SLACPT NEWS

The Official Newsletter of
the Sri Lanka Association of
Clinical Pharmacology and Therapeutics

April 2025 Volume 10 Issue 1

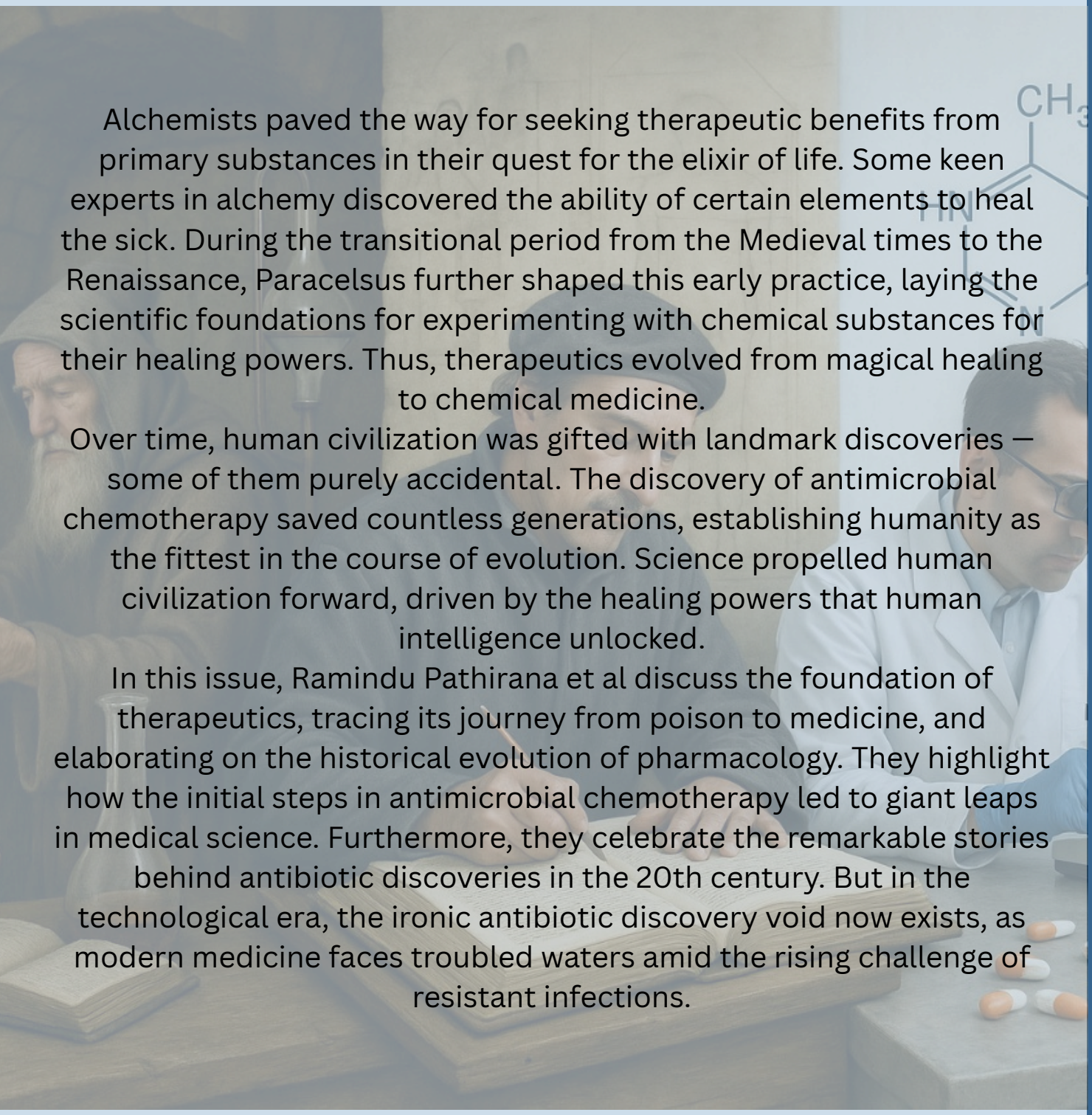
In This Issue.....

SLACPT THEME 2025-2026

Personalized Medicines : Shaping the Future of Prescribing

Contents

Cover Story



Alchemists paved the way for seeking therapeutic benefits from primary substances in their quest for the elixir of life. Some keen experts in alchemy discovered the ability of certain elements to heal the sick. During the transitional period from the Medieval times to the Renaissance, Paracelsus further shaped this early practice, laying the scientific foundations for experimenting with chemical substances for their healing powers. Thus, therapeutics evolved from magical healing to chemical medicine.

Over time, human civilization was gifted with landmark discoveries — some of them purely accidental. The discovery of antimicrobial chemotherapy saved countless generations, establishing humanity as the fittest in the course of evolution. Science propelled human civilization forward, driven by the healing powers that human intelligence unlocked.

In this issue, Ramindu Pathirana et al discuss the foundation of therapeutics, tracing its journey from poison to medicine, and elaborating on the historical evolution of pharmacology. They highlight how the initial steps in antimicrobial chemotherapy led to giant leaps in medical science. Furthermore, they celebrate the remarkable stories behind antibiotic discoveries in the 20th century. But in the technological era, the ironic antibiotic discovery void now exists, as modern medicine faces troubled waters amid the rising challenge of resistant infections.

President's Message

Dear Members of SLACPT,

I thank you for electing me as President of SLACPT, an honour I deeply cherish. Together with my Council, I pledge to work towards achieving the Association's mission: "To be the opinion leader in Clinical Pharmacology and Therapeutics (CPT) in Sri Lanka". The first 3 months of the present Council have seen many activities towards achieving this goal.

Our members remained engaged with the work of the National Medicines Regulatory Authority (NMRA), and workshops were held to improve our members' capacity in evaluating medicinal products. It is hoped that the knowledge gained will help enhance the quality of medicines in Sri Lanka.

We have successfully conducted an MCQ course in Pharmacology to support those preparing for the selection exams of the PGIM. The course was well attended, and the feedback received was very encouraging. This will continue as a biannual activity of the SLACPT.

Preparations are underway for the much anticipated, and keenly contested SLACPT Quiz which will take place in June. We hope that all medical faculties will send their teams. Patient safety is the ultimate goal in Medicine and the safe use of medicines is a vital component of it. I invite you to join us in the many activities the Council will plan in the ensuing months as we work towards striving for excellence in the use of medicines.

Professor Chandanie Wanigatunge
President
SLACPT

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2025 - 2026

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Dr. Supun Wedasinghe

Ex-officio members
Dr. Sujeewani Kurukulasuriya

SLACPT Pharmacology MCQ course

SLACPT MCQ course targeting the MD selection examinations was meticulously organised by Dr Asanka Eriyawa and Supun Wedasinghe, which was held on the 15th and 22nd of March 2025 as an online programme.

MCQ Course Targeting MD Selection Exams Organized by the

SRI LANKA ASSOCIATION OF CLINICAL PHARMACOLOGY & THERAPEUTICS (SLACPT)

15th & 22nd March 2025

15th March 2025		
09.00 – 10.30 am	Basic Pharmacology	Prof Pradeepa Jayawardane
10.45 AM – 12.15 PM	Prescribing in Rheumatology	Dr Sujeevani Kurukulasuriya
01.00 PM – 02.30 PM	Cardiovascular Pharmacology	Dr Solith Senanayake
02.45 PM - 04.15 PM	Pharmacology of Gastrointestinal and Liver Disease	Prof Anuradha Dassanayake
22nd March 2025		
09.00 AM – 10.30 AM	Pharmacology of Anti-infectives	Dr Chiranthi Liyanage
10.45 AM – 12.15 PM	Respiratory and Autonomic Nervous System Pharmacology	Dr Ruwanthi Jayasekara
01.00 PM – 02.30 PM	Antidiabetic Agents and other Drugs in Endocrine Disorders	Dr Gayana Amiyangoda
02.45 PM - 04.15 PM	Pharmacology in Special Population	Prof Shalini Sri Ranganathan

Course fee: Rs.2,500/= (to be paid on or before 13th March 2025)

(Reserve your place by paying the fee since only a limited number will be registered)

HOW TO REGISTER?

By filling the google form. https://forms.gle/R5eDpDm7AGr33dnw6

Please upload payment slip to the google form.

Payments to be made to the following account.

Conducted on a zoom platform

A/C Name - SRI LANKA ASSOCIATION OF CLINICAL PHARMACOLOGY AND THERAPEUTICS

A/C Number – 167200180013901

Bank - Peoples' Bank

Branch - 00167 Colombo Town Hall

FOR MORE INFORMATION (office@slacpt.lk)

Ms. Jayani Dasanayake (0704008070)

Ms.L. D. Dulakshi Chathurika (0719795121)

Following SLACPT members contributed as resource persons in MCQ discussions:

Senior Professor Shalini Sri Ranganathan

Professor Pradeepa Jayawardena

Professor Anuradha Dassanayake

Dr Sujeevani Kurukulasuriya

Dr Solith Senanayake

Dr Chiranthi Liyanage

Dr Ruwanthi Jayasekera

Dr Gayana Amiyangoda

From Alchemy to Medicine: A Pharmacological Journey

Pathirana RM, Mendis SA, Liyanage PLGC

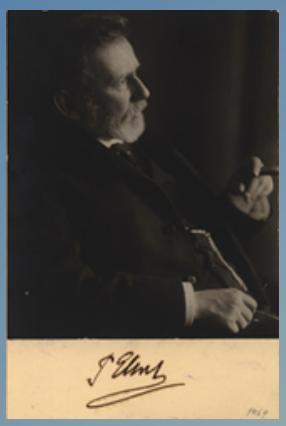
Department of Pharmacology, Faculty of Medicine, University of Ruhuna

From Mystical Alchemy to Chemical Medicine: Early medicine was deeply intertwined with alchemy and herbal lore. Ancient alchemists in China, India, Greece, and the Arab world experimented with distillation and substances in their quest for the elixir of life. Although steeped in mysticism, alchemy bequeathed practical techniques and new compounds to later physicians. By the Renaissance, a significant shift occurred as physicians like Paracelsus began to apply chemical principles to healing. As one historian notes, "with Paracelsus, the era of 'iatrochimica'…began": he **interpreted physiological processes in chemical terms** and **proposed chemical remedies for disease**. Paracelsus (1493–1541) and his followers founded a chemical approach to medicine that would evolve into modern pharmacology.

Paracelsus and "The Dose Makes the Poison"

Paracelsus, the Swiss alchemist-physician, broke with medieval tradition by rejecting pure herbalism and Galenic dogma. He is often called the father of toxicology because he insisted that any substance can be harmful if misused. As he famously stated, "**All things are poison and nothing is without poison. Solely the dose determines that a thing is not a poison.**". This dictum ("the dose makes the poison") underlies modern toxicology and pharmacology.

Paracelsus also pioneered *iatrochemistry* – the use of minerals and chemicals in medicine – arguing, for example, that mercury or arsenic (typically considered poisons) could serve as cures at proper doses. By introducing standardised chemical remedies and emphasising dose–response, Paracelsus helped transform alchemical lore into a systematic pharmacology [1].



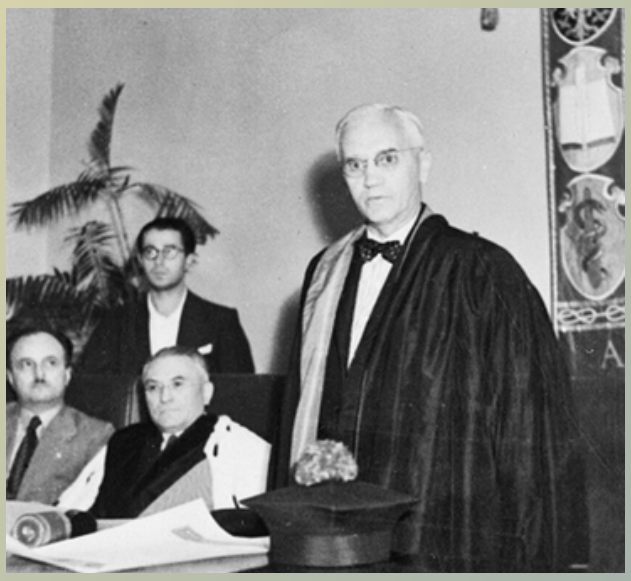
Salvarsan: Birth of Chemotherapy and the "Magic Bullet"

In the early 1900s, German scientist Paul Ehrlich built on this chemical tradition to pioneer **chemotherapy**. Ehrlich conceived of drugs as "magic bullets" that selectively target microbes. He began by studying dyes and antitoxins, then turned his attention to synthetic chemicals for combating infection. Working at the Frankfurt Institute, Ehrlich's team synthesised hundreds of arsenic-based compounds to treat disease. After testing dozens *of candidates, Ehrlich's 606th compound – later named Salvarsan* – proved astonishingly effective against the syphilis spirochete.In 1909, the first clinical trial of 50 late-stage syphilis patients treated with Salvarsan "ended with an impressive positive outcome" [2]. It was a vast improvement over toxic mercury treatments, but it remained challenging to use.

In practice, Salvarsan therapy was prolonged and arduous: patients often needed dozens of injections over roughly a year (often up to 18 months) to clear the infection. The injections were painful, and the arsenic drug itself was pretty toxic, causing side effects like nausea, organ damage and vein injury. Though Salvarsan and its later variant NeoSalvarsan remained the standard syphilis therapy into the 1940s, they were ultimately supplanted by antibiotics [3]. By the end of World War I, penicillin – far more potent and far less poisonous – became the new treatment of choice for syphilis [4]. Ehrlich's work thus provided the first effective chemotherapy for infection and coined the term chemotherapy for chemically-targeted treatment

A Slob's Serendipity: Fleming's Penicillin and the Antibiotic Revolution

In 1928, bacteriologist Alexander Fleming made one of medicine's most famous accidents. Fleming – a brilliant scientist who was notoriously untidy – left a stack of Petri dishes in his lab when he took a two-week vacation to Scotland. Returning in late September, he noticed one dish on the cluttered bench was contaminated with a mould (Penicillium notatum) that had killed the surrounding Staphylococcus bacteria [5].



Fleming's penchant for a messy lab saved the day: a tidier scientist might have simply thrown the mouldy dishes away. Intrigued, Fleming isolated the mould's antibacterial substance and named it penicillin, immediately recognising its "phenomenal" power to inhibit bacteria. This chance discovery launched the antibiotic revolution. Over the next decade, scientists, notably Howard Florey and Ernst Chain, purified and mass-produced penicillin, first using it to save the lives of Allied soldiers during World War II and then introducing it to treat civilian patients. Penicillin proved dramatically more effective and less toxic than earlier drugs. In fact, within a few years, it replaced Salvarsan as the standard cure for syphilis, offering a quicker, far safer treatment, and ushered in the modern era of antibiotics.

Sewage Mould That Became Cephalosporins

The success of penicillin spurred a global hunt for new antibiotics. A striking example occurred in 1945, when Italian scientist Giuseppe Brotzu was investigating typhoid fever on the island of Sardinia. He noticed that although the coastal sewage was teeming with Salmonella, local bathers were rarely ill. Brotzu collected seawater near a sewage outfall and isolated a fungus, initially identified as Cephalosporium. This sewage-derived mould produced a novel antibacterial compound [6]. The active molecule, cephalosporin C, was later purified (by Edward Abraham and colleagues in Oxford) and became the prototype for the cephalosporin class.

Cephalosporins are β-lactam antibiotics (structurally related to penicillin) that are particularly effective against many bacteria resistant to penicillin. Over the ensuing decades, dozens of semi-synthetic cephalosporins were developed, each with an increasingly broader spectrum. Today, cephalosporins (first through fifth generations) are widely used to treat pneumonia, meningitis, urinary tract infections and many hospital-acquired infections. . In effect, Brotzu's humble sewage mould spawned a whole family of life-saving drugs.

These cephalosporin antibiotics "proved effective against bacteria resistant to penicillin" and remain an essential part of our antimicrobial arsenal – undoubtedly **saving countless** lives by curing infections that once would have been lethal.

What's next?

The arc from ancient alchemy to modern pharmacology has brought astonishing therapeutic tools – from Salvarsan to penicillin and beyond.

Await the following article newsletter, “From Alchemy to Medicine: A Pharmacological Journey,” and “Shorter is better—the shifting sands of antibiotic stewardship” to see how the overuse of antibiotics is impacting us today.

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IUPHAR World Smart Medication Day Poster Competition

The Sri Lanka Association of Clinical Pharmacology and Therapeutics (SLACPT) conducted a nationwide student poster competition in alignment with the 2025 IUPHAR Student Poster Competition. The event reflected the 2025 theme: "**Sex/Gender Differences in Clinical Pharmacology**."

The competition featured two categories:

- **General Poster Category**: Open to all undergraduate students in medicine, pharmacy, or pharmacology.
- **Research Poster Category**: Open to both undergraduate and postgraduate students in the same fields.

Posters were evaluated by a five-member panel comprising SLACPT members from departments of pharmacology at medical faculties across the country.
In the General Poster Category,

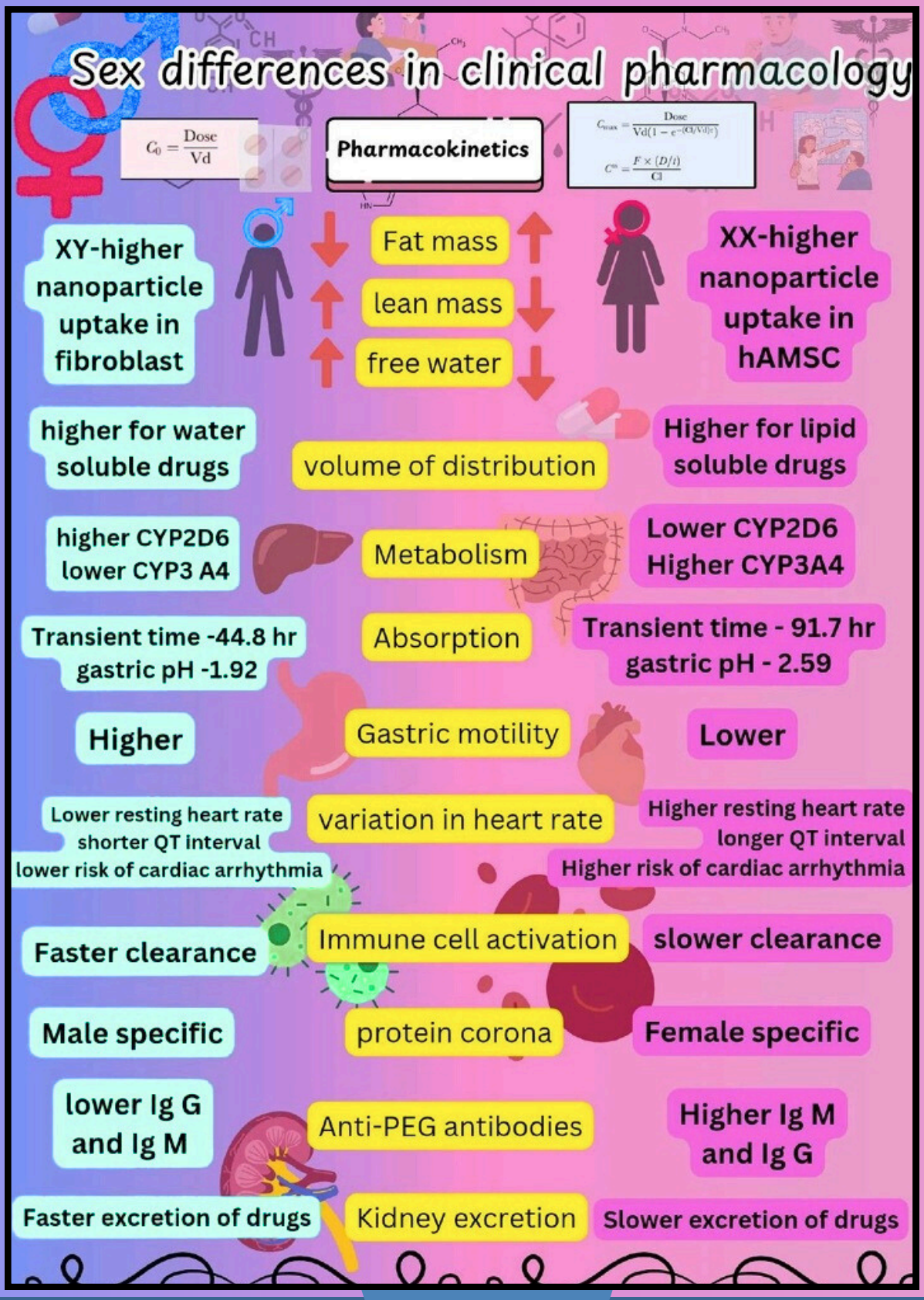
First place in the general poster category was awarded to **Tashiya Pandithasekara** of the Faculty of Medicine, University of Colombo, for her poster titled *"Sex Differences in Clinical Pharmacology."*

The **Research Poster Category** was won by a team from the Department of Pharmacology, Faculty of Medicine, University of Ruhuna. The team, **C. S. Munasinghe, P. S. K. Nanayakkara, R. M. Pathirana, T. K. Sinhabahu, R. A. W. Sevwandi, A. W. L. Mithunika, S. A. Mendis, and G. C. Liyanage** presented the poster titled *"The Influence of Gender on the Severity of Adverse Drug Reactions Among Inward Patients: An Active Surveillance in the National Hospital, Galle."*

All winning posters were submitted to the IUPHAR International Student Poster Competition, held in celebration of **World Smart Medication Day**.

IUPHAR World Smart Medication Day Poster Competition

General Poster Category - Winner



IUPHAR World Smart Medication Day Poster Competition

Research Poster Category - Winner

The Influence of Gender on the severity of Adverse Drug Reactions among in-ward patients. An Active surveillance in the National Hospital Galle.

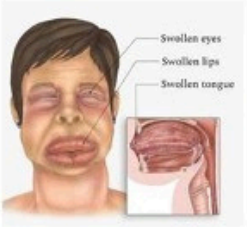
Department of Pharmacology, Faculty of Medicine, University of Ruhuna, Sri Lanka
Munasinghe CS, Nanayakkara PSK, Pathirana RM, Sinhabahu TK, Sevwandi RAW, Mithunika AWK, Mendis SA , Liyanage G

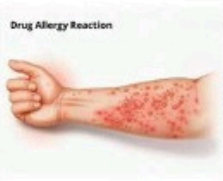
Background

Gender plays a critical role in the development and severity of adverse drug reactions (ADRs) influenced by biological, genetic, hormonal and social factors. Understanding these differences is crucial for improving drug safety and efficacy for both men and women.

Objective

The study aimed to identify the influence of gender on adverse drug reactions among inward patients in the National Hospital, Galle.





Methodology

- This research was focused on the ADR reported on patients admitted to the National Hospital, Galle.
- The severity was categorized using the Modified Hartwig and Siegel scale.
- Descriptive statistics were generated utilizing SPSS statistical software.

Conclusion

Males showed the predominance in system involvement while females showed a higher prevalence of skin reactions. However, it is crucial to conduct further research in this area.

Results

Figure 1 -Prevelance of gender difference in ADRs

- Antibiotics were the most common causative agents, responsible for 48.6% of ADRs, with males being more frequently affected (58.6%).
- Co-amoxiclav was the most frequently implicated antibiotic, causing 15.7% of reactions.

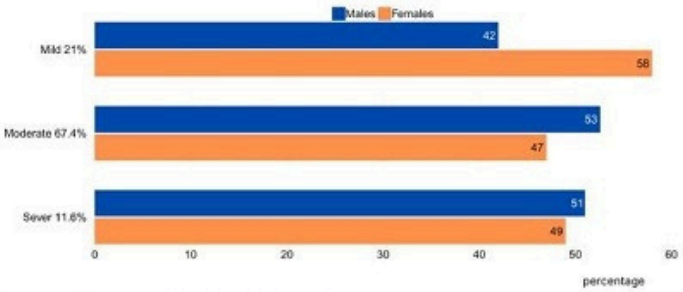


Figure 2 - Severity of ADRs according to gender

- Skin reactions were predominant in females (57.8%), while males showed predominance in other systems.

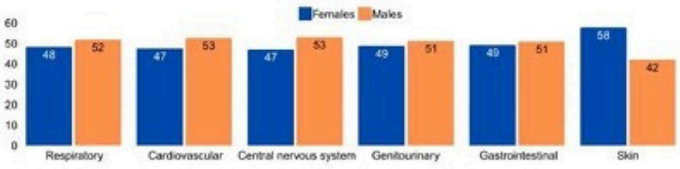


Figure 3 - System involvement in ADRs according to the gender

- Despite observed gender variations, there was no significant association between gender and the severity of ADRs (p =0.84)
- These findings contrasts with previous studies indicating that women generally experience ADRs more frequently than men.

IUPHAR research poster compitition 2025

Tackling Hypertension in an Aging World

De Zoysa W
Department of Medicine, Faculty of Medicine, University of Ruhuna

Global trend

The global demographic landscape is experiencing a significant transformation characterized by an increasing proportion of older individuals. Projections indicate that by 2050, the global population of people aged 60 years and older will double to reach 2.1 billion. Notably, 80% of these older individuals will reside in low- and middle-income countries [1].

Hypertension is a significant concern among the aging population. The number of adults aged 30–79 years with hypertension has increased from 650 million to 1.28 billion between 1990 and 2019. Approximately 580 million individuals with hypertension were unaware of their condition, and over half were not receiving the necessary treatment [2]. The prevalence of hypertension steadily increases with age. It is around 60% at the age of 60 years and 75% at the age of 75 years.

Aging Sri Lanka

Sri Lanka mirrors this global trend. Currently, 12.3% of the population is aged 60 and above, the highest proportion of older adults in the South Asian region. Projections suggest that by 2045, this demographic will constitute 21% of the population, increasing to 35.6% by 2100. This rapid demographic shift is occurring at a pace similar to that of more developed nations, despite Sri Lanka's lower per capita income [1]. In Sri Lanka, 65% of adults more than 70 years of age are found to be hypertensive.

Risk Factors

- Age: The risk of hypertension rises with age due to physiological changes such as increased arterial stiffness and alterations in the renin-angiotensin system.
- Obesity: Elevated body mass index (BMI) and body fat percentage are significantly correlated with higher blood pressure levels. A study found that 85% of participants with obesity had arterial hypertension, compared to 16% in those with normal body weight.
- Dietary Habits: Low intake of fruits and high salt consumption are associated with increased hypertension risk.
- Family History: A positive family history of hypertension nearly triples the risk among older adults.

Hypertension Mediated Organ Damage and Complications of Hypertension

Hypertension can lead to various target organ damage and complications. In the brain, it may cause transient ischemic attacks (TIA), strokes, intracerebral haemorrhages, aneurysmal subarachnoid haemorrhages, and different forms of dementia, including vascular dementia, mixed vascular dementia, and dementia of Alzheimer's type. The heart may experience left ventricular hypertrophy, left ventricular dysfunction, and ischemic heart disease, which includes angina pectoris and acute coronary syndromes. Kidney damage can result in albuminuria and chronic kidney disease. The arterial system may suffer from peripheral arterial disease, while the eyes can show retinal findings such as retinal arteriolar narrowing or sclerosis, arteriovenous crossings, exaggerated arterial light reflex, retinal haemorrhages, retinal exudates, cotton wool spots, and papilloedema seen on fundoscopy.

Cardiovascular risk stratification

More than 50% of hypertensive patients have additional CVD risk factors. The presence of additional CVD risk factors increases the risk of coronary, cerebrovascular, and renal diseases in hypertensive patients. The therapeutic options should target both the additional risk factors and hypertension. This reduces CVD beyond BP control. The WHO(World Health Organization) risk prediction chart is used to assess the CVD risk in Sri Lankan population as it is validated for Southeast Asia including Sri Lanka.

Management Guidelines

Hypertension management in older age depends on the patients' age and the frailty level. Effective management of hypertension in older adults is essential to reduce the risk of cardiovascular events and other complications. Clinical guidelines recommend that individuals aged less than 85 years who are not moderately to severely frail should receive treatment similar to that of younger patients. This approach is supported by both the ISH 2020 and the ESC 2024 guidelines, and it advocates for the prompt initiation of both lifestyle modifications and pharmacological therapy in individuals with confirmed hypertension. They recommend pursuing a target systolic BP of 120–129 mmHg among adults receiving BP-lowering medications, reflecting a more aggressive approach compared to previous guidelines.

Balancing Benefits and Risks

Aggressive BP reduction in older adults may lead to risks such as hypotension, falls, and renal impairment. Therefore, it's crucial to individualise treatment plans, considering factors like frailty, comorbidities, and overall functional status.

Non-pharmacological management

Lifestyle interventions for managing blood pressure include adopting the DASH diet—rich in fruits, vegetables, whole grains, lean proteins, and low-fat dairy, while low in saturated fats, cholesterol, and refined sugars—along with sodium restriction (<2.3 g/day, ideally <1.5 g/day) and increased potassium intake through foods like bananas and potatoes (unless contraindicated). Achieving and maintaining a healthy body weight (BMI 18.5–24.9) and engaging in at least 150 minutes of moderate-intensity aerobic exercise per week are key. Limiting alcohol intake (≤2 drinks/day for men, ≤1 for women), smoking cessation through counselling, stress management techniques such as mindfulness and CBT, and ensuring good sleep hygiene by addressing disorders like sleep apnea are also crucial. Regular home blood pressure monitoring, patient education, and encouraging social and community support play important roles in promoting adherence and improving overall cardiovascular health.

Pharmacological management

First-Line Therapy:
Preferred options include low-dose thiazide-like diuretics (e.g., Hydrochlorothiazide), calcium channel blockers (e.g., Amlodipine), and angiotensin-converting enzyme (ACE) inhibitors (e.g., Enalapril) or angiotensin receptor blockers (ARBs) (e.g., Losartan).

Combination Therapy:
Dual therapy is now often the preferred approach for older adults, particularly when achieving target BP is challenging. This is commonly needed when BP is >160/100 mmHg. The use of combination therapy is recommended for better efficacy in controlling hypertension.

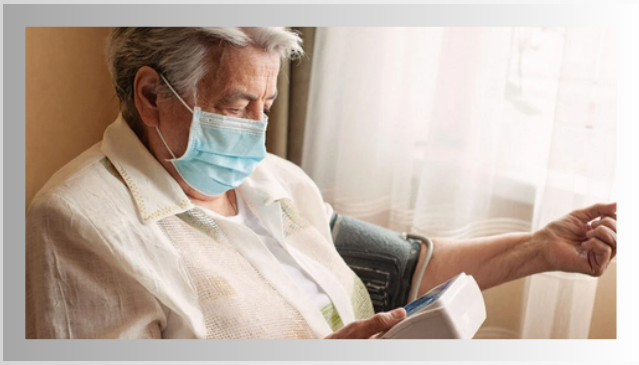
Common Drug Combinations in Elderly Hypertension Management
The ESC/ESH 2024 and ISH 2020 guidelines suggest the following combinations as first-line therapies for elderly patients: ACE Inhibitors/Angiotensin Receptor Blockers (ARBs) + Calcium Channel Blockers (CCBs), ACE Inhibitors/ARBs + Diuretics, Calcium Channel Blockers (CCBs) + Diuretics, Beta-Blockers + ACE Inhibitors/ARBs.

Monotherapy for Frail Patients:
In frail elderly patients, especially those aged 80+ years, monotherapy with careful titration is recommended to minimise the risks of adverse effects.

Exceptions for Initial Monotherapy (6):
Initial monotherapy is preferred for grade 1 hypertension, moderate-to-severe frailty, symptomatic orthostatic hypotension, and individuals aged 85 years or older.

Blood Pressure Targets

Age	Systolic Blood Pressure	Diastolic Blood Pressure
<65 years	<130 (129-120)	<80 (79-70)
>65 years	<140 (139-130)	<80 (79-70)



Isolated Systolic Hypertension

Isolated Systolic Hypertension (ISH) is characterized by a SBP of ≥140 mmHg with a DBP of <90 mmHg and is the predominant form of hypertension in older adults. Its prevalence increases with age, primarily due to age-related arterial stiffness.

Data from the Framingham Heart Study indicate that ISH prevalence is approximately 35% to 40% among individuals aged 50–59 years and rises to 65% to 70% in those over 60 years. Another study reported that among untreated hypertensive individuals aged 60 years and above, 79.7% had ISH. These figures underscore the significant burden of ISH in the aging population.

With advancing age, SBP tends to rise continuously until around the eighth decade of life, while DBP increases until the fifth or sixth decade and then plateaus or declines. This divergence results in a widened pulse pressure and elevates SBP as a critical factor in cardiovascular risk among older adults.

Several landmark trials have demonstrated the benefits of managing ISH in older adults:

- **Systolic Blood Pressure Intervention Trial (SPRINT):** Targeting an SBP of <120 mmHg, the intensive treatment group experienced a 25% reduction in major cardiovascular events and a 27% decrease in all-cause mortality compared to the standard treatment group with an SBP target of <140 mmHg.
- **Strategy of Blood Pressure Intervention in the Elderly Hypertensive Patients (STEP) Trial:** Although specific details from the STEP trial are not provided in the search results, similar studies have indicated that intensive BP control in older adults with ISH can lead to significant cardiovascular benefits.
- Systolic Hypertension in the Elderly Program (SHEP): This study found that antihypertensive treatment in individuals with ISH led to a 36% reduction in stroke incidence and a 27% decrease in myocardial infarctions.

Results from the SPRINT and the STEP trials confirm that lower SBP targets are effective in reducing CVD events in patients with ISH. Therefore, therapeutic inertia in older patients with ISH should be avoided.

Conclusion

The growing number of older adults worldwide, including in Sri Lanka, highlights the ongoing challenge of managing hypertension in this age group. The high rates of undiagnosed and uncontrolled hypertension call for strengthened efforts in screening, treatment, and long-term management. Following recommended guidelines, setting suitable blood pressure targets, and addressing isolated systolic hypertension alongside other risk factors are key steps in reducing the burden. A comprehensive and personalized approach will ultimately help improve health outcomes and quality of life for the elderly population.

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5. European Society of Cardiology Guidelines (ESC), 2024

Thyroid Care in Practice:

Sri Lanka Association of Clinical Pharmacology and Therapeutics and Sri Lanka College of Endocrinology Joint CME Webinar

SLACPT conducted its first Continuing Medical Education (CME) webinar for the year 2025 in collaboration with Sri Lanka College of Endocrinologists on the management of thyroid disorders.

SLACPT obtained accreditation from the Ministry of Health, Sri Lanka, for this CME programme. Participants were offered 1.5 CPD points while the resource persons received 0.5 CPD points. More than 100 participants have joined virtually.

This was held from 10.00 AM to 11.30 AM on Saturday, the 26th April 2025.

Dr. Isahra Athurgiriya, Senior Registrar in Endocrinology and Dr. Sonali Gunathilaka, Consultant Endocrinologist delivered lectures representing the Sri Lanka College of Endocrinolgosits. Dr. Gayana Amiyangoda was the resource person representing the SLACPT.

Dr. Gayana Amiyangoda, supported by Dr. Ruwanthi Jayasekera and Dr. Sahan Mendis, organised the CME webinar successfully.

"Shorter is better" - The shifting sands of Antibiotic Stewardship

Sinhabahu TK, Liyanage PLGC

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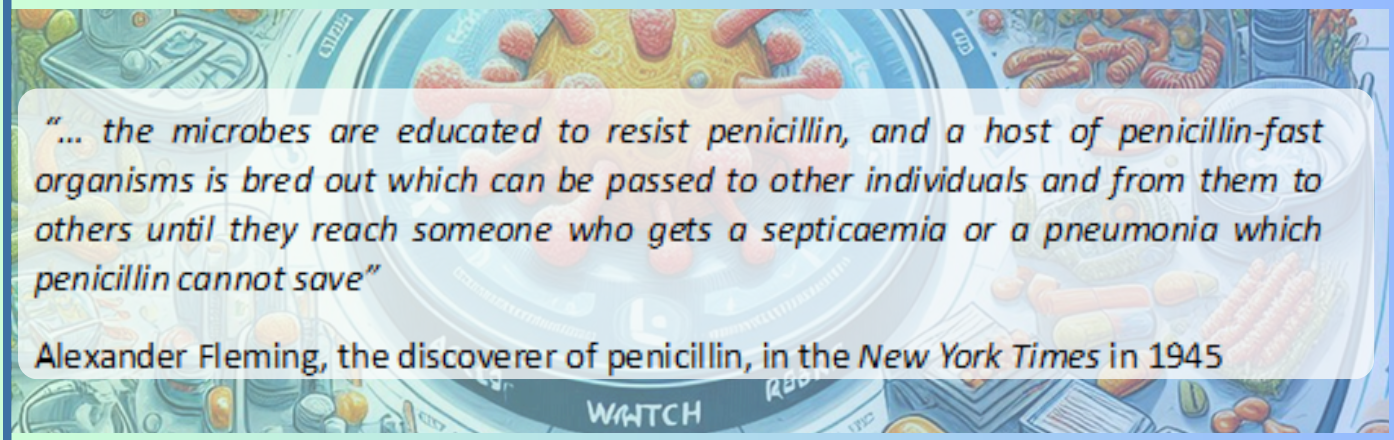

Antimicrobial resistance (AMR), as so graphically elicited above, is the ability of microorganisms such as bacteria, viruses, fungi and parasites, to resist the effects of antimicrobials that usually kill or inhibit the growth of susceptible organisms. This resistance is acquired by the organism by being exposed to antimicrobials whereby the bugs develop ways and means to resist the action of antibiotics. If the involved organisms in an infection are antimicrobial-resistant pathogens, treatment of the infection becomes more complex, leading to a poor therapeutic response, and an increase in the risk of disease spread and severity, ultimately even leading to death. It has been estimated that 4.95 million deaths were associated with bacterial AMR in 2019, including 1.27 million deaths directly attributable to the same [2].

As a solution to the increasing AMR, the principles of Antibiotic Stewardship came into being. That initiative included the surveillance of micro-organisms and sensitivity pattern through antibiograms, surveillance of antibiotic prescriptions and inducing medical professionals to prescribe antibiotics rationally. Prior to prescribing an antibiotic, optimal selection of the drug, optimal dosing and useful duration of antimicrobial treatment has to be taken into account. This will eventually result in better clinical outcomes with minimal side effects, thereby contributing to the achievement of the ultimate goal of useful therapeutic outcomes and minimizing the impact on subsequent resistance. This, on the contrary, is perhaps directly against the mistaken belief and myth of the notion of a longer course of antibiotics being superior in therapeutic effect as well as in reducing antimicrobial resistance.

In 2017, the World Health Organisation (WHO) developed the AWaRe initiative of antimicrobials being separated into three categories, namely, Access, Watch and Reserve [2]. Access antibiotics, which are the recommended first choice of antibiotics for infections, have a narrow spectrum of activity and a preferred safety profile. Watch antibiotics are more broad-spectrum antibiotics and are recommended as first line for patients with more severe clinical presentations or for infections where the causative pathogens are more likely to be resistant to Access antibiotics. Reserve antibiotics, are generally the last-choice antibiotics and are even used as fall-back drugs to treat multidrug resistant infections. This classification can be used to give an indirect indication of the relevance of antibiotic use.

This image shows antibiotic sensitivity tests with culture growth sensitive to all antibiotics tested (right) and a culture growth resistant to all antibiotics tested (left). This indicates the emergence of infections due to multi drug resistant organisms.

Globally, the formation of Antibiotic Stewardship Committees at hospitals has been a noteworthy development to monitor the use of watch and reserve antibiotics. Many local advances in lieu of antibiotic stewardship have also been noted to be of great value, including the latest update of the Antimicrobial Guideline in 2024 by the Sri Lanka College of Microbiologists. In addition, the Sri Lanka College of Paediatricians has brought forward management algorithms of various disease conditions, taking into account the preservation of antibiotics for rational use. For example, the use of access antibiotics such as benzyl penicillin as a first-line treatment of early onset neonatal infections where the common causative organism is considered to be the Group B Streptococcus. However, when treating a neonate for late onset sepsis, the commoner organisms are deemed to be staphylococci and hence the drug of choice is flucloxacillin from the access group combined with an aminoglycoside such as amikacin from the watch group. Additionally, in the local setting, initiatives are being taken to commence an Antibiotic Stewardship Committee in National Hospital, Galle.

Nearly all antibiotic classes being used today were discovered during the Golden Age of antibiotic innovation, which extended from the 1940s to the 1960s. Notably, only a couple of entirely new classes of antibiotics have been discovered within the last few decades. The antibiotic Halicin was discovered in 2024 and the lasso peptide Lariocidin as recently as March 2025. Both of these were discovered through Artificial Intelligence. Due to the limited emergence of useful antibiotics through the pipeline, we can only hope to reduce antimicrobial resistance to existing antibiotics with a 'smart' and 'focused' approach to using antibiotics wisely through stewardship, and to even prove that in some clinical situations, when prescribing antibiotics, shorter is indeed better!

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Breaking New Ground: Novel Pharmacological Therapies in Obesity

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Despite the global "obesity epidemic," pharmacological treatments remain limited, often leaving a significant gap between lifestyle interventions and bariatric surgery. However, recent breakthroughs in our understanding of the molecular pathways that regulate energy balance have led to the development of novel and effective strategies that were unimaginable just a decade ago. As our insights deepen, the future of pharmacotherapy in obesity appears increasingly promising, narrowing the divide between medication and surgical intervention, and making meaningful strides in tackling this global health challenge.

The pathogenesis of obesity involves two interrelated but distinct processes: (1) sustained positive energy balance (energy intake > energy expenditure), and (2) resetting of the body weight "set point" at a higher threshold. The latter explains the common relapse following lifestyle-induced weight loss, presenting a major barrier to long-term success [1].

Defining Obesity

The 2014 NICE Guidelines classifies Overweight and Obesity as follows[2]:

- Overweight: BMI 25–29.9 kg/m²
- Obesity Class 1: BMI 30–34.9 kg/m²
- Obesity Class 2: BMI 35–39.9 kg/m²
- Obesity Class 3: BMI ≥ 40 kg/m²

In addition to these BMI thresholds, separate values are given to certain ethnicities that are prone to central obesity and are at a higher cardiometabolic risk at a lower BMI. The BMI thresholds given for people with a South Asian, Chinese, other Asian, Middle Eastern, Black African or African-Caribbean family background are:

- Overweight: BMI 23–27.4 kg/m²
- Obesity: BMI ≥ 27.5 kg/m²

Obesity classes 2 and 3 are usually identified by reducing the thresholds by 2.5 kg/m^2.

Leptin and Energy Regulation

Leptin, an adipocyte-derived hormone, plays a pivotal role in regulating hunger and energy expenditure through its action on the hypothalamus. Leptin resistance and alterations in this signaling pathway are central to obesity pathophysiology.

Glucagon-like peptide-1

Glucagon-like peptide-1 (GLP-1), secreted by intestinal L-cells, plays a key role in regulating postprandial glucose levels. GLP-1 receptor agonists exert their effects through multiple mechanisms. In the pancreas, they enhance insulin secretion and suppress glucagon secretion. In the liver, they reduce hepatic gluconeogenesis. In peripheral tissues such as skeletal muscle, GLP-1 activity increases glucose oxidation while in the adipose tissue it increases lipolysis and increases glucose uptake. Centrally, GLP-1 agonists increase satiety, reduce appetite, and delay gastric emptying, contributing to both glycemic control and weight reduction.

Pharmacotherapy

Anti-obesity agents are used in conjunction with caloric restriction and physical activity. The 2014 NICE Guidelines approved semaglutide, liraglutide, and orlistat. Since then, additional agents have been FDA-approved, with many others under investigation.

Semaglutide

Semaglutide, a GLP-1 analogue, administered at 2.4 mg weekly, resulted in a 14.9% mean weight loss over 68 weeks in non-diabetic adults with a BMI ≥27, as demonstrated in the STEP 1 Trial. It has also been shown to promote significant weight loss in individuals with obesity and type 2 diabetes [3]. Furthermore, in patients with pre-existing cardiovascular disease but without diabetes, semaglutide significantly reduced the incidence of cardiovascular death, nonfatal myocardial infarction, and nonfatal stroke [4] .

This benefit likely stems from reductions in visceral fat and ectopic adipose depots that may contribute to atherosclerosis and myocardial dysfunction [5], and improvement of the systemic pro-inflammatory state [6].

Semaglutide is contraindicated in patients with a personal or family history of medullary thyroid carcinoma, in those with Multiple Endocrine Neoplasia type 2, and in patients with a history of pancreatitis or severe hepatic impairment.

Liraglutide
This daily GLP-1 analogue achieved 6.7%–9.2% total body weight loss over one year (3.0 mg/day), with concurrent reductions in glycemic and cardiometabolic parameters [7].
As with semaglutide, liraglutide is contraindicated in individuals with a personal or family history of medullary thyroid carcinoma, in those with Multiple Endocrine Neoplasia type 2, and in patients with a history of pancreatitis or severe hepatic impairment.

Orlistat
Orlistat inhibits gastric and pancreatic lipases, reducing fat absorption by approximately 30%. Studies report weight loss of 6.4%–11.3% after 1 year [8].

Sympathomimetic Agents and Combination Therapies
Short-term FDA-approved agents include benzphetamine, diethylpropion, phendimetrazine, and phentermine. However, due to weight regain upon discontinuation, their use is limited. Long-term combination therapies such as phentermine-topiramate and bupropion-naltrexone have shown sustained weight loss [9,10].

CagriSema: Amylin + GLP-1 Analogue
Cagrilintide (amylin analogue) combined with semaglutide (GLP-1) showed additive effects in reducing appetite and promoting sustained weight loss. Both agents support bone mineral density. In a phase 2 trial, CagriSema led to superior glycemic control and greater weight loss than either drug alone [11].

Tirzepatide
A dual GIP and GLP-1 receptor agonist, tirzepatide demonstrated dose-dependent weight loss of −7.6 kg to −11.2 kg over 40 weeks, outperforming semaglutide in both weight and HbA1c reduction [11] .

Retatrutide (Triple Agonist)
Targeting GIP, GLP-1, and glucagon receptors, this agent led to substantial, dose-dependent weight loss in phase 2 trials [12].

Tetraagonist: GLP-1–GIP–Amylin–Calcitonin
In rodent models, this novel combination led to superior fat mass reduction with lean mass preservation, outperforming tirzepatide in glucose, lipid, and liver enzyme control [13].

Looking Ahead

Future therapies under investigation include monoclonal antibodies, triple monoamine reuptake inhibitors (e.g., tesofensine), brown adipose tissue activators, and agents targeting monogenic obesity.

Stay tuned for the next issue, where we explore these upcoming agents and their potential impact on obesity treatment.

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Wall of Fame

Vidyajyothi Professor H. Asita De Silva, Cadre Chair and Senior Professor of Pharmacology, Faculty of Medicine, University of Kelaniya and the Past President of Sri Lanka Association of Clinical Pharmacology and Therapeutics has been elected as a fellow of the British Pharmacological Society (BPS). BPS recognises fellows who have demonstrated distinction and peer recognition in pharmacology, through their work, publication and presentation of research, leadership, and contribution to society life.

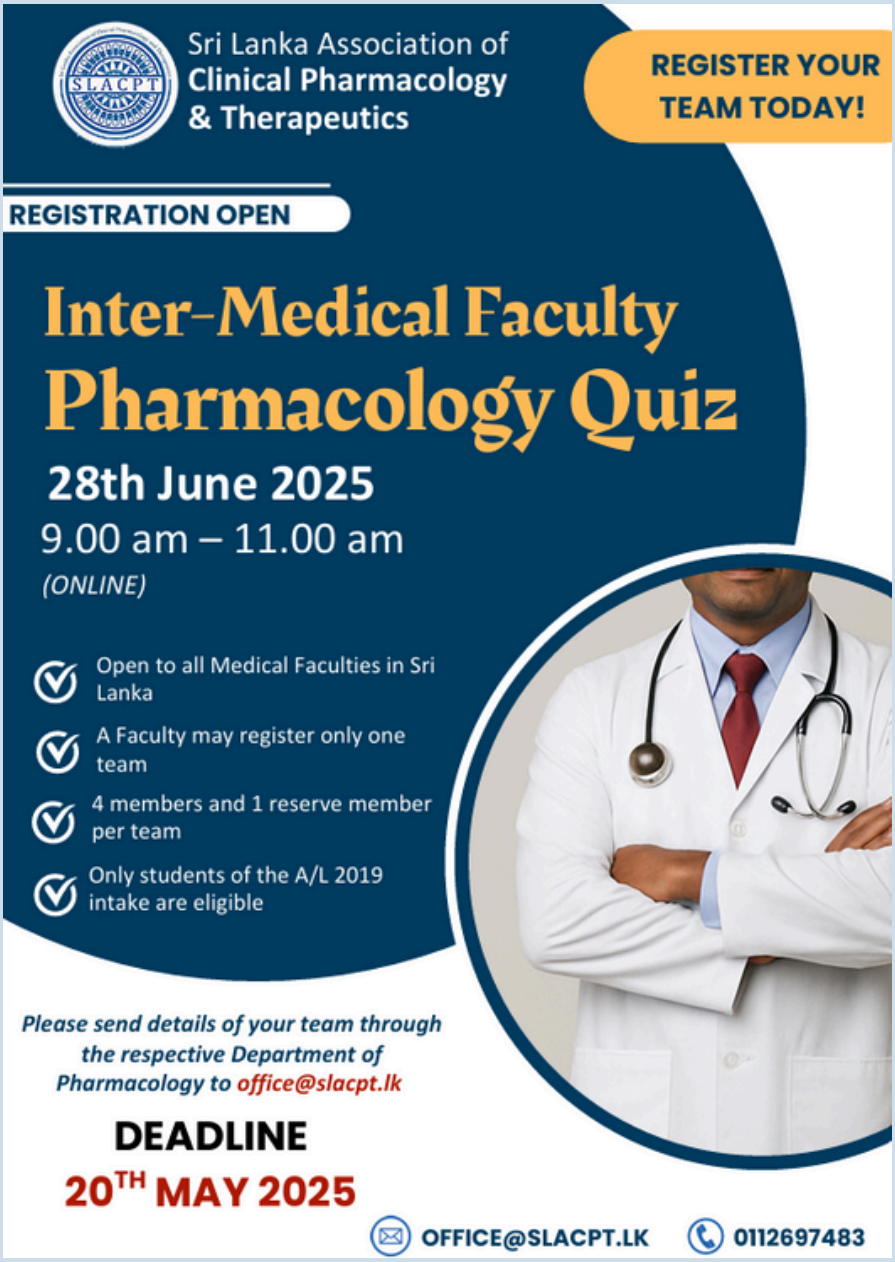
Professor Chamila Mettananda, Professor in Pharmacology, Faculty of Medicine, University of Kelaniya was awarded the American College of Physicians' Global Physician Scholarship 2025. She spent four weeks hosted by Dr Pankaj Shah at the Mayo Clinic, Rochester, Minnesota, USA, ranked number one for Diabetes and Endocrinology in the world, gaining experience in the latest management of diabetes and metabolic syndrome.

Achievements

Dr. Indika Wettasinghe,
Lecturer in Pharmacology, Faculty of Medical Sciences, University of Sri Jayawardenapura, succeeded in the MD Medicine examination held in March 2025.

SLACPT extends heartfelt congratulations and best wishes to
Vidyajyothi Professor H. Asita De Silva,
Professor Chamila Mettananda and
Dr. Indika Wettasinghe
for their achievements!

SLACPT upcoming events



SACPT/SLCP Joint CME Webinar – August 2025

Next SLACPT joint CME webinar will be conducted in collaboration with Sri Lanka College of Pulmonologists in August 2025.

SLACPT NEWS

The Official Newsletter of
the Sri Lanka Association of
Clinical Pharmacology and Therapeutics

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