

PEARLS

POCUS for Emergency and Acute Care
in Resource-Limited Settings

Welcome to our
Monthly Newsletter



Painting of the Solomon Islands archipelago at Honiara airport



REMINDERS

Upcoming:



**Monday 21st October
+7AM GMT**
Image Review Session
Dr Lewis McLean
<https://unimelb.zoom.us/j/89171569520>
PW: 584496



**Monday 4th November
+7AM GMT**
Monthly Lecture series
Dr Greg Stiller
Topic: TBC
<https://unimelb.zoom.us/j/81618424483>
PW: 316519

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numbers

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Upcoming events
& developments

Message from Long



Long Nguyen
Medical Student Lead

Hello everyone,

Welcome to another edition of our monthly newsletter!

Thank you to everyone who has supported the fundraising effort for Dr Donna Piamnok and her medical treatment. We are currently at almost 80% of the target goal. Please share the link to her GoFundMe page to your colleagues if you could. Her story is included again in this edition on page 8 - Community Corner.

We would like to especially thank Dr Sam Orde for his team's incredible generosity in donating money from his Nepean ultrasound courses towards buying Butterfly probes for PEARLS. Being a volunteer-run organisation, we rely entirely on the time and goodwill of everyone involved in making our mission possible. Thank you, Sam!

Dr Wahab, the Head of the Emergency and Trauma Department at the Kuala Lumpur Hospital delivered our monthly lecture this month on the topic of "POCUS in Dengue". It was a fascinating and worthwhile watch. Please head to our Youtube channel to view the recording!

In PEARLS's first venture into Asia earlier this month, Dr Matt Born led the first workshops in Nepal at the NEMPHE Conference 2024 in Kathmandu. Despite treacherous weather with severe flooding and tragically many lives lost, he was still able to accomplish his mission. We will have the opportunity to read about his adventures in a future edition of the newsletter.

A quick reminder that we'll be announcing the annual awards for our learners in our final newsletter edition next month. Please make sure you finalize and upload all of your scans and remind your coaches to review them! 🙌

Have fun scanning!



Dr Sam Orde

Vacancies

PEARLS has mini-teams working on various projects in the background. We are on the lookout for anyone interested in contributing in these fields:

HIGHEST PRIORITY:

- **PEARLS Donor liaison, Fundraising coordination & Grant applications team**
- **PEARLS Tech Support team**
- **PEARLS Publicity, Social media, Marketing & Website team**
- *PEARLS Country Leads & Local Leads - spots open for senior leads and junior partners in multiple countries*
- *PEARLS Remote Coaches*
- *PEARLS Cloud Coordination team - supporting lead Dr Ivan Chan*
- *PEARLS Lecture Series - speaker recruitment and coordination - partnered with medical student team*

To enquire or request a Position Description, please email us at pearls.enquiries@gmail.com. Many positions are open to medical students as well, often in partnership with a senior lead.

A brief timeline of PEARLS's history



AUGUST 2022
INAUGURAL PEARLS-ED
WORKSHOP IN VANUATU
**4 FACULTY AND 10
LEARNERS.**



NOVEMBER 2023
PARTNERED WITH DR LEWIS
MCLEAN AND THE ICU
COMMUNITY TO LAUNCH THE
PEARLS-CC WORKSHOP. THIS
OCCURRED IN PNG ALONG WITH
A PEARLS-ED COURSE
5 FACULTY AND 20 LEARNERS.



MAY 2024
OUR FIRST RETURN TRIP TO
TONGA TO DELIVERY BOTH
PEARLS-ED AND PEARLS-CC
WORKSHOPS TO OUR LEARNERS
6 FACULTY AND 11 LEARNERS



AUGUST 2024
PEARLS EXTENDED BEYOND
THE PACIFIC ISLANDS AND
DELIVER THE FIRST PEARLS-ED
COURSE IN BOTSWANA, PLUS
THE FIRST PEARLS-CC COURSE
IN FIJI.



NOVEMBER 2024 (PLANNING)

PEARLS IS ON TRACK TO
DELIVER FIRST WORKSHOPS IN
SOLOMON ISLANDS AND
SAMOA

MAY 2023

SECOND PEARLS-ED
WORKSHOP - IN TONGA
**5 FACULTY AND 11
LEARNERS.**



MARCH 2024

OUR FIRST EVER 'PEARLS
RETURN TRIP' - TO
VANUATU
**6 FACULTY AND 23
LEARNERS.**



JUNE 2024

FIRST 'SCOUT' SENT TO
HONIARA, SOLOMON ISLANDS
TO ESTABLISH INITIAL
REMOTE TRAINING TO **4
LEARNERS**



OCTOBER 2024

PEARLS EXTENDED INTO ASIA
TO DELIVER THE FIRST IN-
PERSON WORKSHOPS IN
KATHMANDU, NEPAL



PEARLS IN NUMBERS

Dr Ivan Chan - PEARLS Cloud Coordinator and PEARLS Research team



119

Clinicians Trained

26

QA image reviewers on cloud

33

Clinicians who've travelled to teach PEARLS

37 + 6

Butterfly probes linked to cloud: Distributed through funding support of partners + self-sourced or funded by local health system

711

Studies uploaded to cloud

11

In-person workshops across 6 countries (7 PEARLS-ED, 4 PEARLS-CC): Vanuatu, Tonga, PNG, Fiji, Botswana, Nepal

11

Learners began PEARLS training through remote coaching - from PNG, Kiribati, Nauru and Solomon Islands

21

Number of educational videos on Youtube channel

348

Number of social media followers including Twitter, Youtube



Top 5 learners

Ranked by the number of successfully QA-ed uploads in the previous month.

1 - Dr Isaac Singh



2 - Dr Ibandji Tsasa



3 - Dr Alison Lalega



4 - Dr Seluvaia Taunaholo



5 - Dr Twila Okaipa



Super amazing everyone! Keep up the great work and we look forward to reviewing more scans this month! 🙌

Top 3 QA reviewers

Ranked by the number of successfully QA-ed uploads in the previous month.

1 - Dr Lewis McLean

2 - Dr Steve Lindley

3 - Dr Sally Hansen

HONIARA RECAP

As we count down the days to our inaugural in-person workshops in Honiara, Solomon Islands, we'd like to revisit (in more details) our earlier landing in the country!



Central Market, Honiara with huge arrays of fresh produce

In June 2024, I embarked on a transformative two-week elective placement at the National Referral Hospital (NRH) in Honiara, the capital of the Solomon Islands. This placement was coupled with my volunteering mission as part of PEARLS (POCUS for Emergency and Acute care in Resource-Limited Settings) to provide the emergency department with a free ultrasound probe, a smart tablet and initial training in point-of-care ultrasound. The entire experience proved to be far more than an elective placement; it became a profound exploration of a new culture, a chance to offer meaningful contributions, and an opportunity for significant personal growth.

Leaving behind Melbourne on a cold, crisp morning, I was filled with a mixture of excitement and anticipation as I boarded the flight to Honiara. In less than 10 hours, I found myself greeted by the intense heat and humidity of the tropical island and sprinkling rain - an absolute reprieve from the freezing and temperamental weather of Melbourne. The taxi ride to my accommodation was both precarious and amusing. The upper half of the front screen was tinted to block the harsh sun during the day but it also meant at night, the driver had to crouch down to his steering wheel in order to see the road - I mildly feared for my life but also trusted that this local driver knew what he was doing (surely!). My fear was not abated when the later half of the drive bounced us through a million pot holes the moment we turned off the highway. The precariousness of travelling didn't stop there as the following morning I took a 'short cut' route to the hospital which meant I had to trek down a steep hill through the wilderness to reach the main roads. Sometimes I wondered if the 'short cut' also implied my life might be cut short if I kept slipping and tripping on the slope; yet somehow that was my path of choice every morning to the hospital.



Beautiful sunset over the South Pacific ocean

As I ventured into Honiara's bustling Central Market, vibrant colors and local produce offered a feast for the senses. This market, brimming with fresh fruits, vegetables, and fish, was a stark contrast to the perils of the roads. Everything was so fresh, inviting and in absolute abundance that I wondered if our Westernized way of life may have made us forget what is true richness and what is true abundance. Later on in my stay, observing the infiltration of highly processed food and how many considered it to be the height of civilisation and desirability, I was both petrified and sad. Petrified by the pernicious marketing ploys of the Big Food industry permeating into the psyche of the Solomon Islanders; and sad that they feel somehow inferior or lacking, unaware of the natural golds of their land and ocean.

Dr Gwen Tovosia, one of the ED registrars was my 'tour guide' for the first day. Her warm and patient guidance through the small city's streets and local shops as well as tips on local languages, customs and culinary cultures laid a solid foundation for me to confidently navigate the city in the coming days. Among over 100 types of bananas and several different types of cassavas, I learnt which to choose and how best to cook them, ensuring I could eat like a proper local! And of course, the pride of Solomon Islands, their canned tuna!



Dr Gwen Tovosia - my tour guide and local cooking coach



Shopping haul!

Honiara is a remarkably international and multicultural city. Many locals speak multiple languages, including their mother tongue dialects and Pidgin, with some doctors at NRH fluent in up to five languages or more. Due to the absence of a medical curriculum in Solomon Islands, all doctors were sent overseas for training and thus, upon returning, they would also be able to speak Spanish and English. Other cultures that are present here include many migrants from nearby island states such as the PNG or Fiji, as well as Sri Lanka, China, and even Vietnam, besides Australian expats and tourists. Having a Vietnamese background, I was both amused and intrigued to discover a large mural of the Vietnamese flag in a popular café called 'King of Meatz' along with pho, bun and other traditional rice dishes, an example of the unexpected and delightful cultural connections I encountered here.

As the days progressed, I immersed more into my life at the hospital. In my volunteering capacity as part of PEARLS, I delivered presentations on emergency ultrasound techniques and trained emergency doctors in some ultrasound protocols including eFAST, FELS, basic echocardiography and IV cannulation. During the other half of the time, I participated in morning and afternoon handovers, triaging and managing patients under supervision, observing and participating wherever possible. Being able to immediately contribute in however small capacity by working alongside Dr. Trina and the team on educational materials for local medical professionals was both challenging and fulfilling. I found it extremely important and rewarding to be quickly integrated and considered part of the team. Our focus was on enhancing emergency ultrasound skills, something we believe to have game-changing potential in assisting emergency doctors with their diagnosis and management of patients here. Just the week before I arrived, an 8-year old girl passed away from cardiac tamponade which the doctors all believed could have been detected much earlier had they had a POCUS on hands that would have eliminated their delay in her diagnosis and management. Being able to combine my placement with my volunteer work with PEARLS made this placement extra special knowing I would be leaving behind a meaningful and life changing, if not saving, piece of equipment for the people of Solomon Islands.



Providing ultrasound training to the ED team.



The old and temperamental portable ECG machine

Completely different to Melbourne is the high prevalence of infectious diseases like tuberculosis, malaria, and dengue fever here. Almost all patients at the point of presentation for any symptoms vaguely resembling possible malaria. Another commonly observed issue is poor wound care management where minor cuts often progressed into serious infections requiring extensive treatment. We would also have to chase up blood test results by frequently visiting the pathology lab to find blood test results written by hand in huge folders (I will never complain having to navigate EMR again!). Even simple point-of-care medical equipments were in short supply including thermometer, pulse oximeter, single-use lancets (nurses use injection needles instead), blood glucose machine, etc. On several occasions basic antibiotics were unavailable and thus patients would receive only one of the two recommended medications in their treatment regime. I will always remember the day when my patient with a heart attack couldn't get his medication because we ran out of stock (nor did we have a cath lab). This is not to mention the hospital's ongoing budget drought.

There were many more memorable and poignant experiences that occurred during my time here. From my first resuscitation attempt on a young man my age who had end-stage liver failure and unfortunately did not survive, to the two separate occasions where I diagnosed and managed two patients with myocardial infarctions that presented quite late, to a young woman with molar pregnancy and another with suspected ruptured appendix. The reality of high prevalence of non-communicable diseases in a developing country struck hard: chronic liver disease, diabetes, dyslipidemia, overweight and obesity, hypertension and cardiovascular diseases - just like Australia. Unlike Australia, however, patients here have poorer management and thus outcome of their conditions with many often presenting with lots of complications, very commonly decompensated heart failure or non-healing diabetic wounds requiring surgical debridement or amputation. Many of these patients had stopped taking their medications due to medication shortages or not knowing they needed to take them for the rest of their lives, despite these medications technically being available for free to all local residents. This situation illuminated one of the many underdeveloped aspects of the healthcare system. It was evident that addressing the broader issues of health literacy, consistent medication supplies, and chronic disease management are some of many crucial aspects to improve healthcare in this setting.



All hands on deck - 2 doctors, 1 nurse and 1 mom to take blood from a super strong toddler

With constant challenges that vary each day, the doctors in the ED had learnt to quickly adapt how they practice medicine and become more resourceful with what they had. However, it also means they were forced to accept and live with the fact that the medical care their patients are receiving falls short of what they need. I found it incredibly difficult at first but when the stream of new patients kept pouring in, I also noticed how I quickly developed a different coping mechanism, to put aside my sense of idealism so as to simply moving on to tend to those in needs.

Towards the final days of my placement, I was pleased to find out that the hospital was starting to receive significant funding from China, Japan, and Australia to improve its infrastructure. A new hospital building funded by China was under construction. The ED department was also recently renovated, which included the addition of air-conditioning a much-needed comfort and an absolute luxury for me after arriving each day drenched in sweat from my hike down the hill and walk to the hospital under the early scorching sun. The state-of-the-art radiology building, featuring the hospital's first CT machine installed just three years prior, and ongoing efforts to secure an MRI machine, showed promising progress was being made to improve healthcare delivery in Honiara.



Mural outside the paediatric ward - Clean hands save lives

My two weeks in the Solomon Islands were a rich and rewarding experience that extended beyond the boundaries of professional training. It was a journey marked by connection, growth, and a deep appreciation for the resilience of a community and the universal quest for better healthcare. This elective placement was more than a professional exercise, turning into my personal mission to contribute more to the landscape of international medical aid and collaboration. Not only has it provided me with so much insight into resource-limited healthcare in Solomon Islands, but it also has renewed my sense of purpose in my medical career.

There was so much more that happened, moved and inspired me, and so many people and doctors I met during this trip that made me feel so welcome and at home, that I can't fully capture or write down in words in this short piece of writing. However, they will stay forever in my heart and will continue to guide my future practice and understanding of medicine in ways that would simply not have been possible without these experiences. As I boarded my flight back to Melbourne, I felt both profound sense of gratitude for the opportunity to learn and grow, and also a burning desire to do more.

This is only the beginning.

Long Nguyen

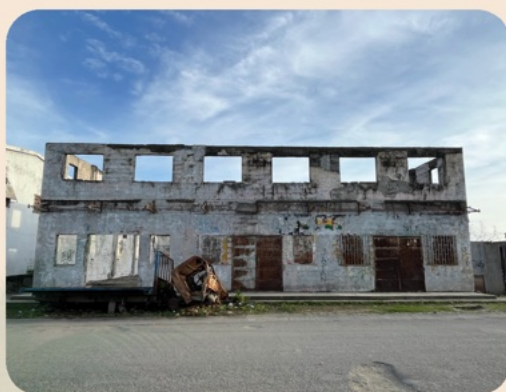
I am immensely grateful for the support provided by the Andrew Dent Student Elective Scholarship, which made this memorable and transformative experience possible.



Packed like tuna inside a local bus.



'National pride'. Canned tuna.



An abandoned building in China Town

I also realized whilst on the placement that there were significant opportunities for future collaborations and initiatives aimed at advancing medical education in the Solomon Islands. Dr Trina Sale and her colleagues, in collaboration with the Solomon Islands National University, were working on launching the first postgraduate diploma in Rural Medicine, which would be the first medical degree created and delivered in Solomon Islands. It is a significant and promising step forward for the future of medical education and healthcare in the country.



Nursing students Raydrick and Rose kindly gave me a huge tour of their big and beautiful university campus, the Solomon Islands National University.



Community corner

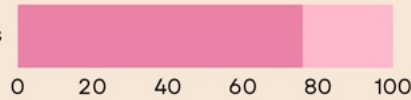


To support



Lifesaving surgery for Donna

Progress



Dr Donna Piamnok, a dedicated member of our PEARLS community and our first ever PEARLS remote learner, was recently diagnosed with breast cancer. Donna is currently receiving chemotherapy treatment in Wewak, East Sepik. Her friends and colleagues are fundraising for her surgical treatment. If anyone in our community has the capacity to support, please do so at her GoFundMe page below.

“Bron and Angie from Pacific Emergency Education are asking for assistance in raising the cost of life saving surgery for our friend and colleague Dr Donna Piamnok, an emergency care clinician from Papua New Guinea.

Donna has worked tirelessly for many years to advocate for best practice emergency care for all of her patients in Papua New Guinea, particularly including those in remote communities. We have seen her spend the night driving around pharmacies trying to access medication for a patient having a heart attack, then still be on the outreach clinic bus at 7am, travelling to offer her skills to patients who live too rurally to otherwise access medical treatment. She has risked losing her job to speak out about the lack of basic medication available to hospital clinicians in Papua New Guinea, and has been a ferocious advocate for women and marginalised patients as well as a strong supporter for her nursing colleagues. Last year her work was recognised by The Australasian College of Emergency Medicine (ACEM).

Now it is Donna who needs to access specialist care. She is currently receiving chemotherapy in Wewak, Papua New Guinea but after this will require complex

surgery to definitively prevent a recurrence of her cancer. Due to the many challenges within the Papuan healthcare system, her surgeon is unable to safely undertake this operation in a public hospital, and she needs to have the surgery performed privately at the Pacific International Hospital in Port Moresby.

We hope you will join us in supporting Donna to receive this life-saving treatment. Ideally, the funding goal will be met by November 2024 so that Donna can finish chemotherapy knowing that planned surgery will follow.

Donna's patients and community in Papua New Guinea need the skills and passionate advocacy that she brings to her medical practice, and her many friends and family know that the world is a much richer place with Donna in it. Please lend your support to accessing this life-saving care for someone who has cared for so many other people.

All funds raised will be used for the cost of surgery at the Pacific International Hospital and post operative rehabilitation.

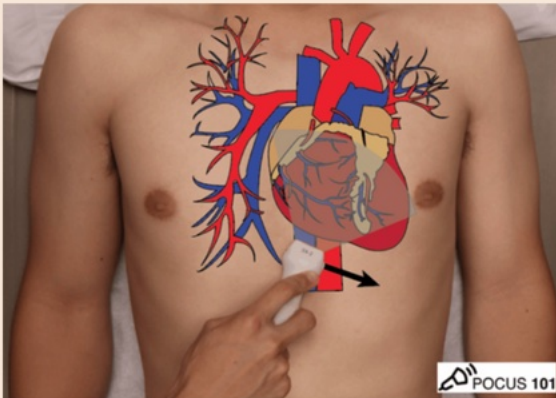
Small donations add up to wonderful things when they are shared amongst a community, so please share this page with your family and friends.”

<https://www.gofundme.com/f/lifesaving-surgery-for-doctor-donna>

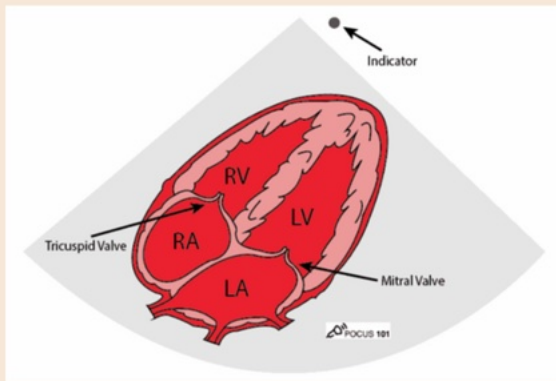
We wish Donna all the best with her medical treatment and we send her and her family all our love.



Tips of the month: Subcostal View



Hand and Probe position for the Subcostal View



Subcostal View Illustration

Reference: https://www.pocus101.com/cardiac-ultrasound-echocardiography-made-easy-step-by-step-guide/#Step_3_Apical_Views

How to get there:

With the patient's knees bent, position the probe under the costal arch (beneath the xiphoid process) with the indicator pointing towards the patient's left.

TIP 1:

Since the plane of the heart is superficial, you need to use an overhand grip on the probe in order to be parallel with the skin.

TIP 2

If you approach from the left side your view will be obstructed by the stomach or bowel gas so approach from the right side!

TIP 3

If you are still having trouble getting a clear image, try applying gentle downward pressure on the probe.

Monthly Image Review session

Monthly Image Review sessions are held on the **third** Monday of each month at +7AM GMT.

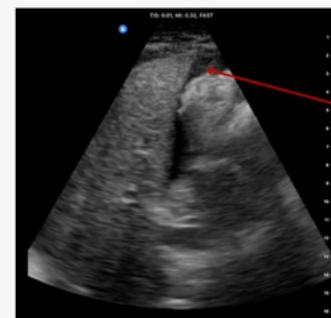
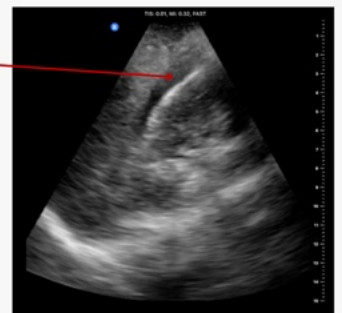
Dr Lewis McLean returned to host our September session, joined by a large number of our new faculty numbers who were keen to learn about how to train the next group of learners.

We reviewed two cases, one eFAST and one echocardiography - the staples of PEARLS workshops. Common mistakes and areas for improvements were highlighted, along with tips on how to guide the learners through the initial stage of scanning and acquiring images. These include:

- Adjusting and choosing the appropriate image depth
- Image optimisation with probe positioning and angling
- Image optimisation with patient positioning
- Speed of probe movements while recording sweep views
- Adequate labelling of scans

Disclaimer: Case presented with the permission of the scanner/doctor, solely for the purpose of education in our internal newsletters.

Good demonstration of free fluid but liver tip not well visualised



On the second scan, both free fluid and liver tip well visualised

Image. RUQ view of a patient with blunt abdominal trauma

ID cases from around the world



This segment features cases contributed by ID specialists Dr Tom Heller and Dr Francesco Taccari.

A 39-year-old male from Romania presented to ER with a 2-week history of low-grade fever and a left axillary lump. He tested HIV positive; his chest X-ray was unremarkable. An ultrasound of the left axilla revealed enlarged hypoechoic lymph nodes and an ultrasound of the abdomen revealed again multiple, hypoechoic enlarged celiac nodes as well as multiple, hypoechoic spleen micronodules.

Question 1:

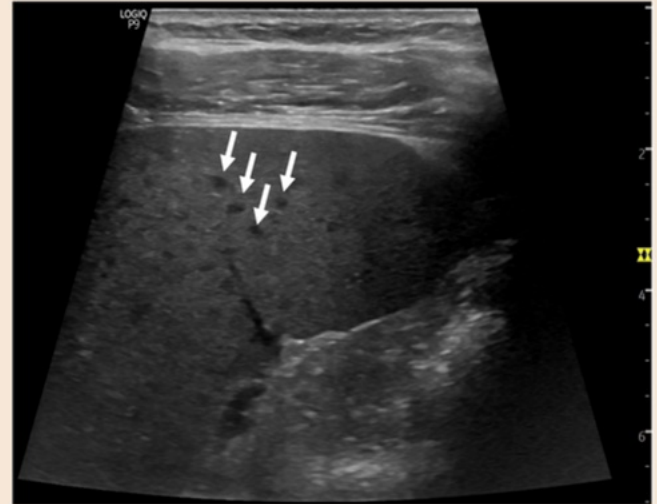
Based on the patient's medical history, what diagnosis do these ultrasound features suggest?

1. Lymphoma
2. Disseminated tuberculosis
3. Bartonellosis
4. Melioidosis

Question 2:

Which test do you perform to confirm the diagnosis?

1. Fine-needle aspiration of the spleen
2. GeneXpert on sputum sample
3. Fine-needle aspiration of the axillary lymph node
4. Surgical excision of the axillary lymph node



USS of the spleen



Answers in page 9

You can view the clip by clicking the following link (you will need to log into Gmail) or scan with QR code below:

https://drive.google.com/file/d/1ipDsWDYqBLqIDmz8t376Dd77Z7QBx3gZ/view?usp=share_link

T@g an expert

To maximise the wealth of expertise and knowledge within the organisation, we are running the "T@g an expert" initiative! For difficult scans, both learners and faculty can T@g one of our experts in an image comment for their opinions and advice as per below. Due to technical difficulties yet to be resolved by Butterfly, the names of some faculty are not yet included here.

Faculty who'd like to make modifications/additions to this list, please email pearls.enquiries@gmail.com

Name	Happy to be tagged in
@Jonathan Henry	Echo, E-FAST, AAA, bowel
@Katie Newman	Anything except echo
@Jo McCann	Anything except echo
@Lewis McLean	Echo, lung
@Gabriela King	Anything
@Matt Born	Anything
@Ant Allso	Anything
@Darsim Haji	Echo, lung
@Sam Orde	Echo, lung

Upcoming Events & Developments

PEARLS Workshops

- **Nov 6-13 2024:** Inaugural PEARLS workshops in Honiara, Solomon Islands
- **Nov 18-22 2024:** Inaugural PEARLS workshops in Apia, Samoa
- **Nov 26-27 2024:** PMA conference in Christchurch - 'Vunilagi ni Bula Saute: Living our best lives'. See [below](#) in the green box for details!

Other updates

- **22nd-23rd Nov:** Dr Matt Born is presenting virtually at the WINFOCUS World Congress 2024 on the topic of "POCUS for abdo pain in resource-limited settings".



PMA Conference Christchurch PEARLS Workshop

Nov 26-27 2024: PMA conference in Christchurch - 'Vunilagi ni Bula Saute: Living our best lives'.

Are you attending, and would like to attend a POCUS workshop, most likely to be scheduled the day prior to the conference?

Please email jploubser@gmail.com including modalities you'd most like to learn, and your flight details (if already booked).

We'd love to run it as a refresher workshop - welcome to all, but especially those who've attended a PEARLS course before. And be sure to bring your probe!



PMA Scholarships

Dr Sitaleki Finau Scholarship - \$10,000 will be awarded to one Indigenous Pacific medical trainee sub-specialising in Public Health with an interest in Pasifika community-led research yielding convincing evidence to implement a public health project.



The Sir Terepai Tuamure Maoate International Study Award - \$20,000 will be awarded to one Indigenous Pacific-based Doctor or Nurse that has been enrolled and accepted into a course at an international institution for study.



Dr Joe Williams Scholarship and Dr Robert Woonton Scholarship- Each scholarship will award \$10,000 to one Indigenous Pacific medical training in their first or second year of specialist training.

For more information and to apply, please visit:

<https://pmamembership.org.nz/scholarships>





Answers:

Q1: 2. Disseminated tuberculosis.

Q2: 3. Fine-needle aspiration of the axillary lymph node.

Fine-needle aspirate of the axillary lymph node was sent for GeneXpert MTB/RIF and was positive. Standard anti-TB therapy with rifampicin, isoniazid, pyrazinamide and ethambutol was started with progressive improvement of patient's symptoms.

Tubercular spleen micronodules are usually multiple hypoechoic, few millimeters in size (usually 4-7 millimeters) with a "miliary" distribution. They can be easily detected with high-frequency linear transducers but can sometimes also be seen with convex probes. Spleen micronodules, together with abdominal lymphadenopathy, pleural, pericardial and abdominal effusions, are the target of the Focused Assessment with Sonography for HIV-associated tuberculosis (FASH) protocol, a POCUS tool for diagnosing extra-pulmonary tuberculosis in people living with HIV (PLHIV) from high-TB burden settings.

Spleen lymphoma is more often characterized by larger hypoechoic lesions with mass-effect, although a micronodular pattern may be observed rarely; disseminated bartonellosis may cause spleen micronodules, even micronodular liver involvement is frequent and typical purplish skin lesions may be observed in PLHIV. Melioidosis should be included in the differential diagnosis of splenic micronodules, according to geographic distribution (unlikely in Romania). Fine-needle aspiration of the axillary lymph node was preferred over aspiration of spleen or surgical lymph node excision because it's faster, easier and safer to perform. GeneXpert on sputum was not performed because the normal chest X-ray and the absence of respiratory symptoms; in case a patient can produce sputum, it is always a good option to also send sputum.



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