

Pulse²⁰¹⁹





THE STORY OF SRI LANKA



Sigiriya Rock Fortress:
a World Heritage Site and considered
one of the best preserved examples of
ancient urban planning.

THE STORY OF THE PEARL OF THE INDIAN OCEAN

Sri Lanka, known to ancient travellers as the pearl of the Indian Ocean, is home to 21 million people. The history of Sri Lanka goes back to the times of the Stone Age. Ancient ruins and archaeological evidence suggest that the Sri Lankans from pre-historic times were very resourceful, technologically advanced and intelligent. Fast-forward a few centuries into the age of our ancient kingdoms, yet again you'll see technological, architectural and engineering wonders such as the Sigiriya rock fortress, sophisticated irrigation systems, structured citadels and defined systems of governance. While it is steeped in history and nurtured by Buddhist philosophies of rational and scientific

thinking, it has been influenced through Portuguese, Dutch and British rule for centuries.

Modern day Sri Lanka is a culturally diverse, multi-ethnic and multi-religious democracy.

Sri Lanka, as an emerging upper middle-income country has universal state-funded healthcare and education systems and is responsible for the national literacy rate of over 94% . The country's excellent general infrastructure like the road networks, connectivity, high-speed internet, reliable power supply, its strategic geographical location and an educated workforce fluent in English language provides Sri Lanka a solid foundation to become a strong knowledge-based economy over the next few years.

- Total population **21.7 MILLION**
(Population growth rate - 0.5%)
- Commercial capital **COLOMBO**
- Business language **ENGLISH**
- Per capita GDP **4102 USD**
- Literacy rate **94.2%**
- Universal State-funded healthcare **FREE**
at the point of delivery
- Life expectancy **MALE 74, FEMALE 77**

THE SRI LANKAN HEALTHCARE SYSTEM

A SUCCESS STORY

The records of Sri Lankan medical tradition dates back to the pre-historic era. Ancient Sinhalese are believed to have introduced the concept of hospitals to the world. According to the Mahawansa, the ancient chronicle of Sinhalese royalty, King Pandukabhaya (474 BC - 367 BC) had 'lying-in-homes' service and hospitals (Sivikasotthi-Sala) built in various parts of the country after having fortified his capital at Anuradhapura during the 4th Century BC.

Ruins of a hospital in the city of Mihintale built by King Sena II (851 AD -885 AD) is considered to be one of the world's oldest hospitals. Several kings of ancient Sri Lanka were known to be practitioners of medicine.

King Buddhadasa (340 AD - 368 AD) was said to be adept in general medicine, surgery, midwifery and veterinary medicine, and got chronicled thereafter for a surgical operation on an outcast woman to help deliver her child and also for a surgical removal of a lump from the belly of a snake. 'Sarartha Sangraha', a comprehensive medical treatise in Sanskrit, is also attributed to King Buddhadasa.

Excavations of the ruins of ancient hospitals have uncovered several surgical instruments such as forceps, scalpels and scissors as well as spoons that are believed to have been used to mix or administer medicine. The hospitals in ancient Sri Lanka had toilets and baths that were attached to the living quarters. They had been designed to optimise ventilation and free circulation of air with open courtyards in addition to windows; design attributes that indicate psychological aspects of treatment were understood by our ancient medical practitioners.

Evolved through this rich heritage and culture of taking care of the less fortunate, Sri Lanka's current universal state-funded healthcare system was introduced after independence from British rule in 1948. It is built on a strong foundation of primary healthcare with focus on prevention. At the most basic primary healthcare level, community health workers designated as public health midwives, whose

main responsibility is maternal and child health, support a defined community to ensure every citizen receives the benefit of free healthcare. Sri Lanka's excellent health indices in terms of maternal and child mortality, nutrition and national immunisation cover, which exceeds 99%, that stand out in the region is mainly attributed to this highly structured and well-defined primary healthcare service.

A medicine trough (also known as Beheth Oruwa in Sinhalese) which was discovered at the ancient monastic hospital of the Alahana Pirivena (built between 1153 AD and 1186 AD) premises in Polonnaruwa.



BIG IMPACT OF A ROBUST HEALTHCARE SYSTEM

Through targeted community-centred programmes, Sri Lanka has been successful in eradicating several diseases that still challenge healthcare systems in other countries within the South-East Asian region.

- Introduction of the National expanded immunisation programme and compulsory vaccination has led to the reduction and eradication of several vaccine preventable diseases.

Sri Lanka has been successful in eradication of Polio, with the last case being reported back in 1993.

- In May 2016, the WHO declared Sri Lanka as one of the first countries in the South-East Asian region to be free of lymphatic filariasis.

- Elimination of malaria in Sri Lanka is a public health success story 80 years in the making.

After an extraordinary battle with this life-threatening disease, Sri Lanka received WHO certification for having completely eliminated malaria in September 2016.

- Elimination of mother-to-child transmission of HIV is another success story of the Sri Lankan healthcare system. Prevention programme of

mother-to-child transmission (PMTCT) of HIV was introduced in early 2002 with the introduction of Antiretroviral Therapy (ART) for HIV-positive pregnant women. By October 2019, the WHO would declare Sri Lanka as being successful in preventing mother-to-child transmission of HIV.

Tertiary care hospitals and national referral centres based on specialties with state-of-the-art facilities and highly trained medical specialists form the apex of Sri Lanka's healthcare structure. Our research work to find solutions to important healthcare problems are conducted in these institutions underpinned by an excellent national healthcare system.

Sri Lanka successfully eliminated mother-to-child transmission of HIV in 2019.





SRI LANKA'S HEALTHCARE STRUCTURE

Sri Lanka holds a unique position in South Asia as one of the first of the less developed nations to provide universal healthcare, free education, strong gender equality, and better opportunity to social mobility. Since its independence, successive governments have implemented welfare-oriented policies and programmes which have allowed Sri Lanka to achieve relatively high standards of social and health development in comparison with countries of similar levels of economic development. As a result of this, the country has made significant improvements in social welfare, both in the development of public healthcare and education systems.

The health system in Sri Lanka is a mix of Allopathic, Ayurvedic, Unani and several other systems of medicine. Of these systems, Allopathic medicine has become dominant and is catering to the

majority of the health needs of the people. As in many other countries, the Sri Lankan health system consists of both the state and the private sector. The Health Ministry and the Provincial Health Services provide a wide range of promotive, preventive, curative and rehabilitative healthcare services. Sri Lanka has an extensive network of healthcare institutions.



STATE-FUNDED HEALTH COVERAGE

Sri Lanka has a free and universal healthcare system. It is organised through both public and private sectors, and includes the services of those practising within the Allopathic system of healthcare, along with traditional medicine such as Ayurvedic and Homeopathic treatments.



TERTIARY-CARE HOSPITALS

Large, well-equipped, tertiary-care hospitals compatible with those in developed countries with all major and sub specialties. Sector curative services are provided through a series of healthcare institutions ranging from basic central dispensaries to teaching hospitals and the National Hospital of Sri Lanka (NHSL).



PATIENT-RELATED DOCUMENTS

All patient-related documents such as bed head tickets, diagnosis cards, discharge summaries are maintained in English.



DEDICATED SPECIALTY HOSPITALS

Dedicated specialty hospitals such as National Cancer Institute, National Institute for Nephrology, Dialysis and Transplant, Lady Ridgeway Hospital for Children and many more are set up to treat specific disease, conditions or patient populations.



WESTERN HEALTHCARE INSTITUTIONS

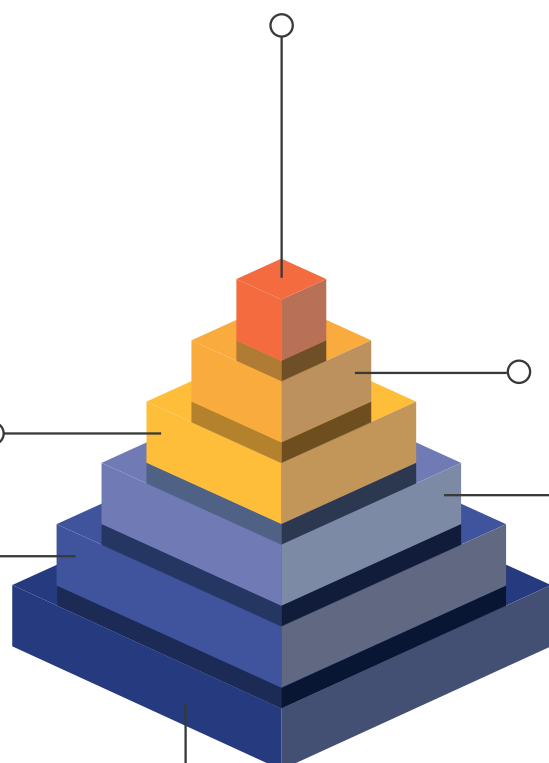
Both public and private sectors are involved in the delivery of Allopathic healthcare systems, primarily governed by the Ministry of Health, which ensures provision of comprehensive health services to all citizens.



PRIMARY HEALTHCARE STRUCTURE

Well organised primary healthcare structure that facilitates patient retention for studies with long-term follow-up.

Immunisation cover > 98%
Death registration > 95%
MMR – 12/100,000 live births
IMR – 11.2/1,000 live births



Hospital category - State hospitals	Number of hospitals
National Hospital*	01
Teaching Hospitals	15
Provincial General Hospitals	03
District General Hospitals	20
Base Hospitals	71
Divisional Hospitals	482
Primary Medical Care Units and Maternity Homes	14
Other Hospitals**	25

*National Hospital bed capacity
3.396 as of 2015.

**Other hospitals include
National Cancer Institute,
Lady Ridgeway Hospital
National Eye Hospital,
National Institute
of Mental Health etc.

All services at state hospitals are
provided free of charge in keeping
with the free healthcare policy of
the Sri Lankan Government.



SAFER TREATMENT SNAKEBITE STUDY

Classified as a neglected tropical disease by the WHO, snakebite is a major public health problem in Sri Lanka. Annual snakebite incidence in Sri Lanka is about 400 per 100,000 population, one of the highest in the world. Although there are more than 90 species of snakes in the country, much of the morbidity and about 95% of the mortality associated with snakebites are due to the highly venomous Cobra, Russell's viper, and Kraits.

Sri Lanka is an agricultural country whose agricultural activities are mainly carried out around two monsoon seasons, May to September and November to January. Snakebite is considered as an occupational hazard by farmers; high incidences of snakebites have been reported during the periods of high rains and agricultural activity.

The farming community, especially those living in North-Central and North-Western provinces, are seriously challenged by this problem.

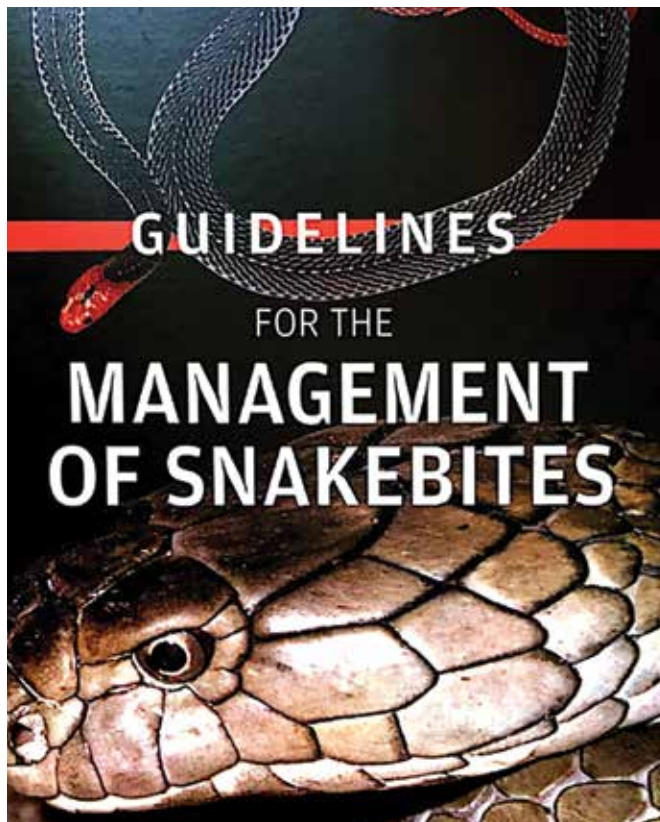
Polyvalent antivenom is the most effective, if not the only effective treatment available for snakebite envenomation. Unfortunately, in the South Asian countries including Sri Lanka where snakebites are common, antivenoms are often of poor quality, and acute allergic reactions to them occur frequently. Many studies have shown approximately 80% of snakebite victims who receive antivenom, develop acute reactions; up to 40% of these are life-threatening anaphylactic reactions. As a result, the management of acute adverse reactions to antivenom is an important part of the management of snake envenoming. Increasing the safety of treatment with antivenom for snakebite victims is therefore a matter of high priority.

Crisscrossing the country at least once a month during three long years, from March 2005 to April 2008, one of the largest clinical trials on snakebite was conducted at five different sites by Principal Researcher Prof. Asita de Silva and his team from the Clinical Trials Unit of the Faculty of Medicine, University of Kelaniya.

Undertaken in collaboration with the University of Oxford and the

Recommendation: based on the results of a powerful and well-designed trial in Sri Lanka, routine use of prophylactic adrenaline is recommended before antivenom treatment, except in those older patients in whom there is evidence or suspicion of underlying cerebrovascular disease and when the particular antivenom in use has a proven low incidence of reactions (<5%). The adult dose of epinephrine (adrenaline) is 0.25ml of 0.1% solution (0.25 mg) by sub-cutaneous injection (children 0.005 ml/kg body weight of 0.1% solution) (T).

Use of histamine anti-H1 and anti-H2 blockers, corticosteroid, and the rate of intravenous infusion of antivenom (between 10 and 120 minutes), do not affect the incidence or severity of early antivenom reactions (T,O).



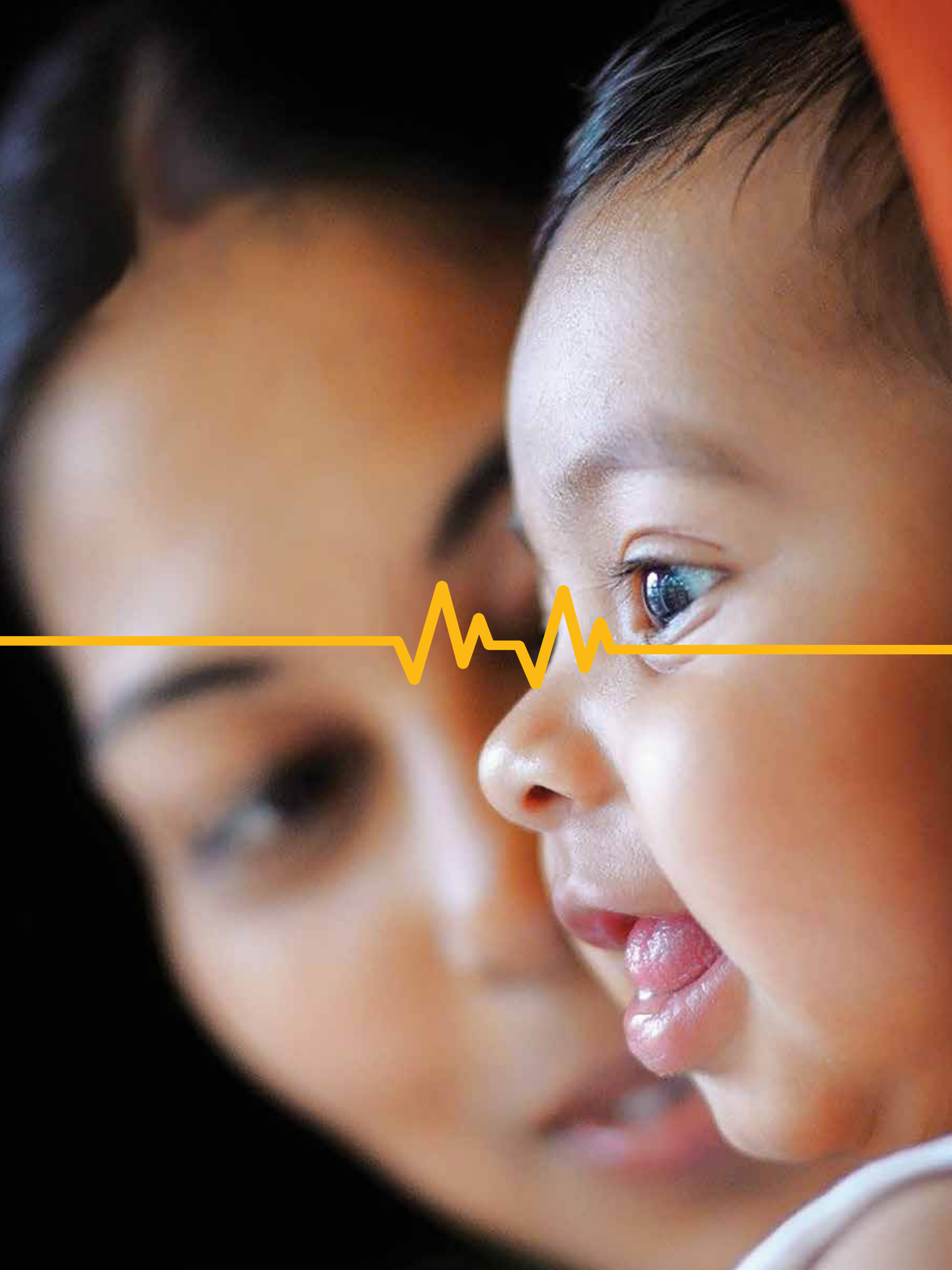
Liverpool School of Tropical Medicine, the research was funded by small grants from the University of Kelaniya and the Clinical Trial Service Unit of the University of Oxford. The researchers randomised 1,007 patients who had been admitted to secondary referral hospitals in Sri Lanka after snakebite to receive low-dose adrenaline, promethazine, hydrocortisone, or placebo alone and in all possible combinations immediately before treatment with antivenom. The patients were monitored for at least 96 hours for adverse reactions to the antivenom; patients who reacted badly were given adrenaline, promethazine, and hydrocortisone as 'rescue medication'. Three-quarters of the patients had acute reactions mostly 'moderate' or 'severe' to the antivenom. Most of the acute reactions occurred within an hour of receiving the antivenom, and nearly half of all the patients were given rescue

medication during the first hour. Compared with placebo, pretreatment with adrenaline, reduced severe reactions to the antivenom by 43% at one hour and by 38% over 48 hours. In contrast, neither hydrocortisone nor promethazine given alone reduced the rate of adverse reactions to the antivenom. Moreover, adding hydrocortisone negated the beneficial effect of adrenaline.

The findings were published in PLoS Medicine in 2011. Since then, pre-treatment with adrenaline has been used widely by physicians in Sri Lanka and other countries in the region.

In 2015, this intervention before antivenom infusion, was included into WHO snakebite management guideline.

This pivotal study was the starting point of our journey into the world of international, multi-centre clinical trials and paved the way to establishing the public-private partnership between University of Kelaniya and RemediumOne. This fired our imagination and determination to find simple and cost-effective solutions to major public health problems, which remains our ethos to this day.



PROBABILITY OF DEATH DURING PRODUCTIVE LIFE

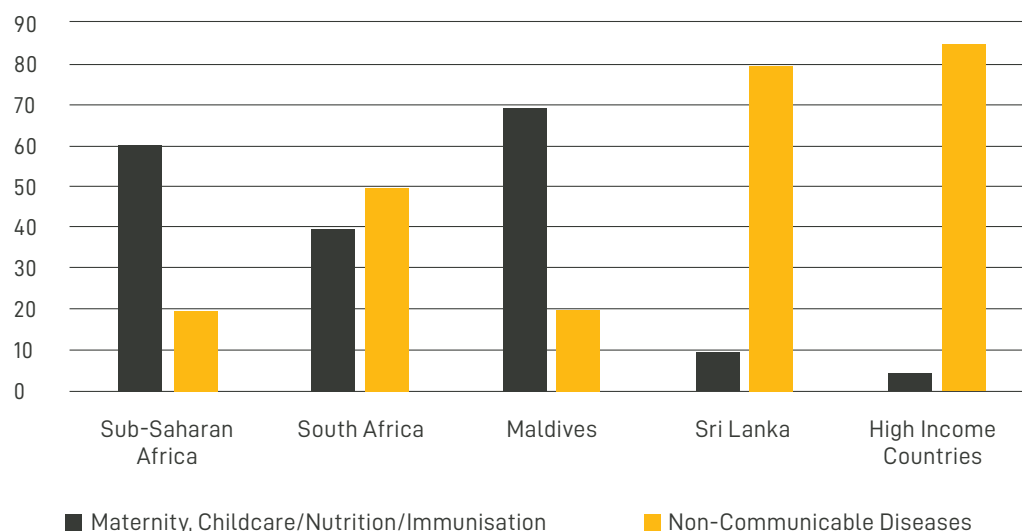
The probability of death between 30 and 70 years among men and women in Sri Lanka has increased significantly during the first decade of the new millennium; main contributors have been cardiovascular diseases, diabetes and cancer. These Non-Communicable Diseases (NCDs) claiming more than 103,000 lives each year remain the biggest killers.

Sri Lanka with an annual per-capita income of more than USD 4000 is now a middle-income country. With this success and the associated lifestyle changes, comes the challenge of NCDs that have completely changed the country's disease burden pattern. With very high national prevalence rates of hypertension, diabetes and heart diseases.

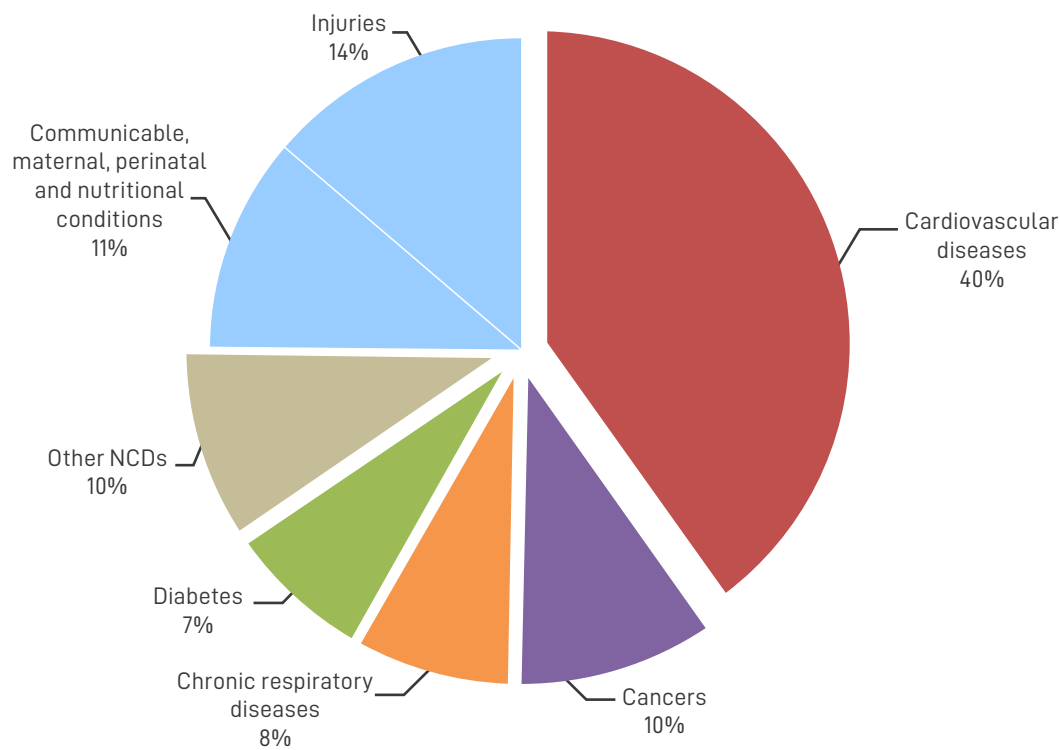
Sri Lanka's NCD burden has exceeded that of more affluent countries. Non-communicable diseases cause more than three quarters of all deaths and nearly 1 in 5 people die prematurely from NCDs. A recent report provided by the United Nations Interagency Taskforce on NCDs has warned Sri Lanka's 'epidemic' of NCDs fuelled by tobacco use, unhealthy diet, harmful use of alcohol and physical inactivity has now become a serious public health and economic threat to the country.

More than one third of adult males in the country are tobacco users. Consumption of salt is two to three times higher than recommended. One out of four people have raised blood pressure, and one third of women are overweight.

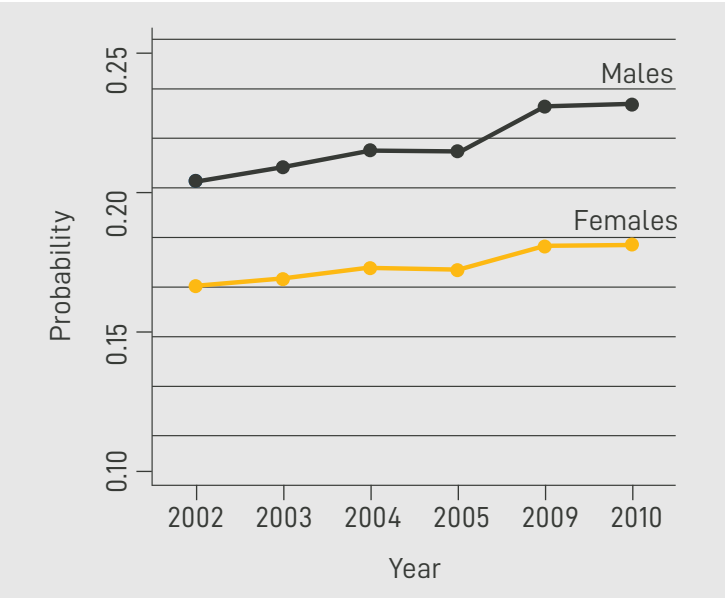
Burden of NCD's in Sri Lanka higher than selected regions



Percentage of population living in urban areas: 15.1%
Population proportion between ages 30 and 70 years: 46.7%
Proportional mortality (% of total deaths, all ages, both sexes)*



Year	Males	Females
2002	20.1	10.6
2003	20.8	11.3
2004	21.9	11.9
2005	21.7	12.0
2009	24.1	14.1
2010	24.3	14.1
% increase	4.2%	3.5%



Contribution by selected NCDs to the increase in probability of death of the 30 - 70 year age group in Sri Lanka

NON-COMMUNICABLE DISEASES IN SRI LANKA



70% of the estimated 18 million deaths worldwide per annum due to cardiovascular disease (CVD) occur in low and middle-income countries (LMIC). CVD are the largest cause of disability adjusted life year (DALY) loss, which includes 7 million premature deaths; 80% currently in LMICs. The economic loss, due to both direct healthcare costs and loss of productivity, from NCDs globally over the next decade is expected to be

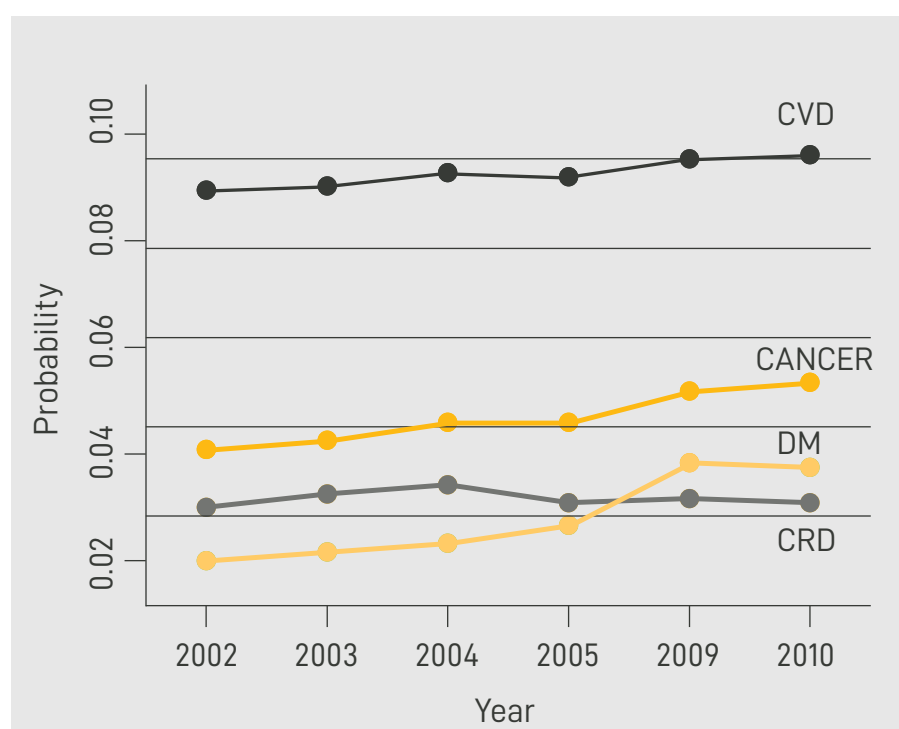
almost US\$ 50 trillion, about half of which relates to CVD. This will contribute directly to growing socio-economic inequalities both within and between countries, with catastrophic expenditure due to cardiovascular events becoming an increasingly common reason for households being pushed into impoverishment. According to a WHO report published in July 2018, 58.2 million people were pushed below the extreme poverty line of purchasing power parity of US\$ 1.90 per capita per day and 64.2 million below the poverty line of US\$ 3.10 in the South Asian region due to catastrophic health expenditure.

Unfortunately, NCDs disproportionately affect the poor, threaten to impoverish families, and place a growing burden on healthcare systems. In Sri Lanka, government spending on health is less than 2% of the national GDP,

lower than what has been accepted as necessary for better performance. As a result, our health financing model relies heavily on out-of-pocket expenditure (OOPE) by households, comprising an estimated 45% of current health expenditure (CHE). Spending on medicines is the dominant component accounting for 34% of total out-of-pocket health expenditure, a rapidly ageing population in the background of increasing prevalence of NCDs further compounds challenges faced by our country's healthcare system as well as individual households.

More cost-effective interventions, aimed at prevention as well as better management of noncommunicable diseases are urgently required. This will require coordinated actions across all stakeholders, including academia, industry, funding agencies and policy makers.

Year	Cardiovascular Diseases	Cancer	Diabetes Mellitus	Chronic Respiratory Diseases
2002	9.3	3.5	1.0	2.2
2003	9.4	3.7	1.2	2.5
2004	9.7	4.1	1.4	2.7
2005	9.6	4.1	1.8	2.3
2009	10.0	4.8	3.2	2.4
2010	10.1	5.0	3.1	2.3
2% increase	0.8%	1.5%	2.1%	0.1%



Gradual increase of NCDs in Sri Lanka

HYPERTENSION - THE SILENT KILLER

Uncontrolled high blood pressure is the leading attributable risk factor for mortality globally. Despite strong evidence that treatment of hypertension reduces risk, only less than one-third of those with hypertension worldwide have controlled blood pressure due to multiple barriers. The problem of uncontrolled BP is particularly concerning in rural areas in LMICs where health literacy and health systems are weakest, and CVD case fatality rate is highest.

There are a number of fundamental society-level drivers of this changing disease burden, but a key proximate cause of the CVD epidemic is non-optimal blood pressure (BP). Globally, it has been estimated that approximately 20% of all deaths are attributable to non-optimal BP and, most alarmingly, this problem is worsening as population distributions of BP in LMICs become increasingly adverse. For this reason, the Global Burden of Disease Study now identifies high BP as the leading risk factor for disease and disability globally, replacing other factors such as childhood undernutrition or unsafe water. This is true across the world except for the bottom billion who live in the least developed nations.

So, how do we tackle BP-related disease? There is widespread familiarity with two major paradigms of disease prevention – public health approaches that attempt to shift the entire population distribution

of a risk factor in a favourable direction, and clinical approaches that focus on the treatment of individuals with risk factor levels above a certain threshold.

These two approaches are, of course, not mutually exclusive. Population-based approaches such as reducing dietary sodium, increasing physical activity and decreasing unhealthy alcohol use are critical to achieving large, sustainable population-level benefits. From the perspective of individual patient approaches, despite huge advances over recent decades in the availability of highly effective and safe drugs for BP treatment, large gaps in implementation and scale-up persist. This provides an opportunity to challenge traditional paradigms and develop innovative solutions both in terms of clinical care and health systems response. From the perspective of LMICs, innovation is particularly important and provides an opportunity to 'leap-frog' traditional approaches which are unlikely to address the CVD crisis.

Palagyi A, de Silva HA, Praveen D & Patel A.
Heart, Lung & Circulation (2019)

In Sri Lanka, high blood pressure is now the second highest contributor to national disease burden. Prevalence estimates from population based surveys range between 19 and 30% (both urban and rural populations included). Of those identified with high blood pressure in the population-based surveys, between 30 and 50% were new diagnoses. When combined with the population size (approximately 22 million, of whom 60% are over 25 years),

approximately 5.3 million

Sri Lankans currently have hypertension and about half of those cases are undiagnosed.

Of those who receive treatment for high blood pressure, only about 20% are adequately controlled.



SMARTER TREATMENT AND COMMUNITY ENGAGEMENT TRIUMPH



Triple Pill versus usual care management for patients with mild-to-moderate hypertension (TRIUMPH), is a study we conducted exclusively in Sri Lanka in collaboration with The George Institute for Global Health. Funded by the National Health & Medical Research Council of Australia, the study was carried out at ten sites in Sri Lanka under the clinical supervision of eminent cardiologists and physicians.

The current clinical approach to hypertension management is to start treatment with monotherapy, and increase dosage in a step-wise fashion before adding additional treatments. However, only about one-half of people in high-income countries and one-quarter of those in LMICs who are started on BP lowering treatment in this manner achieve a BP level of less than 140/90 mmHg.

There is good evidence that a major contributor to this treatment gap is therapeutic inertia.

Most patients with hypertension require BP lowering medication from two or more classes to achieve adequate control. The need for titration of medication and addition of multiple classes of drug requires multiple physician visits and this in itself triggers poor adherence to prescribed medication and poor attendance at scheduled visits. The requirement to take multiple medications in complex regimens also results in poor adherence. For physicians, the need for repeated up-titrating or adding extra medications can lead to inertia and complicit acceptance of inadequate blood pressure control. Monotherapy is now being recognised as a challenge to achieving desired BP goals in patients with hypertension. There are sound pharmacological principles to expect the maximum benefit to adverse effect ratio from low-dose multiple-drug combinations. The benefits of each component working through different mechanisms of action are additive, and low doses typically avoid most adverse effects while achieving most of the potential BP reduction attributable to any given drug.

TRIUMPH was a prospective, open, randomised controlled clinical trial of a fixed dose combination of blood pressure lowering pill (Triple Pill) based

strategy compared to usual care among individuals with persistent mild-to-moderate hypertension on no or minimal drug therapy, augmented by a cost-effectiveness analysis. The aim of the study was to assess whether provision of Triple Pill compared to usual care improves blood pressure control at six months (SBP < 140 mmHg, DBP < 90 mmHg).

700 patients were enrolled across ten sites, of whose the average age was 56 years and at the time of enrolment, average blood pressure was 154/90 mmHg, and 59% of participants were not receiving high blood pressure treatment.

Patients were randomly assigned to receive either usual care in which their physician selected their medication or the combination 'Triple Pill', consisting of telmisartan (20 mg), amlodipine (2.5 mg) and chlorthalidone (12.5 mg). The primary endpoint was the proportion of patients who achieved a blood pressure of 140/90 mmHg or less at six months.

After six weeks, 68 percent of those taking the Triple Pill had achieved blood pressure within their target range, compared with 44 percent of those in the usual-care group. For patients receiving the Triple Pill, the average blood pressure reduction was 8.7 mmHg, compared with 4.5 mmHg for those receiving usual care. After six months, 83 percent of participants in the Triple Pill group were still taking the combination pill, while one-third of patients in the usual-care group were taking at least two blood pressure-lowering drugs.

The TRIUMPH study showed that the Triple Pill strategy provided benefits to patients even if doctors and patients did not increase drug therapy when required, as the consequences of such 'therapeutic inertia' were bypassed. The study results were published in the Journal of the American Medical Association (JAMA) in August 2018.

A within-trial and modelled economic evaluation of the fixed combination, low-dose Triple Pill strategy used in TRIUMPH compared to usual care for individuals with mild-to-moderate hypertension suggests that the Triple Pill strategy is very cost-effective as a first-line treatment option for individuals with mild-to-moderate hypertension, especially older individuals and those with higher BP, through reductions in cardiovascular disease morbidity and mortality. In limited resource settings such as Sri Lanka, where there are large and increasing gaps in treatment for cardiovascular disease, the study provides a strong economic case for scaling up this intervention as a means of addressing the population burden of cardiovascular disease. Results of this economic evaluation published in Lancet Global Health in October 2019, makes a strong case for investment in low-dose combination Triple Pill antihypertensive therapy as a cost-effective strategy in low-and middle-income country settings that could support achievement of the World Health Organization's global target of a 25% relative reduction in the prevalence of raised blood pressure by 2025 and ultimately reduce the global burden of cardiovascular disease.

COBRA - BPS

There are many important society-level drivers of this alarming increase in cardiovascular disease burden particularly in LMICs, but a key proximate cause of the cardiovascular disease epidemic is non-optimal blood pressure. Globally, it is estimated that approximately 20% of all deaths are attributable to non-optimal BP.

Unlike individual patient-based approaches that are focussed on effective medication, population-based approaches such as reducing dietary sodium, increasing physical activity and decreasing unhealthy alcohol use are critical to achieving large, sustainable population-level benefits.

There is a paucity of information on effective and sustainable public health system strategies for managing hypertension in South Asian countries, including Sri Lanka. Many people in the rural communities of South Asian countries lack the correct perception of hypertension and have minimum knowledge on how to prevent hypertension or even manage existing hypertension.

The main barriers to accessing health services are inadequate services and poor quality of existing facilities, shortage of medicine supplies, access to doctors due to high patient load, long travel distance to facilities, and long waiting times once facilities are reached.

COBRA-BPS or Control of Blood Pressure and Risk Attenuation – Bangladesh, Pakistan & Sri Lanka

study, a community-based, stratified, cluster randomised, controlled trial was conducted over two years to evaluate the effectiveness of a scalable, multicomponent intervention (MCI) designed specifically for hypertension management in rural areas delivered by government community healthcare workers in addition to usual care.

The MCI consisted of five components:

- (1) Home health education by government community health workers (CHWs)
 - (2) BP monitoring and stepped-up referral to a trained general practitioner using a checklist
 - (3) Training public and private providers in management of hypertension and using a checklist
 - (4) Designating hypertension triage counter and hypertension care coordinators in government clinics
 - (5) A financing model to compensate for additional health services and provide subsidies to low income individuals with poorly controlled hypertension.
- Usual care comprised of existing services in the community without any additional training.

A total of 11,222 individuals aged over 40 years were screened in 30 randomly selected clusters from 15 rural districts in the three countries, and 2,645 with hypertension were enrolled to the study. The primary outcome was reduction in systolic blood pressure at 24 months. While 76% reported being on antihypertensive medications, 60% had uncontrolled blood pressure (>140 mmHg systolic or >90 mmHg diastolic) at enrolment.

Analysis of baseline data shows an alarmingly high burden of cardiometabolic multimorbidity affecting 1 in 4 individuals with hypertension from rural communities in Bangladesh, Pakistan, and Sri Lanka. Chronic Kidney Disease (CKD) was the most common comorbid condition, followed by diabetes, stroke, and heart disease. CKD and diabetes dominated all the morbidity pairs and were found in 10% of the population with hypertension. Individuals residing in Sri Lanka had higher odds of cardiometabolic multimorbidity regardless of lifestyles, sociodemographic and economic status. Our findings add to the current knowledge on the epidemiology of cardiometabolic multimorbidity in rural South Asians, and underscore the importance to develop prevention and treatment strategies to target individuals at risk of or with cardiometabolic multimorbidity.

This complex community-based intervention study funded by a programme grant from the Wellcome Trust/MRC/DfiD (UK) and conducted in collaboration with public health specialists at the Duke-NUS Graduate Medical School in Singapore has demonstrated the multi-component intervention centred on home visits by government CHWs with integration into the existing health system led to clinically meaningful reductions in BP among adults with hypertension at 24 months. If implemented, this cost-effective intervention delivered on top of usual care has the potential to reduce cardiovascular disease burden in South Asia through better control of blood pressure at community level.

The Sri Lankan cohort although more literate, wealthier, and having greater access to blood pressure lowering medication compared to those in Bangladesh and Pakistan had a higher percentage of patients with poorly controlled blood pressure (systolic BP ≥ 140 mmHg or diastolic BP ≥ 90 mmHg) despite being on treatment at baseline.

COBRA-BPS:

American Journal of Hypertension 2018; 31:1205–1214



BETTER PREVENTION

DENGUE VACCINE

Dengue is a viral infection caused by four types of viruses (DENV-1, DENV-2, DENV-3, DENV-4) belonging to the Flaviviridae family. The viruses are transmitted through the bite of infected *Aedes aegypti* and *Aedes albopictus* female mosquitoes that feed both indoors and outdoors during the daytime (from dawn to dusk). The 4 dengue viruses have spread worldwide and are endemic in Asia, Central and South America, the Caribbean, the Pacific Islands, parts of Australia, and parts of Africa. An estimated 50 - 100 million cases of dengue fever occur annually, which results in around 500,000 cases of dengue haemorrhagic fever (DHF) and an estimated 22,000 deaths, primarily in children. It is estimated that 2.5 billion people (40% of the world's population) live in areas at risk of dengue virus transmission.

Dengue is an epidemic of national proportion in Sri Lanka. It is a tropical country with two monsoon seasons. Each monsoon brings in two peaks of dengue fever making it an endemic disease in Sri Lanka. However, 2017 started with an exceptionally high number of dengue cases which shot up to an outbreak in May-June 2017, creating the largest dengue outbreak experienced by the country for the last three decades. During the year 2017, a total of 186,101 suspected dengue cases were reported and as of May 24, 2018, a total of 19,459 suspected dengue cases were reported

to the Epidemiology Unit of the Ministry Of Health (MOH) in Sri Lanka with over 320 deaths in 2017 and 202 deaths in 2018. Over 40% of dengue cases were reported from the Western province.

No effective licensed dengue vaccine is available at the moment nor is there any antiviral therapy for dengue virus infection. Treatment of dengue fever is based solely on symptoms and signs, with fluid replacement required for haemorrhagic or shock cases. Preventive measures rely on mosquito control and individual protection, are of limited efficacy, complex to implement and questionable in terms of cost-effectiveness. There is a great unmet global public health need for a safe and effective vaccine that will protect against all serotypes of dengue infection, and thereby reduce the morbidity and mortality associated with dengue disease.

Given the unprecedented spread of dengue throughout Sri Lanka, there is an urgent need for a foolproof and solid prevention mechanism for the spread of dengue fever. It was at such a time that RemediumOne brought a dengue vaccine trial into the country. The trial involved coordination between various stakeholders, including the National Epidemiology Unit, in charge of providing strategic oversight in the project implementation in Sri Lanka. The recruitment target was a massive one of 2,100 healthy children aged 4 to 16.

Retaining 2,100 children and their parents in a 5-year-long study is a great challenge. RemediumOne, together with the principal investigators, arrange various retention strategies such as weekly telephone calls to capture adverse events, seminars on child nutrition and dengue and workshops for children to retain these subjects in the study.

RemediumOne believes in finding solutions to problems that affect Sri Lanka and the dengue epidemic is one such problem. There is a need of the hour to find an effective prevention mechanism for this disease that has claimed many lives. This vaccine, if proven effective, would be one of the best solutions to the dengue epidemic and would be a giant step towards eradication of dengue in Sri Lanka.



OUR STORY

RemediumOne is Sri Lanka's first, and currently the only, clinical research organisation. Founded in 2009, our ten years in Sri Lanka has allowed us to make significant contributions to the healthcare system as well to the economy of the country. In addition to making a difference in our own country, we have also contributed to global health challenges by participating in a number of pivotal and policy changing clinical trials.

The success of the initial snakebite trial conducted

through the University of Kelaniya led the university and our founder to understand the potential of clinical trials for our country. This in turn led to the establishment of RemediumOne on a Public-Private Partnership with the Clinical Trials Unit (CTU), University of Kelaniya, thus making RemediumOne the commercial arm of the CTU. With the academic and scientific guidance from the CTU, we have completed more than 20 studies over the last decade, with close collaborations with centres of excellence such as Duke University, The George Institute for Global Health and Oxford University.

RemediumOne works with over 250 investigators on various projects spanned out over various healthcare institutions all over the country. Our work has taken us to almost all parts of the country, including the Jaffna, which was ravaged by the 30-year civil war. We have active centres in teaching hospitals, general hospitals and specialty centres covering

various projects, including both community-based trials and drug intervention trials.

Throughout RemediumOne's decade-long journey, the one thing that has been in our DNA and by extension in all the work we do has been quality. Our teams are committed to quality and are constantly encouraged to place quality above all else. The biggest testament to our commitment to quality is our ISO 9001:2015 certification.

RemediumOne understands the value of the data it produces in changing global practices and bringing novel therapies into this world. Being on par with the global trends in data protection, RemediumOne became certified for ISO 27001:2013 standard for information security management, providing our clients with added assurance of the safety of data we produce.

VISION

OUR ASPIRATION

To become the most valued partner to our
Clinical Development and Life Sciences clients;
role model to our industry

MISSION

OUR WORK

A Regional Centre of Excellence
in Clinical Development and Life Sciences

VALUES

CLIENT FOCUS

Responsible, responsive attitude to our clients

ACCOUNTABLE

Ownership, honesty and integrity

RESPECT

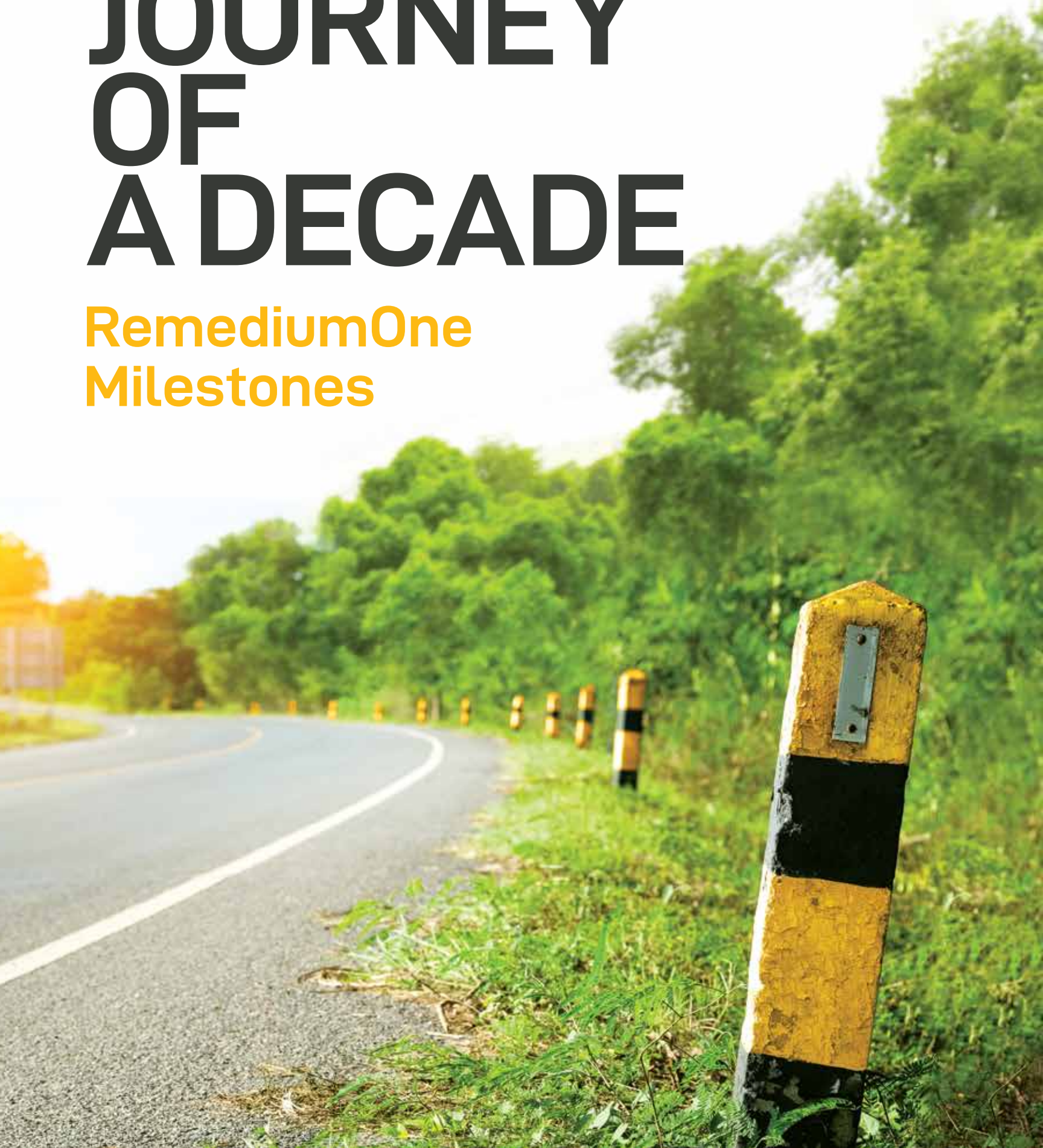
Honest, transparent, fair in our actions and
communication

ENDURE

Perseverance and belief in enduring partnerships

THE JOURNEY OF A DECADE

RemediumOne
Milestones



2019

Celebrating 10 years in
clinical research

2017

ISO 27001:2013 certification
for information
security management

2015

Reached 50 employees
First nephrology
and respiratory trials
Undertaking of first
monitoring trial

2013

First cardiovascular trial

2011

First diabetes trial

2009

Inauguration of RemediumOne
first gastrointestinal trial

2018

First FDA inspection
readiness programme

2016

First vaccine trial
ISO 9001:2015 certification for
quality management system

2014

Corporate branding
Establishment of QA department
First autoimmune and
ophthalmology trial

2012

First neurology and
oncology trials

2010

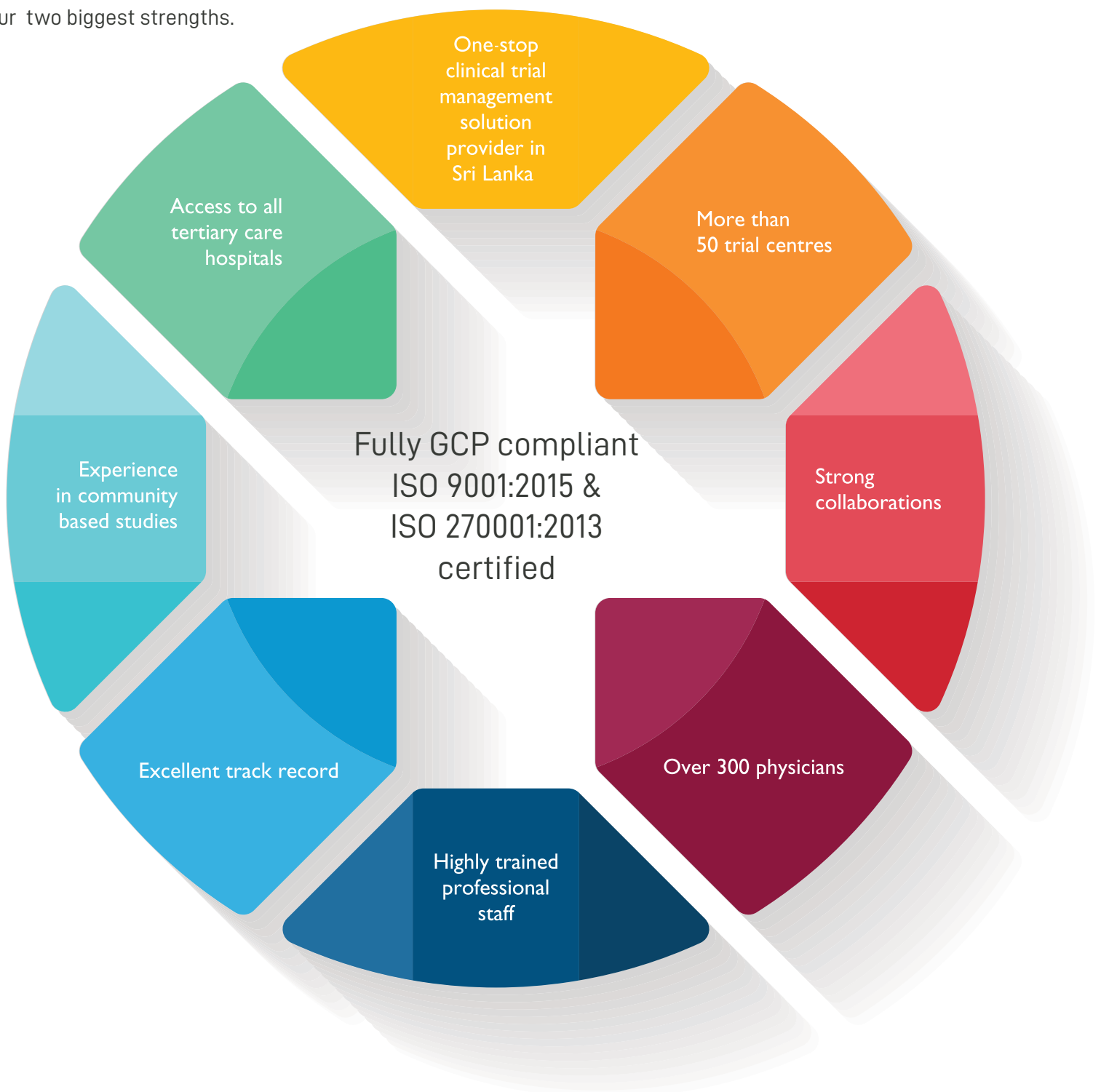
Affiliated with University
of Kelaniya
First rheumatology trial

OUR WORK

RemediumOne's main focus is to contribute towards improving the lives of the people in Sri Lanka as well as all over the world. This is why we undertake research projects that have big impacts on health problems of various dimensions. Our unique project delivery system, underpinned by a sharp focus on quality and safety allows us to be on par with global research institutions.

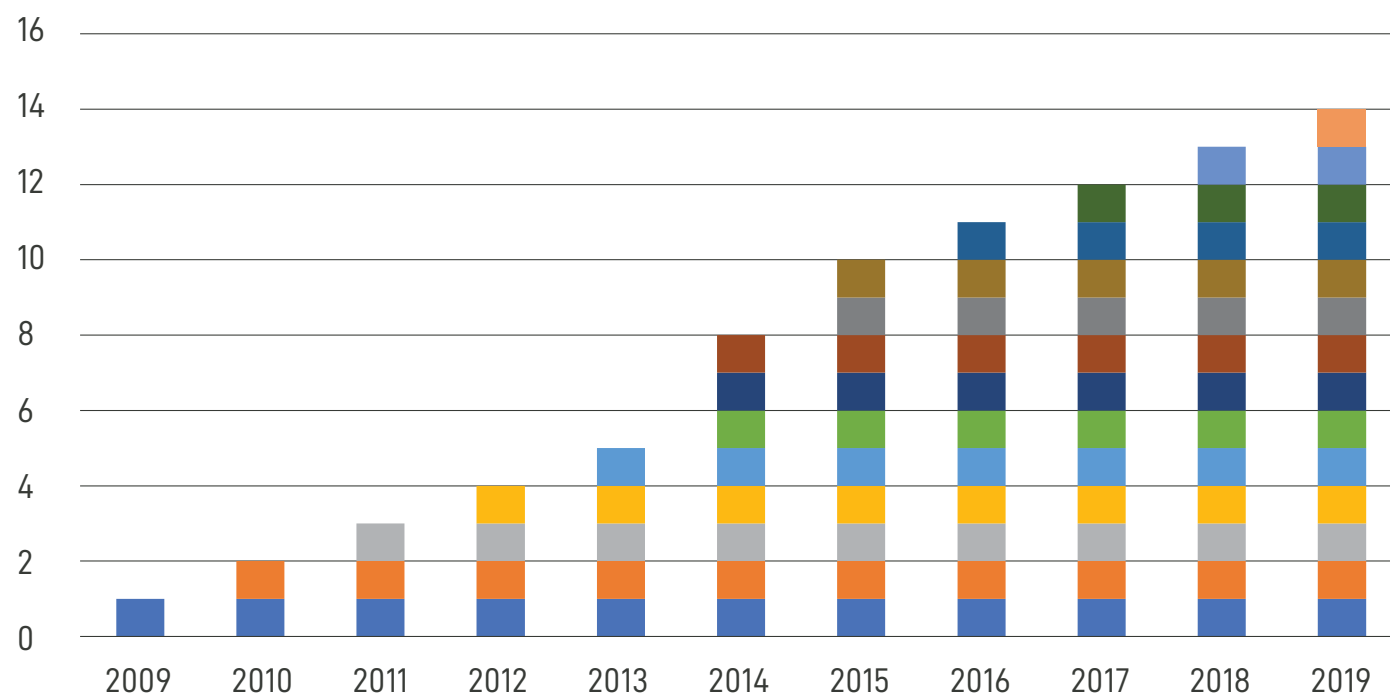
OUR STRENGTHS

Among our many strengths, we consider our staff and the excellent physicians we work with - our two biggest strengths.



GROWTH UNDERPINNED BY A ROBUST QUALITY AND SAFETY FOCUS

CLINICAL TRIAL EXPERIENCE



- Gastroenterology trial
- Oncology trial
- Ophthalmology trial
- Respiratory trial
- Haematology trial
- Rheumatology trial
- Cardiovascular trial
- Paediatric trial
- Vaccine trial
- RWE Study
- Diabetes trial
- Autoimmune trial
- Nephrology trial
- Neurology trial

OUR COMMITMENT TO QUALITY AND DATA SECURITY

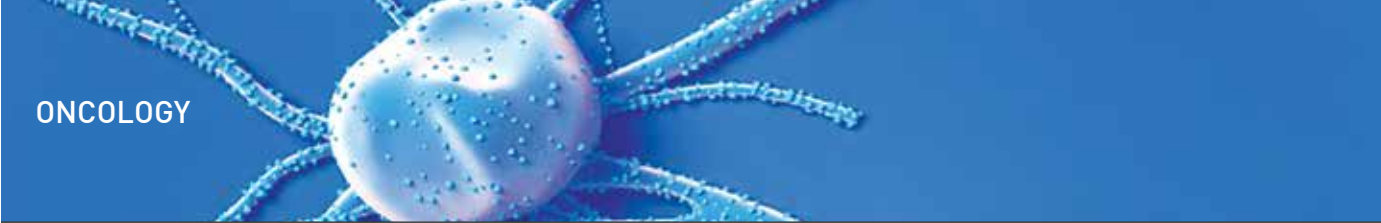
**Over 25 client
audits, over
15 therapeutic
areas with
zero critical
observations**

In addition to the routine project monitoring by the Sponsor, RemediumOne's internal quality assurance team routinely monitors all project sites to ensure that we are compliant with ICH GCP, our local regulatory requirements, protocol and our own standard operating procedures. The quality assurance team is totally independent of the Operations team and reports directly to the top management, ensuring anonymity and removing bias. Our Quality Management System (QMS) is ISO 9001:2015 certified since 2015. In addition, RemediumOne is also certified for ISO 27001:2013 on information security management. Our QMS and information security management is audited by our clients as well as by external certification bodies such as Bureau Veritas.

In our quest for quality and benchmarking, RemediumOne's inspection readiness team is being coached and trained by leading industry experts who've had proven track record of facing inspections from various regulatory agencies across the world. Under the careful guidance of a consultant from USA, who has had over 40 years of industry experience, including facing many regulatory inspections, our inspection readiness team continues to train staff, conduct awareness sessions to PI and conduct mock audits to ensure that we are ready at all times for a regulatory inspection.




OUR TRACK RECORD



ONCOLOGY					
STUDY	APPROVAL DURATION	TOTAL STARTUP DURATION	NO. OF SUBJECTS RANDOMISED	% OF TARGET RANDOMISATION	STUDY STATUS
Oral cavity cancer	20 weeks	32 weeks	46	N/A	Follow-up
Colorectal cancer	16 weeks	28 weeks	22	N/A	On-going
Metastatic breast cancer	12 weeks	20 weeks	06	100%	Completed



ENDOCRINOLOGY					
STUDY	APPROVAL DURATION	TOTAL STARTUP DURATION	NO. OF SUBJECTS RANDOMISED	% OF TARGET RANDOMISATION	STUDY STATUS
Paediatric type 2 Diabetes mellitus	24 weeks	40 weeks	18	N/A	On-going
Diabetes mellitus and cardiovascular outcome	16 weeks	40 weeks	64	100%	Completed
Gestational diabetes	08 weeks	14 weeks	300	N/A	On-going



CARDIOLOGY					
STUDY	APPROVAL DURATION	TOTAL STARTUP DURATION	NO. OF SUBJECTS RANDOMISED	% OF TARGET RANDOMISATION	STUDY STATUS
Community-based blood pressure reduction	12 weeks	24 weeks	850	100%	On-going
Hypertension	12 weeks	22 weeks	700	100%	Completed
Cardiovascular outcome	16 weeks	32 weeks	314	100%	Follow-up

AUTOIMMUNE DISEASE

STUDY	APPROVAL DURATION	TOTAL STARTUP DURATION	NO. OF SUBJECTS RANDOMISED	% OF TARGET RANDOMISATION	STUDY STATUS
Systemic Lupus	18 weeks	34 weeks	02	60%	Completed
Lupus Nephritis	20 weeks	30 weeks	11	90%	Completed
Lupus Nephritis	18 weeks	30 weeks	24	80%	Completed

INFECTIOUS DISEASE

STUDY	APPROVAL DURATION	TOTAL STARTUP DURATION	NO. OF SUBJECTS RANDOMISED	% OF TARGET RANDOMISATION	STUDY STATUS
Dengue vaccine	54 weeks	72 weeks	2100	100%	Follow-up
Adenoviral conjunctivitis 1	16 weeks	24 weeks	48	100%	Completed

NEUROLOGY

STUDY	APPROVAL DURATION	TOTAL STARTUP DURATION	NO. OF SUBJECTS RANDOMISED	% OF TARGET RANDOMISATION	STUDY STATUS
Bilateral benign blepharospasm	14 weeks	24 weeks	33	100%	Completed
Head positioning	06 weeks	12 weeks	272	100%	Completed

GASTROENTEROLOGY

STUDY	APPROVAL DURATION	TOTAL STARTUP DURATION	NO. OF SUBJECTS RANDOMISED	% OF TARGET RANDOMISATION	STUDY STATUS
Ulcerative colitis	12 weeks	22 weeks	48	48%	Completed

PUBLICATIONS OF TRIALS WE HAVE CONTRIBUTED TO

- 1 B Vitamins in patients with recent transient ischaemic attack or stroke in the vitamins to prevent stroke (VITATOPS) trial: A Randomised, Double-Blind, Parallel, Placebo-Controlled Trial. The Lancet Neurology 2010; 9: 855-65
- 2 Low-Dose Adrenaline, Promethazine, and Hydrocortisone in the Prevention of Acute Adverse Reactions to Antivenom following Snakebite: A Randomised, Double-Blind, Placebo-Controlled Trial. PLoS Medicine 2011; 8(5): e1000435. DOI:10.1371/journal.pmed.1000435
- 3 CHIMES-I: sub-group analyses of the effects of Neuroaid according to baseline brain imaging characteristics among patients randomised in the CHIMES study. International Journal of Stroke 2013; 8: 491-94
- 4 Chinese Medicine Neuroaid Efficacy Stroke Recovery – Extension Study (CHIMES-E Study): An Observational Multicenter Study to Investigate the Longer-Term Efficacy of Neuroaid in Stroke Recovery. Cerebrovascular Diseases 2013; 35: 18-22
- 5 Chinese Medicine Neuroaid Efficacy on Stroke Recovery: A Double-Blind, Placebo-Controlled, Randomised Study. Stroke 2013; 44: 2093-2100
- 6 Effects of MLC601 on early vascular events in patients after stroke: The CHIMES study. Stroke 2013; 44: 3580-3.
- 7 Efficacy of Nitric Oxide, with or without continuing Antihypertensive treatment, for management of high blood pressure in acute stroke (ENOS): A Partial-Factorial Randomised Controlled Trial. The Lancet 2015; 385: 617-28
- 8 Chinese Medicine Neuroaid Efficacy on Stroke Recovery-Extension Study (CHIMES-E): A Multicenter Study of Long-Term Efficacy. Cerebrovascular Disease 2015; 39: 309-18
- 9 Glyceryl Trinitrate for Acute Intracerebral Haemorrhage: results from the Efficacy of Nitric Oxide in Stroke (ENOS) trial, a subgroup analysis. Stroke 2016; 47: 44-52
- 10 Control of Blood Pressure and Risk Attenuation – a public health intervention in rural Bangladesh, Pakistan, and Sri Lanka: Feasibility Trial Results. Journal of Hypertension 2016; 34: 1872-81
- 11 Regional variation in Acute Stroke care organization. Journal of the Neurological Sciences 2016; 371: 126-130
- 12 Prognostic Factors and Pattern of Long-Term Recovery with MLC601 (NeuroAiD™) in the Chinese Medicine Neuroaid Efficacy on Stroke Recovery - Extension Study. Cerebrovascular Disease 2017; 43: 36-42
- 13 Trial of Head Positioning in Acute Stroke. New England Journal of Medicine, 2017: 2017;376:2437-47. DOI: 10.1056/NEJMoa1615715
- 14 Multi-component intervention versus usual care for management of Hypertension in rural Bangladesh, Pakistan, and Sri Lanka: Study Protocol for a Cluster Randomized Controlled Trial. Trials, 2017: DOI 10.1186/s13063-017-2018-0
- 15 Route of feeding as a proxy for Dysphagia after stroke and the effect of transdermal Glyceryl Trinitrate: data from the Efficacy of Nitric Oxide in Stroke Randomised Controlled Trial.

Translational Stroke Research, 2017: DOI 10.1007/s12975-017-0548-0

16 Determinants of uncontrolled Hypertension in Rural Communities in South Asia - Bangladesh, Pakistan, and Sri Lanka. *American Journal of Hypertension* 2018; <https://doi.org/10.1093/ajh/hpy071>

17 Fixed Low-Dose Triple Combination Antihypertensive Medication vs Usual Care for Blood Pressure Control in Patients With Mild to Moderate Hypertension in Sri Lanka: A Randomised Clinical. *Journal of the American Medical Association* 2018; 320(6): 566-579. doi:10.1001/jama.2018.10359

18 Regional Variation in Chronic Kidney Disease (CKD) in Hypertensive individuals in rural South Asia and Associated Factors: Findings from Control of Blood Pressure and Risk Attenuation- Pakistan, Bangladesh, and Sri Lanka. *Nephrology Dialysis Transplantation* 2018: 1-8 doi: 10.1093/ndt/gfy184

19 A lifestyle intervention programme for the prevention of Type 2 Diabetes Mellitus among South Asian women with Gestational Diabetes Mellitus (LIVING study) – protocol for a Randomised Trial. *Diabetic Medicine* 2018: doi: 10.1111/dme.13850

20 Process evaluation of a Randomised Controlled Trial of a pharmacological strategy to improve Hypertension control: protocol for a qualitative study. *BMJ Open* 2018;8:e022317. doi:10.1136/bmjopen-2018-022317

21 Blood Pressure Variability and Outcome in Acute Ischemic and Hemorrhagic Stroke: A Post-Hoc Analysis of the Headpost Study. *Journal of Human Hypertension* 2019; 33(5): 411-418. doi: 10.1038/s41371-019-0193-z

22 Patients with Recent Acute Coronary Syndrome and Polyvascular Disease derive large absolute benefit from Alirocumab. *Journal of the American College of Cardiology* 2019; 73(9): DOI: 10.1016/S0735-1097(19)32640-3

23 Regional Variation in Prediabetes and Diabetes and Associated Factors among Hypertensive Individuals in Rural South Asia. *Journal of Obesity* 2019; Article ID 4914158, 11 pages <https://doi.org/10.1155/2019/4914158>

24 Patients' experiences on accessing Health Care Services for Management of Hypertension in Rural Bangladesh, Pakistan and Sri Lanka: A Qualitative Study. *PLoS One* 2019; <https://doi.org/10.1371/journal.pone.0211100>

25 Prevalence and Correlates of Cardiometabolic Multimorbidity among Hypertensive Individuals: A Cross-Sectional Study in Rural South Asia- Bangladesh, Pakistan, and Sri Lanka. *BMJ Open* 2019;9:e030584. doi: 10.1136/bmjopen-2019-030584

26 Patient perspectives on Hypertension management in health system of Sri Lanka: A Qualitative Study. *BMJ Open* 2019 Oct 7;9(10):e031773. doi: 10.1136/bmjopen-2019-031773.

27 Fixed low-dose Triple Combination Antihypertensive medication versus usual care in patients with mild to moderate Hypertension in Sri Lanka: A Within-Trial and Modelled Economic evaluation of the TRIUMPH trial. *Lancet Global Health*, *Lancet Global Health* 2019; 7: e1359-66.

WHAT WE OFFER

As an SMO (Site Management Organisation), RemediumOne offers a 'plug and play' model for sponsors and contract research organisations, who are interested in doing research in Sri Lanka. The importance of scientific research in medicine has been extolled numerous times; so much so that Western medicine is commonly referred to as 'evidence-based medicine.' We provide ground-level expertise, from selecting eminent clinicians who are at the pinnacle of their respective fields in supplying qualified clinical research coordinators who provide site-level expertise, resulting in top-quality data, as well as high-level care for our patients.

FEASIBILITY ASSESSMENT AND INVESTIGATOR SELECTION

RemediumOne offers its services in feasibility assessment and investigator selection. This process includes assessing internal

and environmental capacity, and assessing the potential of conducting a clinical trial in the country, while selecting investigators who are experts in their fields. Robust feasibility, performed by our trained professionals, ensures realistic assessment and guarantees high-quality research.

QUALIFIED MEDICAL SPECIALISTS



Medical doctors produced exclusively by State Universities



Local postgraduate medical degrees recognised by the GMC, UK



Mandatory overseas training at centres of excellence (e.g. UK & Australia) for board-certification as specialists



Most specialist doctors in all major and sub specialties are highly trained and possess overseas postgraduate degrees



Culture of conducting and participating in clinical trials



Prior clinical trials experience in conducting multicentre multinational studies

REGULATORY AND ETHICS SUBMISSIONS

Our well-experienced regulatory team collaborates with CROs, sponsors, investigators and regulatory bodies to ensure accurate and timely submission to ethics committees and the regulatory authority.

CLINICAL TRIAL REGULATIONS OF SRI LANKA - STRENGTHENING OUR WORK

The clinical trial regulations were published by the National Medicines Regulatory Authority of Sri Lanka on 14th of October 2019, through an extraordinary gazette notice under the National Medicines Regulatory Authority Act No. 5 of 2015.

This further strengthens the regulatory environment and promotes more research to be conducted in the country.

Clinical trial regulations can be accessed through www.nmra.gov.lk

TRAINING AND HUMAN RESOURCE MANAGEMENT

Our team is one of our biggest assets. Hence, a substantial investment – both monetary and time – goes into ensuring that our team is well trained in the latest and the best practices in the industry.

START-UP ACTIVITIES

The start-up phase of a study sets the tone for the entire clinical trial in the country. A well-planned start-up allows a clinical trial to transfer seamlessly into operations and sites to function with minimal obstacles. RemediumOne's start-up team collaborates and coordinates with multiple stakeholders to set the correct foundation for the study in Sri Lanka.

SITE SPACE MANAGEMENT

Our dedicated facilities management team will facilitate all infrastructure and facility requirements to get a site up and running throughout the country.

PROJECT IMPLEMENTATION

Clinical trial sites are the heart of our operation. RemediumOne's well-trained coordinators collaborate daily with the investigators of the highest calibre, ensuring that we give data of the best quality while adhering to the protocol, ICH GCP and local regulatory requirements.

SUPPLY CHAIN MANAGEMENT

Proper management of investigatory products is of prime importance in a clinical trial. RemediumOne offer complete supply chain management services, right from applying for import licensing to proper destruction of the expired or used investigational products.

PATIENT RECRUITMENT AND RETENTION

Here, at RemediumOne, we believe that patient care begins at recruitment. Starting from our first screening visit, we aim to build a long-lasting relationship that lasts after the study close out. Our coordinators are stationed

permanently at various healthcare institutes, enabling them access to various patient pools and also allowing patients the access to the coordinators any time.

Screened and randomised over 5,000 patients all over Sri Lanka

SAFETY REPORTING

Safety management in clinical trials is an important component, comprising of various reporting timelines from Sponsor, regulatory authorities and ethics review committees. RemediumOne's dedicated safety reporting team works around the clock to ensure that all stakeholders are managed and coordinated to ensure regulatory and ethical compliance.

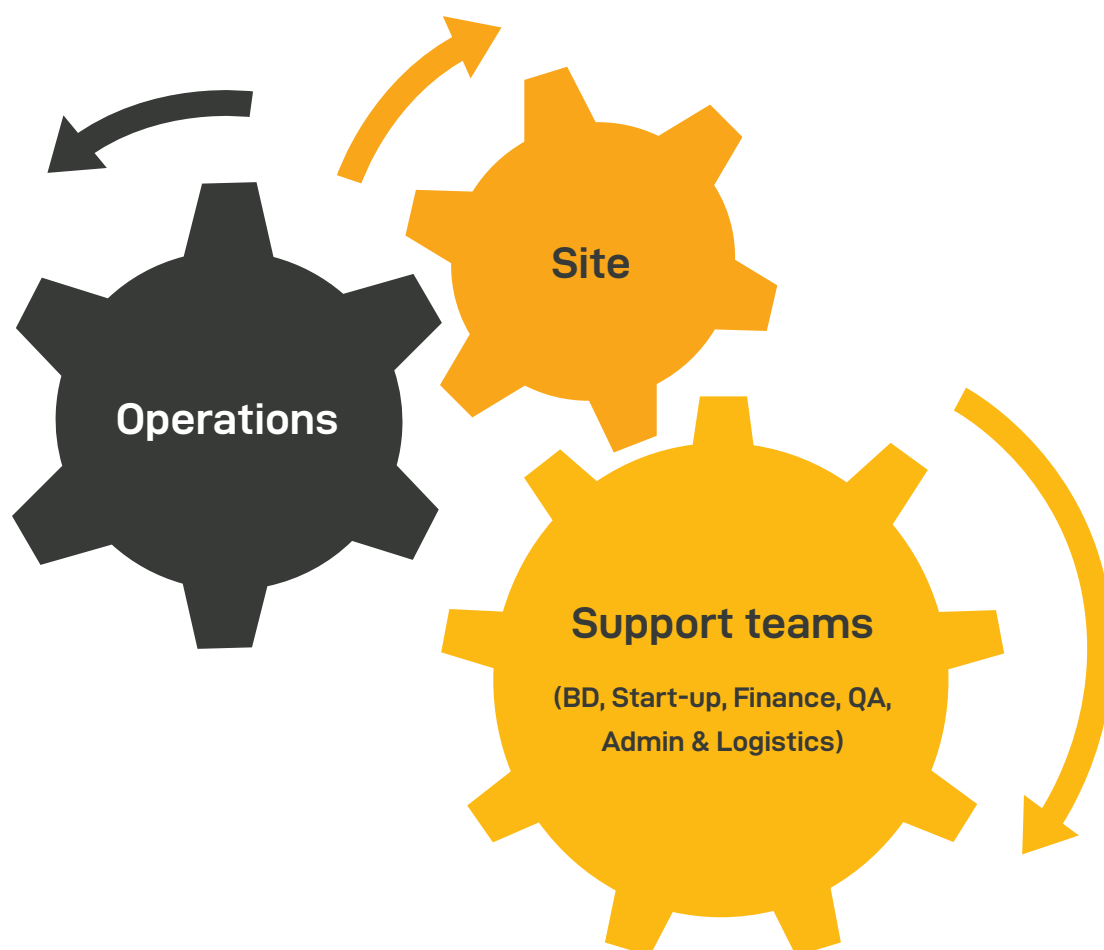
Over 100,000 safety reports processed
Over 20,000 regulatory communications made

QUALITY ASSURANCE

RemediumOne places utmost importance to quality. Here our demand for quality is uncompromisable, starting from the lowest employee to the topmost executive. Our quality management system covers all of RemediumOne's activities – starting from start-up to operations and study closure. We are also certified for ISO 9001:2015, which is a testament to our commitment to quality.

MONITORING & REPORTING

RemediumOne has its own monitoring team, independent of the core operations. We have been in this space since 2015, working with academic research organisations such as The George Institute for Global Health.



OUR REACH

1 Kandy Teaching Hospital

Therapeutic areas -

- Cardiovascular disease
- Diabetes
- Nephrology
- Neurology
- Gastroenterology

2 Kurunegala Teaching Hospital

Therapeutic areas -

- Cardiovascular disease
- Diabetes
- Neurology

3 Negombo Teaching Hospital

Therapeutic areas -

- Vaccine studies
- Gynaecology

4 Colombo North Teaching Hospital

Therapeutic areas -

- Cardiovascular disease
- Diabetes
- Nephrology
- Neurology
- Gynaecology
- Vaccine studies
- Gastroenterology

5 National Cancer Institute, Maharagama

Therapeutic areas -

- Oncology

6 National Hospital of Sri Lanka

Therapeutic areas -

- Cardiovascular disease
- Diabetes

- Nephrology
- Gastroenterology
- Gynaecology
- Neurology

7 Lady Ridgeway Hospital for Children

Therapeutic areas -

- Diabetes
- Vaccine studies

8 Sri Jayewardenepura General Hospital

Therapeutic areas -

- Cardiovascular disease
- Neurology
- Nephrology
- Diabetes

9 Colombo South

Teaching Hospital

Therapeutic areas -

- Cardiovascular disease
- Neurology
- Gastroenterology
- Diabetes
- Vaccine studies

10 Karapitiya Teaching Hospital

Therapeutic areas -

- Diabetes
- Oncology
- Gastroenterology

11 Jaffna Teaching Hospital

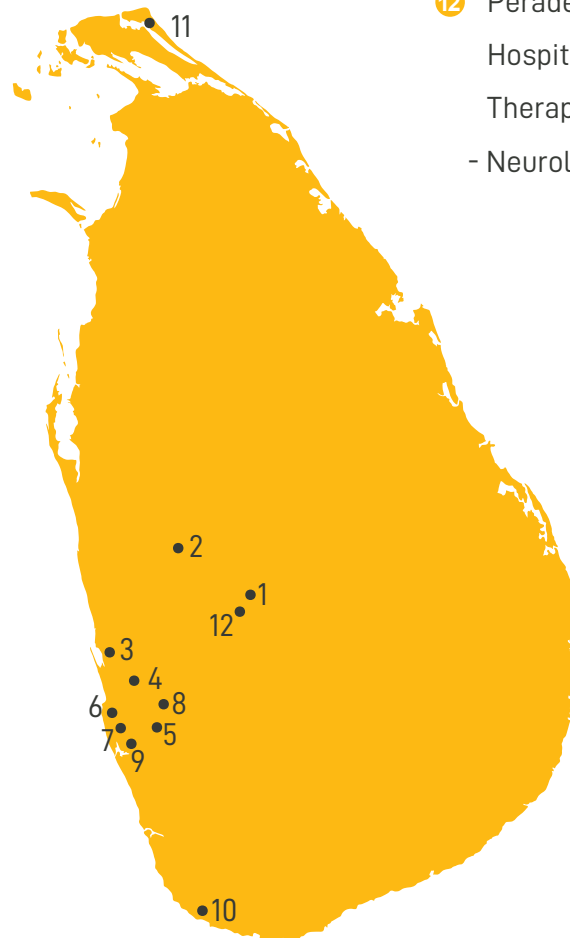
Therapeutic areas -

- Haematology

12 Peradeniya Teaching Hospital

Therapeutic areas -

- Neurology



OUR PEOPLE

With nearly 90 professional staff, spread across Sri Lanka, the diversity and calibre of expertise of our staff has been an integral part of the success of RemediumOne.

We are proud to have a team of young and energetic scientists who are aspiring to change the face of medicine through their work. All our research staff has completed bachelor's degrees in life sciences degrees as a minimum. Many are pursuing master's degrees

and PhDs in various disciplines. RemediumOne is dedicated to providing its employees with fulfilling careers and opportunities to test their boundaries. We believe that providing our team with a safe, fulfilling and challenging work environment allows them to better focus on larger health problems of the world.



OUR LEADERSHIP

RemediumOne is grateful to its founder, board of directors and CEO for their leadership and guidance in achieving its vision.



PROF. ASITA DE SILVA
FOUNDER

Prof. Asita de Silva is the founder of RemediumOne in 2009.

He is a Clinical Pharmacologist, and is currently Senior Professor of Pharmacology at the Faculty of Medicine, University of Kelaniya, Sri Lanka. He is also Director of the Clinical Trials Unit in the same institution, which he founded in collaboration with the University of Oxford in 2005. He had his postgraduate training in clinical pharmacology at the Radcliffe Infirmary in Oxford. He holds a doctorate in Clinical Pharmacology from the University of Oxford (Exeter College) and is a Fellow of the Royal College of Physicians, London.

From its humble beginnings in the University of Kelaniya to the establishment as we know it today, Prof. de Silva, was able to successfully establish Sri Lanka's pioneering clinical research centre and build partnerships with many other centers of excellence globally. Called to serve the country in a larger capacity, Prof. Asita resigned from RemediumOne in 2016 to head the National Medicines Regulatory Authority. RemediumOne is grateful and indebted to Prof. Asita de Silva for his visionary leadership and guidance.



MR. KARTHI GAJENDRAN
DIRECTOR

Currently designated as the President of the multi-billion dollar giant in India's Airport and Transportation sector, GVK Group, Mr. Karthi Gajendran is responsible for the execution, operation and development of major capital projects in a range of markets including airport and transportation, energy resources, hospitality and life sciences. Holding the ownership and management rights to the operations of India's Mumbai International Airport and Bangalore International Airport, GVK has a vision to become 'the world's premier infrastructure and utilities organisation' that constantly strives to provide the highest standard of products and services. His most recent business and management venture is the expansion and development of two state-of-the-art Greenfield international airports in collaboration with Indonesia's Government in two of their provinces namely North Bali and Yogyakarta. Mr. Gajendran's decades of value-added experience has been a part of the many milestones RemediumOne has reached in its decade.



**MR. PRIYANGA
GUNASEKERA**
DIRECTOR

Director and CEO of Sri Lanka's leading System Integration and Enterprise Business Partner for cloud and virtualisation software and services, VSIS, Mr. Priyanga Gunasekera established multiple businesses using his passion for innovation and IT development alongside other expertise in the field. VSIS provides ICT services to a number of Governmental, Telecommunications, Banking and Finance integrated organisations including leading national institutions. Bringing 20 years of experience in ICT, Mr. Gunasekera is known for undertaking complex projects and achieving great success in lifting VSIS to be a leader in a range of markets including medical facilitation, banking, finance and educational institutions. In 2014 Mr. Gunasekera's company, VSIS, set up a Software Defined Data Center at Colombo University, the first of its kind in Sri Lanka.



**MR. DUMINDRA
RATNAYAKA**
DIRECTOR

A highly qualified alumni from the University of Moratuwa and a Chartered Engineer by profession, Mr. Dumindra Ratnayaka has worked in management for three decades. Designated as a Director and CEO of telecommunications giant Etisalat Lanka (Private) Limited, Mr. Ratnayaka's expertise and skills have helped him overcome the many challenges of the highly competitive Sri Lankan Telecom market. His most successful feats were three brand-building exercises that took the organisation from Celltel to Tigo to Etisalat, eventually making Etisalat quote, 'the most cost-efficient telco in Sri Lanka.' Since his retirement from his long reign as CEO, he has contributed greatly to grooming a set of capable professionals in RemediumOne.



**MR. SAMANTHA
RANATUNGA**
CEO

Recently appointed as CEO of RemediumOne Private Limited, Mr. Samantha Ranatunga has a wealth of experience in a variety of industries. Simultaneously holding the position as Chairman of the Ceylon Chamber of Commerce. Ranatunga has worked for 30 years at the CIC Group and 10 years as its Managing Director and CEO. Mr. Ranatunga also served as an independent director at the Seylan Bank Board for 9 years. His desire to reconnect with the field of science and technology aided his decision to join a centre of scientific excellence such as RemediumOne. Using his experience as a pioneer in coordinating and setting up agricultural and pharmaceutical businesses of CIC, Mr. Ranatunga will help our quest to strategically build and position RemediumOne in the global clinical trial industry to create further business opportunities for the organisation and its potential stakeholders.

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