



SLMA NEWS

THE OFFICIAL NEWSLETTER OF THE SRI LANKA MEDICAL ASSOCIATION

**Research as a Component
of Professionalism**

**Epidemiology of Melioidosis
in Sri Lanka**

**Highlights of the
inauguration ceremony of
129th International Medical Congress**

**Metacognition:
Ignite Learning within Educational Contexts**

CoverStory...



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PRESIDENT'S MESSAGE

The Annual Medical Congress which is unquestionably the pinnacle academic event in the calendar of the Sri Lanka Medical Association, was held from 24-27th July and was a great success. It was heartening to be congratulated by many who attended the Congress on a well organized event with varying and stimulating content. Organizing the congress was no mean task and it posed many challenges to the scientific committee. I extend my grateful thanks to all the scientific committee members led by the co-chairs Dr. Anula Wijesundere and Dr. G. Weerasinghe who rose to the occasion and accomplished the task with patience and professionalism. Dr. Neelamani Punchihewa, the Hon. Secretary, Dr. Chandrika Wickramasuriya, SLMA member and Dr. Harini Fernando, the SLMA pre-intern deserve the highest praise and thanks for working round the clock to sort out the numerous abstract related issues. A special word of thanks to the registrars and senior registrars who readily volunteered their services to coordinate the congress activities. The office staff of the SLMA ably led by Mr. Rajasingham worked hard to

ensure that all arrangements went according to plan and I thank them very much.

This year's doctors concert organized almost single handedly by Dr. Christo Fernando, was indeed a memorable event. Everyone who was present had the highest praise for the performances, which confirmed the fact that doctors are indeed multi-talented. I take this opportunity to place on record my deep appreciation to Dr. Christo Fernando for his commitment and dedication to the SLMA.

In addition to the technical updates that were presented at the pre-congress and congress sessions, topics such as 'Political initiatives impacting health – have we succeeded in our advocacy?', 'Clinical leadership ensuring and assuring high quality healthcare', 'Can we end AIDS in Sri Lanka before 2030?', 'Are we moving to a post-antibiotic era?' and 'How safe is the air we breathe?' were included in the programme. The objective of these sessions was to use the congress to advocate for nationally important issues among medical professionals.

This year too a number of important

research findings were presented at the free paper and poster sessions. As was done last year, we will discuss these with the Ministry of Health regarding implementation as well as to advocate for further research.

The annual cricket encounter with the lawyers is being organized and I fervently hope that SLMA would emerge as the winners. Therefore, I invite SLMA members who would like to play for the team to come forward to ensure victory. This event provides a forum for doctors and lawyers to socialise and foster solidarity among two of the most respected professions.

I am pleased to inform the members that this year the SLMA Foundation Sessions will be held in Colombo at the N. D. W. Lionel Memorial Auditorium from 21 - 22 October. An interesting programme is being organized and we will keep you updated on the progress. I urge the council and members to actively contribute to these sessions.

Thank you and best wishes
Dr. Iyanthi Abeyewickreme

RESEARCH AS A COMPONENT OF PROFESSIONALISM

Professor Harsha Seneviratne, Emeritus Professor of Obstetrics and Gynaecology, former Dean of the Faculty of Medicine, University of Colombo and a past President of South Asia Federation of Obstetrics and Gynaecology was the chief guest at the inauguration of the 129th Anniversary International Medical Congress held on 24th July 2016. The script of his address at the ceremony is given below.

Research as a component of professionalism

By Professor Harsha Seneviratne

President Dr. Iyanthi Abeyewickreme

Members of the SLMA Council, Past Presidents, The Trustees, Members of the Sri Lanka Medical Association, the Orator for today and Dear Friends, I am deeply touched and honoured by this invitation by your President and the Council for me to participate at the inauguration ceremony of the 129th Annual Academic sessions and be the Chief Guest. It shall remain a high point in my professional life.

I thank the President, Dr. Iyanthi Abeyewickreme for that very overwhelming introduction but wish to add that her own professional progress is no mean achievement. If my suggestions could advance the status of the SLMA and its activities then my pres-

ence at this function would be justified and worthwhile.

The SLMA is the umbrella medical organization in the country. The Annual Scientific Sessions is the key event in the academic and social calendar of this prestigious association. Since I joined the SLMA in 1970 I have noted that our members wait in anticipation to exchange academic and research ideas, interact with old friends and also to once again experience that most enjoyable medical concert. Research presentations however are the main focus. What has been the outcome in professional terms of the efforts to organise this very unique event?

Contd. on page 03

Research as...

In the short time allocated to me I would like to address the issue of 'Research as a component of professionalism'.

To generate better professionalism all our Medical Schools now have behavioural sciences streams. The approach to professional practice however appears to be a negative one. We regularly present medications to our patients prioritising and over emphasising the side effects in preference to the benefits. Family planning counselling is the classic example where the clients are rarely informed about the non – contraceptive benefits including those that prevent cancers.

Similarly research is looked upon with some reservation and even fear by many in the profession. A more positive attitude to all aspects of professional life will hopefully extend even to research. This means getting out of the box and re-visiting every aspect of basic, clinical and advanced research for the provision of better health care.

Research as a part of professional activity is entirely unrestricted to colour, race, creed, gender, age amongst many other things. It is certainly not confined to academics from the Universities.

The Murugesar Sinnatamby Oration of 1974 delivered by Dr. P.H.D.H. De Silva, the then Consultant Obstetrician and Gynaecologist at Base Hospital in Kegalle was a very unique experience for me as a second year Registrar. I was impressed by the results on his investigation on 100 cases on the clinical applications of uterine abnormalities and the link to the renal system. I was however intrigued as to how he could have conducted this study in the late 1960s to early 1970s using the meagre facilities at the Base Hospital in Kegalle at that time. In a similar manner I had the privilege of reading all research studies conducted by Prof Mahasara Gooneratne performed from the 1970s to the early 2000 and those experiments on the intra uterine contraceptive devices were

masterpieces. I do not think our post graduates have ever bothered to look at any of these. These were conducted at a time when computers, internet, endoscopy, the many types of scans were just dreams.

The take home message would be that efforts should be made to marry the ideas and experience of the past with the newer technologies of the present. The collections in the Sri Lanka Medical Library dating from 1844 is unique, loaded with details of basic, applied and clinical sciences and yet to be available on the web. These are lost to anyone who is confined to electronic referencing.

Recently various self-imposed titles have emerged in our country, such as "Knowledge hub, research hub of South Asia, Asia or even the world". Research payments also have been made in Universities and even the Ministry of Health. What has been the return of that investment? "ROI" in business terms. It is said that a tsunami of research has been conducted but the benefits are yet to be realised.

What should be done to encourage and enhance research in general and in particular those of good quality?

Let us briefly look at the outcome of research as so far reported. The participation at the SLMA Annual Scientific Sessions increased over the years compelling a move from the SLMA house to outside venues. Increasing numbers of participants is no indicator of the scientific advancement of the sessions.

1. Prof. Kamini Tennekoon and Mrs. Tanya Nanayakkara reporting on behalf of the National Coordinating Committee on Reproductive Health Research stated that from 2007 to 2012 of 482 studies performed and presented at scientific meetings only 105 (22%) were ever published and only a mere 35 (7.3%) were in indexed journal.
2. Prof. Janaka de Silva in a presentation titled "Scientific Research in Sri Lanka: the need to do better" highlights that in-

terventional studies reported at the Annual Scientific Sessions of SLMA 2005, 2006 and 2011 have been consistently low in number and shown a decline from 4.1% to 3.6% which is only 3 to 4 of 83 to 105 papers presented.

3. Your President of 2005 Haleem Sherrif Deen introduced the concept of "Getting Research into Practice". The Scientific session of that year was based on that principle which he referred to as "GRIPS".

I went through all the abstracts of oral presentations of the 128th Scientific Sessions 2015 of SLMA specifically identifying those that had results with recommendations to get into practice.

Of 78 Oral presentations 37 (47.4%) had recommendations for GRIPS

While 41 (52.6%) did not. These were Surveys, audits, basic science research etc.

Recommendations from most of these were to conduct further studies or use larger samples. Although many had findings which could be used in practice these had not been addressed.

09 presentations were non – interventional but had GRIPS.

Research projects should basically answer the question "How can the results be used in practice?"

It is clear that the strategy to promote research has to change.

There are three stakeholders in this process of enhancing research. They are the Researchers, Research Supporting Organisations and the Public at large:

1. The researchers, should be more positive towards research, take it as a professional responsibility and enjoy doing it. Research ideas can come at the most unexpected times in the most unusual manner and when it comes grab it and work on it. From previous studies look to the methodology to generate research ideas while the results direct the application in clinical practice.

Contd. on page 04

Research as...

Sometimes a research idea may be looked upon as being crazy. So what!! It was Albert Einstein who said "If an idea does not raise scepticism, that idea does not have a future". So potential researchers! There is a whole wide world out there for you to change things to ensure better health for our people.

2. Supporting Research: In all areas of professional life a little help given at the correct time is invaluable. With every medical school having a research project in the curriculum hopefully more young doctors will take on some kind of research in the future. They need multiple inputs, encouragement and help. The need for a **Research Supporting Structure** is very real. The SLMA and other professional bodies which are already doing some work to enhance research could play a major role in mentoring, providing information on available research hardware in the country, to suggest financial resources etc.

A major step has been taken by The Colombo Medical Faculty by organising a Research Writing club under the Nadeeka's Guidance and spearheaded by Dilshani and Tharanga. The concept has now been disseminated to other faculties as well.

Such a concept of supporting innovators and researchers has been practiced elsewhere:

- In the UK Partnering with the British Government the TATA Company which had a major share of engineering production in Sheffield, provided physical factory facilities to small companies with innovative ideas. The object was to provide physical and conceptual engineering support to design and produce limited runs of automotive and aerospace components for small engineering firms which would otherwise face the "valley of death".
- I am personally aware of the medical research institute set up in Jamshedpur in India, the TATA base with my good friend the late Prof. Dasgupta as the Director after his retirement from active University Service. Any researcher in Reproductive Health from the state of Bihar was provided with the laboratory, workshop and technical facilities, mentoring etc.
- A similar process but for very high level research into nano technology was set up in Biyagama in Sri Lanka. However this facility is inaccessible to those at the lower end of the research hierarchy.

Therefore a new process the SLMC may consider is forming a **supporting committee or task force** to develop the organisational tract to enhance research. Start small and let it evolve.

3. Finally I ask you, Who should be the target audience to benefit from the research conducted?

To illustrate what I mean, may I draw your attention to the work published in our own Ceylon Medical Journal in June 2013 on Breast Milk DHA levels and fish diets in three locations in Sri Lanka? This paper by Prof. Sanath Lamabadusuriya, Dr. Pujitha Wickremasinghe and others concludes that "where access to sea fish is limited mothers should be encouraged to increase their fish intake as this would improve their DHA status and that of their breast milk". **If this was a clear message to be sent to lactating mothers why is it languishing on a shelf in the SL Medical Library, while the public is harassed by the promotional material from the milk food industry?** Sadly even the post graduate trainees following the MSc Course in Nutrition were totally unaware of this publication.

Similarly the published work on preventive effect of lactation on breast cancer by Dr. Upul Senarath and co-workers and so many other good researches done in this country should be shouted from the roof tops and not kept in hiding. We should be proud of the good work done by our researchers. Small precise, clear health messages should reach the public via the whole range of audio, print and electronic media available today.

Funding for such activity is always a concern. I am confident that the largest source of funding which are the public, many corporate organisations and the industry could be commissioned to cover the costs. After all the SLMA and most professional societies have shown how good they are at fund raising. Conferences such as what we are commencing today are not run on peanuts. The public will only donate if

we bother to do our promotional work and publicise the benefits they could enjoy from our research. Industry calls it marketing. Part of the marketing strategy should be to popularise the (GRIPs – of) Research done in Sri Lanka that can be put into practice.

President, ladies and gentleman the change from MDGs to **Sustainable Development Goals** I think has given the profession a golden opportunity to do all this. Poor health information imparted to the public has been recognised as a serious lapse in our efforts to reach the MDGs. The SDGs designed to overcome these have not only provided the scope for a wide range of areas for research but also emphasised most importantly the need to get the relevant messages to the public. Both state Health Care system of each country and the professional organisations have been entrusted with this task.

In summary I believe the track to follow is to enhance the research culture amongst our medical professionals, support their research efforts and to disseminate useful health messages amongst the public.

The SLMA has provided the leadership for health development in Sri Lanka for a long time. I am confident that given the resources and expertise available at the SLMA it would be able to extend the supportive track for research and utilization of its results.

I greatly value my association with the SLMA over the past 46 years. My wife joins me in thanking your President and Council for the invitation to participate in this inauguration ceremony.

I also warmly acknowledge the assistance readily given to me by the office staff over the years.

I would however be failing in my duty if I do not thank the staff of the SLML specially Mr. Bandara for the support given to me over many years for referencing of documents, especially when electronic facilities were unavailable.

Contd. on page 06



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Research as...

The History of the library is aptly documented by Drs. Uragoda, Aloysius and Lionel in the CMJ and also by Panduka Karunanayake in the Newsletter of June 2012.

Friends, I wish the 129th International Medical Congress of the SLMA all success and thank you for your patient hearing.

Sabbe saththa bhavanthu sukhitha-ththa.

May all beings be well and happy!

24th July 2016.

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EPIDEMIOLOGY OF MELIOIDOSIS IN SRI LANKA

This is a summary of the SLMA Oration 2016, delivered by Dr. Enoka Corea at the inauguration ceremony on 24th July 2016 at the Cinnamon Grand Hotel, Colombo.

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A hundred years ago, the word "horsepower" meant exactly that. Horses were essential for transportation, carrying cargo, agriculture and even waging war. A much feared disease was glanders, an equine infection caused by the bacterium *Burkholderia mallei*, which could wipe out whole stables resulting in economic ruin. Glanders was even used as a bioterrorism agent in World War 1 with Germany attempting to infect the horses and donkeys of the Russian Army. Glanders was known to the Greeks and Romans

and Aristototele, that indefatigable natural philosopher and writer, describes it in Book VIII of his *Historia animalium* giving it the name 'melis' or hammer. Glanders can also be transmitted to humans and cases of human glanders were not uncommon.

In 1902 Captain Alfred Whitmore of the Indian Medical Service was posted to the Rangoon General Hospital in Burma to establish a pathology service. During that period he was given orders to investigate an outbreak of suspected glanders and it was during the course of this investigation that, in his own words "our eyes were opened to the fact that there was an infective disease somewhat resembling but easily distinguishable from glanders, prevalent among the ill-nourished, neglected wasters of the town", in the main morphine addicts¹. He published his account of this "hitherto undescribed infective disease" in the Indian Medical Gazette of 1912, just over a 100 years ago².

Soon afterwards more cases of "Morphia injector's septicaemia" or "Whitmore's disease" were described

in the Federation of Malaysian states or British Malaya where Stanton and Fletcher suggested, that since none of their cases were in drug injectors, that the term "morphia-injectors septicaemia" was no longer valid and proposed "for this disease of such varied form" the name "Meliodosis", because "the Greek physicians described under the name 'Melis' a variety of conditions resembling glanders"³. So the term 'meliodosis' simply means resembling glanders!

Meliodosis was subsequently described in Cochin China, modern Vietnam⁴, and in 1927, the fourth country in which meliodosis was reported was none other than Ceylon, where Denny and Nicholls of the Pasteur Institute, now the Medical Research Institute (MRI), described a fatal case of meliodosis in (to their surprise) "a European of good social standing and living in hygienic surroundings"⁵.

Before I continue the story of meliodosis in Sri Lanka I would like to spend a few minutes introducing this infection to those who are unfamiliar with the topic.

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Epidemiology of...

In a similar manner to which the term 'tuberculosis' is used for all manifestations of infection with *Mycobacterium tuberculosis*, melioidosis is the name given to all manifestations of infection with the bacterium "*Burkholderia pseudomallei*" or 'false' mallei, named for its resemblance to the cause of glanders, *B. mallei*.

B. pseudomallei, is a Gram negative, oxidase positive, glucose non-fermenting bacterium, similar to *Pseudomonas* and is a saprophyte found in soil and water. It is particularly abundant in paddy lands. The distribution of this bacterium and the distribution of melioidosis is restricted to the tropics and subtropics between 20°S and 20°N of the equator. Thailand, Malaysia, Singapore and Northern Australia have reported large numbers of cases. Sri Lanka, positioned between 5-10°N of the equator, is situated in the endemic belt and has similarities in weather and environment conditions with these countries.

B. pseudomallei is not a primary pathogen but is acquired during the course of occupational, recreational or lifestyle exposure to soil and water. It first rose to prominence as an occupational hazard of soldiers fighting in the South East Asian theatre of War in World War 2 and subsequently of French and later, American soldiers fighting in Vietnam. The US Army still categorises it as a bioterrorism agent and funds research into melioidosis. The risk groups for melioidosis vary from country to country with paddy farmers at high risk in Thailand, construction workers in Singapore, and indigenous populations in Northern

Australia. Infection is acquired accidentally by inoculation of contaminated soil and water through breaks in the skin or by inhalation into the respiratory tract.

Melioidosis has several unusual features. One is its highly variable incubation period. Infection usually manifests 2 days to 2 weeks after exposure, with a median of 9 days but *B. pseudomallei* can remain latent in the body within macrophages and manifest months, years and even decades later. In fact it currently holds the record of having the longest documented incubation period where a soldier taken prisoner-of-war POW in world war WWII presented with clinical disease 62 years after the initial exposure⁶.

Melioidosis is also notorious for its protean clinical manifestations, which range from acute fulminant sepsis with or without pneumonia with high mortality to chronic, localized infection with abscess formation, and its ability to spread to and affect any tissue or organ of the body after exposure, presenting as localized, multifocal or systemic disease, which has earned it the epithet "the great mimicker". The most common clinical manifestations may vary depending on the geographical location with pneumonia and sepsis being the most common in all case series, abscess formation and parotitis important in Thailand and genitourinary infection and encephalitis reported in Northern Australia. Melioidosis is also feared for its tendency to relapse months or years after treatment which has given it another nickname "the Vietnamese time bomb" because a Vietnam war veteran could never be sure when infection would recur.

Fortunately, severe infection is more common in people with an underlying predisposition, with diabetes mellitus, renal, liver or lung disease, thalassaemia and alcoholism carrying a substantial excess risk. Diabetes in particular has been shown to carry a high risk of disease and the association between diabetes and melioidosis, is the

strongest described between an infection and an underlying predisposition ranging from a relative risk of 7.5 to 100, higher even than the association between diabetes and tuberculosis.

In the dry season the bacteria are found in the deeper, moister levels of the soil and infection is usually sporadic but in the wet season they move up to the surface. Therefore, the incidence of melioidosis increases in the rainy season with the number of cases correlating with total rainfall and case clusters may occur after severe weather events. Natural disasters, such as the Asian tsunami of 2004, also uncovered new locations where melioidosis had not been previously described eg. Southern Thailand and Indonesia.

The most important feature of this infection is its high mortality ranging from 20% in Northern Australia to 50% in Thailand. Mortality can be reduced considerably by early diagnosis and effective therapy. Treatment is complex and expensive with a prolonged course of intravenous antibiotics for the acute phase followed by an even longer course of oral eradication therapy to prevent relapses.

Moving back to the story of melioidosis in Sri Lanka, Sri Lanka lies in the tropics, within the melioidosis belt and rice and rice flour is the staple diet. The predominant form of agriculture is rice farming in smallholdings using traditional farming methods. Such rice fields are the natural habitat of *B. pseudomallei*.

As mentioned previously, Ceylon was the 4th country to report a case of melioidosis after its initial description in Rangoon. This was the first report from the Indian subcontinent and led to the island being identified as an endemic area. However, this early report was followed by only one other case thought to have been acquired in Sri Lanka, in a Belgian traveler to the island⁷.



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Epidemiology of...

The tsunami of 2004 did not throw up any evidence of melioidosis and by 2005 Sri Lanka was no longer identified as a country with endemic melioidosis. With only two cases in 75 years melioidosis was now considered a disease with sporadic occurrence. However, in that same year the first indigenous case was reported in the Ceylon Medical Journal⁸.

After Professor Vasanthi Thevanesam of the Peradeniya University diagnosed two cases in 2006/7, prospective case-finding activities were started. Ethics approval for the study was obtained. We set up a national clinical microbiology network, designated my laboratory as the reference centre, established a case definition for surveillance and designed a laboratory work up procedure for culture and identification of the bacterium and a standard questionnaire. The indirect haemagglutination assay for antibody testing was established.

Primary isolation relied on conventional culture techniques for blood and other sterile fluids, pus and occasional soft tissue specimens on routine culture media such as blood and MacConkey agar in hospitals with microbiology laboratories. Suspected *B. pseudomallei* isolates were referred to our laboratory for preliminary bacteriological identification. Culture of this bacterium from patient samples is not difficult but definitive identification is. Routine biochemical tests and commercial identification kits are not suitable as they do not have this bacterium in their databases. Therefore a polymerase chain reaction to amplify and identify a specific genetic region in the bacterium was used. Awareness was raised chiefly among the microbiology community through lectures, presentations and publications, e-mails and personal communication.

Since 2006 we have detected 167 culture positive cases of melioidosis with another 60+ additional cases diagnosed as melioidosis by high antibody titres. However, I have restricted

my analysis of the clinical epidemiology of melioidosis to only the culture confirmed cases.

The number of culture positive cases has risen dramatically every year, with 83% of cases detected since 2014. Melioidosis is prevalent throughout the island with all 9 provinces affected, the highest numbers being from the Western and North Western Province. There were no cases at higher elevations and only a few cases in the Northern Province where microbiology services are limited.



The age range of patients was wide (2-92 years), reflecting the ubiquity of exposure to soil in the Sri Lankan population. The majority of patients were middle-aged and men, corresponding to the likelihood of soil exposure and age of onset of diabetes. There were 120 males and 47 females including 10 children below the age of 18 (5 girls and 5 boys).

While men (115/157, 73%), farmers (30/163, 18%) and rural populations (133/160, 83%) predominated, there was representation of every population group from housewives (n=29) and school children (n=10) to professionals (n=4) including physicians and school principals, businessmen and women (n=5), white collar workers in-

cluding irrigation officers, technicians, and clerks (n=10) and blue collar workers including labourers and construction workers (n=8). Notably 10 patients (7%) belonged to the defence forces, army, police or civil defence and 20 (12%) were drivers. Melioidosis in Sri Lanka seems not to be a disease limited to rice farmers but an infection related to the outdoor, agricultural, barefoot lifestyle still practiced by the majority of the population. The large number of drivers, especially three wheeler drivers and motorcyclists in this series is intriguing and a possible explanation is exposure to dust. Another prominent risk factor that has come to the fore in the recent past is the number of cases following exposure to the recent floods which now comprise 15% of our series.



While diabetes was the predominant risk factor, seen in 113/163 cases (70%), other organ disease and alcoholism were seen and thalassemia was a significant risk in children seen in 3 of our 10 children. Other, more unusual, predisposing causes included IgA nephropathy, dengue haemorrhagic fever which we know is a risk for secondary bacterial infection, SLE on prednisolone therapy and lepromatous leprosy. However, melioidosis was also seen in many (23/160, 14%) healthy adults and children with no obvious risk.

As expected clinical presentations were varied, ranging from acute sepsis to chronic abscess formation, reflecting the protean nature of this infection and manifesting in the full gamut of clinical infection.

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HIGHLIGHTS OF THE INAUGURATION CEREMONY OF 129





Epidemiology of...

As in other series, lung infections predominated followed by musculo-skeletal infections including septic arthritis, muscle abscesses and osteomyelitis and abdominal involvement chiefly abscesses of the liver, spleen or psoas muscle. Skin and soft tissue abscesses followed. While more than half the patients were blood culture positive and septic, 15 presented with septicaemia only without any obvious focus. Central nervous system infection was seen similar to the clinical presentation reported from Northern Australia in the form of meningitis, subdural empyema, cerebral abscess, brain stem encephalitis, transverse myelitis, Guillan Barre syndrome and status epilepticus. It is interesting to note the involvement of the salivary glands in many patients, similar to the clinical presentations in Thailand. Genitourinary involvement was seen in 7 patients with urinary tract infection or prostatitis. The cardiovascular system was affected with one patient presenting with pericardial effusion and one with endocarditis, an extremely rare presentation, reported only twice previously. The key message is that most patients had involvement of more than one organ or system.

It is of note that many patients showed involvement of the lower limbs (27%) such as septic arthritis (23) psoas muscle abscess (5) and cellulitis (6).

Septic arthritis was the primary presentation or complicated the clinical course of as many as 27/163 (17%) of patients. This may reflect bacterial entry by inoculation into the lower limbs consistent with a barefoot lifestyle.

Overall mortality was as high as 22% (36/167) with a toddler of 2 years and 2 school-going youth of 17 and 20 years among the dead. However the mortality compares favourably with the mortality of melioidosis in Northern Australia (19%) versus the mortality in Thailand (50%). Eight patients relapsed over this period, some due to noncompliance with the lengthy oral

treatment required in the 'eradication phase'.

Looking more closely at the geographical distribution of this infection, melioidosis was present in the wet, intermediate, dry and even arid zones. When charting seasonal trends based on rainfall, particularly the South Western and North Eastern monsoon, we see that cases are seen throughout the year with a trend of two peaks during the monsoons. This is consistent with studies in many other countries that have shown increased cases during the rainy season. Flooding has been shown to increase the incidence of melioidosis and this year with the torrential rainfall experienced in May we saw a high peak of infection in June.

While most of the cases were sporadic and unrelated to each other there were some interesting epidemiological clusters. One was melioidosis affecting two thalasaemic siblings from Maha Oya that occurred six months apart. They had probably been infected during the construction of a new house. The other was a case cluster of 10 cases in Batticaloa in Oct/Nov 2015 following heavy rains. This rainfall map depicts precipitation in the week ending 29th October 2015 and shows the severe weather experienced that month. Within a few days to one and a half months after exposure, 10 culture positive patients were detected at Batticaloa Hospital. There were four deaths including three female patients who had severe community acquired bronchopneumonia indicating acquisition via inhalation, including two healthy women in their twenties, one of whom had only just completed her A/levels.

When we plotted our geographic data on topography and land use maps from the National Atlas of Sri Lanka an infection-free area, comprising the highlands above 500m was noticed. Looking at this further we found that while the distribution of melioidosis predictably coincided with rice

growing areas it seemed to be absent from rubber and tea growing regions. It is intriguing to speculate on the reason for this distribution. Is it due to the low temperatures in the hill country or different soil conditions or do the agricultural practices used in tea and rubber cultivation result in low risk for exposure? Further research including soil sampling for *B.pseudomallei* will be needed to elucidate this question.

Seroepidemiology is often used to get a snapshot of exposure to *B. pseudomallei* in a country, as healthy people who are exposed to the bacterium develop antibodies that are detectable on testing with the IHA. A seroepidemiology study was conducted in 32 blood banks distributed throughout the country on 675 blood donors using the indirect haemagglutination assay between 2011 and 2013. Antibodies to *B. pseudomallei* were quantified and the cut-off for seropositivity was set at an antibody titre of $\geq 1:40$. The seroprevalence of antibodies against *B. pseudomallei* in the study population was 7.4% (50/675).

Worldwide, *B. pseudomallei* strains belong to two major clades. The YLF strains are found in South East Asia while the BTFC strains are restricted to Australia and Oceania. PCR was used to identify the clades of our isolates. Although the majority of strains ($n=131$) belonged to the YLF (Yersinia-like fimbrial) gene cluster which is characteristic of South East Asian strains, surprisingly, as many as 26 (17%) of the strains were of the BTFC (*B.thailandensis*-like flagellum and chemotaxis) gene cluster which is typically found in Northern Australia. Further research is needed to explain this unusual distribution but it is interesting to note the central position of India and Sri Lanka in Pangaea, between Gondwanaland and Laurasia.

Genotyping of *B.pseudomallei* is performed using multilocus sequence typing (MLST).

Epidemiology of...

In this method 7 housekeeping, or relatively conserved genes are amplified by PCR. The amplicons are sequenced and each unique allele given a number. The seven number code generated for each strain is compared with the international database. Currently Sri Lanka has the largest representation (number of strains submitted) on this database of all the countries in South Asia.

MLST genotyping of 108 Sri Lankan strains revealed a high diversity containing novel sequence types distinct from those previously documented in the international MLST database. This molecular epidemiology is compatible with a bacterium that has been endemic in the country over a long period of time, even millennia, than of one that had been recently introduced. Further proof that the bacterium has been present in this country for thousands of years is the observation that strains from Sri Lanka cluster separately from strains from South East Asia and Australia in the E-burst dendrogram again suggesting separation far back in geological time.

We have also done some preliminary work to ascertain the presence of *B. pseudomallei* in soil in Sri Lanka. We visited 4 homes and fields of our patients and conducted soil sampling according to standard guidelines. The soil samples were subjected to quantitative PCR to quantify the bacterial load. To summarise the results 70% of the soil samples were positive for *B. pseudomallei* with some sample having bacterial loads of 105-106 bacteria per mg.

Having established the presence of *B. pseudomallei* as an integral part of the soil microbiome of Sri Lanka since ancient times, demonstrated significant exposure of the Sri Lanka population to this bacterium and has shown that melioidosis is endemic throughout Sri Lanka, with a wide geographic and demographic distribution. It remains for us to try and explain how melioidosis remained unrecognised for so

many decades.

It is likely that the reasons are multifactorial. This is a rural disease affecting remote populations and underserved communities. Clinical factors such as lack of physician awareness, protean manifestations, rapid fatality and most importantly, the lack of microbiology services, including blood culture facilities and on site clinical microbiologists, would have contributed to the disease being overlooked. This is not unique to Sri Lanka as even in Burma, where the infection was first described, cases are now rarely described. Our neighbouring countries also report very few cases and in fact, cases in those countries are most commonly reported in migrants to developed countries. The epidemiology of melioidosis has been compared with an iceberg, since the majority of cases in tropical countries, including South Asia, are hidden from view⁹.

A very recent publication that estimated the burden of melioidosis on a global scale using mathematical modelling, estimates 165,000 cases and 89,000 deaths annually worldwide¹⁰. Going on to quantify the burden, the paper identifies South Asia as probably having the largest 'at risk' population and goes on to detail the predicted incidence and mortality for each country. According to their estimates Sri Lanka is predicted to have an annual incidence of 1800 cases with 600 deaths. So the number of patients we have diagnosed is very much the tip of the iceberg. The paper concludes that the global mortality of melioidosis exceeds the mortality of dengue and leptospirosis combined! However, much of this burden of disease is undetected

It is likely that the incidence of melioidosis will increase, fueled by the diabetes epidemic that is raging in countries of South Asia including Sri Lanka. Improved diagnosis has led to reduced mortality through early effective therapy but the mortality rate can be brought down further by fostering a higher index of suspicion in clinicians

leading to early diagnosis and therapy. Since diagnosis cannot be made on clinical presentation alone, establishment of facilities for bacterial culture is mandatory for confirmation. There is an urgent need to extend surveillance of melioidosis to relatively underserved parts of the country and to populations at high risk, such as rice farmers and the armed forces.

We hope that Sri Lanka can lead the way in South Asia for effective diagnosis and management of this neglected tropical disease.

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RUNNING OUT OF ANTIBIOTICS!

"Fever is not a sign of carbapenem deficiency" says Sri Lanka College of Pulmonologists.

Sri Lanka College of Pulmonologists offered free health advices at the annual health run and walk organized by the SLMA on 17th July 2016. Their members (who are members of SLMA too) participated in the run and walk promoting rational use of antibiotics.

SLCP is deeply concerned about the abuse, misuse of antibiotics and the emergence of antibiotic resistant microbes.

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DIABETIC RETINOPATHY-AN UPDATE

By Dr. Kushlani Jayatilke
Assistant Secretary-SLMA

The monthly clinical meeting of the SLMA for August 2016 was held on 16th of August from 12 noon to 1.30pm at the SLMA Auditorium in collaboration with the College of Ophthalmologists of Sri Lanka. The topic was "Diabetic Retinopathy-an update". The case presentation was done by Dr. Aruna Fernando, Consultant Vitreo Retinal Surgeon. Review Lecture – Diabetic macular oedema was done by Dr. K. K. T. Sanjewa, Act.

Vitreo Retinal Surgeon and the MCQs and picture quiz on Diabetic Retinopathy was done by Dr. Binara Amarasinghe, Consultant Eye Surgeon. The meeting was chaired by Dr. Iyanthi Abeyewickreme, President, SLMA.



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LAUNCH OF THE COMMONWEALTH MEDICAL ASSOCIATION 24TH TRIENNIAL CONFERENCE 2016

By Prof. Vajra H. W. Dissanayake
President Designate
Commonwealth Medical Association

The Commonwealth Medical Association's 24th Triennial Conference 2016 to be held in Colombo from 14 to 16 October 2016 was Launched at a ceremony at the Atrium Lobby of the Cinnamon Grand Hotel on 18 August 2016 by the Minister of Health, Nutrition and Indigenous Medicine Honourable Dr. Rajitha Senarathne.



The dignitaries at the Launch (Right to Left): Hon Dr. Rajitha Senarathne, Minister of Health, Nutrition, and Indigenous Medicine; Prof. Vajra H. W. Dissanayake, President Designate, Commonwealth Medical Association; Dr. Iyanthi Abeywickrama (President, Sri Lanka Medical Association); Dr. Neelamani Heewageegana (Deputy Director General of Health Services); Dr. Neelamani Punchihewa (Secretary, Sri Lanka Medical Association); Dr. S. Subasinghe (Advisor to the Minister of Health).

The conference is hosted by the Sri Lanka Medical Association, the Health Informatics Society of Sri Lanka and the Government of Sri Lanka. The invitation to host the conference in Colombo was extended to the Commonwealth in 2013 during the time when the current President, His Excellency Maithripala Sirisena, was the Minister of Health. Honourable Dr. Rajitha

Senarathne further extend the invitation to the Commonwealth at the Commonwealth Health Ministers Meetings in Geneva in May 2015 and in May 2016. The conference is scheduled to be held from 14 to 16 October 2016 at the Cinnamon Grand Hotel in Colombo.

The Commonwealth has reciprocated Sri Lanka's invitation at the highest level as evidenced by the confirmation of the presence of the Secretary General, Baroness Patricia Scotland and



The theme of the conference, in keeping with the commonwealth Medical Associations mandate to improve the health and wellbeing of commonwealth countries and communities, is 'Digital Health for Health and Wellbeing'. Speaking at the launch Honourable Dr. Rajitha Senarathne said that "Sri Lanka has pioneered various eHealth, mHealth and Digital Health initiatives with very low cost free and open source software backed by a unique postgraduate training programme for doctors aimed at creating leaders in health informatics. In fact I have been informed that by 2019 Sri Lanka will become only the second country in the world after the USA to have board certified health Informaticians. Recently, the District Nutrition Monitoring System, developed by the Ministry of Health in collaboration with the Unicef and the Health Informatics Society of Sri Lanka won the mBillionth Award from the Digital Empowerment Foundation as the best early stage healthcare mobile app in South Asia. This system is now used by 600 midwives in three districts to monitor the nutrition status of children. We believe that Digital Health has much to offer in the care of an aging population with non-communicable disorders in the community, monitoring of maternal and child health and nutrition, and the control of bad habits that contribute to non-communicable disorders such as tobacco, and substance abuse. We plan to share our experience in Digital Health at the conference." The global software giant Microsoft will be the platinum sponsor of the conference.

Over 100 speakers from around the world have confirmed their participation as speakers.

Contd. on page 20

Honorable Dr. Rajitha Senarathne delivering his speech announcing the conference

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These include speakers such as Sir Michel Marmot the President of the World Medical Association. The conference is expected to be attended by 500 doctors, nurses, midwives, and

other healthcare workers as well as hospital operators and businessman from around the commonwealth and beyond. Further information on the conference can be found on the con-

ference website <http://www.cma2016.org>. The conference is open to all and therefore anyone who registers for the conference can participate.

PROGRAMME AT A GLANCE CMA TRIENNIAL CONFERENCE 2016

COMMONWEALTH MEDICAL ASSOCIATION 24TH TRIENNIAL CONFERENCE 2016

PROGRAMME AT A GLANCE

14 OCTOBER 2016			
09.00	Commonwealth Healthcare Business and Investment Forum		
18.30	Conference Inauguration		
15 OCTOBER 2016			
	Track 1	Track 2	Track 3
08.30	Opening Plenary Symposium on Digital Health for Health and Wellbeing		
10.00	Tea		
10.30	Symposium on The Commonwealth Health Hub – Community, Connect, Collect, Consult, Collaborate In collaboration with the Health and Education Unit, The Commonwealth Secretariat	Symposium on Clinical Pharmacists – Essential Partners or Optional Extras? In collaboration with the Commonwealth Pharmacists Association and the Pharmaceutical Society of Sri Lanka	Symposium on Measurement and Accountability for Health Results In collaboration with the Asia eHealth Information Network
12.00	Lunch and Poster Sessions		
13.00	Keynote Address on Anti Microbial Resistance		
13.45	Symposium on the Burden of Disease in the Commonwealth. In collaboration with the Institute for Health Matrix and Evaluation	Symposium on Anti-Microbial Resistance: Stronger Together – a Multidisciplinary Approach to a Major Global Threat In collaboration with the Commonwealth Pharmacists Association and the Pharmaceutical Society of Sri Lanka	Symposium on Building Resilience to Increasing Risks of Pandemic Threats In collaboration with the Mobile Alliance of Pandemics
15.15	Tea		
15.30	Symposium on Resilient Health Systems and Universal Health Coverage In collaboration with the Commonwealth Health Professionals Alliance	Symposium on Access to Medicines In collaboration with the Third World Network	Symposium on How health professionals can contribute to health and wellbeing through leadership in eHealth
17.00		Symposium on How diaspora can contribute to development of health in home countries In collaboration with International Alert	
18.00	Close		

Programme at...

Commonwealth Digital Health Awards			
16 OCTOBER 2016			
8.30	Symposium on Globalising the Paradox of Sri Lanka's Health Achievements – Reducing Maternal Mortality In collaboration with the Ministry of Health, Sri Lanka	Symposium on Innovative eHealth Initiatives in Sri Lanka	Symposium on Health Terminology Standards In collaboration with the International Health Terminology Standards Development Organisation, IHTSDO
10.00	Tea		
10.30	Symposium on Globalising the Paradox of Sri Lanka's Health Achievements - Reducing Infant Mortality In collaboration with the Ministry of Health, Sri Lanka	Symposium on Nursing Informatics In collaboration with the International Institute of Health Sciences, Sri Lanka	Symposium on Innovative eHealth Initiatives in Commonwealth Countries
12.00	Lunch and Poster Sessions		
13.00	Keynote Address on Anti Microbial Resistance		
13.45	Symposium on Civil Registration and Vital Statistics In collaboration with the Bloomberg Data for Health Initiative, University of Melbourne, Australia and the CRVS Project, Ministry of Health, Sri Lanka	Symposium on Nursing Informatics In collaboration with the International Institute of Health Sciences, Sri Lanka	Symposium on the Commonwealth's Response to Global Eradication of Polio In collaboration with Rotary International
15.15	Tea		
15.45	Closing Plenary Symposium on The Commonwealth Digital Health Network		
17.15	Close		
15 & 16 OCTOBER 2016: SATELLITE MEETINGS			

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METACOGNITION: IGNITE LEARNING WITHIN EDUCATIONAL CONTEXTS

By Sudeshini Fernando
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Why are flowers brightly coloured? Why do polar bears have such an acute sense of smell? Why do trapdoor spiders exist? The answer is simple. Learning and adaptation are prerequisites for survival. This applies to all organisms in all spheres of life.

Thinking about thinking

For man (the “rational being”), thinking becomes more complicated. The learning that is expected of human beings requires relatively quick behavioural adaptation based on complex reasoning processes. Not only do we need to think logically, but we also need to be able to think about our thinking. This is referred to as metacognition, or awareness of one’s own cognitive processes. Metacognition is the single most powerful tool for effective reasoning, learning and problem-solving.

Through metacognition, a person can be aware of what they already know, determine whether they understand certain information, strategise about how to approach a problem, monitor and control their own thinking in terms of certain criteria and re-evaluate and modify their conclusions (in other words, learn).

Can metacognitive awareness be taught?

Within the educational context, the training and internalisation of metacognitive awareness, or self-awareness, is crucial.

The development of metacognition occurs naturally when parents or peers repeatedly ask questions such as: “is this clear” or “what is important here” or “how can we map and represent this information”. Over time the learner internalises these critical questions that have been posed and starts asking themselves the questions independently. This has a profound impact on the effectiveness of a person’s information processing competence and learning capability.

Multiple research studies indicate that metacognitive skills can be taught to learners to improve their problem-solving and learning skills. The results are surprising – researchers have found significant improvements in critical and independent thinking in students after only 10 hours of metacognitive training.

What is the role of the teacher?

The internalisation of metacognitive awareness is best facilitated by teachers when they refrain from providing answers to learners, but rather continually pose appropriate metacognitive questions and prompt learners to ask these questions themselves.

What kind of task material works best?

The ideal task material for developing metacognitive skills is practical or difficult, where mistakes can easily be made and where the learner has to investigate where they went wrong. Examples include cooking, woodworking, music, computer programming and mathematics.

Awareness of thinking processes

can also be stimulated through the discussion of one’s own approach and typical errors with others, through journaling to keep track of frequent errors, through the use of reminders (such as cards on one’s desk) and through the deliberate practice of metacognitive questioning when dealing with new information.

What does it look like in practice?

The goal of metacognitive training is to ensure that learners always:

- plan how they would approach a learning task (“what must I focus on”, “do I have sufficient knowledge”)
- monitor their progress according to certain metacognitive questions or criteria (“is this relevant”, “is this clear”, “is this accurate”, “am I being systematic”, “does it make sense”, “is this purposeful”)
- evaluate their progress in retrospect (“where did I go wrong”, “what did I learn”, “how can I improve my approach”, “did I achieve my goal”). The aim of teaching metacognitive strategies is therefore to ensure independent and critical thinking.

How can it be assessed?

A person’s degree of metacognitive awareness can be measured. ‘The Learning Orientation Index’ is a simulation exercise designed to measure the cognitive processes of millennials and generation Ys, school, college and university leavers or youth already in the workplace. It is used for purposes of diagnosis of cognitive strengths and weaknesses, for career guidance processes and for the selection of bursary candidates.





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