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# President's Message

Dear Colleagues and Esteemed Members of the Independent Medical Practitioners Association (IMPA) of Sri Lanka.

It is a profound honour and privilege to address you through this edition of our journal as your President. As we stand together at the threshold of a new chapter in our Association's journey, I am imbued with optimism and a deep sense of responsibility to lead with vision, purpose and collaboration.

**Charting the Course: A Vision for Holistic Clinical Practice**

In an era marked by rapid change in healthcare delivery, evolving patient expectations and the growing burden of chronic illness, the role of the general practitioner and family physician is more vital than ever. Our Association - founded in 1929 and proudly recognized as the oldest national organization of independent general practitioners in the world - embodies the spirit of innovation, service and professional solidarity.

During my Presidential year, one of the key strategic priorities will be the integration of anti-aging care into our co-clinical practice. Why this emphasis? Because longevity without quality is only half a victory. Our patients are living longer, and they rightly demand not only longer lives but healthier, more active and meaningful ones. By equipping ourselves with the knowledge, skills and systems of preventive, regenerative and functional medicine, tailored within the family medicine framework, we can offer more than treatment of diseases: we can support vitality, resilience and healthy ageing.

**Why Anti-Aging Care Matters in Primary Practice**

- Ageing is a multifactorial process, influenced by genetics, lifestyle, environment and diseases of ageing (cardiovascular, metabolic, musculoskeletal, cognitive). As family physicians we are ideally positioned to intervene early, longitudinally and holistically.
- Evidence increasingly supports that interventions in lifestyle, nutrition, metabolic optimization, screening, and targeted therapies can modify trajectories of ageing, frailty and chronic disease.
- Integrating structured anti-ageing modules within routine care helps us deliver added value to our patients, differentiating our practices and reinforcing the centrality of primary care in the

healthcare ecosystem.

**Key Pillars of My Presidential Agenda**

1. *Education & Capacity - Building:* Through IMPA's monthly CPD programs and forums, we will introduce modules on healthy ageing, metabolic health, functional biomarkers, and interventional preventive care, complementing our strong foundation in family medicine.
2. *Collaborative Research and Innovation:* Building on our strong research orientation (for example, IMPA members engaging in obesity, cardiovascular risk factor studies and medical-invention work), we will promote small-scale pragmatic trials, audit projects and innovation pilots in anti-aging care.
3. *Practice Transformation:* We will provide tool-kits and frameworks for integrating anti-aging screening (e.g., sarcopenia, cognitive decline, metabolic age), patient education pathways, and referral networks aligning with our ethos of independent practitioners yet interconnected best practice.
4. *Patient-Centric Community Engagement:* Our practices don't exist in isolation. We will reach out via community health talks, digital platforms and partnerships to raise awareness of healthy ageing, empower patients and strengthen the role of GPs as community leaders.
5. *Sustaining Excellence in Family Medicine:* While we chart new territory, let us reaffirm our core identity: family medicine. My own background as a board-certified specialist in family medicine, senior lecturer at the Faculty of Medicine, University of Colombo, and examiner of fellowships and diplomas enables me to appreciate the rigour, depth and integrity required.

**An Invitation to Each Member**

I call on each of you, whether you practice in remote rural clinics, busy urban practices, or multi-disciplined health centers, to join hands in this endeavor. Let us bring curiosity, evidence-mindset, collaboration and compassion into each consultation, each patient interaction, each preventive plan. Let us build mentoring relationships, peer support networks, and share best practices so that no practitioner feels isolated in this journey.

**Concluding Thoughts**

Our world is changing. Demographics, diseases, patient expectations and technologies are all evolving. But the core of what we do remains unchanged: to serve our patients, to care with humanity, to prevent what we can and treat what we must, and to champion the health of our communities.

In this Presidential year, let IMPA be known not only for its proud heritage but for being forward-looking, for being the association that embraced healthy ageing in primary care, that empowered its members, and that anchored Sri Lankan family practice firmly in the 21st century.

Thank you for your faith, your membership, your trust. I look forward to working with you, learning from you and together delivering a healthier future for all Sri Lankans.

With warm regards and in service,

***Dr Sanath Hettige*** MBBS, DFM, MD (Family Medicine), FCGP
President
Independent Medical Practitioners Association of Sri Lanka
Board-Certified Specialist in Family Medicine
Honorary Senior Lecturer, Faculty of Medicine, University of Colombo
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# Editorial

*Dr Neelamani Sandhaya Rajapaksa Hewageegana*

An association thrives through the active participation and contribution of its members. The Independent Medical Practitioners Association (IMPA) continues to stand strong because of the collective effort, dedication, and professional engagement of its members across the country.

To encourage academic and professional growth, the association publishes the IMPA e-Newsletter monthly and the IMPA Journal annually. These platforms provide valuable opportunities for members to share their experiences, research, and reflections-enhancing both personal learning and the collective knowledge of our fraternity.

Our President has set forth many inspiring goals aimed at uplifting the image and standing of IMPA in the professional and public spheres. It is our shared responsibility to support these initiatives wholeheartedly, ensuring that IMPA continues to represent excellence, integrity, and leadership in Sri Lankan Health System.

I take this opportunity to extend my sincere appreciation to the versatile and committed editorial board, a team of highly recognized professionals in Sri Lanka's health sector-whose expertise, dedication, and collaborative spirit have been instrumental in shaping both the e-News and the Journal. Their continued guidance ensures that the quality and relevance of our publications remain exemplary.

Together, let us continue to strengthen IMPA as a vibrant and respected body of Independent Medical Practitioners, fostering knowledge, professionalism, and unity.

***Dr Neelamani Sandhaya Rajapaksa Hewageegana***
Doctor of Medicine (Colombo, Sri Lanka) / Doctor of Philosophy (Sheffield Hallam,UK)
Editor, Journal of the Independent Medical Practitioners Association (IMPAJ)

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# How Public-Private Partnerships Can Reduce Healthcare Burden on Governments and Support Private Healthcare Services

*Dr Tissa Perera*

**Abstract**

The global demand for healthcare continues to rise, creating significant pressure on public health systems, particularly in low- and middle-income countries. Governments often face challenges such as financial constraints, lack of infrastructure, and inadequate access to advanced technologies. Conversely, the private sector often possesses modern facilities, expertise, and advanced equipment that remain underutilized. Sri Lanka's situation is similar. Public-Private Partnerships (PPPs) offer a viable solution to address these disparities. This article examines how PPPs can reduce the burden on government healthcare systems while supporting private healthcare providers and proposes strategies for effective implementation.

## Introduction

Healthcare delivery has evolved dramatically in recent decades, driven by technological advancements and changing disease patterns. Non-communicable diseases (NCDs) such as cardiovascular conditions, diabetes, and cancer require sophisticated diagnostic tools and interventions, many of which are unavailable in most of the government hospitals in Sri Lanka, other than the teaching hospitals and some general hospitals due to budgetary limitations. Meanwhile, private hospitals often have cutting-edge technologies and infrastructure, which are not fully utilized because of limited patient volumes or high operating costs. Creating a structured Public-Private Partnership can bridge this gap, optimizing resources in both sectors, improving patient care, and ensuring sustainability of the healthcare system.

## Challenges in Public Healthcare Systems

### *Limited Capital for High-Tech Equipment*

Advanced technologies such as MRI machines, PET-CT scanners, blood and tissue investigations which need sophisticated technologies and robotic surgical systems involve high acquisition and maintenance costs. Governments cannot afford to equip every tertiary and secondary care hospital with such equipment, resulting in limited access for patients.

### *High-Cost Investigations and Procedures*

Tests like genetic profiling, blood investigations which need advance technologies, complex cardiac interventions, tissue transplants and organ transplants and minimally invasive surgeries require substantial investment in technology and specialized manpower. Public hospitals often lack the infrastructure for these services.

### *Overcrowding and Long Waiting Times*

Public hospitals in many areas of Sri Lanka are overwhelmed with patient volumes. Waiting periods for elective surgeries and advanced investigations can extend to several months, delaying treatment and worsening health outcomes.

***Shortage of Skilled Workforce***
Specialists in fields such as transplant and vascular surgery, cardio-thoracic surgery, advanced orthopedic surgery, cosmetic surgery, vitreoretinal surgery, and neurosurgery, tissue and organ transplants are limited in number. Government hospitals may struggle to retain them due to resource limitations and inadequate compensation structures.

**The Role of Public-Private Partnerships**
PPPs provide an opportunity for the government to leverage private sector strengths without heavy capital investment. A well-structured model can create mutual benefits for both sectors while improving patient outcomes.

1. ***Access to Advanced Facilities at Concessionary Rates***
   The government can enter into agreements with private hospitals to refer patients for high-tech investigations and specialized procedures at negotiated concessionary rates. For example, MRI, CT scans, PET scans which are costly to establish in every government hospital, can be provided through private partners under regulated pricing.

2. ***Utilization of Idle Private Sector Capacity***
   Many private hospitals operate below their full capacity during certain hours of the day, especially during the daytime. Operation theatres, catheterization labs, and endoscopy suites often remain underutilized. Government hospitals can send their patients and surgical teams to perform operations in these facilities by paying a reasonable facility usage fee. This arrangement can significantly reduce waiting times for surgeries and optimize resource utilization.

3. ***Reducing Waiting Lists for Elective Surgeries and Diagnostic Tests***
   Through a structured referral system, patients on long waiting lists in government hospitals can be sent to private hospitals for investigations and surgeries. Charges can be negotiated to ensure affordability while guaranteeing timely care.

4. ***Shared Investment Models***
   Both sectors can co-invest in specialized centers of excellence such as cancer treatment units, dialysis centers and tissue transplant units. This approach minimizes the financial burden on the government while giving private partners a share in the service provision. Underutilized government facilities can be used for these purposes.

5. ***Joint Training and Skill Development***
   PPPs can facilitate joint training programs where government doctors and nurses receive hands-on experience with advanced technology in private hospitals. Similarly, private healthcare professionals can benefit from exposure to large patient volumes in government settings.

**Proposals for Effective Implementation**
To ensure that PPPs deliver their intended benefits, the following strategies should be adopted:

- ***Establish a Clear Policy Framework***
  Governments should create standardized policies governing PPP agreements, including pricing, quality assurance, and accountability measures.

- ***Transparent Pricing Mechanisms***
  A transparent pricing structure should be developed to make services affordable while ensuring sustainability for private hospitals.

- ***Integrated Patient Referral System***
  A centralized referral and scheduling system should be established to streamline patient movement from public to private facilities.

- ***Performance Monitoring and Quality Assurance***
  Regular audits and performance reviews should be conducted to maintain clinical standards and patient safety across both sectors by an independent accreditation body.

- ***Public Awareness and Trust Building***
  Clear communication is essential to assure the public that PPP arrangements do not compromise quality or fairness.

**Benefits for Both Sectors**

***For the Government:***

- Reduced burden on public hospitals
- Improved access to advanced diagnostics and treatments
- Efficient resource utilization without large capital expenditure
- Ability to reallocate funds to preventive and primary healthcare

Facilitate capacity building among healthcare specialists and multidisciplinary teams.

***For the Private Sector:***

- Better utilization of existing infrastructure
- Additional revenue streams
- Enhanced reputation as a socially responsible partner
- Facilitate capacity building among healthcare specialists and multidisciplinary teams.

**Conclusion**

Public-Private Partnerships are not just a financial strategy; they are an essential component of a sustainable healthcare system. When implemented with transparency, accountability, and mutual benefit, PPPs can significantly reduce the healthcare burden on governments while strengthening private sector viability. By combining resources and expertise, these partnerships have the potential to transform healthcare delivery, reduce waiting times, and provide equitable access to advanced medical care for all.

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***Dr Tissa Perera***

MBBS, M.Sc. (Medical Administration), PG Diploma in Toxicology, Certificate in Cardio-Vascular Health (Australia), Certificate in Health Programme Management

Medical Superintendent (Senior Medical Administrator),

Nawaloka Hospital, Sri Lanka

# When the Remedy Becomes Worse Than the Illness

*Dr B G D Bujawansa*

The community regards all doctors as healers. But the paradoxical situation mentioned above is encountered every now and then. In most of these situations' doctors concerned are neither negligent nor incompetent. Every attempt should be made to prevent this situation. The remedy may be medication or a procedure. The author will limit the scope of this article to medications.

The mechanism of this situation may be one or more of under mentioned phenomena.

(A) Undesired effects
(B) Idiosyncrasy
(C) Drug interactions
(D) Drug allergy

A good clinician must be sensitive to all these situations. In this respect the family doctors have an advantage over the clinicians in other disciplines. This is because the family doctor gets an opportunity to study individual patients because of long term follow up and restricted clientele in a family practice setting.

The contraindications absolute or relative are based on the ***undesired effects***. A good example is tendency of beta blockers to cause bronchospasm. Thus non cardio selective beta blockers are absolutely contraindicated in bronchial asthma. Beta blocker eye drops used in glaucoma can precipitate an acute exacerbation in an asthmatic. Similarly, nonsteroid anti-inflammatory drugs (NSAIDs) are absolutely contraindicated in dengue fever and chronic kidney disease (CKD). Steroids are relatively contraindicated in diabetes mellitus because they disturb the patient's glycaemic control. We use steroids in diabetics taking appropriate precautions when benefit outweighs the risk. This is done in severe bronchial asthma; Patient should be made aware of this situation.

***Idiosyncrasy*** is rare but important. These are unexpected individual reaction to a drug. It may depend on the genetic predisposition in the patient. Steven Johnson syndrome is an idiosyncratic reaction which is potentially fatal. Carbamazepine, phenobarbitone and sulfonamides are known to cause Steven Johnson Syndrome among other drugs.

***Interactions*** occur when two or more drugs are administered. There are favourable drug interactions too. This article deals only with unfavourable drug interactions. It is well known that steroids and NSAIDs reduce the efficacy of antihypertensive drugs.

Potassium supplements administered along with potassium sparing diuretics can cause hyperkalaemia. It is known that a drug with low therapeutic margin that is when therapeutic blood level is close to toxic blood level interact frequently with other drugs. Digoxin, theophylline and carbamazepine fall into this category. Two drugs having similar undesired effects are not suitable to be combined. Both theophylline and prednisolone are gastric mucosa irritants. Combination of these can cause an iatrogenic dyspepsia. Though a patient having many co morbid conditions need many drugs. This polypharmacy may lead to drug interaction. One has to carefully assess risk and benefit of imposing polypharmacy particularly in elderly patients as they may have compromised renal and hepatic function.

Distribution, metabolism and excretion of a medicament are very much related to undesired effects and interaction.

A very important area in drug interaction is some drugs causing prolonged QT interval in ECG. Combination of two or more of these can cause fatal cardiac arrhythmias. Many drugs used in psychiatry have this property. Fluoxetine and sertraline used commonly by GPs and other non-psychiatrist clinicians are among these. Chlorpromazine, haloperidol and quetiapine too mainly used by psychiatrists to prolong QT intervals in ECG. Quinolones (ciprofloxacin, levafloxacin) and acrolides (erythromycin, azithromycin, clarithromycin) the common antibiotics used in family practice also do have this property. Hydroxychloroquin (HCQ) used to control arthralgia following Chikungunya, at the time of writing too causes prolongation of QT interval. The drug history therefore should not be overlooked during a consultation.

***Drug allergy*** is another area the prescriber has to be concerned about. Maintaining accurate clinical records, communication with colleagues and detailed history taking will help to eliminate this situation. Drug allergies ranges from fatal anaphylaxis to a mild skin eruption. Penicillins, NSAIDs are drugs causing allergic reactions frequently. Though sulfonamides are not used much nowadays it is present as a component of cotrimoxazole. Sulphonamides are well known to cause fixed drug eruptions. Sometimes the patient with a fixed drug eruption presents to the doctor only after a few days .The clinician sometimes does not see that as a result of the medication.

A fixed drug eruption

All clinicians must familiarize themselves with the look of a fixed drug eruption. If the drug is repeated after some time it tends to appear at the same location. Sometimes there can be multiple lesions.

Every effort should be made to avoid remedies becoming worse than the illness. As already mentioned, polypharmacy, inadequate history and non communication with colleagues increases the chances of ending up in this situation. "*Nihil nocere*"" ("Do no harm") dictum of Hippocrates made about 500 BC is quite relevant when remedy becomes worse than the illness.

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# A Family Physician's Perspective of Chikungunya - Like illness outbreaks

*Dr K Chandrasekher*

## 1. Introduction

Chikungunya was first identified and described in Tanzania, Africa, in 1952. Chikungunya is spread by an alpha virus that is transmitted by mosquito bites from the *Aedes aegypti* mosquito and *Aedes albopictus*. The virus is mainly found in tropical areas.

General Practitioners in many parts of the country who provide first contact care to patients have lately mentioned that they have been seeing patients presenting to them with features of Chikungunya-like illnesses in their clinics. I have also encountered such patients, but not in large numbers. They were also devoid of the typical symptoms seen in 2006 in my clinic situated in Colombo 13, the executive and judicial capital of Sri Lanka. Most have been having myalgia and/or arthralgia with fever, except for 3 patients who had mild ankle swelling. Most of the viral fevers also have similar features. These patients, other than a handful, responded to symptomatic treatment given for 5 days. This made me think of an observational study that I conducted in 2006, where I saw a large number of cases of Chikungunya-like illnesses with many features mentioned in the literature. While treating my patients, I was able to gather valuable primary data and observations. These were recorded and archived.

In this article, I have recorded the signs and symptoms of Chikungunya in my patients treated by me during the Chikungunya outbreak from September to December 2006. I have also compared the signs and symptoms seen in my study with those of the 1966 outbreak. The epidemic in 1966 has been documented in the Ceylon Medical Journal (1).

## 2. The Inclusion Criteria

The following aspects were considered when examining a patient to decide whether it was a clinical presentation of Chikungunya.

a) How the patients narrate their complaint and how they present themselves, namely:
   - Looking fairly ill and demonstrating great difficulty in walking unaided.
   - Severe pain in the muscles or arthralgia; and
   - In children, the parents say that the child prefers to sit in one spot without moving around as normally.

b) Presence of high fever at 100° F
c) Flushed face, with fever and severe arthralgia/myalgia.
d) Tenderness in joints or muscles

It is important to be sensitive to the fact that patients have to pay a fee for service in family practice in Sri Lanka. This consideration inevitably results in a prudent approach to investigations. We do not share the luxury of ordering investigations for every trivial suspicion. Hence, Family Physicians have been treating a large number of our patients during this epidemic without

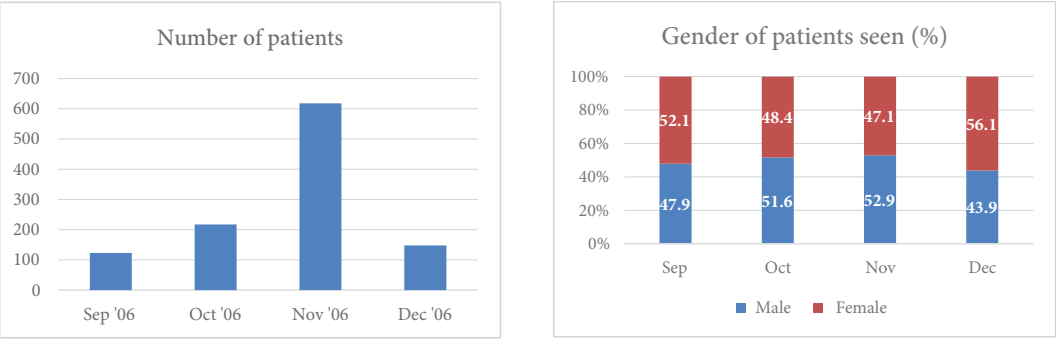
any investigations unless there has been an absolute indication to do so. Thus, the inclusion criteria in my study were merely the clinical picture.

The family physician gives personalised, primary and continuing care to individuals and their families and has a practice population comprising all ages and both sexes. This care is not restricted by the category of illness or the systems affected. It is the synthesis of these functions which is unique in family practice. The long-term relationship between the practitioner, his/her clients and the community is the cornerstone of family practice. None of our clients is statistically insignificant.

It was an unusual experience for me and something which I had not witnessed in my career as a family physician. The common medical problems seen in everyday family practice took a back seat, while almost every patient who walked into my consultation room was a patient having this illness. In fact, at one point in time, the work was becoming so monotonous, seeing the same symptoms and signs over and over again. This was the scenario in Kotahena, Colombo 13, when this outbreak raged despite many attempts to curb it. My clinic is situated in Colombo 13, and most of my patients are from Kotahena, Mutuwal, Crow Island, Grandpass and Maradana.

I started seeing patients with clinical Chikungunya beginning in the third week of September 2006. The number of cases peaked in November 2006 and gradually declined in December 2006. Overall, I treated 1,100 patients exhibiting clinical symptoms of Chikungunya during this period. Figure 1 and Table 1 below provide a detailed breakdown, including the number of cases per month, the gender distribution, and the age ratio of the affected individuals.

***Figure 1.*** Breakdown of Chikungunya patients treated at Dr. K. Chandrasekher's Clinic (September - December 2006) by month and gender.




***Source :*** Compiled from Dr. K. handrasekher's Family Practice archived records

***Table 1.*** Age distribution of Chikungunya patients treated at Dr. K. Chandrasekher's Clinic (September - December 2006)

| Month | Below 10 yrs | 10-20 | 20-30 | 30-40 | 40-50 | 50-60 | 60 and above |
|---|---|---|---|---|---|---|---|
| Sept '06 | 30.10% | 12.20% | 18.70% | 14.60% | 6.50% | 7.30% | 10.60% |
| Oct '06 | 22.60% | 12.90% | 19.40% | 17.50% | 14.70% | 4.60% | 8.30% |
| Nov '06 | 20.40% | 16.80% | 20.20% | 17.40% | 11.60% | 8.20% | 5.10% |
| Dec '06 | 21.60% | 18.20% | 20.90% | 16.20% | 9.50% | 6.10% | 7.50% |

***Source :*** Compiled from Dr. K. Chandrasekher's Family Practice archived records

### 3. Clinical Features

The symptoms of Chikungunya include fever, which can usually reach 39°C (102.2°F), a petechial or maculopapular rash typically affecting the limbs and trunk, and arthralgia or arthritis that impacts multiple joints. Additionally, myalgia associated with the condition may be debilitating. Headache and a slight photophobia with conjunctival injection could also be present. The symptoms are described in more detail below. Figure 2 shows some examples of the lower limbs of patients presenting with symptoms of Chikungunya.

#### a) Fever

The highest recorded temperature I encountered in my practice was 105.2°F. It was common for entire households to be affected by Chikungunya. Some patients experienced only severe body pain without fever and responded well to Paracetamol alone-I was among those in that category.

#### b) Headache

Headache was a common symptom, often severe or moderately intense, usually frontal, and sometimes accompanied by photophobia. In the 1966 series, the experience was similar.

#### c) Flushed face and conjunctival injection

This was clearly seen in the pinna. A painful-looking facies with a red pinna seems to be pathognomonic of Chikungunya during the height of this epidemic. Once again, this too was almost universal in the 1966 series.

#### d) Arthralgia

Many of my patients pointed to their right or left knee as the first joint which was affected. This later spread to the other joints as well. It was a notable feature that the patient pointed to one of the previously affected joints, saying with a lot of frustration, "This pain has come **again,** doctor." This was true in the 1966 series, too.

#### e) Myalgia

Many of my patients were unable to

***Figure 2.*** Visuals of the lower limbs of patients presenting with symptoms of Chikungunya.

***Source :*** From Dr. K. Chandrasekher's Family Practice archived records

differentiate myalgia from arthralgia. This may be because the arthralgia was so severe that it masked the myalgia. But when questioned specifically as to the presence of myalgia, the reply was in the affirmative.

**f) Gastrointestinal Tract (GIT) Symptoms**

When advised to eat something before taking medication or to stay well-hydrated, many patients frequently complained of loss of appetite and a lack of taste. These symptoms were also observed in 1966.

**g) Respiratory symptoms**

A sore throat or mild dry cough was seen in many. Many of the patients in the 1966 series had similar symptoms.

**h) Cardiovascular System (CVS) Symptoms**

Although in the 1966 study the authors reported bradycardia, I did not detect marked bradycardia in my patients. Hypotension was common, and many had felt faint or giddy during micturition or defecation. This could have been due to evaporation of body surface with the high fever, as well as inadequate oral replenishment of liquids during the febrile period.

**i) Rash**

Some patients developed rashes, including macular or maculopapular rashes, blotchy like measles. These were not seen initially but appeared in subsequent visits. This had been seen in the 1966 study in some patients.

**j) Lymphadenopathy**

Although in 1966 this had been seen in most cases, it was not a routinely observed feature in my series. In those I noted, many had posterior cervical and postauricular lymphadenopathy, which was more on the left, and it was tender. This was noticed because the patient complained of this**.**

**k) Mental and Neurological Symptoms**

Almost all my patients I saw were quite alert and conscious, even when they had very high fever. In the 1966 series, there had been instances where the patients were drowsy. Some patients reported difficulty sleeping after their fever subsided. One of them was my younger daughter, aged 10 years, who was seated watching TV, or reading books late into the night, at least for two to three days after the fever had settled and when she was not on any medication.

**l) Haemorrhagic features and Haematological symptoms**

I did not detect any of these amongst my patients. But in the 1966 series, there were a few patients with epistaxis and haemoptysis.

**4. Features not described in 1966 but Seen in my Series**

I also saw many patients who came with pruritus of the body on the third or fourth day of the fever, which had not been reported in the 1966 study. Ankle oedema on the third or fourth day was another manifestation I saw in many of my patients, which has not been seen in the 1966 epidemic or the available literature. Could this have been due to water retention following the NSAID?

Another interesting feature I saw in at least four patients was a tender linear worm-like thickening under the skin, which was about 2-3 cm in length in the shin or calf region. This, too, had not been described in the 1966 study. Was this a lymphangitis, vasculitis or a thrombophlebitis? There were a few patients with crural ulcers and aphthous ulcers as well.

Figure 3 shows some visuals of these features.

***Figure 3.*** Visuals of new features, not described in the 1996 study, but seen at Dr. K. Chandrasekher's Family Practice

***Source :*** From Dr. K. Chandrasekher's Family Practice archived records

**Differential Diagnosis:**

a) Dengue Fever
b) Leptospirosis

Myalgia is more severe than arthralgia in this.

**5. Investigations**

I did not do any investigations in any of my patients, except in a few instances where the fever was of a saddle type. The WBC/DC tests indicated mild leucopoenia, and in two cases, the platelet counts were between 105,000 and 120,000/cmm. Since both patients could afford it, Dengue antibody tests were conducted, and both tested positive for IgG and IgM. Their platelet counts were monitored every other day, and by the third report, both showed an upward trend, reaching a range of 160,000 to 180,000/cmm. Serological assays for Chikungunya-specific IgG and IgM antibodies, Neutralization Tests and Polymerase Chain Reaction Tests were not conducted by me in my practice.

**6. Treatment**

There is no specific treatment for Chikungunya. After ensuring there were no contraindications, I provided symptomatic treatment to my patients. These included the following.

- Bed rest till such time they are free of temperature and feel better.
- Oral hydration: Plenty of liquids (at least 1-1.5 litres in case of an adult. I found it useful to give my patients packets of Jeevani and give them instructions on preparation and administration.
- Analgesia:
  - Treating patients with severe pain/high fever with Non-Steroidal Anti-Inflammatory Drugs (NSAIDs)

was common then, as the incidence of Dengue fever was low. When I revisit this treatment schedule, it is now clear that treatment schedules for the same illness may have to be changed depending on whether other diseases are prevalent in the community at that point in time.

- Use of Chloroquine for non-refractory arthralgia, although spoken of in the literature, is better avoided in the present times, as experts do not have a consensus on its use and given the re-emergence of malaria in Sri Lanka.

In the present episode, I see Chikungunya-like illness much less than the last time, as mentioned before. These cases do not seem to have all the above symptoms and signs as before. It is mostly with mild to moderate fever, myalgia and joint pains with swelling of one or two joints in just a few patients. I treat them with Paracetamol, advise complete bed rest and good hydration and follow them up. If the pain is severe, I have been doing the Dengue rapid antigen test to exclude dengue before going for NSAIDs and even a short course of steroids like prednisolone on a case-by-case basis after careful consideration of the other medical conditions in the patient.

Patients were advised to limit further exposure to mosquito bites, stay indoors and be under a mosquito net at appropriate times. In the non-acute phase, when the arthralgia was persistent, they were advised regarding movement and non-weight-bearing exercises which tend to improve stiffness and morning arthralgia. They were warned against heavy exercise that could exacerbate joint symptoms. Appropriate pain relief was given and was gradually tapered off over a period of time.

## 7. Concluding Remarks

The Chikungunya-like illness presently seen does not have the typical symptoms that I encountered in 2006 in my area of practice. I would like to emphasise that all patients who came to me this time with fever and myalgia and/or arthralgia were asked whether they had an attack of Chikungunya in 2006. All of them, without exception, over the age of 20 years, answered in the affirmative. This raises the following interesting questions in the context of the present episode:

- Is it possible that those who were affected in 2006 have developed long-term immunity to this disease?
- Is a different strain of the virus now causing Chikungunya?
- Is the current episode in the initial stages of an epidemic yet to come?

From a public health perspective, these are questions that need to be addressed, with empirical evidence and investigations, in partnership with public health agencies and General Practitioners.

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***Dr K Chandrasekher***
MBBS. DFM. PG Dip. MEd. FCGP
General Practitioner, Colombo 13.
Past President (College of General Practitioners of Sri Lanka)

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# The Sri Lanka Medical Council at 100 Years : Reforming Self-Regulation for Public Accountability

*Dr Ruvaiz Haniffa*

The Sri Lanka Medical Council (SLMC), as the sole regulator of medical professionals in Sri Lanka, has played a vital role in shaping the nature, quality and character of medical professionals and the profession for a century.

The speech made by Judge of the Supreme Court His Lordship Justice Yasantha Kodagoda on 5th July 2025[1] at the Centenary Celebrations deserves praise and thanks for its forthrightness. The speech presents to the medical community at large an invitation and opportunity to look more inwards than outward in its regulatory role for the future. His Lordship's speech was aptly titled "Strategies for Addressing Malpractices in Healthcare Systems". This very point was reiterated by the current Registrar of the SLMC who stated, "With a vision for continuous improvements and adaptation, the SLMC is poised to navigate the future of healthcare with the same dedication that has defined its first century".

We have been told for at least the past decade that there is a new Medical Amendment Bill with the Ministry of Health which will address the issues raised by the medical profession and professionals to enable the dedicated men and women of future SLMCs to perform the duty of the SLMC well. The primary objective of the SLMC is to protect the citizens of Sri Lanka from any unethical practices by the medical professionals. *('The SLMC is a statutory body established for the purpose of protecting health care seekers by ensuring the maintenance of academic and professional standards, discipline and ethical practice by health professionals who are registered with it'*)

As pointed out by Justice Kodagoda, issues pertaining to medical ethics by practicing medical professionals and the way the SLMC has handled such issues in the recent past, in particular, have led to increasing public concerns about the SLMC. His Lordship went further and even proposed a mechanism/s to overcome such public concerns with a particular reference to ethical issues resulting from the practice of medicine. He quite correctly used words such as 'neutrality' and 'representation' to a 'Complaints Secretariat' which he proposed to handle issues of complaints against medical professionals. He even suggested that non-medical professionals should be allowed to serve on such disciplinary panels.

As of now, the composition of the SLMC Council is exclusively limited to doctors as far as the medical profession is concerned. Thus, whatever process is suggested within this fundamental framework, it will as of now ultimately result in self-regulation of Doctors by Doctors. This is the real question which needs addressing, and one hopes that the new Medical Amendment Bill decades in the making, will address the fundamental question of *'Can the medical profession self-regulate itself, or does the composition of the SLMC need fundamental*

*reform to include non-medical personnel on its council to unbiasedly perform its statutory duty of protecting the Sri Lankan citizen from the Sri Lankan medical profession?*

The institution on which the SLMC was modelled, over a century ago, is the General Medical Council (GMC) of the United Kingdom, which was established in the year 1858. Initially, its members were elected by the members of the profession and enjoyed widespread confidence in the profession. The 167-year-old GMC has undergone many reforms to serve the public and the profession in a more transparent, accountable and responsible manner over the years. With regards to public concern, the GMC was regulating itself to the detriment of public trust in it. To address this issue, the composition of the General Medical Council in the UK was reduced to 12 members from 24 members on January 1, 2013[2]. The Council consists of 12 members include 6 medical professionals (registrant members) and 6 non-medical individuals (lay members). The GMC also has an Executive Board that handles daily operations and over 1,000 associates who support its work.

An interesting article appeared in the comments section of the British Medical Journal on 12th November 2022[3]. The opinion piece was titled "**The GMC has been failing for 30 years"**. The opinion of Martin McKee and Scott [L3,4.] Greer dealt with matters of transparency pertaining to the regulatory role of the GMC within the profession in the United Kingdom. This opinion piece was brought to the notice of the SLMC by way of email and regular post on 17th November 2022. The point of discussion which was requested by the SLMC was *'Is the current composition of the Council of the SLMC unbiasedly capable of 'self-regulation' of the profession at large?'* and '*Has/Is the Sri Lanka Medical Council acted/acting in the best interest of the citizens of Sri Lanka or Is it acting in the self-interest of the profession or more specifically self-interest of an elected/selected segment of the medical profession?'*

With regards to the composition of the SLMC Council and the wider Medical Amendment Bill, which has been proposed, the SLMC called for submission of proposals by way of a newspaper advertisement on 5th October 2018[5]. The Sri Lanka Medical Association (SLMA) Council at the time submitted a set of proposals to be included in the new Medical Amendment Bill to the SLMC on 22nd October 2018 (the deadline for submission was 28th October 2018).

As the SLMC is celebrating its Centenary and has stated its desire *'for continuous improvements and adaptation, to navigate the future of healthcare with the same dedication that has defined its first century'* we reproduce below a few submissions made for the consideration of the SLMC back in 2018 with a particular reference to the Council of the SLMC and the process of appointment to the Council of the SLMC. The objective of these submissions from the SLMA is to support changes to many aspects of the present Medical Ordinance, which in turn, will create a Medical Council which is truly independent, free from the influence of politicians and trade unions, and one which has the power to perform its legally conferred functions without fear or favour.

**(A) The composition and the term of office of the SLMC as proposed by the author**

1. The SLMC shall consist of a total of fifteen (15) members appointed by the Constitutional Council of Sri Lanka.

i. Ten (10) members shall be reputed medical/dental practitioners who have been registered with the SLMC for a minimum period of 20 years.
ii. Two (02) members shall be Deans from the Faculties of Medicine, who have been registered with the SLMC for a minimum period of 20 years.
iii. Three (03) shall be leading professionals of high repute from education, law, finance, or management professions, from the private or public sector, with a minimum period of service of 20 years after obtaining the first professional qualification or degree.

2. The President of the SLMC, who shall be a member of the medical profession, should be elected by the council members of the SLMC at its first meeting.
3. The term of office of the Council shall be three (03) years.
4. Any person can serve in the Council only for a maximum of six years *in toto.*

**(B) The process of appointment to the Council of the SLMC as proposed by the author**

1. The Registrar of the SLMC shall call for applications from eligible members of the Medical/Dental profession and members of the education, legal, finance or management professions, at least three (03) months before the expiry of the term of office of the SLMC.
2. All applications received shall be forwarded to the Constitutional Council through His Excellency the President of Sri Lanka.
3. The Constitutional Council shall appoint the members within a period of six (06) weeks from the date of submission of the names to the Constitutional Council by His Excellency the President of Sri Lanka.
4. The Constitutional Council shall ensure that the appointees can discharge their duties free from the influence of politicians and trade unions and can perform their functions without fear or favour.

These are a set of submissions among many that the SLMC would have received during the period it sought public opinion for the new Medical Amendment Bill. We hope that the SLMC in its centenary year will revisit these proposals carefully and seriously address the issue of self-regulation of the doctors by doctors and introduce more transparency in guiding the medical profession in Sri Lanka in to the future, keeping in mind its statuary role of *'protecting health care seekers by ensuring the maintenance of academic and professional standards, discipline and ethical practice by health professionals who are registered with it'*

As the SLMC enters its 2nd century, the powers that be at the SLMC and the medical profession itself must reflect objectively on the core statutory function of the SLMC. The outcome of this reflection ought to be finding the most suitable answer to the question (not the ideal answer). *How can the SLMC, as a statutory body, protect the health seekers by ensuring the maintenance of academic and professional standards, discipline and ethical practice by health professionals who are registered with it?*

In doing so, the SLMC must not revolve around what it thinks it is doing well but revolve around selected core issues and evolve in a manner to serve the interest of the Sri Lankan public, which it's statutorily bound to do.

During the celebration, it was revealed to the public that the long-overdue new medical act, which has been unanimously approved by the Council of the SLMC, indeed addresses the most fundamental of structures in the SLMC, which is its Council. It has been proposed to include non-medical members as Council members. If true, this is indeed a welcome development for the future of the SLMC commitment to begin giving up the idea of exclusive self-regulation of doctors by doctors. We sincerely hope that the new medical act can be presented to parliament as soon as possible for discussion by the people's representatives.

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***Dr Ruvaiz Haniffa***
Past President Sri Lanka Medical Association - 2018

# Audit of Quality Issues in a Random Sample of Declaration of Death Forms (B33) at the National Hospital of Sri Lanka (NHSL)

*Rasangani Premathilaka, Chandana Abeysekara, Ramesh Nanayakkara*

**Abstract**
Accurate death certification is vital for public health surveillance, research, and health policy planning. This audit assessed the quality of medical certification of cause of death (MCCD) using a random sample of B33 forms from the National Hospital of Sri Lanka (NHSL). A total of 489 forms from medical, surgical, and cardiology wards were evaluated against standard criteria. Significant errors were identified in documentation, sequence of causes, use of abbreviations, and legibility. Only 2.04% of forms had a single error, while over 71% had four or more. Findings highlight the need for systematic training, quality assurance, and adherence to international certification guidelines.

Keywords: death certification, B33 form, audit, quality assessment, NHSL, medical documentation

**Introduction**
Accurate documentation of the cause of death is essential for national mortality statistics, public health planning, and global disease surveillance. The practice of registering births and deaths in Sri Lanka dates back to the Dutch colonial period (1640-1798), with compulsory registration implemented in 1897. The current legislative framework is established under the Births and Deaths Registration Act of 1951 [1].

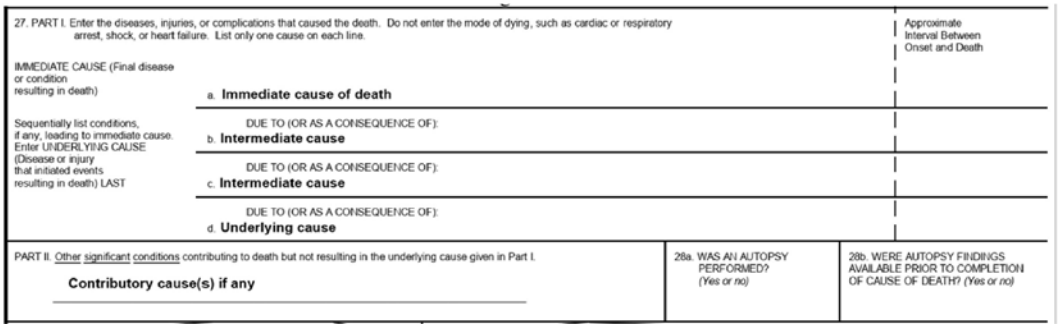
According to Section 31 of the Act, the attending physician is responsible for completing the Certificate of Cause of Death when a patient dies of natural causes. The physician must exercise caution, as medico-legal implications may arise, especially if post-mortem findings contradict the clinical diagnosis.

Sri Lanka follows the World Health Organization (WHO) format for the Medical Certificate of Cause of Death (MCCD), aligned with the International Classification of Diseases, Tenth Revision (ICD-10) [2]. This format facilitates proper sequencing of causes of death, where Part I lists the immediate, antecedent, and underlying causes, and Part II includes other significant contributing conditions [3]. The underlying cause, as defined by WHO, is the disease or injury that initiated the train of events leading directly to death and is crucial for statistical tabulation and policy-making. Figure 1 illustrates the part of the B 33 form which depicts the sequencing of causes of death.

**Objective**
To evaluate the quality of B33 forms issued at NHSL, focusing on accuracy, completeness, and conformity to standard MCCD guidelines.

**Methodology**
A retrospective audit was conducted using 489 randomly selected B33 forms issued at NHSL. The sample was drawn from medical, surgical, and cardiology wards. Each form was reviewed against predefined error categories based on WHO and

***Figure 1.*** Sequencing of Causes of Death




national certification guidelines. Errors were quantified in terms of frequency and percentage.

## Results

***The audit findings highlight a high frequency of documentation errors in B33 forms, with several error types occurring at notable rates.***

***Table 1.*** Frequency and Percentage of Error Types Identified

| Error Type | Number | Percentage |
|---|---|---|
| Multiple causes of death per line | 76 | 16% |
| Missing time interval from onset to death | 111 | 23% |
| Use of abbreviations in the cause of death | 75 | 15% |
| Illegible handwriting | 12 | 3% |
| Clinically improbable or incorrect sequence of causes | 55 | 11% |
| Incorrect first condition in the lowest-used line of Part I | 75 | 15% |
| Other errors | 82 | 17% |

*As detailed in Table 1, the most common issue was the omission of the time interval from onset to death, present in 23% of cases. Other frequently observed errors included multiple causes of death listed per line (16%), use of abbreviations in the cause of death (15%), and incorrect placement of the first condition in Part I (15%). Errors such as clinically improbable sequences (11%) and illegible handwriting (3%) were also recorded.

***Table 2.*** Distribution of Errors per B33 Form

| Number of Errors | Number of Forms | Percentage |
|---|---|---|
| 0 | 0 | 0% |
| 1 | 10 | 2% |
| 2 | 47 | 10% |
| 3 | 69 | 14% |
| 4 | 146 | 30% |
| 5 | 134 | 27% |
| 6 | 70 | 14% |

Table 2 shows that the majority of forms contained multiple errors, with 30% of forms having four errors, 27% having five, and 14% having six. Notably, no forms were free of errors, underscoring the need for targeted training and quality assurance measures in death certification practices.

**Discussion**

The audit findings reveal a high prevalence of quality issues in death certification at NHSL. Notably, more than 70% of forms contained four or more errors, indicating systemic deficiencies in training, oversight, or understanding of standard certification guidelines.

Common issues included missing time intervals, use of vague or clinically invalid causes (e.g., "cardiac arrest" or "septicemia" without specifying underlying causes), and misuse of Part I sequencing. The frequent use of abbreviations further hampers clarity and compromises data accuracy.

These findings align with global observations that documentation of the cause of death remains a challenge in many settings, particularly in busy clinical environments. Improving the quality of MCCD requires a combination of training, supervision, and systematic auditing.

**Conclusion**

The audit identified widespread deficiencies in the completion of B33 forms at NHSL. These documentation errors compromise the reliability of mortality statistics and hinder public health decision-making. Addressing this issue is a critical priority for hospital administrators and health policymakers.

**Recommendations**

1. Conduct targeted training for medical staff on the correct completion of B33 forms and understanding the ICD-10 framework.
2. Introduce checklists or electronic templates aligned with WHO guidelines to reduce variation and omissions.
3. Establish a routine review process for B33 forms prior to final submission to the Registrar General's Department.
4. Promote legibility and accuracy in documentation through awareness programs and feedback mechanisms.
5. Implement periodic audits to monitor compliance and guide continuous improvement.

**Acknowledgement**
We express our sincere gratitude to all medical and administrative staff who supported the audit process and facilitated access to records. Their cooperation was invaluable in conducting this quality assessment.

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# Mental Health First Aid

*Sunera Fernando*

**(This writeup on Mental health First Aid is based on a lecture delivered as part of the GP CME Training Programme)**

Mental Health Problems are a major cause of long-term disability and it leads to a poor quality of life. The prevalence of mental health problems is high, and they adversely impact functioning.

The suicides rates in Sri Lanka between 1950 and 1995 increased eight fold to a peak of 47 per 100,000 in 1995. In the 10 years since 1995, Sri Lanka's suicide rates declined by 50%. Pesticide self-poisoning is one of the most commonly used methods of suicide in Asia with an estimated 300,000 deaths each year. It accounts for two thirds of Sri Lanka's suicide deaths. The rates of suicide have dropped slightly due to a reduction in pesticide ingestion. The rate of suicide in Sri Lanka in 2022 was 27/100 000 in males and 5/100 000 in females. The overall suicide rate in 2022 for the population was 15 / 100 000. A study in 2006 of all deaths given a verdict of 'suicide' by the coroner during a one year period showed that during that time nearly two thirds of the victims were below the age of 40 years. Pesticide poisoning was the commonest method of suicide followed by self-burning, hanging, drowning or jumping in front of a train.

With this high prevalence of mental health problems, it is important to be able to recognise how to help someone with a mental health issue when it is first noticed. Mental Health First Aid provides immediate care to individuals facing mental health problems or crises. This first aid aims to reduce distress and encourage seeking professional mental health help. It is similar in concept to first aid provided for physical conditions. However, these interventions have more behavioural and communication in nature. The goal of **Mental Health First Aid** is to reduce distress and encourage seeking professional mental health help in a timely manner.

**The four core principles of Mental Health First Aid are :**

1. assess risk and identify potential risk to the person's mental health and the safety of themselves and others promptly and carefully
2. listen non judgmentally and provide empathic and supportive listening without making assumptions.
3. give reassurance and information.
4. encourage professional help and advice seeking help from qualified mental health professionals, as needed.
5. encourage self-help strategies, self-care activities and coping strategies to improve mental well- being.

In this lecture, we will be looking at specifically how to provide Mental Health First Aid to a suicidal person. A suicidal person may not ask for help directly, but is likely to show warning signs and therefore, it is important to be able to recognise these signs and start the process of helping them using the above core principles. In this

situation, assessing risk is an important task and thereby we can identify the potential risk to the person's mental health and the safety of themselves and others in a timely manner. A person who is thinking about suicide will have early warning signs that indicate this impending risk.

**Identify warning signs**

- ***Threats:*** verbally threatening to kill themselves.
- Their ***access to obtaining lethal means:*** gaining access to firearms, drugs of addiction (recreational drugs) and poison.
- ***Talking about death:*** bringing up death or suicide in conversations, writing about dying or posting on social media about suicide.
- ***Drastic mood swings:*** hopelessness, feeling trapped, rage, anger, irritability, anxiety or vengeful thoughts.
- ***Risky behaviours:*** acting recklessly or increasing drug or alcohol use.
- ***Uncharacteristic behaviours:*** sleeping too much or too little, mood changes, giving away prized possessions.

There are times when Mental Health First Aid is not safe, especially when there is a threat to your own physical safety. Do not attempt Mental Health First Aid on your own. Call the ambulance immediately if the person has a weapon and is threatening to kill themselves or harm someone else. Although it may seem noble to help while risking your safety and that of the people around you, it is not a wise decision and may only worsen the situation. After assessing the situation, it is important to call for immediate help if the above risks are present.

Prompt intervention is important for suicidal persons. If you notice that someone displays signs of suicide risk, intervene immediately. Don't assume that the person's friends or family will act before you do. You may be the only person who recognizes the warning signs and can respond with mental health first aid support. Furthermore, you may also be the only person this suicidal person has confided in.

**Step 1: To Assess Suicide Risk**

Ask questions to assess suicide risk if you notice the warning signs of suicidal ideation in someone and there is no immediate threat to your safety. Approach the person privately to begin Mental Health First Aid for suicide risk. Since this could be a life-changing conversation, choose a time when both of you are free and find a setting that is free of distractions and relatively private. To start the conversation, you can ask them directly about their suicidal thoughts. You can ask, "Are you having thoughts of suicide?" or "Are you thinking about killing yourself?". It is important to say the word "suicide' when you talk with someone struggling with suicidal thoughts, and use the word "suicide" in the conversation. Contrary to popular belief, this will not, "put the idea in their head," and won't convince someone to act impulsively. In fact, saying the word suicide without a tone of dread can be comforting to someone who struggles with suicidal thoughts. Your confidence and empathy can put them at ease. When you talk about suicide openly, you break the stigma surrounding this issue and let someone know that it's alright to talk openly about how they're feeling and through this encourage them to seek help. You can also instill hope in them that help is available.

**Step 2: Determine Whether Someone Has a Plan for Suicide**

Asking, "are you thinking of killing yourself?" is an important first question in this conversation, but you will need to

ask more detailed questions to determine the severity of the situation. To provide appropriate help, you need to understand whether someone has a plan to kill themselves or if they struggle with more vague thoughts like, "what's the point in living?"

Three questions to ask to determine the level of suicide planning include:

- **have you decided how you would kill yourself?**
- **do you know when you would kill yourself?**
- **have you secured everything you need to follow your plan?**

Typically, a higher level of preparation indicates more severe risk of suicide, but the absence of a plan does not mean that the person is safe. Other factors that influence a person's plan and suicide risk can include:

- previous suicide attempts: this increases the likelihood that someone will attempt suicide again.
- lack of supportive networks
- chronic physical disease
- drug or alcohol use: the use of harmful substances can lead to intoxication, which can make someone more likely to act impulsively.
- if the person has psychotic symptoms and a loss of touch with reality the risk is very high.

**Never stay quiet about a suicide plan.**
If someone who is contemplating suicide and has told you of their plan, they may ask you to keep it a secret. While you can practice discretion and respect the person's privacy, to truly help them, you cannot agree to stay quiet about their suicide plan. Let them know this and involve them in the decision about who you will tell. Encourage them to collaborate in the plan to facilitate help-seeking in a timely manner.

**Step 3: Keep the Person Safe Until Help Arrives**
Someone who is experiencing suicidal thoughts should not be left alone. Stay with them as long until you can see them off safely with a friend, family member or medical emergency personnel. If you cannot stay with the person, arrange for someone else to stay with them.

One of the most important parts of keeping a suicidal individual safe is knowing how to talk to them. It can be difficult to know what advice is supportive and what's better left unsaid. Unsupportive behaviours to avoid during this time may look like:

**Avoid the following in these interactions:**

- expressing personal opinions about suicide
- expressing judgmental thoughts and feelings
- being critical of the person
- attempting to reason with the person or correct them
- fidgeting with a smartphone
- offering unhelpful advice like, "You'll get over it"
- using guilt or threats, like "You will go to hell"

Instead focus on these things below and **show support and solidarity through your words** and **actions,** including:

- telling them that you care and are there to help them though this difficult time
- explaining how their life makes a difference in yours
- telling them that suicidal thoughts are common and don't have to be acted on

- explaining that suicidal thoughts are often symptoms of a treatable mental health condition

If they are willing, encourage them to talk about their thoughts and feelings, and listen without judgment. To be **an active listener**, practice:

- maintaining open body language and comfortable eye contact
- using minimal verbal prompts, like "I see,"
- asking clarifying questions
- listening to the person without judging them as weak and telling them these problems are not due to weakness or laziness and the person is trying to cope
- being patient, not anxious to fill any silences

Give reassurance Information to help the field person feel hope and optimism to realise that if they are having depression (low mood) they have a real medical condition depression is a common illness. It is not a weakness of character or defect and effective treatments are available for the depression. Depression is not laziness, it takes a while to develop and sometimes takes a while to resolve, but it will get better faster with the correct help. All this will encourage the person to seek help.

**Barriers to Mental Health First Aid**

Providing initial help through Mental Health First Aid promotes wellbeing and encourages seeking professional help. However, there are barriers to mental health care which need to be addressed in this process. Mental health stigma creates fear and shame that prevents many individuals from seeking mental health support. The lack of awareness, insufficient knowledge about mental health issues limits understanding and prevents seeking help and these need to be addressed with providing education.

Another problem is cultural and access barriers. Cultural beliefs and limited access to mental health services reduce effective support available when in crisis.

Further information about providing Mental Health First Aid for different mental health conditions can be accessed from "Mental Health First Aid for Sri Lanka", a book published by Sahanaya, National Council for Mental Health.

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***Sunera Fernando***

Ho norary Associate Professor Macquarie University, Sydney and
Honorary Associate Professor University of Wollongong, Sydney and
Consultant Psychiatrist, Northern Sydney LHD

# Listening Heals: Physiological Impact of Empathy from Healer to Healed

*Dr Kushani Atukorala, Prof Savithri Wimalasekera*

Empathy is often described as an art - the ability to feel with another person. Yet, modern neuroscience shows it is also rooted in physiology. Science defines empathy as the ability to sense other people's emotions, coupled with the capacity to imagine what someone else might be thinking or feeling, encompassing both cognitive empathy (understanding another's perspective) and affective empathy (feeling what another person feels) (1).

For family physicians, who often serve as the first and most continuous contact for patients, understanding the physiology of empathy offers more than academic curiosity. It provides a biological explanation for why listening, compassion, and connection can tangibly improve patient's health.

***Empathy in the Brain and Body***

Empathy begins in the brain's mirror neuron system, first identified in the premotor cortex and inferior parietal lobe. These neurons activate both when we perform an action and when we observe another performing it, allowing us to "resonate" with others' experiences (2). Functional MRI studies show that when a doctor empathizes with a patient's pain, similar neural circuits in the anterior insula and anterior cingulate cortex are engaged, areas linked to emotional awareness and autonomic regulation (3).

This neural mirroring extends beyond cognition. When empathy is genuine, autonomic synchrony occurs: patients' and doctors' heart rates and respiratory rhythms can align during compassionate interactions. Such synchrony enhances trust and reduces perceived pain and stress (4).

***Hormones of Healing***

Empathy is also biochemical. Listening and compassionate touch increase oxytocin, a neuropeptide produced in the hypothalamus that fosters bonding and attenuates the stress response. Oxytocin modulates the hypothalamo–pituitary–adrenal (HPA) axis, leading to reduced cortisol secretion and promoting a sense of safety and calm. Lower cortisol levels enhance immune function, wound healing, and metabolic balance (5). Concurrent parasympathetic activation during genuine empathy is supported by oxytocin's calming effects on the brain. These effects promote vagal nerve activity, enhancing heart rate variability and blood pressure control; this "calm and connect" response reduces stress and supports healing and recovery (6). Furthermore, empathy influences pain perception by modulating activity in limbic regions such as the anterior insula and anterior cingulate cortex, thereby diminishing the emotional intensity of pain (7).

These mechanisms explain why patients who feel "heard" often report lower pain scores and better adherence to treatment, independent of pharmacological effects (8). In essence, empathy acts as a form of

physiological therapy.

For the doctor, empathic engagement triggers the release of oxytocin and dopamine, activating reward and bonding circuits, increasing heart rate variability, reducing stress markers, and promoting emotional resilience. Over time, these effects contribute to reduced burnout, greater professional satisfaction, and improved well-being. In essence, empathy is a bidirectional physiological process, creating synchrony that heals both patient and practitioner (9).

However, research indicates that this protective effect against burnout is more strongly associated with cognitive empathy, which enables clinicians to maintain compassionate understanding while preserving emotional boundaries that protect against emotional exhaustion. In contrast, excessive affective empathy, particularly in demanding primary care settings characterized by high workloads and limited resources, can contribute to compassion fatigue (10).

***Why It Matters in Primary Care***

In the context of brief consultations and increasing digitalization, family physicians face growing pressure to prioritize efficiency over human connection. Yet, even small acts, such as maintaining eye contact, allowing silence, or acknowledging emotion, can trigger the neural and hormonal cascades described above. Empathy not only improves patient satisfaction but also protects the physician from burnout and supports their own physiological and emotional health (9).

Thus, fostering balanced empathy, combining emotional attunement with cognitive perspective-taking, may help sustain compassionate care without compromising physician well-being.

***Reclaiming the Science of Empathy***

Physiology has long been viewed as the study of organs and systems. Perhaps its most powerful application lies in reminding clinicians that the "mind–body connection" is not metaphoric but biological. For family physicians, empathy is not merely a moral virtue; it is an evidence-based therapeutic tool that heals both the patient and practitioner.

As medicine evolves and artificial intelligence increasingly supports diagnostics, data analysis, and treatment planning, it cannot replicate the uniquely human qualities of listening, attunement, and emotional resonance. Communication, compassion, and empathy remain essential aspects of care that only a human clinician can provide.

In a world where algorithms can process data, but not feelings, the physician's empathy remains medicine's most powerful signal of healing.

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***Dr Kushani Atukorala*** MBBS, PhD
Senior Lecturer, Department of Physiology, Faculty of Medical Sciences, University of Sri Jayewardenepura (E-mail: kushani@sjp.ac.lk)
***Prof Savithri Wimalasekera*** MBBS, MPhil, PhD
Professor of Physiology, Department of Physiology, Faculty of Medical Sciences, University of Sri Jayewardenepura

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# Integrating Mindfulness into the Sri Lankan Health Sector: a policy case study

*Rajapaksa Hewageegana Neelamani S, Chandrasena A P R S, Gunawardena Asela, Chinthika H L H, Perera Susie*

**Introduction**

In the rapidly evolving field of healthcare, where stress, emotional exhaustion, and burnout are common, mindfulness has emerged as a vital tool to restore balance, compassion, and clarity among health professionals. Mindfulness, defined as the intentional awareness of the present moment without judgment, has been shown to enhance concentration, emotional regulation, empathy, and overall well-being.

Evidence from global research demonstrates that mindfulness-based interventions improve patient safety, staff communication, and job satisfaction, while reducing anxiety, depression, and burnout among healthcare workers (1,2).

**Evolution of Mindfulness: From the Teachings of the Buddha to Jon Kabat-Zinn**

The concept of mindfulness originates from the teachings of Lord Buddha more than 2,500 years ago, under the term Sati, which forms a core component of the Noble Eightfold Path. In Buddhist practice, mindfulness is cultivated to develop insight (Vipassana) and wisdom (Panna) through observing the mind and body with awareness and equanimity.

In the late 20th century, Professor Jon Kabat-Zinn of the University of Massachusetts Medical School introduced the Mindfulness-Based Stress Reduction (MBSR) program. This secular adaptation of ancient mindfulness practices bridged Buddhist philosophy and modern medicine, enabling its integration into clinical and educational settings worldwide. His work marked the beginning of evidence-based mindfulness interventions in healthcare, transforming how clinicians' approach both patient care and self-care (3,4).

**Mindfulness in the Sri Lankan Health Services**

In Sri Lanka, mindfulness has been systematically introduced into the health system through the Sati Pasala Foundation, which promotes mindfulness in schools, workplaces, and healthcare institutions. Within the public health sector, mindfulness programs have been incorporated into training curricula through collaboration between the Ministry of Health and Sati Pasala.

A significant milestone was reached in 2018, when a Master Trainer in Mindfulness initiated a pioneering collaboration between the Family Health Bureau's School Health Unit and the Ministry of Education's Health and Nutrition Branch. This partnership marked the beginning of a national pathway to incorporate mindfulness into school health programs, focusing on the well-being of school children. The initiative created an important bridge between the health and education sectors, highlighting mindfulness as an essential life skill that nurtures emotional balance, focus, and resilience among students and teachers alike.

Remarkably, all nursing schools across the island have now undergone mindfulness training, equipping future nurses with the skills to cultivate calmness, compassion, and resilience in patient care. Additionally, mindfulness has been incorporated into the training of primary healthcare teams as well as into the nursing curricula at the diploma level. These initiatives may have strengthened the emotional intelligence of caregivers and improved the quality of patient interactions and teamwork within hospital settings.

**A Professional Platform for Health Sector Training**

In October 2022, a professional college in the health sector took a progressive step by creating a national platform for mindfulness training. In collaboration with Sati Pasala, all Medical Administrators and Medical Practitioners were invited to undergo a four-session online mindfulness training program. This initiative played a pivotal role in simplifying the understanding and delivery of mindfulness concepts across the national health system, empowering leaders and practitioners to integrate mindfulness into daily healthcare practice.

There are many unsung heroes behind this growing success story - individuals who quietly dedicate their time and compassion to promoting mindful care. Their contribution earns merit each time a healthcare worker pauses to be mindful, when near misses are prevented, and when patient care is delivered with mutual satisfaction between caregiver and receiver.

In 2024, a landmark three-day Master Trainers Programme was conducted at Nissarana Vanaya, where selected teams from three major hospitals (Nuwara Eliya District General Hospital, Ampara District General Hospital, Karapitiya Teaching Hospital) participated. The teams comprised healthcare professionals of all categories, including medical specialists, nurses, and support staff. Since then, these trained teams have extended the reach of mindfulness practice by conducting training sessions in their own hospitals and supporting staff from other institutions and districts.

**The Ampara Model: A Beacon of Mindful Leadership**

A noteworthy example of the successful integration of mindfulness into a healthcare institution is the Ampara District General Hospital. Despite the high turnover of staff - a common challenge in government health institutions - the hospital has sustained a vibrant culture of mindfulness training and practice.

The Director himself underwent the Mindful Master Trainers Programme and subsequently established a dedicated team of Master Trainers within the institution with the help of Sati Pasala. These trained facilitators have continued to conduct regular mindfulness sessions for staff in and around the hospital, extending their reach even beyond the district. Recently, they contributed to programs in the Sabaragamuwa Province, sharing their expertise and supporting other healthcare institutions.

This success story demonstrates that a visionary leader with insight and commitment is essential to sustain mindfulness initiatives in healthcare settings. The ongoing support provided by Sati Pasala, through online refresher programs and continuous engagement, has further strengthened the continuity and quality of these practices. The Ampara experience stands as a replicable model for other government hospitals across

the island, proving that with leadership, structure, and dedication, mindfulness can become an enduring component of institutional culture.

**Practical Applications and the** "Slowly, Mindfully, Silently (**SMS) Concept**
During mindfulness training in the health sector, participants engage in practical exercises that reflect real-life challenges encountered in their daily work. A key element introduced is the SMS concept SMS concept. This approach encourages healthcare professionals to bring calm awareness and thoughtful action into their daily routines, promoting safer, more compassionate, and efficient patient care.

Various mindfulness-based games and interactive activities are also integrated into training sessions to enhance teamwork, improve communication, and deepen collective awareness among staff. These experiential components make mindfulness relatable and directly applicable in both clinical and administrative settings.

**The Way Forward**
The integration of mindfulness into Sri Lanka's health services represents a transformative shift towards a more compassionate, patient-centered, and emotionally intelligent healthcare culture. To ensure sustainability and long-term impact, a structured evaluation framework is essential. Assessing the outcomes of these initiatives - in terms of reducing burnout, improving communication, and enhancing patient satisfaction - will provide critical evidence for continued institutional support and policy integration.

Whilst leadership is vital in institutionalizing mindfulness practice within organizations, transformation into basic health professionals training to have integrated competencies built, through existing teaching is vital. Innovative curriculum design with prospective evaluation will help us learn more about making our efforts to be sustainable.

**Conclusion**
Mindfulness is no longer a peripheral concept; it has become a core professional competency that enhances both caregiver well-being and patient outcomes. The collective efforts of dedicated trainers, health administrators, and practitioners have laid a strong foundation for a mindful health system in Sri Lanka.

As this journey continues, it is important to recognize the countless unseen contributors who sustain this movement through their consistent, compassionate practice. Every mindful breath taken by a health worker, every moment of awareness before a critical decision, and every act of kindness in patient care echo the success of this initiative.

By nurturing mindfulness within the health sector, Sri Lanka is shaping a future where healthcare is not only clinically competent but also deeply humane, empathetic, and balanced — embodying the timeless wisdom of mindfulness in modern medicine.

Kalmune Base Hospital is the first hospital to train more than 80 percent of staff in Mindfulness.

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***Rajapaksa Hewageegana Neelamani S***
MD, MSc, MD (Medical Administration), PhD

***Chandrasena A P R S***
MBBS, MSc, MBA, MD, Director, District General Hospital Ampara

***Gunawardena Asela***
MBBS, DBS (Diploma in Buddhist Studies), MA (Master of Arts in Buddhist Studies)
MSc in Medical Administration, MBA, FCMA, FCFMF,
Director General of Health Services, Sri Lanka

***Chinthika H L H***
MBBS, DCH, DMF, Family Health Bureau

***Perera Susie***
MBBS, MSc, MD (Community Medicine)


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# Diabetes Mellitus and the General Practitioner: commemorating the WORLD DIABETES DAY

*Dr A L P De S Seneviratne*

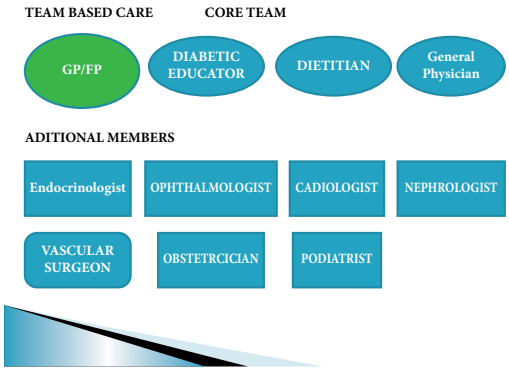
President Primary Care Diabetic Group Sri Lanka World Diabetes Day is a global awareness campaign focusing on Diabetes Mellitus. It falls on the 14th of November. The theme this year is to "Raise Public Awareness of Diabetes".

This day was launched in 1991 by the International Diabetes Federation (IDF) and the World Health Organization (WHO) in response to the rapid increase in the number of patients with Diabetes. The day marks the birthday of Fedrick Banting, who, along with Charles Best and John Rickard Macleod, first conceived the idea leading to the discovery of Insulin.

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, with a population of over 21 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. Approximately 1 in 4 Sri Lankans over the age of 30 years has diabetes. It is estimated that 4.2 million people in Sri Lanka are suffering from this metabolic disease. This varies across the regions, with the highest rate found in Northern province. Diabetes is more prevalent in urban areas.

Primary Care Diabetes Group Sri Lanka (PCDGSL) is an organization that consists of General Practitioners with great interest in diabetic care. All members are GPs with SLMC registration. All members show much enthusiasm and organization in delivering diabetic care to their patients. They are motivated and interested.

The GP provides continuing and comprehensive care to the patients and their families. Diabetes is a disease that needs very good doctor-patient relationships, good communication, and the need to provide continuity and comprehensive care. As a result, the GP (Family Doctor) is the ideal person to manage diabetes. The GP should identify the need for referral to a team member. The GP should work in a team. This consists of the following. (figure 1)




Diabetes Mellitus has now risen to endemic proportions in our small country, Sri Lanka. The latest studies in 2019 have

shown that it is 10.7% in the age groups of 25-79 years in Sri Lanka. The International Diabetes Federation (IDF) estimates that the global diabetes prevalence in 2019 was to be **9.3% (463 million people)**, rising to 10.2% (578 million) by 2030 and 10.9% (700 million) by 2045. Although the rise is predicted to occur virtually in every nation, the greatest increase is in developing countries. The alarming feature is the changing profile of this metabolic disease. Initially, Type 2 diabetes was regarded as a disease of middle age and the elderly. There is accumulating and disturbing evidence that the age of onset has now fallen to the 20-to 30-year age group in our country. Worse still, children too are now caught up in the diabetic epidemic.

**Managing patients with Diabetes.**

**1. Prevention**

Epidemiological evidence has reported a higher incidence of Type 2 diabetes in low birth weight children. Therefore, maternal nutrition plays a major role. Studies suggest a relationship between stress and insulin resistance. Maternal stress is a known etiological factor which may predispose the newborn to develop DM in the future. Maternal infections during the antenatal period also contribute strongly.

**The GP should take all steps to avoid low birth weight (LBW)babies, improve maternal nutrition, and avoid maternal stress and infections during the antenatal period.**

Preventing type 2 diabetes starts with understanding your risk. In addition to lifestyle factors, such as what you eat and drink, your daily movement and wellbeing, your age, family history, and ethnicity all play a role. But with personalised support and guidance, you can make achievable steps that may help you reduce your risk of type 2 diabetes.

**2. Screening and case detection**

The GP should screen all patients > 30 years with a Fasting Blood Sugar(FBS). If there is a degree of suspicion, he should request a 2h PPBS. If the patient can afford a HbA1C is very useful to arrive at an early diagnosis. If these are normal, it could be repeated in 3 years. In those with Cardio-metabolic risk (CMR), screening should be at an early age and if normal, repeated annually.

*Who are those with CMR?*

- Patients at a risk of developing type2 diabetes and/or cardiovascular disease(MI/Stroke)
- Patients with a cluster of modifiable risk factors

*Which include*

- Classical risk factors-diabetes, Hypertension, Ischemic Heart Disease, Dyslipidemia, overweight, smoking
- Others - endothelial dysfunction, vascular inflammation, coagulator disorders e.g. High C Reactive Protein. Once a clear diagnosis of diabetes is made, this should be conveyed to the patient.

*The patients with diabetes should know*

- The nature of the disorder
- Symptoms of diabetes
- Risk of complications and in particular, the importance of foot care
- Individual targets of treatment
- Lifestyle requirements and meal planning
- Regular exercises
- Oral hypoglycemics and side effects
- Features of hypoglycemia and treatment
- Self-monitoring of blood glucose
- Special attention in pregnancy

**3. Clear diagnosis**

The GP should be familiar with the diagnostic criteria

**Diagnostic criteria of Diabetes Mellitus-venous plasma glucose**

American Diabetic Association Criteria

| Type of Patient | FBS |
|---|---|
| Normal | <100 |
| IFG (pre diabetes) | 100-125 |
| Diabetes | >126 |

HbA1c > 6.5%

WHO criteria

| Patient | Glucose Value | |
|---|---|---|
| Normal | FBS | <110 |
| | OGT 2h | <140 |
| IFG(prediabetes) | FBS | 110-125 |
| IGT(prediabetes) | OGT 2h | 140-200 |
| Diabetes | FBS | >126 |
| | OGT2h | >200 |

HbA1c > 6.5%

IFG - impaired fasting glucose, IGT - impaired glucose tolerance, FBS-fasting blood sugar, OGT - oral glucose tolerance

**4. Managing elevated blood sugar**

**Life-Style modification**

The patient should be advised on the dietary requirements as - ''AVOID''

sugars and foods containing sugar
Sugar, juggery and honey
Sweet snacks
sweets, chocolates, sweet biscuits.
Buns and cakes
Sugar in tea and coffee
cordials and cool beverages
All those containing highly refined carbohydrates, fats and high-calorie content

**Ideal foods**

Diabetic meal plate

Rice-parboiled red rice/nivudu rice/ Basmathi
Vegetables-high fibre
E.g. Kohila, cucumber, vatakolu, snakegourd
Fruits-papaw, pineapple, mango and plantains in order of benefit
Pulses-green gram, cowpea, chickpeas, dhal, bean seeds, Ulundi, winged bean (dambala)

**Physical activity is important to control blood sugar for various reasons**

Exercise plan

- Brisk walking /jogging
- Minimum of 5 days a week
- At least 30 minutes at a session
- Ideally pulse rate should reach 100/ min.
- Avoid chatting during your walk
- Walk at uniform speed
- Usually should cover a 1 km distance in 10 minutes

Other types of beneficial exercises include cycling, gardening, swimming, farming, digging drains and pits, climbing stairs, and mountains.

**Drug Therapy**

**Oral hypoglycaemic drugs**

These could be selected according to type of diabetes, age, cost, BMI, meal pattern, Post-prandial hyperglycemia and evidence of other complications.

**Metformin**

Metformin is recommended as a first-line therapy in obese patients and could be used in non obese patients. Promotes modest weight reduction, lipid-lowering effect and reduces HbA1c by 1.5%. It is best avoided in hypoxic states and in situations with evidence of other organ failure.

**Sulphonylureas**

These stimulate insulin secretion by Beta

cells and lower HbA1c by 1.5%. However may lead to weight gain and hypoglycemia. The new generation ones include gliclazide and glimepiride.

**Thiazolidinediones**

Pioglitazone improves insulin sensitivity and reduces the HbA1c by 0.3-0.9%. Usually used as a second-line therapy with metformin and sulphonylurea. Causes ankle swelling and may worsen heart failure. Thiazolidinediones should not be initiated in patients with active liver disease or transaminases above 2.5 times of upper limit of normal.

**α-glucosidase inhibitors**

Acarbose slows down carbohydrate absorption from the jejunum and hence decreases the post-prandial blood glucose. It reduces the HbA1c by 1%. is known to cause gastrointestinal side effects. In hypoglycemia, patients should be given glucose only.

**Glinides**

Nateglinide reduces the post-prandial blood glucose by 60-70 mgs. It is not a sulphonylurea. It is given with meals. Therefore, could adjust the regime according to the meal pattern.

**GLP 1**

These drugs improve beta-cell responsiveness to increasing glucose levels, decrease glucagon secretion. It also slows gastric emptying, resulting in a feeling of fullness. Must be injected subcutaneously twice a day, within 30-60 minutes before a meal. Reduces HbA1c by 1%. Oral preparations are now coming into the market.

**DPP4 Inhibitors**

DPP-4 inhibitors that have FDA approval include sitagliptin, saxagliptin, linagliptin, and alogliptin. The mechanism of DPP-4 inhibitors is to increase incretin levels (GLP-1 and GIP), which inhibit glucagon release, which in turn increases insulin secretion, decreases gastric emptying, and decreases blood glucose levels.

**SGLT 2 INHIBITORS**

SGLT2 inhibitors, also called gliflozins, are a class of medications that alter the essential physiology of the nephron. The foremost metabolic effect appears to show that this pharmaceutical class inhibits the reabsorption of glucose in the kidney and therefore lowers blood sugar. They act by inhibiting sodium-glucose transport protein 2 (SGLT2). SGLT2 inhibitors are used in the treatment of type II diabetes mellitus (T2DM). Apart from blood sugar control, gliflozins have been shown to provide significant cardiovascular benefit in T2DM patients. Several medications of this class have been approved. In studies on canagliflozin, a member of this class, the medication was found to enhance blood sugar control as well as reduce body weight and systolic and diastolic blood pressure.

**Insulins**

**Indications for insulin therapy**

- Type 1 diabetes
- Women with diabetes who become pregnant or are breastfeeding
- Transiently in type 2 diabetes in special situations
- In type 2 diabetes, inadequately controlled on glucose-lowering medicines (secondary failure)

**Barriers to insulin therapy**

- Patients' perception that it is a last resort
- Fear of injection
- Fear of hypoglycemic symptoms
- Difficulties in storage

**Types of insulin**
**Short - acting** - Bovine: soluble analogue: Actrapid
**Rapid - Acting Regular** - Human: Insulin Asparte
**Intermediate Acting** - Isophane (NPH) Insulatard HM
**Long - Acting** - Human Lente / Analogue: Glargine, Determir
**Pre - Mixed** - Mixtard 30/70**,** Novomix 30

There are several regimes of insulin therapy to suit the patient's needs.

The GP should start encouraging self-monitoring blood glucose (SMBG) among his patients. This will give better patient care, responsibility, patient satisfaction and even cost-effective.

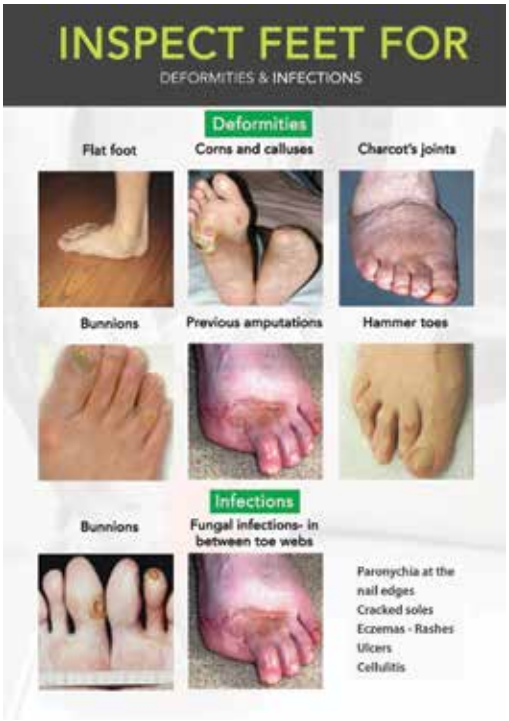
**Diabetes is a metabolic disease affecting most of the body's organs, leading to complications.**


**5. Blood pressure control and addressing dyslipidemia**
A blood pressure of 140/90 or lower should always be maintained. The drugs of choice are ARBs and/or ACEI. eg. losartan/ enalapril. Enalapril or calcium channel blockers. Enalapril could cause an irritable noisy cough, and amlodipine is known to cause ankle swelling.

The lipid levels, too, should be maintained at lower than a normal person. The level depends on the co-morbidities the patient has.. You will aim
Total Cholesterol< 160mg to get the maximum benefit
LDL < 100mg
Triglycerides < 150mg
HDL > 50mg
Always request an SGPT with serum lipids. If it is 3 times above normal, you should omit the statins.

**6. Renal assessment**
You should request urinary microalbumin, serum creatinine with e.GFR in all patients. If they are abnormal, start on ACEI or ARBA and serum creatinine should be repeated, and if >1.5mg/dL with e.GFR < 30, metformin should be avoided. Most of the laboratories will calculate e.GFR gives you a rough idea about the renal function. If you are in doubt, this is an indication for referral to a nephrologist for an opinion.

**7. Foot Care**



This is a very important and a neglected area. The GP should follow a checklist, advise accordingly, identify the at risk patient for foot amputation and reinforce foot care advice in every visit. All GPS should have a 10G monofilament in their clinic. This will give the earliest evidence of loss of protective sensation.

**Checklist**

| A. Sensory Functions | B. Vascular Status |
|---|---|
| touch (cotton wool) | skin temperature |
| pain (prick) | pallor on elevation |
| vibration (128MHz tunings folk) | foot pulses |
| 10G monofilament | |

| C. Deformities | D. Infections |
|---|---|
| prominent metatarsal heads | ulcers |
| claw toes | tinea |
| callosities | paronychia |
| Charcot joints | cellulitis |

E. Obesity

F. Impaired sight

**Patients at risk for foot amputation**.
Peripheral Vasculopathy
Sensory neuropathy
Infection of the feet
Foot deformities
History of foot ulcers
Obesity
Impaired sight

**7. Eye referral**
Your patients with diabetes should be referred to an eye surgeon for ophthalmic assessment.

To facilitate good diabetic care, the GPs could run a diabetic clinic with a well-maintained diabetic follow-up medical record. This is one of our objectives for our members of PCDGSL.

**8. Some of the Indications for referral to a consultant**

A. Poor glycaemic control in spite of treatment
B. Type 1 diabetes mellitus
C. Diabetes in pregnancy
D. Evidence of chronic kidney disease
E. Complication of diabetes e.g. ketoacidocis
F. Diabetic cellulitis
G. Peripheral vascular disease needing vascular surgery
H. Non-healing diabetic foot ulcer

***Dr A L P De S Seneviratne***
MB.BS, DFM, FCGP, MD, MRCGP [INT.]
Consultant Family Physician

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# Doctor's Role in Childhood Sleep

*Dr Anuruddha Padeniya, Dr B R Rukshani N Gunaratne*

**1. Abstract**

Globally, inadequate and poor quality sleep in children is a growing public health concern, with estimates suggesting that 20-50% of school-aged children experience insufficient sleep or sleep disturbances. Poor sleep adversely affects academic performance as well as physical, mental and social health, highlighting the need for coordinated interventions in schools and healthcare settings. Ongoing initiatives worldwide aim to promote sleep health education and implement age-appropriate sleep guidelines in both school and clinical context.

Adequate sleep is essential for children's health and education. It supports physical health and growth, including metabolic regulation and immune function, cognitive functioning, particularly attention, memory, learning and academic performance; emotional regulation, mental health, behavioural regulation and social functioning. Since good sleep practices enhances immunity, it reduces susceptibility to infections contributing to the prevention of communicable diseases. However, insufficient and poor-quality sleep are increasingly common due to modern lifestyle patterns, excessive screen exposure, irregular routines and psychosocial stress. Inadequate sleep in childhood is associated with attention difficulties, learning challenges, mood disturbances, behavioural dysregulation and an increased risk of obesity and metabolic dysfunction, with implications for both short- and long-term health issues, including future non-communicable disease risk.

Physicians, particularly general practitioners, have a pivotal and expanding role in promoting healthy sleep in childhood. Routine clinical encounters should include sleep history taking and screening and early detection of insomnia, sleep-disordered breathing and circadian rhythm disturbances. Doctors provide evidence-based guidance on age-appropriate sleep duration, consistent bedtime routines and optimisation of the sleep environment, while coordinating multidisciplinary care with paediatricians, psychologists, ENT surgeons and sleep specialists when required. By strengthening awareness, preventive education and timely intervention, clinicians can mitigate the developmental and health-related consequences of poor sleep. Enhancing clinicians' competence in paediatric sleep medicine is therefore essential to improving child health outcomes and reducing the long-term burden of communicable and non-communicable diseases also optimising education and productivity.

**2. Introduction**

Sleep is a fundamental biological process essential for optimal growth, neurodevelopment, emotional regulation, learning and immune function in children[1]. Throughout childhood, adequate sleep supports brain maturation, memory consolidation and physical

restoration, thereby influencing academic performance, behaviour and psychosocial well-being[2],[3]. Despite its critical role, sleep problems are increasingly common. Global estimates indicate that 20–50% of school-aged children experience insufficient sleep or sleep disturbances[4]. Contributing factors include increased screen exposure[5],[6], irregular sleep routines[7], academic pressures[8], and medical or psychological comorbidities[1].

General practitioners (GPs) and paediatricians are often the first points of contact for families expressing concerns regarding a child's sleep[3]. Including a few sleep-related questions in routine consultations helps doctors identify common problems early, such as difficulty falling asleep, frequent night waking, or symptoms of sleep-disordered breathing[9]. In addition to diagnosis, physicians play a key educational role, providing practical guidance to parents on healthy sleep hygiene, age-appropriate sleep duration, consistent bedtime routines, and managing environmental influences[3],[1].

When sleep issues are complex or secondary to underlying developmental, medical or emotional conditions, coordinated multidisciplinary care may be required, involving collaboration with psychologists, neurologists, ENT surgeons or sleep specialists[1]. Beyond the clinical setting, doctors are also well positioned to support community-level health promotion efforts that highlight the importance of sufficient and good-quality sleep during childhood[3],[10].

Strengthening physician knowledge and skills in paediatric sleep health is therefore essential. Improved competency in sleep assessment, prevention and early intervention can significantly enhance child health outcomes, reduce long-term complications, and support overall well-being[1],[11].

### 2.1 Scientific Definition and Stages of Sleep

Sleep is a naturally recurring, reversible state of reduced consciousness, sensory activity and voluntary muscle activity, characterised by altered brain wave patterns, reduced responsiveness to external stimuli and complex physiological processes essential for restoration, memory consolidation and metabolic regulation. It is regulated by homeostatic (Process S) and circadian mechanisms (Process C) that coordinate neural, hormonal and metabolic functions to maintain physical and mental health[12],[13].

*According to the American Sleep Foundation, sleep is a vital, recurring physiological state that supports physical restoration, brain function, emotional regulation, and overall health, and is essential for children's growth, learning and well-being[14].*

### 2.2 Stages of Sleep

Human sleep is broadly divided into two major types as Non-Rapid Eye Movement (NREM) sleep and Rapid Eye Movement (REM) sleep. Sleep progresses cyclically through these stages approximately every 90 minutes, repeating 4–6 times per night. Each stage is characterised by distinct brain wave activity, physiological responses and restorative functions[15].

**1. Non-Rapid Eye Movement (NREM) Sleep**

NREM sleep consists of three stages (N1, N2, and N3):

**Stage N1** (Light Sleep): Transition between wakefulness and sleep, marked by slow eye movements and theta wave activity and its proportion is relatively stable from

neonates through childhood.

**Stage N2**: Represents about 45–55% of total sleep time, characterised by sleep spindles and K-complexes on EEG, with further reduction in heart rate and body temperature. Stage N2 gradually increases in proportion as children age[15].

**Stage N3** (Deep or Slow-Wave Sleep): Combines the former Stages 3 and 4 (Figure 1) which is dominated by delta waves, crucial for physical restoration, growth hormone secretion and immune system support. N3 is most abundant in early childhood and gradually declines with age[15].

**2. Rapid Eye Movement (REM) Sleep**

REM sleep is marked by rapid eye movements, muscle atonia and vivid dreaming. EEG patterns resemble wakefulness, but the body remains paralysed to prevent acting out dreams. REM sleep supports emotional regulation, learning and memory consolidation[15]. It typically accounts for 20-25% of total sleep time, predominates in the latter half of the night, and is especially high in neonates, gradually decreasing with age.

**2.3 Sleep Requirements**

There are three key factors that determine healthy sleep in children, namely sleep onset, sleep duration and sleep quality. Understanding and addressing these aspects helps ensure optimal growth, development and overall well-being.

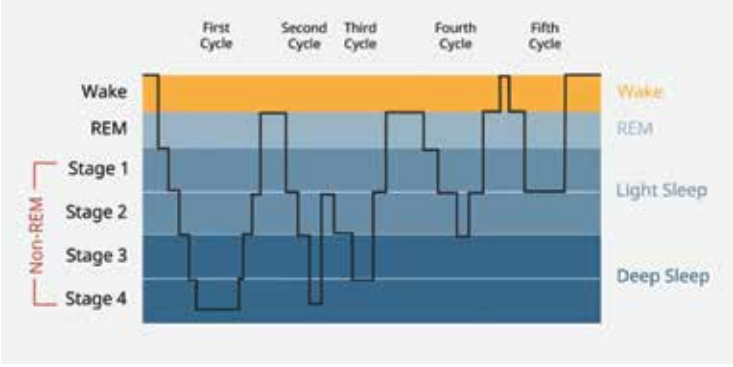
**1. Sleep Onset**

Sleep onset problems are common in children and often relate to inconsistent bedtime routines, excessive screen exposure before bed or anxiety around sleep[14],[1]. Difficulty falling asleep can lead to delayed bedtimes and reduced total sleep time, affecting daytime functioning[3]. Establishing predictable bedtime habits, such as a calming pre-sleep routine, fixed sleep and wake times and limiting stimulating activities, can support easier and more timely sleep onset[1]. Parents may also benefit from guidance on gently encouraging independent settling rather than prolonged parental presence at sleep onset[1].

**2. Sleep Duration**

Sleep needs vary across childhood, with younger children requiring longer sleep that gradually decreases as the brain matures[1],[2]. Consistent and adequate sleep duration supports physical growth, cognitive functioning, emotional regulation, learning and behaviour[1],[2]. Insufficient sleep due to late bedtimes, frequent night waking or irregular routines may result in daytime sleepiness,

***Figure 1.*** Sleep Cycle Illustrating REM and Non-REM Phases[21]



irritability, difficulty concentrating and poorer academic performance[3]. Chronic short sleep has also been associated with higher risk of obesity and metabolic health issues[2]. Ensuring that children achieve age-appropriate sleep duration and maintain regular sleep schedules is therefore a key aspect of routine health promotion in primary care[1],[10].

***Table 1.*** Recommended sleep durations for children and adolescents by age group[4]

| Age Group | Recommended Hours of Sleep / 24 hours (Including naps) |
|---|---|
| Infants (4-12 months) | 12-16 hours |
| Toddlers (1-2 years) | 11-14 hours |
| Preschoolers (3-5 years) | 10-13 hours |
| School-aged children (6-12 years) | 9-12 hours |
| Adolescents (13-18 years) | 8-10 hours |

**3. Sleep Quality**

Sleep quality is as important as sleep duration. Good-quality, restorative sleep requires regular schedules, minimal night waking, and an environment that supports uninterrupted rest[2],[1]. Fragmented or insufficient sleep may lead to reduced concentration, irritability, behavioural concerns, weakened immunity, and increased risk of obesity[2]. General practitioners should ask about bedtime routines, night awakenings, bedroom environment and screen use, allowing early identification of factors that may disrupt sleep continuity and overall sleep quality[1],[3].

**3. Health and Education Benefits of Good Sleep for Children**

**3.1 Sleep and Obesity**

Adequate sleep is a significant modifiable factor in maintaining a healthy weight. Deep, restorative sleep supports hormonal balance, particularly regulating ghrelin and leptin, which control appetite and satiety. Poor or insufficient sleep increases ghrelin, decreases leptin, and promotes overeating, leading to excessive weight gain. Children with inadequate sleep are more likely to develop obesity, while sufficient sleep helps maintain healthy weight and energy balance[1],[2].

**3.2 Sleep and Non-Communicable Diseases (NCDs)**

Chronic inadequate sleep in childhood contributes to long-term metabolic risks. Sleep disruption reduces insulin sensitivity, impairs glucose metabolism, increases blood pressure, and promotes low-grade inflammation, all of which elevate the risk of type 2 diabetes, metabolic syndrome and cardiovascular disease. Addressing sleep duration and quality early is a simple, low-cost preventive strategy that clinicians can integrate into routine assessment and lifestyle counselling[2],[1].

**3.3 Sleep and Immunity**

Adequate sleep strengthens the immune system, enhancing the body's ability to fight infections and reducing the frequency of illness[10],[3]. Chronic sleep deprivation impairs immune responses, making children more susceptible to communicable diseases. Ensuring consistent, high-quality sleep is therefore critical for both individual health and public health prevention strategies.

**3.4 Sleep and Mental Health**

Sufficient sleep supports emotional

regulation, mental health and behavioural stability. Children with good sleep patterns demonstrate reduced irritability, impulsivity, hyperactivity and mood disturbances. Conversely, poor sleep is linked to anxiety, depressive symptoms and behavioural problems, highlighting its importance in promoting psychosocial well-being and resilience[1],[3].

### 3.5 Sleep and Educational / Cognitive Outcomes

Sleep has a direct impact on learning, memory consolidation, and school performance. Children who achieve adequate and high-quality sleep exhibit better attention, concentration, memory integration, executive functioning and overall better academic performance[3],[14],[8]. Poor sleep impairs focus during learning tasks and reduces classroom engagement, while sufficient sleep enhances cognitive processing and classroom behaviour, supporting long-term educational achievement.

### 3.6 Sleep and Daily Functioning/ Restoration

Sleep facilitates physical restoration, energy replenishment and daily functioning[1],[3]. Growth hormone release during deep sleep promotes tissue repair and overall development. Regular, restorative sleep enhances daytime alertness, cognitive efficiency and the capacity to participate in physical and social activities, further supporting healthy development.

## 4. Doctor's Role in Paediatric Sleep

### 4.1 Primary Care Screening and Evaluation

Assessment of sleep in children is primarily clinical and relies on a combination of parental report, behavioural observation and structured tools. Several validated instruments are available to support screening, diagnosis and monitoring of sleep problems in primary care. The BEARS Sleep Screening Tool (Bedtime problems, Excessive daytime sleepiness, Awakenings at night, Regularity and duration of sleep, and Snoring) provides a brief clinical screen for children aged 2–18 years and is widely used for quick screening during routine visits[1]. The Children's Sleep Habits Questionnaire (CSHQ), a parent-report instrument for ages 4–10 years, evaluates sleep duration, bedtime resistance, parasomnias, sleep anxiety and daytime sleepiness, making it useful for identifying behavioural sleep problems[1]. Sleep diaries or logs are practical across all ages for recording bedtime, wake time, night awakenings, naps and sleep consistency, are ideal for initial assessment and monitoring response to interventions[3],[6].

### 4.2 Sleep Hygiene Education & Counselling

Sleep hygiene refers to the behavioural and environmental practices that promote consistent, high-quality sleep and support a healthy sleep–wake cycle, and is foundational in preventing sleep problems and managing behavioural sleep disturbances in children[1]. General practitioners should provide age-appropriate guidance on maintaining a regular sleep schedule, establishing calming pre-sleep routines, optimising the sleep environment, limiting screen exposure before bedtime, encouraging daytime physical activity and avoiding caffeine or heavy evening meals[1],[11]. Supporting parents in implementing quiet, predictable bedtime activities and promoting independent settling further enhances sleep quality and duration. Good sleep hygiene is central to promoting healthy sleep patterns and improving outcomes such as behaviour, mood regulation, learning and overall daytime functioning[1],[14].

### 4.3 Age-Specific Signs of Poor Sleep

***Table 1.*** Age-Specific Signs of Poor Sleep in Children and Adolescents

| Age group | Features of Poor Sleep | Significance |
|---|---|---|
| Infants (0–12 months) | Night waking, feeding-related sleep disturbances, difficulty settling independently, reversed sleep cycles, irritability, inadequate growth | difficulty settling independently, reversed sleep cycles, irritability, inadequate growth<br>Early identification prevents developmental issues |
| Toddlers and Preschoolers (1–5 years) | Bedtime resistance, sleep anxiety, night awakenings, daytime hyperactivity, temper tantrums, excessive activity despite sleepiness | Behavioural and emotional regulation support may be needed |
| School-aged Children (6–12 years) | Delayed sleep phase, insufficient sleep due to academic/extracurricular activities, trouble waking, falling asleep during class, declining academic performance, mood changes, possible snoring indicative of sleep-disordered breathing | May indicate sleep-disordered breathing; affects learning and behaviour |
| Adolescents (13–18 years) | Delayed sleep phase, social jet-lag, insomnia, excessive daytime sleepiness, attention difficulties, mood and behavioural changes, high screen use delaying sleep onset, increased risk of obesity and metabolic disorders | Early intervention can prevent long-term health and cognitive consequences, overall importance highlighted |

### 4.4 Common Paediatric Sleep Disorders

General practitioners should be familiar with the most prevalent paediatric sleep disorders to enable early recognition and referral. These include obstructive sleep apnoea, often associated with snoring, restless sleep and daytime behavioural issues[9]; insomnia, characterised by difficulty initiating or maintaining sleep[1]; parasomnias such as night terrors, sleepwalking or confusional arousals[1]; restless legs syndrome and periodic limb movement disorder, which can cause night-time discomfort and disrupted sleep[1]; and circadian rhythm sleep-wake disorders, including delayed sleep phase, commonly seen in adolescents[3]. Early identification and appropriate counselling or referral to paediatricians, sleep specialists, psychologists or ENT surgeons as necessary is essential to prevent long-term consequences on growth, cognition, behaviour and overall health[1].

### 4.5 Assessment of Impact on Health and Education

General practitioners should evaluate the broader consequences of poor sleep on children's health and education. Inadequate and poor sleep can impair cognition, affecting attention, memory, learning and academic performance[3]; contribute to behavioural dysregulation and mood disturbances[1]; increase the risk of obesity and metabolic disorders[2]; weaken immune function, raising susceptibility to infections[3]; and negatively influence school engagement and social functioning[3]. Early identification of these impacts during routine consultations allows GPs to provide targeted interventions, promote preventive strategies, and coordinate care

to mitigate both short- and long-term adverse outcomes[1].

### 4.6 Risk Factor Identification and Comorbidity Screening

General practitioners should systematically screen for underlying medical, neurological, psychiatric or developmental conditions that may contribute to paediatric sleep problems. Common medical factors include allergic rhinitis, asthma, obesity and gastroesophageal reflux disease, all of which can disrupt sleep[1]. Neurological or developmental conditions such as autism spectrum disorder, ADHD and intellectual disabilities often present with sleep difficulties[3]. Psychiatric comorbidities, including anxiety, depression and behavioural disorders, may exacerbate bedtime resistance, insomnia or night wakings[1]. Identifying these risk factors enables GPs to provide targeted management, coordinate multidisciplinary care when necessary and prevent the amplification of both sleep disturbances and associated health or educational consequences[1].

### 4.7 Public Health and Preventive Role

General practitioners play an important role in promoting healthy sleep at the community and school level, raising awareness among parents, teachers, and caregivers about the importance of adequate and high-quality sleep for children's physical, cognitive, and emotional development[1],[3]. GPs can collaborate with local health authorities, schools and public health initiatives to implement sleep health education programmes, encourage age-appropriate sleep guidelines and support preventive strategies aimed at reducing the risk of obesity, metabolic disorders and other non-communicable diseases[2],[3]. By engaging in public health advocacy and preventive education, clinicians contribute to improving population-level child health outcomes and fostering lifelong healthy sleep habits.

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***Dr Anuruddha Padeniya***
Paediatric Neurology Unit, Lady Ridgeway Hospital, Colombo 08, Sri Lanka
***Dr B R Rukshani N Gunaratne***
Senior Registrar, Paediatric Neurology Unit, Lady Ridgeway Hospital, Colombo

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# A Paradigm Shift in Patient Care: Integrating Anti-Aging Care into Core Clinical Practice

*Dr Sanath Hettige*

**Abstract**
The Independent Medical Practitioners Association (IMPA) embarks on a visionary mission to integrate anti-aging medicine into mainstream clinical practice in Sri Lanka. This paradigm shift seeks to extend health span alongside lifespan, reduce chronic disease burden, and empower doctors to adopt preventive, regenerative, and patient-centered approaches.

**1. The Need for Change**
Current medical practice is primarily disease-oriented: diagnosing, medicating, and managing conditions after they appear. Yet the root cause of most chronic illnesses is the biological aging process itself. The IMPA envisions a future where physicians intervene early to slow or reverse biological aging, thereby preventing disease rather than treating its manifestations.

**2. The Aging Tsunami**
Aging remains the most overlooked risk factor in clinical medicine. By 2050, over one-fourth of Sri Lanka's population will be over 60 years old. Without proactive aging interventions, this demographic shift will intensify healthcare expenditure and caregiver stress.

**3. Impact on Sri Lankan Healthcare**
***Economic Benefits***: reduced national expenditure, extended workforce participation, and lower family costs.
***Healthcare Benefits***: reduced chronic disease burden and better quality of care**.**
***Social Benefits***: stronger intergenerational ties and reduced caregiver burnout.

**4. Understanding Biological Aging**
Aging involves genomic instability, telomere shortening, epigenetic alterations, mitochondrial dysfunction, cellular senescence, stem cell exhaustion, and chronic inflammation - leading to frailty and immune deterioration.

**5. The Two-Pronged Anti-Aging Strategy**
***For younger individuals***: delay biological aging before cellular damage occurs.
***For older individuals:*** reverse certain aging pathways and restore vitality. Both approaches aim to reduce biological age and extend functional lifespan.

**6. Core Clinical Interventions**
***Lifestyle:*** sleep optimization, stress management, caloric control, exercise, anti-inflammatory diet, and purpose-driven living.
***Pharmacologic:*** Metformin, rapamycin, senolytics, NAD+ boosters, and micronutrients.
***Emerging Therapies:*** Gene and stem-cell therapy, partial cellular reprogramming, and plasma-based rejuvenation.

**7. Clinical Integration Example**

A 55 - year - old woman with chronic pain treated conventionally with NSAIDs benefits more from anti-aging interventions: intermittent fasting, nutrient support, exercise, and sleep optimization- leading to biological reversal, not just pain relief.

**8. Educational Reforms - Start Young, Stay Young**

IMPA proposes integrating aging science into school and medical curricula. Students must understand that aging is inevitable, but decline is not - early preventive habits preserve vitality and productivity.

**9. Recommended Healthy Practices**

Daily fasting (16 hours), one hour of exercise, no refined sugars, green tea with meals, daily vitamins and minerals (vit D, Mg, Zn), use of herbal nutraceuticals, and adequate sleep.

**10. The Road Ahead**

During the next three years, IMPA will: conduct national awareness programs; collaborate with the Health Ministry to establish Aging Units; publish Anti-Aging Clinical Guidelines; promote international training; and launch preventive community programs.

***Conclusion***

Sri Lanka stands at the threshold of a new medical era. By embracing anti-aging science, we can transform healthcare from reactive disease control to proactive longevity care - preserving vitality, dignity, and productivity for all citizens.

For further reading: www.drsanathhettige.com | https://books.drsanathhettige.co

***Dr Sanath Hettige***
MBBS, DFM, MD, MCGP
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# Intersecting Epidemics: Antimicrobial Resistance and Diabetes in Sri Lanka

*Kayathri Periasamy*

**Abstract**
Diabetes is a serious and common disease in Sri Lanka where, due to the inherent properties of the disease, infections are more common and antibiotic usage is also highly prevalent. This article attempts to explore the parallels of this epidemic, the promoting factors and the presence of Antimicrobial Resistance (AMR) in this subset.

**Introduction**
Diabetes is common in Sri Lanka, with 1 in 4 people being affected. People with diabetes are more prone to infections, and it is estimated that they are prescribed 60% more often with antibiotics. AMR is another "epidemic" that the country is facing with many steps being taken to curb this. It is interesting to note that there is an overlap of these 2 epidemics due to the nature of the disease and this article attempts to explore some of the salient features of this overlap.

Hyperglycaemia causes chronic inflammation and reduces immunity, and this promotes skin and soft tissue infections that do not respond quickly to antibiotics. People with diabetes are more likely to be prescribed antibiotics for upper and lower respiratory tract infections. Urine infections are also more common among diabetics. People with diabetes are also prone to neuropathy and poor blood flow in their legs, which leads to foot ulceration. These diabetic foot ulcers take a long time to heal and become breeding grounds for microorganisms.

Diabetes related foot ulcers promotes chronic and abundance of antibiotic use. The prevalence of diabetic foot disease in Sri Lanka ranges from 6.9% to 22% depending on different studies. Nevertheless, diabetic foot ulcers and foot infections are the reason for much of the antibiotic use among diabetics in Sri Lanka. Antimicrobial use is also repeated often, and longer courses are given for chronic ulcers. This sets a precedent for antimicrobial resistance.

**AMR in diabetes patients**
- High blood sugar and chronic inflammation create a perfect environment to fuel infections that spread quickly despite antibiotics, which leads to multiple antibiotic use and longer courses.
- Poor blood circulation in many diabetic patients hinders the delivery of antibiotics to the wound site, which causes slow recovery and prolonged infection, which can lead to AMR.
- Impaired immunity in people with diabetes also causes multiple organisms to grow in the infected tissue. This leads to the use of broad-spectrum antibiotics, which again promotes AMR.
- Formation of Biofilms, which are a protective layer created by bacteria on chronic wounds, making them less vulnerable to antibiotics. This also drives AMR.

**Types of Micro-organisms in diabetes related foot ulcers and Antibiotic Resistance Pattern**

Gram-positive Bacteria such as *Stahylococcus aureus* is very common in diabetic foot ulcers. Methicillin resistant *S. aureus* is often seen and requires stronger antibiotics Gram-Negative bacteria, which are commonly isolated from diabetic foot ulcers, are *Pseudomonas aeruginosa*, *Escherichia coli* and *Klebsiella pneumoniae*.

A study in Anuradhapura looking at the antibiotic sensitivity pattern in Sri Lanka in diabetic foot ulcers, found that 52% of Pseudomonas infections were resistant to ciprofloxacin, and 50% resistant to ticarcillin. It also showed coliform resistance to commonly prescribed antibiotics such as ciprofloxacin (66.6%), co-amoxiclav (84.6%), and cefotaxime (53.5%). They were all sensitive to amikacin.

Resistance in *S. aureus* was also noted with cloxacillin (70%), co-amoxiclav (80%) and co- trimaxazole (50%). MRSA was found in 40% of cases.

Although this study is from 2011, it is a clear example of the prevailing AMR. More recent studies on this topic could not be found.

Sabyasachi et al's systematic review of article between 2021 and 2023 looking at 13 articles from around the world identified similar pathogens in diabetic foot infections and varying rates of resistance to the common antibiotics. However, in some of the studies it is worthwhile noting that with judicial use of antibiotic and antibiotic stewardship, antibiotic resistance in preudomaonas had reduced.

**Strategies for combating AMR in persons with diabetes**

- Blood sugar control is the cornerstone of managing diabetes, preventing complications such as neuropathy and blood circulation problems, as well as preventing infections.
- Careful foot care is necessary, with yearly assessment of nerves and circulation and routine monitoring for calluses and web space infections. Education of patients on how to care for their feet daily and the proper use of footwear must be a priority. Prevention is better than a cure.
- Comprehensive and easily accessible diabetes wound care clinics can facilitate streamlined care of wounds and control how antibiotics are used. This also facilitates monitoring for resistance.
- Providing diabetic patients with Antibiotic cards, which help keep track of an individual's antibiotic use.
- Appropriate antibiotic use:
- Cleaning wounds and taking culture from deeper tissue discharge to avoid culturing contaminants. Tailoring the antibiotic to the sensitivities and the targeted microorganism as soon as possible.
- Using the aWaRe (Access, Watch and Reserve) method and local resistance patterns to guide antibiotic use.
- Continue wound management with removal of slough regularly, proper drainage, barrier cream etc
- Close communication with the Hospital or area microbiologists for updates on relevant AMR data and antibiotic sensitivities.
- Always assess blood circulation in diabetic patients with a foot wound and correct it while treating the infection
- Multidisciplinary approach to care of the patient- physicians, surgeons,

wound care nurse, microbiologist and pharmacist.

Since Sri Lanka adopted the Global Action Plan on AMR, the "One Health" approach was introduced. The Sri Lanka College of Microbiologists in collaboration with the Ministry of Health have set up National Laboratory based surveillance of AMR. Sri Lanka is also enrolled in the Global Antimicrobial Resistance and Use Surveillance System (GLASS-AMR) data submission in 2018. National hospitals as well as private hospitals have been guided to implement Antibiotic Stewardship programs headed by microbiologists and Physicians. These steps and increased vigilance have shown an encouraging downtrend, for example, in 3rd generation cephalosporin resistant E. coli. Careful management of diabetes related infections, especially foot ulcers would help curb AMR further. Diabetes is a situation where early empirical therapy is necessary to prevent escalation of infection while being cautious of the need to curb AMR by judicious laboratory identification and streamlining treatment.

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***Kayathri Periasamy***
MBBS (Nottingham, UK) Board Certified in Internal Medicine (USA), MRCP (UK), Postg
diploma in Diabetes Care (Newcastle, Australia)
Consultant Physician

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# How the immune system prevents itself from attacking our own bodies

*Prof Suranjith L Seneviratne*

*The 2025 Nobel Prize in Physiology or Medicine has been awarded to three scientists who identified Tregs - critical immune regulatory cells - and the FOXP3 gene that controls them*

**Summary**
The 2025 Nobel Prize in Physiology or Medicine has been awarded to Drs. Mary Brunkow, Fred Ramsdell and Shimon Sakaguchi. Before their discoveries, the immune system was primarily seen as a 'force of attack'. It was composed of killer and helper cells that sought to destroy foreign invaders. The three scientists showed that an internal regulatory force also exists, constantly policing the body to prevent 'friendly fire'. Their work on peripheral immune tolerance and the genetic control of regulatory T cells has reshaped the understanding of immune balance. It has opened the way to novel therapies for autoimmune disease, cancer and organ transplantation.

**Background**
Each day, the immune system protects the body from thousands of invading microbes. It has the ability to distinguish between harmful intruders and the body's own cells. This process is called immune regulation. When immune regulation fails, it can lead to autoimmune disorders. T cells are a type of white blood cell and are an important player in the immune system. T cells are produced in the bone marrow and then go to the thymus, where they mature.

**Immune tolerance**
For much of the last century, Immunologists believed that immune tolerance was generated mainly in the thymus. The accepted view was that T cells that react against proteins and cells of our own body (self-reactive T cells) were eliminated through a process known as 'central tolerance'. However, there were some unresolved questions from this point of view. For instance, it was known that some self-reactive T cells escaped deletion, and how did such cells not cause problems? Furthermore, why was it that autoimmune diseases often developed long after the thymus had completed its task? From around the 1970s, the existence of 'suppressor T cells' had been proposed. They were supposed to moderate immune activity. However, inconsistent experimental evidence caused the 'suppressor T cell' hypothesis to fall out of favour.

Nearly three decades ago, the three scientists discovered an additional layer of control, that is 'peripheral immune tolerance'. This process operates outside the thymus and relies on a distinct population of cells called regulatory T cells, or 'Tregs'. These cells function as the immune system's guardians or security guards. They suppress excessive activity and prevent destructive over-reactions. FOXP3 was soon identified as the master gene that governs Treg development. The three scientists' findings provided the framework for understanding how the immune system

achieves equilibrium – aggressive enough to defeat pathogens, yet restrained enough to avoid self-inflicted harm.

**Treg cells**

Dr Shimon Sakaguchi observed that newborn mice, deprived of their thymus, developed severe autoimmune conditions rather than weakened immunity. This paradox suggested that the thymus must be producing defender cells and also a second population of cells that restrained them. He then transplanted T cells from healthy mice into thymus-deficient ones and found that the recipients no longer had autoimmune disease. This pointed to the presence of some T cells that were actively maintaining immune equilibrium. Thus, a novel class of T cells was discovered - regulatory T cells. These cells carried the same surface protein as helper T cells (i.e. CD4), but also expressed another marker, CD25.

**FOXP3 - the master switch**

In the United States of America, Dr Mary Brunkow and Dr Fred Ramsdell were studying an unusual strain of laboratory mice that was first identified in the 1940s. The males of this strain, known as 'scurfy' mice, developed flaky skin, swollen lymph nodes and enlarged spleens before dying within weeks. As only males were affected, the causative mutation was expected to be on the X chromosome. Following careful and meticulous work, the condition was found to be linked to a mutation in a hitherto unknown gene that resembled members of the 'fork head box' (FOX) family of transcription factors. This gene regulates other genes during development, and they named it FOXP3. Clinicians had also identified a human disorder called IPEX (immune dysregulation, polyendocrinopathy, enteropathy, X-linked syndrome). Boys with this condition experience catastrophic autoimmune damage to multiple organs. When the DNA of such patients was sequenced, harmful mutations were seen in the FOXP3 gene. Their findings were published in Nature Genetics in 2001.

**Treg and FOXP3**

Two years later, Sakaguchi and his colleagues showed that FOXP3 was the master regulator of Treg cell development and function. Without it, T cells fail to acquire the suppressive characteristics that prevent immune self-destruction.

The three scientists had thus found a new branch within Immunology. This has allowed other scientists and clinicians to explore how immune balance is preserved within the body. The implications of these findings have been profound in several areas of medicine.

**Autoimmune diseases**

These conditions result from insufficient immune restraint. They include a number of well- known conditions such as systemic lupus erythematosus, rheumatoid arthritis, type 1 diabetes mellitus, multiple sclerosis and inflammatory bowel disease. Here, the therapeutic challenge is to strengthen Treg activity. Clinical trials are underway to assess low-dose interleukin-2 (IL-2), a signaling molecule that promotes Treg growth, in order to restore immune balance.

**Cancer**

Tumours exploit regulatory T cells by attracting them into their microenvironment. Here, they shield malignant cells from immune attack. Researchers are aiming to dismantle this barrier by disabling or re-programming Tregs. This should enable the immune system to destroy tumours more effectively. Some modern cancer immunotherapies incorporate strategies to target Tregs selectively.

**Transplantation**

Currently, potent and toxic immunosuppressive medicines are needed to prevent organ rejection following transplantation. Strengthening Treg activity may be one way to reduce dependence on such immunosuppressive drugs. Furthermore, it may be possible to isolate regulatory T cells from a patient's blood, expand them outside the body, and then reinfuse them to restore tolerance. Some laboratories are engineering these regulatory cells with surface antibodies that would guide them to specific tissues, such as a transplanted kidney or liver.

**The Nobel Laureates**

***Mary Brunkow***, is an American Molecular Biologist and Immunologist. Currently, she is the Senior Programme Manager at the Institute for Systems Biology in Seattle. She was born in 1961 and educated at the University of Washington and Princeton University. She was one of the first students to join Princeton's Department of Molecular Biology. She received her PhD from Princeton in 1991. Her PhD advisor, Shirley M Tilghman has said her Nobel work is 'path leading'.

***Fred Ramsdell***, is an American immunologist. He is currently the Scientific Adviser at Sonoma Biotherapeutics in San Francisco. He was born in 1960 and is a graduate of the University of California, at both San Diego (BSc) and Los Angeles (PhD). In 2017, he won the Crafoord Prize for research in polyarthritis.

***Shimon Sakaguchi***, is a Japanese Immunologist. Currently, he is a Distinguished Professor at the Immunology Frontier Research Center of Osaka University in Japan. He was born in 1951 and received his MD and PhD from Kyoto University, Japan. He has previously won the Robert Koch Prize in 2020, the Crafoord Prize in 2017 and the William B Coley award in 2004.

**Conclusions**

Immunology and Genetics are relatively new fields of Medicine and Science. They act as an important bridge across the established and better-known fields of Medicine, such as Cardiology, Neurology, Renal medicine, etc. Important and fundamental advances in Immunology and Genetics directly influence improvements in patient care across diverse areas of clinical medicine.

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***Prof Suranjith L Seneviratne***

DPhil(Oxon), MBBS, MD, DPath, MRCPath, MRCP, FRCP, FRCPath, FSLCGP, FCCP

Immediate Past-President, Sri Lankan Medical and Dental Association in the UK

Professor and Consultant in Clinical Immunology, Allergy and Immunogenetics

Health Services Laboratories, Royal Free Hospital and University College London, London, UK

Nawaloka Hospital Research and Education Foundation, Sri Lanka

# A Tribute to Dr Joe Fernando

Dr. Joe Fernando, the esteemed Patron of the Independent Medical Practitioners Association (IMPA), served the nation with exceptional dedication, wisdom, and humility. A revered figure in Sri Lanka's health sector, he also graced the College of Medical Administrators as its Patron, embodying the finest qualities of professional leadership and public service.

Beginning his journey as a Medical Officer of Health, Dr. Fernando rose through the ranks to serve in pivotal national roles—including Director of the General Hospital Colombo, Director-General of Health Services, and ultimately Secretary of Health. In each of these capacities, he upheld the highest standards of integrity, fairness, and compassion.

Dr. Fernando was deeply respected not only for his administrative acumen but also for his genuine empathy for colleagues and communities alike. At a time when medical administration was still an emerging discipline, he identified, nurtured, and guided many young administrators, shaping them into the leaders they are today.

A true teacher, mentor, and visionary, Dr. Joe Fernando leaves behind a legacy that will continue to inspire generations of medical professionals. His life's work stands as a testament to the power of integrity, service, and compassionate leadership.

The IMPA community pays heartfelt tribute to a man whose contributions have left an indelible mark on the health sector and on all who had the privilege of knowing him. May his noble soul rest in peace.

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