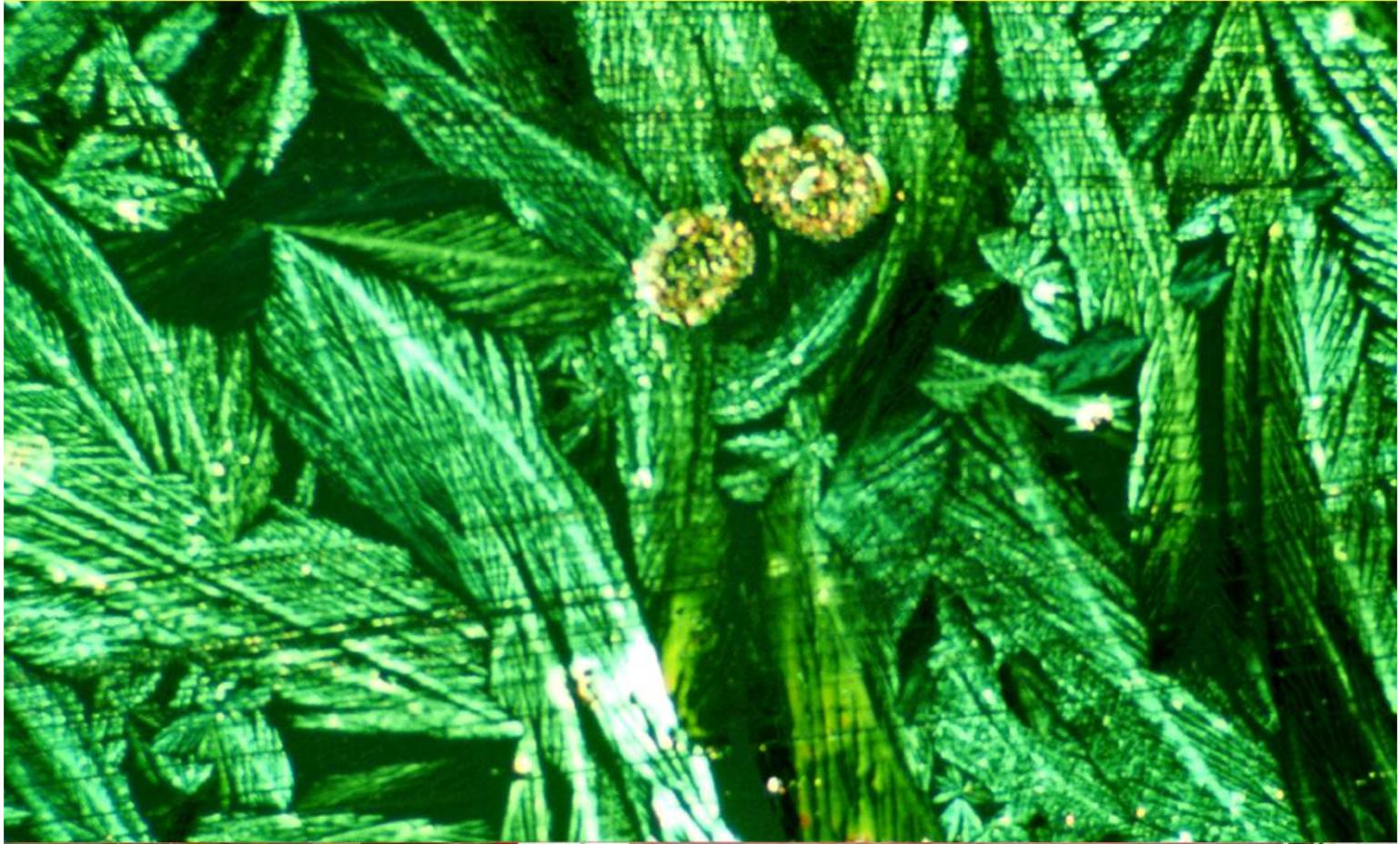




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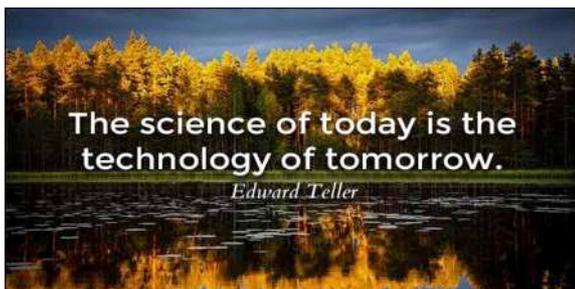
Chitra Dhvani

Quarterly e-Magazine of Sree Chitra Tirunal Institute for Medical Sciences and Technology, Trivandrum



A Leap Ahead in Technology Translation

A Drop of Life ♦ Patient Remembers Food
Technical Research Center



Vol 4, Issue 3-4; 2016

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Designing and layout:

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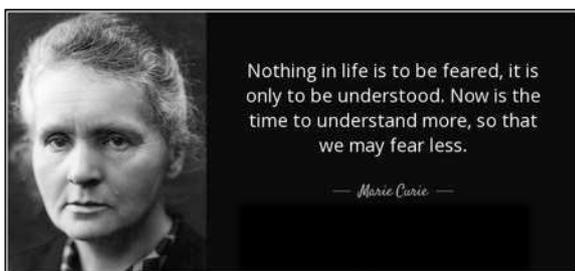
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Feedback may kindly be sent to:
newsletter@sctimst.ac.in

(The entries are invited for the next issue and
may kindly be sent to the above mailbox)

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Editor's Note

First of all the editorial team would like to thank the readers for appreciating the new look and the contents of the Monsoon issue of the magazine. We are back again to the readers with the combined issue of volume 3 & 4 of the year 2016. The second half of 2016 has been a busy time for us with one activity after another. As we did last time, we have continued to focus on human connection in this issue with few other more features. The 'Cover Story' on the Technology Conclave 2016 captures the effort taken by the Institute to realign the focus to the mandate of the Institute to become the torchbearer for medical devices development in the country. To this effect, the Institute has reached out to industries and institutions for partnering with SCTIMST in the translation of the indigenous technologies developed for reducing the import cost of healthcare products. The 'New Initiative' describes the focused and target oriented research taken up by the research and development team of the Institute with full support from the Department of Science & Technology, Government of India. The 'special feature' article portrays the crucial work done by the dietary division in providing safe, nutritious and personalized diet for the various categories of inpatients. In this issue of 'From Sree Chitra Case Box' Prof. HV Easwer narrates how important the role becomes of unseen heroes voluntarily involved in the process of saving a life. A timely, informative article about the myths and facts of Dengue outbreak is presented in the 'Do You Know' page. 'Dengue, the Menace' is about the lessons not learned in time and how the State has become the most hospitable place (for mosquitos) and how individuals become the key element in the fight against this archaic, yet dreadful enemy. A new section 'School of Thought' has been included for the expression of perspectives areas of interest to the employees. As usual, 'What to do' in an emergency situation (heart attack), a 'Crossword Puzzle', 'Laughter in Labs', 'Camera in action', 'Arteria' and a 'News Room' has newer and interesting facts. Past six months also saw a multitude of events hosted by SCTIMST that has been amply covered in this issue. All of these have been compiled with an aim to spread the word about the work we do, the manuscripts we publish, the news we hear, the thoughts we harbor and last but not the least, the skills we nourish.

We hope you will enjoy this spring version of the issue and we welcome suggestions and feedbacks to make this initiative even better.



DR. SRINIVAS GOPALA
Chief Editor

Disclaimer: The views and opinions expressed in this magazine are those of the authors and do not necessarily reflect the official policy or position of Sree Chitra Tirunal Institute for Medical Sciences and Technology.



COVER STORY

4 SCTIMST Technology Conclave: A Leap Ahead in Technology Translation

SCTIMST continues its journey ahead. Facts and figures speak; so do the number of technologies translated



FROM CASE BOX

09 A Drop of Life

A tumor while operating poses a great challenge and the struggle to save a life transforms into an opportunity for timely help by many. Dr. HV Easwer (Neurosurgery) shares his experience

SPECIAL FEATURE

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COVER: The background image of the cover is that of stain deposits on a cytology slide transformed by a polarization microscope into a marvelous mix of color, form and beauty. Background image and description contributed by Prof. S. Sandhyamani, Department of Pathology. The inset photo is of the inaugural ceremony of the Technology Conclave held during November 2016. Cover design and Masthead art by Dr. Manoj Komath of Bioceramics Laboratory.

SCTIMST Technology Conclave: A Leap Ahead in Technology Translation

The most remarkable event that happened in the second half of the last year was the Technology Conclave organized on 19th November 2016. This event has been organised to promulgate the biomedical technology development activities and to felicitate the new technology partners.

The four themes of the function were as follows:

Transfer of three brand new technologies developed by the Institute to the industry.

Release of two second-generation medical devices, which have been jointly developed by the Institute with its long-time industrial partner M/s. TTK Healthcare Ltd.

The Launch of the Technical Research Centre for Biomedical Devices sponsored by the Department of Science and Technology, Government of India. Announcement of the first batch of 15 new technologies presently under development and the initiation of the second batch of 14 new projects under the Technical Research Centre Program.

Silver Jubilee Celebration of Sree Chitra's most prestigious product, the TTK-Chitra Heart Valve.

The three technologies transferred to the industry at the Technology Conclave are Bioactive Calcium Sulphate Cement, a process for

converting animal tissue (pericardium - covering of heart) for use in repair of human hearts and the PVA surgical sponge. The Sree Chitra Tirunal Institute for Medical Sciences and Technology (SCTIMST) brought out the nation's first fully indigenous mechanical heart valve prosthesis- the TTK-Chitra Heart Valve back in 1991 which has since been implanted in over one lakh patients across the country, without a single report of structural dysfunction till date. The new TTK-Chitra Valve Model TC2-H, which is MRI-compatible and has better haemodynamics, is now ready for clinical evaluation. This second generation Chitra valve is being brought out as SCTIMST celebrates 25 years of its first version, The conclave also celebrated the silver jubilee of the commercial release of the TTK-Chitra Heart Valve on Saturday, 19th November 2016. To commemorate this success and as part of the silver jubilee celebration of the valve, TTK Healthcare Ltd., handed over a consent note to the Government of Kerala to provide free heart valves to 25 deserving patients.

The Chief Minister of Kerala, Shri. Pinarayi Vijayan inaugurated the Technology Conclave and he promised all help needed for the progress of SCTIMST and to promote indigenous research in healthcare sector to curb exploitation. The Minister of State for Science, Technology and Earth Sciences Shri. YS Chowdary launched the Technical Research Centre for Biomedical Devices and applauded the efforts taken by SCTIMST to develop

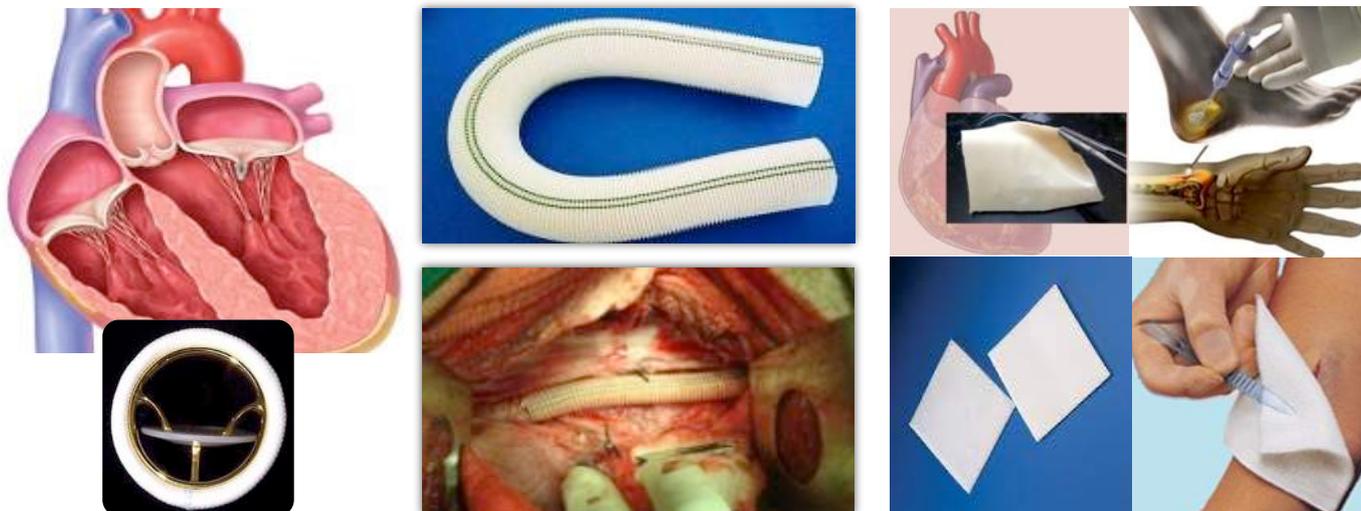
affordable healthcare technologies for the people of India. He emphasized the need to promote preventive measures against the major diseases through active and effective intervention through public health programs. The Conclave also witnessed the announcement of the first batch of 15 new technologies in development, launch of the second batch of 14 new projects under the Technical Research Centre Program and e-Consultation System. Through e-Consultation System, the Institute intends to review consultations of registered patients through Internet-based video conferencing. This facility has been designed primarily to help patients who would like to have a tete-a-tete with the treating doctors, without travelling all the way from their houses to Thiruvananthapuram.

One of the primary missions of the Institute is to promote research and development in biomedical science and technology. During the past three decades, the Institute was able to develop and commercialize several technologies, thus catalyzing the growth of the medical device industry in the country. The efforts of the Institute combined with those of its industrial partners have made many medical devices affordable to the common man. Needless to say, this has helped to keep the cost of imported devices under check in the Indian market as well.



COVER STORY

A few, out of many technologies, on their way to patients...



A glimpse the most recent technology transfer events by SCTIMST

M/s. TTK Healthcare Ltd. Chennai, Tamil Nadu has done the joint development of the Second Generation Heart Valve Coated Vascular Graft and M/s. G. Surgiwear Ltd. Shahjahanpur, Uttar Pradesh has taken technologies for Glutaraldehyde Cross-linking of Pericardium, Bioactive Bone Cement, Lint-free Surgical Absorbent

The overall national demand for medical devices is estimated as over Rs. 20,000 Crores. Currently Indian industries are reported to meet only 20% of the total demand. It is imperative that the capacity of innovation and indigenization is enhanced in a very rapid mode in tune with the global scientific advancements while also addressing the goals of the National Vision 2035.

Mechanical Heart Valve, intended to replace the diseased mitral and aortic valves, is the flagship technology of SCTIMST. The first indigenous model developed is being produced and marketed by TTK, which is highly popular in India and abroad. The 'TTK-Chitra Heart Valve' is available in paediatric to adult sizes (17 - 33 mm). The research team has now come up with the second generation model **TTK Chitra Heart Valve TC2**. This has improved design features for better minor orifice flow. The cage material is non-magnetic, making it MRI compatible. Surface modification is done to reduce blood clotting problem.

Vascular Graft is another life-saving implantable device from the Chitra team. It is a uniform corrugated tube in sizes 8mm and above, made of polyethylene terephthalate woven fabric, used for replacing diseased blood vessels affected by 'aneurysm'. A new version of Vascular Graft is developed which is made more blood compatible by coating with polyvinylidene fluoride inside. The outer side is smeared with a gel forming composition of alginate and gelatin. This fully resorbable gel coating, on implantation, will effectively seal the graft from undesirable seepage of

blood. These modifications add to the acceptability of the product.

The researchers of the Institute also have developed a process for glutaraldehyde cross-linking of pericardium including anti-mineralization treatment, which is qualified for implantation. The product is derived from biological sources and could be used as a cardiovascular patch or for applications such as right ventricular outflow tract reconstruction. The safety and compatibility of the material has been established through in vitro and in vivo methods.

A novel bone filler cement has been developed by the team, named Chitra-BioCaS. This is a patented bioactive formulation in powder-liquid packing that forms a self-setting putty upon mixing. It will set as calcium sulphate and phosphate combination, which will enable the remodeling of the bone and faster healing of the defects. It is useful for bone grafting applications in orthopedics and dentistry.

Another product is a lint-free sponge for fluid management in wounds. The base material is dry formalized polyvinyl alcohol (PVA) sponge, which can swell upto 8 times the volume, absorbing body fluid or exudates. Intended for single use, this sterile product could be easily handled and manipulated. It is a safe and biocompatible material suitable for the effective cleaning of surgical sites.

COVER STORY



Vital Statistics: Biomedical Technology

Number of patents so far: 110
 Number of technology transferred: 30
 Number of industrial partners: 20

Institute's first technology partner is one of the largest producers of blood bags in Asia and all industrial partners together, are making about 50 million bags annually, exporting to more than 70 countries. The annual turnover based on commercialized technologies is estimated to be Rs. 350 Crores.

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 Fellows: 06
 Technical Staff: 41
 Supporting Staff: 08

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INFRASTRUCTURE
 Device Testing Labs
 Quality Management
 Customer Service Cell

RESEARCH
 Biomaterials
 Tissue Engineering
 Biological Materials

Medical Device Design

* The data shown is as of / for the year 2016

The Biomedical Technology Wing of Sree Chitra Tirunal Institute for Medical Sciences and Technology (SCTIMST) has been established with an objective of promoting research and development of Biomedical Science and Technology. The campus inhabits various research labs led by experienced faculty, working in different areas of Biomedical Science and Technology. The activities are diverged in four fronts - applied research, medical device development, devices / materials evaluation and human resource development. Applied Research activities are in fields like controlled drug delivery, wound dressings, polymer and ceramic biomaterials and tissue engineering. It is complemented with translational research for development of medical device related to cardiovascular, neurosurgical, dental and orthopedic areas. The BMT Wing has advanced set up for the evaluation of medical devices and biomaterials. The various test labs are engaged in *in-silico* studies, physicochemical characterization and biological evaluation. Preclinical studies and product release studies are also done. The testing services are accredited by an international agency, COFRAC, France. The Institute is also taking care of human resource development in Biomedical Engineering & Technology by running two academic programs- M.Phil (*Biomedical Technology*) and M.Tech (*Clinical Engineering*) along with PhD in the advanced areas of biomedical sciences and technology.



RESEARCH HIGHLIGHTS



Dynamic changes in sleep pattern during post-partum in normal pregnancy in rat model

Sleep disturbance during pregnancy is an unequivocal concern that each woman experiences amidst a fairly long gestational length. It is an emerging concern as the sleep during pregnancy and post-partum is crucial in shaping cognitive development of babies. This novel study provided deep insight into the dynamic changes in sleep patterns during entire pregnancy and after birth during entire nursing period in an animal model. It is always challenging to study sleep-wakefulness in human or animal model especially during pregnancy. This research group lead by Dr Kamalesh K Gulia at the Division of Sleep Research recorded sleep in albino rats during pregnancy, post-partum and after weaning, and also examined the associated adaptive changes in their anxiety. Adult nulliparous female rats, maintained in standard laboratory conditions with *ad libitum* food and water, were surgically implanted with electroencephalogram and electromyogram electrodes under anaesthesia for objective assessment of sleep-wakefulness (S-W). After post-surgical recovery, three control recordings of S-W were taken for 24 h before the animals were kept for mating. After confirmation of pregnancy, S-W recordings were acquired during different days of pregnancy, post-partum lactation/nursing days, and also after weaning. Their anxiety levels were tested in the elevated plus maze. During pregnancy, sleep increased primarily due to increase in light non-REM sleep during dark period. There was an increase in non-REM sleep delta power after parturition, though the sleep was fragmented, especially during daytime. Simultaneous behavioural recording showed increased anxiety during third trimester of pregnancy and gradual reversal of it after parturition. This is the first report on diurnal and nocturnal variations in S-W and delta power along with adaptive changes in anxiety during pregnancy-postpartum continuum. The non-REM sleep delta power, which is an indicator of homeostatic sleep drive, was increased during late pregnancy and after parturition. This study also provided an animal model for sleep disorders and drug trials during peri-partum window.

Neelima Sivasdas, Arathi Radhakrishnan, B.S. Aswathy, Velayudhan Mohan Kumar, Kamalesh K. Gulia *Behavioural Brain Research*, 320; 264-274. (2017).



Baseline characteristics of participants in the Kerala Diabetes Prevention Program: a cluster randomized controlled trial of lifestyle intervention in Asian Indians

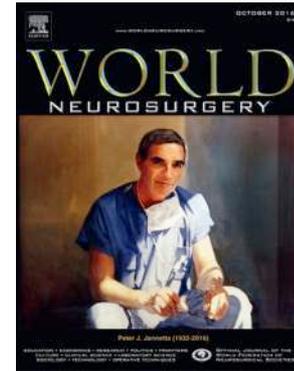
Considering the number and proportion of Type 2 diabetes, Kerala seems to be the diabetic capital of India. Therefore, there is an urgent need for the development and widespread implementation of cost-effective approaches for the prevention and control of Type 2 diabetes in the state and in India. Using an Indian Diabetic Risk Score (IDRS), a large proportion of participants who were otherwise healthy, selected randomly from the electoral roll, were found to have prediabetes and there were high rates of cardiometabolic risk factors, a recent randomized controlled trial consisting of 2586 individuals in the Neyyattinkara taluk of Thiruvananthapuram district reveals. These baseline characteristics of participants of the Kerala Diabetes Prevention Program, *Sree Chitra* researchers report in July 2016 online issue of *Diabetic Medicine*. The IDRS is a non-invasive diabetes risk score, comprising questions about age, physical activity and family history of diabetes, and waist circumference. The geographical terrain of Neyyattinkara encompasses the three natural divisions of Kerala, the highlands, midlands and coastal areas served as the study area. "We found that almost 60% of the participants had a IRDS score ≥ 60 , who subsequently underwent an oral glucose tolerance test. More than two-thirds (69.0%) had prediabetes and 31.0% had normal glucose tolerance. The prevalence of cardiometabolic risk factors was high, including current tobacco use (34.4% in men), current alcohol use (39.3% in men), family history of diabetes (47.9%), overweight or obesity (68.5%). Almost everyone reported not having leisure time exercise and only over 20% consumed a fruit/vegetables on a daily basis", Prof. K R Thankappan says. More than one fifth had increased blood pressure and nearly 85% had abnormal blood lipid levels with high total cholesterol, LDL and triglycerides. The Kerala Diabetes Prevention Program (K-DPP) is a cluster randomized controlled trial, designed to evaluate the effectiveness of a culturally adapted, group-based and peer-led lifestyle intervention program for the prevention of Type 2 diabetes in Asian Indians suggests the researchers. The purpose of this trial is to evaluate the effectiveness of lifestyle intervention in a population selected on the basis of a diabetes risk score and to use community based intervention approaches with a strong emphasis on peer support to improve health behaviors and metabolic risk factors.

Satish T, Oldenburg B, Tapp RJ, Shaw JE, Wolfe R, Sajitha B, Esposito FD, Absetz P, Mathews E, Zimmet PZ, Thankappan KR. *Diabetic Medicine* (2016)



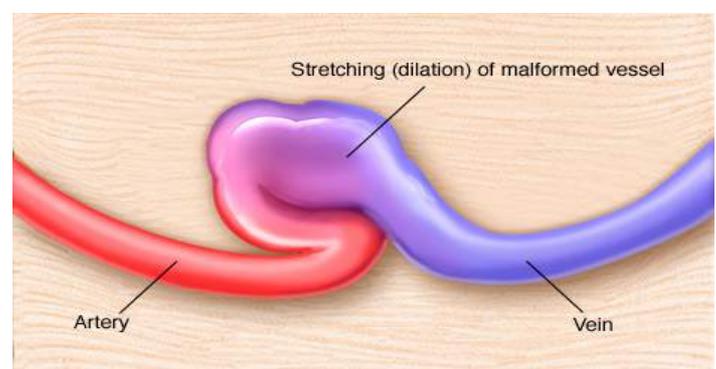
In recent years, demands to couple imaging modalities such as optical and magnetic resonance imaging have tremendously increased due to the success rate of such coupling. Such couplings are expected to have advantage of complementing the desired properties both the methods. Likewise when MRI and optical imaging are coupled, both the resolution and penetration depth are taken care. Among the MRI contrast agents, generally positive T1 contrast agent is widely used. Currently used gadolinium chelates release a certain amount of free Gd ions, which inhibit calcium channels, which leads to cardiovascular and neurologic toxicity. The process of doping Gd ions into a host crystal structure will effectively prevent this leaching. Gd³⁺ chelates can only offer one hydrate position since their other six unpaired electrons are coordinated by chelates whereas in Gd doped host lattices, surface Gd³⁺ ions offer all seven of its unpaired electron for water hydration by Inner sphere contribution, which cooperatively induce the longitudinal relaxation of water proton. This synergistic effect enhances relaxivity value of Gd doped host lattices than Gd chelates, thus enhancing its MRI contrast property. With these background and hypothesis, we explored the use of gadolinium-doped *tetragonal*-Lanthanide orthovanadates (*t*-LaVO₄) as a dual imaging contrast agent. We have synthesized Gd-doped LaVO₄ nanoparticles with different crystal structure and varying morphology, viz., sphere, rods, and irregular rectangular nanocrystals by a catechin directed hydrothermal method. *t*-LaVO₄ is the source for luminescence whereas gadolinium provides MRI contrast. With catechin concentration, the saturation magnetization values of rod shaped Gd-doped LaVO₄ is greater than that with spherical shape. During this process, the magnetic properties shifted to superparamagnetism from paramagnetism, owing to catechin strong coordination, resulting in the switching from T₂ to T₁ contrast agent. MRI studies established that superparamagnetic Gd-doped LaVO₄ could be employed as both T1 and T2 contrast agent, as against the common perspective of the same as a T1 contrast agent alone.

Vairapperumal T, Saraswathy A., Ramapurath S, Jayasree, Janardhanan SK, Unni NB. Catechin tuned magnetism of Gadolinium-doped orthovanadate through morphology as T1-T2 MRI contrast agents. *Scientific Reports*. 2016; 6:34976



To describe a rare clinical entity of intrasosseous skull base arteriovenous fistula managed with transvenous fistula embolization. A 57-year-old woman presented with complaints of headache and episodic tinnitus with progressive left-sided visual deterioration. Cross-sectional imaging of the head revealed multiple vascular channels in the sphenoid bone and in bilateral masticator spaces. Catheter angiography showed the presence of a large osseous arteriovenous fistula epicentered in the body of sphenoid and left pterygoid plates with arterial feeders from bilateral external carotid arteries and venous drainage into bilateral cavernous sinuses and the pterygoid venous plexus. She was managed by transvenous coil and liquid embolic agent (Squid 18) embolization of the venous sac with significant reduction of shunt. In the post-procedure period, the patient developed paradoxical worsening of symptoms due to central retinal vein occlusion. Skull base osseous fistulae are uncommon clinical entities and fistulae centered within the sphenoid bone are very rare. The aim of this report was to highlight management issues associated with such a case and review the available literature on the subject.

Aneesh Mohimen, Santhosh Kumar, Jayadevan E R. Skull Base Osseous Arterio-venous fistula - a rare clinical entity: Case report and Literature Review. *World Neurosurgery*. 2016



An **arteriovenous fistula** is an abnormal connection of vessel in the tissues around the brain or spinal cord in which one or more arteries are directly connected to one or more veins or venous spaces called sinuses



A Drop of Life

How do we measure Life? Some would say in years, but others would say in terms of what a person had done during those years. In a hospital, as one recovers from a grave illness, it can only be measured as gratitude to his or her Fate and to all those who had helped him or her to recover.

It wasn't just another day but Christmas eve as the whole world looked forward to the pious festivities and the holidays that follows it. Our hospital too had a laid back feel as most people were looking forward to enjoying the break from work and some good time with their families.

However, our Operating Rooms (ORs) were buzzing with activity as we proceeded to wrap up all the waiting patients prior to the holiday season. Mr G (name changed to protect patient privacy) too was in there as he reported with a tumor in his brain whose size surpassed over seven centimetres something which gave him intractable headaches over the last few years. The tumor, called as a meningioma, was from the coverings of the brain and dipped into the latter grotesquely invading and distorting the same. Not contend with this the tumor pushed its way through the overlying skull bone too.

The anaesthetists were at it, administering the drugs through large intravenous lines that went straight into his central veins near his heart and an arterial line that traced his blood pressure. A breathing tube was slid along his mouth right into his trachea (windpipe) as the ventilators took control of his respiration. The OR nurses were setting up the instruments required for the surgery. Mr Manoj and Mrs Ajantha, the OR assistants helped set up the suction that clears blood that pools in the field of surgery and obscures the surgeon's vision. As the buzz of these activities happened around me, I stood staring at the MRI images of his brain, which showed a large tumor. I could feel a knot in my stomach as I felt uneasy at the prospect of operating this large one.

On a green signal from our anesthetists, we positioned the patient's head on a surgical clamp as well as clean his scalp with disinfectants and marked the area to be operated with sterile surgical clothing called as drapes. We began with a surgical knife cutting through his scalp exposing the underlying skull. This was followed by a procedure called craniotomy where a portion of the skull overlying the tumor was removed exposing the latter. At this point we started encountering bleeding from the tumor, which was more than just a trickle. I instructed my anaesthetists to procure some blood from our Blood Bank, as I feared the worst. As we progressed to cutting pieces of



tumor tissue, in small bits, the bleeding to increased. The suction cleared the rivulets of blood helping us with our view of the tumor. My pulse started to race and my premonitions of a bloody surgery was almost happening.

The tumor was not easy to remove, as it was hard and bled on a mere touch as some meningiomas are likely to behave. Angry streams of blood ran down along the drapes into our surgical aprons and sometimes arteries ruptured to splash the same into our faces and chest. I stopped for a minute to allow Manoj to take out my glasses splashed with blood as it was blinding me. My hands pressed a big ball of gauze over the partially removed tumor trying to stem the haemorrhage and I looked around to see what was happening. My anaesthesia colleagues, Dr Unnikrishnan and Dr Madhusoodanan were valiantly trying hard pushing blood procured from the Blood Bank to replace the lost volume. I saw the monitor connected to the patient revealing his vital parameters including his blood pressure and my heart sank as I saw it was just fifty millimeters of Mercury.

I was five hours into surgery and almost ten units of blood were replaced to counter the loss and we were losing the battle. The Blood Bank informed us that they were running out of blood as we had already consumed more than what they were ready with. They had made an announcement over the hospital's public address system asking for blood donors and people were just trickling in to donate their blood.

Manoj placed my spectacles back over my surgical mask and my hand held on to the large surgical gauze that was meant to apply pressure on the tumor surface and contain the bleeding until more blood products arrived from the Blood Bank. There was this sinking feeling around me as the blood pressure failed to climb and we were staring down at the prospect of losing the patient at surgery.

Ajantha was running along the floors as she collected sachets of blood from the blood bank located elsewhere

FROM SREE CHITRA CASE BOX

in our hospital and this happened over twenty five times. Manoj was at my side clearing the suction apparatus clogged by blood. My OR nurses laboured hard passing the instruments direly required. As donors poured into donate their blood, more of it arrived at the ORs and I proceeded to remove the tumor. The rush of adrenaline kept us all away from being fatigued as we raced to save Mr G's life. The tumor was again approached, and respectfully gnawed off against torrents of blood. Dr. Unnikrishnan and Dr. Madhusoodanan were hanging on to every drop of blood as they pushed it across multiple Intra-Venous lines. The blood pressure showed an abysmal thirty millimetres of mercury and every one became silent expecting the patient's heart to crash. The monitors were blaring out the alarms suggesting that everything had gone awry.

I went after the tumor with renewed vigor, as I knew removing it completely was the only way to stop the bleeding and steady the blood pressure thereby staving off a cardiac arrest. More blood arrived and Dr. Madhusoodanan was seen pressing the blood-bags in both his hands against his chest in an attempt to push it rapidly into the patient. It was 5 pm and we were almost done having been at work since eight am. By six, the last bit of tumor was removed and the bleeding trickled down. After ensuring that the bleeding has stopped we started closing the surgical wound. I looked at the monitors again, something I had avoided for sometime, as I did not want to be psyched by the sight of an alarmingly low blood pressure. It read as 60 mm of mercury. The cardiac arrest has not happened!

The patient was shifted from the OR and multiple infusions of blood trickled down into his veins. His heart held and we knew that the worst was over. The game changer was of course the steady supply of blood donated by donors who never knew the patient or what happened to him at surgery.

It took another day to replace all his losses and the final score stood at a whopping thirty-four units of blood products! The patient was gradually weaned off the ventilator. I stood at his side as he regained his consciousness and started moving his limbs attempting to communicate something with us.

The last of the blood products was running down his veins and I stared at the drops as they trickled down from the blood bag. They were not mere drops of blood but drops of life, a fresh lease of it given to the patient by good Samaritans. Many of them would never get to see the patient and his family express their gratitude for their altruistic acts but then, they can go on with their lives with this feeling that they have been game changers in a fellow being's life.



Hon'ble MP, Shri Suresh Gopi, donating blood on September 17, 2016

Sitting relaxed in the donor room, clenching and releasing a foam ball, seeing a part of himself being collected drop by drop in a bag of life; the donor wonders and contemplates his deed. "Where would the blood be going? Who would be helped by it? A mother? A father? A son or a daughter? A person battling cancer, sickle cell disease, brain surgery or maybe a person involved in a car accident?" Even the most informed donor may not be able to fully anticipate the lifesaving power that blood donations have for people who need transfusions, and how his contributions will bring back a loved one for a family or will gift a person another chance at this wonderful set of possibilities called life. The reasons why people donate are varied; some give blood because a friend asked them. Some come forward in the face of a calamity or unfortunate incident that have hurt many people, while some do it because they believe it is a good thing to do. Whatever the reason, the motivation is always the same, to help others.

Unlike in developed countries, in India there are no central blood collection agencies; the job is left to the local governments and hospitals. This creates excess at some states and deficit at others. India has 2,708 blood banks, but 81 districts still lack one, according to government data. This deficit is especially prominent in rural India, and as 70% of our population still resides in the villages, this becomes a major hindrance in appropriate medical care. The shortage was estimated at 1.1 million units as blood is measured with a unit being either 350 ml or 450 ml - in 2015-16, Minister for Health and Family Welfare JP Nadda told the Lok Sabha in July 2016.

The voluntary donations have seen a steady rise since the past decade, India was 9 per cent short of its blood requirement in 2015-16 as oppose to 17 per cent shortage in 2013-2014. But the growing health care facilities and enhanced medical tourism, has added to the necessity and the supply doesn't match the demand. We have marched ahead in leaps and bounds but still have many a miles left. Thus, all healthy adults must voluntarily come forward to contribute a part of their life to save others'.



CHITRA'S STARS

* CONGRATULATIONS *



Dr. Francis Fernandez, Research Associate, Division of Bioceramics, BMT Wing, won the **Academia industry Training (AIT) Grant**, at Switzerland.



Dr. Hemanga Kumar Dhing, DM Neurology Resident, SCTIMST was received **Young Investigator Award** in the *World Stroke Congress 2016*.



Dr. Nikhil C Hiremath, Senior Resident from the Department of Neurology, SCTIMST was received **Young Investigator Award** in the *World Stroke Congress 2016*.



Dr. Vineetha V S, DM Neurology, SCTIMST was received **Young Investigator Award** in the *World Stroke Congress 2016*.



Dr. Arun Anirudhan V, Engineer 'D', Network Service Cell, SCTIMST received **Best Paper Award** in the *Annual Conference of the Indian Academy of Neurosciences*.



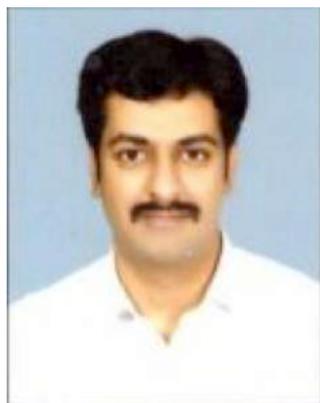
Mrs. Tisha K Vijayan, Staff Nurse, SCTIMST was awarded **Second Prize** in the **Poster presentation** in Nursing Session in the *Annual Conference of the Pediatric Cardiac Society of India*.



* CONGRATULATIONS *



Dr. Ajay Asranna, Senior Resident from the Department of Neurology, SCTIMST was awarded **Best Orator** in the Grand Finale and was the **Winner in Zonal Round - "South Zone"** of *Neurology Torrent Young Scholar Award 2016* and **Third Prize** in the **Paper Session** in the *Annual Conference of Kerala Association of Neurologists*.



Dr. Suraj Narasimhan A, DM Cardiology was awarded **First Prize** in the **Quiz Competition** in *Annual Conference of Kerala Heart Rhythm Society*; **First Prize** in the **Post Graduate Quiz** in *Annual Conference of Pediatric Cardiac Society of India* and the **Best Paper Award** in *Annual Conference of Indian College of Cardiology*.



Mr. Rahul V G, PhD student from the Division of Tissue Engineering and Regenerative Technologies, BMT Wing, SCTIMST was awarded **Best Oral presentation** at the "*11th Asia Pacific Chitin and Chitosan Symposium & 5th Indian Chitin and Chitosan Society Symposium*" organized by Indian Chitin and Chitosan Society, held in Kochi in September 2016.



Dr. Debabrata Gohain from CVTS awarded **Best Oral Abstract Presentation** at the *Annual Conference of Pediatric Cardiac Society of India* held on 29th September to 2nd October 2016.



Dr Shivanesan P, Vascular Surgery was awarded the **Second Prize** in **Paper Presentation** and **Third Prize** in Poster Presentation in *National Conference of Vascular Society of India (VSICON 2016)* held at Bangalore in September.



Mr. Joyi K, Technical Assistant, IS & IR, SCTIMST, has won **First Prize** in Quiz Program, in the *3rd National and 1st International Conference of ISRT* held in December 2016.



* CONGRATULATIONS *



Dr. Srinivas G, Scientist-F, Department of Biochemistry, selected as the **Member** of the **National Academy of Medical Sciences (India)** in the year 2016.



Dr. Jayasree R.S., Scientist-E, Division of Biophotonics and Imaging, Department of Biomaterial Science and Technology, BMT Wing has been selected for the **MRSI Medal Award** for 2017, and has been awarded **Fellow of the Royal Society of Chemistry**, FRSC (UK).



Dr. Kamalesh Gulia, Scientist – E, Division of Sleep Research was selected as the **Member** of the **National Academy of Medical Sciences (India)** in the year 2016.



Mr. Sjiith R, IS & IR, SCTIMST, won Prize in **Quiz Program**, in the *3rd National and 1st International Conference of ISRT* held in December 2016.



Mr. Tintu Thomas, IS & IR, SCTIMST, won **First Prize** in **Students Poster Presentation**, in the *3rd National and 1st International Conference of ISRT* held in December 2016.



THINGS TURN OUT BEST FOR THE PEOPLE WHO MAKE THE BEST OF THE
WAY THINGS TURN OUT – JOHN WOODEN



The art of inventing time during working life

Are you worried that you don't find time to do your work, write new projects, publish research findings and meet the deadlines of various committees? There is a way out. It's simple! What you need is sportsman spirit! We present a suggestion in this elegant one page write up on one-hour workday...

Early in the morning is when people are at their mental best and maybe also most in control of their time before the emails and the meetings and deadlines of the day start to intrude. So, it's important to cash in on that extra mental reserve and do your daily writings. This could be for as less as an hour a day and best adhered to if planned a night before. The planning may include the blocking in of the activity on the calendar and on the to-do-list with details of the paper or proposal or section to be worked upon. The best way to commit is to develop a 'ritual'. As the American poet W.H. Austen wrote, "Routine, in an intelligent man, is a sign of ambition". Once one gets past the aversion to the term, 'wake up - brush - coffee - write' becomes doable. A ritual must not be considered as being on autopilot; it rather is a finely calibrated mechanism to make use of the most limited of all resources in ones work life - time.

When looked into history, most creative and accomplished people of their fields achieved their genius by practicing a strict daily routine. Mozart got dressed with his hair all gelled, as was deemed appropriate for the elite, by 6 am and then composed without breaks till 9. One may keep other than the wee hours of the morning if that best suits them, but create a schedule; as Benjamin Franklin took up in one of his thirteen virtues - 'Orderliness - Let all your things have their place, let each part of your business have its time'.

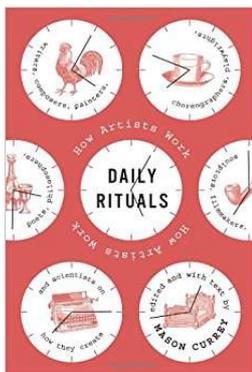
Today we live in an era of multitasking, each having multiple responsibilities to tend to; it feels difficult to devote some time to solely writing. But the key to a productive one hour workday is not just devoting an

hour, but devoting an undistracted, focused hour. Thomas Mann, Noble Laureate in the field of literature, to let his creativity flow locked himself up in his study from 9 am to noon making himself unavailable to any visitors, phone calls or family duties forbidding even his children to make any noise during that time. Sigmund Freud took the luxury of having uninterrupted thought process in the first waking hours of the morning when his mind was freshest with the help of his supportive wife who laid out his clothes, chose his handkerchief and even put toothpaste on his toothbrush! Carl Jung, the famous 20th century psychiatrist, moved into a countryside house in Switzerland devoid of any amenities of his time without electricity and telephone as he considered technology a distraction, and lived a seventeenth century lifestyle with working eight - nine hours a day, delivering seminars and lectures and producing his enormous writings. In today's moderate times such extreme steps are irrational but we must understand that the way these masters produced excellence is by pinpointed focus; and our one-hour-workday will not be as productive without mastering this skill.

Even the most committed of artists or sportsman encounter days when they are not 'in form'. It is here when you ought to show sportsmanship and understand that like in the game of cricket the batsman performs best when he focuses only on hitting the next ball as best as he must without getting burdened by the impending overs and the score target. As with golf, hitting the ball not only gives you additional perspective but also every hit gets you closer to your target. But like in all sports one must stay toned and conditioned as once fallen out of practice even the best Olympians suffer from impoverished vigor.

This idea of one-hour-workday in no way promises an immediate distinction in ones writing skills or output, but lays a necessary foundation on which the opulent scientific writing can be built. Not only because it encourages one to commit to the task of writing but also because it offers the opportunities for deep thinking. Once you transgress the inertia and get involved in daily writing, you involve your subconscious mind in the task and you find that ideas flow, dots connect and the hidden concepts suddenly lie barefaced even while you are away from your keyboard amidst your most mundane of chores.

It thus is possible to do more and invent time in your hustling work-life. All it requires is an unwavering commitment of a daily rendezvous with the best friend of your academic life - your computer.



*Good News: There are several ways to find time
Bad News: You have to have time to find your way!*

And the Patient Remembers the Food...



The word hospital is derived from the word “*Hospitium*” in Greek, which means a place to receive guests. As we know, it is a great challenge to satisfy the diverse population with their requirements for food. It is even more challenging when we have to serve food to the patients. The hospital is an organization where teamwork is important and Dietary is one of the arms of the hospital. When we consider hospital as a system, Dietary is one of the subsystems and is a support service. Food not only needs to meet individual nutritional requirements, it also needs to be appropriate for different age groups, religions, cultural and social backgrounds as well as for different medical conditions.

In ancient times, it was a tradition to take care of and treat the patients in their own homes and for those who had no one to look after them, the State had arranged places where the patients were lodged and treated from there and the idea of hospital evolved (see box in page 16).

Food in hospitals is one important part of an integrated program for improving nutritional care in hospitals. It is fundamental that hospitals provide appropriate food, fluid and nutritional care to manage any nutritional risk, to improve nutritional health and well being and to optimize the wider clinical managements of all patients. There is a need to provide a menu with recipe to merge the requirements of protein, carbohydrate and fats.

Like medicine, diet is also a crucial component of the healing process. It plays a key role in the treatment and management of all disease conditions, especially certain ailments such as diabetes, hypertension, cardiac, renal and gastrointestinal diseases. The satisfactory intake of food by the patient in a therapeutic environment is

essential for maintenance of tissue structure, tissue repair and body function. Considering its significance in healing, the hospitals department of Diabetics makes a systematic effort to provide a quality diet to in-patients and diet consultations to patients.

Sree Chitra, being a specialized hospital, there is greater role for a good Dietetic Department. It works under the control of Deputy MS and there is a Chief dietician and an Assistant Dietician who are the immediate supervisors. The dietary department has a team of 33 staff including cooks, clerical staff, helpers and cleaners.

The main objectives of the dietary department are;

1. To maintain good nutritional status of all in-patients.
2. To educate patients about how diet plays major role in the treatment of various diseases
3. To modify the daily diet patter of the patients to meet their requirement during various disease conditions.
4. To correct deficiencies, especially in patients with prolonged hospital stay.
5. Diet therapy in most instances is not a remedy in itself but in a measure, which supplements or makes the medical or surgical treatment more effective.

The dietary department performs three major activities;

1. Nutritional care of patients.
2. Food service management.
3. Training program for interns.

Nutritional care is provided through *In-patient nutritional care and a outpatient diet clinic*.

The dietician/trainees conducts ward rounds on a daily basis to visit the individual patients in order to assess the nutritional status, to make changes according to the patient's need and requirements and to give a brief orientation about our hospital diet. A careful dietary history of each admitted patients is taken, diagnosis and biochemical parameters are being checked so as to modify the diet according to the diseased condition. Diet consultation and plan are also provided. Though a separate out-patient diet clinic does not exist, the doctors refer patients requiring dietary advice to the dietary section, and the dietician provides and explains the diet sheet to these patients.

Diet is compulsory for all in-patients. The centralized system of food service is practiced round the clock. There are six services carried out by the department.

They are bed tea (5 am), breakfast (7:30 am), mid morning (10:45 am), lunch (12:30 pm), evening tea (4 pm) and dinner (7 pm). All the wards have food cabinet for reheating the food if necessary.

The department follows a cyclic menu and is ovo-vegetarian. It also provides north Indian menu in selected areas. Both normal and therapeutic diets are served daily to the patients. 60% diets are normal ones and the remaining 40% are therapeutic.

Therapeutic diets are planned and their nutritive values are calculated according to the diet prescription. The menu plan for all the tube feeding patients are being calculated on the basis of the patient's disease condition and a copy of the menu is given to the wards for reference. The food items with short life span for the naso- gastric tube feeds are prepared in the ward itself to avoid contamination.

Major activities in the kitchen are;

- ✓ Receiving of the raw materials.
- ✓ Storage of raw materials in proper storage area like the walk-in-cooler for perishable goods and dry storage area for non-perishable goods.
- ✓ Production of food where various meals are prepared according to the portion prescribed in the diet plan and serving the diet trolley to the wards.

The dietician does purchase of all food materials and other items required for the dietary section. Vegetables, fruits, egg and non-perishable items are purchased twice in a week. Bread and milk are purchased daily. Provision items are purchased in a month. Vegetables, fruits and provision items are purchased from government shops on credit basis. The shops provide door delivery. Record-keeping and accounting is done jointly by the UDC and dieticians. There is imprest money for purchasing emergency items.

The diets are ordered from the various wards through computerized requests every morning before 9:30 am, which is valid from that day tea-time to next day lunch. If there is any change in the ordered diet, the change can be informed to the dietary. The dieticians transfer the requisitions from the ward to the distribution ship, which is used for intending and serving. The newly admitted patients and diet requisition is entered in the distribution slip before each food service. The requisition slips for the patients who are admitted after 6:30 pm should reach the dietary in writing from the OPD. The list of the discharged and surgery patients is to be given to the dietary before 5:15 pm either in writing or over phone.

The major roles of dieticians in the food service are:

- ✓ Preparation of the distribution slips which mention the type of diet, portion size and foods to be given to each patient.
- ✓ Preparation of the indent for the food items to be taken from the store to the kitchen for each meal.

Do not let your patients starve and when you offer them nutrition support, do so by the safest, most simplest, effective route:-
National Collaborating Centre for Acute Care, February 2006

THE SCIENCE AND CULTURE OF NUTRITION



Saint Elizabeth offering food to a hospital patient in Marburg, Germany, 1598

Hospital food in some ancient Islamic hospitals was to be of a quality suitable to feeding noblemen and even kings. If the medical treatment in other early hospitals has been questioned, few historians have doubted the benefits that food and rest offered to hospital patients. While regional and seasonal variations existed, much of the quality also depended on who cooked the food. Historically, this has varied from monks in medieval hospitals to nurses, soldiers and porters' wives in the 1700 and 1800s. In India, Fa-hien (C.E 405-411) a Chinese traveler visited during the times of Chandragupta and provided in details about the charitable dispensaries in Pataliputhra. According to him the nobles and householders of this country funded hospitals, where the people were treated freely. Hiuen Tsang (C.E 629-645) visited during the time of Emperor Harsha and noted that in all the highways of town and villages throughout India there were "hospices" (puniye-salas) were provided with food and drink as well as physicians and medicine.



SPECIAL FEATURE

- ✓ Planning of Ryles tube foods according to the required calories, protein and volume needed.
- ✓ Supervision of cooking, setting of the diet trays and its proper loading on the food trolleys to ensure that patients received the meal as per the plan given to the slip.
- ✓ Evaluation of prepared food before serving to the patients.
- ✓ Conducting ward rounds and deliberates with patients and nurses to ascertain their problems and emerging remedial measure.
- ✓ Monitoring of cleanliness of the various areas of the kitchen, its premises and the store room etc.
- ✓ Supervision of the washing of the used materials.
- ✓ Ensures that the required items are adequately stocked.
- ✓ Ensures that the equipments are maintained in good working order.
- ✓ Impacting practical training to the apprentice trainees.
- ✓ Verifies the bills furnished by the suppliers.
- ✓ Duty rosters of the trainees, cooks, unit helpers and cleaners should be drawn up in advance to avoid disruption.
- ✓ Direct counseling to the IP/OP patients.

The various types of diet being provided are;

1. Regular normal diet
2. Liquid diet
3. Semisolid diet
4. Ryles tube feeds
5. Jejunosotomy feeds
6. Diabetic diet
7. Renal diet
8. Hepatic diet
9. High protein diet
10. Salt restricted diet
11. Ketogenic diet

Nutrition education classes are conducted on all Mondays and Fridays to the in-patients of the cardio surgery ward who are being discharged.

The department conducts apprentice program for Post Graduates in Dietetics for one year and they are given training in all the activities of the dietary department. The interns in Dietetics are also oriented to hospital Dietary.

Dietary service is a centralized service, which works 24*7*365 days in year and supports all the hospital areas. It has contributed immensely for the patient care service and is poised to develop further with the proposal for the new hospital block.

**Ahara sambhavam vasthu rogaschahara sambhava
Hitahita visheshatcha visheshah sukhadukhayoh!!**

-(Charaka Sutra)

A planned and knowledgeable intake of diet prevents disease and plays a key role in the upkeep of healthy life

The National Institute for Clinical Excellence, United Kingdom published guidelines on nutrition support for adults in February 2006. It recommended the need for regular nutritional screening, multidisciplinary working, education and training in hospital staffing. The aim of these guidelines was to improve the practice of nutrition support by providing evidence and information for all healthcare professionals, patients and their carers so that malnutrition whether in hospital or in the community, is recognized and treated by the best form of nutrition support at the appropriate time. As mentioned in the feature, adhering and implementing the guidelines requires incessant dedication. The decision to include a write-up about hospital dietary services was taken during a meeting



Photo courtesy: Mr. Ashok S (Biochemistry)

held for discussing future articles to be featured in the magazine. After going through the first draft, the search for a suitable title for this special feature was initiated. A lot of formal titles were discussed and we could not finalize on the title. It was then that I was hospitalized with a condition that left me incapacitated for nearly three weeks, that too with an absolute aversion of appetite for food. Having started to get relieved from the debilitating effects of dehydration, I slowly started to think about food for the first time in six days. At dusk, a plate with steaming rice porridge along with a side dish appeared in my room. As I hastily gulped the few spoonful of the rice porridge, I was reminded about the unfinished business of finding the title for the 'special' feature on dietary and there it was, from my heart...

DR. SRINIVAS GOPALA

SRISHTY

Photo courtesy: Mr. Ashok S (Biochemistry)

Apart from saving time in daily commute, living close to the place of work or study furnishes one with new opportunities to meet people from all around the country. The cultural blend and meeting people from similar walks of life could provide solace in an enervating schedule. A lush green environment with a decent building indeed makes for an agreeable neighborhood. It helps when one has the comforts of a neat place to unwind when they miss out on the luxury of the proximity of their loved ones. The quietude in a campus hostel can serve as a conducive place to enhance creativity and productivity. As the ancient Chinese proverb says, 'The silence guides our minds'. When Dr Jonas Salk had taken up the task of finding a cure to the polio epidemic in the 1950s, he started with research in the cluttered basement of a Pennsylvania hospital. The work didn't go well until he moved to a monastery in Italy. With the new inspiration in the pristine surroundings, he finished his crucial work that had a paramount impact on humanity and saved the life of millions.

The long wait for a decent hostel came to an end in November 2016. A students hostel 'SRISHTY' was constructed at Kumarapuram complex. The hostel has 16 single rooms, 28 double rooms and 38 family suites with other attached facilities such as kitchen cum dining hall, rooms for the guests and infirmary, house keeping and stores and a reception. The building is designed by M/s Thomas Panicker & Varghese, Architect, constructed by M/s Subramaniam & Co and Project Management service by Construction Wing of SCTIMST. The Hostel was inaugurated by Shri. Y. S. Chowdary, Hon'ble Minister of State for Science & Technology and Earth Sciences, Government of India on 19th November 2016 in the presence of Shri. K. M. Chandrasekhar, Hon'ble President of SCTIMST.

Input from Mr. Vijayan Pillai K, Col. (Retd.), Civil Engineering Division

Relish power-naps if sleep deprived! Zzz..

Some days we are so engrossed in our day-to-day commitments and reaching the deadlines that we compromise on our daily sleep. Poor sleep affects our health in several ways disturbing our attention, alertness and productivity. Well, there is great remedy to this problem: the Nap. Naps are short bouts of sleep, around 30 to 40 min, taken during noon. National Sleep Foundation (US) refers these as "a pleasant luxury, a mini vacation". Several research studies have shown that short naps lower the stress, boost our immune system and decrease the blood pressure. National Aeronautics and Space Administration (NASA) advocated strategic naps to effectively promote alertness and performance in operational setting in space. The "NASA nap" is a common practice among pilots making international flights for airlines such as Continental and British Airways.

Not only this, several companies in US have adopted snooze friendly policies and made nap-rooms in the offices. A short twenty-minute nap has helped tremendously the workers at in boosting alertness and improving performance at work. These power-laden naps can protect our health and also save money (the US approximately loses nearly \$65 billion each year due to lost productivity by sleepy workers). Many of the spiritual and International political leaders including Dalai Lama; Pope Francis; the Iron lady - Margaret Thatcher; John F. Kennedy; Winston Churchill; Bill Clinton and our own former PM Indira Gandhi have rejuvenated themselves with power naps.



Modern sleeping pod for power nap (Gentle lights and vibration will wake the person after nap)

Dr. Kamalesh K Gulia, Division of Sleep Research



NEW ROLE

Appointment of Dr. Harikrishna Varma PR as the Head, BMT on 30/072016



Dr. PR Harikrishna Varma did Ph.D from Regional Research laboratory (CSIR) Trivandrum, under University of Kerala in the year 1993 and joined SCTIMST and started the Bioceramic Laboratory. His interest in Bioceramic materials for hard tissue prosthetic applications, pulsed laser deposition of bioactive coatings, biomimetic chemistry, etc. enabled him to undertake several projects nationally and internationally to carry on extensive research on micro and nano porous bioceramic substrates having capacity to carry drugs, bone filler cements based on calcium sulphate and calcium phosphates, coating of hydroxyapatite layers on to titanium implant surface, silica-based biosensors for the detection of markers in blood for diagnostic applications, magnetic nanoparticles for radiological and therapeutic applications and biomimetic materials as bone implants. Notably, he has more than 15 patents to this effect in the area of preparation and processing of various bioceramic materials. He has received several awards, fellowships not only from India, but from Israel, UK, Japan and Germany. Based on the technology developed in the Bioceramic Laboratory, the know-how has been given to three Companies to produce clinically useful implants for orthopaedic and dental application. Some of their products are currently available in the market. He is charming, enthusiastic, art loving and has a space for humor in his heart, albeit his busy new role. Above all he is a great mentor, who has helped many to take up research as a career, if not away of life. **Congratulations!!!**

EVENTS HOSTED BY SCTIMST

Training in Ethics in Health Research - A short course for researchers and Research Administrators held in August at AMCHSS



The training in ethics is the foundation stone that must be securely laid before commencing any type of research. The academic staffs at SCTIMST deeply believe in upholding the highest standards of research ethics while delivering on the cutting edge research. With a walk through history to understand how medical innovation came at the expense of human rights; the Tuskegee Syphilis Study, where the blacks in US were used as the study subjects without their consent and even denied medical treatment (penicillin) when it became available so as to arrive at their study conclusions, and the Thalidomide cases, where the drug was used as a sedative for pregnancy but was not FDA approved and did not take informed consent from the participants resulting in nearly 12000 babies being born with severe deformities; and the likes were discussed. The workshop participants got a grasp of the necessity and the components of the Nuremberg Code and the Declaration of Helsinki that all research abides by in this modern era. This event passed on the guidance of a more humane perspective towards scientific progress.



Independence Day celebrations on 15th August 2016



Official release of the 2016 Monsoon Issue of Chitradhwani

EVENTS HOSTED BY SCTIMST

Service awards



Service awards: Serving for 3 decades...



EVENTS HOSTED BY SCTIMST

Service awards: Serving for 1, 2 & 3 decades...



25 years of service



20 years of service



10 years of service



30/20/10 years of service (BMT wing)



EVENTS HOSTED BY SCTIMST

Inauguration of Congenital Heart Surgery Intermediate Care Unit (CHIMCU) on 22nd August 2016

SCTIMST experiences a massive load of patients both paediatric and adults for cardiovascular and thoracic surgery. With a crunch in the number of beds available in paediatric ICU and the limitation it would put on the number of children that can be operated upon, SCTIMST conceived the idea of an intermediate unit between the ICU and the ward. This paved way for the CHMICU (Congenital Heart Intermediate ICU) which is equally equipped as the main ICU for all emergencies, but has lower nurse to patient ratio (1:2) as compared to the main ICU with a ratio of 1:1. This facility also allows the mothers of the patients to be in the unit as by-sanders and secondary care givers after a brief training on the basic cleanliness and aseptic standards of the ICU.

The Traditional Onam Feast & Celebrations



The traditional Onam feast, Sadhya, was organized during the Onam celebrations in the institute with many servings of rice with sambar, parippu, rasam complemented with the delectable toran and avial, flavorsome pullisheri and delicious payasam at the end; making you more than full but leaving your taste buds tempted for more...



EVENTS HOSTED BY SCTIMST

Onam Celebrations held at the Crèche of the hospital wing,
9th September 2016



Children are happy because they don't have a file in their mind called '*all the things that could go wrong*'. They smile and celebrate everyday like a festival.

KEEP ME AWAY FROM THE WISDOM WHICH DOES NOT CRY, THE PHILOSOPHY WHICH DOES NOT LAUGH AND THE GREATNESS WHICH DOES NOT BOW BEFORE CHILDREN: **KHALIL GIBRAN**

EVENTS HOSTED BY SCTIMST

Launch of 'Prevention and Control of non-communicable diseases in Kerala' on 4th August 2016



EVENTS HOSTED BY SCTIMST

Planting of trees for Swachh Bharat Campaign during Gandhi Jayanti on
2nd October 2016

Swachh Bharat Abhiyan, a campaign by the Government of India to clean the streets, roads and infrastructure of the country, was officially launched on 2 October 2014 at Rajghat, New Delhi, by Prime Minister Narendra Modi. To keep up with the tradition of honoring the father of our nation and make the country he left behind cleaner and greener, the staff of SCTIMST gathered on the Gandhi Jayanti and planted saplings.

EVENTS HOSTED BY SCTIMST

Rashtriya Ekta Diwas commemorating the birth anniversary of Sardar Vallabhai Patel on 31st October 2016



104th birth anniversary of His Highness Sree Padmanabhadasa Sree Chitra Tirunal Balarama Varma celebrated on 7th November 2016



EVENTS HOSTED BY SCTIMST

Inauguration of apartment complex SRISHTY by Shri Y.S. Chowdary on 19th November 2016



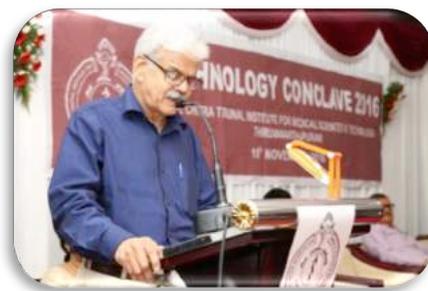
Technology Conclave - 2016



EVENTS HOSTED BY SCTIMST



EVENTS HOSTED BY SCTIMST



Hon'ble minister of State for Science, Technology and Earth Sciences Shri Y.S. Chowdary visits BMT wing during Technology Conclave



EVENTS HOSTED BY SCTIMST

Farewell of the retiring and welcoming of newly joined staff organized by Staff Benevolent Fund in November 2016



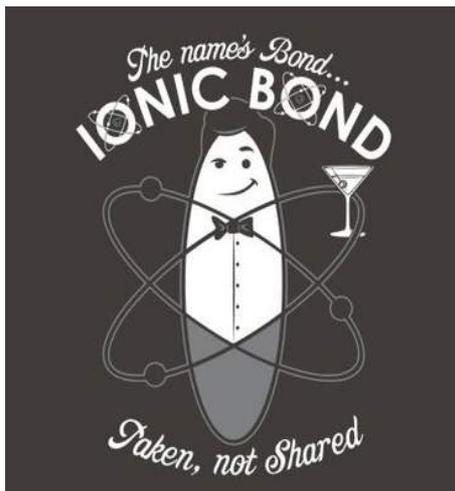
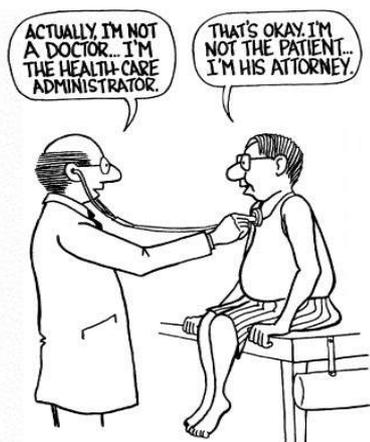
Inauguration of LIC's Salary Savings Scheme Service Camp organized in December 2016



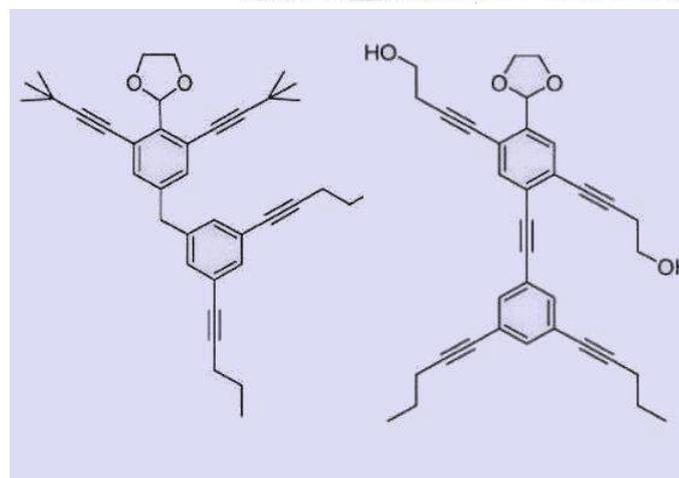
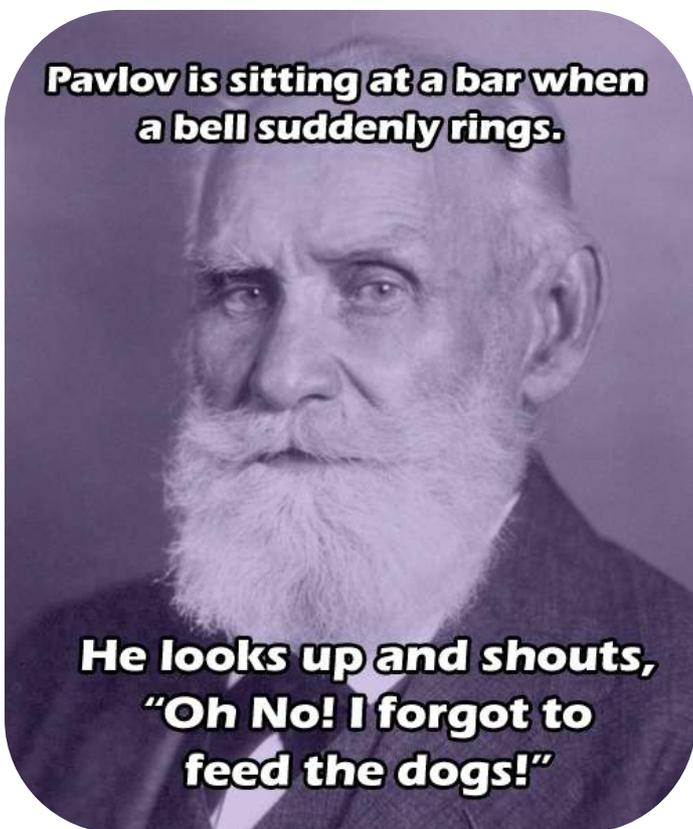
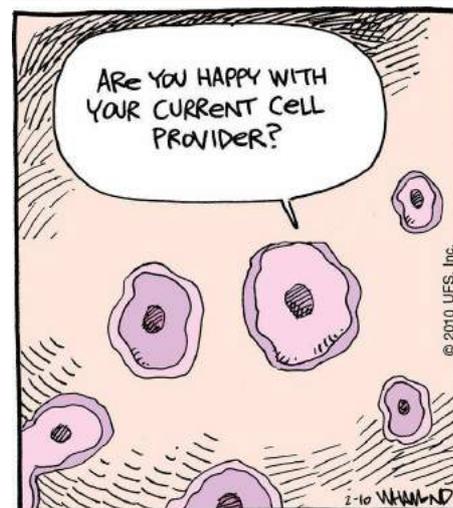
The story of insurance is probably as old as the story of mankind. The same instinct that prompts modern businessmen today to secure themselves against loss and disaster existed in primitive men also. They too sought to avert the evil consequences of fire and flood and loss of life and were willing to make some sort of sacrifice in order to achieve security. Though the concept of insurance is largely a development of the recent past, particularly after the industrial era – past few centuries – yet its beginnings date back almost 6000 years. Source: www.licindia.in



LAUGHTER IN LABS



Two men walk into a bar.
 One man orders H₂O.
 The other says,
 "I'll have H₂O, too."
 The second man dies.



Dancing Molecules !!!

Adapted from Internet by Srinivas G,
 Mahalaxmi Ganjoo & Anand CR



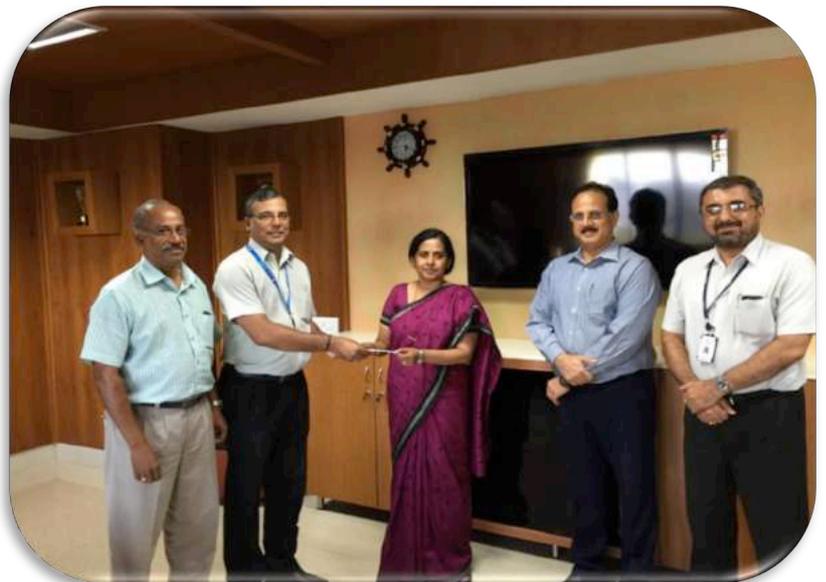
GIVING

Generous gestures from Lepton Software Export & Research Private Limited & The State Bank of Travancore



The Institute appreciates the benevolence and generosity of Mr. Rajeev Saraf, Director of Lepton Software Export and Research Private Limited, Gurgaon, for the timely donation of two Video EEG machines (Nicolet V 32) + PC/Laptop costing a total of Rs. 20 Lakhs to the R Madhavan Nayar Centre (RMNC) for Comprehensive Epilepsy Care. The Institute also appreciates the efforts of Prof. Sanjeev V Thomas, Dr. Ashalatha Radhakrishnan and the Epilepsy team in making this possible. This kind gesture would ensure continuing high quality patient care for the needy.

State Bank of Travancore, Medical College Branch contributed Rs 5 Lakhs to SCTIMST to equip the wellness centre in "Swasthy" as part of their CSR activity.



GIVING



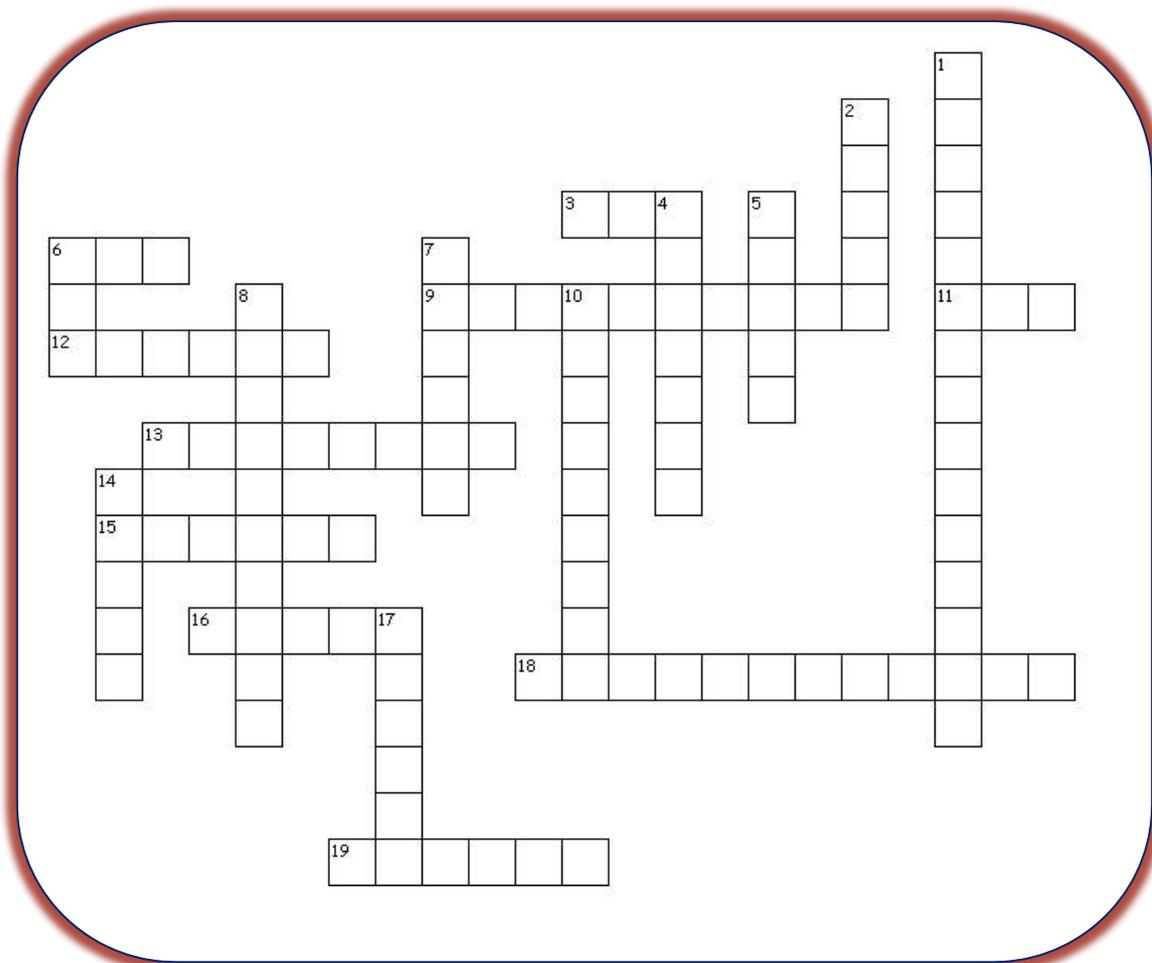
How can we expect our children to know and experience the joy of giving unless we teach them that the greater pleasure in life lies in the art of giving rather than receiving.

— James Cash Penney —

The employees of SCTIMST have always been the strength behind all our achievements. In order to support the altruistic tradition of subsidized services and free treatment to the financially poor and vulnerable patients, our employees have stood with the Institute during its need and continue to do so. These gestures are important not only with regard to its financial significance, but also to the spirit of Unison in the Sree Chitra Family, during challenging times. In the period from July 2016 to December 2016, an amount of Rs. 2,48,170/- was collected from voluntary donations from the salary of our employees, while Rs. 2,37,180/- was collected through donations from other individuals and patients both totaling to a sum of Rs. 4,85,350/-.



CROSSWORD PUZZLE



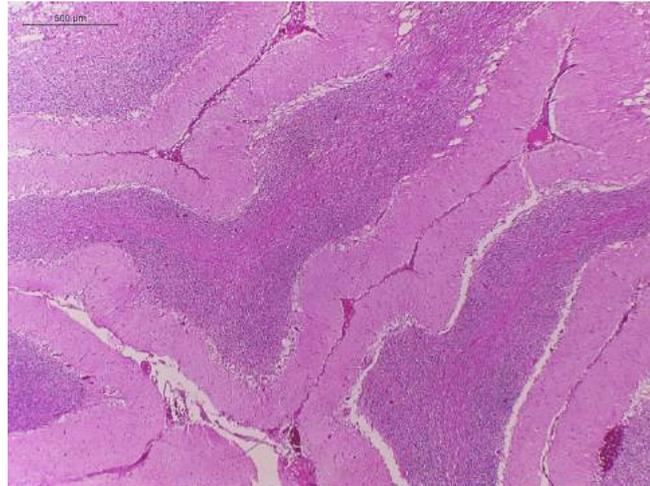
Down

- 1. A device that supplants or supplements the input and/or output of the nervous system
- 2. Scientific name of the mosquito that caused Dengue
- 4. Name of the new hostel inaugurated in November
- 5. A small mesh tube that's used to treat narrow or weak arteries
- 6. Acronym for the facility to R&D of biomedical devices
- 7. An new research program initiated by the Department of Science and Technology
- 8. An element with potential to be used as MRI contrast agent
- 10. A Greek word for a place to receive guest
- 14. A stable dispersion (emulsion) of polymer microparticles in an aqueous medium used as a base material for gloves, blood bags etc
- 17. The virus that recently caused the outbreak of fever

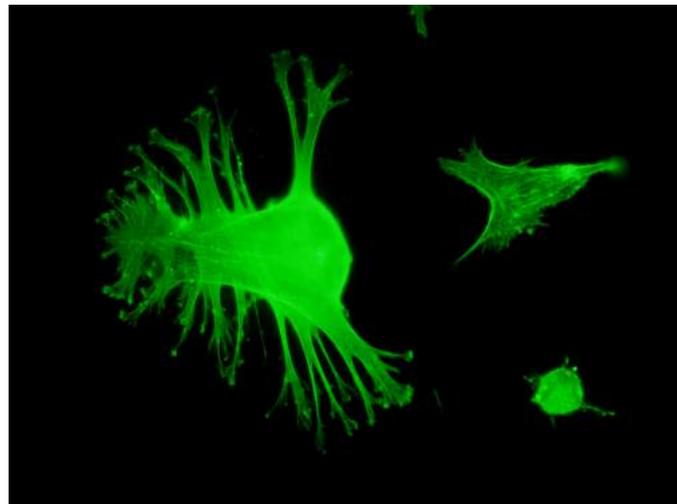
Across

- 3. A neurosurgical procedure, involving the implantation of a medical device through implanted electrodes, to specific targets in the brain
- 6. Industrial partner of the Chitra Heart valve
- 9. A devastating disease causing memory loss and neurodegeneration named after its inventor
- 11. Short form of the chemical used in the vascular graft
- 12. Accreditation Committee situated in France
- 13. The first technology transferred from the Institute to an Industry.
- 15. Mild chest pain
- 16. Business incubator of SCTIMST
- 18. An interventional way of blocking abnormal blood vessel
- 19. The company that donated two video-EEGs to SCTIMST

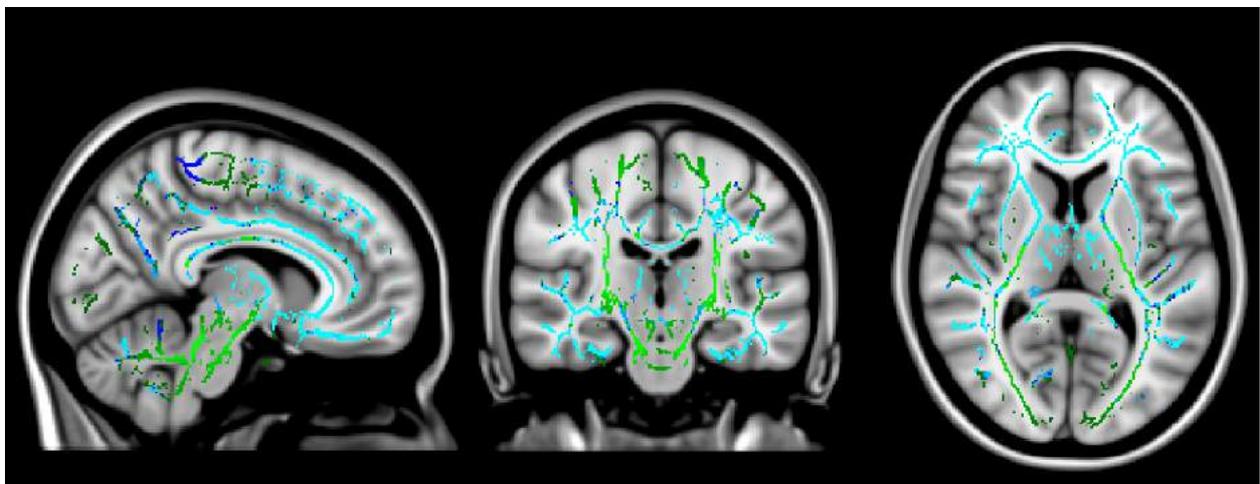




Microscopic image of human cerebellum
Dr. Rajalakshmi P.



Collagen staining in cultured cells by Dr. Neethu Mohan



White matter tracts shown using DTI in patients with fronto-temporal Dementia
by Dr. Sheela Nair



Technical Research Centre (TRC) for Biomedical Devices is created with a mission mode research and development program with translational potential. This is one among five such initiatives of Government of India, through Department of Science and Technology to strengthen the core areas of Science and Technology. Different projects have been identified under each category based on unmet clinical needs and the requirements of the industry. Combining unmet clinical needs with business analysis and technology development with the goal of catalyzing the implementation and commercialization of biomedical innovations. Bringing together such varied expertise to solve clinical problems holds enormous promise in terms of benefiting patients.

Research and development is in full swing in the identified areas of

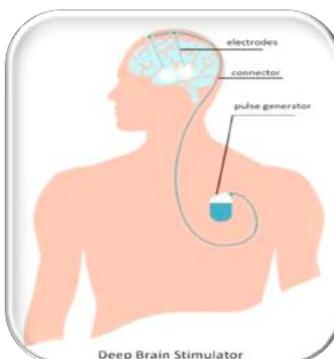
- **Cardiovascular devices**
- **Neuroprosthetic devices**
- **Hard tissue devices**
- **In vitro diagnostics**
- **Biological and combinational products**

Paracorporeal Left Ventricular Assist Device (pLVAD)



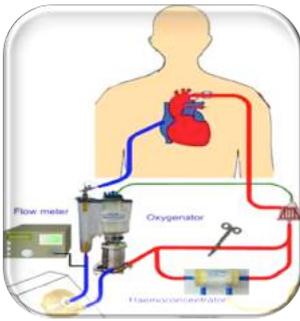
A mechanical pump used to support heart functions in patients who have weakened hearts. The device takes blood from the lower chamber of the heart and helps pump it to the body and vital organs, just as healthy heart would. This can be used for patients waiting heart replacement or patients having problems during surgery where heart will recover if it is allowed to relax for a few days.

Deep Brain Stimulator



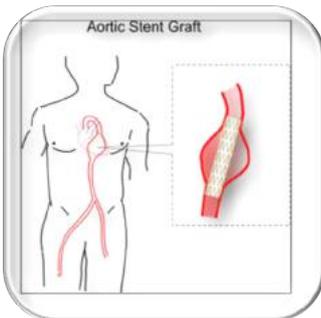
Parkinson's Disease (PD) patients suffer from a variety of movement related disorders such as tremors, stiffness of limbs, slowness of movement and poor balance. Low energy electrical stimulation of certain regions of the brain using electrodes implanted in the brain controls these symptoms. Deep Brain Stimulator employs a pulse generator and a set of platinum electrodes to achieve the required effects.

Centrifugal Blood Pump with Flow Meter



Extracorporeal cardiopulmonary bypass is a technique where the patient heart has to be stopped or bypassed during open heart surgery. The functions of the heart and lungs will be replaced by blood pump and oxygenator respectively. Roller pumps are cost effective for bypass, but causes blood damage. Centrifugal blood pump reduces blood damage substantially. Blood flow meter is used for measuring the flow output from the pump.

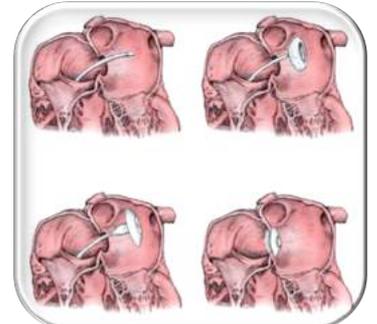
Endovascular Stent Graft



Used as an alternative to conventional surgical repair of aortic aneurysms (localized blood filled balloon like bulge in the wall of large arteries). The device is tubular fabric structure with metal reinforcement which can be delivered to the site using catheters. The patient recovers fast and it requires only a shorter period of hospital stay.

Atrial Septal Defect (ASD) Closure Device

An atrial septal defect (ASD) is an opening or hole in the wall that separates the two upper chambers of the heart. Conventional management technique is open heart surgery to close the hole. A special metal alloy (NiTiNOL) mesh is taken to the site using a catheter and then deployed to close the hole. Being a non-surgical procedure, the patient recovers fast and it requires a very short period of hospital stay.



Intracranial Electrodes

Epileptic seizures are the result of excessive and abnormal nerve cell activity in the certain regions of brain. Intracranial electrodes are used for locating the epileptogenic regions of brain. They help to locate the regions that need to be removed by surgery for controlling epilepsy. The device employs platinum electrodes with platinum-irridium alloy connection wires embedded in silicone rubber.

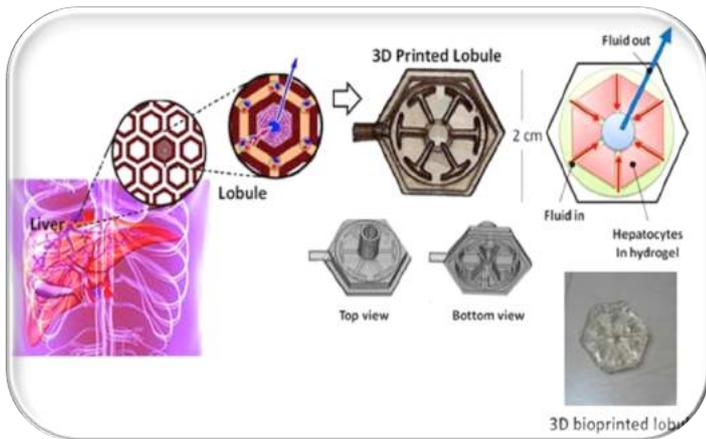


Leukocyte (WBC) Reduction Filter



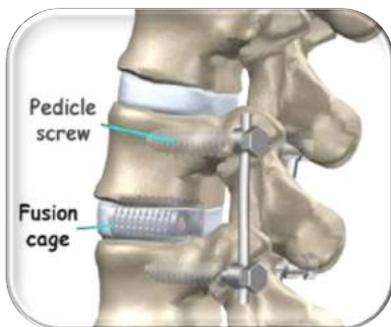
Presence of white blood cells (WBC) in transfused blood creates many complications to the recipients. Leuko-reduction is the removal of white blood cells (or leukocytes) from the blood or blood components supplied for blood transfusion. The device employs special membranes which attracts and traps WBC as blood passes through it.

3D Printed Liver Constructs



The evaluation of potential liver toxicity represents a crucial step in the development of new drugs. Laboratory animals are used for carrying out these tests. The 3D liver constructs can be used for preliminary screening of drugs for their liver toxicity and help reduce the use of laboratory animals for drug toxicity assays.

Bioactive Intervertebral Spacers



Instability of lower spine vertebrae due to spondylosis (spinal degeneration) and spondylitis (inflammatory arthritis that affects the spine) often lead to crippling pain. Pain relief is achieved surgically by fusing the unstable portion of the spine or immobilizing the vertebral motion segment. The device helps in joining vertebral bodies through natural healing.

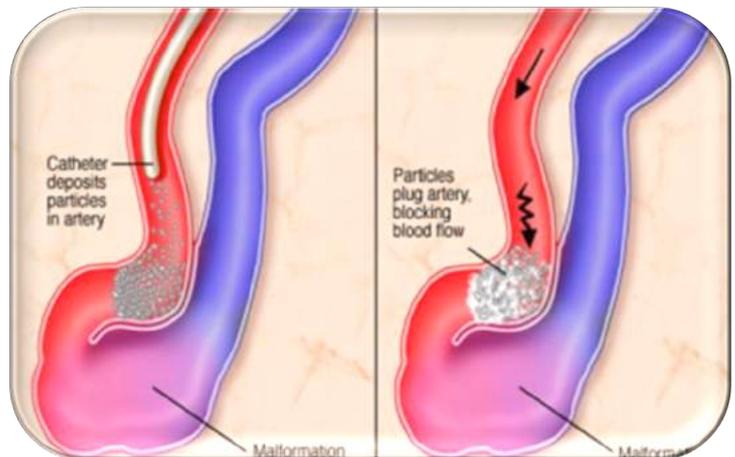
PT / INR Monitoring System



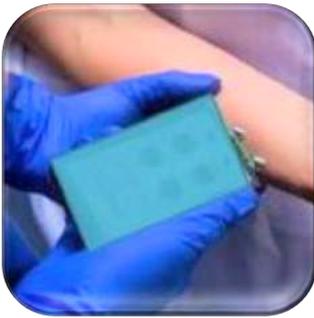
Most of the blood vessel disease patients and those with cardiovascular implants, management need continuous and lifelong use of anti-coagulant and need a close monitoring of blood clotting time (Prothrombin Time- PT) regularly. A home care monitoring system is planned in this project.

Radio-opaque liquid embolization device

Arterio-venous malformations in the brain (which causes seizures, intra-cranial bleeding, paralysis, visual loss or severe headache) are sealed with specific sealants. An MRI compatible non-metallic sealant is planned in the project.

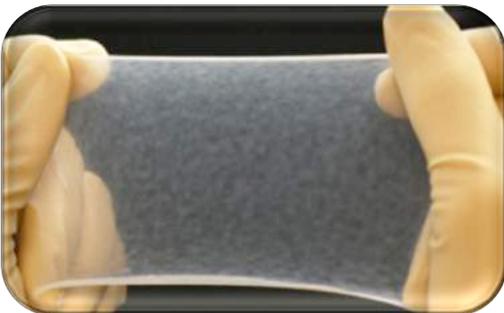


Optical Nerve Stimulator



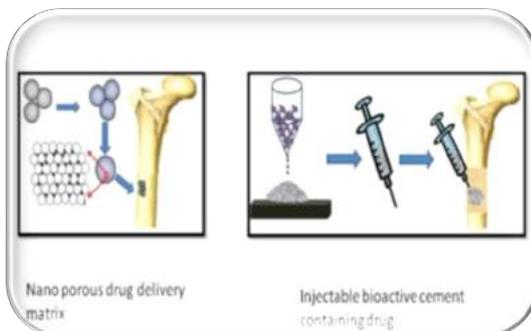
Standard approach to stimulating human nerve cells has been to use electrical current. Optical nerve stimulation overcomes many of the problems associated with electrical stimulation: it requires no physical contact with the nerve cells. Light source (normally a LASER) can be tuned to precisely hit a small desired area. The project will focus on the feasibility study of optical neural stimulation.

Wound healing portfolio



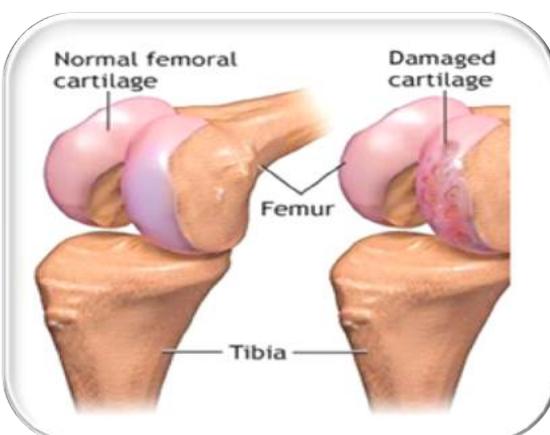
Synthetic, biological and combinational products for addressing acute as well as chronic wounds promoting healing, infection control and antibiotic delivery. Products include PLGC - fibrin homostatic graft, Alginate scaffold with growth factors, Lint free absorbent dressing, Porcine-cholecystic extracellular matrix, Chitosan-Alginate based wound dressing.

Bioactive material for drug delivery in bone



Bone and joint infections (osteomyelitis) remain one of the most dreaded complications of orthopaedic surgery. Bacteria adhere to implants, especially metals, making eradication of infection even more difficult. Project aims at the development of bioactive material platform having a novel bio ceramic composition which has tuned porosity and osteoconductivity.

Injectable hydrogel for cartilage repair



Most of the trauma related injuries to the cartilage are often as a result of sports or accident related trauma. The aim of this project is to develop injectable hydrogel for repairing damaged cartilages. The gel can also be used as a vehicle to transport cartilage producing cells to the site.

Stereotypes

Welcome to our nation of stereotypes. Fasten your seat belts since this is one hell of a ride. No, this isn't about religion or race or gay pride. But, rather about a section of the society that everyone unequivocally loves to deride.

Do you see that little girl shopping with her mother in the boys' toy section? Her fascination for fire trucks isn't a work of fiction. Barbie dolls don't weave as much magic as the magnificent red fires her imagination.

"Halt!" shouts the traffic policeman...errr woman. You hesitate, since commandeering of any sort is best left to the masculine kind. Taking order from a woman? No, this must be an aberrancy. Why, aren't women just supposed to dominate the kitchen and all it's fancy?

"Hello, this is the captain speaking...welcome aboard" - the high pitch makes you quiver. Piloting a plane when driving a car in a straight line itself is a shiver. "No traffic sense!" you shout. But she deftly manoeuvres the free skies as the naysayer's voices get drowned out.

Newly married bride. New name. New rules. New parents. New stranger to sleep with at night. Recycled freshly minted life. Undercover agents could not be as adept at hiding their real identities as a married woman might.

"Uh excuse me *nurse*, could you fix this i.v. drip?" She rolls her eyes but decides not to speak. Treading a fine line between gentle-speak and a competitive streak, the woman surgeon ignores tradition and the biological clock to perfect her craftsmanship.

Conducting meetings and performance appraisals, she's the quintessential multitasker mommy. The one-tasker husband returns home after a prolonged meeting. As she dons the kitchen apron, he screams at his IPL team's poor performance.

Staring at the future, the expectation of motherhood looms large. Wanting time to 'find herself' is a luxury she cannot afford. A vending machine for children might be too strong a word. But then, isn't snuffing out one's own

aspirations to hesitantly birth a life a hugely sad and unfair world?

The rules are that there are no set stereotypes, no set rules. "What will society say!" has killed many a dream, a hesitant hand rise in class or a dormant leadership skill. Pinks and blues do not exist - only a rainbow, the colours of which will be chosen by each soul at will.



Dr. Sonali Inamdar
Senior Resident, Cardiology

Melancholy Around...

Along the wind
Came the rhetoric melancholy
The song of malady
Fills the air around
People around care not
For their own blood and flesh
Inbred mayhem around
Chaos pervades the society
Who is in charge?
Who is their supreme patronage?
Cries around us getting louder
And louder enough to defy tribunals
Cries for peace
And harmony eventually dies around...

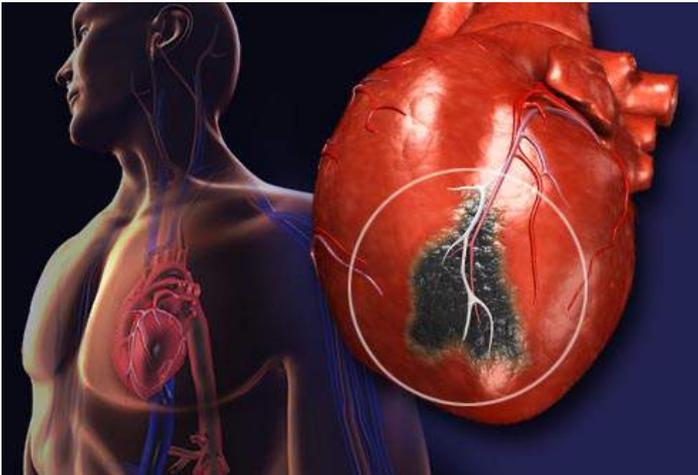


Mr. Arun KM
PhD Fellow, IS&IR



WHAT TO DO...

Heart Attack



Chest pain can be caused by reasons as minor as indigestion, or as life threatening as a heart attack. It's important to take chest pain symptoms seriously and immediately seek care in the nearest hospital emergency department. It could save your life or the life of a loved one. Patients should never attribute their symptoms to a particular diagnosis. Often it takes a team of medical experts and various tests to diagnose the specific causes of chest pain. If it's a heart attack, that delay in time can prove fatal.

The most common symptoms of a heart attack include:

- Uncomfortable pressure, fullness, squeezing, or pain in the center of the chest that lasts more than a few minutes, or goes away and comes back.
- Pain that spreads to the shoulders, neck, lower jaw, arms, or back.
- Chest discomfort associated with lightheadedness, fainting, sweating, nausea, palpitations or shortness of breath.
- Some patients especially diabetics may not have pain as the predominant symptom. 10% of patients will have a "silent heart attack".

When you experience these symptoms or see a patient with any of these symptoms, make them rest and take them to the nearest medical facility. Most of the mortality due to heart attack due to the heartbeat abnormality termed as ventricular fibrillation. This can only be treated by giving a form of electrical shock, procedure termed as defibrillation. So the safest thing to do is to reach a hospital with this machine. Travelling long distances to reach big hospitals may be dangerous as complications develop on delaying treatment.

Treatment of heart attack

Heart attack occurs due to sudden block in the coronary

arteries (which supply blood to heart) by blood clot. So the treatment is to remove the blood clot and re-establish the blood flow. The most effective way is to take the patient to the cardiac catheterization laboratory and remove the blood clot by dilating the block with a balloon and inserting a small metal tube called stent. This procedure is called primary angioplasty. This facility is now available in most parts of the country.

If primary angioplasty is not feasible as hospitals are far off or patients cannot reach such an advanced hospital in 2 hours, we give medicines to dissolve the blood clot. Even though this is not as effective as primary angioplasty, this also saves lots of lives.

In addition to this other drugs like aspirin, cholesterol-lowering medications, painkillers etc. will be given to all patients. In the current era, the mortality due to heart attack has come down to less than 10%.

So if you have symptoms suggestive of heart attack, reach the nearest hospital at the earliest.

Compiled from inputs from Prof. Harikrishnan S

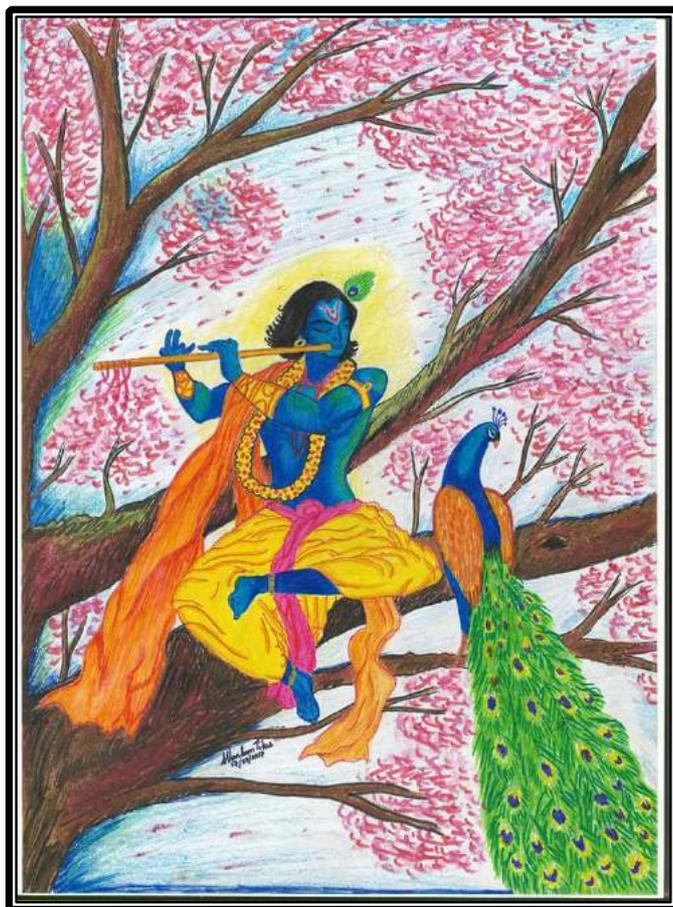
Some of the heart attack risk factors include:

- **Age.** Men age 45 or older and women age 55 or older are more likely to have a heart attack than are younger men and women.
- **Tobacco.** Smoking and long-term exposure to secondhand smoke increase the risk of a heart attack.
- **High blood pressure.** Over time, high blood pressure can damage arteries that feed your heart by accelerating atherosclerosis.
- **High blood cholesterol or triglyceride levels.** A high level of low-density lipoprotein (LDL) cholesterol (the "bad" cholesterol) is most likely to narrow arteries. A high level of triglycerides, a type of blood fat related to your diet, also ups your risk of heart attack.
- **Diabetes.** Having diabetes – not producing enough insulin or not responding to insulin properly – causes your body's blood sugar levels to rise. Diabetes, especially uncontrolled, increases your risk of a heart attack.
- **Family history of heart attack.** If your siblings, parents or grandparents have had early heart attacks (by age 55 for male relatives and by age 65 for female relatives), you may be at increased risk.
- **Lack of physical activity.** An inactive lifestyle contributes to high blood cholesterol levels and obesity. People who get regular aerobic exercise have better cardiovascular fitness, which decreases their overall risk of heart attack. Exercise is also beneficial in lowering high blood pressure.
- **Obesity.** Obesity is associated with high blood cholesterol levels, high triglyceride levels, high blood pressure and diabetes. Losing just 10 percent of your body weight can lower this risk, however.
- **Stress.** You may respond to stress in ways that can increase your risk of a heart attack.

Adapted from mayoclinic.org



*Freedom is what you think by
Ms. Krishnapriya (TRU)*



*The ravishing – Murali Krishna by
Mr. Allen Sam Titus (DCMC)*



*Love has no boundaries
By Ms. Dhanya Krishnan (Biochemistry)*



*Little Miss Sunshine
By Ms. Mahalaxmi Ganjoo*

CAMERA IN ACTION



He that cannot obey cannot command
by Dr. Sachin J Shenoy

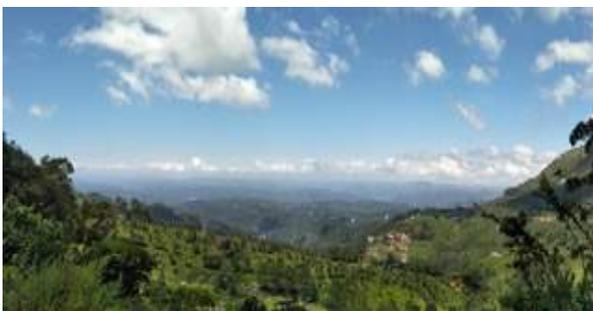


The glow of the looming end
by Mr. Arun KM



*Memories made in the Mountains stay
in our Hearts forever*

by Mr. Arun Thejaus



Look at the sky; remind yourself of the Cosmos
by Ms. Sulfath TP

DENGUE OUTBREAK: MYTHS & FACTS

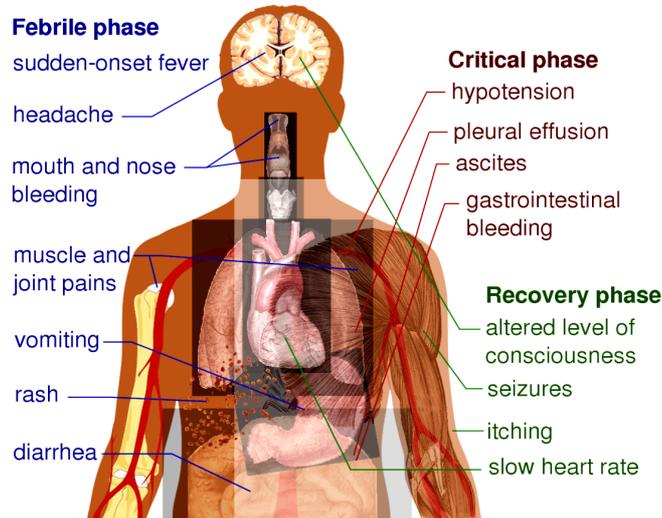
Over the last decade, Dengue fever outbreaks became common accompaniment of monsoon season in India. The causative agent, spread by the vector mosquitos of the *Aedes* group, is a single stranded RNA virus. As it is true with many other RNA viruses, dengue viruses are also prone to frequent mutations. Four serotypes (DENV1, DENV2, DENV3, DENV4) infect human and the fifth serotype (DENV5) remains sylvatic in nature. Each serotype has many more Genotypes and each of the Genotypes have many more lineage differences. The occurrence of dengue concurs with the abundance of *Aedes* mosquitos but the severity of outbreaks and the number of deaths largely depend upon its stereotypes, genotypes, strain lineages and the adequacy of the health care system.

Dengue is characterized by high fever and accompanied by two of the following symptoms: severe headache, pain behind the eyes, muscle and joint pains, nausea, vomiting, swollen glands or rash. These symptoms usually last for 2-7 days, after an incubation period of 4-10 days after the bite of an infected mosquito. Warning signs for severe dengue occur in 3-7 days after the first symptom along with a decrease in temperature, persistent vomiting, rapid breathing, bleeding gums, fatigue, restlessness and blood in vomit. These symptoms can be critical and lethal.

Usually the primary infection, first time infection with one serotype of dengue, evoke mild to moderate disease and offer life long immunity against that serotype, except in case of DEN4, where even the primary infection could turn fatal. Generally it is the secondary infection, *i.e.* when a person who had primary infection with one serotype gets infected with another serotypes in (usually) subsequent years, that the disease become severe, due to antibody dependent enhancement (ADE) of viraemia. The severe forms could manifest as Dengue Haemorrhagic Fever or Dengue Shock Syndrome (DHS/DSS) with involvement of vital organs due to irreversible damage in blood vessel linings. The enhanced permeability in capillaries drives fluid out into the extracellular spaces, causing decreased blood volume resulting in hypovolemic shock. The deranged coagulation systems lead to haemorrhage into the internal organs and necrotic lesions in vital organs, leading over to systemic failure and death. Unlike the popular belief, the low platelet count is not the cause but a consequence of the disease.

The recent estimated burden of dengue is about 390 million infections per year, of which 96 million manifest clinically. In 2010, Asia bore 70% of the global burden while India alone contributed 34% to the global total. In

Symptoms of Dengue fever

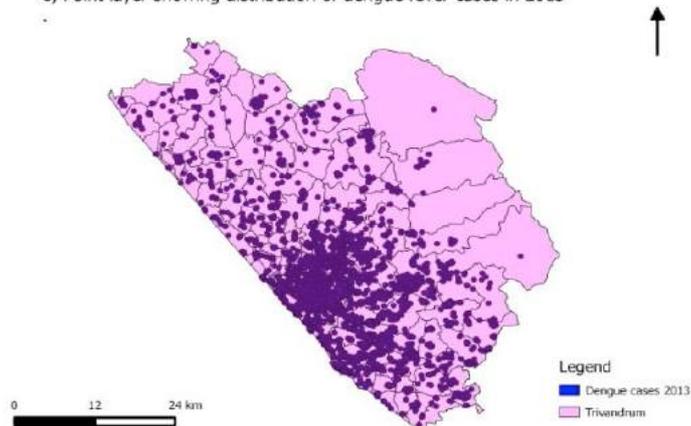


2016 also there were significant numbers of dengue cases in India. Kerala also has witnessed large outbreaks of dengue fever, especially in the monsoon months. The capital district, Thiruvananthapuram has been contributing to the highest number of cases since 2010.

While the occurrence depends on vector related factors, the severity and fatality of cases are more virus specific and understanding its phylodynamics is very important in its control strategy. Phylodynamics include phylogenetics (the pattern of origin and family free the genotypes and lineages) and phylogeography (the location specifics of the origin and spread of the current strains) and these require high-level expertise and equipments. For example till last year we were mainly getting DENV2 and DENV3 serotypes, with their cosmopolitan genotypes. But in this year occasional DENV4 serotypes were also got reported. Also there could be a change in the serotypes or genotype or changes in strain lineage within theses subtypes in the state or within the districts or sub-regions in the state, which could have ticked the scale of severity of the disease. Some of these genetic mutations makes the prevailing strain, non reactive to NS1Antigen (one of the common diagnostic tests used in the state). A detailed analysis of the phylogenetics and the phylogeography of the subtypes of prevailing dengue infection is to be done on a continuous basis for this. In Kerala we have facility and personnel capable of doing it, and a concerted action to tap the resources will help in the larger good. Unfortunately, even the available data are not being analyzed in a scientific manner within the state. The online reporting of the Integrated Disease Surveillance Projects (IDSP) and the

Dengue - the Menace

c) Point layer showing distribution of dengue fever cases in 2013



e-Health initiatives provide a wonderful opportunity to crystallize our efforts in this line. The enactment of the Clinical Establishment Act will help us to coarsen the private sector also to report on this public health infection.

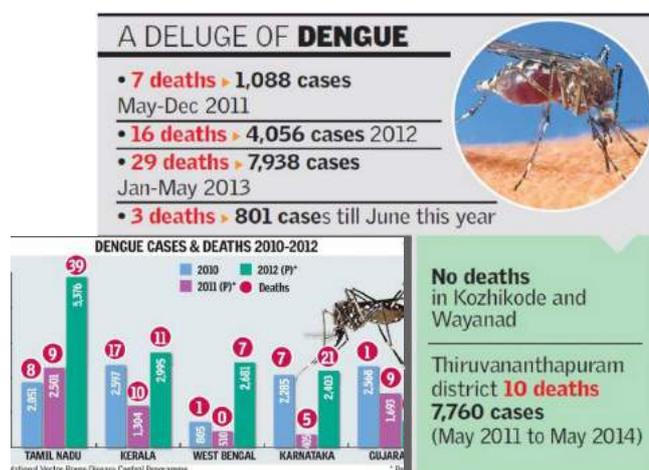
With no specific treatment for dengue fever, prevention and control are the main option to tackle dengue fever outbreaks. Dengue should be suspected in all high grade fevers lasting for more than a couple of days in this season, especially if the fever is without respiratory symptoms, and the subjects should be treated with adequate rest, plenty of fluids and light but nourishing diet. Physical exertion should be avoided, as myocarditis could be a not so uncommon accompaniment of the dengue, which could turn fatal. The best prevention strategy is to keep our houses and premises clean of mosquito breeding, as these mosquitoes will not fly far off, usually hover within 200-400 meters from its site of breeding. *Aedes* mosquitoes need only a drop of water that remains in a place for 8-10 days to breed on. The rich tree canopy and the frequent rains in Kerala provide ample such natural opportunities for *Aedes* mosquitoes, and in addition there are many man made avenues like heaps of garbages, waste collections, rubber plantations, ongoing construction activities, etc. This is why it is very important to diligently observe the **weekly dry day** in Kerala. Everyone in the community should do this in a concerted fashion, which requires political commitment rather than technical expertise.

Individual or household measures could include keeping the environment clean, disposing of solid waste properly, covering and cleaning of domestic water storage containers, applying insecticides to water storage outdoor containers, using personal household protection such as window screens, long-sleeved clothes, insecticide treated materials, coils and vaporizers.⁷ Community measures which are more effective include provision of adequate piped drinking water to high risk areas, meticulous observance of the **“weekly dry day on every Sunday”** and the meaningful use of the available technical resources in the state for better surveillance of the data.

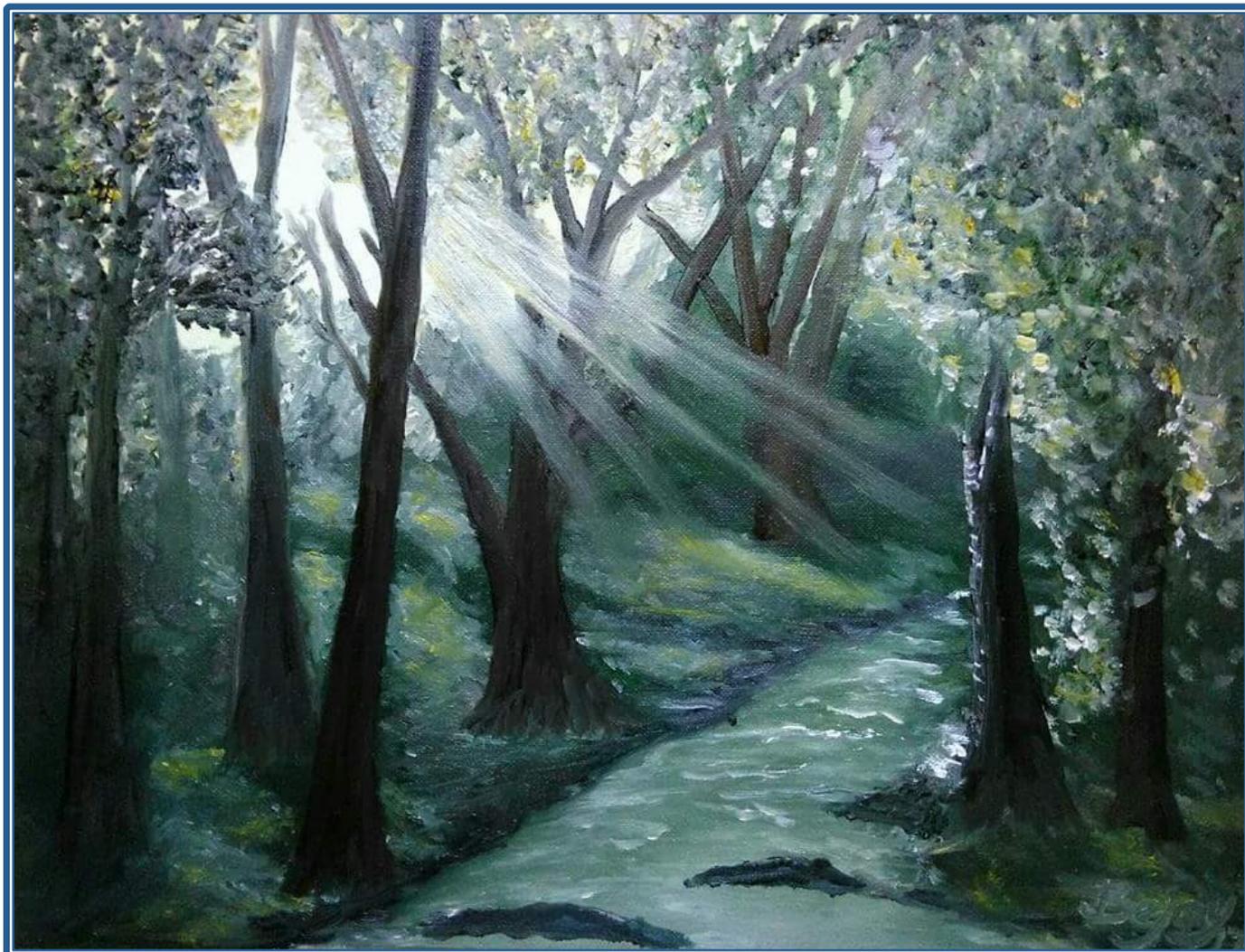
For nearly 25 years after the inception of the State of Kerala during which the policies (without prior knowledge whether they will perform!) that were made under the leadership of some remarkable men in Government, led to “the previously poor state of Kerala, with its universal healthcare and universal schooling, now having the highest per capita income among all the states in India” (Amartya Sen, 2015). Remarkable indeed!

But the state has witnessed a great epidemic of Dengue in the recent past. The national death toll in this monsoon session at an all time high, Kerala has witnessed an alarming number of afflicted. With more than 775 deaths reported* during the years 2011-2016 and more than 115 deaths** reported this year alone, caused due to a fever, it has made for a rather vexing remembrance of the cholera epidemic of the nineteenth century that abounded the country and swept away countless folks. This agonizing similarity unconcealed the hollow glitz of remarkable health index charts and data. The city of Thiruvananthapuram experienced a massive surge in the number of reported cases of Dengue fever. Even after the immigration to the cities for better medical facilities are taken into account, we cannot turn a blind eye to the sheer load of cases here.

The numerous water ponds and wells in the state have kept it at the edge of a sword where one misbalanced step can result in catastrophic and deadly wounds. When the storm that we are faced with is gigantic and the protection that we would have hoped from the government is slothful and inept at tackling the demands put on them, it becomes a man’s own responsibility to shield him. With the awareness of the breeding spots of the *Aedes* mosquitoes and the spread of the Dengue virus, a heap of burden of the disease can be solved. In these dire circumstances, we as citizens must come forward to stand one for all and all for one to shelter ourselves from this preventable menace.



Morning Glaze



Inspired by Nature

Bejoy Thomas

It is heart warming to see Chitra Dhvani serve as a platform for our members to showcase not just their academic grasp but also their intrinsic abilities- **Dr. HK Varma, Head, BMT Wing**

Chitra Dhvani is not just the voice, it is the '*Chitra Lekha*' that traces out and showcases the thoughts, pictures, achievements and hidden creative talents of our chitra community- **Dr. S. Sandhyamani, Professor & Head, Department of Pathology**

A good initiative to transform Chitra Dhvani from an academic to a more inclusive magazine of the Institute, Congratulations! - **Dr. Smitha KA, Research Associate**

It was moving to see not only all the events of the recent past but also the walk through the rather earlier days as well- **Mr. Aji K, Physiotherapist**

Beautiful & Professional, Chitra Dhvani has metamorphosed...- **Ms. Deepa, M.Phil Student**

The contents, presentation style, organization are really appreciable...- **Ms. Shiny Biju, Senior Staff Nurse**

After reading the articles, I became aware of many things that were happening in our Institute, which hitherto, remained out of my knowledge- **Anonymous**

