August 2022

AIMS (VIC) Biochemistry Workshop

AIMS (VIC) Haematology Workshop

Victorian Faces of the Fellowship

BENCHPRESS

The official newsletter of The Australian Institute of Medical Scientists (Victoria Branch)

A.C.N 010 985 403

Inside this Edition

Got News to Share?

We would be delighted to share the good things you are doing in the scientific world.

Contact us at secretary.aims.vic@gmail.com or via Facebook (@AIMSVictorianBranch) to let us know.

The submission deadline for next issue of Benchpress is the 30th November 2022.

A Note From the Chair

Welcome to the winter edition of Benchpress. Hope everyone is keeping warm and well, flu and covid free.

It's been a busy first half of the year for the committee. In March, we hosted our first meeting via Zoom. The biochemistry meeting was well received and attended with over 70 delegates. I want to thank Yuh Ping Chong, John Abcede and Pramod Subedi for organising this event.

In May, we hosted our first in person Haematology meeting. There was great interest in the event and attracted over 50 delegates. I would like to thank Gurbaksh Singh, Joe Rigano, Niki Lee and Jessica Guglielmino for organising this event.

We will be running similar events in the future so look out for the announcements on our Facebook page and register early.

Since our last edition of Benchpress we welcomed new committee member Hazel Chambers. Hazel's background is in anatomical pathology so with her expertise we look forward to bringing future events in this area.

Congratulations to our 2022 Fellow recipient Joe Rigano. Well done!

Our upcoming AGM will be held on 31 August 2022 via Zoom. We will have a Q&A session on the fellowship program and a genomics presentation preceding the event so please save the date.

Look forward to seeing everyone at the AGM.

Tina Pham
Chair
AIMS VIC Branch

AIMS (VIC Branch)
Biochemistry Workshop

FROM TRAINING & PROFESSIONAL DEVELOPMENT TO EXCELLENCE IN DIAGNOSTIC TESTING

Learn new knowledge, connect with your peers and earn your professional development points.

Australian Institute of Medical and Clinical Scientists

AIMS (VIC) Biochemistry Workshop

By Yuh Ping Chong (Biochemistry Lecturer, RMIT University)

The Victorian branch AIMS successfully organised the Biochemistry Virtual Workshop on 3 March 2022 with the theme "Clinical chemistry: From training and professional development to excellence in diagnostic testing". The objective of the workshop was to provide an update on common topics in clinical biochemistry. In addition, the Organising Committee also presented a forum addressing "why APACE and CMLS are important to the medical laboratory workforce". Professor Denise Jackson (Present of AIMS and Vice President of CMLS) and Mrs Maureen Jacobsen (Chair of the AIMS APACE committee) were invited as the Guests of Honour to answer on-the-spot questions raised by the audience. In this brief report, I share my reflections on the talks at the workshop:

Challenges encountered in routine serum protein electrophoresis

By Dr Kay Weng Choy (Northern Pathology, Victoria)

Serum protein electrophoresis is a powerful technique for identification of patients with monoclonal gammopathy (multiple myeloma). Normally proteins are separated into their characteristic peaks: Albumin, α1, α2, β1, β2 and γ. Whilst the normal electrophoretic pattern is familiar, pre-analytical or analytical interferences may result in misleading electrophoretic patterns that can easily be misinterpreted as monoclonal bands (pseudomonoclonal gammopathy). Among the factors causing psuedomonoclonal gammopathy include (i) polyclonal hypergammaglobulinaemia, (ii) elevated IgG4, (iii) cryoglobulin, (iv) fibrinogen, (v) therapeutic monoclonal antibodies and (vi) gross haemolysis.

Challenges and opportunities of teaching clinical chemistry to medical laboratory science students

By Dr Prajwal Gyawali (University of Southern Queensland)

One of the challenges in educating medical laboratory science students is to impart a diverse skillset, principles and evidence-based knowledge in a limited time of three to four semesters. Dr Gyawali described the huge expectations from scientists – laboratory scientist is not exactly a researcher or manager or clinical consultant, but a combination of these multiple roles. To meet the contemporary demand from industry, Dr Gyawali showcased his experience on cultivating analytical and creative mindset in students at the tertiary level. An example provided by him was the development of hands-on projects that simulate method validation in diagnostic laboratory, where students can troubleshoot real-life analytical-based problems.

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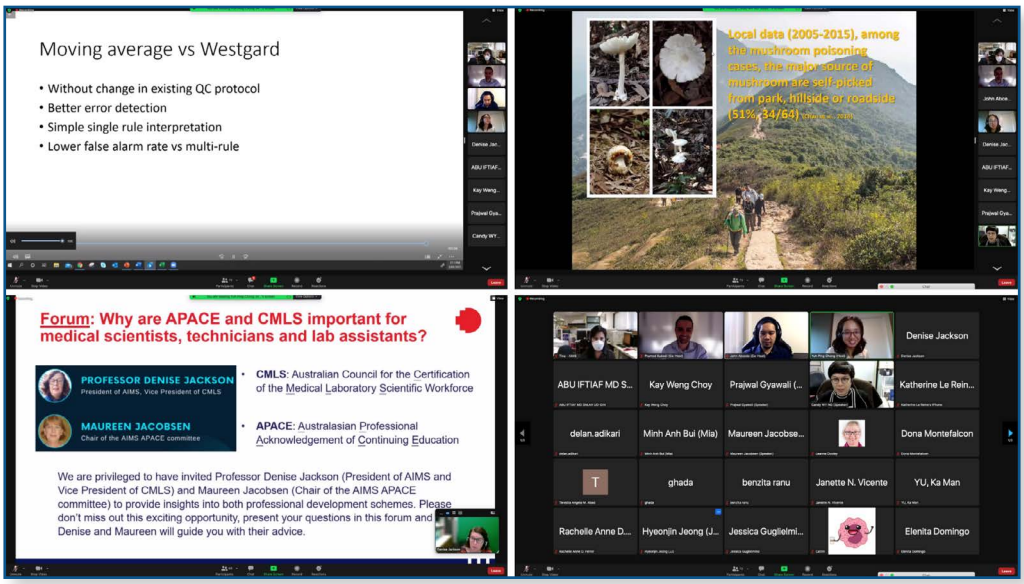

Moving averages for internal quality control monitoring

By Dr Tze Ping Loh (National University Hospital, Singapore)

Internal quality control (IQC) is an essential practice to ensure the performance of the laboratory measurement system conforms with clinical requirement. Traditionally, the 'Westgard' rules are employed to interpret IQC data against predefined control limits. However, these rules can have poor error detection rates, high false alarm rates and difficult to interpret. Dr Loh presented a proof-of-concept study supporting the idea that moving average algorithms outperform Westgard rules for detection of systematic error. If you are interested, please read his published article: Poh et. al. (2021) Internal quality control: Moving average algorithms outperform Westgard rules. Clin Biochem. 2021, 98:63-69. doi: 10.1016/j.clinbiochem.2021.09.007.

Mushroom poisoning in Hong Kong: From clinical to analytical toxicology

By Dr Candy Wai-Yan Ng. (Princess Margaret Hospital, Hong Kong)

Identification of hepatotoxic mushroom cases can be challenging since the poisoning symptoms may overlap with those observed with other food poisoning. The window for effective treatment to reduce liver damage is very narrow so it is important to get a quick diagnosis. While morphological identification of the mushroom by mycologist would provide the definitive diagnosis, this service is not readily available. Dr Ng revealed two robust techniques employed by her laboratory to confirm the mushroom identity – (i) mass spectrometry-based analysis and (ii) molecular identification with DNA barcoding. Both methods prove to aid accurate diagnosis of fungi-associated liver toxicity, thus facilitating the subsequent urgent patient management.

Forum: Why APACE and CMLS are important to the medical laboratory workforce

APACE (Australasian Professional Acknowledgement of Continuing Education) and CMLS (Australian Council for the Certification of the Medical Laboratory Scientific Workforce) are the professional development programs in laboratory medicine in Australia. As of February 2022, 657 and 316 users have registered for APACE and CMLS, respectively. Many important questions were asked by the audience at this forum: 1. Why do APACE and CMLS established in Australia? 2. How do I apply to become a certified medical laboratory science worker? 3. Are APACE and CMLS open to professionals outside the laboratory, but has substantial medical laboratory knowledge? Prof Denise Jackson and Mrs Maureen Jacobsen provided useful advice and emphasised the significance of APACE and CMLS in one's career advancement in laboratory medicine.

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SUMMARY

In summary, the virtual Biochemistry Workshop organised by AIMS Victoria was successfully launched with approximately 75 participants attended the event in real-time. We learned new knowledge in education, professional development, quality control and special chemistry. The feedback from the audience was positive; the audience enjoyed the workshop and found it educational/ informative. The Organising Committee would like to thank all presenters and Guests of Honour for their excellent presentations and contributions. A big thank you also goes to the audience for their active participation in making the workshop eventful.

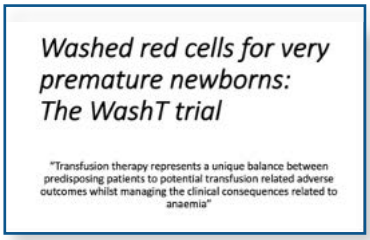
(This event was recorded; recording will be made available to the AIMS members via the member's log in.)

Victorian Immunohaematology Discussion Group (VIDG) Meeting

VICTORIAN IMMUNOHAEMATOLOGY DISCUSSION GROUP

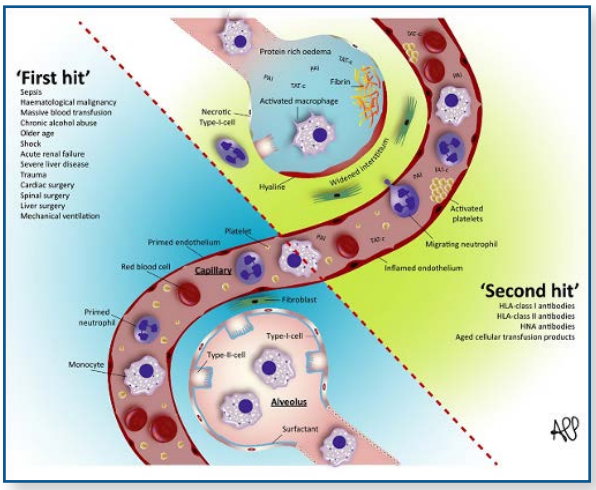
By Niki Lee

The Victorian Immunohaematology Discussion Group (VIDG) organises monthly meetings to discuss all things related to Transfusion Medicine and on the 9th November 2021, they hosted a Webex virtual meeting that had four amazing speakers present a range of topics from a clinical trials project to appropriateness of Rh(D) blood cells and use of apheresis platelets.



For the purpose of this short write up, I will only be focusing on the WashT Trial presented by Professor Michael Stark from the Neonatal Medicine Department of the Women's and Children's Hospital Adelaide.

Red cell transfusion in a preterm neonate is fairly common practice with 91% of very low birth infants requiring at least one unit of packed red blood cell transfusion with the majority of cases requiring between 3 – 5 units throughout their primary hospitalization. While red cells transfusion are readily used, it has increasingly being recognised as an independent predictor for adverse outcomes in the preterm cohort.



TRIM or Transfusion-Related Immunomodulation is a phenomenon that may be the common complication of preterm birth. Transfusion is known to be associated with bronchopulmonary dysplasia, necrotising enterocolitis, retinopathy of prematurity etc. and is consistent with the general understanding of TRIM and the concept of the two-hit process with prematurity being the first hit and transfusion being the second hit. This sets a trend of dysregulated immune mechanism that leads to a poorer outcome.

One of the earlier projects conducted looked at pro-inflammatory cytokines and markers of endothelial activation in post transfused neonates. It was noted that there was an increase in these cytokines and increase in markers for endothelial activation which led to development of the WashT project.

Prior to the launch of the WashT project, a pre-pilot study was conducted on Human Umbilical Vein Endothelial Cells (HUVEC). In this study, HUVEC cells were exposed to wash and unwashed cells red blood cells and it was shown that in the washed samples, there was a significantly lower levels of IL-6, IL-8, VCAM-1 and E-selectin. The result of this study was the catalyst to launch the pilot WashT study where 224 babies were studied. It is important to note that the pilot study was conducted without any financial support until the very later stages of the study where the National Blood Authority (NBA) awarded the team a seed grant to fund the analysis.

The transfusion with washed versus unwashed red blood cells to reduce morbidity and mortality in infants born less than 28 weeks gestation: a multi-centre, blinded, parellel group randomised controlled trial or better known as The WashT Trial was launched in 2021 with the group receiving a National Health and Medical Research Council (NHMRC) to proceed with the project.

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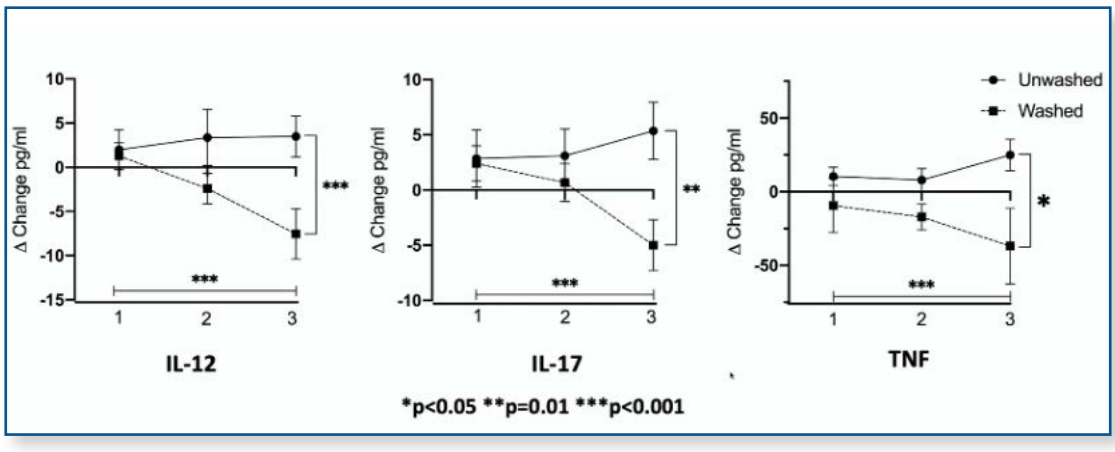


Primary aims of the project compare the effects of transfusion with either washed or unwashed red blood cells on a composite outcome including one or more of: all-cause hospital mortality, bronchopulmonary dysplasia, retinopathy of prematurity or necrotising enterocolitis and to determine the cost effectiveness of washed red cells for transfusion.

The WashT Trial was originally scheduled to commence in 2020 but due to the global pandemic it was pushed back to 2021 and funded through to 2025. Since the project is on-going, no preliminary outcome has been published, but we look forward to its outcomes.

AIMS (VIC) Haematology Workshop

By Jessica Guglielmino

On the 28th of May, I had the pleasure to attend the scientific workshop 'Challenges in the Haematology Laboratory' hosted by AIMS Victoria. This workshop was a full day, in person event graciously hosted by Stago at their headquarters in Forest Hill, Victoria. Like many, the opportunity to be reunited with acquaintances and network with colleagues in the medical science field was wholly welcomed after what seemed like a never ending period of COVID-19 lockdowns. There were 10 fantastic speakers organised with over 60 attendees present. Morning tea and lunch were provided and the atmosphere was buzzing with excitement.

All of the presentations were unique, insightful and interesting to watch. My favourite presentations were delivered by Teodora and Niki on the topics 'Transfusion in trauma' and 'Interference in solid phase transfusion testing', respectively.

As a student with limited exposure to clinical pathology laboratories and the procedures and protocols that are used, hearing about Teodora's experience with managing transfusions in trauma patients at The Alfred was particularly insightful. A video showing the process of providing red cells to such patients was shown during her presentation, illustrating the progression from notification of an incoming trauma patient to issuance of blood. This video was particularly memorable to me and was a fantastic aid in demonstrating the process, minus the intensity of a real time trauma case of course! The importance of knowing the patient details such as gender, age and transfusion history was reinforced by Teodora, as well as remembering that these details may be incorrect when patients are non-responsive. From this presentation it wasn't hard to deduce that managing transfusions in trauma patients is undoubtedly challenging in terms of working under pressure, providing units when patient details may be scarce as well as dealing with the emotional impact post-event.

Solid-phase transfusion testing was a concept I was familiar with from my studies at RMIT, however the practical challenges of using this platform was something I was not familiar with at all. Presented by Niki, the interferences observed with this technology as well as the challenges of overcoming them was very interesting to learn about. Due to the increased sensitivity of solid phase transfusion testing compared to other testing platforms (such as column agglutination technology), false positive reactions may be observed at a higher frequency. Solid-phase only antibodies may interfere with pretransfusion testing and, as detailed by Niki, need to be resolved with manual methods. It was interesting to see just how common this interference is and how experience plays a big role in recognising true positive reactions and reagent-dependant reactivity. Should I ever find myself in a laboratory that uses solid phase testing, this presentation is definitely something I will draw on.

I was also fortunate enough to be given the opportunity to present at the workshop, which was a totally new experience for me as a student. Although I was nervous, it was a fantastic experience and the positive reception made me excited to be a part of a community of scientists that foster continued learning. Overall, I believe it was a successful day and I am so excited for future in-person networking events!

Victorian Faces of the Fellowship

Joe Rigano (FAIMS)
Haematology

Alfred Health

After receiving my bachelor's degree, studying for a postgraduate degree was the furthest thought in my mind. As the years progressed, I gained a depth and breadth of knowledge and experience in the field of Haematology. I reached a point in my career where I wanted to formally consolidate my knowledge and experience as a medical scientist. Many of the senior scientists who I worked with were AIMS Fellows and they suggested that I enrol in the AIMS Fellowship programme. After learning more about the programme and unable to easily answer the practice exam questions, I was hesitant to start. A couple of years passed before I discussed the programme with a former colleague (who became my mentor) at which point I decided to go for it.

The first exam was the hardest as I was unsure of the extent of preparation required. The curriculum covered a vast amount of laboratory and clinical knowledge. Once I had gathered the necessary resources, I developed a study plan that commanded discipline, commitment and consistency. This was essential to my success as I continued working on a 24/7 roster as well as raising a young family. When I passed my first exam, I felt a sense of relief and confidence that I was capable of achieving the AIMS Fellowship. I adopted the same study plan for the remainder of my exams and was awarded a Fellowship in Haematology in March 2022.

There is no doubt that the Fellowship has advanced my career by providing me with an operational perspective of the laboratory and confidence to apply my knowledge through training, mentoring and supporting colleagues. The programme is specific and relevant to your chosen discipline providing you with practical knowledge that you can apply to your daily life as a medical scientist making you an invaluable resource to any organisation. The Fellowship is challenging requiring commitment, organisation and support nonetheless it is a rewarding experience and the knowledge gained will prepare you for a future in Laboratory Medicine.

I would like to thank mentor Ray Dauer for his inspiration and motivation and most importantly my wife and children for their support, encouragement and patience.

A Day in the Life of a Transfusion Scientist: Sofia Plymin

What has been your career/study path thus far?

After completing a Bachelor of Science majoring in Pathology at the University of Melbourne, I felt like I had a lot of theoretical knowledge but had very little practical skill. The role of a medical scientist wasn't even discussed during my undergraduate degree, and it was only through my own research that I discovered the Master of Laboratory Medicine at RMIT and discovered what medical scientists were. Although during my Masters I completed subjects in chemistry, histology and microbiology, I knew my passion was in Haematology and I majored in Haematology and Transfusion/Transplant Medicine. I completed a placement at Alfred Pathology Service in their Haematology department and this solidified my decision of becoming a haematology scientist. I started at St Vincent's Pathology shortly after and rotated through their blood bank, haematology, morphology, and routine and special coagulation departments. Last year, I made the move to Northern Pathology Victoria to be the Grade 3 senior scientist in the Haematology and Blood Bank laboratories.

What is your role as a transfusion scientist?

The staff here at NPV rotate through a core laboratory which include the haematology, coagulation, blood bank, morphology, biochemistry, and electrophoresis departments. Along with the Grade 3 in Biochemistry, our roles as Grade 3s of the core laboratory is to ensure competency of staff, training of new recruits, updating and reviewing protocols, stocktake and ordering of reagents, reviewing lab and clinical incidents and creating corrective actions, monitoring of QC, submitting and reviewing external QAP, creating monthly reports for management meetings etc.. the list can seem never ending at times!

When people think of the work a blood bank scientist performs, their mind very rightly goes to pre-transfusion testing. And this is a very important, clinically significant part of our role, but the other facets of the role that is often overlooked is blood inventory management. The baton of responsibility for handling these precious donations is passed from Australian Red Cross Lifeblood to our blood bank as soon as the blood components and products are received by our staff. In the past year, some of the components and products such as O Rh(D) Negative red cell have fallen to very low stock levels and there have been many times ordering restrictions have been placed on laboratories to manage numbers. This has hopefully prompted many hospitals to review their product management, and bring in policies such as Group A low titre FFP for emergency use, or O Rh(D) Positive emergency issue RBC for adult males. Here at NPV, we were fortunate enough to have a Standard 7 committee who was very supportive in bringing in these changes at the beginning of this year, and since the implementation of O Rh(D) positive emergency RBC for males, we've seen both a reduction in the amount of O Rh(D) Negative red cells being ordered each week, as well as a reduction in their use for non-O Neg patients. As a senior in blood bank, part of my role is to think of ways our blood bank can both help ARCL manage their stock as well as managing the stock required in our hospital to treat patients in a safe and timely manner.

Has your working day changed since the covid pandemic?

I joined NPV during the second wave of COVID in 2021 so I haven't known my role outside of COVID yet. Like most workplaces, isolation and sick leave has impacted the roster incredibly, and I've jumped on the bench for many shifts, including nights. I believe that as a senior, keeping a hand in the lab is very important as there's sometimes quirks to the LIMS or exceptions to protocols that you may not see unless you're performing the work regularly - and this can help when reviewing procedures.

What is special about your role that sets it apart from other medical scientist roles?

II find that the role of a blood bank scientist differs from roles in other departments when it comes to relationships with clinical wards. Every day, we will have face to face contact as well as many phone conversations with different clinical staff, including nurse, doctors, hospital orderlies, and students. As a senior, I attend massive transfusion reviews with anaesthetic and emergency doctors, organise ward stock for our ICU and Theatre departments with the nurse unit managers, and manage our three antenatal clinic fridges with anti-D stock in conjunctions with the midwives. When I'm working in the blood bank compared to haematology, the more prominent connection to clinical wards reminds me that every action we make as medical scientists has a patient at the end that will be affected by those decisions, and I remember to take that reminder with me when I work in other departments.

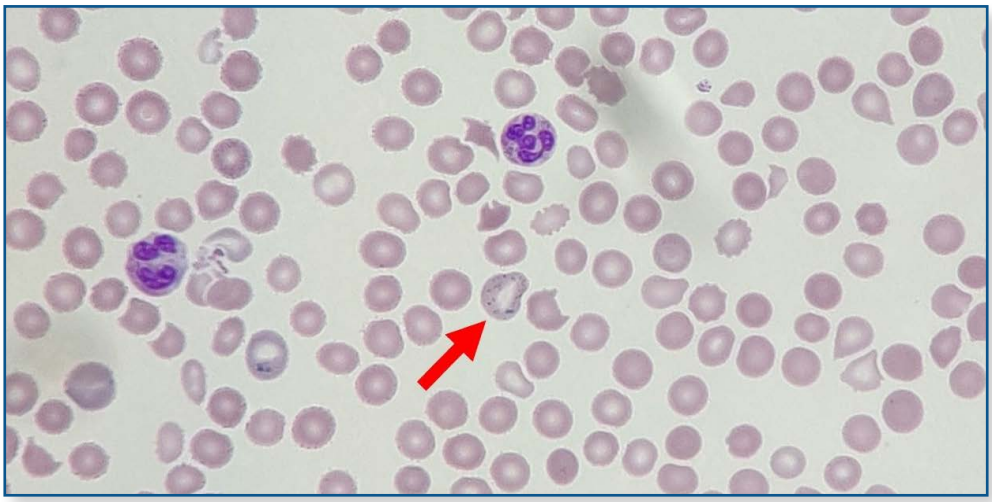
What is something quirky about you – something that others may not know?

One thing people may not know is that I taught dance every week whilst being a Grade 1 scientist. I have unfortunately had to stop when moving to NPV but still take the odd class for fun.

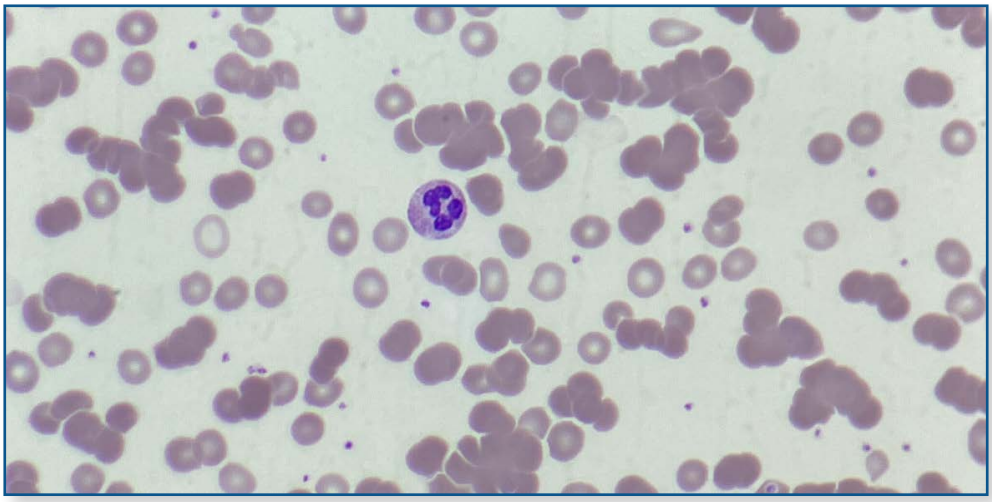
[Answers on page 13]

TEST YOURSELF

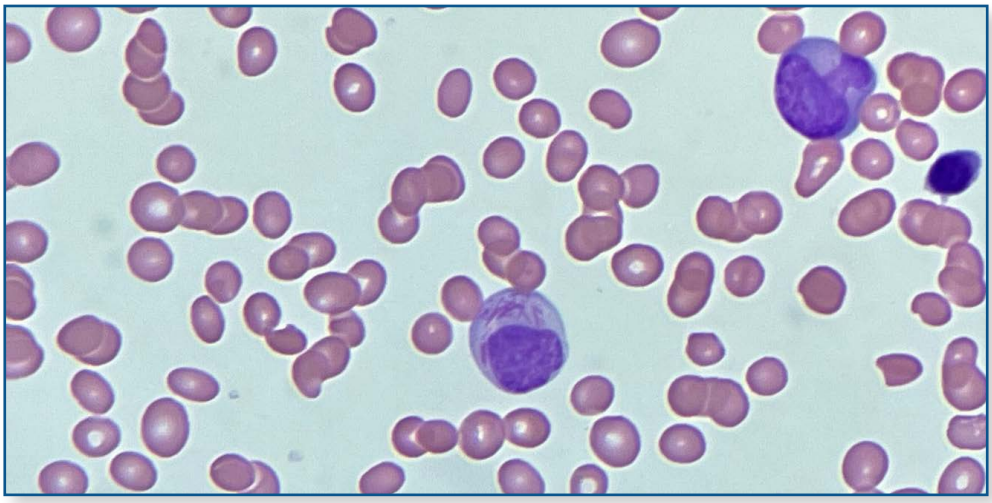
1. Name the cell pointed by the arrow:



2. Possible diagnosis for the blood film below:



3. Possible diagnosis for the blood film below:



All images provided by Anas Nasir.

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GET YOURSELF CERTIFIED!

The Australian Council for Certification of the Medical Laboratory Scientific Workforce (CMLS) is a newly created not for profit company established to administer the voluntary certification scheme for clinical scientists, medical scientists and technical officers.

WHY BECOME CERTIFIED?

Your status as a certified medical laboratory professional is a public guarantee that you are qualified, competent and continuing your professional development.

- Recognition of scientific qualifications
- Certification aligned with competency development and assessment processes
- Acknowledgement of participation in continuing educational activities
- Increased professional credibility and prestige in the industry
- Support of industry standards
- Demonstrated commitment to superior professionalism
- Advantage in the recruitment process

Visit the website https://cmls.org.au/Apply to apply. If you encounter any problems or have any questions, please email: office@cmls.org.au.

Australasian Professional Acknowledgement Continuing Education (APACE) is a voluntary programme that recognises professional activities which contribute to professional growth.

WHY BECOME CERTIFIED?

- Participation in CPD activities demonstrates a commitment to ongoing continuing education and professional development.
- APACE provides formal recognition of activities that may have been pursued on personal basis without recognition – records for a professional development portfolio.
- An APACE Certificate enhances professional profile and is a bonus on a resume.
- Recognition of participation in activities provides encouragement to maintain, improve and extend knowledge and skills for scientific and professional duties.
- CPD is about extending your knowledge and keeping up with, or ahead of, current developments and practices.
- CPD participation ensures a competent workforce and enhanced quality of service for increased confidence of service users.

The programme is open to members of AIMS, AACB, ASM, THANZ, ANZSBT and FSA. APACE participants can lodge applications and activities using the online diary www.apace.org.au.

"As an overseas-trained laboratory professional with a few years of working experience in an Australian laboratory, I felt the need to uplift my professional standing within the industry. Getting certified is one way for me to achieve this and gain more professional credibility. Working in the clinical laboratory means that the majority of the clinical decisions are based upon the results that I as a Medical Scientists produce. With that, I believe it is a personal obligation for me to assure the public that I am capable in my field of work and this certification is a proof my competence. Being part of this also means I am obliged to participate in CPD activities which is important in our field to stay knowledgeable and keep up to date with the latest developments."

JOHN ABCEDE, CMLS, MAIMS
MEDICAL SCIENTIST
NORTHERN HEALTH

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Answers to quiz on page 11:
1) Basophilic Stippling
2) CHAD
3) APML- Auer Rods present

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