



Christian Medical College

Vellore



Year book 2016

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Building not a medical college, but the kingdom of God

CMC was founded on sensitivity for the spiritual and physical dimensions of human suffering. The chaplains therefore take the roles of pastoral caregiver for the sick, conscience-keeper for the institution and spiritual counsellor for patients, students and staff. Through a team of 20 chaplains from different states in India, speaking different Indian languages, the Chaplaincy maintains its credo of facilitating fellowship with the God of healing to those needing care. The instruments of its services cover worship services, spiritual literature distribution, counselling and retreats. Dr Scudder's vision was on building not a mere medical college but the kingdom of God.

To effectively practise our calling to be a faith-based establishment, CMC has also instituted a missions outreach programme that seeks to broaden the network of organisations involved in the healing ministry. The Missions Office is committed to reviving mission fields in the rural pockets across the country that lack access to quality medical services.

CMC's medical mission includes major initiatives also. This year, CMC was actively involved in earthquake relief in Nepal; flood relief in Chennai and surrounding districts, control of the sudden spate of deaths among Bodo infants in Tezpur, Assam; and restoration of the standards of medical care and management at CSI Hospital, Erode, Tamil Nadu.



Editorial

A Tribute

To the extended family and Friends of Christian Medical College, Vellore!

What is most impressive in the story of CMC! Is it the educational mission? 'Both-and' logic in delivering health care? Or, the unbelievable commitment of the brave lady, Dr Ida Scudder?

I needed help in the monumental task of putting together CMC Year book 2016, sorting out the dilemma of presenting the work that spoke most directly to the turn of the millennium or what seemed to me the most paradigmatic of CMC's works. Lo and behold! The members of CMC family without any hesitation came forward to give a helping hand to create this document.

The editorial team members moved forward conceptualising the content and emailing each other back and forth. I saw a renewed energy in many to project their hard work through this Yearbook!! It was really encouraging and touching

and I could reconfirm that I belong to a strong, united and loving CMC family.

The editorial vision of this Year Book 2016 is informed by our tradition of showcasing the history and an account of the ongoing activities of the institution while extending our founder, Aunt Ida's mission to 'Build a Kingdom of God, not a mere Medical College'. It is organised in terms of CMC's history, founder's vision and a narrative account of the 3 main areas of focus of the institution-Medical Care, Education and Research. I am sure, as you go through the pages of this book, you will understand the uniqueness of this great, 115 years old institution, Christian Medical College, Vellore!

Rita Isaac
Editor

Abbreviations

ABO	Blood group system comprising the A, B and O blood types	HPV	Human Papilloma Virus
AHS	Allied Health Sciences	HR	Human Resources
ALS	Advanced Life Support	ICMR	Indian Council of Medical Research
BLS	Basic Life Support	IDTRC	Infectious Diseases Training & Research Centre
CHAD	Community Health and Development programme	IGRT	Image Guided Radiotherapy
CHIPS	Computerised Hospital Information Processing System	IMRT	Intensity Modulated Radiotherapy
CMAI	Christian Medical Association of India	LCECU	Low-Cost Effective Care Unit
CMC	Christian Medical College, Vellore	LMP	Licentiate Diploma in Medical Practice
CMCH	Christian Medical College & Hospital	MCh	Magister Chirurgiae
CONCH	College of Nursing Community Health programme	MD	Doctor of Medicine
CSCR	Centre for Stem Cell Research	MMed	Masters in Medicine
CSIR	Council of Scientific & Industrial Research	MRI	Magnetic Resonance Imaging
DM	Doctoral Degree in higher medical speciality	MS	Master of Surgery
DVR	Digital Voice Recorder	NABL	National Accreditation Board for Testing and Calibration Laboratories
EBUS	Endobronchial Ultrasound	NHRM	National Rural Health Mission
EEG	Electroencephalogram	NRL	National Reference Laboratory
EMG	Electromyogram	OR	Operating Room
ENT	Ear, Nose and Throat	PACS	Picture Archival and Communication System
EQAS	External Quality Assessment Scheme	PCF	Private Care Facility
ERCP	Endoscopic Retrograde Cholangiopancreatography	PCR	Polymerase Chain Reaction
EUS	Endoscopic Ultrasound	PEG	Percutaneous Endoscopic Gastrostomy
GVHD	Graft-versus-Host Disease	PGDFM	Post-Graduate Diploma in Family Medicine
		RMU	Reproductive Medicine Unit
		RUHSA	Rural Unit for Health and Social Affairs
		SRS	Stereotactic Radiosurgery

Foreword

Every twelve months, the year book gives us an opportunity to recapitulate the events of the year. 2015 -16 has been relatively eventful with moments of definite progress as well as uncertainties, ups and downs, new initiatives and the constant effort to continue with our precious legacy. Through it all we have been abundantly guided and blessed by God Almighty as we continue to emulate our visionary founder, Aunt Ida in 'building the kingdom of God' through our training, service, research activities and outreach.

Thanks to the dedicated team of medical, nursing, paramedical and other members of the CMC community, we are constantly upgrading our services trying to keep pace with the phenomenal demand in patient care areas. I owe an immense amount of gratitude to you my dear CMC colleagues, alumni, members of the Council, well-wishers and friends, your support and encouragement has been invaluable.

2018 would mark the centenary year of medical education in CMC, which started as a licentiate programme for women alone. Much has evolved over the years and the envisaged changes in the admission process may herald more modification. We are doing everything possible to retain autonomy in all aspects of our institutional endeavors.

The International Consultation conference is scheduled for October 2016 when the extended CMC family, along with experts, will review our past performance and set appropriate goals for the future based on our guiding principles.



We have made progress in our commitment towards mission outreach goals. In addition to supporting the mission network of CMC, we are also actively involved with re-invigorating the work in mission hospitals in Erode, Kotagiri, etc.

The CMC Chittoor campus has seen a steady increase in outpatient attendance and new clinics have been started. The inpatient facility and operation theatres will commence soon, heralding a new phase in the growth of the campus. The Kannigapuram project, located on the national highway towards Chennai, has been planned to develop trauma facilities, cancer services and their related departments. It is moving forward at an accelerated pace. We need your prayers and support as we embark on this transformational venture in the life of the institution. The Kagithapattarai campus adjacent to the Main Hospital is nearly complete with the nursing students having moved into their new and much improved hostels adjacent to the College of Nursing. This has become a vibrant campus with remarkable activity thanks to the initiatives of all the residents.

Two of our distinguished alumni received the BC Roy Award this year: Dr Mammen Chandy (1967), former head of the department of Haematology, who pioneered bone marrow transplantation in India; and Dr Glory Alexander (1970) who is impacting the lives of thousands through her HIV / AIDS-focused NGO, Asha Foundation. These have come as a fitting recognition to CMC in its role as a unique model in medical education and health care.

There is so much more I am keen to share with you which is elegantly compiled in this year book. It is not only a testimony of CMC's progress but also to the abundance of blessings that God is showering on us as an institution. I am grateful to Dr Rita Isaac and her team in the Promotion and PTP Office for the mammoth work that has gone into the compilation of this Year Book, which is a ready reckoner on our unique history and latest factual data.

I take this opportunity to sail along with our institution as we enter into yet another year in its journey of healthcare excellence in and for India.

Sunil Chandy

Mission

The primary concern of Christian Medical College, Vellore is to develop through education and training, compassionate, professionally excellent, ethically sound individuals who will go out as servant-leaders of health teams and healing communities. Their service may be in promotive, preventive, curative, rehabilitative or palliative aspects of health care, in education or in research.

In the delivery of health care, CMC provides a culture of caring while pursuing its commitment to professional excellence. CMC is committed to innovation and the adoption of new, appropriate, cost-effective, caring technology.

In the area of research, CMC strives to understand God's purposes and designs, fostering a spirit of enquiry, commitment to truth and high ethical standards. Research may be aimed at gaining knowledge of the fundamental bases of health and disease, at improving interventions or in optimising the use of resources.

CMC reaffirms its commitment to the promotion of health and wholeness in individuals and communities and its special concern for the disabled, disadvantaged, marginalised and vulnerable.

CMC looks for support and participation in its programmes in education, service, outreach and research, from friends and like-minded agencies in India and abroad, in a true spirit of partnership.

In its role as a living witness in the healing ministry of Christ, CMC seeks to work in partnership both with the Church in India and the universal Church, and their institutions.

Vision

The Christian Medical College, Vellore, seeks to be a witness to the healing ministry of Christ, through excellence in education, service and research.



MILESTONES MILESTONES MILESTONES MILESTONES MILESTONES

1900	Single-bed dispensary	1957	Rural Health Centre at Bagayam
1902	Mary Taber Schell Memorial Eye Hospital		Pharmacy diploma course
1903	Training course for compounders	1961	Successful open heart surgery (India's first)
1906	Roadside Clinics		Middle ear microsurgery (India's first)
1909	Nursing School diploma course	1962	Medical Records and Physiotherapy courses
1918	Medical School for Women LMP course	1965	Fleming Memorial Research Laboratory in Virology
1942	Medical College MBBS degree course	1966	Rehabilitation Institute (India's first)
1945	Lab Technician training course	1968	Occupational Therapy and Hospital Administration courses
1946	College of Nursing degree course	1969	College of Nursing Post-graduate degree courses
1947	Male medical students' join	1970	Nephrology department
1948	Reconstructive surgery on leprosy patients (The world's first)	1971	Kidney Transplant (India's first)
	Neurological Sciences department (South Asia's first)	1976	Artificial kidney lab
	Rural Health Centre at Kavanur	1977	RUHSA
1950	MD and MS courses		First External Quality Assurance Scheme for 59 Indian labs
1954	Radiographer training course	1978	Betatron ICMR Centre for Advanced Research in Virology
1956	Mental Health Centre		

Vision of One Woman

“It is natural for us to admire something impressive, but not many of us care to look beyond its size and external splendor, and try to grasp the vision underlying it...”

- Valson Thampu*



It was the last decade of the 19th century. India was still reeling from the bubonic plague and a terrible famine. But that did not change Ida Sophia Scudder’s plans. A great movement was gaining momentum in Vellore, Tamil Nadu: in 1900, as a new century began, Ida Scudder returned to India.

In then unknown Vellore, Ida laid the foundation, with a one-room, single-bed dispensary. Within two years, thanks to a generous donation, she had expanded it into the 40-bedded Mary Taber Schell Memorial Hospital for women and children. Ida knew she could not take her mission forward without the local people. So she trained many of them, introducing women compounders in 1903. “She was doctor, nurse and technician, all in one,” wrote Dr Desmond, former Professor of ENT at CMC, of her.

Ida’s epiphany had happened about a decade earlier, while she was with her parents in a small village near Vellore, nursing her ailing mother. One night, three young women from

* Indian Educator and Christian Theologian Rev Dr Valson Thampu in *Be Thou My Vision: Spiritual Resources for the Healing Ministry* (New Delhi, 1997, The Theological Research and Communication Institute)

MILESTONES MILESTONES MILESTONES MILESTONES MILESTONES

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|------|--|------|--|
| 1981 | Nambikkai Nilayam (an institute for children with special needs) | 1997 | Trans-septal carotid stenting (World’s first) |
| 1982 | Ophthalmology hospital in the Schell campus | | Trans-jugular mitral valvuloplasty (World’s first) |
| 1982 | Degree programmes in Occupational Therapy and Physiotherapy | | Distance Education Unit Family Medicine programme |
| | LCECU | 1997 | Child and Adolescent Psychiatry unit |
| 1984 | Continuing Medical Education department | | Developmental Paediatrics unit |
| 1985 | Epidemiology Resource Centre | | Clinical Pharmacy post-graduate diploma course |
| 1986 | National AIDS Reference and Surveillance Centre | | In vitro fertilisation via gamete intrafallopian tube transfer (India’s first) |
| | Bone marrow transplant (India’s first) | 1998 | Bone marrow transplant in 6-month-old baby (India’s first) |
| | MSc Biostatistics | | Total body irradiation for bone marrow transplantation (CMC’s first) |
| 1987 | CONCH | 1999 | Intracytoplasmic sperm injection for infertility (CMC’s first) |
| 1991 | Dr Ida B. Scudder Radiation Therapy Block | | Liver transplantation (CMC’s first) |
| 1994 | Clinical Pastoral Counselling diploma course | 2000 | Ida S. Scudder Centenary Centre for Women and Children |
| 1995 | Magnetic resonance imaging | | |
| | Reproductive Medicine unit | | |
| | Endocrinology department | | |
| 1996 | Carotid bifurcation stenting (India’s first) | | |

the neighbourhood died in childbirth simply because there were no trained midwives and it was taboo for male doctors to treat them. That night changed her life forever. The story of CMC thus starts with women's need for healthcare being woven into the fabric of a vision that is being nurtured and tended carefully even after 125 years.

She was moved and motivated by the preventable death of three young mothers. She identified with them and took it as her calling to prevent others dying in such condition. Thus the story of CMC Vellore dates back to the days before Ida even had the slightest dream to pursue a career in medicine. It is appropriate to include them; the three dead women woven together with Ida Sophia Scudder underpin this institute called CMC.

Ida was only tending to her sick mother when this happened and the vision was born in an adverse setting. All the biographers of Dr. Scudder cannot but mention this incident that turned Ida to pioneer this health care initiative in an unknown place called Vellore. It is surprising that she chose Vellore for her dream to be executed, in spite of having the encounter in Dindivanam.

This is the vision that continues today.

Catching the vision

The highly committed and thoroughly trained caught Ida's vision and joined the team. From just one woman, many men and women took it on themselves to contribute to building CMC, where excellence in education, service and research are constantly emphasised as characterising one's witness to Jesus Christ.

Delia Houghton, a registered nurse, joined Dr Scudder in 1909 and helped start the nursing training. By 1946, Vellore had India's first nursing college. An early stalwart of the College of Nursing was **Aleyamma Kuruvilla**, a Sociology graduate from the Women's Christian College, Chennai, who chose to be a nurse, helped start the MSc Nursing programme. With such a leader like her, at one time CMC contributed nurse leaders to almost 50% of all nursing colleges in the nation.

The Government of Madras gave permission in 1918 to start a medical school for women. When the first batch went for exams, the officials commented, "Ida's girls could never compete with men in the medical exams."



She'd be lucky if a single woman passed. As the results were announced, stress mounted. 80% of the men failed. Women's scores were announced last. Inspired by her vision, all fourteen of Ida's girls passed" – Dan Graves. (Christianity.com)

Eminent surgeons gave up promising careers elsewhere to work at CMC. **Dr Jessie Findlay** arrived in 1940, expanding the surgical services that had been established in 1918. By the late 1940s, **Dr John S. Carman**, **Dr Norman S. Macpherson** and **Dr Theodore Howard Somervell** (who won the Olympic gold in 1924 for mountaineering and

MILESTONES MILESTONES MILESTONES MILESTONES MILESTONES

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|------|--|-------------------------------|--|
| 2001 | PACS for radiology | Distance Education Department | |
| 2002 | Medical Oncology unit
Cytogenetics lab | 2005 | Living donor liver transplant (CMC's first)
Department of Continuing Nursing Education
Surgical ventricular restoration (CMC's first)
IDTRC |
| 2003 | Vellore Bombay Artificial Limb Bioengineering department
Palliative Care unit | 2006 | PG Diploma in Family Medicine (Distance education course) |
| 2004 | H1 Grading by Investment Information and Credit Rating Agency
Rheumatology unit
Medical Genetics unit
Telemedicine unit
South Asian Cochrane Network | 2007 | CSCR
Pneumatic Tube Conveyor System for laboratory samples
Fellowship in Secondary Hospital Medicine
Missions Office |



Young Savitri (*name changed for confidentiality*) had lost all hope of living, as no doctor in her home town could help her fight the disease. As a child, she had been treated for TB, and now she had developed intestinal and ureteric obstruction. She came to CMC, desperately seeking help. The disease had progressed so much that regular medical treatment did not seem like a viable option: almost all treatment had failed. She weighed 36 kg and found herself continuously vomiting. Her creatinine level had peaked: she was unfit to be operated on. The team of doctors and nurses served her in love, and she stayed on in the Chatram, the subsidised accommodation run by CMC, for over a year, attending the prayers regularly. Doctors were hoping to operate on the urinary tract, once her weight improved and the intestinal obstruction was resolved. After a few months, however, her urinary obstruction was resolved without any operative intervention. CMC's endeavour, along with faith, has given her new life today. She now wishes to pursue higher studies, something she would not have considered possible just months ago.

<< A resident patient at Chatram

was part of CMC during 1949-61) helped lay the foundation for various services that were added later.

People joined CMC at crucial junctures and included an Australian couple, **Dr Edward Woodall Gault** and his wife, Dr Edna Isabel Baylis. Dr Gault is called the founder-professor of the Pathology department which, under him, during 1944-1962, was recognised as a training institution for doctors completing post-graduate studies at the University of Madras.

In 1948, the young and able

Dr Jacob Chandy returned from North America after his graduate studies. He was instrumental in starting CMC's neurosurgery work and, by 1949, the department had become the first of its kind in the whole of South Asia. An able clinician and administrator, Dr Chandy also initiated post-graduate neurosurgery training at CMC in 1957.

Dr Hilda Lazarus, with rich experience in the UK and India, became CMC's first Indian principal and its first Indian director. Dr Lazarus was convinced that CMC's leaders should be developed from

within the community and from all backgrounds.

Aunt Ida (as she was affectionately known) worked hard both at the growing base hospital, equipping Indians with knowledge in healthcare, as at roadside clinics. Thus, in keeping with her vision, CMC's outreach saw much growth. Medical and Nursing students are active in CHAD and RUHSA even today. And what more, for a two-year period, CMC graduates serve underprivileged communities across India, Nepal and Malaysia.

MILESTONES MILESTONES MILESTONES MILESTONES MILESTONES

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|------|--|------|--|
| 2008 | Anti-Retroviral Therapy Centre
Department of Geriatric Medicine | | E-learning classroom
Advanced Medical Simulation lab |
| 2009 | Endovascular repair of aortic aneurysm using three chimney grafts (first)
Successful ABO-incompatible renal transplant (India's first)
Interventional pulmonary services
Cardiac Electrophysiology unit
Department of Hospital Management Studies and Training | 2012 | Medical Physics Education and Research Block
Medical undergraduate seats increase from 60 to 100
Superspeciality courses in Endocrinology, Hepatology, Neonatology, Rheumatology, Endocrine Surgery and Vascular Surgery |
| 2010 | Chittoor Hospital campus foundation stone laid | 2015 | Superspeciality courses in Critical Care and Hand Surgery
MD Nuclear Medicine |
| 2011 | School of Optometry | | |

PROGRAMME INFORMATION & CLINICAL SERVICES

For decades synonymous with excellence, CMC has maintained a fine balance between providing state-of-the-art treatment while being inclusive and minimising the financial burden on patients. Over the years, CMC has, in line with its motto, “Not to be Ministered Unto, but to Minister” played a major role in healthcare in the country. Today, it is a 2,300-bed multi-speciality medical institution.

Awards & Accolades 2014-16

- CMC was awarded 9 top platinum Skoch Digital Inclusion awards by Skoch Foundation, New Delhi, in 2014 for best healthcare practices in India under the categories shown below.
- Social Inclusion: The RUHSA rural health programme and the tribal health initiative in Jawadhi Hills
- Digital Inclusion: The CHRIS Card for patient payments, the Clinical WorkStation, E-learning and a geographic information system in community healthcare



A DAY AT CMC

Outpatients: 8313
 Inpatients: 2071
 Operations: 175
 Births: 54
 Radiological Tests: 2202
 Bed occupancy**: 79%
Daily Running Expenses:
Rs 2,31,75,655





- Smart Governance: The integrated curriculum in bioethics, distance education in India's medical education Needs and HR Strategies in CMC
- The BMJ Award for Tribal Healthcare 2014
- The Medscape Award for Best Clinical Care Excellence 2014
- The Best Private Educational Institute 2012-13 Award in the Medical category from the World Consulting and Research Corporation
- Since 2012, every year ranked the Second Best Medical College in India by the India Today Annual Survey of the Best Colleges in India
- The Vijayavani National Education Leadership Best Institute in Medical Education 2015 Award, in recognition of leadership, development and innovation



Personnel

Administrative Staff and Clerks	874
Chaplains	15
Doctors	1,656
Engineering Staff and Artisans	78
Housekeeping Staff and Attenders	1,518
Library Staff	29
Nurses	2,646
Pharmacists	246
Social Workers	35
Teaching Staff (Non-Medical) and Technical Staff	1,969
TOTAL	9,066

Diagnostic Services

Microbiology

Started in 1944 by Dr J.T. Cornelius and Dr Ruth Myers, the Department of Microbiology has grown to a world-class, NABL-accredited lab serving CMC and 16 other hospitals in India. In 2015, the bacteriology, mycobacteriology and mycology labs performed 4,48,220 culture-based tests, including rapid diagnostic tests, and the immuno-serology labs, with a repertoire of 38 tests, performed 2,21,555 serological tests. The Department serves also as the WHO NRL for *Bordetella pertussis*, *Corynebacterium diphtheriae*, *Salmonella typhi*, vaccine-preventable *Streptococcus pneumoniae*, *Haemophilus influenzae* and *Neisseria meningitidis*. The Molecular lab, equipped with the latest in PCR, performs diagnostic, epidemiological characterisation and molecular typing techniques. The Department has standardised



several new techniques and acquired state-of-the-art equipment that keeps it at the forefront in the field.

Clinical Biochemistry

This NABL-accredited department provides quality diagnostic services, covering 170 routine test types and many others on request. Last year, 48,66,678 tests were performed, handling 15,60,000 specimens. The plethora of techniques includes colorimetry, spectrophotometry, ion exchange chromatography

and atomic absorption spectrophotometry. The Department's External Quality Assurance Scheme has 4,400 participants annually.

General Pathology

Started in the early 1940s by the Austrian pathologist Dr W. Rosenthal, this department is today a renowned centre across South-East Asia, handling over 50,000 biopsies and 22,000 cytology samples annually. The Department is one of India's major referral centres for diagnostic pathology. Equipped

CMC Statistics (April 2015 - March 2016)

	Beds	Inpatients	Outpatients	Births
Main Hospital	2,297	1,10,086	20,24,938	15,003
Community Health and Development	140	10,733	88,916	3,243
Rural Unit for Health and Social Affairs	70	4,109	95,382	1,286
Schell Eye Hospital	100	7,028	1,14,363	-
Low Cost Effective Care Unit	46	1,653	69,964	136
Shalom Family Medicine Centre			32,877	-
Mental Health Centre	98	846	1,11,797	-
Nambikkai Nilayam	24	96	4,731	-
Rehabilitation Institute	83	778	-	-
CMC Chittoor Hospital	-	-	17,409	-
Total	2,858	1,35,329	25,60,377	19,668

with up-to-date immuno-histochemical panels and state-of-the-art equipment, its molecular pathology and FISH labs feature extensive testing systems, including mutational analysis, T-cell and B-cell clonality assay, MGMT promoter methylation analysis and assays for several brain tumours.

Cytogenetics

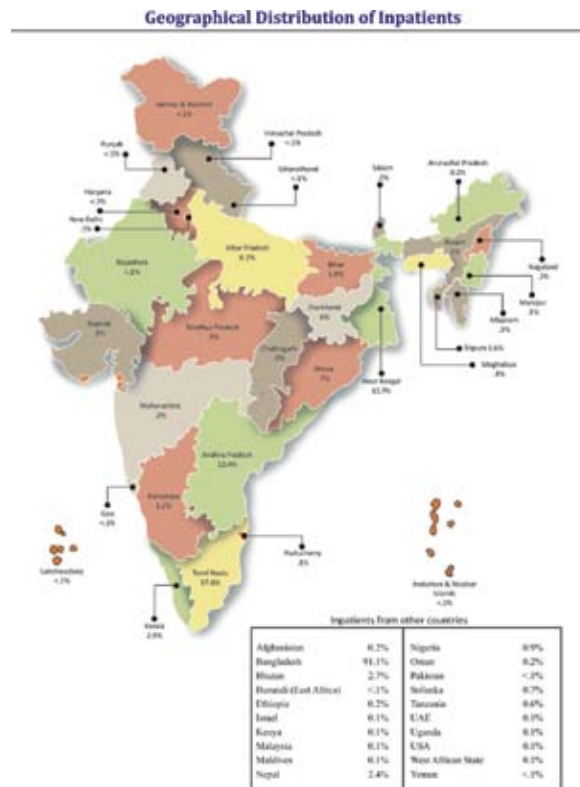
The Cytogenetics unit runs a full-service diagnostic lab conducting karyotyping, FISH analyses and Mitocin-C testing. In addition, advanced techniques like multiplex ligation-dependent probe amplification (MLPA) for the diagnosis of microdeletion syndromes have been set up as a routine service. DNA microarray testing is planned in the near future.

Virology

India's Pulse Polio story, a flagship campaign in global polio eradication, originated in the groundbreaking work of this iconic department. The 3,26,344 diagnostic investigations carried out last year. Its several molecular diagnostic tests for patient care include HPV testing, done as part of WHO's Lab Net. The NABL-accredited lab is an NRL for NACO.

Nuclear Medicine

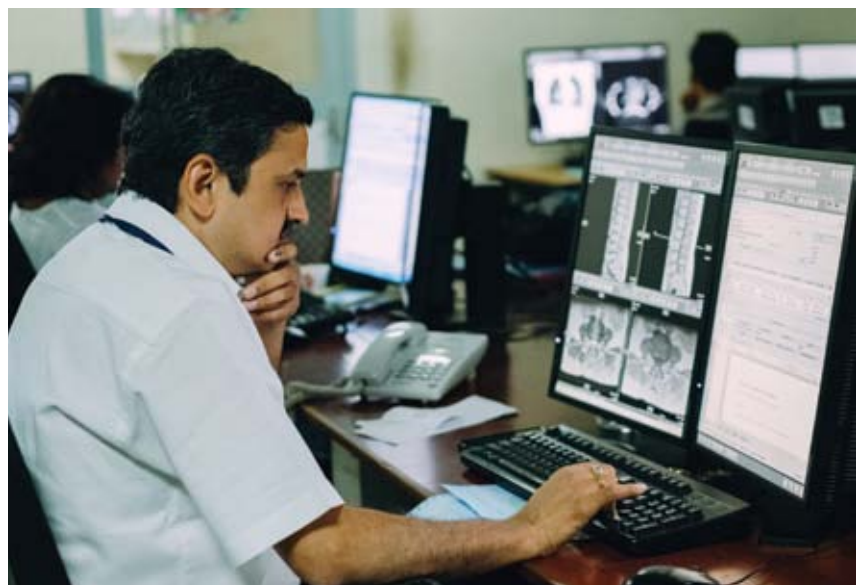
Over 9,000 diagnostic and more than 500 therapeutic procedures are done annually. Single-photon emission computed tomography (SPECT) has ensured a high standard of care. Therapeutic procedures include iodine ablation, samarium therapy and the novel, cost-effective Lutetium-177 therapy.



Radiology

The Department is one of India's largest, with one 3T and three 1.5T MRI scanners; one 64-slice, one 16-slice and one 4-slice CT scanner; and one 3D biplane angiography suite. Filmless since 2002, with all the radiological studies viewed and reported over PACS, the Department handles monthly loads of 50,000-plus radiological

studies, which includes nearly 3,000 MRI scans and 4,000 CT scans. The daily vascular and non-vascular intervention counts range between 10 and 15 and 15 and 20, respectively. The department is actively involved in audits and undergraduate and post-graduate education; offers post-doctoral fellowships in cross-sectional, paediatric and interventional radiology;



and regularly organises state- and national-level Continuing Medical Education workshops and conferences.

Transfusion Medicine & Immunohaematology

The past two years have seen steady advances in the Department. New, more specialised haemostasis and human leukocyte antigen (HLA) tests have been added. The Automated Cell counter area hosts the state-of-the-art cell counters from leading manufacturers around the world, catering to the growing needs of patients. Increasing

numbers of patients can now be seen in the Phlebotomy section and the number of samples processed daily has risen.

The Blood Bank has been working with Christian Medical Association of India, Center for Disease Control, US and National Aids Control Organisation on a project to improve blood transfusion practice around the country, with a focus on the public sector. After years of preparation, in February 2014, NABL declared the lab as ISO 15189-accredited.

The Department also continues to conduct two EQASs for haemostasis and Transfusion

Medicine, which provide quality assessment services to the diagnostic facilities in the respective specialities.

Pharmacy Services

The Hospital's 24-hour pharmacy services, provided by about 250 staff, dispense around 9,000 prescriptions on weekdays through 27 outlets for outpatients, inpatients and patients at outreach centres. Separating express counters and speciality pharmacies from regular counters has improved efficiency and reduced waiting time to around 8 minutes at express counters and 15 minutes at more crowded, larger services. A small manufacturing unit, a quality control lab and drug information services add further value. A drug information centre responds to about 50 drug-related queries daily and publishes a monthly pharmacy bulletin with snippets on new drugs, quality issues, the history of medicines, drug errors, etc. A pharmacy counselling service in the outpatient areas provides additional information to patients.

The Clinical Pharmacology unit provides vital support to clinical departments in therapeutic drug levels and adverse drug reaction monitoring. Therapeutic monitoring of anti-tuberculosis drugs has strengthened tuberculosis management. Pharmacogenomics for individualised drug dosing and patient care is on the cards.



Clinical Services

Women and Children

The Department of Obstetrics and Gynaecology, functioning through its five units, caters to all levels of care in the speciality, has significant influence in the areas surrounding Vellore and the country at large. Its scope of work has included streamlining access of government primary health centres to CMC, helping secondary hospitals in times of need, carrying out complicated invasive prenatal procedures and conducting quality research in obstetrics.

The state-of-the-art Labour Room handled 15,003 births last year.

The geneticists at the Perinatal Clinic manage complex Perinatal Medicine cases. A nurse-led clinic gives midwives a larger role in the care of pregnancy and childbirth. A dedicated Urogynaecology unit is doing pioneering treatment of pelvic organ prolapse and incontinence, using minimally invasive and endoscopic surgery.

The multidisciplinary team at the Gynae-Oncology unit meticulously plans and executes care of complex gynaecological malignancies. Holistic care is provided, with the cervix cancer screening at hospital and community levels complementing the technically demanding work.

Reproductive Medicine provides care for over 10,000 couples in the outpatient department and around 400-500 IVF cycles annually, with more than 500



“We want to take this opportunity to thank the RMU at CMC for their support and guidance during the process. Overall, we were extremely impressed by the professionalism and dedication of the doctors and support staff who conducted themselves with empathy and care. Like they say, half the battle is won when you are in the hands of a good doctor. The joy of bearing a healthy baby and the satisfaction of being in good hands at the Centre combined to make it a great experience.”

- Testimonial of a Couple

endoscopic surgeries carried out each year.

The Department of Neonatology has been one of India's most advanced. A WHO-recognised centre for training in obstetric and neonatal care, it treats preterm and critically ill newborns, with subsequent follow-up in the High-Risk Infant Clinic, with good long-term outcomes. The MiraCradle™ neonate cooler, a phase change material-based system to cool babies developed in collaboration with CMC, has won numerous awards from national and international organisations.

Let the little children come to me, and do not hinder them, for the kingdom of God belongs to such as these. Luke 18:16.

The three-unit Department of Child Health provides state-of-the-art care paediatric care, including paediatric endocrinology, oncology, gastroenterology, nephrology, rheumatology, respiratory medicine, infectious disease and adolescent medicine. The Department contributes significantly to large multi-centre trials and surveillance programmes of national and international importance, related to vaccines, and has pioneered the neonatal thyroid screening programme, along with neonatology in 2001. The umbrella of care is extended through outreach clinics to underprivileged and differently-abled children in nearby care homes.

Developmental Paediatrics provides comprehensive, family-centred multidisciplinary care



for children with a wide variety of conditions, including autism spectrum disorders, cerebral palsy and developmental delay. Doctors, psychologists and occupational and speech therapists constitute the multidisciplinary team.

Paediatric Emergency Medicine manages acute and urgent care of nearly 30,000 children every year. It is involved in basic and advanced paediatric life support training. Its innovative patient monitoring software has received recognition internationally.

The Department of Paediatric Surgery offers superspeciality services that comprise

comprehensive surgical care for children undergoing complex surgical procedures in paediatric urology, thoracic surgery, burns, head and neck, and gastrointestinal pathology. About 20,000 children are seen annually as outpatients and many minor surgeries are carried out on an outpatient basis. Minimal-access surgery is also performed routinely. The Paediatric Urology subspeciality is in the offing.

General Medicine

The Department of Medicine, a pillar of diagnostic excellence that nurtures the formation of undergraduates and postgraduates, is one of the



oldest at CMC, spawning several subspecialties. Its five units handle an annual outpatient attendance of about 200,000 and are renowned for work in toxicology, snake envenomation and tropical diseases. The Clinical Epidemiology unit supports CMC's valuable clinical research. Future development includes Clinical Pharmacology and Maternal Medicine.

Cardiology

Well-supported by an Acute Chest Pain unit, a plethora of diagnostic services including echocardiograms and a state-of-the-art cardiac catheterisation lab, the Cardiology department

continues to be at the forefront of cardiac care in the country. A large number of interventional procedures for patients requiring coronary and extra-cardiac stenting are performed routinely. The Cardiac Electrophysiology and Pacing unit deals with challenging and abnormal heart rhythms. Future expansions into paediatric cardiology and heart transplant services are envisioned.

Endocrinology, Diabetes and Metabolism

Conceived in 1994, Endocrinology, Diabetes and Metabolism is one of India's most recognised centres for hormonal disorders and

diabetes in Asia. Outpatient attendances in excess of 80,000 annually and numerous courses being run: including DM in endocrinology, diabetes fellowships, distance education in diabetes and courses for diabetes counsellors and foot care. Programmes including, outreach and competitions to disseminate knowledge among the medical fraternity and public are conducted. There is a unique nurse educator programme, the first and largest in India. A number of interventional and basic science studies are conducted for diabetes, bone and pituitary dysfunction. The Endocrine Molecular laboratory, uses next generation sequencing -unique in its genetics for diabetes, bone and endocrine disorders- samples are being analysed from other countries.

Radiotherapy

Established in 1951 by Dr Ida B. Scudder, the founder, Ida S Scudder's niece, the Department of Radiotherapy comprises two units that provide comprehensive cancer care to about 5,000 inpatients annually, using special techniques like 3D conformal radiotherapy, IMRT, IGRT, SRS and brachytherapy, where required. Excellence in research and in-patient care is the touchstones.

Gastroenterology

The division of Gastrointestinal Sciences is an amalgam of a very active research wing, the Wellcome Research Unit, and a state-of-the-art clinical/academic unit.

The clinical department is proud of its advanced diagnostic



and therapeutic capabilities in the ever-expanding fields of gastroenterology, hepatology and endoscopy. On an average, 1,200 patients per week consult Gastroenterology and 600 patients per week consult the hepatology outpatient clinics. The Department performs close to 500 endoscopic procedures a week, including advanced procedures like EUS guided procedures, ERCP (Endoscopic Retrograde Cholangiopancreatography), PEG, etc. The Department has also conducted close to 70 liver transplants till date.

Nephrology

The Department of Nephrology, which evaluates all kidney diseases and provides appropriate treatment, conducted India's first haemodialysis in 1962, and the country's first kidney transplant in 1971. The Department's dialysis unit (also known as the Artificial Kidney lab) houses 40 haemodialysis machines and also offers continuous ambulatory peritoneal dialysis. The nephrology research lab has up-to-date diagnostic and research facilities, including DNA profiling techniques and pharmacogenomics tools. Together with the Urology

department Nephrology at CMC continues to be at the forefront of transplantation in the country.

Geriatrics

Started in 2008, the Geriatrics department is one of India's few centres offering an Medical Council of India recognised post-graduate training programme in the speciality. Close to 25,000 outpatients are seen annually. Holistic, multidisciplinary inpatient services are provided to the elderly with multiple comorbidities and acute problems. Awareness-building educational programmes on healthy ageing are also a focus.



An integrated geriatric care programme is in the pipeline for general practitioners.

Rheumatology

The Rheumatology department has pioneered patient care, teaching and research in systemic autoimmune rheumatic diseases. It has an annual outpatient load of about 40,000 and manages one of India's largest cohorts of lupus, Sjogren's syndrome, Takayasu arteritis, spondyloarthropathies and many other systemic autoimmune diseases. The expansion of existing advanced research facilities in basic immunology and the introduction of a PhD

programme will further improve the quality of care.

Clinical Genetics

Clinical Genetics offers a specialised service for genetic disorders. Genetic counselling is offered to patients and their families and molecular genetics-based diagnostic services are carried out for various single-gene disorders. The Department has multispecialty clinics in perinatal medicine and neuromuscular problems. A DNA banking facility has been started for rare genetic disorders so that, in future, DNA can be procured to help diagnose or map genes.

Pulmonology

Pulmonology provides specialised services for advanced and unusual lung diseases. It provides a range of advanced diagnostic and interventional services, including bronchoscopy, stent placement, chest sonography-guided procedures and radial EBUS. The Department's state-of-the-art Sleep lab helps diagnose and monitor sleep-related disorders.

Dermatology

The Department of Dermatology offers specialised, collaborative services for a range of skin- and mucosae-related diseases. Its special outpatient clinics – an infectious diseases clinic for HIV, a cosmetology clinic for disorders of pigmentation, acne and scar revisions, a pemphigus and psoriasis clinic and others – cater to a wide variety of problems. An extensive list of procedures complements this. Fellowship programmes in upcoming specialities including Cosmetic Dermatology, Dermatopathology and Tropical Dermatology and speciality clinics for cutaneous post-bone marrow transplant GVHD, lymphoma and connective tissue diseases are on the cards.

Haematology

The Department's multidisciplinary team of doctors, para-clinical staff and scientists does pioneering work in clinical services and scientific research, taking science from the bench to the bedside in a burgeoning molecular speciality. The Department



was India's first to conduct a bone marrow transplant. Currently, it performs around 200 transplants annually. The clinical work is supported by a state-of-the-art Bone Marrow Transplant unit and lab services using advanced diagnostic techniques like cytogenetics, immunohistochemistry and molecular diagnosis.

Neurology

The Neurology department treats movement, epilepsy and neurometabolic disorders and other complex conditions, which requires active interaction with Bioengineering and Neurophysiology and has resulted in the development of customised equipment, elegant solutions and pioneering research. Specialised paediatric care is also provided. The Neurophysiology lab does

routine EEG, EMG, telemetry and other electrophysiological testing and now has an Autonomic lab for challenging diagnoses. Upcoming subspecialties include cognitive neurology and neurological infections.

Palliative Care

The Palliative Care unit has a multidisciplinary team involved in educating, disseminating information and building awareness regarding the compassionate care of cancer patients with advanced illness. The holistic approach spans psychological assessment, symptom management and counselling to enable the family to meet patients' complex needs at home. The active home care programme covers the poorest and neediest.

Orthopaedics

Three general units and two speciality units (for spinal disorders and paediatric orthopaedics) cover orthopaedic surgical services, including joint replacement, trauma surgery, sports medicine, arthroscopy and musculoskeletal tumour surgery. Trauma theatres are available 24x7.

The Spinal Disorders Surgery unit routinely performs technically demanding surgeries for spinal tumours and severe spinal deformities. Due to a large clinical load, routine spinal surgeries have been moved to a nearby secondary hospital with comparable outcomes.

The Paediatric Orthopaedic unit treats all childhood disorders, including paediatric tumours and neuromuscular conditions, and does joint preservation



surgery and provides emergency cover for children with orthopaedic problems. The recent addition of neonatal hip ultrasound screening and extracorporeal shock wave therapy has improved care quality. *The Week* recently ranked the Department the country's second best orthopaedic department.

Hand Surgery

The Department of Hand Surgery, founded by world-renowned hand surgeon Dr Paul Brand, has grown from a leprosy reconstructive surgery unit to a full-fledged clinical department providing comprehensive care around hand and peripheral nerve surgery, including brachial plexus surgery and microsurgery. Expertise in intraoperative neurophysiologic mapping and contralateral

C7 neurotisation keeps the Department at the cutting edge. Hand therapy, administered in the Hand Physiotherapy section, ensures good outcomes. The department also runs a M.Ch course in Hand Surgery, with an annual intake of one candidate.

General Surgery

The Division of Surgery functions as four general surgical departments with speciality foci – head and neck, upper gastrointestinal, colorectal and abdominal wall, and retroperitoneal – three speciality departments providing comprehensive care for general surgical conditions.

Hepatic, pancreatic and biliary surgery provides care for patients with complicated diseases of the liver, pancreas and biliary tract. A multidisciplinary team conducts

liver transplants and other complex hepatobiliary surgeries, with outcomes at par with those at the world's best centres. The Department of Vascular Surgery routinely performs technically demanding endovascular surgery. A hybrid theatre is being planned in the near future to foster advances in this new field.

Urology

Urologic surgery recently completed 50 years in urological training and CMC continues to be a pioneer in the field. The speciality did India's first successful renal transplant and laparoscopic donor nephrectomy. Today, over 100 transplants are done annually, with most donor nephrectomies done laparoscopically. Advanced laparoscopic and minimally invasive surgery, e.g. laparoscopic partial

nephrectomy, “mini-perc” and retrograde intrarenal surgery complement the large volumes of routine and complex open surgeries. To address the burgeoning need for specialised care, developing subspecialties and robotic surgery are planned.

Plastic surgery

Plastic surgery covers a wide spectrum, from trauma surgery to elective surgery, e.g. microsurgical and other reconstructions. Services are additionally provided through the Burns unit and, in collaboration with international charitable organisations like the Smile Train Foundation, free for the poor and marginalised.

Cardiothoracic surgery

Cardiothoracic surgery has a rich tradition at CMC, with many firsts to its credit. The

three units manage the cardiac ICU and offer services in adult and paediatric cardiac and thoracic surgery. Numerous open heart, closed heart and lung surgeries are routinely performed. The Department is licensed to perform cardiac transplants and will shortly start minimally invasive cardiac surgery.

Dental and oral surgery

Dental and oral surgery functions from two units that cover the Oral and Maxillofacial Surgery, Oral Medicine, Prosthodontics, Orthodontics, and Pedodontics subspecialties. A large number of outpatient procedures are also performed under anaesthesia. Emergency care is provided for maxillofacial injuries and fascial space infections in Casualty.

Neurosurgery

Part of the Department of Neurological Sciences, established in 1949 by Dr Jacob Chandy, Neurosurgery has two units. It treats numerous brain tumours including gliomas, meningiomas, intraventricular tumours, pituitary adenomas, craniopharyngiomas and skull base tumours. Over the last decade, major advancements in endoscopic trans-sphenoidal surgery for management of sellar and suprasellar lesions have been incorporated into the surgical protocols, resulting in improved patient outcomes. Vascular disorders such as aneurysms and arteriovenous malformations are routinely managed, as are spinal disorders, including degenerative diseases, and tumours of the spine and spinal cord. Complex spinal



anomalies, craniovertebral junction anomalies and spinal dysraphism surgeries are routinely performed using state-of-the-art techniques. Intraoperative neuro-navigation equipment now aids safer and more radical excision of brain tumours. Intraoperative neurophysiological monitoring has resulted in good patient outcomes and preserving neurological function. In 1995, the Department pioneered using linear accelerators for stereotactic radiosurgery and radiotherapy in India, choosing the most economical option for managing brain tumours and arteriovenous malformations.

Anaesthesia

A crucial service for the various surgical departments, the 180-staff, five-unit Department runs up to 44 operations and

procedures daily. On call 24x7 for emergency surgeries are 11 anaesthetists. Over 48,800 anaesthetic procedures were performed last year. Acute Pain services help manage post-operative and labour analgesia.

Physical Medicine and Rehabilitation

A multidisciplinary team of doctors, nurses and allied health specialists staff this function, working to secure the health and maximise the functional abilities of people with disabilities. The Mary Varghese Institute of Rehabilitation houses inpatients and movement analysis and urodynamics labs, ultrasonographic services, a minor theatre and physiotherapy and occupational therapy facilities, enabling holistic care for 900-plus inpatients yearly.

The Department is a WHO Collaborating Centre for Development of Rehabilitation Technology, Capacity Building and Disability Prevention, a tribute to the pioneering work done over the last 50 years.

Ophthalmology

The Ophthalmology department has a dedicated team of eye care professionals leading an active community outreach programme for sight restoration. Services were provided to over 20,000 patients last year. Subspecialty services include Cornea, Contact Lens, Glaucoma, Vitreoretina, Strabismus, Paediatric Ophthalmology, Uvea, Low Vision Aids and Oculoplastics. Care was provided to 1,09,866 outpatients, with 5,819 operations done last year.



ENT

The Department strives to excel through service research and provides the highest level of training to future otolaryngologists. All five units offer medical and surgical care for common ENT conditions in adults and children over 4 years. General ENT – common problems such as otitis media, hearing loss, tonsillitis, allergic rhinitis, sinusitis and dizziness – constitutes 70 percent of each unit's work. The unit-wise specialisations include Unit 1: Head and neck conditions, including tumours and endoscopic skull base surgery; Unit 2: Special paediatric problems for under-4-year-olds, including congenital disorders, airway problems and cochlear implants; Unit 3: Specific nasal conditions such as fungal infections, nasal and sinus tumours, corrective nasal surgery and endoscopic skull base surgery; Unit 4: Ear and hearing, balance disorders and chronic dizziness, including specialised surgery for dizziness and hearing, cochlear implants and lateral skull base surgery; Unit 5: Laryngeal cancers and voice, swallowing and airway disorders, including 24x7 cover and surgery for laryngeal trauma.

The Department has outreach clinics in the Community Health department, RUHSA, the Chittoor campus hospital and the Shalom Family Medicine Clinic.

Special Areas

“Alpha” Clinic

Recognising the need to improve the facilities for the private patients and provide a better hospital experience, a multidisciplinary, special Alpha Clinic was started in 2015. This has significantly shortened long waiting times for outpatient appointments, consultations and investigations.

Accident and Emergency Medicine

The first such department in the country and the largest in the private sector, the Department has contributed many firsts: a Trauma Management course, protocol-based clinical pathways, a Trauma team, triage and formal training in Emergency Medicine. In 2005, the WHO recognised the Department as South-East Asia's Regional Training Centre for Emergency Care Nursing. The Department has grown from an 18-bed facility to a full-fledged, 45-bed independent clinical department today.

Critical Care

The Division of Critical Care, comprising the Medical, Surgical and Neurocritical care units, offers high-quality, affordable patient care, provides multi-dimensional education and publishes practice-changing research relevant to the Indian context. Over 6,000 patients are managed annually in its various ICUs. The division is an accredited advanced training centre for the Fellowship of the College of Intensive Care

Medicine of Australia and New Zealand and the European Diploma in Intensive Care Medicine. It has also been approved by MCI and by the Indian Society of Critical Care Medicine to award the DM in Critical Care, and a diploma and a fellowship in Critical Care Medicine, respectively. The Division also conducts courses on Basic Life Support, Advanced Life Support, Basic Emergency Medicine Ultrasound and Advanced Emergency Medicine Ultrasound and short Critical Care courses run by the Chinese University of Hong Kong.

Forensic Medicine

The Forensic Medicine department, in collaboration with other departments, including Paediatric Emergency, Child Health and Child & Adolescent Psychiatry, has played a key role introducing medico-legal services sexual offence victims. The Department continues to provide medico-legal consultation to clinicians involved in the care of such victims. A secure storage unit has been procured and a specimen register is being maintained to store and dispatch medical specimens collected from the victims. The Department has also begun planning for a CMC child advocacy centre, in consultation with the University of San Francisco, California. Its medico-legal autopsies, mandatory for many cadaver organ donors, support CMC and the Tamil Nadu Cadaver Organ Donor Transplant Programme.

Support Services

Dietetics

It offers therapeutic diet planning and execution, diet consultations and dietetic education and research. A professional catering service, rigorously monitored by the Department for quality, quantity and safety, manages inpatient catering.

CHIPS

CHIPS plays a vital role in running clinical services and the Hospital at large. The CHIPS Clinical Workstation, developed in-house, is the portal for accessing patient information, ordering investigations and prescribing medications. CHIPS' services cover electronic medical records and various crucial auxiliary areas like billing and purchase. CHIPS also features RFID-based patient tracking for theatre management and app-based paediatric casualty services.

Engineering Departments

During 2015-16, the **Civil Engineering** department completed numerous major projects including a student nurses' hostel in the Kagithapattari campus, an outpatient building in RUHSA, a PCF lift, a patients' facility centre in the old mortuary, an MRI scanner in the Asha building and steel water tanks at the Palar pump house – a total of 17 major and 42 minor projects, at an overall cost of Rs 44,76,19,544. Another 18 major and 45 minor projects are in progress.

The **Electrical Engineering** department, responsible also for fire safety, maintains 15

transformers, 8 generators and 58 lifts. During 2015-16, it installed and commissioned a solar photovoltaic power plant and replaced several conventional transformers with newer, efficient ones, completing 16 major and 65 minor projects.

The **Electronic Engineering** department installs, calibrates, tests and maintains CMC's biomedical and electronic equipment and maintains centralised systems for pneumatic chutes, outpatient paging, nurse paging, chapel relay, surveillance cameras, audio-video equipment and emergency communication. During 2015-16, 5 new RFID pneumatic stations were installed and 149 new CCTV cameras and 22 DVRs, added. New PA systems were installed in the Alpha clinic, the Schell Eye Hospital, the preanaesthetic clinic and CHAD. An emergency communication PA system was installed in the main OT complex.

The Department of **Environmental Engineering** provides uninterrupted drinking water supply to the main Hospital, Kagithapattarai and Schell Eye Hospital campuses (20 lakh litres/day to the CMC town campus, 1.3 lakh litres/day to the Kagithapattarai campus and 45,000 litres/day to the Schell campus) and maintains a sewage/wastewater treatment plant. In the town campus, it maintains 7 water sumps, 22 main overhead tanks, 220 individual water tanks and, for firefighting, 4 sumps, 1 tank and 19 overhead tanks.

The **Mechanical Engineering** department oversees the maintenance of hospital equipment at CMC and

peripheral units. It provides steam and medical gases to the OTs and critical care units. During 2015-16, 162 new medical gas outlets, new ENT OR machinery and equipment, energy-efficient air compressors and a solar concentrator for boiler feedwater were added. The Department's Asset Recycling Office recycles equipment for CMC and other mission hospitals.

Transport

The Transport Department coordinates transport requirements through 212 CMC vehicles, including 22 from RUHSA.

Postal

During 2015-16, the Postal Section handled 78,043 letters and 2,013 parcels. Efficiency in handling external and internal mail is its touchstone.

Laundry

The Laundry Department, which installed new equipment this past year, handled 60,43,140 pieces of linen (a daily average of 16,516 pieces).

Hospital and College Maintenance

The Hospital and College Maintenance teams, with housekeeping attendants work tirelessly, maintaining high standards of cleanliness at the hospital and Bagayam campuses.

The Central Sterile Supply department processed 55,04,207 items for sterilisation and sterile packs, during 2015-16 – a daily average of 15,067 packs, with 6,75,266 items supplied to the OP departments.

RESEARCH

*Innovation is integral to CMC,
and this millennium has witnessed significant breakthroughs.*

Some discoveries that have transformed the management of several common problems:

The Department of Neonatology has used simple coolant jelly packages to treat asphyxia at birth, drastically cutting down on the cost of therapy and making such therapy accessible to the remotest parts of the country, where sophisticated neonatology facilities are unavailable.

The Gastroenterology department has conducted path-breaking research on the rotavirus and tested low-cost vaccinations to prevent the onset of viral diarrhoea.

For hand amputees, the Bioengineering department has devised the low-cost Vellore Hand, while the Department of Paediatric Orthopaedics and the Indian Institute of Science have invented the Padmapada, an electronic chip-based device to improve compliance in children with club foot deformity.

Endocrinology has used next-generation sequencing to arrive at novel methods to identify the cause of maturity onset diabetes



At the Centre for Stem Cell Research (CSCR), Vellore, work is on the gene therapy programme for haemophilia and musculoskeletal regeneration.

of the young (a hereditary form of diabetes) and several other diseases, including osteogenesis imperfecta and porphyrias.

Rural Unit for Health and Social Affairs (RUHSA) is evaluating a feasible model for Cervical Cancer screening for all women in low resource settings

In different departments, surgeons are testing devices and prostheses used in treating diseases that need operative procedures.



Using a Geographic Information System (GIS), the Community Health department has mapped the topography, soil and water in the Vellore area to disease patterns. The index source of a

diarrhoeal epidemic could be identified using this technique.

At the Centre for Stem Cell Research (CSCR), Vellore, work is on the gene therapy programme for haemophilia and musculoskeletal regeneration. CSCR is also engaged with creating an induced pluripotent stem cell, haplobank. Progress is being made in research on human mesenchymal stromal cells, vascular biology and tissue engineering using scaffolds as well..

A number of Phase II and Phase III clinical trials involving several pharmacological agents are underway at various CMC departments. More important, many of these trials involve known drugs in diseases and have been designed by doctors at CMC and not supported by the industry.

Recognitions

Current Medicine Research & Practice, a peer-reviewed bimonthly journal, brought out by Sir Ganga Ram Hospital, Delhi, rated CMC seventh in the world with regard to research publications in public health and clinically relevant problems in 2016. The Clinical Development Services Agency recognised CMC as one of the five centres of excellence in the country in 2014.

Facilitatory factors

A number of factors foster a fertile research environment:

- A voluminous patient population with varied and complex diseases
- World-class labs and four animal houses for important animal studies

- An Institutional Review Board that helps enhance the quality of research proposals
- An intensive three-step programme for post-graduates on how to conduct meaningful research
- A Data Safety Monitoring Board for in-house clinical trials and an Institutional Biosafety Committee for biosafety surveillance
- An Intellectual Property Rights Committee initiating and supporting patenting
- International and National organisations that support CMC's research

Annually more than 800 proposals are presented at CMC's monthly Institutional Review Board meetings.

Research meetings

The Winter Symposium is an annual event that blends basic science and clinical research.

Cognitio, is another annual event at which medical students from CMC and other colleges presented their undergraduate research.

The Annual Research Day is the third event at which CMC faculty and students from all disciplines present their research.

EDUCATION

The emphasis has always been on producing compassionate, professionally excellent and ethically sound healthcare professionals who will go out as servant-leaders, serving in the spirit of Christ.

Undergraduate Medical Education

In response to the desperate need for medical doctors in India, Dr Ida Scudder started the LMP programme in 1918. This was later upgraded to the MBBS course in 1942. She started the institution as a women's medical college but, from 1947, men were also enrolled.

CMC has always been ranked among the top medical colleges in the country. The emphasis has always been on producing compassionate, professionally excellent and ethically sound healthcare professionals who will go out as servant-leaders, serving in the spirit of Christ.

The curriculum is unique in that it is a hybrid curriculum. It is a combination of subject/discipline based, community based, competency based and problem based curriculum. Emphasis is given to early clinical exposure during the first year and to integrated learning throughout the course. Students are introduced to important aspects of ethics,

communication, leadership and management during the course. Emphasis is laid on acquiring the relevant knowledge, skills and attitudes to practice medicine effectively.

An e-learning portal hosts lecture presentations and other educational material, which students widely use. The libraries are equipped with the latest textbooks and journals and are easily accessible to both faculty and students. Other facilities include a simulation lab. A highlight of undergraduate medical training is the clerkship programme, during which students work as sub-interns in the wards. They learn to do procedures and follow-up patients from admission to discharge.

Community health and secondary hospital programmes sensitise the students to healthcare needs in rural India. In the latter programme, students spend a few weeks at mission hospitals situated in various parts of rural India, acquiring the knowledge and skills to practice medicine in a secondary-care setting.



Students are encouraged also to engage in research, mentored by faculty. Several students have won prizes for their research projects. The students organise an annual, national level undergraduate research symposium that provides a platform for students to present their research. Students also get to go on exchange programmes to medical universities in other countries, thereby experiencing firsthand the practice of healthcare and research in

Community health and secondary hospital programmes sensitise the students to healthcare needs in rural India.

different settings.

Emphasis is given to the spiritual growth of the students through weekly Bible classes, class prayers, community worship and annual retreats.

The college is proud of a vibrant student body. The students showcase their talents in drama, dance, cultural, sports

and games through various events which occur through the year. These programs give them opportunities to develop their talent, teach them about working in a team, sharpen their leadership and managerial skills.

Fully residential, both faculty and students live on the same campus. This facilitates better





Best Outgoing Undergraduate Award

all-round faculty-student interaction. The families of faculty become students' foster families during their stay here.

CMC upholds the value that all its alumni will commit themselves to the service of the poor and marginalised. Towards this end, the cost of education is kept at a very modest level to prevent graduates from being burdened with financial preoccupations. All medical graduates serve in an area of need for a period of two years. This would either be in one of the CMC network of mission hospitals in remote parts of India or at CMC itself. This period enables them to mature into budding young doctors with a first-hand experience of the health needs of the country. This process, we hope, will nurture our graduates into a life of service and enable them to



work in a learning environment where they can take informed decisions about their future careers. The Christian Medical College, through its education process for nearly a hundred years, continues to pass on the motto of the institution 'not to be served unto but to serve', to every student who goes through the portals of this institution.

Post-graduate Medical Training

CMC has been a pioneer in post-graduate medical training in India. Starting with General Medicine and General Surgery in the early 1950s, by 2011, most departments had doubled the number of seats. CMC was also the first in India to



Jasmine Chain at the graduation ceremony: A symbol of passing of heritage and values



offer post-graduate training in super-specialities such as Neurosurgery and Clinical Haematology.

Currently, on offer are 24 MDs/MSs, 11 diplomas in broad specialities, 10 DMs and 9 MChs in higher specialities, 3 MScs, 6 post-graduate fellowships and 45 post-doctoral fellowships. The annual intake is 355 PG students.

Holistic training is imparted. In a large teaching hospital like CMC, students get rich clinical exposure and ample opportunities for hands-on surgical, clinical or other technical experience in various specialisations, CSCR, the surgical skills laboratory and the animal facilities. They gain special training in research methodologies, ALS/BLS and medical education technology and receive research grants from the CMC Research

Committee for dissertations. The students can also access NABL-accredited biochemistry, virology, microbiology and clinical pathology labs for clinical diagnostics and research support.

Over the past two years, the students have bagged five gold medals at the university examinations conducted by the Tamil Nadu Dr MGR Medical University.

Twenty-five percent of post-graduates serve rural communities at various mission hospitals.

Nursing Education

Since 1909, the College of Nursing has turned out young nurses who have changed lives – particularly those of the underprivileged – all around the world, through their exceptional knowledge and skills, with CMC's motto.

The story of Nursing education at CMC – one of excellence, vision and commitment – was founded on Dr Scudder's vision and the resolve and planning of Delia Houghton and Vera Pitman. In 1909, the first batch of 15 girls graduated from the then School of Nursing. In 1932, the programme evolved into a diploma in Nursing and offered India's first degree course in 1946, and post-graduate courses and doctoral programmes in 1969 and 1994, respectively. Today, collegiate Nursing education is provided to 900 male and female undergraduate, post-graduate and doctoral students.

Value-based Nursing education is a key element of successful healthcare. The College curriculum design has a strong theoretical foundation and high emphasis on clinical experience. It uniquely integrates education

and practice: the theory taught reflects the faculty's extensive clinical experience. This closes the students' knowledge-practice gap, in turn helping maintain patient care standards.

The College seeks to sensitise the students to the relevance and challenges of healthcare in India's secondary hospitals. The exposure of BSc Nursing students' to mission hospitals enables them to witness healthcare dynamics in secondary hospitals and the health needs of rural India. This programme adds to their experience in Community Health Nursing, preparing them to competently work in any healthcare setting. The Community Health Nursing department is unique: it covers urban, rural and tribal programmes, integrates service and education and thus provides rich opportunities to Nursing students at all levels to acquire clinical competence in caring for individuals, families and communities.

One of the 36 centres of excellence comprising the Global Network of WHO Collaborating Centres for Nursing and Midwifery Development, the College serves as a resource centre for nursing and midwifery development and for educating and training Nursing teachers in India. With CMAI Nurses' League, the College works to raise Nursing education standards in mission hospitals. The College also collaborates on education, service and research with overseas universities, including the universities of Pennsylvania, Kansas and



Transforming lives in Uganda

College of Nursing alumnus Jasper Damaris is actively involved in the International Christian Medical & Dental Association health initiatives in South Sudan, which aims to build capacity in the health system of the Republic of South Sudan. In 2014, the Emmanuel Hospital Association, New Delhi deputed Jasper to join the team as Academic Registrar and Senior Tutor. She is currently setting up the Academic department at the National Health Training Institute, Kampala, Uganda. Her dynamism in teaching, supervision and curriculum planning and her commitment to making a difference in the lives of the marginalised in a conflict-torn zone are commendable.

Winds of change in Bihar



Determined to use the knowledge and skills acquired at CMC to make a positive change in healthcare in rural India, Amelia joined CMAI's CARE project in Bihar. The project, which has scaled up to cover the entire state, is involved in capacity-building among midwives at various public health facilities. The objective is to lower mortality rates of mothers and neonates. Working as the simulation specialist, Amelia and her team have trained midwives at 166 public health facilities so far.



Washington, and Columbia and York universities.

Bright students hailing from marginalised sections of society, who aspire to go far in their careers but need financial assistance, are offered scholarships. The College creates a nurturing environment and, to this end, along with academic and clinical excellence, the spiritual development of students is emphasised through retreats, Bible classes and community worship on Sundays so that the institution's motto is internalised.

AHS Training

Growth and expansion in healthcare necessitates a team approach – and a variety of skills and expertise – in curing illness and sustaining life. Advanced,

complex instrumentation and sophisticated equipment are needed to meet the rising demand for cost-effective diagnosis, treatment and related services, requiring professionals to operate, manage and maintain them. AHS courses thus enable healthcare professionals to work at multiple points in the care and healing pathway.

From 1903, when “Aunt Ida” trained local women as compounders, CMC has seen continuous upgradation in informal in-service training to certificate-, diploma- and university degree-level courses, and 2011 saw significant increases in the number and range of AHS courses. Currently, CMC awards eight diplomas, 19 bachelor's degrees, 13 post-graduate diplomas and two fellowships programmes in

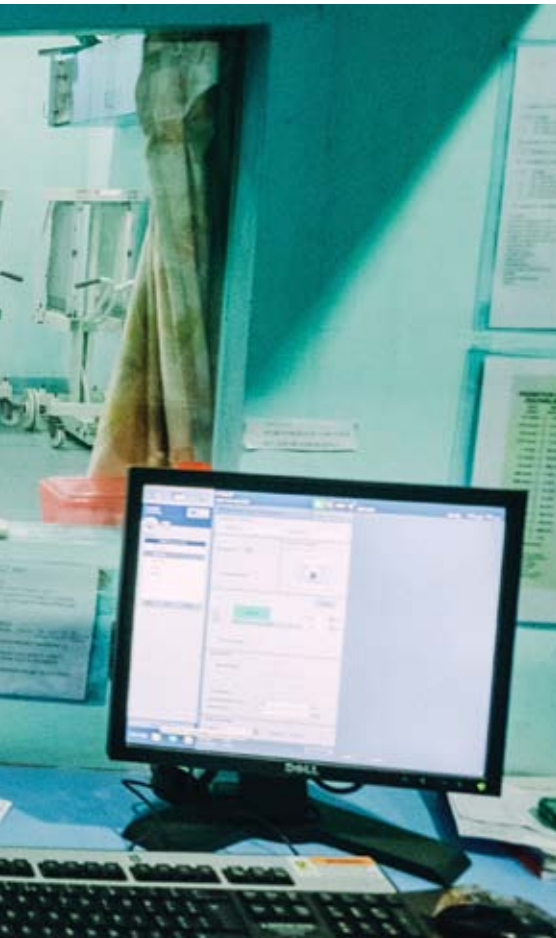
AHS. Since 2014, 195 students have completed their respective courses; 467 are en route.

The training integrates classroom teaching with hands-on clinical and practical work. The courses are designed to improve knowledge and professional skills, build character, nurture motivation and strengthen drive not to be served, but to serve the poor and marginalised.

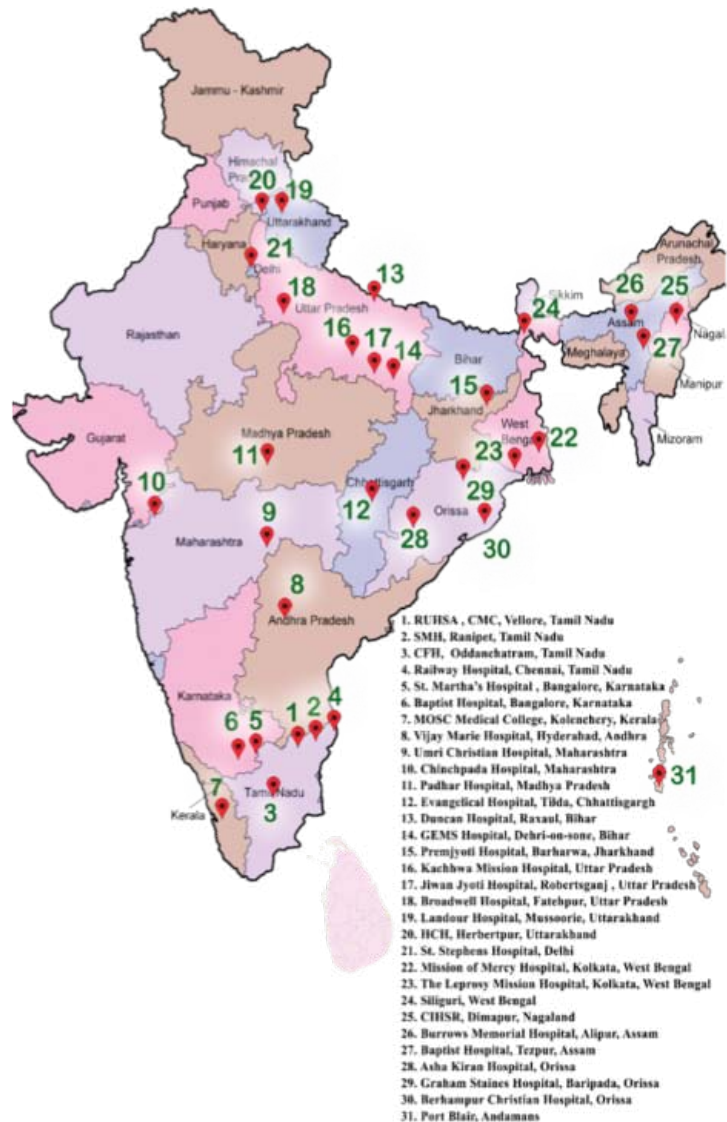
Distance Education

The Distance Education unit builds human resource capacity to enhance healthcare delivery systems in India and other developing countries so that healthcare access to the poor and marginalised is improved.

The Unit therefore conducts various courses, training



Current National, Regional Centers being used for distance Education by CMC



programmes and workshops for doctors, nurses, community workers, medical students, AHS professionals, medical educators, et al, using technology-aided methods. Innovative teaching-learning and andragogic approaches – problem-based self-learning, video-lectures, videoconferencing, etc – and face-to-face contact help train large numbers at or near workstations. In special focus are the proper diagnostic approach to medical problems, the rationality of prescriptions and medical ethics. At any given time, about 1,000 off-campus students are enrolled.

In 2006, a two-year PGDFM, spearheaded by Dr Vinod Shah along “Refer Less, Resolve More” lines, was accordingly launched, in response to the



acute need for multi-competent health specialists. Supervised by national and international Family Medicine faculty, 11 secondary-level hospitals across India function as PGDFM contact centres in this programme. In 2013, the programme was upgraded to an MMed-Family Medicine affiliated to the Tamil Nadu Dr MGR Medical University. In 2014, a two-year online Masters in Family Medicine diploma was started in collaboration with the University of Edinburgh, Scotland.

The Unit also runs a training programme in Family Medicine, for government doctors sponsored by NRHM from Bihar, Chhattisgarh and other states and, in collaboration with CMC's Department of Endocrinology, Diabetes and Metabolism, a one-year distance course in diabetes management and a basic health training certificate programme for Christian NGO workers in remote areas.

Courses in geriatrics, hospital dentistry and transfusion medicine are ready for launch. The future plans of expansion include establishing a Distance Education hub in Chittoor Hospital campus and starting of Family Medicine in e-learning mode, Primary Care Research

and Bioethics.

Recognising the growth and plans for future expansion, CMC has allocated 3,000 sq ft office space with 16 rooms including a conference room and skill-lab in a leased building in down town Vellore and it was inaugurated on 28 March 2016.

Research projects done in the department include a medication misuse study, in collaboration with the University of Melbourne, Australia, supported by an internal fluid grant; the Knowledge Economy Partnerships project, in collaboration with the University of Edinburgh, Scotland, supported by the British Council; and the Prevention of Oral and Cervical Cancer in Rural India project, under the Global Innovation Initiative Project, in collaboration with the University of Edinburgh, Scotland, Cornell University, USA, and RUHSA.

Awards

In 2014, Skoch Foundation Award was received for Best practices in Distance Education; In 2015, FICCI Healthcare Excellence Award for using Blended learning to teach PHC/ CHC doctors & Village level Community lay-leaders.





OUTREACH SERVICES

CMC is unique among unaided, private sector healthcare institutions in not limiting itself to high-tech tertiary care but actively using secondary and primary healthcare models to deliver healthcare to rural India.

CMC's founder, Dr Ida Scudder, within two years of starting a one-bed dispensary, had single-handedly treated 12,000 patients. But she felt frustrated: many patients still remained outside the ambit of medical services. So, in 1906, she began setting up roadside clinics, taking the services to villages and hamlets outside Vellore. That was the beginning of CMC's outreach.

CMC is unique among unaided, private sector healthcare institutions in not limiting itself to high-tech tertiary care but actively using secondary and primary healthcare models to deliver healthcare to rural India, giving priority to the needs of the urban and rural poor, including the most vulnerable, disadvantaged communities – women, children, the mentally and physically challenged, leprosy and HIV patients, the poor and neglected elderly, slum-dwellers, tribal populations and others.

In 1948, to provide basic healthcare services to rural communities, with special



Scudder's roadside clinic in bullock cart

focus on preventing maternal mortality and tackling leprosy (then an endemic and highly prevalent disease), the Kavanur Rural Health Centre was started in the K.V. Kuppam rural block of Vellore district, 25 km from the main hospital campus, with Dr Hilda Lazarus as Director and Dr Robert Cochrane as Principal. In 1977, rural healthcare was redefined by introducing socioeconomic development programmes as part of healthcare delivery and the Centre was renamed the Rural Unit for Health and Social Affairs (RUHSA).

In 1956, under CMC's Department of Preventive and Social Medicine, a rural health centre was started in Bagayam, with a few MCH centres in the Kaniyambadi rural development block, in Vellore district. This has grown to CMC's present-day Community Health department.

In Vellore town, CMC started LCECU in December 1982, in response to the needs of the urban poor. The initiative also demonstrated that, in an environment of escalating healthcare costs, quality rational care could be provided at low cost.



The Team at RUHSA

Community Health Department

The Community Health Department provides primary care to the rural, urban and tribal communities nearby and serves as a training ground for medical, Nursing and paramedical students.

In 2015-16, the CHAD hospital attended to 88,916 outpatients and 10,733 inpatients, including 3,243 women who were delivered in the facility. A special highlight of the programme includes Counselling services. The most common psychological problems in the community include those related to maladjustment between spouses, alcoholism and HIV, for which counselling and free legal aid and advice is provided. The counsellors are regularly invited to the Special Prison for Women for counselling



In the Ward at CHAD

its registered inmates. The prison authorities also refer clients who need help to this centre. So does “Udhavaum Ullangal”, a voluntary organisation. After counselling the clients may be referred to MHC, the domestic violence protection officer or a short-stay home.

The education of doctors, nurses and Allied Health professionals is central to the

vision of the Department. Some of the educational initiatives include Community Orientation Programme for first-year medical students introduced in 1975, Epidemiology Resource Centre for training professionals in research launched in 1985 and MD programme in Community Medicine started in 1974 and Masters in Public Health Programme started in 2009.



Day care for the elderly

Community Development projects

The Jawadhi hills tribals project, initiated in 1980 for a population of 30,000, aims to improve maternal and child health through regular clinic-based antenatal care, growth monitoring of children, nutrition education and ambulance services. In 2014, a permanent health care facility, the C.K Job Tribal Health and Development Centre, was inaugurated. An important facet of the work in Jawadhu Hills is the development of a scholarship scheme aimed at providing Nursing and AHS training for tribal youth.

There are two day-care centres for the elderly, functioning in two villages in Kaniambadi rural block, which serve 38

beneficiaries. Basic medical services, occupational therapy, recreation, health education, nutritional support and counselling are offered.

Reproductive health and family life education in the adolescent health programme for girls has been underway for school going children. The demand from schools and colleges for conducting such programmes on an ongoing basis has been increasing in both rural and urban areas, and CMC has begun working regularly with organisations like Students Partnership World-wide India (SPW) to broaden the outreach.

Awards

In 2014, the Department won the BMJ Primary Healthcare in Challenging Circumstances

award for the Jawadhi Hills Health and Development Project and two Skoch Platinum awards for best governance for a GIS in healthcare and for tribal healthcare at Jawadhi Hills. In 2015, the Association of Healthcare Providers (India) Excellence in Community Engagement award and WHO's 2015 Public Health Champions award.

Several research projects are underway at the Department, including those on the effect of inactivated poliovirus vaccine on gut immunity against poliovirus in children, utilising the community DOTS provider for treatment of TB in Vellore district, evaluating the impact of three feeding regimens on the recovery of children from uncomplicated severe acute malnutrition in India, the aetiology of neonatal infection



Well Baby Clinic at RUHSA

in South Asia, and an open label post licensure trial to evaluate the safety and immunogenicity of indigenously manufactured killed bivalent (o1 and o139) whole cell oral cholera vaccine (trade name Shanchol).

RUHSA

RUHSA provides affordable medical care for rural poor; deploys various models of community development and poverty alleviation and conducts capacity-building training for all levels of healthcare personnel.

Providing affordable medical care for the rural poor

During 2015-16, RUHSA attended to 95,382 outpatients and 4,109 inpatients. Across 23 outreach

mobile clinics, about 25,000 patient visits were managed. Of 4,109 inpatients, 1,286 had come for delivery; 1,100 were children. Subsidised and free care was provided to those with chronic diseases, including 2,655 for diabetes, 1,598 for psychiatric conditions and others for rheumatic heart disease, seizures, HIV, TB, hypertension and chronic lung disease.

Intensifying capacity-building

In addition to training Community Medicine post-graduates, medical interns and Medical Sociology bachelor's degree students, annually, 2,000-plus nursing students from about 50 colleges from neighbouring states are trained in one- to two-week workshops

on integrated health and development and the principles of management, while 1,300 rural medical assistants from Chhattisgarh have been given hands-on primary healthcare training through two-week workshops in batches, since 2012.

Enhancing and enriching ties and partnerships for health care

Since 2007, RUHSA has partnered with the universities of Sydney and Edinburgh, Cornell University and the Global Initiative Against HPV and Cervical Cancer, USA on the "Educate, Screen and Treat" cervical cancer prevention model for rural India. So far, from a 2,00,000 population in and around the RUHSA

A home for abandoned senior citizens in rural India



Irusan and his sister-in-law, Muthu, are residents of Panamadangi, a low-caste colony in K.V. Kuppam block. Irusan's wife died about 10 years ago, after which his two daughters, currently married and living with their husbands, abandoned him. Irusan lives in a thatched hut on a plot of land he owns. Muthu's husband died about four years ago. Her three sons abandoned her. Her in-laws – with whom, as per local custom, Muthu lived – ill-treated her. So she asked Irusan for shelter; and, now, they live in his hut. They live on a monthly Government old-age pension of Rs 1,000, and they are regulars at the RUHSA day-care centre for the elderly.

The 2015 north-east monsoons, which came during November-December, destroyed their hut. So RUHSA put them up in the women's self-help group premises until they made a temporary thatched shelter, using some of their pension. They have now asked RUHSA for help with better housing, and RUHSA has initiated the construction of a brick-and-mortar dwelling, with donations from Friends of Vellore.

service area, 6,612 women have been screened. The patients are treated with the support from Departments of Gynaecology and Radiotherapy.

Preventive healthcare training in low-resource settings

At the mission hospitals in Padhar, MP and Mungeli, Chhattisgarh, through international collaborations and funding, RUHSA has, as part of the Global Innovation Initiative project, conducted workshops on preventing cervical and oral cancer in partnership with distance Education Department.

Community Development projects

To make special caring facilities available to the poor elderly in rural areas, day-care centres for the elderly poor and neglected were started in 2007. The

centres provide free medical care, nutritious noon meals five days a week, a platform for group interaction and venting of pent-up feelings, and varied recreational opportunities. Currently, six centres in the block serve 120 beneficiaries, supported by Friends of Vellore in the UK, Sweden and Vellore Rural Community Trust, UK; and well-wishers in India.

Vocational training for rural youth

The RUHSA Community College provided vocational training to 300 youth last year, taking the total to 4,494 over the past 15 years. The training is affiliated to the Tamil Nadu Open University and the National Institute of Open Schools and covers the mechanism of two- and four-wheeler automobiles, refrigerators, air-conditioners, rewindable motors, and

electrical wiring for homes; and a beautician course for women. The aim is to better the socio-economic status of the rural communities by enhancing employment opportunities. Since 2000, over 85 percent have been gainfully employed, a significant number absorbed in reputed companies across south India.

Other community development programmes include Six Youth Clubs, with 120 members, to guide and motivate the rural youth to make better career decisions and six Clubs for Marginal Farmers who are linked up with the National Bank for Agriculture and Rural Development for relevant training and small-budget financial assistance. RUHSA has also facilitated an interest-free loans of up to Rs.30,000 per farmer to purchase milch animals with support from Friends of Vellore, UK. In 2014-16, 24 farmers were provided with loans.

Research

Several research projects are underway in collaboration with International Universities. Key projects include those on multiplexed antenatal screening for infections using point-of-care tests by health workers and on cervical cancer prevention for rural India and the Vellore-Aberdeen Nutrition Exchange project.

Awards

In 2014, RUHSA was awarded a Skoch Foundation award in the Social Inclusion category, which recognised RUHSA's 37 years' involvement in raising the status of rural communities through primary healthcare, training initiatives, population-based research projects and community development programmes.

LCECU

A 40-bed facility housed in the Schell Eye Hospital campus in Vellore town and managed primarily by Family Medicine specialists, LCECU provides services to poor urban patients at affordable costs. First-time patients are required to provide proof of residence and are screened subsequently by social workers. Patients may also be referred to LCECU by the social workers and by community health and urban health nurses in the College of Nursing's Community Health wing. During the year, the Unit attended to 63,245 outpatients and 1,737 inpatients.

Over the years, these services have been expanded by broadening community mapping, raising the number of

outreach clinics, school health programmes and community-based rehabilitation of the disabled. In partnership with the Department of Physical Medicine and Rehabilitation, through half-day workshops among college students, Project Helmet was initiated in 2014 to sensitise youth and young motorists on injury prevention and safe driving practices.

Patients pay a one-time registration fee of Rs 25. Routine care attracts no consultation fee but medicines are paid for – often at subsidised cost. Costs are kept to a minimum by patient counselling for better self-management, good history-taking and thorough physical examinations, prudence in requesting tests and scans, use of generic drugs and basic, no-frills infrastructure.

Outreach care stories from Psychiatry department Unit III

Psychiatric illness, poorly understood, is shadowed by stigma and rarely paid sufficient attention. Persons suffering from psychiatric diseases have no voice because of the inherent nature of major psychiatric disorders, which disrupts the patient's awareness of pathology and need for treatment. Poverty compounds the problem: the significant deficit in treatment services results in tragedies that play out quietly in unattended corners of the world.

Yet the following stories are examples of the miracles that happen when healthcare professionals and communities work together.

A young man, Mr B, was a schizophrenia patient. One day, when acutely symptomatic, he climbed on to an electrical power transformer, touched a live wire and sustained burns. He was brought to the psychiatric ward at CMC because he could not be treated at the local government hospital. At CMC, his burns were treated and a skin graft was done for a patch of skin that had festered for long. Although he continues to be psychotic, the CMC Psychiatry department, with a local NGO, Udhavum Ullangal, has appointed a volunteer to make house calls and administer depot injections periodically to keep the schizophrenia under control.

Mr K had been confined to his home for many years because he had schizophrenia. His elderly mother would collect and sell firewood to feed her son and herself. However, after LCECU and Unit III started treatment, Mr K improved. However, his mother developed psychosis, and LCECU started her treatment. But her condition deteriorated drastically and, to manage both mother and son, LCECU negotiated her transfer to the nearby Missionaries of Charity home in Shenbakkam.

BASIC SCIENCES

Basic Sciences form the foundation of medical practice at CMC

At CMC, practical correlations integrate the Basic Science curriculum to the clinical context, forming the framework of its clinical services.

Anatomy

The Anatomy Department is a pre-clinical department devoted mainly to teaching students of the MBBS, BSc Nursing, Bachelor of Occupational Therapy, Bachelor of Physiotherapy and 21 other undergraduate AHS courses. In addition to post-graduate training towards MD Anatomy, the subject is also taught to MSc Nursing, MSc Medical Physics, MS Clinical Engineering, PhD Clinical Engineering and other medical post-graduate students. The Department facilitates the running of several cadaveric workshops for surgical and clinical skills training. Teaching is dissection-based and there is an active body donation programme that facilitates this. In addition to the formalin storage facility for cadavers, plastination is done by which projected





Pathology Museum

specimens and organs are preserved. The department has ongoing projects in the fields of clinical anatomy, anthropometry, embalming techniques, plastination, medical education, histology and immunohistochemistry, cell culture, stem cell research and radiological anatomy, among others, both in isolation and in collaboration with other departments.

Biochemistry

The Department of Biochemistry is involved in teaching (MBBS, nursing and allied health sciences courses), training (MD Biochemistry and PhD programs) and research. Innovative teaching methods, along with considerable academic support, provide

a high quality of education. Training programs include academic nurture to produce personnel for India's needs. Research work focuses on conditions relevant to India (eg,



dysregulated iron homeostasis in anemia of inflammation, liver disease and insulin resistance, gestational diabetes mellitus, endometrial cancer, etc). Work done covers basic science and clinical aspects of these conditions, involves collaborations within CMC and with institutions abroad, and is supported by intramural and extramural grants (Government of India's Departments of Biotechnology [DBT] and Science and Technology, Indian Council of Medical Research, CSIR and the Wellcome Trust DBT India Alliance).

Pharmacology

The department of Pharmacology and Clinical Pharmacology consists of two units: Basic Pharmacology,

located in the College campus, at Bagayam, which does most of the teaching work; and Clinical Pharmacology, located in the Hospital campus, which is involved in therapeutic drug monitoring and monitoring of adverse drug reactions in patients. Both units are involved significantly in research. The Clinical Pharmacology unit continues to expand the range of drugs whose concentrations are monitored. The Department's research involves smooth muscle pharmacology, biochemical pharmacology, epigenetics and therapeutic drug monitoring. The Department tests new drugs acting on genitourinary smooth muscle and in the biochemical pharmacology specialisation and works on theoretical epigenetics.

Physiology

The Department of Physiology is involved in training undergraduate and post-graduate students and research. Facilities are available for research on whole animals, tissues, cell culture, phytochemistry, patch-clamp electrophysiology and human physiology. Recently, three patch-clamp amplifiers and accessories were donated by Prof Frederick Sigworth, of Yale University, shipped with help from Friends of Vellore, USA. Three patch-clamp rigs are now being set up for training patch-clamp electrophysiology researchers, which will also enable the Department to provide drug testing for new molecules to study their effects on ion channels.

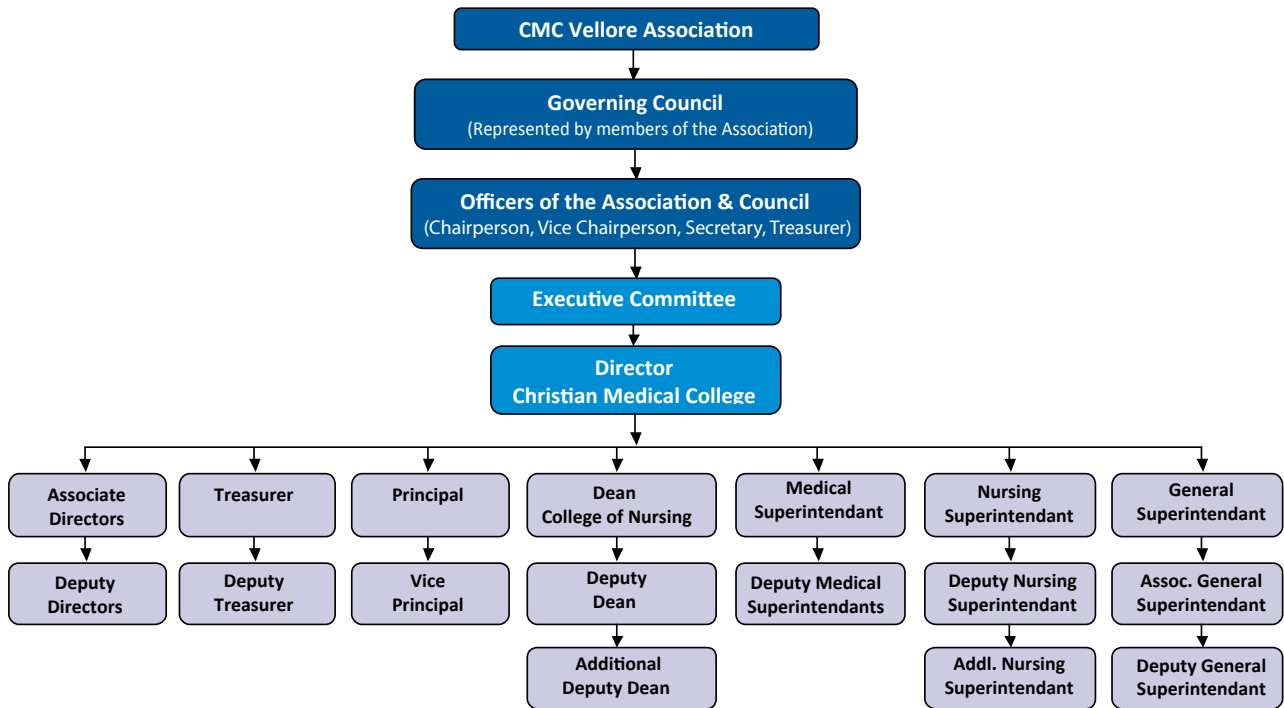


Second patch-clamp rig set-up in progress

ORGANISATIONAL & FINANCIAL INFORMATION



CMC Governance



CMC is a non-profit organisation governed by the Christian Medical College Vellore Association, registered under the Societies Registration Act XXI of 1860. Governance is through the represented members of the Association, headed by its officers. The Memorandum of Association, Constitution and bye-laws are clearly listed and strictly adhered to. Appointment of officers is through a Nomination Committee of the Council. All financial matters are handled in a transparent manner and audited statements of accounts are submitted annually, following audit by external auditors. Standing Committees such as the Administrative Committee, the Finance Committee, the Academic Committee, the

Planning Cell, the Student Selection Committees and nine other committees ensure the provision of high-quality medical education and patient care.

Identity

Registration of Societies Act XXI of 1860. No.5 of 1947

CMC PAN No: AAATC1278N

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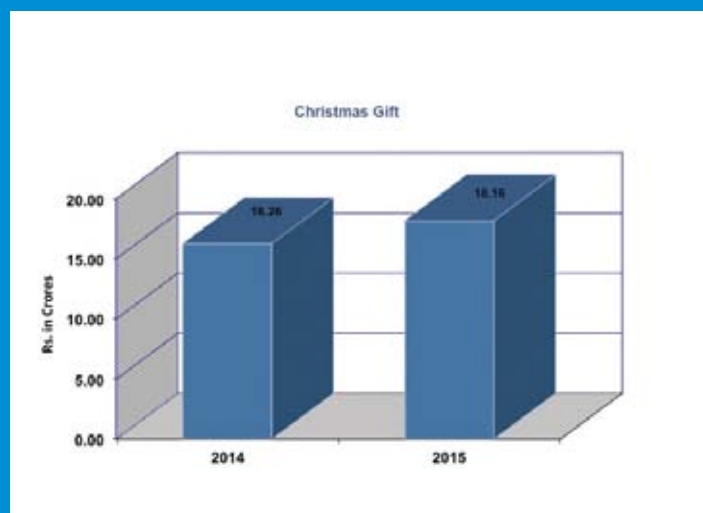
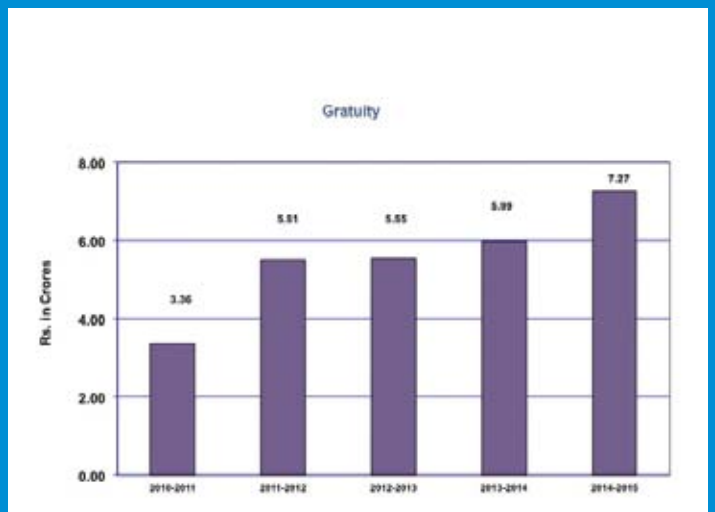
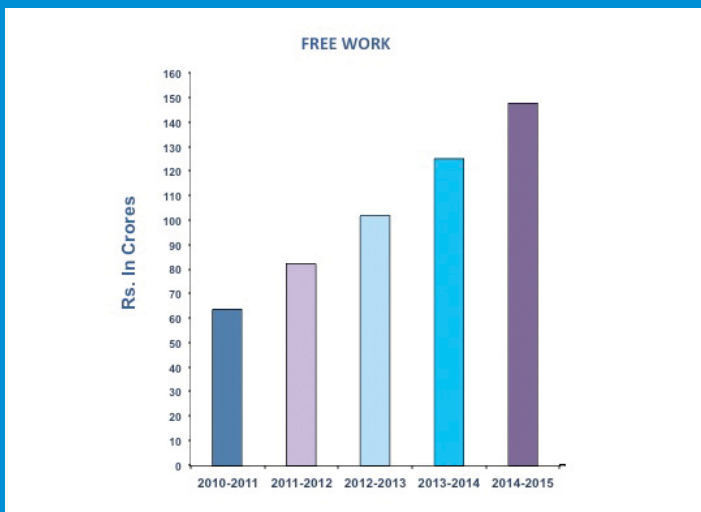
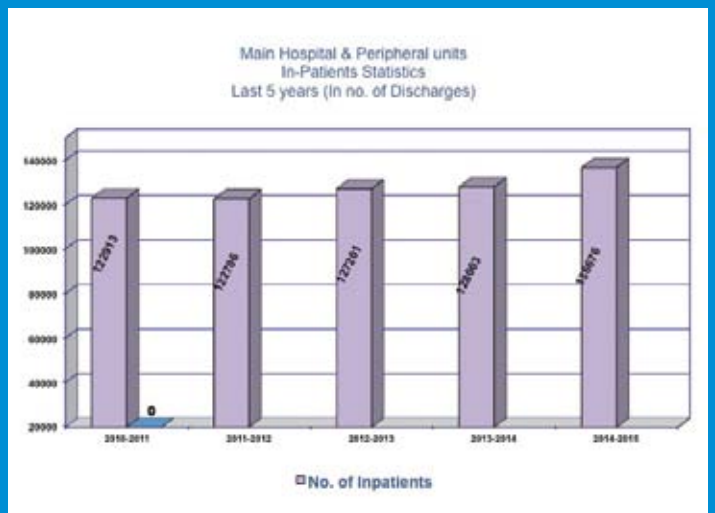
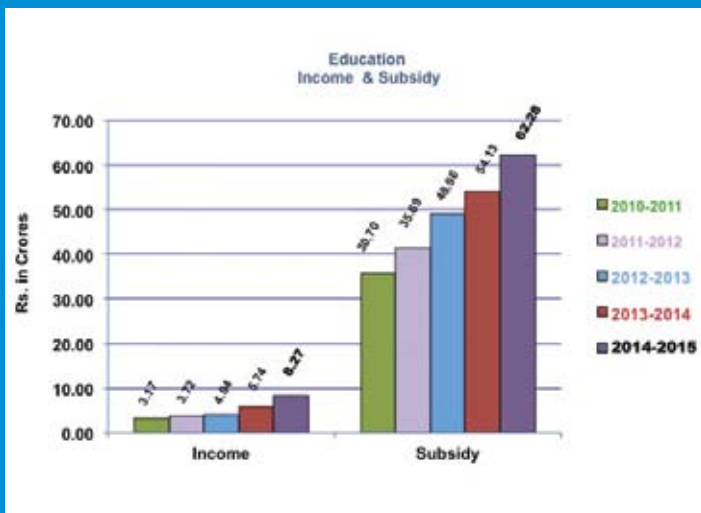
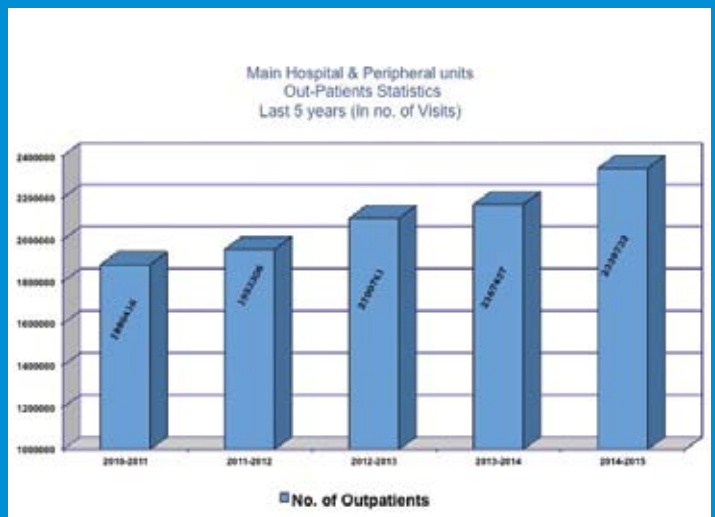
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CMC Staff Details

As on 16/06/2016, we have 4081 male and 5306 female employees at CMC.

All donations to CMC qualify for exemption u/s 80G of the Income Tax Act, 1961 – Authority, Director of Income Tax (E) Letter No: DIT(E) No. 1 (78) / 01-02 dt. 05-02-2009



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Year Book 2016

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Friends of Vellore

The Friends of Vellore (FOV) is an overseas association that has espoused the cause of CMC since the late 1940s, by representing the interests of the institution internationally. With its presence across the countries listed below, the role of FOV has been greatly adapted over the decades, in tandem with the dynamic progress of CMC. The projects supported by this fellowship include 'Jawadhi' Tribal Health project, the Person-to-Person Programme Fund, quite a few social projects through RUHSA and LCECU and the Palliative Care.

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