



SLMA NEWS

THE OFFICIAL NEWSLETTER OF THE SRI LANKA MEDICAL ASSOCIATION

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*Merry
Christmas
and Happy
New Year*



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PRESIDENT'S MESSAGE

Dear Members,

Concluding the term of office and a new Executive Committee and Council being elected in mid December 2017, is a fitting time to review, reflect, recall and reveal the ups and downs of SLMA's annual journey of advocacy within our country, the region and internationally. I recall with humility the singular honour entrusted upon me to lead the Council of 2017. We took on the onerous duty of maintaining the high standards required of the wonderful institution of the SLMA - as Lanka's most mature national representation of our profession. This indeed was quite challenging in the midst of an outcry and disagreement within our profession on the SAITM issue at micro level, and the much greater issues of roles and responsibilities from the making of doctors to working as proficient medics with a strong social outreach. The emotions were high; the reactions were unfathomable, with an unfounded paranoia within our middle order that filtered down to medical students; while the public response was humbling. Any initiation of an objective discussion based on a broader outlook that respected some fundamental principles of arriving at a rational and broad based plan of action, became exceedingly difficult and unpopular within our profession. Hence, the majority took the easiest path of remaining silent. The latter response was disappointing, to say the least. An open discussion, based on facts and figures, national needs, and particularly the changing needs and expectations of our society, could not be addressed on a professional platform. Even more disconcerting, was the ominous trend of pursuing those who questioned the ethics of strikes and of using students as pawns. Obnoxious postings on the social media depicting professional leads in our field (including me representing the SLMA) as being pawns of the government, multi national agencies and pharma companies - along with unsigned letters of threat in the most despicable and foul language imaginable became evident. Such postings were clearly

by members of our own profession. Sadly, confusion in their interpretation of the concept of 'conflict of interest' was also evident. Disagreements and discussions are quite in order and essential in any democratic and professional approach to solving complex issues at hand. However, such unsigned and unnamed captions and inscriptions were a poor reflection on the maturity and makings of our own colleagues. I thank these few individuals for demonstrating that much needs to be done in building up professional attitudes and behavior, that have been regrettably neglected in the making of our own profession over the past few decades. I can state here without any hesitation that the wide mix of our own Council and members of SLMA's expert committees, who give of their time and expertise entirely on a voluntary basis for the greater good of society, also have diverse opinion about the current crisis we face. We have had several meetings, group email exchanges, agreements and disagreements. But we always respected the majority decision and complied with dignity and decorum. My personal prayer is that such a practice must be extended to our entire profession. We need to work as one cohort, for the better good of the people and country, rather than prioritize our own self-image, ego, emoluments or prestige. Honesty, integrity and a strong sense of public spiritedness are the needs of the hour. In this respect I was extremely fascinated and gratified by the suggestions of SLMA's Council representatives, who themselves are leads in their individual specialties and mature academics and clinicians, of the potential role of SLMA as a national professional body. They suggest we develop a strategic plan, with the objective of inculcating noble values, norms and practices from early medical student days. I do appreciate the basis for this suggestion - to be appropriately aligned from the beginning to become a well-balanced medical doctor. The overall consensus is, that there exists a void within our profession, which needs to be supplement-

ed. In order to inculcate decent values and guarantee a healthy social outlook requires a broad based discussion of topics outside of the sciences and thereby strengthen the professional responsibilities of our future generations of doctors. I applaud such a process and look to the future leaders of SLMA to take this as a perpetual and sacred institutional duty.

On a brighter note, I share with you, with a sense of pride, SLMA's purposeful progress in getting the Ministry of Health to encourage voluntary CPD for grade medical officers, who otherwise are left to themselves to keep pace with the changing frontiers in medicine. Web based CPD was initiated by Prof Kumara Mendis - that must be supported and strengthened, with a visible and sustained utilization by doctors for their own professional development. SLMA's uniform approach to a wide regional outreach and the positive response received on the neglected aspects of COPD, palliative care, wound care, prevention of pressure ulcers and adoption of food based dietary guidelines were perceived as good initiatives by our members serving the peripheries. Therefore, prioritizing time appropriate health needs and addressing them equitably is recommended. The role of SLMA as a lead advocate in the formulation of a rational health policy, improving quality of care with a particular emphasis on primary care, implementing clinical practice guidelines, encouraging audit, improving data collection and analysis, dissemination of research, strict adherence to adopting ethical principles in the conduct of research and getting research output into practice, are our other attainments. Safe prescribing of medications and the prevention and control of antibiotic resistance deserve high priority. Issues that yet need in-depth commitment includes gender based violence and female genital mutilation and how to deal with them - that are often overlooked within our work settings. SLMA has received representation on the latter by silent victims who have no one to turn to.

PRESIDENT'S MESSAGE...

I look to the Women's Health Committee to take up these complex matters with open discussion and plan a pragmatic rebuttal to reduce the burden of victims and their mental agony. SLMA gave leadership to the joint professional response on medical termination of pregnancy in selected situations of potentially lethal fetal malformations, incest and rape. But much more needs to be done by addressing the broader root causes – including unplanned pregnancy and unmet needs of family planning. The provision of a regular forum to give ear to patient expectations and respond appropriately is required. The symposium held during the annual congress in July 2017, highlighted this need. Past President Prof Narada Warnasuriya was resilient enough to openly express our profession's acknowledgement of *mea culpa* (our own fault). The media's role in addressing issues of health while maintaining ethical norms is required; and is in the action plan of the Media Committee. Dengue control, Road Traffic Injuries and legal aspects of End of Life need further planning and action. The high level commitment of the Health Management committee must be acknowledged. Lobbying for health appropriate budget plans, a more rational state health insurance for the most needy and joint activities with other expert committees with respect to fiscal policies on beer taxation and sugar sweetened beverages along with issues around unethical marketing that targets school children requires the SLMA to be constantly vigilant and persuasive to protect the public.

Voluntarism among SLMA members from the many and varying fields of health care must be recognized and saluted. The Task Force on Palliative & End of Life Care exemplifies this – which focuses on non-cancer chronic diseases and age related degenerative conditions. I am ever so grateful to the live wire of this task force, Dr Udayanganie Ramadasa, ably led by Dr Dilhar Samaraweera and sup-

ported by Dr Sankha Randenikumara. This task force has achieved so much in this short spell and is poised to do much more. Sitting as a member of Council or an Expert Committee for the mere collection of merit points for one's own promotion must be discouraged. The SLMA being the meeting point of people from many disciplines is a major strength. Such networking helps yield a healthy output; with avenues created to address even more unmet needs of health. A regular review of the outputs and outcomes of every expert committee and their alignment with the long-term strategic objectives of SLMA must be encouraged. The importance of involving representatives of the public and giving due respect to public expectations must be held supreme at all times. Self-help patient groups must be encouraged, with senior medical and health personnel playing an advisory role. Adoption of basic norms of ethical principles in all these activities and a healthy approach to preventing any form of breach in 'conflict of interest' must be another SLMA priority. A multi-sector approach to discussion of policy and implementation must be adopted at all times. A prompt response to natural disasters, disease epidemics and supporting the Ministry of Health to control, contain and prevent a recurrence of disease outbreaks using a rational and cost-effective approach must be yet another SLMA principle. Networking with other professional groups with mutual respect and indeed the Organization of Professional Associations (OPA) must be a priority area of the SLMA. Encouraging a generalist approach at primary care level to attend to our rapidly ageing population riddled with chronic NCDs is the need of the hour. I am indeed pleased that the Nirogi Lanka model of health promotion has been well taken by the Ministry of Health and being discussed for implementation at national level. Nirogi Paadha in collaboration with the shoe industry continues to address the issues of diabetic foot – a

remarkable public health approach to improve disability adjusted life years (DALYs).

The multitude of achievements, and potential to do more by the SLMA would not have been possible without our most upright, capable, conducive and meticulous Honorary Secretary Dr Sudharshani Waasalathanthri. I am indeed grateful for her strength in leadership and coordination. The four assistant secretaries ably supplemented her quest for perfection. Drs Yasas Abyewickrema and Bhanuja Wijayatilleke so ably coordinated the complex needs of regional meetings alongside our provincial representatives. Professor Sharmini Gunewardena steered the monthly newsletter to perfection and raised the bar – a truly remarkable achievement. I thank the highly capable and committed editorial team. IT coordination and web designing was entirely managed in-house and ably led by Dr Achala Jayatilleke, well supported by Dr Pamod Amarakoon. Dr Yamuna Rajapakse deserves special mention for coordinating with other colleges the monthly clinical meetings, and also supporting the social secretaries through her talents in music, speech and creativity in design and event planning. Dr Achala Balasuriya the Honorary Treasurer was a tower of strength to the SLMA by strengthening procurement processes, accountability and good governance. She went beyond this sacred realm to serve on the Editorial Committee of the newsletter, helped with the formulation of a catchy and creative theme for the SLMA Walk and arranged the Clinical Pearls Day during the Foundation Sessions. What can I say of our two Vice Presidents – Prof Chandanie Wanigatunge and Dr Amitha Fernando? They gave strong leadership at all times and in particular bore the entire responsibility of leading the two important annual events – the International Congress in July and the SLMA Walk in June respectively.

PRESIDENT'S MESSAGE...

Our indefatigable PRO- Dr Kalyani Guruge is a true example of public spiritedness! Thank you Kalyani for your constant attention to address time appropriate health priorities with such vivacious precision and skill. I am extremely pleased to report to you that the Doctors Concert and Medical Dance 2017 were both resounding and memorable events! I feel happy and proud that we could bring the long-standing tradition of the Medical Dance to fruition so well. This was a huge team effort that was enjoyable and exceptional. A well-rounded busy professional group must be able to unwind, enjoy and share each other's talents and expertise in other fields. The professional leadership of our two social secretaries par excellence – Drs Pramilla Senanayake and Christo Feranando, was a pleasure to experience. The younger group of enthusiasts led by the highly creative Dr Yamuna and well supported by Drs Sajith Edirisinghe and Gazhally personified what team work is. The not so young

group led by Dr Preethi Wijegoonewardena and Dr BJC Perera added to the amusing discussions and planning. The generous contributions and support of all our Council members and their presence in music, song and dance amidst the camaraderie are a pleasure to acknowledge recall and reflect upon. I am happy and proud that the SLMA was most contained in the serving of alcohol this year, with no institutional expenditure on spirits with the serving of wine being contained, at low cost and just appropriate for those who wanted to savour the flavour! I am sure that in the days to come the SLMA can hold its head high and say "we are an exemplary group of healthy medics".

Dr Ruvaiz Haniffa, President elect was a tower of strength throughout the year along with Prof Vajira Disanayake, Chair Housing Finance and Management Committee. I am most grateful to the Board of Trustees and all Past Presidents for their ready sup-

port and advice. I take this opportunity to make special mention of Professors Wilfred Perera and Lalitha Mendis, Drs Malik Fernando, Lucian Jayasuriya and JB Pieris who were always available to give me valuable advice and direction. Dr BJC Perera was perpetually available to edit all e-bulletins. Every member of Council participated actively. A very special mention of the unending support of SLMA staff members - so well institutionalized and committed. Let us pay tribute to all of them and indeed our pioneers and in particular Dr EM Wijerama who donated his own house to the SLMA and the library. I thank each and every member of SLMA and particularly the active readership of our newsletter, for your support and valuable feedback.

My best wishes for the Christmas Season and New Year 2018!

Yours truly,

Chandrika Wijeyaratne
President SLMA

LAUNCH OF THE SLMA GUIDELINES AND INFORMATION ON VACCINES SIXTH EDITION 2017

Dr Hasini Banneheke
Convener / SLMA Expert Committee on
Communicable Diseases

The Sixth Edition of the SLMA Guidelines and Information on Vaccines was launched on Friday 1st December 2017 at 2.30pm at the Lionel Memorial Auditorium, Sri Lanka Medical Association, Colombo 7, in front of a large gathering of invited guests consisting of officials from the Ministry of Health, officials from GSK Pharmaceuticals, members of the Board of Trustees of the SLMA, Past Presidents of the SLMA, members of the SLMA council, members of the Expert Committee on Communicable Diseases of the SLMA, members of the Vaccine Forum of Sri Lanka, editors and contributors to the book.

Former Director General of Health

Services Dr J M W Jayasundera Bandara was the Chief Guest while the present Director General of Health Services Dr Anil Jasinghe was the Guest of Honour.

After lighting of the traditional oil lamp and singing the national anthem, Dr. Lucian Jayasuriya, Joint Editor and coordinator of the book, warmly welcomed the guests. He outlined the history of the book from its first edition in 2001. Dr Ranjith Perera, Chair, SLMA Expert Committee on Communicable Diseases and Mr Damian Gilkerson, Managing Director, GlaxoSmithKline Pharmaceuticals also addressed the gathering.



Professor Sujeewa Amarasena, Senior Professor in Paediatrics, University of Ruhuna commended the SLMA for producing this useful book which he has used from the first edition. He congratulated the SLMA for institutionalising it, and in particular Dr Lucian Jayasuriya, who spearheaded this activity.

Contd. on page 06



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LAUNCH OF THE...



Following the speech by the Chief Guest Dr J M W Jayasundera Bandara, copies of the book were handed over to the Chief Guest, Guest of Honour and editors and contributors to the book. The four joint editors of the sixth edition are Dr Lucian Jayasuriya, Dr Omala Wimalaratne, Professor Jennifer Perera and Dr Geethani Galagoda.

Dr Hasini Banneheke, Convener of the Expert Committee on Communicable Diseases of the SLMA proposed the vote of thanks.

This book is available at the SLMA website <http://slma.lk/guidelines/>. Every SLMA member can collect a copy of the book free of charge from the SLMA office or request one to be posted. Non-members could purchase a copy for Rs.300.

The welcome address delivered by Dr Lucian Jayasuriya is given below.

Ladies and gentlemen. I am a very happy and proud person today. I have been able to see the launch of 6 editions of these Guidelines of which I have been Coordinator and Joint Editor. In 2001, at a meeting of the SLMA Committee on Communicable Diseases when Dr Iyanthi Abeyewickreme was Chairperson, Dr Anura Weerasinghe put forward the idea of writing guidelines on Non-EPI vaccines. I was then Medical Advisor of GSK. I was able to get the support of Mr Michael Andree, Managing Director GSK Pharmaceuticals for this venture. He agreed to support the meetings and print the book. I became the Coordinator and Anura and I became Joint Editors. The First Edition called 'SLMA Guidelines on Non-EPI vaccines' was launched in 2001. It had 20 chapters by 7 authors in 56 pages. Vaccine books are usually revised every three

years; (i) to keep up-to-date with developments in vaccinology (ii) to include new vaccines and (iii) to update vaccination schedules

The Second Edition launched in 2004, discussed all vaccines available in Sri Lanka and the book was named 'SLMA Guidelines on Vaccines'. It had 25 chapters by 10 authors in 78 pages. The Third Edition published in 2008 was named 'SLMA Guidelines and Information on Vaccines' on the recommendation of Professor Lalitha Mendis, then President SLMA. Dr Omala Wimalaratne was invited to be a Joint Editor. It had 30 chapters by 17 authors in 141 pages. Professor Jennifer Perera was invited to be a Joint Editor from the Fourth Edition published in 2011. It had 29 chapters by 23 authors in 198 pages. 12,000 copies were printed. We dedicated the Fifth Edition to the late Dr Desmond Fernando, Family Physician, who was a keen contributor to the four earlier editions of this book. It had 31 chapters by 23 authors in 220 pages. 9,000 copies were printed.

Professor Anura Weerasinghe declined to be an editor for the Sixth Edition which we are launching today. Dr Geethani Galagoda was invited to be a Joint Editor. The Sixth Edition, has 32 chapters by 23 authors in 253 pages. The chapter on measles vaccine has been dropped and the measles vaccine included in MMR. Two new chapters have been added on dengue vaccine and immunization of transplant recipients.

We started work on this edition in mid 2016, and had 26 meetings of about three hours each at the SLMA. Some authors were changed. The authors include consultant epidemiologists, community physicians, microbiologists, virologists, paediatricians, pharmacologists, immunologists, a venereologist and a family physician. I will name them later when we hand over the Guidelines. All chapters were revised. The Editors guaran-

tee that the information in this book is unbiased. We have gone to the extent of not mentioning any trade name. Each chapter was reviewed with the author by the core review group, except those from authors who are abroad.

I am sure that the Core Review Group would agree with me that we looked forward to each meeting as it was an interesting exercise. I very sincerely thank them and the authors for their dedication and enthusiasm.

The Vote of Thanks will be given by Dr Hasini Banneheke, Secretary of the Expert Committee on Communicable Diseases, however, I have to add my personal thanks to Mr Damian Gilkerson Managing Director of GSK Pharmaceuticals who agreed to help in the preparation and printing of this edition of the book. It is the sixth time that GSK had supported and printed it. Dr J M W Jayasundera Bandara, for readily accepting my invitation and for his courtesy and kindness always, and Prof. Sujeewa Amarasena for readily accepting to speak at this occasion. I also thank Professor Chandrika Wijeyaratne, President SLMA for her unstinted support. Dr Ranjith Perera the Chair, and members of the Expert Committee on Communicable Diseases, for giving the Editors a free hand in writing this book. And also Sharp Print Holdings the printers with whom I had much interaction in the last few weeks.

Thank you very much ladies and gentlemen.



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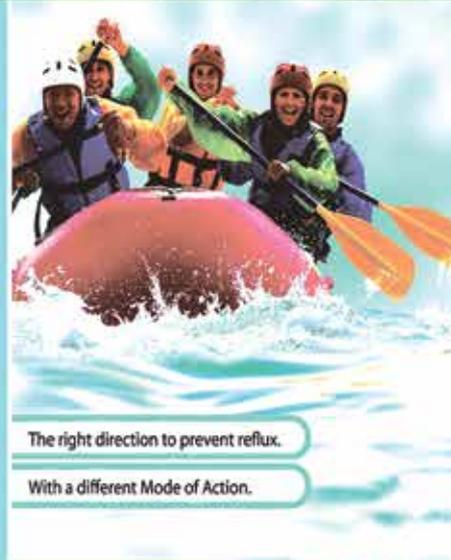
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SLMA MEDICAL DANCE 2017

The Medical Dance was held on 8th December 2017 at the Oak Room of Hotel Cinnamon Grand from 8.00 pm onwards. There were around 400 guests who had a really wonderful time at an evening of superlative music complemented and adorned by an outstandingly opulent sit-down dinner. Music was provided by two of the acclaimed leaders amongst the bands of Sri Lanka, "Misty" and "Flame". The band Aura comprising of Dr Christo Fernando (Drums), Dr Farazad Nazeem (Keyboards), Timal Jayamanne (Bass) and Ray Gomes (Guitar) provided musical accompaniment to the vocalists Drs Yamuna Rajapakse, Nilanka Munasinghe and Savinki Rambadagalle. Their performance was applauded by all. Popular Radio Personality, Raymond Reed of Lite FM chipped in with two songs in his own inimitable style. The Christmas Carols segment was led by Dr Yamuna Rajapakse and Dr B J C Perera. The compère for the show was the inimitable Clifford Richards, a

connoisseur amongst them all. Very many grand prizes were also awarded to the winners of a plethora of draws and contests during the event.

The evening began with preliminary mocktails from 8 to 8.30 pm. This helped to facilitate camaraderie and bonhomie amongst the participants. The dance proper started at 8.30 pm to the scintillating music provided by "Flame". The dance floor was opened by Prof Chandrika Wijeyaratne (President, SLMA) and her husband Prof Mandika Wijeyaratne. They set the tempo for the rest of the evening and the other band "Misty" joined in with an equally dazzling repertoire of their own. The bands took turns at short intervals to provide excellent and continuous fare for the participants of the dance and this led to the everyone enjoying an alluring night to remember. The fabulous and plush five-course formal dinner, augmented by coffee and chocolates, was served from around 9.30 pm. There were more than 60 prizes on offer including 4 Air

Tickets for the Entrance, Table and Raffle Draws. There were also prizes for the Baila and jive Competitions.

The dance concluded around 3.30 am and the opinion of many who attended the dance was that it had been the best ever Medical Dance held so far.

This magnificent event was made possible through the exceptional efforts of all members of the Dance Committee. Dr Christo Fernando and Dr Pramilla Senanayake, who looked into every aspect of the dance with meticulous attention to detail, should be specially mentioned. Some of the logistical arrangements and other details were capably attended to by Drs Sudharshani Wasalathanthri, Yamuna Rajapakse, Sajith Edirisinghe, Gazally Nizamdeen, and other members of the dance committee. Many members of the committee played a part in securing sponsorships for the event and advertisements for the souvenir.





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Speed test

1. Is the prevalence of pinworm in Sri Lanka more than 20% among children?
2. When you prescribe anthelmintics for pinworm, do you treat the entire household?
3. When you treat for pinworm infection, do you regularly prescribe a repeat dose after the first dose?
4. Do you educate your patients on how to prevent pinworm infections?

If your answer to any of the above questions was 'No', then this article is sure to be of benefit to you and your patients.

Dr B Kumarendran and
Professor Nilanthi de Silva
Faculty of Medicine, University of Kelaniya

What is pinworm infection?

Pinworm is an extremely common childhood infection, caused by the intestinal nematode *Enterobius vermicularis*. The common English name 'pinworm' refers to the long pin-like tail of the adult female worms, which are often seen on the peri-anal area of infected persons, whereas the Sinhala term '*kiri panuwo*' probably refers to the creamy white appearance of the adult worms, which are about 1 cm in length (shown in Figure 1).



Figure 1. Adult pinworms

How is pinworm infection transmitted?

E. vermicularis probably has the simplest life cycle of all intestinal worms. Adult pinworms live in the large intestine particularly the caecum and the sigmoid colon, and are occasionally found in the appendix. Pinworms do not attach themselves to the intestinal wall, or damage it, but lie on the surface of the mucosa. Unlike the other intestinal worms, which release eggs or larvae into the intestinal lumen, female pinworms remain in the gut until all their eggs are mature. Mature, gravid females crawl through the

anus at night and lay their eggs in the peri-anal area.

Unlike the eggs of the common roundworm, whipworm, and hookworm, which require several days to develop in soil before they become infective to a new host, pinworm eggs develop within 4-6 hours, on the skin, to the infective stage. Thus, by morning, pinworm eggs on the peri-anal skin of an infected individual are infective both to that person and to others. The eggs are light and stick easily to the skin and other surfaces. They can remain viable for months, because they are resistant to desiccation.

Typically, the movement of the adult worms and the presence of eggs causes itching (usually at night), and so eggs are transferred from the peri-anal region to the hands and thence to other surfaces in the household – door knobs, furniture, utensils etc. Eggs may be also found on the night clothes, bed linen and towels used by the infected individual. Since they are light and resistant to desiccation, they may circulate in the dust and settle on food etc. When infective eggs are ingested, they hatch in the small intestine after exposure to gastric acid, migrate down to the caecum where they grow to adulthood, taking about 3 months to do so.

Thus pinworm infection not only spreads very easily from one person to another within a household (particularly when there is overcrowding), the same individual is also prone to auto-infection, which makes it very difficult to get rid of the infection.

What are the clinical features of pinworm

infection?

The most common clinical feature associated with pinworm infection, in both children and adults, is the characteristic nocturnal pruritus ani. Mothers of infected children may also complain that the child is very restless at night, or has reverted to bed-wetting. A characteristic posture, where young children sleep face down, with the buttocks raised in the air, is also often attributed to '*kiripanuwo*'. The phrase '*kiripanugaaya*', which is sometimes used synonymously with restlessness and hyperactivity in children, may be attributable to the pruritus ani. Other symptoms commonly attributed to pinworm infections in children include insomnia, irritability, and loss of appetite.

You may well ask why we should bother about a non-fatal infection that does not cause any major complications. Unfortunately, nocturnal pruritus ani severely disturbs the quality of sleep of children and thereby that of others in the household too. When their sleep quality is affected, their concentration and educational performance can be adversely affected as well. Moreover, the itching may result in peri-anal abrasions, and even the development of painful peri-anal abscesses because of secondary bacterial infection.

How can we diagnose pinworm infection?

Although the nocturnal pruritus ani is a very characteristic clinical feature, definitive diagnosis of pinworm infection requires identification of either the adult worms or the eggs.

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PINWORM INFECTION...

White, threadlike adult worms may be seen with the naked eye on the peri-anal skin or on the surface of formed stools. Occasionally, the eggs may be seen on microscopic examination of a stool smear in saline, but the standard diagnostic technique involves the use of peri-anal swabs.

A variety of different peri-anal swabs have been described, but the most-user friendly technique is the double cellophane strip, shown in Figure 2. The two leaves for each day peel apart and the sticky surface underlying the coloured circle is positioned over the anus of the child who is positioned face down, with the knees bent to raise the buttocks into the air. This technique can be demonstrated quite easily to the mother or principal caregiver using a doll, with instructions to repeat it on two consecutive mornings, using the two strips because egg deposition may be irregular. The strip may be given to the mother in an envelope, in which it should be inserted and returned to the laboratory.

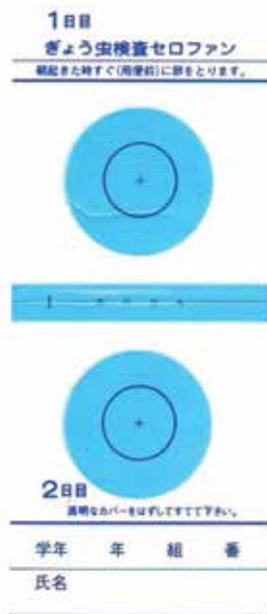


Figure 2. Cellophane strips for diagnosis of pinworm infection

Each strip may be held firmly between two glass slides and examined with the x100 magnification for the characteristic D-shaped ova with the folded larva inside.

Who is most at risk of infection?

Pinworm infection is more common among children aged ranging from 3-18 years. Children under two years of age are not often infected as they are mostly confined to their homes. Thereafter, prevalence increases up to 5-7 years corresponding with the increasing interaction with other children in preschools and schools. Prevalence gradually reduces as children grow up and their personal hygiene improves. Regardless of age, presence of children in a household increases the risk of infection for adults. There is no sex difference. Since pinworm infection is closely linked to reduced personal hygiene and increased personal contact, the risk of infection increases with overcrowding, sharing of beds, poverty and lower educational level.



Figure 3. Pinworm eggs

A national survey on intestinal helminth infections carried out in early 2017 among 4,136 children attending Grades 1 and 2 in 128 state sector schools in Sri Lanka, found a prevalence of 22% at national level, 37% in urban slums and 30% in the plantation sector; whereas the prevalence of the soil-transmitted helminth infections was less than 1% [1]. This reinforced the findings of a previous

clinical trial carried out among 1,257 children aged 3 to 7 years living in underserved settlements in Colombo Municipal Council area which found a pinworm prevalence of 42.5% [2].

How should pinworm infection be treated?

Pinworm responds well to any of the broad spectrum anthelmintics such as mebendazole and albendazole, both of which kill adult worms very effectively. Currently, deworming is carried out in both preventive and curative arms of the state sector and also by the private sector. The preventive sector provides deworming to school children during school medical inspections and to pregnant women through antenatal clinics. In the curative sector (state/private), deworming is provided mainly during case detection and whenever there are complaints of poor appetite.

Moreover, there is a commonly held belief that children must be dewormed every three months in order to promote good health.

Despite all this deworming, we still see a high prevalence of pinworm infection among young children in Sri Lanka. It is obvious that we have no effective programme for the control of pinworm. If so, what more can physicians do to address this problem?

There are three main components that need to be addressed:

1. Specific health education regarding prevention of pinworm infection
2. Simultaneous treatment of the entire household
3. Repetition of the anthelmintic treatment after two weeks

Which aspects should be covered in the health education?

Information regarding how the infection is transmitted should be accompanied by simple advice on personal hygiene such as keeping the nails well-trimmed and short, use of well-fitting undergarments, and a morning bath to wash away the eggs.

PINWORM INFECTION...

Advice on household hygiene such as washing all the clothes, bed linen and cleaning the surfaces with potential to have pinworm eggs on the day of deworming, together with explanation of the rationale for treating entire household simultaneously and the rationale for repeating the dose in two weeks is also helpful.

Why treat the entire household simultaneously?

When one member in the household is infected, it is likely that others in the household are also infected, even if they are asymptomatic. Therefore, all should be treated together in order to avoid re-infection from the untreated.

Why should treatment be repeated after two weeks?

Although mature adult pinworms are very sensitive to anthelmintics, the immature stages are not. Therefore, repeating the treatment after two weeks will kill the worms unaffected during the first dose. A single oral dose of 100 mg mebendazole followed by another 100 mg mebendazole in two weeks is

usually sufficient, when combined with treatment of the entire household and health education. In the clinical trial mentioned earlier, children and their families were treated with two doses of 100 mg mebendazole at a two-week interval. Overall prevalence was reduced from 42.5% to 10% following the first dose, and to 6.8% following the second dose, but increased to 29.3% at follow up 12 weeks after the second dose [3].

A new public health strategy for pinworm control

The current guideline issued by the Ministry of Health on community-based deworming is aimed at control of the soil-transmitted helminths, rather than pinworm, which requires a very different approach. Other countries such as South Korea and Taiwan have shown that a well-organized, targeted approach through schools can reduce pinworm prevalence dramatically within a five-year period. Sri Lanka too can aspire to this goal because both our preventive health institutions and primary schools reach even the

remotest parts of the country. It's time for all of us to unite in battle against pinworm in Sri Lanka!

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JOINT REGIONAL MEETING OF THE SRI LANKA MEDICAL ASSOCIATION IN COLLABORATION WITH THE NORTH WESTERN CHAPTER OF THE COLLEGE OF GENERAL PRACTITIONERS OF SRI LANKA

The 6th Joint Regional Meeting for this year of the Sri Lanka Medical Association (SLMA) was held in collaboration with the North Western Chapter (NWC) of the College of General Practitioners of Sri Lanka at the Golden Star Beach Hotel, Negombo, on Sunday 12th November 2017. The highlight of the meeting was the Dr Desmond Fernando Lecture, delivered by Dr Preethi Wijegoonewardene, Family Physician and a Past President of the SLMA entitled as "GPs should be in the first-line of action during a Dengue outbreak".

Dr Thilak Silva, President North

Western Chapter, Dr Carmel Fernandopulle, President College of General Practitioners of Sri Lanka and Professor Chandrika Wijeyaratne, President SLMA, welcomed the gathering. President, North Western Chapter highlighted the historic milestones of the NWC, while President SLMA, gave a brief overview about the SLMA and invited members of the College of General Practitioners to become members of the SLMA.

The sessions included two lectures by General Practitioners: 'Misuse of antibiotics - what can we do?' by Dr W Ferdinand and 'Allergic rhinitis - prac-

tice essentials' by Dr Thilak Silva and also two delivered by SLMA council members: 'Addressing child obesity through food based dietary guidelines' by Dr Bhanuja S Wijayatilaka, Consultant Community Physician and an 'Update on wound care for GPs' by Dr Yassas Abeywickrama, Consultant Plastic & Reconstructive Surgeon. Another special event included was the presentation of findings of a project by the NWC on childhood obesity done by Dr Titus Fernando, General Practitioner from Chilaw. The vote of thanks was delivered by the Secretary, NWC of the College of General Practitioners, followed by fellowship and dinner.

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JOINT REGIONAL MEETING...

The coordination and support provided by the president and members of the North Western Chapter of the

College of General Practitioners of Sri Lanka in collaboration with SLMA

NWP representative Prof Kumara Mendis is greatly appreciated.



JOINT REGIONAL MEETING OF THE SRI LANKA MEDICAL ASSOCIATION IN COLLABORATION WITH THE RUHUNU CLINICAL SOCIETY

The Sri Lanka Medical Association (SLMA) collaborated for the Annual Academic Sessions of the Ruhunu Clinical Society (RCS) held at Sanaya Mansion, Matara on 30th November, 2017. The sessions commenced with a grand Inauguration Ceremony with the Hony. President of the SLMA, Prof Chandrika Wijeyaratne, as the Chief Guest and Prof Sarath Lekamwasam, Professor of Medicine of the University of Ruhuna, as the Guest of Honour. Dr Ranjith Jayasinghe, President RCS, welcomed the gathering.

The sessions included seven guest lectures on diverse topics delivered by

eminent speakers and two free paper sessions. The guest speakers were Prof Sanath Lamabadusuriya, Emeritus Professor of Paediatrics, Prof M D Lamawansa, President of the College of Surgeons, Dr T P Weeraratne, Professor in Medicine, Dr K U R A Banagala, Senior Consultant Orthopedic Surgeon, Dr Bhanuja S Wijayatilaka, Consultant Community Physician, Dr Tiran Dias, Senior Lecturer and Consultant Obstetrician and Gynaecologist and Dr Vajira Dharmawardena, Consultant Psychiatrist. The Annual RCS Lecture entitled "Sri Lankan History: An Archeological Perspective" was delivered by Prof Raj Somadeva, Senior Professor in Archeology, Post

Graduate Institute of Archeology. The sessions concluded with the Awards Ceremony and a musical extravaganza and reception.

The Sri Lanka Medical Association greatly appreciates the coordination and collaboration provided by the President and Council members of the RCS.



MULTI-PRONGED PLAN TO IMPROVE SRI LANKA'S QUALITY OF MORTALITY STATISTICS

Dr Rajitha L Jayasuriya, Dr Vindya Kumara-peli, Dr Lene Mikkelsen

Bloomberg Philanthropies Data for Health Initiative, Global Burden of Disease Group, University of Melbourne.

Building the case to improve Sri Lanka's mortality statistics

Reliable and timely cause of death

(CoD) data are vital for informed, evidence-based health policy and planning purposes. In Sri Lanka, despite the country's sound civil registration system with completeness rates close to 100%, the overall quality of mortality statistics is poor.

Due to slow collection and process-

ing, the CoD data are not up-to-date. The resulting codes based on ICD-10 (International Statistical Classification of Diseases and related health problems – 10th revision), are totally useless for public health planning and make up to 30-40% of the national statistics, thus seriously affecting the utility of data.

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MULTI-PRONGED PLAN ...

There are two main reasons why Sri Lanka's cause of death (CoD) data is of poor quality. Firstly, out of around 130,000 deaths reported annually, close to half occur outside hospitals i.e. at home or in the community (1). These deaths are not medically certified by a doctor but by coroners and registrars of births and deaths. Secondly, most doctors working in health facilities have not been trained in proper medical certification of cause of death (MCCOD), contributing to the high proportion of poorly specified and unusable CoD data. For instance, it was found that 15.5% of physicians at a Sri Lankan hospital misclassified CoD and frequently used ill-defined terms and abbreviations, which led to confusion and poor coding (2,3,4).

A high-level government imperative for civil registration and vital statistics (CRVS) improvement in Sri Lanka forms a key part of the country's parallel commitments to participate in the CRVS decade Asia and the Pacific 2015-2024 ('get everyone in the picture'), and to achieve the Sustainable Development Goal (SDG) agenda by year 2030. Given the current concern across government departments to meet the SDGs, especially the health goal (SDG 3: Ensure healthy lives and promote wellbeing for all at all ages), Sri Lanka will need accurate mortality data from a strong CRVS system to monitor the 17 health indicators related to the SDGs (5).

Initiative supports Sri Lanka to improve quality mortality data

Sri Lanka's commitment to CRVS system strengthening has been significantly enhanced by its involvement in the Bloomberg Philanthropies Data for Health Initiative (BD4H), a 16 country and two-city initiative for CRVS systems strengthening and capacity building. On joining BD4H (December 2015) technical support via the University of Melbourne (UoM) has become available to improve the quality of death certification through two

innovative ways. Firstly, by introducing automated verbal autopsy (VA) to ascertain the cause of death of people dying in the community; and secondly, by up-skilling Sri Lanka's doctors in correct MCCOD through training and use of electronic tools that will assist them to improve the accuracy of their medical certification (and thus the overall quality of CoD data generated in hospitals). This project is led within the country by the Ministry of Health (MoH) and Registrar General's department (RGD) with support from the Health Informatics Society of Sri Lanka (HISSL).

Preparing to implement automated VA

SmartVA is an automated VA tool developed by the UoM, and the Institute for Health Metrics and Evaluation (IHME), University of Washington. It consists of a validated questionnaire to conduct a 15 - 25 min structured interview with the family on signs, symptoms and events prior to death. Data are entered on Android smartphone/tablet during VA interviews, sent to a central server and 'Tariff' (a method using computer algorithms) assigns a probable CoD. The districts of Colombo, Kurunegala and Jaffna were selected to field-test SmartVA. Public health midwives (PHMs) were selected to be the VA interviewers adhering to their existing domiciliary care-based model (picture 1). Close to 150 PHMs were trained in VA data collection using SmartVA. To support PHMs in locating households with deaths, a new link was established between the additional District Registrars and the Medical Officer of Health, allowing for the transfer of names and addresses of households with deaths monthly. After translation and adaptation of the VA questionnaire, 286 SmartVA interviews were completed in the pre-test phase. The evaluation of these showed that usable ICD CoD were obtained for 82% deaths (figure 1), compared to only 30% in the data currently

collected for home deaths. Application of SmartVA in Sri Lanka therefore has the potential to significantly improving the quality of CoD information for out of hospital deaths.

Key steps to improve MCCOD

Five hospitals in Sri Lanka (Lady Ridgeway Children's Hospital, Colombo South Teaching Hospital, Colombo North Teaching Hospital, Kurunegala Teaching Hospital and Homagama Base Hospital) were selected to field-test the hospital-based training in MCCOD. Eighteen 'master trainers' and over 400 doctors were trained in MCCOD. Evaluation of the content and accuracy of a sample of medical certificates in the five pilot hospitals in a six-month period found an average of 30% improvement in error-free certification. A manual for Sri Lankan doctors on how to correctly certify deaths to ICD-10 standard using the new B33 Form (death declaration) was also developed and an interactive educational mobile app or 'CoD App' will soon be launched by the Ministry of Health. The CoD App is an easy-to-use tool that doctors can resort to when they are in doubt certifying the CoD. The CoD App will be cost free for doctors to download from the Ministry of Health's website. Once downloaded, internet connection is not necessary for the CoD App to be accessed and re-used.

Working towards more milestones

The second phase of the BD4H initiative will continue to target improving CoD data quality by scaling up both interventions that have been evaluated and have been shown to work well. In addition, training in the use of two electronic tools will be provided. One will assess the accuracy and completeness of mortality and CoD data by checking for potential errors and inconsistencies; and the other assesses the quality of the death declaration. Both can be used for monitoring progress of the two interventions.

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MULTI-PRONGED PLAN...

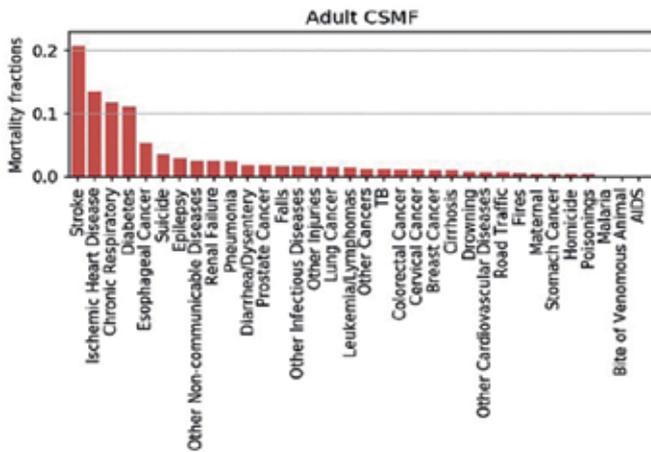


Figure 1: Smart VA derived CoDs of out of hospital deaths in Sri Lanka



Figure 2: A Public Health Midwife interviewing a spouse of a decedent

Steps will also be taken to engage with Sri Lanka’s medical schools to explore the most effective way to improve the curriculum on MCCOD for medical students. The steering committee of the project and its technical working group are working on scaling up SmartVA beyond

the three pilot districts and to expand the MCCOD training to the 50 largest hospitals. Solutions will also have to be found to make the training sustainable for both doctors and PHMs. The support of the SLMA for these innovative interventions is important. The Sri Lankan medical fraternity is strong and interested in developing time appropriate skills. Therefore we propose that SmartVA and MCCOD need to be introduced and improved which, through more reliable statistics, can support the planning for reducing the burden of major diseases in Sri Lanka.

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PCOS SUPPORT GROUP

Ms Achini Ranasinghe
Clinical Psychologist

The 1st programme of the PCOS support group was held at the medical clinic premises, De Zoysa Hospital for women on 17th December 2007. Eight young women who were diagnosed with PCOS obtained the membership through the clinics and “Combat PCOS: Sri Lanka” official Facebook page participated in the event.

The following activities took place during the session. Participants were asked to pick a numbered token. Then the participants with similar numbers were asked to group together and introduce themselves to the partner.

The participants were introduced to the team by her partner using the most significant information that was shared during the above discussion. This activity was done as a means of facilitating the process of introducing each group member to the rest of the group.

Later the objective of the support group was explained to them by Ms Achini Ranasinghe, Clinical Psychologist. This was followed by a group activity in which the participants discussed solutions using a brainstorming method for a few psychological issues associated with PCOS as identified by the participants.

Participants created a “WhatsApp”

group and decided to meet again on 27th January 2018. PCOS friendly fruits were distributed among the participants to encourage them to eat healthy.



Which do you think is the deadliest animal that kills the most number of humans every year?

Shark?, Snake?, Elephant?

Here are the statistics:-

Shark	10	Roundworm	5,000
Wolf	10	Fresh water snail	10,000
Lion	100	Assassin bug	10,000
Elephant	100	Tsetse fly	10,000
Hippopotamus	500	Dog	25,000
Crocodile	1,000	Snake	50,000
Tapeworm	2,000	Humans	475,000

BUT the deadliest is the smallest of them all.

It is the mosquito.

Mosquitoes cause a whopping 725,000 deaths annually.

Sent by Dr B J C Perera
As extracted from an e-mail forwarded by Professor Sanath P Lamabadusuriya

MEDICALLY IMPORTANT ARTHROPOD VECTORS IN SRI LANKA

Dr Sanath Senanayake
Senior Lecturer in Parasitology
Faculty of Medicine, University of Colombo

Introduction

Arthropods are a group of living creatures identified by their segmented body parts (head, thorax and abdomen) and jointed legs or limbs. They consist of more than 90% of the animal kingdom. The term entomology derived from the Greek word 'entomon' and the term insect derived from the Latin word 'insectum' provide the same meaning of being 'cut up' or having a 'notched body' and are used interchangeably in descriptions of this subject.

Medical importance of arthropods

Arthropods are responsible for several important medically related issues, of which the major contribution comes from their ability to transmit diseases as vectors of disease. This article will deal with some of the important arthropod vectors of disease that are important to Sri Lanka. Be-

ing a tropical country, Sri Lanka has climatic and environmental factors favourable for the continuous growth and development of a large number of arthropods.

Vectors of malaria

Even though no indigenous transmission of malaria is seen in Sri Lanka since 2012, the vectors are still at large in the previously endemic areas. Mosquitoes belonging to the genus *Anopheles* are the principal vectors of malaria worldwide. They are dark mosquitoes with light and dark bands along the outer margins of their wings. There are about 20 *Anopheles* species described in Sri Lanka, out of which the most effective vector is *An. culicifacies*. This is a species complex comprising of five sibling species, namely A to E. The sibling species E was identified as the main vector in Sri Lanka (while sibling species A is one of the major vectors of malaria in India). Apart from *An. Culicifacies*, a few other species of *Anopheles* found in Sri Lanka are known as potential vec-

tors of malaria as malaria parasites could propagate within these mosquitoes. *An. annularis*, *An. subpictus*, *An. vagus*, *An. varuna*, *An. tessellatus* are some of those potential vectors (Amerasinghe et al. 1999). But none of these species are as effective as *An. culicifacies*. Disease transmission was confined to rural areas as vector breeding was found in those areas. The preferred breeding conditions for *An. culicifacies* is clear, sunlit, stagnant or sluggishly moving water found in drying river banks, gem pits, rock pools and water collected in cart tracks and hoof prints. These mosquitoes are outdoor biters but blood-fed females tend to rest indoors. The *An. culicifacies* is attracted more to animals (zoophilic) than humans and hence the presence of cattle and other animals in the vicinity were found to be protective. The control of adult mosquitoes was best achieved by indoor residual spraying (IRS) of insecticides as blood-fed female mosquitoes rested indoors.

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Infective mosquito bites were drastically reduced by the use of long lasting impregnated nets (LLINs) in the endemic areas. Larval control using larvicides added to water bodies and physical methods like filling up gem pits with soil were practiced in the past against the breeding of these malaria vectors. However, vector control measures were scaled down with the elimination of malaria.

The major threat to Sri Lanka in maintaining the malaria free status are the imported cases coming from endemic countries. Malaria is still endemic in neighbouring India and poses a major threat due to people travelling between the two countries. The situation in India is worse due to the presence of both rural (*An. culicifacies*) and urban (*An. stephensi*) vectors that cause malaria. *An. stephensi* is a highly effective malaria vector which is found in some of the Middle Eastern countries and South East Asia including parts of China apart from India. This vector is capable of transmitting both *Plasmodium vivax* and *P. falciparum* and was recently found in Sri Lanka for the first time from a well in Mannar. Later, it was also found in some other areas of the Northern Province as well. There is always a risk of reintroduction of malaria and the presence of a potent urban vector like *An. stephensi* makes the situation far worse. One should bear in mind about the adaptations of this vector to the Indian strains of the parasite. *An. stephensi* could breed in clear fresh water collections found in both urban and rural settings. The larvae have been detected in domestic wells, overhead tanks, room coolers, cisterns and roof gutters in urban settings. This vector is conventionally a night time indoor biter but found to be effective in biting outdoors in public places depending on the weather conditions. The control of *An. stephensi* is difficult owing to its breeding sites and biting habits and we would need to deal with it effectively in future to maintain a malaria free Sri Lanka.

Are we on the correct path against dengue vectors?

Vectors of dengue are the mostly discussed topic in present day vector studies. Mosquitoes belonging to the genus *Aedes* are responsible for transmission of dengue. They are known as container breeders as they lay their eggs in small, clean water collections. The known vectors of dengue include *Aedes aegypti* (urban vector that breeds in manmade containers like discarded tyres, tins, coconut shells, plastic cans, roof gutters and broken cisterns) and *Aedes albopictus* (rural vector that breeds in naturally occurring small collections of water in tree stumps, leaves and between banana leaves and the trunk). They are also responsible for transmission of chikungunya, yellow fever and ZIKA. Sri Lanka has experienced a massive epidemic of Chikungunya in the past, is yet to record yellow fever and ZIKA. However dengue is making inroads to affect entire Sri Lanka with a massive outbreak occurring in 2017. The two species are identified by their body marking. The presence of dark and light (white) bands throughout the body (especially abdomen) is common to both species. *Ae. albopictus* is darker and has a single silver (white) line along the thorax while more lighter *Ae. aegypti* has two crescent shaped markings on the dorsum of the thorax.



Ae. aegypti

Ae. albopictus

The health authorities, policy makers and the general public are well aware about the breeding sites and transmission dynamics of these vectors. There are intense programmes being conducted with the mobilization of various sectors in the country including the armed forces against these dengue vectors. In spite of all the efforts dengue is spreading causing severe health issues in the country making it necessary to look at the problem from different angles.

The *Aedes* mosquito has a remarkable ability to adapt to the presence of environmental challenges. The mosquitoes have already shown adaptation to breeding in polluted water, large water bodies and also in brackish water in some instances. The *Aedes* eggs delay their hatching when predator concentrations increase in the container. The eggs are also resistant to desiccation and could survive for more than 6 months without water. The ability of the dengue virus to transmit to the next generation (transovarial transmission) without involvement of a patient is well documented in *Ae. aegypti* and to a lesser extent in *Ae. albopictus*. Laboratory experiments have shown that *Ae. aegypti* could maintain the same infectivity after seven generations. Therefore, zero prevalence in human dengue cases will not guarantee disease control. The virus will survive within the vector to return at a later time. The combined effects of all these factors will make *Aedes* a formidable vector that should be dealt with more tactfully, effectively and vigorously. This raises the question of whether the present control measures of destroying breeding places, fogging and spraying of houses strengthened by fines and warnings is adequate for the threat posed by the vector? Or, does it need something special? The answer is yes - control measures would need to be strengthened through innovation. Genetic modifications to resist the disease within *Aedes* mosquitoes or artificial infection with *Wolbachia* bacteria seem promising. *Wolbachia* is a bacterium that is found within some insect vectors but not in *Aedes*. Artificial infection by this bacterium in *Aedes* has shown the ability to resist the growth of dengue, ZIKA, chikungunya and yellow fever viruses in the gut of the mosquito. It has also shown the transmission of these bacteria into its next generations. However, these new approaches need more research and planning, requiring huge amounts of funding.

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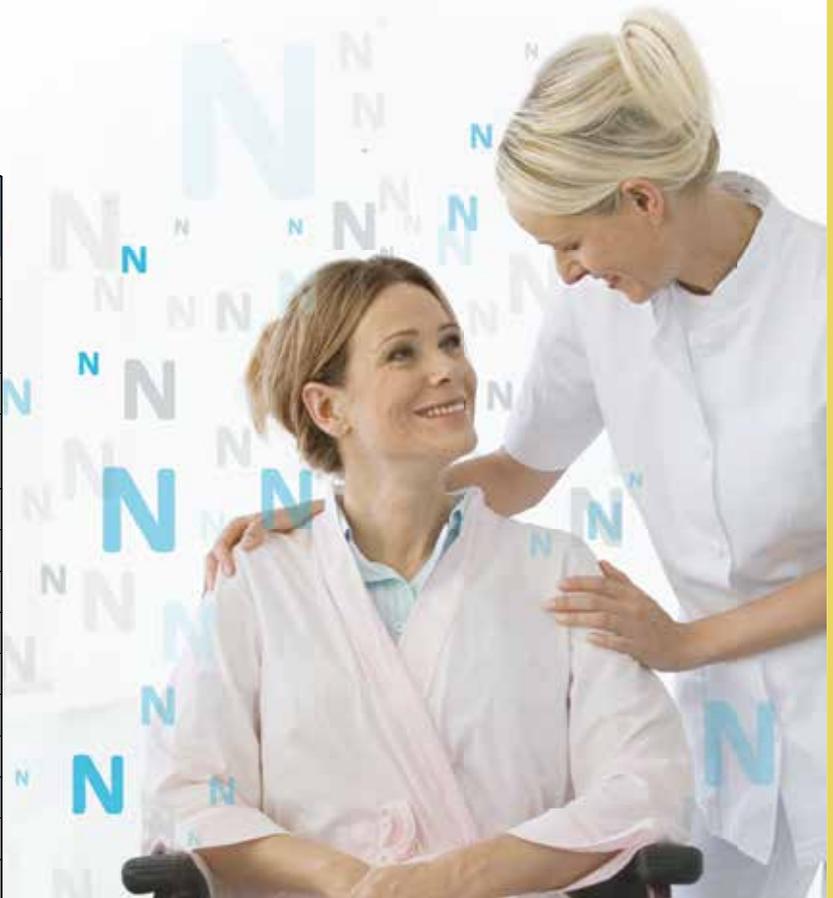


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Energy	kcal	362	18
Fat (2% TEI)	g	1	0.05
of which			
saturates	g	0.8	0.04
Carbohydrates (1% TEI)	g	0.3	0.015
of which			
sugars	g	0.3	0.015
lactose	g	<0.3	<0.015
Fibre	g	0	0
Protein (96% TEI)	g	88	4.4
Salt = (Na (g) x 2.5)	g	1.4	0.07
MINERALS			
Sodium	mg	550	27
Potassium	mg	1170	58
Calcium	mg	55	2.7
Phosphorus	mg	220	11



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But considering the given situation faced today it may very well prove worthwhile.

Not forgetting *Culex* mosquitoes as vectors

Mosquitoes belonging to the genus *Culex* are important vectors of lymphatic filariasis and JE in Sri Lanka. They are medium sized light brown mosquitoes without any specific body markings. The only known vector of bancroftian filariasis in Sri Lanka is *Cx. quinquefasciatus* which breeds in poorly sunlit stagnant water polluted with organic matter.

There are several *Culex spp.* mosquitoes that transmit JE in Sri Lanka. *Cx. tritaeniorhynchus* and *Cx. gelidus* are known to be the most important JE vectors among them while *Cx. vishnui* and *Cx. pseudovishnui* are also found to be potential vectors. Most of the JE vectors breed in paddy fields except for *Cx. gelidus* which breeds in polluted water in husk pits. Water management in paddy fields by intermittent irrigation (complete drying from time to time) is the best way to achieve long term control of JE vectors.

Vectors of leishmaniasis

Leishmaniasis is an emerging vector borne disease in Sri Lanka. The disease is transmitted by an infective bite of a sandfly. Sandflies are small insects. Their length ranges from 1.2-3.7 mm (Perfil'ev, 1968). The size may be comparable to 1/8th of a mosquito. Head, thorax, abdomen and appendages are covered with hairs which give a "fluffy" or "hairy" appearance. The wings are raised above the body in the shape of the letter "V" on resting. Legs are long and slender (see figures). Sandflies which are disturbed on a wall do not usually fly, but jump away. This jumping or hopping behaviour and the raised wings are the characteristics that help in recognition of a live sandfly and distinguish it from other small insects (Perfil'ev, 1968). Besides the transmission of leishmaniasis, sandflies are also known transmitters of the bacteria *Bartonella*

bacilliformis, the infectious agent of Oroya fever, and also of sandfly fever virus that leads to a febrile illness in humans (sandfly fever).



Figure 1 Female sandfly Figure 2 Male sandfly

There are more than 700 species of sandflies reported worldwide. The majority of them are non-vectors of human leishmaniasis. Confirmed human vectors of leishmaniasis remain less than 30 in the old world and belong essentially to the genus *Phlebotomus*. The new world vectors belong to the genus *Lutzomyia*. Sandflies belonging to the genus *Sergentomyia* are capable of transmitting *Leishmania* parasites among cold blooded animals but not in humans.

There are several reports about the presence of species of sandflies that belong to the genus *Phlebotomus* (eg: *P. argentipes*, *P. salehi*) and *Sergentomyia* (eg: *S. zeylanica*, *S. baraudi*, *S. babu*) from various parts of Sri Lanka (Gajapathy et al. 2011). *P. argentipes* is the proven vector of visceral leishmaniasis (VL) in India and several other countries. The presence of *P. argentipes* has been reported in Sri Lanka as far back as 1910 (Annandale, 1910). *P. argentipes* is now identified as a species complex comprising of three sub species (*P. argentipes Annandaleae*, *P. argentipes annandalei Sinton*, *P. argentipes glaucus Mitra & Roy*). Evidence is now emerging that sandflies belonging to *P. argentipes* complex may be harbouring the causative parasite, with likely contributions to transmission of leishmaniasis within Sri Lanka as well (Senanayake et al. 2011).

Life cycle and behavioural characteristics

The exact breeding sites of sandflies are difficult to locate. But most of the sandfly eggs are laid in cracks

and crevices in moist ground and mud walls of houses, among leaf litter, in loose soil between roots of trees, at the bases of termite mounds, on the floors of cattle and poultry sheds, and in animal borrows (bandicoots) where adult flies usually rest. The time taken for the hatching of eggs and the larval stages to develop into adults varies among the species. Life expectancy of the adults may depend on environmental conditions. They may live up to 28 days in some species.

Sandfly bites usually occur when the light intensity is low especially at dusk (late afternoon). Indoor bites occur during the night and feeding on cattle and other animals is seen towards early nighttime (20 00hr – 23 00hrs) in *P. argentipes*. Identification of the blood meal is useful as a tool in detecting host seeking behaviour. But blood meal data has to be interpreted with caution as they reflect not only innate vector preferences, but also the relative abundance and accessibility of host species in the local environment.

Control of sandflies and prevention of bites

Measures used to control adult sandflies include the use of insecticides (mostly pyrethroids) for residual spraying of dwellings and animal shelters, space-spraying, insecticide-treated nets, impregnated dog-collars and personal protection through application of repellents/insecticides to the skin or fabrics (Alexander and Maroli, 2003). Because the breeding-sites of sandflies are generally unknown, control measures that act specifically against immatures are not feasible.

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