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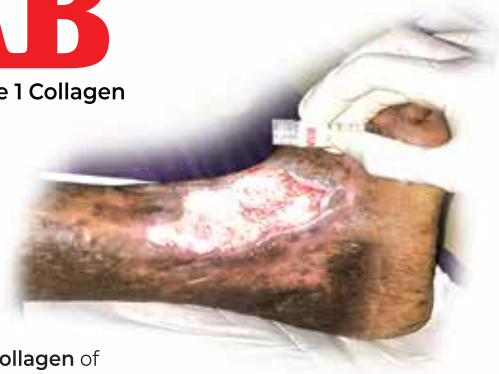

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President's Message

It is with great pleasure I take this opportunity to express my sincere appreciation to the IMPA in publishing the 2023 Journal Volume 17 this year.

The IMPA journal supports our membership and medical professionals to express their views on several topics of significance, especially in the field of medicine.

I wish to thank Dr. A. L. P. De S. Seneviratne for agreeing to be the editor of the Journal this year and delivering a quality product in time.

I also wish to thank all the members of the editorial board, Dr. Palitha Abeykoon, Dr. S.M. Samarage, Dr. S. M. Goonesekera, Dr. S.A.P. Gnanissara and Dr. Sanath Hettige for their sincere efforts in assisting to complete the publication of this issue.

A special thanks to all the contributors of articles to give this edition value.

I would be failing in my duty if I do not acknowledge our very able administrative secretary Ms. Champa Silva whose untiring efforts of coordinating the numerous details to bring the journal to fruition.

I also appreciate the effort of our printer AK 2 PRO for obliging us always in producing a quality journal par excellence.

Finally, this Journal would not have been possible if not for our sponsors and advertisers who contributed so magnanimously in these difficult economic times to make this journal a reality.

I wish the IMPA success in all its future achievements!!

Dr. A. H. A. Hazari
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Editorial

Dr A L P De S Seneviratne

Palliative care

Palliative care (derived from the Latin root palliare, or 'to cloak') is a medical caregiving approach aimed at optimizing quality of life and mitigating suffering among people with serious, complex, and often terminal illnesses. Within the published literature, many definitions of palliative care exist. The World Health Organization (WHO) describes palliative care as "an approach that improves the quality of life of patients and their families facing the problems associated with life-threatening illness, through prevention and relief of suffering by means of early identification and impeccable assessment and treatment of pain and other problems, physical, psychosocial, and spiritual". In the past, palliative care was a disease specific approach, but today the WHO takes a broader patient-centered approach that suggests that the principles of palliative care should be applied as early as possible to any chronic and ultimately fatal illness. This shift was important because if a disease-oriented approach is followed, the needs and preferences of the patient are not fully met and aspects of care, such as pain, quality of life, and social support, as well as spiritual and emotional needs, fail to be addressed. Rather, a patient-centered model prioritizes relief of suffering and tailors care to increase the quality of life for terminally ill patients. You need to treat the patient who is having the disease rather than the disease the patient is suffering.

To understand the importance of such an activity, we would like to take the reader through some important information pertaining to Sri Lanka.

a) Sri Lanka has a population of about 22.5 million and approximately 115,500 deaths a year. The total number needing palliative care in the country can be estimated to be 50% of all deaths or about 68,000 people a year, with the majority of them dying of non-communicable diseases.
b) With rapid ageing of the population, the highest number of patients needing palliative care will in the future come from the elderly terminally ill. There are very few institutions in the country providing much needed palliative care services.
c) Family Physicians are called upon to provide palliative care to patients who are at home and in the final stages of their lives. This stage can last several months in almost 90% of the patients. The majority of such patients are afflicted with problems of old age and may be bed ridden. Patients dying due to cardiovascular problems and malignancies also constitute a large segment needing palliative care. Many are stroke victims. Some are in the final stages of dementia, end stage renal disease, terminal chronic obstructive pulmonary disease (COPD), HIV/AIDS and cerebral palsy.
d) Furthermore, in dealing with chronic illness in patients of all ages (paediatrics to geriatrics), actual home base care is

provided by lay persons, who are family members or hired help who have little or no formal medical or paramedical training.

e) Doctors in general practice, both full time and part-time working almost exclusively in the private sector, are responsible for providing 60%, of the primary care in our country.

f) Palliative care is now established medical or nursing specialty in Colombo Sri Lanka. Education and training in palliative care has been link in palliative care in the country. Training facilities for health care professionals or community volunteers has been formalized to some extent.

Palliative care is appropriate for individuals with serious illnesses across the age spectrum and can be provided as the main goal of care or in tandem with curative treatment. It is provided by an interdisciplinary team which can include physicians, nurses, occupational and physical therapists, psychologists, social workers, chaplains, and dietitians. Palliative care can be provided in a variety of contexts, including hospitals, outpatient, skilled-nursing, and home settings.

Evidence supports the efficacy of a palliative care approach in improvement of a person's quality of life. Palliative care's main focus is to improve the quality of life for those with chronic illnesses. It is commonly the case that palliative care is provided at the end of life, but it can be helpful for a person of any stage of illness that is critical or any age.

Scope

Palliative care is able to improve healthcare quality in three sectors: Physical and emotional relief, strengthening of patient-physician communication and decision-making, and coordinated continuity of care across various healthcare settings, including hospital, home, and hospice. The overall goal of palliative care is to improve quality of life of individuals with serious illness, any life-threatening condition which either reduces an individual's daily function or quality of life or increases caregiver burden, through pain and symptom management, identification and support of caregiver needs, and care coordination. Palliative care can be delivered at any stage of illness alongside other treatments with curative or life-prolonging intent and is not restricted to people receiving end-of-life care. Historically, palliative care services were focused on individuals with incurable cancer, but this framework is now applied to other diseases, including severe heart failure, chronic obstructive pulmonary disease, multiple sclerosis and other neurodegenerative conditions.

Palliative care can be initiated in a variety of care settings, including emergency rooms, hospitals, hospice facilities, or at home. For some severe disease processes, medical specialty professional organizations recommend initiating palliative care at the time of diagnosis or when disease-directed options would not improve a patient's prognosis. For example, the American Society of Clinical Oncology recommends that patients with advanced cancer should be "referred to interdisciplinary palliative care teams that provide inpatient and outpatient care early in the course of disease, alongside active treatment of their cancer" within eight weeks of diagnosis.

Appropriately engaging palliative care providers as a part of patient care improves overall symptom control, quality of life, and family satisfaction of care while reducing overall healthcare costs.

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Prognostication on the brain; I gave it up, aeons ago...

Dr B J C Perera

From time to time, many a paediatrician is called upon to decide on the chances of recovery of a child's brain that has been subjected to a disease, disorder, or an insult by some offending malady. It takes a very well-informed assessment on our part for one to be able to do so but even then, nothing can be laid down in stone and the chances of one making an error are quite high. It is not necessary to elaborate on the early anguish and heartbreak caused to the loved ones of the patient if the initial pontification is totally erroneous.

This author has learned over the years that the chances of making an error in our judgements regarding the potential for a full recovery of the brain following an insult to it is reasonably high. Hence the 'catchy' title of this article, implying that the writer has given up forecasting on the outcomes of a sickness that directly affects a child's brain. In that perspective, the following two cases may illustrate the justification of the title.

The first one occurred in late 1979 in General Hospital Badulla where the author, just 32 years of age, served as the Consultant Paediatrician on his very first appointment as a specialist. A 10-year-old boy was admitted with a severe neurological aftermath following viral encephalitis. The child had been in the Batticaloa Hospital for about 3 weeks and the parents had hired a vehicle at great expense and brought him to Badulla. He had clinical evidence of severe brain damage with marked muscle stiffness, decerebrate posture, and was unconscious. He was practically a vegetable. It was too late for any useful treatment but we gave him a blood transfusion, started nasogastric feeds, vitamins, minerals, and intensive physiotherapy. I explained all this to the parents and gently pointed out that there was very little that I could offer. They very tearfully fell at my feet and begged us to do whatever we could for the child. I told them that we would try our best and I kept him in the ward for about a month without any improvement whatsoever. After a couple of weeks, we taught the mother to feed the child through the nasogastric tube. Our staff looked after him so well that the child did not lose much weight and there was not even a single bed sore. When the mother was quite adept at feeding through the tube, we taught her how to change the position of the child on the bed to prevent bed sores and continue physiotherapy on her own. After doing all that we told them to take him home. I had no hope for that child and expected him to die within the next few months. I did not even arrange to see him again in the clinic as they were so far away in Batticaloa.

Lo and behold, about six months later, the child walked into our clinic, perfectly normal. He had no stiffness of the limbs, was quite mobile, mentally very normal and there was no evidence of any brain damage whatsoever. He was going to school and doing quite well in class. We were absolutely shocked but greatly delighted to see him. I was totally wrong in my earlier assessment; I was way off the mark. The

parents and the child fell at my feet to thank me, as they thought I was totally responsible for his recovery. They thought I had given the child a miracle drug that worked slowly over a few months. It was a singularly humbling experience to know for sure that I contributed very little to his recovery but yet for all that, the parents who were simple villagers, firmly believed that I was the greatest. They were convinced that the best thing they ever did was to bring the child to Badulla from Batticaloa. Their gratitude was completely overwhelming. I had to try very hard to control my tears. I also realised how little we knew about the human brain and the recuperative power of a child's brain.

Another rather bewildering clinical problem occurred while I was in Ratnapura for my second appointment as a consultant. A very premature baby was born with severe hydrocephalus and was being treated in the Premature Baby Unit. He was very ill from the time of birth. Then to make matters worse he developed a cerebral haemorrhage as a complication. He was at death's door. I spoke gently to the parents and told them the child was very ill. However, having learned from the experience in Badulla, I told them that we would try our best for the baby. The parents of the baby fell at my feet and pleaded with me to do whatever I could for the baby. Because of them, we tried our best. The head was virtually twice the size of a normal baby, because of a blockage to the CSF circulation. The head was gradually increasing in size as well. The baby survived but had major neurological problems. He could not support the very large head at all. He was stiff in all four limbs and hardly responded to outside stimuli. After about a month in hospital, I was able to send him home but he had major motor problems. The mother managed to feed him with her milk and physically the baby was growing. We arranged for physiotherapy and he struggled on with major disabilities. The gradual increase in the size of his head slowly stabilised, but he could not support the weight of his head for a couple of years. I then had a ventriculoperitoneal shunt inserted in Colombo which stabilised the progressive enlargement of the head. The parents soldiered on and the baby started to grow slowly. I saw the baby regularly in the hospital as well as in the private sector and we tried to do all we could for him. After a couple of years, it was evident that his intellectual functions were reasonably well preserved in spite of a cerebral cortex of just one centimetre in thickness However, he had major difficulties with his motor functions with mobility problems and lack of balance. He was barely able to walk with intense support even at 4 years of age. The parents and the child followed me to Kurunegala Hospital, Kalubowila Hospital and Lady Ridgeway Hospital when I was transferred through the Ministry of Health. We continued our rehabilitation efforts with vigour and it was apparent that his intellectual functions were quite reasonable.

He however was a real survivor and continued his education at a normal school. To cut a long story short, he passed the GCE ('O' Level) and GCE ('A' Level) examinations, entered the University of Colombo, secured a BSc, two Postgraduate Diplomas, two MAs and is currently reading for his PhD.

I learnt to my cost how wrong I would have been if I told the parents that it was a totally lost cause. At least, following the lessons gleaned in Badulla, I had learnt not to be too dogmatically negative in prognosticating about a child's brain. The parents of the boy firmly believed that I had worked a miracle with their son.

Now, are you really surprised that I am ever so reluctant to give a negative prognosis on a child's brain?

This account is extracted from the author's autobiography
titled ***"A trek known only to a few"***

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Antimicrobial Resistance - A Global threat and the Role of Doctors

Dr Dhammika Vidanagama

Antimicrobials are essential in the treatment of infectious diseases. Antimicrobial resistance (AMR) is well recognized as a silent pandemic posing a threat to human health. AMR makes infections difficult to treat resulting in greater morbidity, mortality, and healthcare costs. According to a study published in Lancet, 4.95 million deaths were estimated to be associated with bacterial AMR in 2019, with Methicillin resistant *Staphylococcus aureus* (MRSA) causing more than 100,000 attributable deaths[1]. Development of new antimicrobials effective against the variety of evolving drug resistant organisms is a huge challenge which is difficult to meet within a few years[2].

Impact of AMR is not limited to humans. It can be a threat to animal health and plant health and influence the food production, livelihoods, and the global economy. Resistant microorganisms can enter the environment with a potential of spreading through water, air and soil. Therefore, AMR is considered a threat to global development[3,4].

In 2019 it was predicted that AMR will cause 10 million deaths globally per year by 2050, if effective preventive strategies to control the pandemic are not implemented immediately[5].

Mechanisms of AMR

AMR makes antimicrobials ineffective causing treatment failures. Microbes develop resistance to antimicrobials using several mechanisms to block the antimicrobial activity. Some organisms show intrinsic resistance to some antimicrobials. Acquired resistance is a greater problem since it cannot be predicted without testing. Microbes can produce enzymes to destroy the antimicrobials used to act against them. E.g., Different types of beta lactamases produced by bacteria can destroy specific beta lactam antibiotics. Changes in the microbial genome can alter the targets utilized by the antimicrobial agent to inhibit or kill the organisms. Some bacteria can transport the antimicrobial molecules out of the bacterial cell using efflux pumps thereby preventing the effective inhibitory action of the drug. Genetic elements called plasmids carrying genes conferring resistance to multiple antibacterials can spread among bacterial species creating multidrug resistance in previously sensitive bacteria.

Scope of AMR

Resistant microorganisms are reported all over the world with higher rates of AMR in countries with lower and middle incomes4. AMR is observed in a vast range of different microorganisms including bacteria, fungi, viruses and parasites as seen in the following examples. Multidrug resistant (MDR) bacterial pathogens are described as common causes of healthcare associated infections but have been reported in the community as well. *E.coli, Klebsiella pneumoniae, Acinetobacter baumanii,* and *Pseudomonas aeruginosa* are frequently observed to cause MDR Gram-

negative infections. Common Gram-positive pathogens exhibiting resistance are MRSA and penicillin resistant *Streptococcus pneumoniae*. Multidrug resistant or extensively drug resistant forms of tuberculosis (MDRTB/XDRTB) are significant contributors to AMR related deaths globally. Antifungal resistance, especially noted with the transmission of multi-resistant strains of *Candida auris* has been a concern in healthcare facilities managing patients with risk factors. Viral pathogens can acquire resistance. With the increasing use of antiretroviral drugs (ART) to treat HIV infections, HIV strains resistant to some ART agents have emerged. Development of resistance to anti-parasitic agents is a threat in the treatment and control of malaria.

Key drivers of AMR

Resistance to antimicrobials is a natural phenomenon occurring in microorganisms. However, the development and transmission of AMR is aggravated by the factors outlined below.

Over prescribing and overuse of antimicrobials for the treatment of humans and animals, and the non-therapeutic use for animal and plant food production are major causes for the selection of drug resistant organisms (DRO). Behaviours of prescribers and users are critical factors in determining the emergence of AMR. Failure to complete courses of antimicrobials according to prescriber's instructions, sharing of medicine with other patients and improper disposal of antimicrobial drugs promote the emergence of AMR.

Propagation of DRO can occur with clonal expansion during multiplication. Populations of DRO can thrive in the presence of antimicrobials, exit from the places of origin, and spread into the environment. Transmission of DRO can occur within healthcare facilities as well as in communities. A study published in 2021 shows the transmission of resistant *Enterobacteriaceae* (coliform species) from colonized mothers to their neonates[6].

Inadequate infrastructure facilities and resources and poor adherence to basic hygiene and infection prevention and control practices expedite the spread of DRO within institutions and communities. International travel facilitates the global transmission of DRO.

Response to AMR threat

The need for a harmonized global scale action to combat the threat of AMR was becoming increasingly evident at the dawn of the 21st century. The World Health Assembly held in 2015 adopted the Global Action Plan for AMR (GAP-AMR) and the member nations agreed to develop country plans aligned with the objectives of GAP-AMR. The GAP-AMR recommended the following 5 strategic objectives with the goal of ensuring the continuity of the ability to treat infectious diseases with effective and safe medicines[7].

Objectives of the GAP-AMR[7]

1. to improve awareness and understanding of antimicrobial resistance through effective communication, education and training
2. to strengthen the knowledge and evidence base through surveillance and research
3. to reduce the incidence of infection through effective sanitation, hygiene and infection prevention measures
4. to optimize the use of antimicrobial medicines in human and animal health
5. to develop the economic case for sustainable investment that takes

account of the needs of all countries and to increase investment in new medicines, diagnostic tools, vaccines and other interventions

Understanding the aggravating threat of AMR in Southeast Asia, the Health Ministers of Southeast Asian Region (SEAR) of the WHO had pledged to take action to prevent AMR in their countries. At a meeting held in Jaipur, India in 2011, they have signed a declaration named the 'Jaipur Declaration on Antimicrobial Resistance'[8].

Sri Lanka endorsed and implemented the country's first National Strategic Plan for combatting the threat of AMR in 2017[9]. This plan has been reviewed in 2023 and the country is in the process of adopting a new National Action Plan for combatting AMR during the next five-year term from 2023 to 2028. Both national action plans are well aligned with the GAP-AMR strategies listed above and reflect a multisectoral One Health approach. Implementation of the national action plans needs the resources and the commitment, and perseverance of many stakeholders in human health, animal health, plant health, food production, food safety and environmental sectors. The human health sector plays the major role in these activities as the sector responsible for the highest consumption of antimicrobials as well as the key impact area for the adverse outcomes of AMR. Doctors must take leadership in these activities as responsible prescribers and healthcare providers to the nation.

Doctors' role in prevention and control of AMR

Medical professionals are involved in the diagnosis, treatment, and prevention of infectious diseases. Managing infectious diseases is a challenge with different types of susceptible patient populations, emerging pathogens with a poorly understood armamentarium of virulence factors and ever-changing resistance profiles among known organisms. Early diagnosis of sepsis and initiating antibacterial therapy is lifesaving. Avoiding the use of antibacterials in viral infections is equally important. Understanding the indications for using antimicrobials and prescribing the correct agent in the correct dosage regime and route for the appropriate duration is vital. The choice of proper empiric antimicrobial depends on the site, extent and severity of infection, probable pathogens and susceptibility patterns and patient factors. Antimicrobial stewardship programs should be established to ensure the adoption of guidelines for antimicrobial use. The AWaRe classification recommended by WHO categorizes antibiotics in to Access, Watch and Reserve groups to optimize the use of antibiotics and to prevent the emergence of AMR[10].

Effective use of diagnostic facilities supports the decision-making process and further management of infections. Diagnosis of infections and detection of AMR is the cornerstone of AMR surveillance. Surveillance of AMR and antimicrobial use and consumption is compulsory to assess the burden and epidemiology of infections and AMR and the impact of preventive strategies.

Doctors should also be educators and opinion leaders for the public. Effective communication with patients will be essential in avoiding unnecessary antibiotic use and to enable adherence to the instructions on correct use when antibiotics are prescribed. Guidance on proper hygienic practices to prevent the spread of infections and protect vulnerable populations is essential.

Infection prevention and control practices should be implemented in hospitals and community practices where doctors can be role models to promote compliance with infection prevention practices among other healthcare staff.

Conclusion

AMR provides a good example of the complexity and interconnected nature of global health issues. A successful response to AMR is essential for the wellbeing of life on earth and needs inputs from many stakeholders. Medical professionals must play an active role in planning, implementing, and sustaining the response to AMR to preserve safe and effective treatment options for infectious diseases in future.

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Insect allergy in Sri Lanka

Dr Rajiva de Silva, Dr Dhanushka Dasanayake

Abstract

Insect allergy is common, worldwide. Most insect allergies are caused by stinging insects, of the Order Hymenoptera. These include the Families Apidae (bees), Vespidae (wasps/hornets) and Formicidae (ants). Allergy due to biting insects is rare.

The most important insects responsible for allergy in Sri Lanka are *Apis dorsata* (the Giant Asian honey bee Sin. bambara*), Vespa affinis* (Lesser banded hornet Sin. debara) and three species of ants; *Odontomachus simillimus* (Sin. dala kadiya), *Tetraponera rufonigra* (Sin. hathpolaya), and *Solenopsis geminate* (Sin. Nai kuhumbuwa).

Clinical features are generally confined to local reactions (such as pain, swelling and erythema) due to toxic effects of the venom. IgE mediated reactions include large local reactions (LLR), systemic cutaneous reactions and anaphylaxis. In 3 large case series in Sri Lanka, anaphylaxis was observed in 0- 6% of patients following stings of *A dorsata* and *V affinis*. A study of hymenopteran sting allergy from Kurunegala in a one-year period, however, indicated a higher figure, 1/3 of cases. Fatalities are rare in Sri Lanka, and are mainly due to anaphylaxis.

Patients with LLR or systemic cutaneous reactions would rarely develop anaphylaxis with subsequent stings. However, those with anaphylaxis have a 30 - 67% chance of anaphylaxis with subsequent stings. Treatment entails diagnosis and offering venom immunotherapy (VIT) for such patients.

In Europe and the US, diagnosis of the culprit insect is by skin testing (SKT) or in vivo testing with commercial allergen. SKT are sensitive and specific. In vitro testing is less sensitive and may lead to double positive results for both bees and wasps/ hornets. Component resolved diagnostics (CRD) have increased the sensitivity and specificity of diagnosis. The basophil activation test (BAT) is a novel method of diagnosis.

No commercial reagents are available for Sri Lankan species. However, component resolved diagnosis using venom of the Western honey bee, *A mellifera*, may be offered in *A dorsata* allergy. A novel method, the passive basophil activation test (BAT) using indigenous *A dorsata* and *V affinis* venom may be used to diagnose the respective venom allergies. *Apis mellifera* venom may optionally be used for VIT for *A dorsata* venom allergy.

Patients at risk for future anaphylaxis should be offered an auto injectable adrenaline pen, or a prefilled syringe with adrenaline for emergency use.

Introduction

Insect allergy is common, world-wide, and may be fatal. In the West, most systemic reactions occur in adults. Approximately 50% of fatalities occur in patients with no history of insect venom allergy [1]. Patients

with systemic reactions should have an auto-injectable adrenaline pen, and venom immunotherapy is available for some insect species.

Classification

Most allergic reactions occur following stings of the Order Hymenoptera. There are three families responsible for stinging insect allergy (table). These include the bees (Apidae), wasps/hornets/yellow jackets (Vespidae) and ants (Formicidae). Only females sting as the stinging apparatus is a modified ovipositor.

Allergy to biting insects are uncommon. They include Triatoma ("kissing bug"), Culicoidae (Mosquito) and fleas.

Table Classification of Hymenopteran insects causing allergy

Family Subfamily	Western species	Sri Lankan species
Apidae	*Apis mellifera* (Honey bee)	*A dorsata* (Giant Asian honey bee; Sin. Bambara) *A cerana* (Domesticated Asian honey bee; Sin. Mee messa) *Apis florae* (Feral Dwarf Honey bee; Sin. Daduwel mee)
Xylocopinae		*Xylocopa tranquebarica*
Vespidae		
Vespinae	*Vespula vulgaris* (yellow jacket) Vespa species (European hornet)	*Vespa affinis* (Lesser banded hornet; Sin. Debara) *Vespa tropica* (Greater banded hornet; Sin. Debara) *Vespa mandarinia*
Polistinae	Polistes species	*Ropalidia marginata* (Paper wasp; Sin. Kalanduruwa)
Formicidae		
Myrmeciinae	Myrmecia species (Jack jumper)*	
Myrmicinae	*Solenopsis Invicta* (fire ant)	*S. geminata* (Sin. nai kuhumbuwa)
Ponerinae		*Odontomachus simillimus* (Sin. dala kadiya) *Diacamma rugosa* (Sin. kadiya)
Pseudomyrmecinae		*Tetraponera rufonigra* (Sin. Hathpolaya)

*Australian species

Insects in Sri Lanka

The insects responsible for most cases of allergy in Sri Lanka belong to the Order Hymenoptera.

Family Apidae

The family Apidae includes the bees; the most important being *A dorsata*, the Giant Asian Honey bee, which is prevalent

in South and S-E Asia. This is the most common insect allergy in Sri Lanka [2]. The other insects in the subfamily include *A cerana* and *A florea* [3]. These insects rarely cause disease.

A dorsata is related to the western honey bee, *A mellifera*. While not domesticated, it's honey is consumed by indigenous people. It is an aggressive insect when disturbed. It builds nests in large branches of trees, rock caves and buildings [3].

A cerana makes hives in crevices of rocks and trees. It is the domesticated honeybee [3]. *A florea* is the smallest honeybee, common below elevations of 1000 feet [3].

The subfamily Xylocopinae includes the genus Xylocopa, or Carpenter bees. Thirteen species have been reported in Sri Lanka, including *Xylocopa tranquebarica*. Carpenter bees are pollen bees, but are nocturnal insects. *Xylocopa tranquebarica* have been reported from the Northern province, Eastern province (Ampara) and Puttalam [4].

Family Vespidae

The family Vespidae includes wasps, hornets and yellow jackets.

Two hornets belonging to the Vespinae subfamily, *Vespa affinis* and *V tropica* [2,3] are responsible for allergic reactions in Sri Lanka. The third species, *V mandarinia*, has not been reported to cause disease in this country.

V affinis is found close to the ground, in grassy areas and forests. It builds nests in trees, shrubs and also houses. It feeds on nectar, but also on carrion. It is an aggressive insect [3].

An old-world paper wasp, *Ropalidia marginata* belonging to the subfamily Polistinae have caused allergic reactions in Sri Lanka. Their nests have been found on vegetation, rocks and man-made structures [3].

Family Formicidae

A number of ant species have caused allergic reactions in Sri Lanka. Those belonging the Ponerinae subfamily are called "Kadiya". They include *Odontomachus simillimus* "dala kadiya", common in the wet zone but not recorded in Anuradhapura and Polonnaruwa districts, and uncommon in the Puttalam and Kurunegala districts; *Diacamma rugosa* "kadiya", recorded in the wet but not dry and intermediate zones [3]. Certain species of Pachycondyla are known to cause allergic reactions in Asia, but not recorded in Sri Lanka.

Ants belonging to the subfamily Pseudomyrmecinae are also black in colour, and are commonly identified as "kadiya" as well. One species, *Tetraponera rufonigra* "hathpolaya" has been identified as a cause of allergy. It is found in both the wet and dry zones [3].

Nests of ants belonging to the subfamily Myrmicinae are found in homes and outdoors. One species, *Solenopsis geminata* "nai kuhumbuwa" has been identified as a cause of allergy [3].

Biting insects rarely cause allergy. Only Triatomids ("kissing bug") have been reported to cause allergy in Sri Lanka.

Clinical features following insect stings

Local reactions

A sting may lead to localized swelling, burning sensation, erythema and pruritus lasting hours to a few days [5, 6]. These are not allergic reactions. Anti-histamines, cold compresses, analgesics and topical steroids may be prescribed [6].

Honey bees leave stingers, which can be removed with the finger nail, or credit card [6]. After stinging, the bee dies. Wasps/ hornets do not leave stingers, and therefore may sting multiple people.

Fire ant stings may lead to a sterile pseudo pustule 1 - 2 days later [6]. This should be kept clean, to prevent secondary infection.

Allergy

IgE mediated allergy manifests in two forms; large local reactions (LLR) or systemic reactions (SR) [1, 5, 6].

LLR is a reaction with erythema and wheals > 10 cm in diameter, occurring 12 - 24 hours after a sting and are IgE mediated late phase reactions [6]. They are not dangerous, unless the head is involved, or respiration is compromised, as in the case of stings of the tongue or throat. The risk of SR following subsequent exposure is low after LLR (< 10% for all SR, and < 3% for severe anaphylaxis [5]. Cutaneous SR (urticaria, angioedema, flushing) is more commonly seen in children [5]. Patients with systemic cutaneous reactions may develop similar or less severe reactions following subsequent exposure. The risk of anaphylaxis with a subsequent exposure is approximately 3% [5]. However, patients who develop anaphylaxis have a 30 -67% risk of anaphylaxis with a subsequent exposure and therefore need evaluation and venom immunotherapy (VIT) [7]. Anaphylaxis is considered be severe when hypotension results in cognitive dysfunction or impaired mobility, or laryngeal involvement causes hypoxia [8].

The onset of symptoms is within minutes to a few hours; within 40 minutes in 87% of cases of anaphylaxis [5]. However, a more rapid onset is related to more severe reactions.

The risk of severe reactions is increased in patients with cardiovascular disease, mast cell disorders and those on β blockers and ACE inhibitors. The effects of adrenaline are nullified by β blockers, and mast cell mediators such as bradykinin are not broken down in patients on ACE inhibitors leading to more severe reactions [7].

Non allergic reactions

Rare complications, where the pathogenesis is uncertain, include serum sickness–like reactions, encephalitis, peripheral and cranial neuropathies, glomerulonephritis, myocarditis, and the Guillain–Barré syndrome [6].

Allergy to stinging insects in Sri Lanka

Bees and hornets

The most comprehensive study on allergy to bees and wasps is from Deniyaya, Southern Sri Lanka [2]. Of the 322 patients who were stung, the majority were due to *A dorsata* (90.7%), while the rest (9.7%) were due to *V tropica* (greater banded hornet), with one sting by *R marginata*. The majority (78.9%) had a painful localized swelling without systemic features. Anaphylaxis was diagnosed in 4.6% of cases. Thirty (9.3%) had mass envenomation; i.e, were stung by > 100 insects. However, none developed multi organ failure or death. The peak incidence was in August- September, whereas the lowest incidence was from January-March [2]. Another study on *A dorsata* venom allergy identified 30 patients with anaphylaxis from Deniyaya [9]. Of the 30, 22 had severe, 5 moderate, and 3 mild anaphylaxis.

Of the 13 carpenter bees reported in Sri Lanka, one species, *Xylocopa tranquebarica*, has been implicated in a possible case of fatal anaphylaxis. This is the first report of anaphylaxis to the venom of this species [4].

A study on anaphylaxis following stings by *V affinis* from Bandarawela revealed that, of the 30 patients included, 29 had moderate and 1 had mild anaphylaxis. None had severe anaphylaxis [10]. Another study from the North Central Province on hornet sting allergy included 78 patients; all developed allergy to Vespa species, with 38 identifying *V affinis*. The majority (96%) developed pain and swelling at the site, but systemic symptoms were rare. Only 6.4% developed anaphylaxis [11]. No deaths were reported. The peak incidence was from June - August.

A study of allergy to arthropod stings and bites from 44 hospitals from the Kurunegala district in a one year period reported 357 patients with Hymenopteran stings. The Hymenopterans included both *A dorsata* and hornets, but the culprit species were not differentiated. Two hundred and fifteen (60%) had local reactions, and 110 (31%) had anaphylaxis. Mild, moderate and severe anaphylaxis was diagnosed in 39, 62 and 9 patients respectively. There were no deaths. Anaphylaxis was seen in 1/3 of hymenopteran stings, 1/4 of centipede bites, but were rare with other arthropods [12].

A study from the central hill country with 80 patients who had hornet (68%) and bee (32%) stings revealed that none had anaphylaxis [13].

R marginata has been reported to cause allergy, including anaphylaxis in Sri Lanka [2, 14].

Anaphylaxis

Anaphylaxis is relatively rare; the large case series quoted above [2, 11, 13] indicate an anaphylaxis rate of 0 – 6.4%, with both honey bee and hornet stings. The only exception is the large study from Kurunegala, where 31% of the patients developed anaphylaxis [12].

Rare allergies

Rare allergic manifestations following insect stings have also been reported in Sri Lanka. Allergic angina after hymenoptera stings and other environment exposures (Kounis syndrome) is due to IgE mediated mast cell degranulation leading to coronary artery vasospasm, platelet activation and thrombus formation resulting in myocardial ischaemia [15-17]. Acute coronary syndrome can also occur due to direct toxic effect of the venom on the coronary vasculature [17]. Two patients were diagnosed with Kounis syndrome following multiple bee stings [15, 16] and in one patient after stings due to *V affinis* [17]. Acute fatal pulmonary oedema in 2 patients with multiple *V affinis* stings [18] and one patient with mass envenomation with *A dorsata* may have been due to anaphylaxis [19].

Non allergic manifestations

Non allergic manifestations have also been described. One patient developed an ischaemic stroke following stings of 3 wasps/ hornets [20]. Another patient developed an ischaemic stroke after > 30 stings by honey bees [21]. Platelet aggregation and thrombus formation, vasospasm due to venom components, cerebral embolism, hypotension, hypertensive haemorrhage and hypoxia are the postulated mechanisms for the condition [20, 21]. The other complications included myocarditis following *A dorsata* sting [22], microangiopathic haemolytic anaemia due to thrombotic microangiopathy following mass envenoming by *A dorsata* [23], limb ischaemia following a sting by *A dorsata* [24], myocardial infarction due to mass envenoming by *A dorsata* [19] and bowel gangrene [19].

Ants

Allergy to 4 species of ants have been reported in Sri Lanka. They include *Tetraponera rufonigra Odontomachus simillimus*, [25, 26], *Solenopsis geminata* [3, 25, 26] and *Diacamma rugosa* [26]. Allergy to *D rugosa* was identified for the first time in the world [26].

Seven patients who developed severe anaphylaxis following ant stings were adults [3, 25]. In the paper on anaphylaxis, in 27 of 42 patients who developed anaphylaxis to insect stings, the culprit insects were ants; *Odontomachus simillimus* followed by *Tetraponera rufonigra, Diacamma rugosa* and in one instance due to *Solenopsis geminate* [26]. Fourteen of the 27 episodes (51.8%) occurred in children aged 12 years or younger. Seven of the 27 episodes lead to loss of consciousness, of which five were in children less than 12 years of age.

Deaths due to stings in Sri Lanka

None of the patients in the large case series died following insect bites. However, fatalities have been reported in case reports. Organ dysfunction, including multi organ dysfunction, could be due to anaphylactic shock, or due to the direct effects of the venom [27]. One 48-year-old male developed hypotension and bronchospasm after multiple (70) wasp stings, followed by rhabdomyolysis, acute kidney injury, acute fulminant hepatitis and haemolysis. He died on day 16 during ICU care [24]. Death due to pulmonary oedema following mass envenomation with *V affinis* in 2 adults may have been due to inadequate treatment of anaphylaxis initially [18]. In addition, an 11-year-old child also died of pulmonary oedema after mass envenomation with *A dorsata*; he may have had anaphylaxis [19]. An adult male died following a sting of a Carpenter bee [4].

A 30-year old female died after developing anaphylaxis after a sting from *O simillimus* [25].

Hymenoptera Venom

The venom of hymenoptera contains histamine and dopamine, responsible for the pain, erythema, swelling and pruritus; alkaloids in the venom of fire ants are responsible for the vesicles [6]. The allergic manifestations are mainly due to phospholipase, acid phosphatase and hyaluronidase in the venom.

The main constituents of honey bee venom include enzymatic proteins such as phospholipase A2 (PLA 2), acid phosphatase, hyaluronidase and nonenzymatic proteins such as mellitin and apamine. Some of these proteins are allergenic; for *A mellifera*, they include phospholipase A2 (Api m 1)-an enzyme with a cytotoxic effect; hyaluronidase (Api m 2); acid phosphatase (Api m 3); and melittin (Api m 4) with haemolytic properties that can stimulate and adversely affect heart rate; dipeptidyl peptidase IV (Api m 5); and icarapin (Api m 10) [28]. In addition, carbohydrate moieties are found in bee venom which induce the production of IgE, but do not cause symptoms. These are termed cross reacting carbohydrate determinants (CCD) [28]. CCD is also present in pollen. IgE to CCD are seen in polysensitized individuals to pollen, and in double sensitized patients with allergy to bees and wasps. The presence of IgE to venom may therefore be due to cross reactive CCD, which are not responsible for allergy.

The venom of *V affinis* has not been well characterized. However, the venom of the European common wasp *Vespula vulgaris* has been characterized. Its allergens include Ves v 1(PLA 1), Ves v 2 (hyaluronidase) and Ves v 5 (antigen 5) [29].

Evaluation of hymenopteran venom allergy (HVA)

Further evaluation of HVA depends on nature of the reaction, current and future risks, and lifestyle and medical factors that place the patient at risk [5,6,7]. Baseline serum tryptase should be assessed to exclude mastocytosis [7].

All patients who developed anaphylaxis should be advised to avoid areas where the culprit insects reside, not to have uncovered food and drink outdoors or to walk or work outside without adequate covering [6].

Patients who developed anaphylaxis and are at risk of further exposure to the culprit insect are offered venom immunotherapy (VIT) in Europe, US and Australia. Identification of the insect is necessary for this purpose. The tests to identify the culprit insect include skin test (SKT), serum venom specific IgE, component resolved diagnostics (CRD) and the basophil activation test (BAT).

SKT with purified venom is the most sensitive and specific test available. The test is performed intradermally, and is safe. In the west, commercial venom protein extracts (yellow jacket, yellow hornet, white faced hornet, wasp, honeybee) are used; for *S Invicta*, and Jack jumper ant species, commercial whole-body extracts of the ants are used.

If SKT cannot be done, invitro testing is available for western insects. However, when serum venom specific IgE is used to diagnose bee/wasp/hornet allergy, double positivity may occur. This is due to co-sensitization, cross reactive components in both venoms or due to CCD [7]. CCD may therefore give false positive results if invitro diagnostics using whole venom extracts are used. The use of recombinant venom components may prevent this (CRD, component resolved diagnostics). CRD use individual venom/allergen components found in venom, which usually has multiple venom allergens/components. Recombinant components do not contain CCD. However, while specificity may increase, sensitivity is low. For example, recombinant components of *A mellifera* (western honey bee), rApi m 1-3, 5, 10 used individually, have sensitivities of 47.9%-72.2% to detect sensitivity to *A mellifera* [7]. However, using all 5 gives a sensitivity of 94.4% [7]. CRD may be useful in differentiating bee vs wasp/hornet allergy.

Commercial venom is not available for *A dorsata* or *V affinis* for diagnosis and VIT. However, the venom of *A mellifera* and *A dorsata* are similar; a study done by us revealed the chemical and immunological similarity [9]. However, use of IgE to *A mellifera* by Phadia ImmunoCap in patients with *A dorsata* venom allergy has a sensitivity of 84% [28], but 76% of patients with anaphylaxis to *V affinis* were also positive [10]. Due to double positivity when using western venom components, IgE to crude venom cannot be used to diagnose HVA. However, r Api m 1+ 10 has a sensitivity of 90% to diagnose *A dorsata* venom allergy [30]. In addition, it is also specific. CRD with *A mellifera* venom components may therefore be useful in the diagnosis of *A dorsata* venom allergy.

The BAT is a new technique to identify sensitization. Basophils of patients will have venom specific IgE on the surface of the basophil, linked to it via high affinity FCεR1. Co incubating these basophils with venom will lead to cross linking IgE and activation of the basophil. Activation will upregulate certain molecules on the surface of the cell (CD 63, CD 203c), which can be identified by flowcytometry. Upregulation

of these molecules indicates the presence of allergen (venom) specific IgE. The direct BAT is sensitive and specific, and also differentiates true positives from double positives. However, the test is expensive, and the test has to be completed within 3 hours of collection. Our group has used a passive BAT for the first time in venom allergy, in patients allergic to the Giant Asian honey bee (*A dorsata*) and wasp/hornet (*Vespa affinis*) [10, 30]. In this procedure, **donor** basophils are stripped of IgE and incubated with serum from an allergic patient. The patient's IgE molecules will then attach to the surface of the basophil. Subsequent incubation with venom from the culprit insect results in activation of the cells and upregulation of CD63/CD 203c on the surface. 100% sensitivity and specificity were shown with both *A dorsata* and *V affinis* venom in patients who developed anaphylaxis to the respective insect [10, 30]. Serum samples can be stored for months before testing, which makes the procedure much more convenient.

Treatment options available in Sri Lanka insect sting anaphylaxis

Anaphylaxis should be treated according to standard guidelines [31]. Patients with anaphylaxis to venom stings are offered VIT in the west. Unfortunately, commercial venom is not available for Sri Lankan species. However, based on our paper [9], the European Allergy and Clinical Immunology Society (EAACI) has suggested that *A mellifera* commercial venom may be used in VIT for *A dorsata* allergy [32].

An auto injectable adrenaline pen should be prescribed for those at risk of anaphylaxis. In the event that it is unavailable or unaffordable, a prefilled syringe with the required dose should be prescribed or a one mL syringe/needle and epinephrine ampoule should be provided with adequate training and written instructions for drawing up the correct dose [31].

Biting venom allergy

Anaphylaxis to biting insects is rare; these include flies, mosquito and Triatomine bugs. Only *Triatoma rubrofasciata*, the "kissing bug" (figure), among the biting insects, has been implicated in allergy in Sri Lanka [26].

Figure. Triatoma rubrofasciata

Conclusion

Allergy to hymenopteran insects is relatively common in Sri Lanka; *A dorsata, V affinis* and several ant species are the most important insects. While most stings result in only local reactions, anaphylaxis may occur. Mass envenomation and anaphylaxis have rarely resulted in death.

Diagnostic and therapeutic reagents are not available for Sri Lankan species, even though experimental studies have indicated that CRD and the passive BAT may be useful in *A dorsata* venom allergy. In addition, *A mellifera* venom may be an option for VIT in *A dorsata* venom allergy.

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Eight-step approach to child with headache

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Introduction

Headache, also known as cephalalgia, which in simpler terms means pain in the head, is a somatic symptom that anybody could experience in his or her lifetime. It is common and disabling in children. However, most parents expect proper reassurance by a competent clinician that their child has no serious underlying pathology. Comprehensive history and examination, coupled with simple management strategies at primary care level can have a substantial benefit in management. Therefore, it is highly cost-effective when managed at primary care level.

It is the most common neurological symptom among children and adolescents, with a prevalence of up to 88% (1) while 60% experience significant headaches, globally (2).

The International Classification of Headache Disorders has published the third version of classification for headache disorders in 2018, where headaches are categorised as primary headaches, secondary headaches, neuropathies or facial pains and other headaches (3). Of primary headaches, the commonest types encountered in children are Tension Type Headache (TTH), Migraine and Cluster Headache.

In the Global Burden of Disease Survey 2019, headache disorders were among the top five causes of disability-adjusted life-years (DALYs) (4). Global prevalence of TTH was 26.0% (males 23.4%, females 27.1%) and of migraine was around 14.0% (males 8.6%, females 17.0%) (5). TTH is the commonest type of primary headache (5) which is usually mild in severity score. Migraine headache which is the most studied and the most commonly seen in clinical practice usually has a severity that is moderate to severe (2).

This common but often neglected disorder has a major impact not only on the affected children, but also on their parents and siblings. Productivity, in terms of school performance, academic, sports and recreation as well as quality of life (QoL) is impaired due to headache and has been described to be on par with children suffering from rheumatoid arthritis and cancer (2). Limited physical and social activities, school absenteeism, and poor academic performance are among the recognised negative effects due to headache in childhood (6). Headache, especially migraine, is known to have comorbid depression, epilepsy, stroke and myocardial infarction, which in turn cause disabilities, impairment of work and daily activities, and an ultimate socioeconomic burden which is substantial yet largely unrecognised. (4)

The importance of headache as a neglected disease entity is highlighted by the statement of the World Health Organization (WHO). "Headache disorders are ubiquitous, prevalent, disabling and largely treatable, but under-recognized, under-diagnosed

and under-treated" (World Health Organization & Lifting the Burden, 2011). (7)

When a child presents with headache to the general practitioner (GP) or the physician there is a general diagnosis bias toward migraine and migraine prophylaxis is started sometimes. The limited time available during consultation and lack of awareness of a structured easy to practice approach may result in ordering unnecessary and costly investigations such as CT/MRI scans. One might on the other hand fail to identify a sinister cause such as a CNS infection or even a tumour. The rule of thumb to remember is that even though migraine is a common primary cause of headache, there can be many other potentially treatable conditions that can be addressed easily. Spending too much time on smart phones and virtual games and psychological factors such as bullying, failed relationships can all result in headaches. Refractive errors with extraocular muscle fatigue could be another contributory cause for headache. (2)

With the experience gained through conducting a dedicated paediatric headache clinic at a national referral institution in Sri Lanka for over a decade, **this simplified and practical eight-step approach** to evaluate and manage a child with headache is being offered.

The eight-step approach proposed here is an easy-to-follow approach that can be adopted for use even at a busy GP practice since a quick evaluation should not need more than 10 minutes. Such intervention would fill a much-needed void and enhance the cost-effectiveness of health care.

Step 1 - Confirm that you are dealing with a "headache" and define its characteristics

Confirmation

In clinical practice it is important to confirm whether pain is in the "head" since related anatomical sites can masquerade as a headache. International headache society (IHS) defines headache as pain occurring above the orbito-meatal line*. (3) The outer components of the head like scalp, head muscles, peri-cranium, and vessels as well as dura, arteries, venous sinuses within the cranium are pain sensitive. Cranial nerves that have sensory components also originate pain. Inflammation, displacement, tension to above mentioned structures can give rise to pain and thus headache.

Defining the characteristics of a headache

A careful history and focused examination are the golden tools in the evaluation of a child with headache. The history taking should involve both the parents and the child.

A young child can be given paper and crayons and asked to draw how he feels during a headache as drawings displaying migraine features has been found to have a high concordance with migraine diagnosis. (8) Box 1 elaborates the key areas to be covered when taking a history from a child with headache.

Examination should involve a comprehensive general and systemic examination including a detailed examination of the neurological system. Box 2 elaborates important areas to focus on when examining a child with headache.

* Orbito-meatal line is a line approximating the base of the cranium, passing from the infraorbital ridge to the midline of the occiput, intersecting the superior margin of the external auditory meatus; the cranium is in the anatomical position when the baseline lies in the horizontal plane while right and left sides are level.

Box 1: Taking a history of a child with headache (Based on Szperka [2])

1. Frequency-how often does the child get these attacks?
2. The pattern of the headache: Intermittent headaches, new or an exacerbation of an existing headache?
3. Localization in the head: The child might point out where exactly it hurts in the head
4. Headache quality: young children may describe it like someone squeezing their head or knocking on their head. It might appear like a tight band round the head. They might say like it's exploding.
5. Headache severity: Faces Pain Scale might accurately describe the severity in a younger child. Teenagers and young children can also be asked to rate their headache on scale from 0-10.
6. Any associated features:
    a. Antecedent symptoms: what happened before pain onset? does the child experience symptoms like facial pallor, fatigue, irritability, mood changes, and yawning.
    b. Migraine aura: The child might see any extra spots, lights, or lines that are sometimes Zig zag; if anything is missing from their vision before or during a headache; and whether they have associated numbness or tingling.
    c. Migraine symptoms: Sensitivity to light and sound (photophobia and phonophobia), nausea and vomiting are diagnostic criteria for migraine.
7. Cranial autonomic symptoms: Conjunctival injection(redness), tearing, nasal congestion, rhinorrhoea, ptosis, ear pressure, and facial flushing are common in children with migraine and usually bilateral. Unilateral autonomic symptoms can be present with migraine but may suggest a trigeminal autonomic cephalalgia.
    a. Postdromal or post event symptoms: Fatigue, cognitive difficulties, and nausea often persist for hours after the pain has resolved.
8. Medical and psychological history: epilepsy, psychiatry drugs etc
    a. Comorbidities like Epilepsy, Anxiety/depression, sleep disorders
    b. Social history: sources of emotional stress on both the child and the family

Box 2: Physical examination of a child with headache (Based on Szperka [2])

General examination:

- Presence of temperature
- Check the Blood Pressure
- Rashes, especially petechial non blanching
- Injuries if any

Neurological examination:

- Level of consciousness (GCS or the AVPU scoring)
- Meningeal signs: neck stiffness, Kernig's sign etc
- Focal neurological deficits including visual disturbances
- Disorders of coordination
- Gait and speech
- Auditory disorders
- Measurement of head circumferences in very young children
- Localised tenderness of scalp.

Step 2 - Identification of life-threatening headaches through "Red Flags" - "SNOOP4Y"

Life-threatening headaches are rare and reported in about 2-3% at emergency treatment units and 1% in primary care. (2) It is important to screen for sinister and life-threatening causes such as brain tumours that may be the underlying cause of the headache in children. Concerning features or "Red Flags" can be remembered with ease using the mnemonic SNOOP4Y (systemic signs/symptoms, neurological signs/symptoms; onset sudden; onset in sleep/early morning; positional exacerbation, precipitated by Valsalva, parents (lack of family history), progressive or new; young age). (2)

Table 1 Potential Red Flags for Serious Causes of Headache Organized by the Mnemonic SNOOP4Y (Based on Szperka (2)

Red Flag	**Significance**
Systemic signs/symptoms	
Fever, acute symptoms	Infections are a common cause of headache
Head trauma	If any
Vomiting	Consistent with migraine but also a risk factor for brain tumours
Weight loss	Can be a symptom of malignancy
Comorbidities	Many systemic illnesses, including rheumatologic, oncologic, vascular, and hematologic conditions; genetic syndromes; and abnormalities of the immune system predispose to other serious causes for headache
Neurologic signs/symptoms	Abnormal gait, ataxia, papilledema, changes in personality/behaviour/cognition, visual disturbances/eye movement abnormalities, and seizures
Onset is sudden?	Thunderclap headache ("worst ever headache in life") in which pain peaks instantly is rare in children but can signal serious causes such as cerebral haemorrhage and imaging should be followed urgently.
Onset in sleep/early morning?	Headache causing a child to wake up from sleep or occurring early in the morning has been associated with intracranial lesions
Positional exacerbation	
Worse upright	Can suggest spontaneous intracranial hypotension or postural tachycardia syndrome
Worse supine	Consider increased intracranial pressure from tumour or idiopathic intracranial hypertension
Precipitated by Valsalva	
Parents (lack of family history)	Lack of family history of headaches is associated with higher odds of having a serious cause of headache in children
Progressive or new	Significant change in the headache pattern, new headache, or progressively escalating headache raises the level of concern for a secondary cause
Young age	children of younger age (defined as ≤5 years) are more likely to be diagnosed with a life-threatening headache

Out of the above features, abnormal neurologic findings, as well as vomiting, are the strongest predictors of severe diseases needing prompt intervention. Night awakenings and occipital pain, as isolated symptoms are associated with non-life-threatening headaches. (2)

Step 3: Is it a secondary headache?

In secondary headache disorders, headache is the symptom of identifiable structural, metabolic or other abnormality.

Some of the important causes of secondary headache disorders are:

- Trauma
- Vascular disorders
- Hydrocephalus and neoplasms
- Substance use
- Intracranial infections
- Metabolic disorders and hypoxia
- Disorders of cranium (e.g. sinuses, eyes, etc.).
- Epileptic disorders (both of ictal epileptic headache and differential diagnosis from other benign focal idiopathic epilepsy of infancy).

Careful history taking and examination will allow to determine whether the child is suffering from a headache because of a secondary cause.

Step 4: Making a diagnosis of a primary headache disorder

In a primary headache disorder, headache itself is the illness and is not attributable to any other disorder. Primary headaches comprise of:

1. Migraine
2. Tension-type headache (TTH)
3. Cluster headache and other autonomic cephalgias
4. Other primary headache disorders

Migraine

Migraine has two major types: Migraine with or without aura. Migraine with aura is primarily characterized by the transient focal neurological symptoms that usually precede or sometimes accompany the headache. Boxes 3 & 4 highlight the ICHD – 3 Criteria for Migraine without aura and Migraine with aura respectively.

Box 3: ICHD-3 diagnostic criteria for migraine without aura

A At least five attacks fulfilling criteria B-D
B Headache attacks lasting 4-72 hr (untreated or unsuccessfully treated)
C Headache has at least two of the following four characteristics:
  1. unilateral location
  2. pulsating quality
  3. moderate or severe pain intensity
  4. aggravation by or causing avoidance of routine physical activity (e.g. walking or climbing stairs)
D. During headache at least one of the following:
  1. nausea and/or vomiting
  2. photophobia and phonophobia
E. Not better accounted for by another ICHD-3 diagnosis.

Box 4: ICHD-3 diagnostic criteria for migraine with aura

A At least two attacks fulfilling criteria B and C
B One or more of the following fully reversible aura symptoms:
  1. visual
  2. sensory
  3. speech and/or language
  4. motor
  5. brainstem
  6. retinal
C. At least three of the following six characteristics:
  1. at least one aura symptom spreads gradually over ≥5 minutes
  2. two or more aura symptoms occur in succession
  3. each individual aura symptom lasts 5-60 minutes
  4. at least one aura symptom is unilateral
  5. at least one aura symptom is positive
  6. the aura is accompanied, or followed within 60 minutes, by headache
D. Not better accounted for by another ICHD-3 diagnosis.

In contrast to adults, the characteristics of migraine in children show differences mainly with regards to the location and duration. In children, migraine attacks can be brief; the International Classification of Headache Disorders, Third Edition (ICHD-3) (3) criteria define a minimum of 2 hours for children, although experts have proposed that this should be lowered to a minimum of 1 hour. Unilateral pain is part of the diagnostic criteria of migraine in adults, but more than 80% of children report bilateral pain, so the diagnostic criteria allow for this difference.

Tension Type Headache (TTH):

Tension-type headache describes headaches that are mild to moderate, nondisabling, and without any notable associated symptoms like vomiting. Box 5 highlights the ICHD-3 criteria for tension type headache.

Trigeminal Autonomic Cephalgias

Trigeminal autonomic cephalgias, including cluster headache, paroxysmal hemicrania, and short-lasting unilateral neuralgiform headache attacks (SUNHA), have been reported very rarely in young children. Typical adult criteria are used for diagnosis because paediatric cases are so rare. Box 5 highlights the ICHD-3 criteria for cluster headache.

Box 5: Tension Type Headache

A At least 10 episodes of headache occurring on <1 day/month on average (<12 days/year) and fulfilling criteria B - D
B Lasting from 30 minutes to 7 days
C At least two of the following four characteristics:
  1. bilateral location
  2. pressing or tightening (non-pulsating) quality
  3. mild or moderate intensity
  4. not aggravated by routine physical activity such as walking or climbing stairs
D Both of the following:
  1. no nausea or vomiting
  2. no more than one of photophobia or phonophobia
E Not better accounted for by another ICHD-3 diagnosis

Box 6: Cluster Headache

A At least five attacks fulfilling criteria B - D
B Severe or very severe unilateral orbital, supraorbital and/or temporal pain lasting 15-180 minutes (when untreated)
C Either or both of the following:
  1. at least one of the following symptoms or signs, ipsilateral to the headache:
     - conjunctival injection and/or lacrimation
     - nasal congestion and/or rhinorrhoea
     - eyelid oedema
     - forehead and facial sweating
     - miosis and/or ptosis
  2. a sense of restlessness or agitation
A Occurring with a frequency between one every other day and 8 per day
B Not better accounted for by another ICHD-3 diagnosis.

Step 5: Considerations for further investigations

Extensive and costly investigations are not routinely warranted in the evaluation of paediatric headache, where a clinician's assessment is the key to arriving at a diagnosis. However, neuroimaging (CT and/or MRI scanning) is needed if red flags are present. Neuroimaging is unnecessary for children with stable frequency of headaches, and normal neurologic examination with the absence of concerning features.

If the child has fever and nuchal rigidity or papilledema without evidence of tumour or thrombosis, lumbar puncture should be performed.

Step 6: Acute Pharmacological Management

Pharmacological management of headache includes two main arms: acute management and prophylactic treatment.

Migraine is the commonest cause for headache in children and adolescents seen in clinical practice. Given in Box 7 below are the recommendations of the American Academy of Neurology and American Headache Society (2019) for acute management of migraine (9).

The very frequent use of acute medications could predispose patients to more frequent headaches, which is termed as "Medication Overuse Headache" (MoH) (3). Hence this limits the liberal use of acute headache medications. Patients and families need to be counselled regarding this.

Step 7 - Preventive Pharmacotherapy

Prophylactic or preventive treatment is warranted for all children with frequent

Box 7: Recommendations on acute treatment of headache of the AAN and AHS 2019 Practice Guideline Update: Acute Treatment of Migraine in Children and Adolescents (Based on [9])

- Clinicians should counsel that acute migraine treatments are more likely to be effective when used earlier in the migraine attack, when pain is still mild.
- Clinicians should prescribe ibuprofen oral suspension (10 mg/kg) as an initial treatment option to reduce pain in children and adolescents with migraine.
- For adolescents with migraine, clinicians should prescribe sumatriptan/naproxen oral tablets (10/60 mg, 30/180 mg, 85/500 mg), zolmitriptan nasal spray (5 mg), sumatriptan nasal spray (20 mg), rizatriptan orally disintegrating tablets (5 mg or 10 mg), or almotriptan oral tablet (6.25 mg or 12.5 mg) to reduce headache pain.
- Clinicians should counsel patients and families that a series of medications may need to be used to find treatments that most benefit the patient.
- Clinicians should instruct patients and families to use the medication that best treats the characteristics of each migraine to provide the best balance of efficacy, side effects, and patient preference.
- Clinicians should offer an alternate triptan, if one triptan fails to provide pain relief, to find the most effective agent to reduce migraine symptoms.
- Clinicians may prescribe a nonoral route when headache peaks in severity quickly, is accompanied by nausea or vomiting, or oral formulations fail to provide pain relief.
- Clinicians should counsel patients and families that if their headache is successfully treated by their acute migraine medication, but headache recurs within 24 hours of the initial treatment, taking a second dose of acute migraine medication can treat the recurrent headache.

- In adolescents whose migraine is incompletely responsive to a triptan, clinicians should offer ibuprofen or naproxen in addition to a triptan to improve migraine relief.
- For children and adolescents with migraine who experience prominent nausea or vomiting, clinicians should offer additional antiemetic treatments.
- Clinicians should counsel patients and families to use no more than 14 days of ibuprofen or acetaminophen per month, no more than 9 days of triptans per month, and no more than 9 days per month of any combination of triptans, analgesics, or opioids for more than 3 months to avoid medication-overuse headache. (No evidence supports the use of opioids in children with migraine.)

and disabling headaches. Most studies suggest prescribing preventive treatment if a child develops 3 - 4 migraine / headache attacks a month (9).

It is important that we as clinicians realise that during multiple clinical trials of preventive treatments for paediatric migraine placebo was effective and the majority of preventive medications were not superior to placebo (9). However, in clinical practice, placebo response can be beneficial, as the goal is patient improvement without harm. Table 2 highlights the options for preventive treatment.

Table 2 Options for preventive treatment (Based on Szperka [2]) AAN, American Academy of Neurology; AHS, American Headache Society.

Treatment	**Dose**	**2019 AAN-AHS Guideline Comment**
Topiramate	2-3 mg/kg/d; typical dose 100 mg/d; maximum dose 200 mg/d	Probably more likely than placebo to decrease frequency of headache days
Divalproex sodium	15-30 mg/kg/d up to 1000 mg/d	Insufficient evidence
Amitriptyline	0.25-1 mg/kg/d (at bedtime)	Insufficient evidence when used alone
Propranolol	20-40 mg 3 times a day	Possibly more likely than placebo to cause 50% reduction in headache frequency
Flunarizine	5-10 mg at bedtime	Insufficient evidence
Cinnarizine	1.5 mg/kg/d for <30 kg; 50 mg/d for >30 kg	Probably more likely than placebo to decrease headache frequency

Step 8: Lifestyle modifications - "SMART"

Studies have shown that lack of sleep, physical inactivity, skipping meals were associated with increased likelihood of headache in children and adolescents (2). Educating children and parents about following consistent lifestyle habits is a cost effective and productive intervention that can be easily implemented in the general practice.

Table 3 SMART (Sleep, Meals, Activity, Relaxation, Triggers) Lifestyle Considerations (Based on Szperka [2])

Factor	Advice
Sleep: routine pattern and adequate	Maintain a consistent bedtime routine and avoid daytime sleeping to prevent disruptions to the sleep-wake cycle. Ensure an adequate number of hours of sleep
Meals and hydration: consistent and sufficient	Consume a balanced diet: Eat a variety of fruits and vegetables, protein, and dairy. Increase consumption of water: ≥8 cups per day for children Do not skip meals
Activity: consistent and sufficient	Engage in physical activities or sports for at least half an hour daily
Relaxation: cope with stress	Home-related stressors (e.g., arguments with siblings, observing parental disagreements or disputes) or school-related stressors (e.g., difficulty in school, fear of doing poorly, bullying, exams etc) should be recognized and coping methods must be taught to children.
Triggers: avoidance/management	Caffeine and certain types of food may trigger migraine attacks in some patients. Patients must be encouraged to recognize and avoid them.

The mnemonic SMART (sleep, meals, activity, relaxation, triggers) will help you to remember the lifestyle modifications to be advocated.

In addition, in the authors' experience with managing paediatric headache, it is important that attention is given to the following aspects.

- Children and adolescents must be advised to limit their screen time (e.g., limiting to only 30 minutes per day, not using screens before bedtime).
- Hidden precipitants of headache like stressors at school (exam stress, pressure from teachers etc.), disputes within the family, mental and physical abuse must be carefully elicited during assessment and addressed in management.
- Encourage school administrators and teachers to facilitate these lifestyle modifications (for example, a letter issued to school encouraging the child to be given time off for a snack if lunch is getting unusually delayed regularly, flexibility with homework if it is interfering with the child's regular sleep habits).

Conclusion

Headache in childhood is a common yet often neglected disease with a high impact on the quality of life in both the children and their families. Clearcut guidelines for the evaluation and management of paediatric headache are still lacking. In such a setting, this article presents a practical and simplified **eight-step approach to a child presenting with headache** with the hope that it will be a useful guide for all clinicians in providing optimal and cost-effective care for childhood headaches.

Figure 1. A summary of the eight-step approach to paediatric headache

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Metabolic Inflexibility as a root cause of many chronic diseases

Dr Achala Weerasinghe

Metabolic flexibility is a vital aspect of overall metabolic health, enabling organisms to adapt their energy metabolism to changing nutrient availability and energy demands. On the contrary, impaired metabolic flexibility, often observed in chronic diseases, has been associated with the development and progression of conditions such as obesity, type 2 diabetes, cardiovascular disease, and cancer. Impact of metabolic inflexibility on these chronic diseases and the importance of promoting metabolic flexibility through lifestyle interventions must be appreciated.

Metabolic flexibility refers to an organism's ability to efficiently switch between different fuel sources, including carbohydrates and fats, to meet energy demands. In contrast, metabolic inflexibility, characterized by an impaired ability to adapt, has been linked to the development of chronic diseases. Understanding the role of metabolic flexibility in conditions like obesity, type 2 diabetes, cardiovascular disease, and cancer is crucial for disease prevention and management.

How to achieve metabolic flexibility?
Metabolic flexibility is the body's ability to adapt and use whatever fuel is available to it (sugar or fat). When we lack it (metabolic inflexibility), we're more likely to experience fatigue, insatiable cravings, irritability, and more not-so-fun states of being.

During evolution, human survival was shaped by food scarcity in which there were periods of feast or famine. Daily living was characterized by abundant exercise, often under conditions of fasting, due to foraging behaviour required to survive in a setting of unpredictable food supply. Human metabolism required great flexibility in the use of metabolic substrates depending on their availability to meet energy demands.

Obesity:
Metabolic inflexibility is commonly observed in individuals with obesity, leading to the accumulation of excess glucose and lipids. This contributes to weight gain and the development of obesity.

Type 2 Diabetes:
Impaired metabolic flexibility, particularly in skeletal muscle and liver cells, plays a significant role in insulin resistance, a key feature of type 2 diabetes. This results in compromised glucose uptake and high blood sugar levels.

Cardiovascular Disease:
Metabolic inflexibility contributes to cardiovascular disease through mechanisms such as dyslipidaemia, oxidative stress, inflammation, and endothelial dysfunction, all of which increase the risk of heart disease.

Cancer:
Metabolic dysregulation, including metabolic inflexibility, is associated with certain types of cancer, such as breast and colon cancer. Enhanced glucose metabolism promotes an environment conducive to

cancer cell growth and proliferation.

Other Diseases:
Metabolic inflexibility is also linked to conditions like polycystic ovarian disease, fatty liver disease, and Alzheimer's disease ("brain diabetes").

Promoting Metabolic Flexibility:
Lifestyle interventions, including regular physical activity, a balanced diet, intermittent fasting (The single greatest tool for achieving metabolic flexibility, is to fast intermittently), and maintaining a healthy weight, are crucial for enhancing metabolic flexibility and preventing chronic diseases.

Impact of Ketogenic Diet:
While the ketogenic diet has gained popularity, prolonged adherence to this low-carbohydrate, high-fat diet may impact metabolic flexibility. The body's adaptation to using ketones and fatty acids as primary fuel sources can reduce its ability to efficiently utilize carbohydrates when reintroduced into the diet.

Bariatric surgery
It's important to note that while bariatric surgery can improve metabolic flexibility in many individuals, the exact mechanisms and extent of improvement may vary. Bariatric surgery can significantly impact the composition and function of the gut microbiota. Certain microbial changes are associated with improved metabolic parameters and enhanced metabolic flexibility. The gut microbiota plays a crucial role in nutrient metabolism and energy extraction, and alterations in its composition can affect how the body processes and utilizes different energy sources. Additionally, the long-term effects of bariatric surgery on metabolic flexibility are still an active area of research, and further studies are needed to fully understand the underlying mechanisms and optimize outcomes.

Reducing fat mass via surgical removal (liposuction) of white adipose tissue (WAT) does not produce metabolically beneficial results (Klein et al., 2004), pointing toward the need for a calorie-restriction-induced and/or an exercise-induced remodelling of WAT in order to achieve metabolic improvements within the adipose tissue.

Metabolic flexibility plays a significant role in the development and management of chronic diseases such as obesity, type 2 diabetes, cardiovascular disease, and cancer. Promoting metabolic flexibility through lifestyle interventions is essential for overall metabolic health.

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Heroin holocaust

Dr H L Pathirajamudali

Harmful use of heroin is a psychiatric condition according to WHO (International classification of Diseases ICD - 10) and American psychiatric association (Diagnosis and statistical manual of mental illnesses). World drug report of UN (UNOD<CP) recommends METHADONE, LAAM, Buprenorphine and Naltrexone for the treatment of Heroin addicts.

Heroin addicts are the most maltreated patients in our society. Heroin causes many altered brains and affects the mesolimbic dopaminergic pathway (Reward Pathway) of the brain. During the first few weeks half a pack is sufficient to give pleasure. After 2 years he will need 4 packs to give that same pleasure. It is then consumed to prevent the painful withdrawal symptoms (yawning, muscle pain, tearing, dilated pupils, goose bumps, loose motions and insomnia) When medicines are given, the amount of medicine used during the first 10 days can be used to treat during the next 15 days. Medicines can be tailed off gradually. Medicines are necessary to prevent the damage done to the Brain by heroin. Medical detoxification is made possible by (1) Methadone and 12 other symptomatic treatment. (2) Medicine and excess liquids are given to remove the heroin residues along with urine. (3) Medicines are given to remove heroin residue with faeces. (4) 3 litres of medicated fluids are given orally and they are kept in steam baths for 1½ hours and heroin residue is removed in sweat and urine.

Methadone the first pharmacological treatment for heroin addiction was pioneered 50 years ago in United States by Rockefeller University's Mary Jeanne Kreck and her colleagues. Methadone is effective for 24 hours. It prevents use of illicit Heroin. It is cost effective methadone prevents HIV, Herpes and Hepatitis C. They can work and earn while taking treatment. Methadone reduces suicides and retains them in treatment programmes. Methadone prevents imprisonment. Many countries keep heroin addicts in Methadone programmes thereby preventing drug cartels raking in trillions of dollars.

Iceberg

Wele Suda, Makandure Madush and hundreds of attached names form the exposed tip of the iceberg the Hummock, which is only 1/10th of the iceberg and it is only an Eye wash. The Bummock which is 9/10th of the iceberg is submerged. In many countries where there is heroin this 9/10 form the destructive drug cartels. These gentlemen know the best attires in the world, the best weapons and money laundering. They are ruthless, versatile, Elegant and invisible. They have many real estates and many mansions. They own many commercial chains, fleets of vehicles and mini armies. Justice, Taxation, Torture, Human rights poverty and starvation are not in their vocabulary. Getting rid of an opponent is as easy as lighting a cigarette. In 2001 Afghanistan produced 5800 tons of Heroin. Farm gate value of 1 kg of heroin was 850 pounds. And, the UK street value

of 1 kg heroin was 75700 pounds. Final selling prize is 168 times the purchasing value. No business can ever come close to the drug trade.

The Blunder of the 30 year war was over in 2009. The next blunder was to continue to destroy our own self by letting heroin to spread by not allowing doctors to treat heroin addicts. This caused much more destruction than the war itself. When the war was over there were 150,000 heroin addicts. It has increased to 550 000 heroin addicts by 2023. There were less than 1000 heroin addicts in 1983. During the war LTTE spread heroin to most areas in the island. By year 2000 there were 45000 regular users of heroin [REID and CONSTGAN 2002] price of heroin was Rs. 100 per pack in 2009. Price of heroin was kept low to propagate heroin as much as possible. It was alleged that Prabakaran had said attacking Colombo was completed using Heroin. After the war police began to raid Heroin strong holds and dens. The balloon effect that was created kept on increasing the price of heroin. In 2000 an addict had to spend Rs. 150/- per day. To get heroin in 2014 he had to spend Rs. 3000 for a day. That was about 90,000 for a month and the families of heroin addicts became paupers overnight. Robberies, burglaries pickpocketing, kidnapping, RTAs, prostitution, camouflaged businesses, homicides suicides and destruction at work places increased ten folds. Heroin addicts began to seek treatment from doctors because with the amount of money an addict had to spend on a day, he could take treatment for 2 weeks. When doctors did not have medicines over 40000 heroin addicts became peddlers. Each peddler introduced heroin to 10-15 people in his area. Peddlers come to Colombo, buy a bundle (Each bundle has 20 packs) go back to his hometown and distribute to new users after taking his share. These peddlers increased the number of heroin addicts 10 times. This would never have happened if doctors continued to treat heroin addicts. The number of heroin addicts would never have increased more than 200,000. Now there are 550,000 heroin addicts in the country.

The use of methadone to treat heroin addicts has increased annually in all the countries where there is heroin. Use of methadone in USA 20,000 kg/year. 1 kg – 200,000 methadone 5 mg tablets. UK - 1833 kg per year. Australia 100 kg per year. Australia has 74,000 heroin dependents in a population of 25.8 million. In Sri Lanka from 2014 there was a mere 0.135 kg per year. There are more than 550,000 heroin addicts in a population of 22 million. There is not a single medicine to treat heroin addicts from May 2021. Only the drug lords benefitted by not having any medicine in the country. Methadone is available in Maldives India, Pakistan, Nepal , Bangladesh etc. Prisons are overcrowded with twice the number of inmates of which 70% are for drug related offences. It is alleged that former Minister of Justice. Mr. Ali Sabri said that 553 000 people in Sri Lanka are addicted. Present Minister of Justice Dr. Wijedasa Rajapaksa has said there are 500,000 methamphetamine (ice) addicts mainly school children in the country. If the Doctors continued to treat heroin addicts, then the drug cartels could not have raked massive amount of money and that would have prevented ice (methamphetamine) spreading in Sri Lanka. There will be startling revelations if laboratory urine testing for Heroin and other narcotics are done in people between 15 years to 55 years.

After 10 years of addiction heroin addicts become like vegetables. Many become

freaks. This could be prevented by early treatment and medical detoxification. It may be possible to get rid of the tip of the ice berg the Hummock. But, not the core of the Bummock. The doctors will never be able to solve this problem. The effect could be minimized only by the doctors. There is not much in Sri Lanka that drugs are not behind.

Rehabilitation

There are 550,000 heroin addicts in the country. Rehabilitation could be done only in 3500 heroin addicts per year. Heroin residue that remains in the fatty tissues of the body for over 6 years will trigger relapses even up to six years. When taking treatment there is no suffering, they could work, save money and spend a happy family life. Rehabilitation cause pain and suffering due to withdrawal symptoms. Heroin dependents dislike going to centres. Many going to centres lose their employment.

Treating heroin addicts is branded as an inferior disrespectful and repugnant branch of the medical profession. All the doctors purchased the monthly quotas of methadone and other medicines approved by the Director General of Health Services (DGHS) from the MSD. In 1993 WHO/ HCDIP funded by an Italian cooperation conducted a training programme for 15 doctors. Treatment given by the doctors saved the lives of heroin addicts and their families. These doctors were insulted, Humiliated ridiculed threatened and were not respected. By 2009 there were only 8 doctors. Until 2008 there were adequate amount of medicines to treat heroin addicts. Methadone was out of stock at the MSD in 2009, 2010, 2014 and 2017. From May 2021 there was not a single methadone tablet or any other indicated medicines available to treat heroin addicts. Only thing heroin addicts could do was to buy heroin to get over withdrawal symptoms. Not having any medicines has caused heroin dependents to end up as retarded deranged and violent people. Heroin has brought about destruction to Education. Happiness index has reached as low as 4.44 in Sri Lanka. This is the only country in the world that has a very high density of heroin addicts but does not have a single medicine to treat them.

Heroin addicts are more prone to have many other diseases. Bronchial Asthma, Bronchiectasis, Tuberculosis (TB) lung abscesses and pneumonia. Heart failure, liver degeneration kidney failure are some of them. How could one treat any of these without treating the root cause which is heroin addiction? Dog did not do its duty and let the ass to do it, and made a mockery out of it.

We can be inconsiderate about the unaccounted billions that were drained out of the country in acquiring and smuggling heroin into the country. Much significant damage to the country was done by over 150 times more billions that was raked in by the drug lords inside the country from the drug addicts. This monstrous mad money that went to the wrong hands did much destruction to the country, paved the way to the beginning of methamphetamine (ice) addiction in the country. This would not have happened if the doctors continued to treat heroin addicts and 40,000 peddlers came for treatment without spreading heroin to others. It is morally unacceptable to let more than 550, 000 heroin dependents to undergo unimaginable pain and suffering by not allowing them to get available medicines and preventing doctors from treating them. Krokodil serves as an excellent illustration of havoc that bad drug policies can wreak on communities. The unfounded fear created about medicines is

due to total ignorance because not a single METHADONE addict was produced during the past 35 years after doctors treated heroin addicts.

Past articles by the writer

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Dealing with Criticism and Complaints in Healthcare Systems

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Any service providing system will have criticisms leveled at it and complaints against it. Dealing with these two areas inappropriately will lead to the deterioration of the system. On the contrary proper dealing with these two areas will enhance the performance of the system and improve productivity.

Those who avail the services of a health care system have a unique attitude. This attitude is shared by mass media and public too. There is zero tolerance of errors and an expectation of a high degree of sacrifice. Attempts to cover up errors and denying responsibility will be disastrous. We have been unfortunate to witness this situation in our motherland during last few months. Analysis of the situation at the time of writing may be a productive exercise. In fact, recent incidents in Sri Lanka shows how not to handle criticism and complaints in healthcare systems. We could study the negative outcomes of this erroneous handling.

Humiliating those who complain will lead to creating doubts about the genuineness of the system. In television talk shows the authorities belittle and blame those who complain and criticize. Denying the responsibility for any incident or a situation prematurely and without a proper background is not advisable. Complaints involving deaths or disability should be received with expression of sympathy and concern. Remarks like "Patients do die in hospitals" or "This isolated incident "should be avoided as they reflect lack of empathy. Lies have no place at all. We have recently seen a director of a hospital lying about an anatomical defect in a victim. Later a member of the caring team was summoned to courts where he contradicted the director. This situation reflects poor integrity of the director in addition to the incompetence of the caring team.

Withholding information too is harmful. Recently an aspirin preparation without aspirin was detected. Some batches of a locally manufactured Co-amoxyclav injection had to be withdrawn due to anaphylaxis. Authorities were very careful not to disclose the names of manufacturers. Not acknowledging criticism implies to admitting alleged blame. Current maintaining a patient on life support for more than one year is an example.

When dealing with criticism and complaints, the medically qualified personnel dealing with criticism and complaints should be guided by and stick to medical ethics. They should be courageous enough to contradict a lay person in a position higher than them based on medical ethics. Strategies meant to contain the problem should deal with the problem. Recently when criticism was leveled against procurement procedure of drugs and devices a committee was appointed with the terms of reference was investigating management of anaphylaxis. This kind of action involves wastage public funds not speak of wastage time of members of the committee.

Medically qualified academics deliberately making wrong public statements about health matters are unethical. A statement to the effect that poor quality pharmaceuticals do not exist was made by the head of the salutary body dealing with procurement of pharmaceuticals. The same person later made a public statement admitting the poor quality pharmaceuticals have found the way to state hospitals. Poor quality prednisolone eye drops caused complications in seventeen patients in one hospital. Two people lost the vision. No attempt was made to find an answer to the query "Who is responsible?"

Why did the system faired so poorly in dealing with criticism and complaints? Integrity and honesty of the authorities are questionable. Personal agendas like pecuniary benefits may be partly responsible. Acting under duress may be another reason. Those handing "political appointments" are not in a position to act independently. They may even be responsible for the duress. Politicians may be behind this situation. If authorities in the system have high integrity and honesty politicians will find it difficult to get involved in corrupt practices.

The most important person in a health system is the patient. Without the patient the healthcare system cannot exist. As a Nation we have failed to look after the patients' interest.

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Blood cancer care; then and now. Where is Sri Lanka?

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Approximately every three minutes, one person in the US is diagnosed with leukaemia, lymphoma or myeloma (**1**). Five-year survival rates for leukaemia has improved significantly from 1980s to now (**1**,**2**). Cancer incidence in Sri Lanka has nearly doubled from 2005 to 2019 while we have shown survival figures comparable to high-income countries in blood cancers.

What are blood cancers?

According to over simplified classification, there are three main types; leukaemia, lymphoma and myeloma, with over 100 subtypes. "Why classify? Classification is the language of medicine; diseases must be described, defined and named before they can be diagnosed, treated and studied" quoted from 2017, WHO Classification of Tumours of Haematopoietic and Lymphoid Tissues (**3**). This is a book with almost 600 pages used as a reference by haematologists and oncologists. It provides an international standard and guide in the diagnosis and monitoring response to treatment. It described different types of 'blood cancers' according to their histological, genetic and clinical features.

How many types blood cancers we know?

There is no definitive answer to this question. There may be hundreds or thousands and classification is renewed every 5 years with new types added. Knowing the right type of disease is of paramount importance for right treatment, more so with the development of 'new targeted' treatment methods. Despite ever developing new ways of classifications, there are common terms used in clinical practice by generalists and public. They broadly include myeloma, lymphoma and leukaemia. However, it is important to understand that it is not possible to deliver blanket treatment to cure 'leukaemia', 'lymphoma' or 'myeloma'.

Who are blood cancer specialists?

Patients with blood cancers are cared by physicians, haematologists and oncologists and not to forget the very important role played by pathologists in arriving at a diagnosis. Physicians trained in medicine, haematology, oncology and pathology are best qualified to look after this heterogenous group of patients. These changes are reflected in the Sri Lankan post graduate training by deployment of clinical-haematology and haemato-oncology subspecialties from haematology and oncology training respectively. In addition, separate treatment facilities were established in the private sector and in the state sector for more specialised care.

We established Lanka Hospital Blood Cancer Centre (LHBCC) in 2013 in a self-financing hospital in Sri Lanka in collaboration with colleagues in government subsidised hospitals with designated space, staff and a strategy to treat blood cancers using treatment protocols from the United Kingdom (UK). In addition, this centre was used for training purposes of first haemato-oncology trainees from government-subsidised hospitals. Similar facilities were

subsequently established in state hospitals and in other private sector hospitals.

How do physicians, oncologists, radiologists and pathologists work together?

In addition to the above-mentioned specialists, many others such as nurses, nutritionists and supportive staff contribute to blood cancer care. There are uniform referral systems and mandatory multi-disciplinary (MDT) discussions in the high-income countries to ensure the uniform treatment strategies and to overcome errors in the diagnosis (**4,5**). This has greatly reduced errors in diagnosis and ensure uniform treatment methods. "A multidisciplinary team in blood cancer care is a group of health care workers who are members of different disciplines (professions e.g. Oncologists, Clinical Haematologists, Pathologists, Surgeons, Cardiologists, nursing staff, Pharmacists, Psychiatrists, Social Workers, junior doctors etc.), each providing specific services to each patient. The team members jointly treat various medical conditions a patient may have, focusing on the issues in which they specialize. For the first time, Lanka Hospitals put together this globally tried and tested system in 2014 to bring in holistic cancer patient care in an international level according to national health service (NHS) charter". However, it is not possible to establish a uniform referral system due to lack of established state-run general physician (GP) system in Sri Lanka.

What treatment methods are used in blood cancer care?

Nitrogen mustard was successfully used in the treatment of lymphomas and chronic leukaemia in 1940s (**6**). In 1948, Farber and colleagues at the Boston Children's Hospital used aminopterin in children with acute leukaemia with some success (**7**). This developed in to the long-established standard of care for blood cancer, chemotherapy. However, this kills not only cancer cells but also other healthy cells. Precision cancer medicine is an evolving treatment method which goes beyond primary tumour site, using origin, development and sequencing of tumour genetics. Examples of personalised medicine include 'targeted treatment' and 'immunotherapy'.

One of the earliest examples of this is STI-571, a tyrosine kinase inhibitors (TKI) later named as Imatinib in the treatment of chronic myeloid leukaemia (CML) (**8**). Insight in to the genetic basis of CML came from the work of Nowell and Hungerford in 1960s, who examined cancer cells from patients with CML. They made an interesting observation of chromosome 9 and 22 (**9**). This subsequently led to the discover of BCR-ABL causing CML by Owen Witte and his colleagues at the University of California, Los Angeles (**10**). Since then hundreds of small molecules are used as targeted therapy in the fight against the cancer.

However, most blood cancers still need 'conventional chemotherapeutic' drugs. In addition, another main aims of current blood cancer care are to reduce long term side effects of treatments used. This evident in recent trials in Hodgkin lymphoma, guided by response to therapy (**11,12**).

Today, bone marrow transplants (BMT) are routinely carried out in the world for some forms of blood cancers. In 1956, Dr Donnall from New York performed the first successful transplant from an identical twin using irradiation as the conditioning (**13**). The first allogeneic transplant performed from an unrelated, HLA-

unmatched donors in 1957 resulted in graft failure rejection (**14**). Dr Mathe identified the wasting and debilitating condition 'graft versus host disease' in 1958 after performing unrelated donor transplants to victims of nuclear reactor incident (**15**). This was identified as immune reaction of the cells in the donor marrow against the cells in the human patient.

Scientists first began to identify antigens that seemed to be responsible for the rejection of allogeneic transplantation in mice as early as 1930s. However. It was only in 1958, French immunologist, Jean Dausset identified and characterized the first of these transplantation antigens in humans (**16**).

That is the past and the future is with Chimeric antigen receptor (CAR) T-cell therapy, the most developed immunotherapy used to treat blood cancer patients (**17**). This method uses body's immune system to fight cancer. This is done by removing T-cells from the blood and changing them in the lab by inserting genetic information that tells them to make the receptors for specific types of cancer cells. The re-engineered T-cells are then infused back in the patients. These can identify and kill blood cancer cells.

Is blood cancer curable in Sri Lanka?

Yes, it is possible to achieve 'cure', 'remission' or 'survival' parameters in blood cancers comparable to high-income countries with the use of western protocols, specific spaces, specialists and strategies in Sri Lanka as we have previously shown in the LHBCC.

There is effective treatment for almost all blood cancers and some are even curable. However, it has been shown that survival and treatment options available depend on the insurance status and country of residence, and South Asian data showed poor compliance rates compared to Western trials (**18,20**). Curing most blood cancers is challenging in low-income countries, especially in a country without free and easy access to the specialty of blood cancer care, transplant facilities, or newer treatment options. Studies from low- income countries comparing clinicopathologic features and survival parameters with data from high-income countries have shown early-onset and late-stage presentation with reduced survival in some blood cancer types (**21**).

Here we discuss a few sub-types of blood cancers in terms of survival parameters in the local setting.

There are several types of leukaemia but one of most commonly heard is acute myeloid leukaemia (AML), a haematological malignancy, which is almost always fatal without treatment with survival ranging from few days to a few weeks (**22**). AML is a deadly disease in the West and a deadly and a costly challenge in the developing countries (**23**). Even in the countries with best facilities, 5-year OS rate in AML ranges between 25% and 40% for the group receiving intensive treatment (**24,25**). Several studies have demonstrated the association between the socioeconomic status and the access to and the distribution of modalities of AML treatment (**26**).

In a study we published related to AML, the median survival has not reached at the time of publication while people who stopped treatment had a median survival of mere 1.65 months. Poor compliance with treatment due to lack of insight and financial reasons (**27**). Burnet et al. reported in AML15, an 8-year survival rate of 47% for patients who received two cycles of DA/ADE and two cycles of consolidation

(**28**). The 5-year survival from diagnosis in a group of patients treated with the same protocol and with an almost identical age distribution to our patients in the AML15 study was above 40%. Sub analysis of patients who continued treatment in our cohort showed 5-year estimated OS rate of 62.9%.

Multiple myeloma, also known as plasma cell myeloma (PCM) and simply myeloma, is a cancer of plasma cells, a type of white blood cell that normally produces antibodies. Often, no symptoms are noticed initially. As it progresses, bone pain, anaemia, kidney dysfunction, and infections may occur. PCM is the second commonest hematologic malignancy, which accounts for 15%-20% of cases (**29**). Incidence of PCM has increased over time, but the death rate has fallen because of improvement in polychemotherapy and radiotherapy (**30**). Incidence of PCM varies among countries but has increased over the past few decades. The largest increase is in low- and middle-income countries (**31**). It is known that African American populations show higher incidence, whereas Asian populations show lower incidence of PCM compared with White populations (**32-34**).

Conventional treatments for PCM include chemotherapy and radiation therapy. Addition of immunomodulatory drugs (thalidomide, lenalidomide, and pomalidomide), proteasome inhibitors (bortezomib, carfilzomib, and ixazomib), and monoclonal antibodies (daratumumab, isatuximab, and elotuzumab) significantly improved the survival of patients with PCM (**35,36**). Induction followed by high-dose therapy and lenalidomide maintenance is recommended as standard of care in certain settings in high- income countries (**37-39**).

We followed those recommendations and in study in the LHBCC, we showed a median OS of 84.2 months and an estimated 5-year survival rate of 65%. To our knowledge, this is the only available Sri Lankan study with a long-term follow-up of patients up to a median follow-up of nearly 4 years (**40**).

Hodgkin Lymphoma (HL), first described by the British pathologist Thomas Hodgkin (**41**) is a B cell malignancy and is the commonest lymphoma among young adults in the west, but there are no records available of its incidence or long-term survival in Sri Lanka. With improvement in polychemotherapy and radiotherapy (RT) it has a cure rate of about 85 to 90% in high income-countries (**42,43**).

Five-year survival rate in HL has improved significantly from being less than 10% in the 1960s (**44**). Recent studies by Radford J et al., 2015 and Johnson P al., 2016 has shown three - year OS rate of 99% and 95.8% in early stage and late stage disease respectively (**45,46**). However real-world data have shown survival figures which are significantly lower than reported in the high- income countries; five-year OS of 79.7% and 78.9% (**47,48**). Our cohort shows five-year estimated survival rate of 81% with patients who continued treatment achieving five-year survival rate of 90%. This is the only avail- able Sri Lankan study with long term follow up of 98% of patients up to a median follow up of nearly four years (**49**). In these studies, we have presented data to support the feasibility of establishing a successful and dedicated haemato-oncology/clinical haematology unit where not only patients were treated according to Western protocols but also participated in subspecialty training for haemato-oncology trainees from government-subsidized hospitals. Treatment successes are likely due to uniform treatment protocols,

having full-time in-house consultants, following western guidelines, availability of comprehensive supportive care network and stringent infection control methods as we have proven during the Covid-19 outbreak in 2020 (**50**).

In summary, blood cancer care in high-income countries has improved immensely during last few decades and Sri Lanka is gaining the benefit of new developments in specific cancer medicine, diagnosis and supportive care.

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Are you troubled by Someone's drinking?

The Al-Anon Family Groups

The Al-Anon Family Groups are a fellowship of relatives and friends of alcoholics who share their experience, strength and hope in order to solve their common problems.

We who live, or have lived, with the problem of alcoholism, understand as perhaps few others can. We, too, were lonely and frustrated, but in Al-Anon we discover that no situation is really hopeless and that it is possible for us to find contentment. We believe alcoholism is a family disease and that changed attitudes can aid in recovery. The family situation is bound to improve as we apply the Al-Anon ideas. The loving interchange among members and the daily reading of Al-Anon literature thus make us ready to receive the gift of Serenity.

Al-Anon is an anonymous fellowship. Everything that is said in the meeting and member to member, is held in confidence. Al-Anon is not allied with any sect, denomination, political entity, organization or institution; does not engage in any controversy, neither endorses nor opposes any cause. There are no dues for membership. Al-Anon is self-supporting through its own voluntary contribution.

Al-Anon has but one purpose: to help families of alcoholics.

The following questions are designed to help you decide whether or not you need Al-Anon:

1. Do you worry about how much someone else drinks?
2. Do you have money problems because of someone else's drinking?
3. Do you tell lies to cover up for someone else's drinking?
4. Do you feel that if the drinker cared about you, he or she would stop drinking to please you?
5. Do you blame the drinker's behavior on his or her companions?
6. Are plans frequently upset or canceled or meals delayed because of the drinker?
7. Do you make threats, such as, "If you don't stop drinking, I'll leave you"?
8. Do you secretly try to smell the drinker's breath?
9. Are you afraid to upset someone for fear it will set off a drinking bout?
10. Have you been hurt or embarrassed by a drinker's behavior?
11. Are holidays and gatherings spoiled because of drinking?
12. Have you considered calling the police for help in fear of abuse?
13. Do you search for hidden alcohol?
14. Do you ever ride in a car with a driver

who has been drinking?

15. Have you refused social invitations out of fear or anxiety?

16. Do you feel like a failure because you can't control the drinking?

17. Do you think that if the drinker stopped drinking, your other problems would be solved?

18. Do you ever threaten to hurt yourself to scare the drinker?

19. Do you feel angry, confused, or depressed most of the time?

20. Do you feel there is no one who understands your problems?

If you have answered yes to any of these questions, Al-Anon may be able to help.

Helpage Sri Lanka

Mr Samantha Liyanawaduge

Giving back to those who gave so much

HelpAge Sri Lanka is Sri Lanka's leading national charity working purely for the needs of Senior Citizens. Since 1986, it has grown in reputation & international standing and is regularly consulted by the Government on age care policy issues. As a sister organization of HelpAge International (HAI), HASL also has access to skills and expertise from across the world's in matters connected with the ageing population.

HelpAge Sri Lanka has been in the forefront of raising awareness on the plight of Sri Lanka's Senior Citizens during the past 37 years. Our programmes and projects are aimed at ensuring this extremely vulnerable section of society is able to lead the remainder of their lives in dignity, befitting the roles they have played individually and collectively in contributing to Sri Lanka's cultural, social and economic upliftment.

HelpAge Sri Lanka eases the pain of growing old especially that of the poor and the under-privileged, through a wide spectrum of activities designed to address the challenges faced by the older citizens of the country.

Conrad N. Hilton Humanitarian Prize 2012

Gold Award - League of American Communications Professionals (LACP) USA

HelpAge Eye Hospital

HelpAge flagship Eye Hospital, located in Wellawatte which has a bed strength of 20 commenced operations in 2009. The Eye Hospital provides an invaluable service to elders who cannot afford eye care expenses including the cost of lenses required for cataract surgeries. Nearly 48,000 free cataract surgeries have been successfully completed upto date and the same number of elders have reaped the benefits of this Hospital where 20 cataract surgeries are performed daily.

HelpAge Mobile Medical and Eye Camp Unit

HelpAge Mobile Medical and Eye Care Unit (MMU) is a leading project which reaches the extremely destitute older citizens located in the most rural areas in all districts of the country where access to health care is poor. This 'clinic- on- wheels' is equipped with a Health Screening Section, an Eye Screening Section and a Pharmacy. These mobile clinics provide alls services totally free of charge and up to now more than 3500 such mobile clinics have been conducted to serve over 500,000 under privileged elders in Sri Lanka.

HelpAge Ayurvedha Centre in Boralesgamuwa

HelpAge Ayurvedha Centre is open to any elder citizen over 55 years and no pre-registration is required. The facility is made available in collaboration with the Faculty of Ayurvedic Medicine of the University of Colombo. Every year over 1000 elders receive free services from this Ayurveda Centre which is housed on a land which was gifted to HelpAge Sri Lanka by late Mrs Thilaka Siriwardena.

HelpAge Home Care Service

In order to promote the family bond HelpAge Home Care and assisted living service is one of the programmes launched to assist families to look after their elders including parents and grandparents. The experienced Home Care Assistants are trained to assist elders with their day today activities including maintaining personal hygiene. This service is provided at a purse easy rate ensuring affordability to a cross section of society.

HelpAge H P Gooneratne Elders Day Care Centre

HelpAge H P Gooneratne Elders Day Care Centre in Ratmalana is a home-away from home where elders from the area are productively occupied with likeminded people. The Day Centre provides them not only with physical well being but psychological solace as well ,as they get the opportunity to interact with likeminded people.

HelpAge Youth Education Programme

With the objective of sensitizing the issue of ageing and bridging the generation gap, HASLs Youth Education Programme labors to create awareness of the issues concerning the older population, thereby inculcating correct values towards the older citizens.

Fund raising

Since HASL is self supported, Direct Mail Appeals, Greeting Cards Scheme, Tills Project, Payroll Donations Schemes, Sale of Christmas Decors, and several more channels initiated by the Fundraising Division help sustain the worthy causes of the organization. Other than the Sponsor a Grandparent Project (SaG) which is

funded by HelpAge International, all other programmes of ours are funded by HelpAge Sri Lanka.

We are very grateful to the numerous **Individual Donors** as well as **Corporate Donors** who have enabled us to improve the quality of life of HelpAge beneficiaries on an ongoing basis and we remain confident that we will be able to better improve the lot of the Senior Citizens of Sri Lanka in the months and years ahead through the efforts of the conscientious and dedicated staff at HelpAge Sri Lanka.

Mr Samantha Liyanawaduge
Executive Director
HelpAge Sri Lanka

Unlocking the Potential of Physiotherapy in Sri Lanka

Nilakshi Kasilingam

Physiotherapy, a rapidly growing practice embraced worldwide, remains relatively unfamiliar to many Sri Lankans who still rely on native treatments. In essence, physiotherapy is a comprehensive approach dedicated to restoring a patient's physical mobility and function after injury or illness. This science-based profession takes a holistic view of health, actively involving patients in their own recovery.

The fundamental goals of physiotherapy are Promotion, Prevention, and Rehabilitation:

Promotion:	Promoting a healthy lifestyle.
Prevention:	Taking proactive measures.
Rehabilitation:	Learning to manage conditions, repair damage, and restore the body.

Physiotherapists, highly - trained professionals, can treat patients at all stages of life, from infants to the elderly, addressing issues related to diseases, injuries, aging, disorders, weight concerns, or various health conditions. These experts delve into the science of movement, pinpointing the root causes of injuries, and work closely with patients to improve pain management, balance, mobility and motor function, ultimately enhancing their quality of life.

Pain management and rehabilitation are the core areas of expertise for physiotherapists. They can assist in a wide range of conditions, including orthopaedic problems like back and knee pain, rehabilitation for neurological conditions such as Stroke, Parkinson's, and Cerebral Palsy, exercises for conditions like Rheumatoid Arthritis, Fibromyalgia, GBS, Asthma, Diabetes, Obesity, and sports injuries like ACL tears.

Elderly individuals with arthritis can benefit greatly from tailored exercises and advice to increase activity levels and manage pain. Women with specific health concerns, such as pregnancy-related issues or postpartum care, can receive specialized treatment and management for problems like incontinence, pelvic pain, prenatal and postpartum pain/ weakness, osteoporosis, and rehabilitation following breast surgery.

Physiotherapists employ various techniques, including therapeutic exercises, electrotherapies like ultrasound, infrared therapy, TENS/IFT, Laser therapy, joint manipulations, and soft tissue work to alleviate pain and restore muscle and joint function.

Cupping therapy, used by physiotherapists, offers relaxation and relief from pain, muscular restrictions, scars, adhesions, swelling, and limited range of motion. Vacuum Cupping is suction created on the skin using plastic cups and they are placed on a selected area of your body and left in place without being moved for a few minutes or glided across the area of the muscle that is treated.

Dry needling is an invasive procedure done by physiotherapist. An acupuncture needle

is inserted in to the muscle through skin to aim at myofascial trigger point. Trigger point dry needling can be done at superficial or deep tissue level. It can produce immediate muscle relaxation but soreness after the session.

Physiotherapists also play a crucial role in the rehabilitation of children. They help children with conditions like Autism, Down syndrome, and Cerebral Palsy improve their gross and fine motor skills through targeted exercises.

Stroke survivors regain independence and enhance their quality of life by relearning lost skills. Physiotherapists use various stimulations to re-educate paralyzed muscles in conditions like stroke, spinal cord injuries, facial palsy, and Bell's palsy. They use galvanic & faradic stimulations for paralysis muscles to re-educate the movements in muscles.

Working with amputees, post-surgical patients with orthotic support, joint replacement surgeries (TKR/THR), and ligament/meniscal surgeries (ACL/PCL), physiotherapists aid patients in regaining mobility and independence. Mobilizing a patient from bed to a wheelchair and gradually progressing to walking aids until they can walk independently is a crucial part of the rehabilitation journey. This process helps patients regain strength, balance, and mobility, especially after injuries, surgeries, or illnesses that may have affected their ability to walk. Physical therapists and healthcare professionals play a key role in guiding patients through these stages to help them regain their independence and quality of life.

Physiotherapists are involved in chest physiotherapy, postural drainage, and breathing exercises to mobilize phlegm and prevent pneumonia in cardiac and respiratory rehabilitation.

One of the most promising areas of growth for physiotherapy in Sri Lanka is its contribution to the world of sports. Physiotherapists now travel with teams, offering evidence-based advice on safe participation in sports and exercises, using techniques like Kinesio taping, rigid taping, bandaging, cupping, first aid, strength & conditioning etc.

However, Sri Lanka faces a critical challenge in its referral system. Physiotherapists often do not receive patients at the early stages, leading to contractures, stiffness, and, in some cases, unnecessary surgeries. Early referral to physiotherapy can be a preventive measure that reduces the need for surgical interventions and minimizes the country's medical expenses.

In Sri Lanka, physiotherapy has the potential to transform lives, prevent unnecessary suffering, and reduce healthcare costs. It's a powerful tool that can empower individuals to regain their health and mobility, ensuring a brighter and more active future for all Sri Lankans.

Nilakshi Kasilingam
Chief Physiotherapist
Founder - Physio Medicare
SLMC Reg. No. 221 PSM

Current Burden and prevalence of Diabetes Mellitus in Sri Lanka and the importance of PHFI's CCEBDM course in managing the situation

Dr A L P De S Seneviratne

Diabetes mellitus, which was once considered a disease of the developed world, has become a worldwide pandemic, with two thirds of the global diabetic population living in the developing countries. Sri Lanka, now a low -income country in Asia with a population of 22 million, has been experiencing rapid and unplanned urbanization over the recent decades with an estimated 30% of the population now living in urban and suburban areas. Local studies show a definite upward trend in the prevalence of diabetes mellitus The urban prevalence of Diabetes, and prediabetes has been rising exponentially over the past three decades. A latest study by Somasundaram and others (2019) in subjects aged over 20 years indicated a population prevalence of dysglycaemia (defined as T2DM or IGT or IFG) of 21.8%, which rose to 30% in urban areas. Metabolic syndrome was found in 27.1% of urban adults. Physical inactivity, elevated body mass index (BMI) and central obesity along with living in an urban area are thought to be strongly associated with the increased risk of dysglycaemia.

Population over the age of 18 are at risk of developing diabetes and one in every three people in Colombo has diabetes, Diabetes Federation, Sri Lanka President Dr. Manilka Sumanatilleke said.He told the media that the details were revealed following a report released after a survey conducted in 2019.33% of people in the Colombo district are living with diabetes, which means one in every three suffers from it.

It was reported that 30% of people are at risk of developing pre-diabetes.Accordingly, more than 50% of the people in the country are at risk of falling into the category of diabetics and pre-diabetes.

After the COVID pandemic, the diabetic situation in the country was on the decline, however, it is now getting worse and becoming another pandemic.

The existing pool of patients with diabetes who are likely to develop significant morbidity over time is a major policy and health planning concern. The presence of a large number of individuals who have prediabetes and can develop diabetes in the future should prompt urgent nationwide interventions as well as personalized interventions such as dietary and exercise counselling. We have previously reviewed possible public health interventions to prevent diabetes and other non-communicable diseases in South Asia. In light of the current findings, these interventions may need to be targeted more towards the above high risk groups in the urban population.

The primary care physician in Sri Lanka who manage majority of diabetic patients in their clinics need to be motivated, interested and knowledgeable regarding this metabolic disease. As a result the Primary Care Diabetic Group Sri Lanka, (PCDG) which consists of senior primary care physicians who have common interest in Diabetes Mellitus have embarked on a

certificate course in diabetes management. This empowering academic program named Certificate Course in Evidence Based Diabetes Management (CCEBDM), is well designed by PHFI in India (www.phfi.org) with the latest updates relevant to primary care providers who are in the forefront of managing diabetic patients.

The Certificate Course in Evidence Based Diabetes Management (CCEBDM)

The fundamental objective of the Certificate Course in Evidence Based Diabetes Management is to improve the treatment outcomes for patients by serving as evidence based guidance for clinical decision making in risk assessment, diagnosis, prognosis and management of Diabetes.

This twelve-month on-the-job training program, conducted once a month on weekend is jointly certified by the Public Health Foundation of India (PHFI) and Dr. Mohan's Diabetes Education Academy (DMDEA), Chennai and Primary Care Diabetic Group Sri Lanka.

The Objective of the course

- To enhance knowledge, skills and core competencies of Primary Care Physicians in the management of Diabetes.

This program had been globally recognized by International Diabetes Federation (IDF) for training primary care physicians. The course has been also recognized by South Asian Federation of Endocrine Societies (SAFES).

This course will consist of 12 modules

1. Introduction to Diabetes
2. Evaluation of the Person with Diabetes
3. Lifestyle Management in Diabetes
4. Drug Therapy for Diabetes - Part 1
5. Drug Therapy for Diabetes - Part 2
6. Metabolic Complications of Diabetes
7. Microvascular Disease in Diabetes
8. Macrovascular Disease in Diabetes
9. Other Complications of Diabetes
10. Diabetes Care in Special Situations
11. Diabetes in Pregnancy and Youth
12. Conclusions and Take Home Messages

Eligibility Criteria All doctors with SLMC Registration. Last date of enrolment To be notified. Contact Ms Champa 0777325550

Participant evaluation will be through a continuous internal evaluation, course work and performance in the written examination. The criteria for successful completion of the program shall be as follows:

- Participants needs to attend 10 out of 12 Modules (including the pre-test and post -test of each module)
- Completion of assigned course work (Three interim assignments based on completed modules given at the end of 4^{th}, 7^{th} and 10^{th} Modules)
- Appearance and clearance of final written examination in the form of MCQs in an hour, along with module 12 (Min. 50% score required to clear the examination).

The candidate completing the certificate course successfully shall be awarded the certificate, to be jointly issued by PHFI, DMDEA and respective Regional Faculty (PCDGSL)

Course Highlights

- ***EVIDENCE BASED UPDATED CURRICULUM***
- ***12 MODULAR COURSE***
- ***CASE STUDIES AND INTERACTIVE VIDEOS***
- ***ONCE A MONTH WEEKEND INTERACTIVE LECTURES***
- ***MONITORING AND EVALUATION***

PROGRAMME

- ***CERTIFICATE CERTIFIED BY PHFI, DMDEA, PCDGSL***
- ***EDUCATIONAL WEBSITE***

PHFI - Public Health Foundation of India
DMDEA - Dr. Mohan's Diabetes Education Academy, Chennai
PCDGSL - Primary Care Diabetes Group Sri Lanka

Primary Care Diabetic Group Sri Lanka - About PCDGSL

The Primary Care Diabetic Group Sri Lanka was registered as a voluntary Social services/ Non-Governmental Organization under voluntary social services organization act No. 31 of 1980 as amended by Act No. 8 of 1998 on the 23rd January 2009.

The PCDG organize several diabetic programs for public and for health care workers.

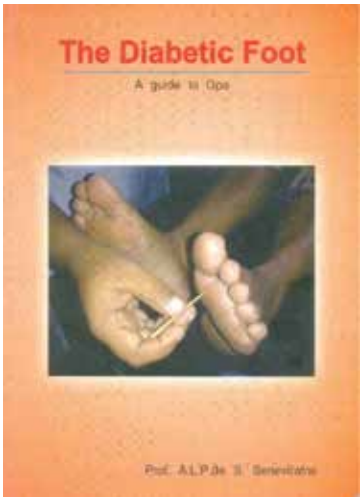
In order to update the primary care physicians, we do have the following.

- News Letter
- Educational material for doctors
- Patient educational charts and books

We have had several symposia and workshops to doctors. We had organized several health camps to aid the public.

Patient Educational Material-leaflets and books

Educational material for doctors



We had several Symposia and workshops

- Colombo
- Batticaloa
- Jaffna
- Bandarawela

Training your nurses to assist in Conducting a diabetic clinic at your practice

Course Managers
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MBBS, DFM, FRCGP, MD, MRCGP[Int.]
Dr Sarath Paranavitane
MBBS, DCH, DFM, FCGP, MD, FCCS, MBA

Course Coordinator
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MBBS, DFM, FCGP

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Mrs. Champa Nishanthi

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MBBS, DFM, PgDCP, MCGP[Int.], MD

External Faculty

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Faculty of Medicine
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