



**Sri Ramakrishna**  
Hospital (Multi-Speciality)

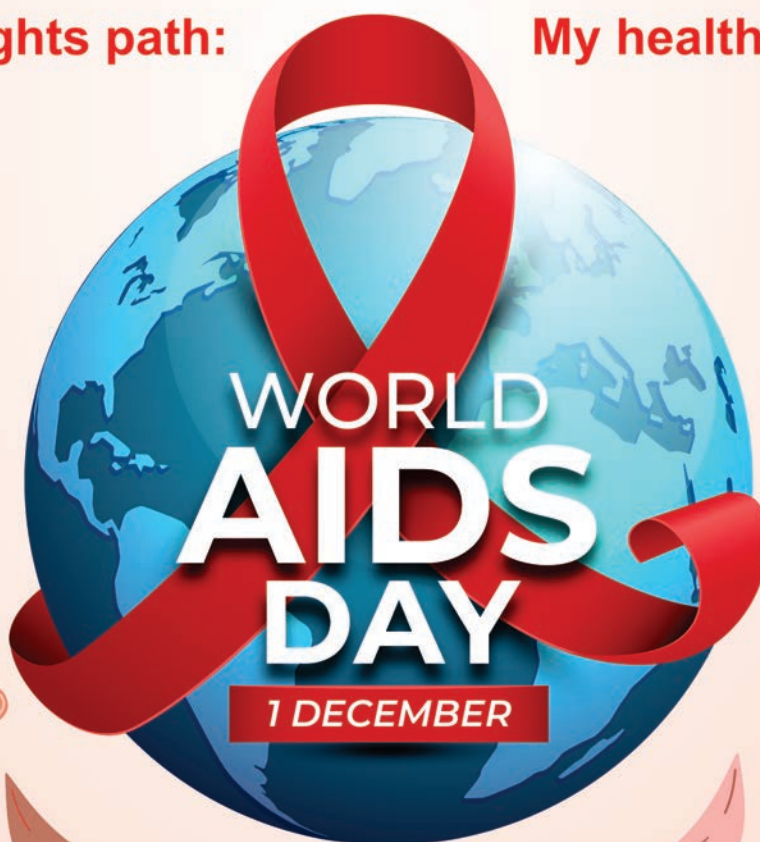
# pulse

*Happenings at Sri Ramakrishna...*



**“Take the rights path:**

**My health, my right!”**





**Shri.R.Sundar**  
Managing Trustee

I am filled with immense pride and gratitude for the growth and innovation we have achieved together. I am delighted to be a part of the team that has made remarkable progress over the years. Our commitment to providing exceptional healthcare and serving our community has always been stronger, and I am proud of the strides we have taken together.

We observe **World AIDS Day** on **December 1<sup>st</sup>** and the **International Day of Persons with Disabilities** on **December 3<sup>rd</sup>**, to reflect on the power of unity, care, and equality in shaping a healthier and more inclusive world. At Sri Ramakrishna Hospital, we take pride in fostering inclusivity by offering accessible healthcare and creating spaces where everyone feels valued and supported.

These days remind us of our collective responsibility to care for one another and ensure equal opportunities for all. Let us commit to breaking down barriers and fostering a society where every individual is empowered to live with dignity, purpose, and pride.



**Dr.S.Rajagopal**  
Medical Director

Sri Ramakrishna Hospital has consistently been at the forefront in conducting diverse academic programs, complementing its clinical achievements. The focus on Clinical Club meetings where we engage in discussions on intriguing cases, significantly enriches the professional development of our team.

This month's spotlight on **Orthopaedics, Plastic & Hand Surgery, Rheumatology and Physiotherapy** reflects our strong commitment to staying abreast of medical advancements and addressing a wide range of healthcare needs, ultimately benefitting both our medical professionals and the overall quality of patient care.

On **World AIDS Day**, we honor the progress made in HIV/AIDS care and treatment while acknowledging the challenges that remain. As medical professionals, we have a critical role in advocating for early detection, promoting prevention, and providing compassionate, stigma-free care. Together, let us work to empower patients and communities to overcome barriers and build a future free of HIV/AIDS.

The **International Day of Persons with Disabilities** reminds us of the importance of accessible healthcare and inclusive practices. At Sri Ramakrishna Hospital, we are committed to tailoring our services to meet diverse needs, ensuring that every patient receives respectful and comprehensive care. By embracing innovation and sensitivity, we can make a significant difference in the lives of individuals with disabilities. Let us continue to strive for excellence in our service to humanity.

## Editorial Team

**Dr.N.Loganathan**  
Pulmonologist

**Dr.S.Prahadeeshwaran**  
Head - Public Relations

**Mr.Murali Kaliappan**  
Head - Marketing

## TOMOTHERAPY RADIXACT - INAUGURATION - 12.11.2024

Sri Ramakrishna Hospital – Sri Ramakrishna Institute of Oncology and Research (SRIOR) has become the first Comprehensive Cancer Centre in Southern Tamil Nadu to introduce Tomotherapy Radixact X9 – a state of the art radiation therapy system developed in the USA.

Tamil Nadu Minister for Health & Family Welfare, Hon'ble Ma. Subramanian launched this machine worth Rs. 30 crore

in the presence of Shri. D.Lakshminarayanawamy, Managing Trustee, Shri. R.Sundar, Joint Managing Trustee, Shri. S.Narendran, Shri. V.Ramakrishna, Trustees, SNR Sons Charitable Trust; Dr.P.Guhan, Director, SRIOR; Dr.Karthikesh, Surgical Oncologist, Sri Ramakrishna Institute of Oncology and Research, Dr. S. Rajagopal, Medical Director and Dr. S. Alagappan, Medical Superintendent, Sri Ramakrishna Hospital. District Collector Shri. Kranthi Kumar Pati IAS, Coimbatore Mayor Mrs. Ranganayaki, City Corporation Commissioner Shri. Sivaguru Prabhakaran IAS and Consultants, staffs and members of Sri Ramakrishna Hospital attended the inaugural.





## PICU WORKSHOP : ENHANCING PAEDIATRIC INTENSIVE CARE - 10.11.2024

The Department of Paediatrics and PICU successfully conducted a highly engaging PICU Workshop for our Postgraduate students and General Paediatricians on 10 November, 2024 as a part of PEDICRITICON 2024. The workshop focused on enhancing critical care skills, covering topics such as Recognition of sick child, hemodynamics of shock, Antibiotic stewardship,



Traumatic brain injury management and case based discussions on difficult airway, different types of shock and sodium disturbances. Hands on for NI V, Ventilator and basic Ultrasound in PICU.

Interactive sessions and hands- on training were key highlights, enabling participants to bridge theoretical knowledge with practical application. This initiative reflects our commitment to fostering clinical excellence and ensuring our delegates are well prepared for challenges in paediatric intensive care.

## QUALITY DAY 2024 – 13.11.2024

Quality day 2024 on the theme “QUALITY- FROM COMPLIANCE TO PERFORMANCE” was celebrated by Sri Ramakrishna Hospital.

SNR Sons Charitable Trust Joint Managing Trustee Shri. R.Sundar was the Chief Guest and Dr.Siddhartha Buddhavarapu,HOD-Department Of Neonatology was the Guest of Honor,joined by the Chief Executive Officer Shri . C V Ramkumar, Dr. S.Rajagopal-Medical Director, Dr.S. Alagappan-Medical Superintendent. Consultants, Department Heads, Managers, Nursing heads, Team Leaders , staffs attended the event. Annual report for the year 2023-2024 was presented.



Memory Contest, Identification Game, Quiz Competition, Teamwork Event, Treasure hunt were conducted. Departments and individuals were felicitated for their involvement in continual quality improvement The entire event and competitions were coordinated by Quality Team to ensure that all the Department Heads contributes for quality improvement of their own departments. Awareness programme, events and competitions are planned be conducted at Sri Ramakrishna Hospital for the benefits of employees, patients and stakeholders in the forthcoming years.

## QUALCON 2024 – 14.11.2024

In celebration of World Quality Day 2024 Department of Laboratory Medicine, Sri Ramakrishna Hospital had organized Tamil Nadu state's first ever one day conference with the theme of "Focus on Excellence, Innovations and Best Practices in Clinical Laboratory". The "QUALCON 2024" was supported and held under the guidance of SNR Sons Charitable Trust Managing Trustee Shri. D. Lakshminarayanawamy, Joint Managing Trustee Shri. R. Sundar.



The event was inaugurated by SNR SONS Charitable Trust Chief Executive Officer Mr. C.V. Ramkumar, Sri Ramakrishna Hospital Medical Director Dr. S. Rajagopal, Medical Superintendent Dr. S. Alagappan, Lab Director Dr. M. L. Raman and Administrative Director Mr. R. Dorairaj.

Dr. C. Ashmi, Director- Microbiology & Molecular Biology, Dr. P. Suseela Director- Quality & Clinical Biochemistry and experts from various institutions shared their insights on quality practices and innovations in laboratory medicine. This event brought together over 200 laboratory doctors, quality professionals, medical students, lab technicians and technologists all united by a shared commitment to continuous improvement and excellence.

## CME ON COMPREHENSIVE STROKE THERAPY - 16.11.2024

Sri Ramakrishna Hospital proudly announced its recent accreditation as an "Advanced Stroke Centre". This accreditation highlights the hospital's dedication to offering the region's highest level of stroke care.

A Continuous Medical Education (CME) session was hosted by Neurology & Neurosurgery experts from Sri Ramakrishna Hospital on November 16, 2024, at Coimbatore which shed light on "Comprehensive Stroke Therapy." The event drew a significant attendance from doctors and healthcare professionals in Coimbatore and its neighboring areas, establishing a collaborative learning environment that underscored the importance of enhanced, region-wide stroke care.



The session was inaugurated by SNR Sons Charitable Trust Managing Trustee Thiru. D. Lakshminarayanawamy, Joint Managing Trustee Thiru. R. Sundar, Chief Executive Officer Thiru. C.V. Ramkumar and Medical Director Dr. S. Rajagopal, Medical Superintendent Dr. S. Alagappan, Chief Neurologist Dr. Asokan and carried forward by Neurologists Dr. Arunadevi, Dr. Vedhanayagam; NeuroSurgeons Dr. Murali, Dr. Vikram ;Interventional Radiologist Dr. Muthurajan; Radiologist Dr. Arun Ramraj of Sri Ramakrishna Hospital.



## AUTOMATED OXYGEN CONTROL IN NICU

**Introduction:** Every year during the newborn care week and the World Prematurity Day (17 November), we at Sri Ramakrishna Hospital renew our pledge and commitment to the tiny babies who go home from our NICU. We constantly strive to bring in newer strategies and technology to ensure that they are not just the miracles that their families prayed for but also fulfill their complete genetic potential in the contribution towards nation building. This year we would like to focus on better titrating the oxygen that we give to babies in NICU as we all know oxygen is a drug and its needs to be used very carefully.

Preterm infants born under 32 weeks of gestation spend a long period in the neonatal intensive care unit (NICU), where they experience considerable morbidities during and after their NICU stay. They receive respiratory support which includes supplemental oxygen, administered with the aim of keeping oxygen saturation (SpO<sub>2</sub>) within a prescribed target range (TR) and preventing hypoxia and hyperoxia. But frequent and prolonged SpO<sub>2</sub> deviations have been associated with mortality and prematurity-related morbidities, including retinopathy of prematurity (ROP), periventricular leukomalacia (PVL), necrotizing enterocolitis (NEC), bronchopulmonary dysplasia (BPD), and neuro-developmental impairment.

However, in practice – maintaining oxygen saturation in a strict target range (91-95%) is more desired than achieved. Various factors contribute to why this is challenging: nursing workload, lack of training and education regarding the importance of strict oxygen control. It's no surprise that several studies have reported on the difficulty of SpO<sub>2</sub> targeting when FiO<sub>2</sub> is titrated manually, reflected in a proportion of SpO<sub>2</sub> TR time of around 50% or less.

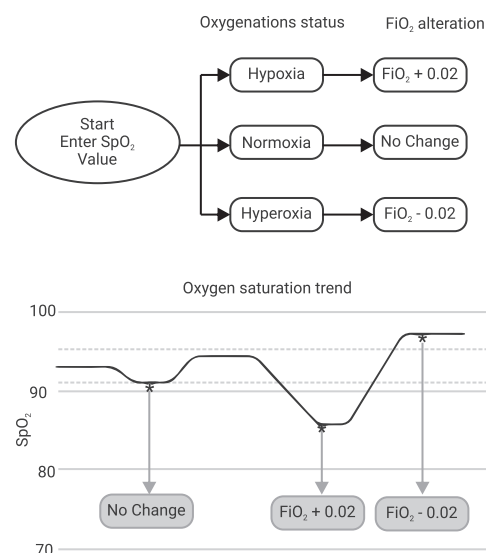
Automated oxygen control (AOC) is a new emerging technology which shifts the burden of titrating FiO<sub>2</sub> on babies with respiratory support from the nurses/doctors to the machine. AOC in neonatal intensive care units (NICUs) represents a significant advancement in the care of preterm infants. This technology aims to maintain optimal oxygen saturation levels, which is crucial for the health and development of these vulnerable patients. Let's delve into the details of this innovative approach.

### How Automated Oxygen Control Works:

Automated oxygen control systems use sophisticated algorithms to adjust the fraction of inspired oxygen (FiO<sub>2</sub>) based on real-time oxygen saturation (SpO<sub>2</sub>) readings. These systems are integrated into contemporary ventilators and can operate using various algorithmic approaches, such as rule-based, proportional-integral-derivative (PID), and adaptive control. The primary goal is to keep the SpO<sub>2</sub> within a target range, reducing the risks associated with both hypoxemia and hyperoxemia.

### Algorithms available to perform AOC:

**Rule Based - FiO<sub>2</sub> is titrated with changes in saturation following a simple rule. It doesn't take baby's condition into account.**



### Proportional Integral Derivative (PID)

This model uses a more complex computation. The proportional term reflects the current error; the integral term reflects the sum of previous errors and the derivative term accounts for the direction the SpO<sub>2</sub> error is heading (figure 2). The computation includes a unique coefficient for each of the P, I and D terms, thus balancing their relative influence. The sum of the P, I and D terms—which may be opposite in sign—determines the magnitude of the change in FiO<sub>2</sub>. If the choice of the coefficient is wrong, it could lead to fluctuations worse than manual titration.



## Adaptive Control

This algorithm uses baby's lung condition into account – it uses basal oxygen requirement (baseFio2) of the baby as a surrogate for lung condition. If the baseFio2 is low, the titrations are of a smaller magnitude and vice versa. An example is illustrated below:

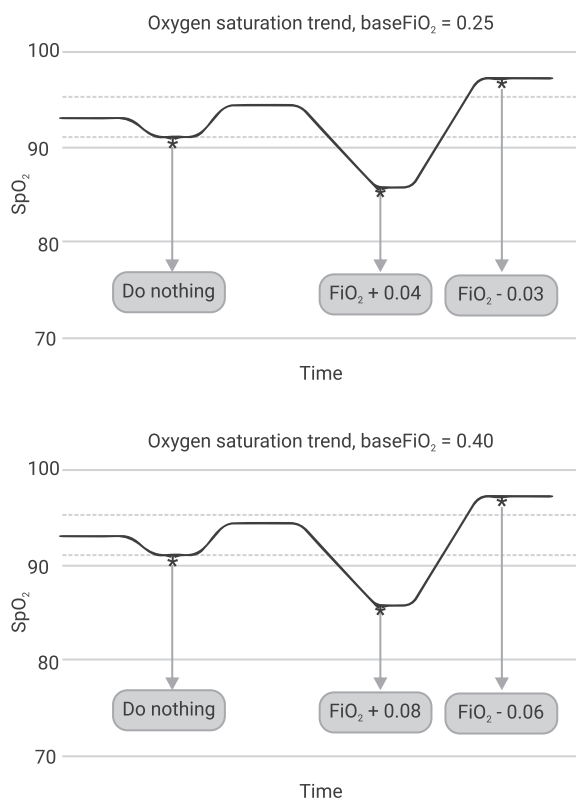


Figure 3: The possible effect and responses of an adaptive in two cases with a different basal oxygen requirement (baseFio<sub>2</sub>)

## Benefits of Automated Oxygen Control

### Improved Oxygen Saturation Management:

- Automated systems have shown to increase the time infants spend within the target SpO<sub>2</sub> range, thereby reducing the incidence of both hypoxemia and hyperoxemia. The time spent in hyperoxemia is much better controlled compared to the time spent in hypoxemia.
- This precise control helps in minimizing the fluctuations in oxygen levels, which is particularly beneficial for preterm infants who are prone to respiratory instability.

### Reduced Workload for Healthcare Staff:

- By automating the adjustment of oxygen levels, these systems reduce the need for manual interventions by healthcare staff.
- This allows nurses and doctors to focus on other critical aspects of neonatal care, improving overall efficiency in the NICU.

### Potential for Better Clinical Outcomes:

- Although more research is needed, initial studies suggest that automated oxygen control may lead to better long-term outcomes for preterm infants by reducing the incidence of oxygen-related complications.

**Oxygenie** is a type of PID model that is available in the market – it calculates baseline Fio<sub>2</sub> every 30 minutes, taking the values of last 60 minutes. The algorithm calculates a new value for the set Fio<sub>2</sub> each second, rounded to 0.5%. The proportional term is adapted to the degree of lung dysfunction by multiplying with 0.5–1, corresponding to a reference Fio<sub>2</sub>. If SpO<sub>2</sub> is in target range, algorithm is tuned to minimise adjustments during good control. Similarly, adjustments are larger if the saturation is below <80%. While in 21% oxygen, values of SpO<sub>2</sub> above target are not considered to represent hyperoxia and the integral term is therefore not altered. In a study on 20 preterm infants on non-invasive respiratory support, time spent within target range increased during AOC, whereas hypoxia with SpO<sub>2</sub> <80% and hyperoxia with SpO<sub>2</sub> >98% greatly reduced [(0.7% (0.1%–1.3%) vs 0% (0%–0.17%)]

### Disadvantages of Automated Oxygen Control:

- Fine tuning of algorithms is still not optimal: averaging calculating times should be shorter, overshoot of Fio<sub>2</sub> needs to be corrected to prevent short periods of hyperoxia
- Masking of clinical situations as machine increases fio<sub>2</sub> without addressing root causes (eg. ET block, air leaks, apneic episodes can be picked up later)
- Artifact Hypoxia due to the movement of baby leads to unnecessary increase in Fio<sub>2</sub>

However, these issues are expected to be resolved in the near future with the rapid advances in technology.

The road ahead for the NICUs is going to be automated control with the newer versions further improving the technology and outcomes. We have recently trialed using Oxygenie on the SLE 6000 and have found encouraging results in oxygen control. We are in the process of acquiring these machines and thereby becoming the first in the region to incorporate this technology in the NICU and further improve our outcomes and ensure our babies grow up to be healthy citizens of the country.

### Dr. SIDDARTHA BUDDHAVARAPU

MD (Paed), Fellowship in Neonatal  
Perinatal Medicine University of Calgary, Canada  
Consultant Neonatologist & HOD

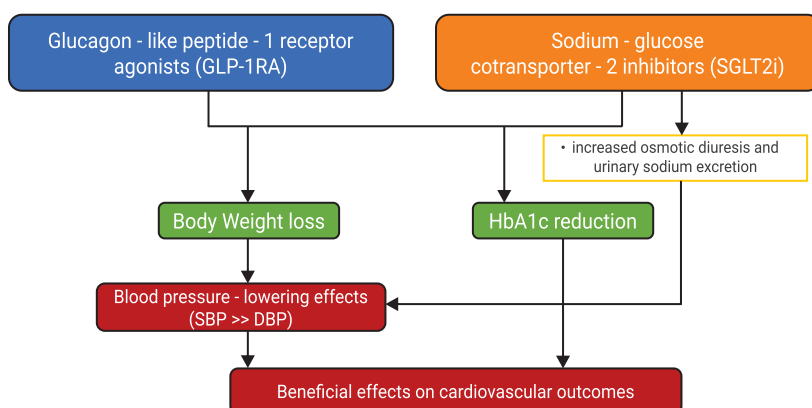




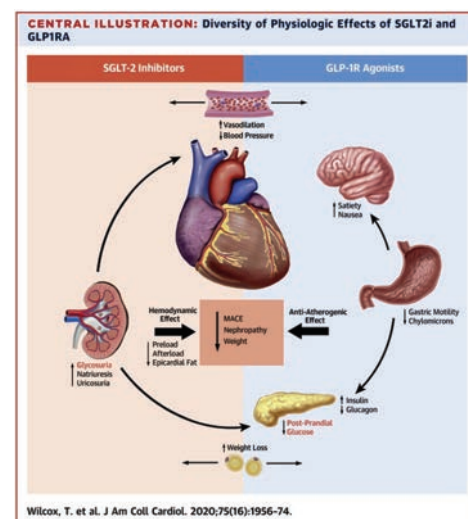
## Diabetes and Insulin Resistance : Novel Treatment with SGLT 2 Inhibitors and GLP1 Analogues

**Case1:** A 50 y/m with ACS and BMI 40 with mild renal failure. Patient was on Insulin 90u /day of premix insulin with severe low sugars. T. Dapagliflozin and Inj Liraglutide 0.6mg/day were added. Patient's symptoms improved and insulin requirements reduced to 20u/day with no hypoglycemia and weight loss of 30kg was achieved in an year.

**Case2:** A 84 y/f with HBA1C of 12.3 , BMI of 28 and on T.Glimepride 4mg, T. Metformin 2mg and T. Linagliptin 5mg/day. She had severe GI side effects and mild heart failure. Metformin was stopped and she was put on oral Semaglutide 7mg and Dapagliflozin 5mg/day. Her HBA1C dropped to <8.5 in 4months and GI problems , breathing difficulties, cardiac function improved.



The above two cases imply the challenges in T2 Diabetes being morbid obesity, visceral adiposity, insulin resistance which are now solved by adding newer agents like Dapagliflozin, Empagliflozin and Liraglutide, Semaglutide, Lixisenatide which also improves cardiac and renal functions. They also reduce Insulin dosage, glycemic variability, hyoglycemia and improve quality of life and reduce mortality. They can be either started as add on to existing diabetic medications or started as first line treatment for T2 diabetes particularly with cardiac issues and obesity.



### Dr. G. KRISHNA SHANKAR

MBBS., MD(Gen Med), DM(Endo & Diab),  
MRCP(UK), SP.CERT(Endo & Diab)

Consultant in Diabetes, Thyroid and Endocrinology





## SPECIAL CELEBRATION

### NECTAR OF LIFE MOTHERS' MILK BANK - 20.11.2024

A momentous celebration was held at the Sri Ramakrishna Hospital to commemorate the remarkable achievement of collecting over one million milliliters of mothers' milk at the Nectar of Life - Mothers' Milk Bank. The event was organized by Rotary District 3201 in association with Sri Ramakrishna Hospital and the Rotary Club of Coimbatore Cotton City.

The Chief Guest, Ms. Swathy Rohit, COO of SNR Sons Charitable Trust, graced the event with her presence.

She commended the donors and the organizers for their tireless efforts. The occasion honored the selfless mothers who contributed to achieving this significant milestone, which has saved countless lives. A special awareness campaign was also launched during the event, where 48 prominent women, including association leaders, doctors, lactation counselors, Inner Wheel members, and social media influencers, were appointed as "Star Campaigners" to advocate for mothers' milk donation and increase awareness about the importance of mothers' milk banks. This celebration stands as a testament to the power of community service and the spirit of giving, furthering the mission to save lives and nurture a culture of compassion through mothers' milk donations.



## NAPCON 2024 – 21.11.2024

26th National Conference on Pulmonary Diseases (NAPCON) 2024, took place in Coimbatore from 21st to 24th November 2024. As part of NAPCON 2024 workshops, Sri Ramakrishna Hospital conducted "ALL ABOUT ILD" workshop on November 21, 2024.

The workshop was inaugurated by SNR Sons Charitable Trust Managing Trustee Shri. D. Lakshminarayanawamy and Joint Managing Trustee Shri. R. Sundar along with Chief Executive Officer Shri.

C. V. Ramkumar, Sri Ramakrishna Hospital Medical Director Dr.S. Rajagopal, Medical Superintendent Dr. S. Alagappan.



The morning lectures and afternoon hands on workshops on transbronchial lung cryobiopsy, echocardiography in pulmonary hypertension, right heart catheterisation, HRCT in ILD and surgical lung biopsy techniques helped immensely the delegates who attended the workshop from all over the country. National Co-ordinator & Venue Co-ordinator of the workshop were Padma Shri Prof.Dr.Randeep Guleria and Dr.N.Loganathan respectively. Faculties from across the country including the prestigious All India Institute of Medical Sciences, New Delhi, PGI Chandigarh, other states institutions along with faculties from Sri Ramakrishna Hospital took part in the workshop sharing their knowledge and skills with all the delegates.

## WORLD PREMATURETY DAY CELEBRATION - 23.11.2024



Sri Ramakrishna hospital celebrated the World Prematurity Day with the families of preterm babies who graduated from the NICU in the last year. SNR Sons Charitable Trust Joint Managing Trustee Shri. R. Sundar, Chief Executive Officer Shri C V Ramkumar, Medical Director Dr. S. Rajagopal, Medical Superintendent Dr. S. Alagappan, along with Dr. Siddartha Buddhavarapu, Dr. Suja Mariam, Dr. Krishna Sameera, Junior Medical Officers, NICU staff nurses took part in the celebration. The NICU at Sri Ramakrishna Hospital is a leading tertiary care referral center for neonates in the city and neighbouring districts. It provides high end neonatal treatments like cooling therapy, high frequency ventilation, nitric oxide therapy and transport for sick neonates.

The celebration was meant to serve as an inspiration for the later generations of preterm baby families and will also motivate NICU staff constantly to provide better and improved quality of care for sick babies.





## SRI RAMAKRISHNA HOSPITAL

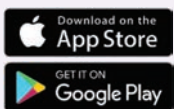
### “BEST CLINICAL EXCELLENCE IN ACUTE STROKE CARE- SOUTH INDIA”



Voice of Healthcare (VOH) organised National Stroke Conclave and Stroke Innovation & Excellence Award 2024 supported by Indian Stroke Association & QAI - Quality and Accreditation Institute was held on 30th November 2024 at New Delhi. The award was presented to Advance Stroke Centre Sri Ramakrishna Hospital, Coimbatore for Best Clinical Excellence in Acute Stroke Care, South India. The Award was received by Dr. Asokan Chief Neurologist/ Stroke Programme Medical Director, Sri Ramakrishna Hospital from Dr. Jeyaraj Durai Pandian, President of World Stroke Organisation.

National Stroke Conclave & Awards 2024 continues its crucial mission in addressing the pressing issue of stroke within the national healthcare landscape. Sri Ramakrishna Hospital has been accredited by QAI for Advanced Stroke Center. The Center delivers evidence based and timely intervention for all patients experiencing stroke. A total of 30 quality indicators are captured on a regular basis to improve the clinical outcome. The center uses standardized protocol for acute stroke care which includes prehospital triage, protocols, NIHSS, dysphagic test (GUSS Scale), clinical care pathway for thrombolysis, thrombectomy, medical management, Modified Ranking Score (mRS). The hospital has Neuro/ Stroke rehabilitation center with advanced machines and technologies.

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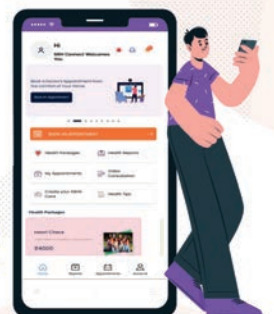
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(Multi-Speciality)

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