecystic fluid collection. Laparoscopic cholecystectomy revealed a gangrenous gallbladder with necrosis and pus. Tissue culture grew pure lactose-fermenting colonies on MacConkey agar, which were identified as *K.cowanii* using MALDI-TOF mass spectrometry. The isolate was susceptible to commonly used antibiotics. Histopathological examination confirmed acute suppurative cholecystitis. Blood cultures were negative. The patient was successfully treated with intravenous amoxicillin/clavulanate for seven days and discharged in stable condition. *Discussion:* This case suggests a potential endogenous route of infection, possibly due to ingestion of contaminated food, rather than the previously reported exogenous plant-related exposures. Misidentification as *Pantoea agglomerans* in conventional systems may contribute to underreporting. *Conclusion:* The use of MALDI-TOF in routine diagnostics has improved the recognition of *K.cowanii* as a potential human pathogen. Clinicians should consider rare organisms in common infections, especially in immunocompromised hosts or when clinical responses deviate from expectations.

M47 Type 2 Autoimmune Hepatitis Following *Mycoplasma pneumoniae*–Triggered Cold Autoimmune Haemolytic Anaemia in a Toddler: A Case Report

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Autoimmune liver diseases in paediatrics population are rare, especially when presented alongside haematological autoimmune complications. This report describes a case of a 2-year-9-month-old previously healthy girl presenting with vomiting, abdominal pain, and subsequent jaundice. Initial blood investigations showed marked transaminitis and hyperbilirubinemia. Further evaluation revealed elevated AST (1282 U/L), ALT (1884 U/L), total serum bilirubin (88.8 µmol/L), prolonged aPTT, and elevated LDH (708 U/L). Direct Coombs test was positive for anti-C3d, suggesting of cold autoimmune haemolytic anaemia (AIHA). Infectious screening showed positivity for CMV IgM, HSV-1/2 IgM & IgG, Mycoplasma pneumoniae IgM, and EBV IgG. Autoimmune workup revealed ANA positivity (1:80, speckled) and anti–liver-kidney microsomal type 1 (anti-LKM-1) antibody positivity, consistent with autoimmune hepatitis (AIH) type 2. The patient was initially managed with IV antibiotics, vitamin K, ursodeoxycholic acid, omeprazole, and lactulose. She improved clinically and was discharged with close follow-up and hepatology referral. This case highlights an unusual combination of cold AIHA and AIH type 2 following multiple viral and mycoplasma infections, reflecting possible immune dysregulation triggered by infection. Early recognition, thorough immunologic and infectious workup, and timely management are essential to prevent complications. The case emphasises the importance of considering autoimmune hepatitis in paediatric patients with unexplained liver enzyme elevations, particularly when systemic infections and autoimmune features coexist.

M48 Defining Signal-To-Cut-Off Thresholds to Reduce Unnecessary Hepatitis C Confirmatory Testing at Hospital Raja Perempuan Zainab II

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In support of Malaysia's national effort to eliminate Hepatitis C Virus (HCV) by 2030, early detection remains critical to ensure timely treatment and access to care. A retrospective study was conducted to determine the prevalence values of false-positive Hepatitis C serological screening results to optimise confirmatory testing practices. Laboratory data consisting of Hepatitis C Antibody (AHCV), HCV Antigen (HCVAg) and HCV RNA RT-PCR tests from January 2021 to April 2023 were extracted through the Laboratory Information System (LIS). These data were then further sorted and analysed using Microsoft Excel. A total of 20,275 specimens were screened for AHCV using automated immunoassay platforms. AHCV-reactive samples were subjected to reflex HCVAg testing, with subsequent HCV RNA testing performed on selected cases depending on clinical indications and HCVAg results. Notably, 7.7% (46/599) of the AHCV-reactive specimens had an S/CO ≤ 5.00. Within this subgroup, 93.5% were non-reactive for HCVAg and 93% were negative for HCV RNA, indicating a high false-positive rate. In contrast, specimens with reactive HCVAg and detectable HCV RNA were predominantly associated with patients living with HIV and those with history of high-risk sexual behaviour. These findings indicate that AHCV-reactive results with values S/CO ≤ 5.00 are frequently false positives and may not require confirmatory testing, except in individuals with HIV or high-risk behaviours. Therefore, incorporating S/CO thresholds and risk stratification into diagnostic algorithms may reduce unnecessary confirmatory testing without compromising diagnostic accuracy.

M49 The hunt for elusive endocarditis agent; Granulicatella adiacens: A diagnostic challenge

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Granulicatella adiacens is a type of nutritionally deficient streptococcus, which has been rarely reported as an etiologic agent in endocarditis. Although typically a commensal organism, its significance may be overlooked due to the challenge of recovering isolates from clinical specimens. We report a case of infective endocarditis caused by *Granulicatella adiacens* in a 30-year-old gentleman who is previously well, presented with prolonged fever and progressively worsening chest pain for 3 weeks. Examination revealed an ejection systolic murmur and *Granulicatella adiacens* was isolated from three of his blood culture samples within ten hours of incubation period. Echocardiogram confirmed the diagnosis and patient was successfully treated with a combination of intravenous penicillin and gentamicin. This microorganism may be the culprit of some culture-negative endocarditis cases due to its fastidious nature and slow growth rate in the laboratory. Hence, our case report aims to emphasise more on the diagnostic challenges in laboratory identification and performing susceptibility testing. It is crucial to recognise and identify this entity to help with determining treatment options for optimum patient management.

M50 The Silent Scourge of the Oral Cavity: Capnocytophaga - from Commensal to Pathogen

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We present a rare case of *Capnocytophaga sputigena* bacteraemia in an elderly patient with complex comorbidities: Type 2 Diabetes Mellitus, hypertension, and severe eosinophilic asthma (SEA) requiring chronic immunosuppression. The patient presented with an infective acute exacerbation of asthma, characterised by fever, dyspnoea, cough, reticulonodular chest infiltrates, and elevated inflammatory markers. Blood cultures confirmed *Capnocytophaga sputigena* bacteraemia, a commensal of the oral cavity and an uncommon opportunistic pathogen, typically seen in severely immunocompromised individuals (0.5-3% incidence of septicaemia). While *Capnocytophaga sputigena* is typically associated with periodontitis in immunocompetent hosts, systemic infections are predominantly observed in patients with haematological malignancies following chemotherapy or stem cell transplant. In patients without haematological conditions, associated risk factors for bacteraemia, such as diabetes mellitus and steroid-dependent treatment, are also significant, as seen in our patient. Due to its rare isolation, *Capnocytophaga sputigena* presents significant diagnostic laboratory challenges. It is a fastidious, facultatively anaerobic, oxidase and indole negative capnophilic Gram-negative rod. In our case, initial isolation yielded small, slow-growing colonies from aerobic blood cultures, likely due to non-routine carbon dioxide (CO2) incubation. Primary attempts at performing antibiotic susceptibility testing (AST) on Muller Hinton Blood Agar (MHBA) under CO2 conditions failed. We successfully performed AST using blood anaerobic agar incubated in CO2 conditions, a key deviation from standard practices. This case report underscores the importance of recognising this rare pathogen and offers practical insights into overcoming the diagnostic hurdles associated with *Capnocytophaga sputigena* isolation and susceptibility testing.

M51 A Case Report: Orbital Abscess with Periorbital Necrotising Fasciitis Due to Invasive Hypervirulent *Klebsiella pneumoniae*

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Hypervirulent *Klebsiella pneumoniae* (hvKP) is an emerging global pathogen associated with severe invasive infections, particularly in immunocompromised individuals. While it is commonly linked to pyogenic liver abscesses and metastatic spread, orbital involvement is exceedingly rare. We report a case of a 65-year-old Malay woman with poorly controlled diabetes, liver cirrhosis, and a history of treated breast carcinoma who presented with recurrent right periorbital swelling, purulent discharge, and fever. Imaging revealed preseptal cellulitis with abscess formation involving the lacrimal duct, medial canthus, and extraconal orbital space, along with underlying chronic sinusitis. Culture and molecular testing confirmed hvKP infection. Histopathological examination

demonstrated extensive necrosis of ocular and periocular tissues. Despite prompt empirical therapy with intravenous ceftriaxone and surgical drainage, the patient's condition deteriorated rapidly, necessitating anterior orbitotomy, enucleation, and extensive periorbital debridement. The aggressive course was attributed to hvKP's hypermucoviscosity and siderophore-mediated virulence, compounded by the patient's immunocompromised state. Sinusitis was suspected as the primary source, with rapid extension into the orbit. This case underscores the highly aggressive nature of hvKP and its potential for atypical, rapidly progressive manifestations. Clinicians should maintain a high index of suspicion for hvKP in at-risk patients presenting with orbital infections. Early recognition, aggressive surgical intervention, and targeted antimicrobial therapy are essential to minimise morbidity and prevent mortality.

M52 A Case of Sight-Threatening Necrotising Keratitis Following Severe *Herpes Zoster* Ophthalmicus

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Herpes zoster ophthalmicus (HZO) which results from reactivation of the *varicella-zoster* virus (VZV) can lead to serious ocular complications. Keratitis is a known manifestation while necrotising keratitis remains an uncommon but potentially sight-threatening sequela. We report a case of a 51-year-old Indian male with no known comorbidities who presented with a two-week history of painful vesicular eruptions over the left side of the face, accompanied by left eye redness and blurred vision. Ocular examination revealed conjunctival injection, corneal opacity, chemosis, and a corneal epithelial defect measuring 1.4 mm × 6.4 mm with unhealthy epithelium and anterior stromal scarring and keratic precipitates. B-scan ultrasonography demonstrated scleral thickening, vitritis, and posterior vitreous detachment. A clinical diagnosis of necrotising keratitis secondary to HZO was made. Intravitreal tap yielded 0.4 cc of vitreous fluid, which tested positive for VZV by polymerase chain reaction (PCR). The patient received a 14-day course of intravenous acyclovir and ciprofloxacin. Topical therapy included acyclovir, gentamicin 0.9%, and ceftazidime 5% eye drops. Bacterial and fungal cultures were negative. The patient achieved complete resolution of ocular inflammation with restoration of visual function. This case highlights the rare but serious complication of necrotising keratitis in HZO. Early identification, appropriate antiviral therapy, and targeted diagnostic sampling, even with limited vitreous volume, are critical for successful outcomes. PCR testing remains essential for confirming viral aetiology, especially in the absence of other pathogens.

M53 Ocular Infiltrate by a Resistant Invader: Unmasking *Scedosporium aurantiacum* in Post-Traumatic Oculomycosis: A case report

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Scedosporium aurantiacum is an emerging filamentous mould increasingly recognised as a cause of oculomycosis, particularly in immunocompromised patients and post-traumatic cases. Its intrinsic resistance to multiple antifungal agents presents significant diagnostic and therapeutic challenges. We report a rare and aggressive case of fungal keratitis caused by *S. aurantiacum* in a 66-year-old male with poorly controlled diabetes mellitus. The patient presented with severe ocular pain, photophobia, and progressive vision loss after sustaining a high-velocity stone injury to the left eye. Visual acuity was reduced to hand movements. Slit-lamp examination revealed a dense central corneal infiltrate with stromal oedema and fluffy borders, suspicion of fungal aetiology. Culture of corneal scrapings on Sabouraud dextrose agar yielded rapidly spreading, cottony white colonies that matured to grey brown with a yellow-orange reverse. Lactophenol cotton blue staining revealed septate hyphae and ovoid conidiophores bearing conidia in clusters. Identification of *S. aurantiacum* was confirmed via MALDI-TOF. Despite intensive antifungal therapy with topical amphotericin B, voriconazole, and systemic fluconazole, the infection progressed, reflecting the organism's known resistance profile. This case highlights the diagnostic importance of combining classical mycological techniques with modern identification tools in recognising rare moulds. It also underscores the urgent need for antifungal susceptibility testing and improved therapeutic strategies to address the growing challenge of resistant oculomycosis caused by non-*Aspergillus* moulds such as *S. aurantiacum*.

M54 Recognising EBV in Young Children: A Case Report of Atypical Infectious Mononucleosis

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Epstein-Barr virus (EBV), the primary cause of infectious mononucleosis, typically affects adolescents, while symptomatic presentations in young children are uncommon. We report a case of a two-year-old girl with an atypical presentation of EBV infection, who exhibited facial and periorbital swelling, fever, vomiting, non-productive cough, and cervical lymphadenopathy. Laboratory investigations revealed leucocytosis with a markedly elevated absolute lymphocyte count (12.39 $\times 10^9$/L) and transaminitis. Peripheral blood smear showed lymphocytosis with occasional atypical lymphocytes. EBV serology confirmed acute primary infection with positive EBV VCA IgM and IgG, and negative EBNA IgG. The patient improved with supportive care, and liver enzymes normalised on follow-up. Although EBV infections in young children are often asymptomatic or mild, this case highlights that classical infectious mononucleosis features, including Hoagland sign (periorbital oedema), can occur and serve as important diagnostic clues. The presence of transaminitis, more often reported in older children, is a noteworthy finding in this age group and warrants monitoring when significantly elevated. Serological testing remains essential for diagnosis in young children, particularly when heterophile antibody tests are unreliable. This case underscores the need to consider EBV in the differential diagnosis of febrile illnesses associated with lymphadenopathy and periorbital swelling in young children. Early clinical suspicion, appropriate

investigations, symptomatic management, and structured follow-up, including monitoring of symptom resolution, liver function, and spleen size, are key to ensuring complete recovery in uncomplicated paediatric EBV infections.

M55 Real-world Experience with IGRA Testing at Hospital Sultan Haji Ahmad Shah, Temerloh, Pahang: Insights, Challenges and Impact

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Interferon Gamma Release Assay (IGRA) is a screening tool to determine whether a person is infected with Tuberculosis (TB). IGRA testing is crucial at each phase: pre-examination, examination and post-examination. Trained personnel and constant vigilance are essential at every phase. This study shares experience of operational network, challenges in implementation process and diagnostic outcomes of IGRA testing. Since 2024, Hospital Sultan Haji Ahmad Shah (HoSHAS), Temerloh became the designated IGRA testing centre, serving 11 districts in Pahang state, accommodating 15 government hospitals, 11 district health offices and 118 health clinics. A total of 2,736 samples were handled from internal and external locations. The external network involved 6 health clinics equipped with incubators and centrifuges, facilitating standardised pre-examination steps. Samples were incubated at 37°C for 16–24 hours, centrifuged, and transported at 4–27°C to HoSHAS. Internal requests were coordinated through a dedicated IGRA team, with test ordering via the HIS system and scheduled twice monthly. Testing conducted using QuantiFERON-TB Gold Plus (QFT-Plus) platform, ELISA method (22 samples per batch), with results uploaded to SIMKA and LIS systems within 21 working days. Of the total samples, 2,421 (88.49%) were negative, 287 (10.49%) positive, and 28 (1.02%) indeterminates; achieved benchmark of <5% indeterminate rate. IGRA testing is feasible when robust coordination, sample handling, and logistics are in place. Centralising testing at HoSHAS while decentralising collection supports efficient state-wide TB screening. Ensuring strict adherence to all testing phase is critical to sustain test quality and minimise indeterminate results.

M56 Uncommon Non-vaccine Serotype 19B *Streptococcus pneumoniae* causing Mastoid Abscess in a Child: A Case Report

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Introduction: Serotype 19B is an uncommon serotype of *Streptococcus pneumoniae* in Malaysia and worldwide. It is underrepresented, with limited data on its laboratory characteristics and pathogenicity. *Case presentation:* A 12-year-old boy presented with painful left post-auricular swelling and a worsening headache for two weeks, preceded by fever and upper respiratory symptoms. Examination revealed a 4 by 3 cm tender swelling over the left postauricular area. Otoscopic examination of the left ear revealed an oedematous external auditory canal and inflamed but intact tympanic membrane. HRCT temporal bone and CECT brain consistent left otomastoiditis with subperiosteal abscess and left sigmoid venous sinus thrombosis. He underwent left modified radical mastoidectomy. Intraoperative pus swab culture grew *S. pneumoniae*. The isolate was a susceptible strain with an extremely mucoid phenotype and identified as serotype 19B. He was treated with intravenous ceftriaxone for 28 days, oral erythromycin for one week, and topical antibiotic ear drops with clinical improvement. *Discussion:* The mucoid phenotype in *S. pneumoniae* is typically linked with serotype 3, which is known to cause invasive pneumococcal disease (IPD). Meanwhile, serotype 19B with similar phenotype is a rare non-vaccine serotype with scarce evidence regarding its invasive properties. Although the isolate was obtained from an intraoperative pus swab, the finding suggested a clinically significant localised pneumococcal infection, despite not fulfilling strict IPD criteria. *Conclusion:* Discovery of serotype 19B *S. pneumoniae* in clinical samples is imperative for ongoing serotype surveillance of severe or invasive pneumococcal disease in anticipation of the emergence of non-vaccine serotype.

M57 Gut Checkmate: *Listeria* or Ischaemia?

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Of the 27 species in the *Listeria* genus, *Listeria monocytogenes* is distinguished as the only significant human pathogen. Listeriosis typically affects the extremes of age, pregnant women, and immunocompromised individuals, often manifesting as sepsis or meningitis. We report a fatal gastrointestinal manifestation of listeriosis in an immunocompetent patient, mimicking bowel ischaemia. A 61-year-old previously healthy man presented with a one-week history of profuse diarrhoea, abdominal pain, and lethargy. Despite being afebrile, he came in with septic shock, hyperlactataemia and multi-organ dysfunction, requiring intubation, fluid resuscitation, and inotropic support. A mesenteric CT angiogram revealed bowel wall thickening with dilated small bowel and colon, raising suspicion of inflammation and bowel ischaemia. Even with intensive supportive care and administration of ceftriaxone and meropenem, the patient succumbed to the illness within two days of admission. Blood cultures obtained on admission later identified as *L. monocytogenes*, through MALDI-TOF extraction method and confirmed by 16S rRNA sequencing. The isolate was susceptible to penicillin. While gastrointestinal listeriosis typically presents as a benign, self-limiting gastroenteritis linked with a clear epidemiological to foodborne outbreaks. Sporadic cases of fatal gastrointestinal listeriosis manifesting as bowel ischaemia are rare, particularly in an immunocompetent individual. Dissemination of this foodborne pathogen begins with colonisation of the mesenteric lymph nodes. In this case, the antibiotics of choice for empiric treatment of fatal sepsis were ineffective against *Listeria*; therefore, timely microbial identification could have been lifesaving.

M58 Rare but Real: Case Reports on *Actinomyces oris* and *Schaalia turicensis* Infection

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Actinomycosis is a rare infection caused by the Gram-positive, non-spore-forming, non-acid-fast, filamentous, anaerobic, or microaerophilic *Actinomyces* species. Infection is often confined to the cervicofacial, thoracic, and abdominopelvic regions. We report a case of *Actinomyces oris* bacteraemia and a right preauricular abscess by *Schaalia turicensis* (formerly *Actinomyces turicensis*). Case 1: A 71-year-old Malay lady with underlying diabetes mellitus and non-alcoholic steatohepatitis presented with fever, diarrhoea, and confusion for 1 day. The white cell count was 11.3×10^9/L, and C-reactive protein (CRP) was 8 mg/dL. The CT brain and liver ultrasound were unremarkable. Blood culture grew *Actinomyces oris*, identified using matrix-assisted laser desorption/ionisation time of flight (MALDI-TOF) mass spectrometry. The isolate was susceptible to penicillin and erythromycin. She was treated with intravenous penicillin and discharged uneventfully. Case 2: An 18-year-old Chinese lady presented with right preauricular swelling and discharge. 1 year prior, she had a history of left preauricular sinus caused by viridans streptococci. Excisional biopsy of the right preauricular swelling showed a preauricular abscess attached to helical cartilage measuring 1 cm × 1 cm, with sinus tract formation. Pus culture was negative for acid-fast bacilli but grew *Schaalia turicensis*, identified using MALDI-TOF mass spectrometry. The isolate was susceptible to penicillin and erythromycin. The patient was later discharged with oral amoxicillin. For actinomycosis, penicillin remains the first-line antibiotic, with amoxicillin equally efficacious. In most cases, it can be managed with antibiotics alone. Surgical intervention is required in certain cases, such as abscess.

M59 Cutaneous diphtheria in Malaysia: Uncommon, or under-reported?

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An exemplar of toxigenic communicable disease, *Corynebacterium diphtheriae* is feared for its lethal respiratory complication. However, cutaneous diphtheria has been rarely, if any, reported in the country, despite multiple reports internationally. We report a case of toxigenic *Corynebacterium diphtheriae* causing cutaneous diphtheria in the lower limbs. The case involves a 45-year-old male prisoner, detained for intravenous drug use. With comorbid hepatitis C infection, he presented with long-standing pain and pus discharge over right foot following a fall in prison. Swab culture of the foot wound revealed mixed infection of toxigenic *C. diphtheriae* and methicillin-sensitive *Staphylococcus aureus* (MSSA). He was treated with ampicillin/sulbactam for a total of seven days and discharged well with no complications. Cutaneous diphtheria is an indolent manifestation of diphtheria with stratospheric infectivity rate. Childhood immunisation against diphtheria is unreliable to guarantee lifelong protection to adults. Clinicians should be cognizant regarding this organism's endemicity. Underdiagnosis could lead to asymptomatic reservoirs propagation which may lead to catastrophic national outbreaks. Both clinical and laboratory personnel should suspect the organism in long-standing wounds in patients with risk factors living in poor conditions. Isolate speciation via MALDI-TOF has proven reliable in differentiating among species within the genera. Cutaneous diphtheria is an under-reported case in the country.

M60 Oral Hygiene Could Save Your Neck

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Streptococcus constellatus, an oral microbiota, is part of the 3-membered *Streptococcus anginosus* group, with *S. intermedius* and *S. anginosus.* We describe a case of *S. constellatus* head and neck infection resulting from neglected dental caries. A 32-year-old gentleman presented to the ENT clinic with right lower toothache and painful, progressively worsening neck swelling for 5 days. A previous similar but less severe episode two years ago was resolved with removal of tooth (38), and multiple subsequent episodes were ignored. On examination, he was tachycardic but alert, afebrile with no stridor. His anterior neck was diffusely swollen, erythaematous and tender. Oral cavity examination revealed trismus, raised floor of mouth, and impacted molar tooth (48), with the overlying gum swollen and tender. CT scan demonstrated multiloculated right submandibular collection with local extension, thus incision and drainage and removal of tooth (48) were performed. Postoperative, the infection worsened into necrotising fasciitis and multiple abscesses formation, requiring two additional wound explorations and drainage. Pus culture grew *S. constellatus*, sensitive to penicillin. After 17 days of Hospitalisation, three operations and five different antibiotics, patient was discharged well. With multiple virulence factors such as cytotoxin, phagocytosis resistance and hydrolytic enzymes, this organism boasts its propensity for invasive suppurative infections, particularly head and neck. When isolated in blood, it carries a 10% mortality rate. *S. constellatus* head and neck infections should be aggressively managed due to its high pathogenicity.

M61 Uncommon Site, Rare Pathogen: Microbiological Diagnosis of Hepatic *Nocardia nova* in an Immunodeficient Infant

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Nocardiosis is a rare but serious opportunistic infection caused by aerobic actinomycetes of the genus *Nocardia*, Gram-positive, filamentous organisms commonly found in soil. While pulmonary, cutaneous, and central nervous system involvement are most frequently observed, hepatic nocardiosis is exceedingly rare, particularly in paediatric populations. We present the case of a 6-month-old female infant with hypogammaglobulinaemia, who presented with prolonged fever for one month and a newly developed epigastric swelling. Serial abdominal ultrasonography demonstrated a progressively enlarging, partially liquefied hepatic abscess.

Ultrasound-guided percutaneous drainage yielded scant yellowish fluid. Blood cultures later grew wrinkled, chalky-white colonies with orange pigmentation. Gram staining revealed Gram-positive, branching and beaded bacilli, characteristic of *Nocardia* species. *Nocardia nova* was identified by MALDI-TOF MS. The patient was commenced on empiric intravenous amikacin, meropenem, and sulfamethoxazole-trimethoprim. The susceptibility test done at national referral laboratory according to CLSI revealed multidrug resistant pattern. Despite aggressive antimicrobial therapy and intensive supportive care, her condition deteriorated, and she unfortunately succumbed to the infection. This case underscores the need for heightened clinical suspicion of disseminated nocardiosis in immunodeficient infants presenting with atypical visceral infections. It also highlights the essential role of timely microbiological diagnosis and prompt initiation of targeted therapy in improving outcomes in such high-risk patients.

M62 Specimen Rejection Rate in Medical Microbiology & Parasitology Unit, Department of Clinical Diagnostic Laboratories, Hospital Al-Sultan Abdullah UiTM

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Introduction: Specimen rejection is one of the most important process in clinical laboratory to ensure the accuracy of laboratory results which eventually impact patient management. Rejection prevents errors and delays by addressing issues like improper labelling, insufficient sample size, or sample degradation, thus improving patient safety and healthcare outcomes. *Objective:* This study aimed to determine the prevalence of the most common specimen rejection in Medical Microbiology & Parasitology Unit, Department of Clinical Diagnostic Laboratories, Hospital Al-Sultan Abdullah UiTM. *Material & Method:* All specimens sent to the Microbiology and Parasitology Laboratory over a 12-month period from January to December 2024 were analysed and documented. *Results:* A total of 46,395 samples were received from January to December 2024, with 93 (0.2%) rejected, primarily due to salivary samples (34%), wrong labelling (20.4%), and incorrect containers (18.27%), while other causes included haemolysed specimens (5.37%), missing labels (4.3%), improper transportation (2.1%), and clotted specimens (1%). *Conclusion:* Maintaining a rejection rate below the acceptable threshold of 1% reflects good laboratory performance; however, continuous adherence to proper specimen collection, transportation, and preparation practices is essential to sustain this standard. This not only enhances laboratory efficiency and reduces the need for repeat testing but also improves patient care through faster and more accurate results. Additionally, minimising specimen rejection contributes to cost savings, strengthens quality assurance processes, and promotes consistent staff performance through ongoing compliance with best practices.

M63 Microbial Profile and Antibiogram of Isolates from Paediatric Patients at Hospital Sultan Haji Ahmad Shah, Temerloh, Pahang

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Microbial profiling and antibiogram analysis of bacterial isolates from paediatric patients are essential for understanding local resistance patterns and guiding effective antibiotic therapy. This study aims to characterise bacterial isolates and evaluate their antimicrobial resistant profiles. A retrospective study was conducted by extracting laboratory culture and sensitivity data from January 2022 to May 2025 using the WHONET software. A total of 24,871 samples were analysed by sample type, organism frequency, and antibiotic resistance pattern based on CLSI breakpoints. Antibiograms and trends were illustrated using heatmaps and line charts. All isolates were identified using biochemical tests or Bruker MALDI Biotyper Microflex® LT/SH MALDI-TOF MS system. Antibiotic susceptibility testing was performed using Kirby-Bauer disk diffusion and E-test (MIC) method. Of the total samples, 11.1% were urine, 34.5 % non-urine, and 54.5 % blood specimens. The frequently identified pathogen in urine specimens was *Escherichia coli*, 180 isolates (53.3%). Among these, 31.7% were Extended Spectrum Beta-Lactamase (ESBL) producers. In non-urine specimens, *Salmonella* spp. was the most common, 189 isolates (26.5%), showing resistance to ciprofloxacin (28.6%) and ceftriaxone (26.4%), indicating multidrug-resistant *Salmonella* spp. (MDRO). In blood cultures, the most common Gram-negative organisms with ESBL are *Escherichia coli* (45.8%) and *Klebsiella pneumoniae* (40.7%). *Staphylococcus aureus* (MRSA) accounts for 29.7% of bacteraemia cases; *Acinetobacter baumannii* (MDRO) represents 8.3%. Contaminant organisms include *Staphylococcus* spp. (49.5%) and *Bacillus* spp. (72.0%). The prevalence of pathogens and their resistance patterns in our setting provide valuable insights and can serve as a foundation for antimicrobial stewardship (AMS) efforts for the paediatric population.

M64 Nosocomial Selection of a Silent Killer: Multidrug-Resistant *Trichosporon asahii*

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Trichosporon species are environmentally ubiquitous yeasts and established resident microbiota of the human skin, gastrointestinal and respiratory systems. The clinical significance of isolating this basidiomycetous yeast, especially from a single blood culture, is often questioned. However, trichosporonosis can be fatal, particularly when diagnosis is delayed or mismanaged. We report a lethal case of multidrug-resistant trichosporonosis in a long-term ICU patient. A 53-year-old man with gout was admitted for acute gastroenteritis with hypovolemic shock. During his prolonged hospital stay, he developed upper gastrointestinal bleeding, type 2 myocardial infarction, and *Pseudomonas aeruginosa*-infected gouty tophi. He required arthrotomy washout, wound debridement, and multiple courses of broad-spectrum antimicrobials. Two weeks post-surgery, he developed recurrent sepsis. Blood cultures (three sets over six days) yielded *T. asahii*, identified by MALDI-TOF MS. Antifungal susceptibility testing (AFST) showed minimum inhibitory concentrations (MICs) for azoles, amphotericin B, flucytosine, echinocandins, and fosmanogepix at the highest measurable range. Without defined clinical breakpoints, these high MICs were interpreted as resistance. Despite seven days of voriconazole therapy, the patient succumbed. Fatal antimicrobial resistance infections may arise from exogenous, hospital-acquired pathogens

or endogenous flora selected under antimicrobial pressure. With intrinsic resistance to echinocandins, *T. asahii* can overgrow and acquire further resistance following broad-spectrum antibiotic use. Clinicians and microbiologists must remain vigilant for emerging fungal pathogens such as *T. asahii*, to ensure early recognition and timely effective antifungal selection. AFST is increasingly essential, even in the absence of breakpoints. Not all invasive yeast infections are echinocandin-treatable candidiasis.

M65 A Lethal Trio: COVID-19, Disseminated Tuberculosis and Community-Acquired Bacteremia in a Myelodysplastic Syndrome Patient

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Introduction: COVID-19 bacterial co-infection is associated with a higher mortality rate. Thorough history-taking and appropriate laboratory investigations may guide the diagnosis and treatment. *Case presentation:* A 58-year-old lady with underlying myelodysplastic syndrome presented with uncontrolled diabetes mellitus and respiratory symptoms. Investigations on admission showed white cell count of $23.4 \times 10^3/\mu L$, ESR 57 mm/hour, positive COVID-19 RT-PCR and her blood culture and sensitivity (C&S) grew *Enterobacter cloacae*. CT pulmonary angiogram revealed organising pneumonia with vasculopathy, and sputum AFB was negative. Despite two weeks of meropenem and aggressive COVID-19 management, her condition further deteriorated and later required intubation. Serial COVID-19 RT-PCR showed a decreasing Ct value from 21 to 13 and repeated sputum AFB on day-13 was positive, hence anti-tuberculosis regimen was started. She succumbed to multiorgan failure one week later. Both the blood sample taken on day-2 for fungal culture and the sputum sample sent for MTB C&S subsequently grew *Mycobacterium tuberculosis* complex, one month later. *Discussion:* This case represents a fatal COVID-19, disseminated tuberculosis (TB) and community-acquired bacteraemia co-infection. Reactivation of latent TB in the background of COVID-19 is likely in this immunosuppressed patient. Indistinguishable respiratory symptoms of both diseases cause a great diagnostic challenge to the clinician. Here, AFB smear was repeated owing to her poor response and newly obtained weight loss history. This case highlights rapid patient clinical deterioration although timely diagnosis and treatment have been carried out. *Conclusion:* COVID-19/TB co-infection should be suspected in TB-endemic regions with prior immunocompromised state in the presence of constitutional symptoms.

M66 *Cryptococcus gattii* meningitis complicated with IRIS in a young healthy college student

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Cryptococcal meningitis is commonly caused by *Cryptococcus neoformans* and rarely *Cryptococcus gattii*. The treatments are challenging and frequently complicated by the immune reconstitution inflammatory syndrome (IRIS). Understanding the nature of the disease is crucial for effective management. We report the case of a previously healthy 20-year-old female student who presented with progressive headache for one month, followed by neurological symptoms. Meningitis was suspected and lumbar puncture was done. *Cryptococcus gattii* was isolated from the CSF culture. She was successfully treated with amphotericin B and flucytosine for 6 weeks in the ward and subsequently discharged. However, she presented again with status epilepticus. *Cryptococcus* IRIS was diagnosed, and corticosteroid therapy had led to improvement. *Cryptococcus gattii* infection tends to affect immunocompetent individuals. The lack of CNS specific symptoms makes early diagnosis challenging. *Cryptococcus gattii* is frequently associated with cryptococcomas, hydrocephalus, and IRIS. Standard diagnostic tools may not be able to differentiate between species, but latest automated system allows precise identification. Management requires prolonged antifungal therapy, and recognition of the complication. This case emphasises the seriousness of *Cryptococcus gattii* infection and since a past outbreak has been reported, it is posing a potential threat to the public health. The success of the treatment depends on the early recognition of the disease and initiation of the antifungal as well the awareness regarding *Cryptococcus* IRIS.