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Christian Medical College, Vellore

Community Health and Development (CHAD)

Community Health and Development of CMC Vellore, popularly known as CHAD, is a true example of the fine balance between training and service to the community. This fifty-year-old program is part of Community Health Department and has grown manifold, attracting people from all over the world. This case study attempts to highlight the efficiency with which CHAD has obtained results through a combination of training and service delivery as well as discuss how aspects of the CHAD model can be adopted by other institutions to achieve similar results.



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The Christian Medical College, Vellore (CMC) began as one of the several mission hospitals located all over the country in the beginning of 20th century offering primary healthcare. Today with over 2,500 beds and many achievements, it is the beacon of medical education, research and patient care in India.

CMC's Community Health Department and its Community Health and Development program, popularly known as CHAD, is a true example of the fine balance between training and service to the community. It is the manifestation of CMC's philosophy of maintaining and expanding its focus on tertiary care while augmenting community health work. Over half a century, the department has grown manifold and attracted people from all over the world.

under the Community Health and Training Centre (CHTC) and the service programs under Community Health and Development (CHAD). This document attempts to capture the key aspects of one of these – CHAD.

Christian Medical College (CMC), Vellore

The Christian Medical College (CMC) was founded in the beginning of the 20th century by Dr. Ida Sophia Scudder with the intention of providing health care services to women and children.

Although in her youth Dr. Ida had no intention of following the family tradition of working as a missionary and dedicating her life for the welfare of others, a particular incident transformed her thoughts and motivated her to study medicine and come back to India to serve the needy.

On a fateful night in 1890, young Ida witnessed the deaths of three young women during childbirth, not for want of medical attention as her father, a doctor, was present; but for constricting social norms that did not allow him to cater to the needs of these female patients. These deaths, which could have easily been prevented, affected young Ida deeply.

Dr. Ida did her medical education at Philadelphia and Cornell. She returned to India in 1900 – an India where the average life expectancy was 24 years – where she started a hospital with one bed and herself as the only doctor.

Today with 2,500 beds, 1,210 doctors and many achievements, CMC is the beacon of medical education, research and patient care in India.

Community Health and Development (CHAD) – CMC, Vellore

By 1902, Dr. Ida Scudder had only seen 12,000 patients. Frustrated at the thought of so many patients remaining outside the ambit of medical services, she began setting up road side clinics (1906) and taking her services to villages and hamlets outside of Vellore. While these clinics treated all, there was a focus on the women and children in the community. By mid 1910s, the road side clinics had graduated from an experiment to an institution and were the foundation stones for today's Community Health Department which includes Community Health and Development (CHAD), Rural Unit for Health and Social Affairs (RUSHA), College of Nursing Community Health (CONCH) and Low Cost Effective Care Unit (LCECU).

In 1954 CMC initiated the Rural Health Centre, Bagayam and Department of Hygiene under the leadership of Dr. K. G. Koshy as a simple clinical-based coordinating center for the rural teams. In 1957, a 12-bed hospital was built and increased to 80 in 1982. Today, the hospital has 135 beds and is almost an independent body on its own. Social and economic development programmes were added in 1977.

In 1982, the CHAD program was initiated with the following objectives:

- (1) To provide primary health care for a population of 88 villages in Kanyambadi block and 120 hamlets in the tribal area of Jawadhi hills
- (2) To provide training in community based health care to the medical, nursing and paramedical students, postgraduates and CMC staff.
- (3) To coordinate and conduct research activities in the community.

The hospital and the development programmes are together known as "CHAD" – Community Health and Development, and are still part of the Community Health Department. Another facet of the Community Health Department is the Community Health Training Centre (CHTC) inaugurated in 1995. The training in Community Health is part of this centre.

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

-Vision statement, CMC

Community Health Department is the manifestation of CMC's philosophy of maintaining and expanding its focus on tertiary care while augmenting the community health work.

Training at Community Health Department

CMC recognizes that relevant medical education and high quality training are vital for a developing nation such as India. Most of the students getting trained in medical colleges hail from middle and upper strata of society and are unaware of the needs of rural community and urban slums. The hospital environment, where the classroom teaching takes place, is also not representative of the actual challenges faced in a community setting. Compounding this gap further are the rapid advancements in science and technology and the high status attributed to specializations.

CMC has thus addressed this need in its training programs by devising community orientation programs for all medical graduates. These training programs are conducted by the Community Health and Training Center (CHTC) and ensure that-

The community training ensures that students turn out to be “basic doctors” with skills relevant to the community.

- (1) The students get exposed to clinical excellence of the highest quality
- (2) The content of the training is relevant to the needs of the community.

Since its establishment in 1954, the department has made community health a compulsory element in the education of nurses and medical students. These students are made to undergo a Community Health Program (CHP) in the following manner-

Community Orientation Program (COP)

The students from medical, physiotherapy, occupational therapy, dietary and bio-statistics courses first encounter community health at the end of the first year (post their examinations) in the form of a three-week block posting.

The posting is preceded by preparatory classes in sociology and statistics, which will familiarize the students with the socio-demographic structure and socio-cultural context of the village in which they will live and work. The students are required to complete a pre-designed form to capture how people live and how they view the world. This is

followed up with a bio-medical survey and the results are collated to generate a complete picture of the area. Then the students accompanied by specialists from their field, visit the village and explore implications of the problems prevailing in the community. The government

- COP**
- *Exposes students to socio-demographic and socio-cultural context of the village*
 - *Provides experience in social research methods*
 - *Provides an opportunity to develop relevant health programs combining needs and available resources*

officials also speak to the students and explain the relationships between the government structures.

This program teaches two things – information gathering and conducting simple tests under village conditions.

Social research methods like focus group discussion and in-depth interviews are used extensively for information gathering.

The students are then formed into groups, which identify the problems of the village, prioritize the problems and then design a health program to deal with the most demanding one. This exercise is then followed by an in-depth analysis of the need identified along with the basic investigations. An evening clinic is also conducted by the students and the villagers are encouraged to visit it. It provides an ideal opportunity for health education among those who attend.

Once the block posting is over, the information gathered is analyzed using relevant statistical tools and presented for discussion.

CHP - I

The second phase of community health program takes place in the first clinical year of studies. It focuses on epidemiology, health management and government health programs (including field visits to understand the process). The students do a cross-sectional study on morbidity and mortality in the community and the utilization pattern of health services. They also study the processes involved in various types of health services from the primary level to the district hospital. A health planning exercise is also carried out.

- CHP - I*
- Focus on epidemiology, health management and government health programs*
- Acquire methodological skills and knowledge of health systems*

CHP- II

This phase expects the students to practically apply the knowledge and skills learned during the first two phases. This phase takes place during the second clinical year and lasts for 2 weeks.

- CHP II*
- Designing of health program that addresses the need of the community*

During this phase, the students need to –

- (1) Evaluate the health status of the community within a defined area

- (2) Make a community diagnosis of the problem
- (3) Design a health program using the information collected
- (4) Implement the program.

The students can collaborate with the government health services and also make use of the services of the employees of CMC. The pace and schedule of the work is entirely dictated by the students, with the employees acting as resource persons.

Internship

This is the final phase of the program and is two months long. It is also a part of the one year compulsory internship program of the medical graduates. These two months are spent in the Community Health Department and equip the student with-

- *Internship*
Acquire skills of a "Basic doctor" relevant to the community

- (1) Basic knowledge of community health or primary care which involves being able to diagnose and treat common complaints without the use of sophisticated equipment.
- (2) An insight on when to refer the patient to a specialist at a higher center.
- (3) Basic skills to enable them to perform simple surgical procedures such as tubectomies, assist in caesarian sections, conduct basic laboratory investigations, and conduct general management of post-operative patients and other inpatients.



Fig 1: Mobile Clinic

Interns also conduct outpatient clinic under the supervision and guidance of senior doctors. Apart from working at the hospital, they also participate in the urban and rural mobile clinics and are encouraged to become involved in developmental activities of CHAD and talk to local people about their lives in general.

CHTC also offers post graduate training courses in community medicine, family medicine and epidemiology. The courses include basic and advanced epidemiology and health economics. These courses are extended to other medical colleges and are available for the CMC staff too. The department receives students from international schools as well for community health orientation and global medicine.

Service Delivery at Community Health and Development (CHAD)

Dr. Ida Scudder strongly believed that a doctor should not waste time waiting for the patient to come to the hospital but should rather go into the community and seek out the patients. This was, at that time, quite a futuristic way of thinking. She visited the villages with her medicines and minimal staff and operated her clinic under a tree where the patients waited for her roadside clinics. She treated all kinds of diseases including leprosy (which was a major concern in those times) and took patients requiring further intervention back to the base hospital in her car. Thus, in keeping with this ideology, the primary health care system at CHAD has been designed to come to the people and address their needs in their own context.

The “road side clinics” continue to exist even today but in a more structured manner and are known as peripheral clinics. They are essentially the outreach program of CHAD. The outreach program or the primary health program consists of-

- (1) Doctor run mobile clinics
- (2) Nurse run mobile clinics
- (3) Home visits

The CHAD hospital serves as the secondary care centre.

Maternal and child health clinics

In 1956, the Community Health Department started organizing its first few maternal and child health centers. The focus was on antenatal attendance and immunization. As the staff increased, the department initiated home visits also for follow up and health guidance. By the mid 70's, the department was looking after five villages with a total population of 10,000. The maternal and child health clinics were held weekly in the larger villages and fortnightly in the smaller ones with focus on antenatal care and immunization. Presently, the village is replaced by student's training as the focus of the program.

This model not only serves the purpose of training and service delivery, but also showcases to the world how a community program can be run. The maternal and child health clinics developed into the peripheral clinics.

Peripheral clinics

Today, the CHAD peripheral clinics serve the rural communities of Kaniyambadi blocks. The catchment area of CHAD consists of 88 villages with a population of 1,078,821 (49.4 percent males and 50.5 percent females).

The villages are categorized into three groups depending on the proximity of the village from the CHAD hospital: Area A (within two to three km), Area B (less than 10 km) and Area C (more than 10 km).

In Area A, five villages have been adopted by CHAD. These villages are used for student education and visitor orientation of the program

| Cadres | Qualification | Population Covered | Activities | Reporting to |
|----------------------|---|--------------------|---|---------------------|
| Registrar | Post graduate student in community medicine | 20,000 to 30,000 | Conduct doctor run clinics | Head of Department |
| Public Health Nurses | Bachelors in nursing | 15,000 to 20,000 | Conducts home visits and nurse run clinics | Area registrar |
| Health Aides | Auxiliary Nurse and Mid wife | 3,000 to 5,000 | Conducts ANC visits, records birth, death, marriage and health events, refers patients to CHAD hospital is required | Public Health Nurse |
| PTCHW | Illiterate | 1,000 to 2,000 | Collects information on social events | Health Aide |

Table 1: Profile of Clinic Team

Each area is assigned to a public health nurse (PHN). Usually a PHN looks after a population of 15,000 to 20,000. The PHN is assisted by area health aides who look after a population of 3,000 to 5,000. The health aides reside in the villages they serve. The health aide supervises part time community health workers (PTCHW) and serves a population of 1,000 to 2,000. PTCHW usually works in hilly terrain and there are 29 such women.

Nurse run clinics

A nurse run clinic is conducted fortnightly – before and after a doctor run clinic. Typically, a nurse run clinic is a full day activity and a PHN covers four to five villages a day. The efficiency of the clinics depends on the data collected in the previous visits. The nurse has various records – antenatal care (ANC), post natal care (PNC), morbidity, mortality, births and under five years

¹ As on Sep 2010 collated by CHAD statistics department

registers. She lists down the details of women for ANC and PNC scheduled for drugs and examination, patients with communicable and non-communicable diseases requiring regular medication and other such details. The day is planned as per these details, drugs are collected and some basic instruments such as stethoscope, blood pressure apparatus, glucose strips and glucometer and torch.



Fig 2: Health Aide

The PHN visits the homes of the patients in order to follow up with them, update her records, make note of health complications (if

any) and if required refer them to CHAD. She is assisted by the health aide and/or PTCHW in these visits. The health aide informs the nurse about health events in the villages and defaulters

PTCHW - Started in 1977 with 4 women who were traditional birth attendants

Health Aides: Supervisory cadre added in 1984 as most of the PTCHW were illiterate. The health aides were educated up to class 10

(if any). The PTCHW on the other hand, gives information on family events such as birth, death and marriage. Both sets of information are followed up by the health nurse during home visits. Comprehensive information is thus collected per patient and shared with the doctor.

Doctor run clinic

The team is similar to the nurse run clinic and in addition includes a community health doctor and a medical intern. The clinics focus on maternal and child health and morbidity and are conducted once a month. One clinic is meant for the population of four to six villages. The venue of the clinic is fixed and made known to the community through the health aides and PTCHW. The doctor run clinic can be held in a facility leased by the hospital or in a mobile van. The mobile van is so designed that it has designated areas for hand washing, examination, documentation, drugs dispensing and treatment.

The community health doctor takes care of the maternal and child health activities and the medical intern runs the morbidity clinic.

The nurses are involved in drug dispensing, administering injections, measuring blood pressure and routine investigations. They are also responsible for health education (through flash cards) and discussions.

The health aide updates the antenatal cards of the women and ensures that follow up is done.



Fig 3: Activities in the doctor run clinic

The patients pay a minimal amount for their medicines (only morbidity) and if they are unable to do so they are treated for free. The patients are referred to the CHAD hospital if further or higher medical intervention is required. The reference of the health aide is given who then facilitates the referral when the patient visits the hospital. This ensures continuity of care and also builds confidence of the patient.

The outreach work in Kaniyambadi block initially started in five villages and has now expanded to cover the entire block. The program has been actively involved in development of primary and secondary health services, development initiatives and empowerment of women through education and income-generation.

The role of outreach activities has changed over time with development of the government sector health services, infrastructure and change in health status of the community. Though maternal and child health is still the focus, emphasis is also being given to other communicable and non-communicable morbidities. Referral services to reduce morbidity and mortality among pregnant women and new born is one of the successful activities linking primary care to secondary care (CHAD hospital) and tertiary care (CMC hospital).

In the year 2008-09, 1447 women availed antenatal services through the outreach program and 272 were identified as high risk pregnancies. Of these, 75 percent of them received care at CHAD hospital during the antenatal period. In the same tenure, 17.5 percent of all admissions in the nursery of CHAD hospital were through referrals of the outreach program.

| CHAD Program Activities - Beneficiaries | 2009-10 | 2008-09 | 2007-08 | 2006-07 | 2006-05 |
|---|---------|---------|---------|---------|---------|
| Home Visits | 54,239 | 55,367 | 61,141 | 67,368 | 65,981 |
| Maternal and Child Health | 11,883 | 11,538 | 12,550 | 15,243 | 14,396 |
| Morbidity Clinics | 27,226 | 29,361 | 24,270 | 20,982 | 6,568 |
| Leprosy Program | 1,312 | 1,128 | 1,394 | 1,591 | 1,745 |
| Jawadhi Hills | 2,992 | 5,276 | 2,992 | 2,495 | 2,585 |
| Psychiatry Program | 1,198 | 1,044 | 1,034 | 951 | 760 |
| Epilepsy Program | 3,469 | 3,107 | 3,214 | 3,372 | 3,699 |
| TB Program | 377 | 286 | 317 | 374 | 445 |

Table 2 Patient statistics, Source: CMC Annual report 2008-09 &2009-10, CHAD annual report 2008-09

CHAD Hospital

The CHAD hospital serves both as a referral centre for the field programs and a point of primary care. It mainly caters to maternal and child health and family planning services. The objective of the hospital is to provide affordable care to the patient in the best possible way for a secondary level hospital.

The hospital provides secondary level of care. The facilities include pharmacy, laboratory, labor room, operation theatre and emergency care. The other facilities include family planning clinic where couples are counseled on the need and methods of family planning and HIV/AIDs counseling is done for pregnant women as part of ANC. The hospital also conducts weekly specialty clinics when specialist doctors from CMC hospital visit CHAD.

Outpatient services include - special clinics for antenatal patients, high-risk infants, tuberculosis, leprosy, ear nose and throat (ENT), eye and infectious diseases. On an average, 180 patients are seen every day by the doctors at the outpatient clinic.

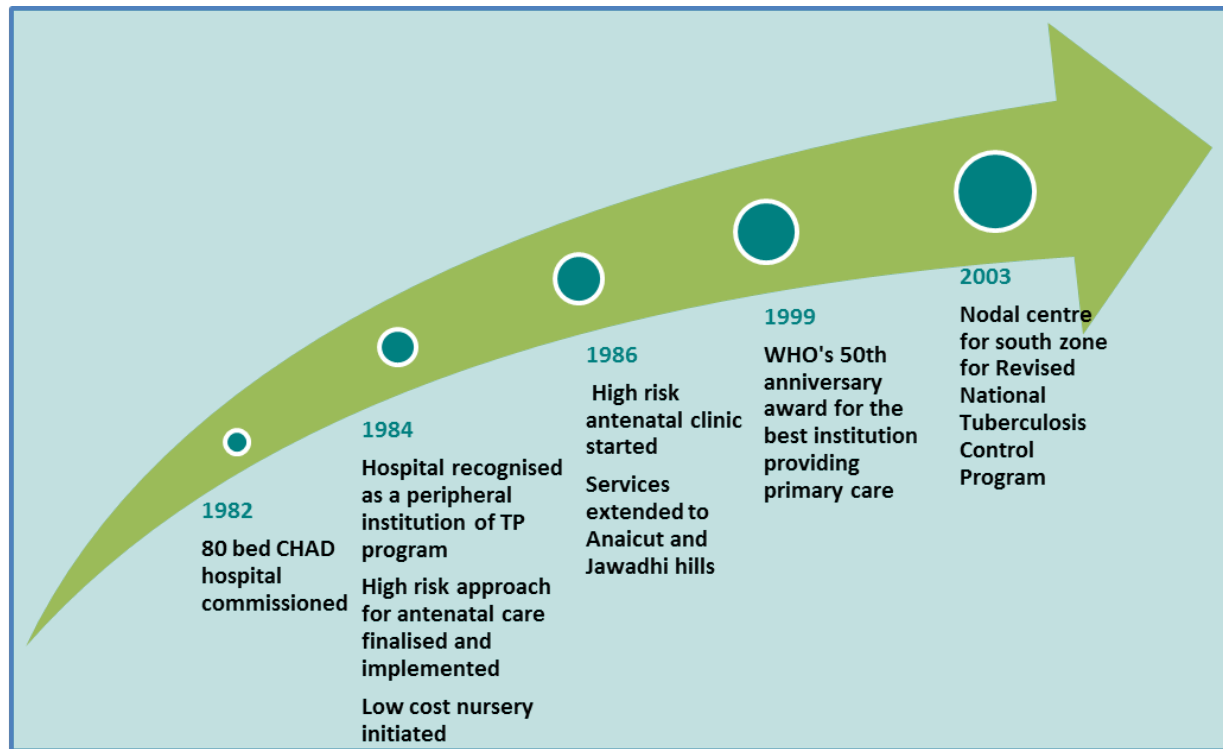


Figure 4: Milestones of CHAD hospital

The hospital has 135 beds. It also has a low cost nursery with 16 beds (initiated in 1984). The hospital is able to provide affordable care because –

- It only employs appropriate and relevant equipment and does not unnecessarily invest in sophisticated equipment (there is no X-Ray machine at the hospital)
- The doctors at CHAD hospital provide most of the care and refer a patient to a specialist only if the patient needs tertiary level of intervention. These doctors are trained in basic surgical procedures and can handle different morbidities based on clinical history and examination.
- Laboratory investigations are avoided, whenever possible, in order to reduce the financial burden on the patient.
- The care is delivered in accordance with the socio-economic conditions of the patients.

Layout

The outpatient department is a single storied structure in which every room is numbered. The layout is U-shaped starting with a registration counter at one end and a pharmacy at the other.

This facilitates easy movement and helps avoid confusion amongst the patients as numbers are easily recognized by a patient than the name of a department. The open space in the centre



Fig 5: Consultation Room

and skylight on the top ensures good ventilation and light. This also reduces the cost of electricity (otherwise required for a closed area). The outpatient clinics are a combination of three rooms with two doctors sharing a cubicle and an examination room with hand wash facility. The doctors ensure that over prescription of medicines does not occur. The pharmacy stocks generic medicines which further reduces the costs.

The labor section has the nursing cum doctor station on one side and labor rooms opposite to the nursing station. The beds have curtains around them for patient privacy and the premises are kept clean. The high ceiling with vents provides good ventilation and light, a major requirement in delivery room. Overall, the hospital provides a non-claustrophobic environment. This is the important aspect as the hospital on an average handles 300 patients per day.

Other activities of CHAD

Tribal health program

In addition, to the peripheral clinics and the hospital, CHAD also has a tribal program in Kalrayan hills (in partnership with Arcot Lutheran Church) and Jawadhi hills. The comprehensive health and community development program was initiated with an objective to enhance the socio-economic, health, education and nutritional status of the tribal population and exercise their right for empowerment. Under this program the following activities have been conducted-

- A comprehensive base line survey of 6,944 families in Kalrayan hills and 4,114 households in Jawadhi hills has been conducted and health services in the form of mobile clinics, health education and referrals to CHAD and CMC hospitals have been rendered.
- Focus group discussions on health education and diseases have been conducted.
- The community has been motivated for various income generation programs and identifying youth for vocational programs.

Diabetic clinics

Every Saturday CHAD hospital operates a special diabetic clinic to provide cost-effective and comprehensive care to diabetics. The team consists of a physician, two nurses, a foot care technician and a trained shoemaker. The clinic handles 40 patients per week. The patients are also referred by peripheral clinics. A team from Schell Eye Hospital screens all the diabetic patients for retinopathy. The patients are followed up once in 3 months if the condition is under control. They are also educated on diet, exercise and prevention of complications

Tuberculosis

In 2003, the Community Health Department was recognized as a nodal centre for south zone for the Revised National Tuberculosis Control Program (RNTCP). The tuberculosis (TB) unit of CHAD coordinates the TB activities of nearly 15 peripheral centers including Vellore Government Medical College, Narayani hospital and primary health centers serving 550,000 people.

The activities of TB are conducted through DOTS clinics on CHAD campus and town campus. The urban program covers the municipal centres. The town campus of DOTS centre also partners with the private practitioners in the town. In the year 2008-09 the reported cure rate was 83 percent.

Leprosy program

The leprosy services which began in early 20th century have now been integrated into the general health services. Apart from curative services, CHAD also provides rehabilitation services such as protective footwear for ulcers for leprosy patients.

Infectious disease clinic

The infectious disease clinic primarily deals with patients with HIV infection. The team includes a physician, a pediatrician and an obstetrician. Psychological and social support is given by counselors who are part of the program. Home visits are also initiated by the counselors wherever required. Patients on anti-retroviral therapy and having stage III or IV disease are followed up on a monthly basis.

Suicide prevention program

This program is an example of a need based program initiated by CHAD. Kaniyambadi block is prone to suicides (75.5 per 100,000 population in 2008) accounting for 10 percent of deaths in the block. To help arrest the suicides in the block, motivated volunteers from the community have been trained to identify persons at risk of suicide by both CHAD and psychiatric

consultants from the Mental Health Department. This intervention is supported by the social workers, community health physicians of CHAD and a psychiatric consultant from the community psychiatry department of CMC.

Urban unit

The urban unit works in close collaboration with the municipal health services of Vellore town. It caters to urban slums in the areas of Kansalpet and Ramanayakanpalayam, covering a population of 17,000. Maternal and child health and morbidity clinics are included as part of the services. The urban clinics also serve as a training unit for young doctors in a cost effective family practice in an urban slum environment, with appropriate referral linkages to CHAD and CMC hospital. In the year 2008-09, the urban unit catered to 35,062 patients in total (Ramanayakanpalayam, Kansalpet and Kagithapattarai).

Developmental activities

The developmental activities of CHAD are used as a strategy to enhance the health status by targeting the social determinants of health. The department initiated development programs such as Handicrafts Center (1974) and the subsequent registration of Community Development Society (CODES) and Self-Health Association for Rural Education and Employment (SHARE), an off shoot of CODES.

CODES was set up as a systematic and coordinated approach to the development activities of CHAD in 1978. An independent NGO, its board consists of equal representatives of CHAD employees and members of the society, with the head of CHAD as the non-executive president. The activities include agriculture, animal husbandry, craftwork, providing loans and other income generating activities. Women are the primary beneficiaries of the CODES program.

Quality Control

The CHAD department believes in providing good quality care at affordable cost and conducts regular audits and employs protocols to ensure this.

Weekly medical audits are conducted to scrutinize and discuss medical charts of all out-patients and in-patients. The cases are reviewed against standard medical practices to identify shortcomings and undertake suitable measures. The events that are audited include perinatal death, caesarean sections and causes of mortality. Out-patient and in-patient charts are also audited

for completion of documentation and adherence to standard treatment protocols. The whole team is part of these meetings.

Ethical case reviews are also regularly organized. The cases identified for these reviews are usually chosen from the patients attending the out-patient and in-patient department of CHAD hospital and peripheral clinics. The discussion following the presentation of the case explains the principles and guidelines for ethical practices in daily activities. The students of CHAD also meet with the head of the department every week to present their projects and other clinical cases.

Another important component of ensuring quality is data collection. The hospital has an information database which has been recently upgraded. A major achievement has been the geographical information system (GIS) which maps individuals living in the block. About 26,000 houses are represented on the GIS map. One of the benefits of such mapping is being able to track epidemics. The online computerization of CHAD hospital also includes online prescription and direct registration from labor room and casualty. These initiatives help to streamline daily operations and also facilitate tracking for auditing purposes.

Human Resource Management

The culture of CMC promotes team work and that is mirrored at all levels. The human resources management ensures team work, positive working culture and provides moral support to its employees.

Leadership

The heads of departments and other operational leaders change every five years. The assumption of a leadership role is not a promotion for financial benefits but of additional responsibilities. The financial and other benefits are related to the number of years served at CMC. The head of the department in addition to his clinical duties also has administrative responsibilities. At the end of the term, another eligible member of the department will be the head. The departmental head is accountable for the annual budget of the department.

| | |
|------------------|---|
| Doctors | 20 interns, 6 to 8 post graduates, 1 pediatrician, 1 obstetrician, 1 physician and 7 community medicine doctors |
| Nurses | 30 including masters in nursing, bachelors in nursing, general nurses and midwives and auxiliary nurses and midwives |
| Other paramedics | Laboratory technicians, occupation therapist, social worker, health aides |
| Administration | Accountant, medical records in charge, cashiers, pharmacists, secretaries and other support staff (housekeeping drivers, security etc.) |

Table 3: Staffing at CHAD Hospital

Recruitment/staffing

The medical superintendent is responsible for appointment of medical, paramedical and technical staff and the principal of the medical college is responsible for appointment of the faculty. However, the health aides are appointed by Community Health Department.

Employee benefits

The employees of CMC who have been with the hospital enjoy a lot of benefits apart from the regular provident fund.

CMC provides accommodation to most of the doctors and nurses. Some of the senior employees choose to stay away from the campus. However, the junior employees are mandated to stay on the campus in order to promote community living and transfer the value system of CMC from the seniors to the juniors.

Senior doctors and nurses can also avail sabbatical and/or study leave. During this period, CMC continues to pay half the salary of the employee to the family. This eases the financial burden of the employee and also helps avoid international transfer of money. The children of employees of all the cadres are eligible for an admission at the CMC medical college, provided they clear the entrance examinations.

Financial model

The CHAD program is highly subsidized by the tertiary hospital. The annual expense of CHAD is about INR 50,000,000 (114,000 USD approximately) and the income is about INR 5,000,000. Major share of the expense are the salaries. The other expenses include expenses towards free patients and outreach program. The pricing at CMC tertiary hospital is such that the minimum price of a service is equal to the actual cost of the service to the hospital. The medicines at the CMC hospital are sold at a discount of 10 percent and at CHAD hospital this is further subsidized. The patient revenue is the most important source of income for CMC as a whole and accounts for nearly 98.72 percent. The revenue earned through the training programs of Community Health Department are routed to a special fund held by the department and is used for paying land tax, maintenance of Community Health and Training Centre facility and salary for some employees.

Growth

The CMC CHAD program is primarily meant for training. Scaling up this program is primarily dependent on two factors: training requirements and strategies and priorities of the parent institution i.e. Christian Medical College.

An important aspect that is currently being addressed by CHAD is the change in services provided by its clinics. The outreach program, which predominantly focused on maternal and child health, now has a morbidity clinic integrated into the system. Table 2 indicates a downward trend in maternal services and an upward trend in morbidity clinics. However, the substantially high numbers indicate that the maternal services will still need to be continued for quite some time, but close monitoring of these trends would be important as the future services would need to be re-designed accordingly.

The state has launched a scheme whereby a mother receives a cash benefit of INR 6,000 for delivering in a government institution. Therefore, CHAD has shifted its focus and now emphasizes more on antenatal services rather than institutional delivery at CHAD.

Some key aspects that can be addressed to accelerate growth further are-

Geographical scaling

The peripheral clinics not only provide services to the community but are also an important part of the students' practical training. However as the students are expected to work on projects, attend lectures and take examinations, large distances disrupt the connection between the department and students and also decrease access to CHAD hospital for patients in remote areas. The solution lies in establishing a hospital in combination with the clinics. This would not only ease the operational difficulties but also allow for geographical scaling.

Technology

A good strategy for scaling the activities of CHAD is by making its services more comprehensive (adding more services or increasing the frequency of the clinics).

One possible way to scale across geography is by employing technology in the form of telemedicine. The community health nurse or even the health aide of CHAD can be trained to facilitate the tele-conversation between the doctor and nurse. There can be fixed hours in the day for this service. Adopting technology would further address the issue of accessibility and also provide an opportunity for the community to consult with the doctor on non-clinic days. A central tele-medicine centre is available at the tertiary hospital building and is presently being used primarily for the distance training programs.

External capacity building

Visibility is an important aspect of growth. Currently, little is known about the community programs of CMC outside the institution. A possible solution to address this issue could be to develop consultants within the department for external capacity building of other organizations. CHAD could consider having a dedicated team for service delivery alone (beyond training) comprising of clinical, paramedical and managerial cadres. The strengthening and scaling of the service delivery component of the department could be resourced elsewhere. Recruitment of health managers would also prove beneficial for this activity and to the department as a whole

Research

Well planned health research is fundamental to the improvement of health in all countries. The community health research in India needs to be strengthened as it would help in advocacy and better policy making. Being a WHO collaborating centre, CHAD can influence policy issues. In order to do so, CHAD would have to play a more active role in evidence based medicine² and implementation research³ for knowledge transfer and for provision of inputs for health policies. It could leverage upon its existing links with international institutions to further enhance the quality of research.

Programs such as National Rural Health Mission and the proposed National Urban Health Mission would benefit from research as the strategies would then be more realistic and output oriented.

Research would also indirectly help CHAD by bringing in more resources to the department – financial and human. It could also teach other organizations to develop their research capacity.

Replication

Replication is a strategy to scale. It can be limited to a small area or across geographies. For a program to be truly replicable it needs to be sustainable – financially and otherwise. Generally, no program can be replicated entirely. It has to be pruned as the external environment influences its implementation through the socio-cultural aspects and other factors.

Replication of CHAD in Toto

CHAD is a very good example of a training program of doctors and nurses and can be adopted by most medical schools – rural and urban-

² Evidence based medicine aims to apply the best available evidence gained from scientific method to clinical decision making.

³ Implementation research is the scientific study of methods to promote uptake of research findings.

All medical schools of the country have service delivery component along with training but most often restrict themselves to tertiary care. A structured and integrated program would not only form a good foundation for training but also enable a community to access healthcare easily. CHAD program is a good example of training and service delivery combination.

The country today faces a severe shortage of skilled health workforce. Adoption of such a program can address this need to some extent whereby students and junior nurses/doctors constitute the major workforce. The permanent/senior employees play the supervisory role and ensure the quality of care is maintained. This constant monitoring and review takes care of the accountability deficit issue common to many community run programs.

A program like CHAD can be replicated even in the urban areas-

The teaching hospitals of the cities can adopt several slums for their community program. Urban primary health care in the public system is not only poor but also resource intensive. People of the city usually visit the tertiary centres for many of their primary care needs. This leads to over congestion of hospitals, increased workload on the hospital employees and decreased quality of care for the patient (both clinical and non-clinical). Doctors, especially specialists, are burdened with common ailments that can be treated by a medical graduate and sometimes a nurse or paramedic. This decreases their time available for patients truly needing their attention and also sometimes their research activities.

Integrated care with a proper referral system will improve the overall delivery of health services and is the need of the hour. At the same time, adopting socio-development activities would empower the communities to reduce poverty and improve overall development of the individuals.

However, CHAD cannot be replicated in Toto by small organizations⁴. The constraints being-

CHAD is a part of the integrated system of care provided by CMC. Replication of only the Community Health Department would be meaningless unless it is supported by a tertiary centre or has a built in effective referral system for accessing such care.

- This is due firstly to the fact that CHAD by itself is not financially sustainable and employs highly skilled and resource intensive staff. This is typical of many primary care organizations working in rural areas of the country, which are largely funded by grants and most of their programs are donor driven.
- Secondly, an important part of the program not easily acceptable to many organizations would be the shift from a bio-medical model to a socio-epidemiological model, that takes into account the context of the people's lives and what they want from it.
- Thirdly, being attached to, and closely integrated with, a tertiary care hospital which places a premium on caring for the marginalized, gives CHAD access to a range of non-

⁴ Standalone hospitals, NGOs having only service delivery and with minimum resources at disposal

financial resources and support that few other primary/secondary care organizations can hope for. Among other benefits, these help attract and retain experienced and dedicated staff.

Replicable components of CHAD

Smaller organizations can however adopt certain components from CHAD such as-

Use of community health worker

One can safely say that community health workers of CMC have been the role models for development of this cadre in other parts of the country. They set an example of how semi-literate women of a village can be trained to deliver preventive services and health education. Many components of the program have been replicated in part at national and local level. The current ASHA program is an amalgamation of PTCHW program and other community health workers profiles of various organizations working at grass-root level. The experiences of CHAD with community health workers can also benefit community programs of other developing countries.

Continuous documentation of data

The data collection of diseases and socio-economic status of people is a practice that can be adopted by many organizations. The data collection and analysis helps in research and in improving the program. It also helps in anticipating the needs of the community and in being proactive as providers.

Peripheral Clinics

The peripheral clinics of CHAD are holistic in nature. All aspects of primary health care are included – promotion, prevention, curative and rehabilitative. These clinics, if adopted by other organizations, could run for a full day with regular home visits by community health aides. With use of technology – telemedicine or mobile health, the presence of a doctor for a continuous stretch of time can also be minimized. Alternatively, nurses could be employed to diagnose patients and provide some curative services. This is possible if the doctor is accessible to the nurse as and when required.

Benefits to a public program

The government health system of India could benefit from studying the best practices for reinforcing their rural health programs. The points noteworthy in the CHAD program are accountability measures and community engagement. The referral system, constant supervision, the support system for the team, data collection and analysis and continuous dialogue with the community will improve program efficiency.

Conclusion

A remarkable aspect about CMC is that its values and vision have remained unchanged with time. The passion and commitment of the employees of CMC is still palpable at all levels of care.

CMC's journey to its current status has been long and challenging starting from the early roadside clinics to the developed community health structure it has today. CMC as an organization is self-funded and the tertiary care supports most of the primary and secondary care. In the absence of this tertiary arm, it would be difficult to sustain the rest of the activities. This approach is not only holistic but also realistic and enables CMC to continue the pursuit of its academic excellence while being firmly grounded to reality.

The CHAD program may be difficult to replicate but it shows what is possible, and what a well-resourced, established programmed with a record of excellence can achieve. The combination of services and training along with sound research keeping in context the needs of the community can go a long way in improving the health status of a nation.

Disclaimer

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