HIV/AIDS Rural Education in Central Mozambique

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ABSTRACT

The Catholic University of Mozambique (UCM), located in central Mozambique, and West Virginia University (WVU), Morgantown, WV, USA have established a partnership for development of rural health care and education in Mozambique. Other medical schools in the USA now participate in this project. The Catholic University of Mozambique (UCM) has established an educational pipeline in central Mozambique. Training of teachers must be accomplished so that there are increased numbers of students graduating from high school that can go on to higher education. UCM can then provide health education programs to produce a health workforce needed to care for HIV/AIDS patients. In 2003, UCM officially created the Centro de Ensino a Distancia (CED) i.e. Distance Learning Centre. The great majority of its students are non-certified teachers working in rural areas of central and northern Mozambique. Currently the centre has 700 students studying for a Bachelor or Bachelors with Honors degree in the field of Education. Launching distance education in this environment has been difficult. Experience has shown that lack of interaction with faculty and the feeling of remoteness by the students hampers distance learning success rate. The plan (already in motion) is to move from (print-based) distance education to e-education. The cornerstone of e-education is becoming a network of community outreach centres, based at the catholic missions affiliated with UCM. These centres will have technological communications capabilities to run distance courses, and also serve as the place to exchange technical information for health workers and members of the community.

The HIV/AIDS clinic on the UCM campus in Beira has been established to provide training of students for HIV/AIDS treatment of patients. The establishment of community outreach centres in the central and northern regions of the Mozambique is underway, and the first rural HIV/AIDS clinic in a remote area of Sofala Province is operational.

BACKGROUND: Parternrship between WVU and UCM

West Virginia University has established a UCM/ WVU partnership for rural health education in Mozambique. The partnership was established because of common goals the Universities share. West Virginia University (WVU), located in a rural mountainous state in the USA, has developed a rural health care and education program for the entire population of the state, not just for people who live in cities. This program was developed because of the mountainous terrain, lack of roads, and absence of medical centres in rural areas. A great effort was made to build rural health care centres. Figure 1 shows the WV Rural Health Education Partnerships (http://www.wvrhep.org) established to extend health education learning to students and health providers in West Virginia at local health clinics all over the state.

UCM and WVU are interested in international cooperation, the sharing of educational expertise and resources, and new partnerships for technology–enhanced education. The UCM School of Medicine collaborated with the WVU School of Medicine through a USAID grant -Partnership for Rural Health Education in Mozambique. This seed grant provided $100,000 and led to a larger NIH grant and other collaborations.

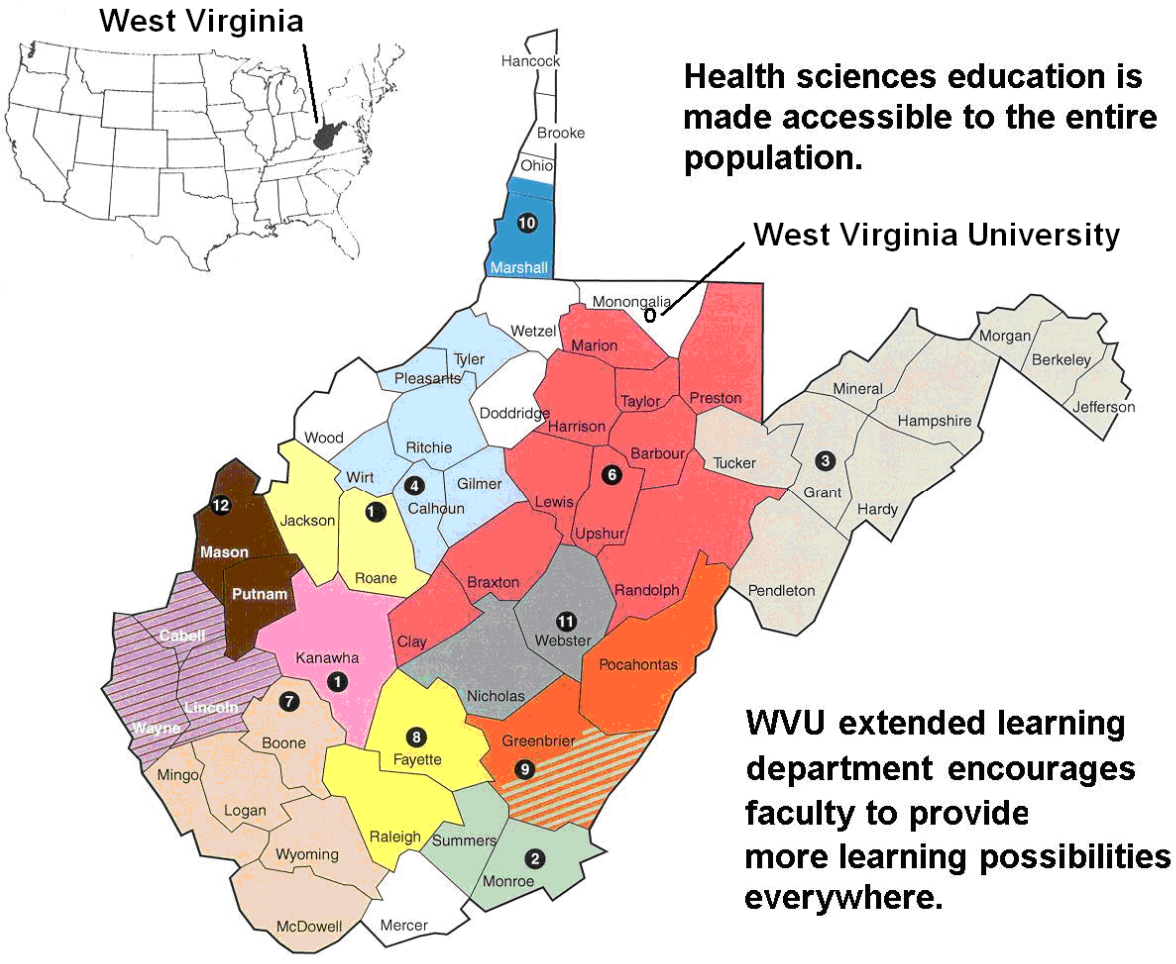

Figure 1. West Virginia Rural Health Education Partnership. Although the University is in the far north, rural health clinic sites (numbered) are located all over the state.

In order to have a health work force for the WV rural clinics, an educational pipeline (Figure 2) was developed. Recruitment of potential health workers begins with summer programs for middle school students throughout the state. The students are encourages to consider paramedical, medical, dental programs for their educational path. When they are in college, student rotations to the rural clinics are mandated in all programs. They go to underserved communities, are expected to do community service during their rotation, and community –based research in addition to clinical training.

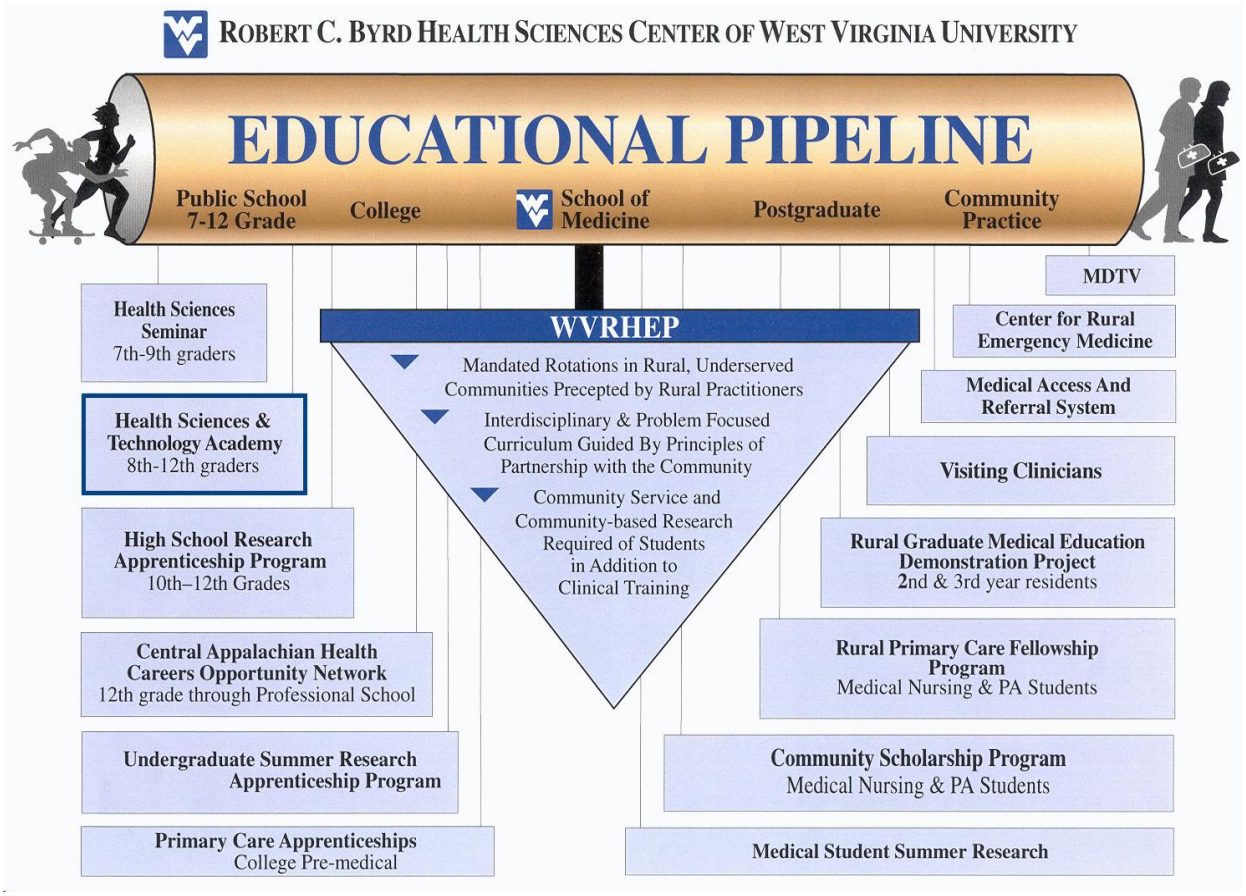

Figure 2. A great effort is made to extend health education to students and health providers all over the state.

The Catholic University of Mozambique (UCM) shares the same challenges of providing health education programs to the central region of Mozambique, and is establishing an educational pipeline. Major deficiencies are: passable roads, communication, and basic infrastructure such as running water, electricity grid or telephones. Overcoming these hardships, UCM medical students are expected to rotate through the rural clinics, and 6th year students spend 4 weeks in a rural area with a local rural doctor as preceptor.

UCM is a private not-for-profit university, which was established as part of the Peace Accords of 1992, after a long period of colonial and civil war in which the infrastructure of the region was almost totally destroyed. Schools, health posts and clinics are now under reconstruction by the government and non government institutions, including the Catholic Church. The decision was made to establish the six campuses of the university at different locations in order to respond to a great demand for education in the central and northern regions of the country (Fig. 3). The emergence of UCM as a significant player in the country's recovery efforts is due to the decentralization of the institutions of higher learning. Each campus will provide a centre for on campus and distance learning in the surrounding areas. The University officially began in August 1996, establishing the Faculty of Law in Nampula and the Faculty of Economics and Management in Beira. In 1998, UCM opened the Faculty of Education in Nampula and in January 1999, the Faculty of Agriculture in Cuamba.

In August 2000, UCM established the Faculty of Medicine in Beira. The newest Faculty of Tourism and Informatics is located at Pemba. The UCM Faculty of Medicine has accepted responsibility for premedical and medical student education in central Mozambique. The school uses a problem based learning (PBL) curriculum which is supported by the Maastricht University in the Netherlands. The focus is to produce physicians who will be competent to work in rural areas, not just in one to one care, but in upgrading the training of the health workers, establishing community health and education programs.

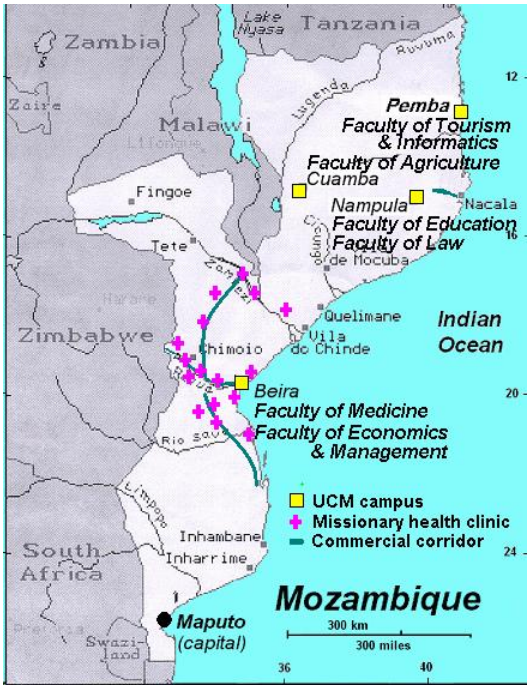

Figure 3. Catholic University of Mozambique campuses (yellow squares) and mission sites (red crosses) located along commercial corridors (green roads) in the central and northern region.

In Mozambique, the most important causes of morbidity and mortality continue to be the transmittable diseases such as malaria, parasites, tuberculosis, acute respiratory infections, and diarrhea etc. The HIV/AIDS pandemic, (which is a risk factor for economic growth and national survival in the long term), is rapidly expanding and constitutes an enormous challenge to a health system already overburdened with diseases. The first AIDS case reported in Mozambique was in 1986, and in 1987 the adult HIV prevalence was 3.3% (ranging from 1.8 to 5.0 percent) in the studied areas. Today's official HIV prevalence rate in Mozambique is 16.2%, an increase from 14.6% in 2004, but sentinel data show that the prevalence rates are not homogeneous all over the country. The central region, the geographic focus of this paper, is the hardest hit, and although the official rate in this region is 26.5%, the seroprevalence in Beira is 34% (Surveillance Data, MOZ MoH, 2004). Today in Mozambique there are 750 new infections daily, and about 350 come from the central region. Today it is known that HIV/AIDS poses a "triple threat" for the health workforce. First, there is an increased workload and skill demands of the health workers due to AIDS. In some countries, 50%–70% of hospital patients are HIV-positive. Second, health workers are falling ill and dying in many countries. Caring for the sick is not only demanding but risky. It is expected that health systems in Africa will lose around 20% of their workforce due to death. Third, health workers must cope with the psychosocial stress of offering palliative care to increasing numbers of dying patients along with caring for their own sick family and relatives. These factors lead to increased low morale, burnout and absenteeism. In addition, fear, stigma and discrimination affect motivation and performance.

To face these health problems, there is a chronic shortage of adequate healthcare work force. In developing countries, the ability to respond to a full-blown AIDS epidemic, tuberculosis, and malaria with a fragile health system —not to mention to meet the primary healthcare needs of the general population—is severely compromised by this shortage. The World Health Organization's World Health Report 2006: Working Together

for Health (http://www.who.int/whr/en/) highlights the gravity of the situation. Mozambique is not an exception. The World Health Organization estimates that to achieve the Millennium Development Goals (MDGs), health systems need at least 2.5 health workers per 1,000 people. In Mozambique, there are 514 doctors, 3,954 nurses, and 2,229 midwives; per 1,000 people there are 0.36 full-time equivalents of health workers (2004 figures). Mozambique's health workforce would have to be multiplied by seven to achieve the MDGs.

To roll out antiretroviral therapy (ART) across the country, Mozambique estimates that it would need eight health workers per 1,000 patients receiving ART: one to two physicians, two to seven nurses, one to three pharmacy staff, and a wide range of counsellors and treatment supporters. These findings apply to ART programmes in their start-up phase, which require an intensive follow-up, but even if a mature ART programme could be effective with only four health workers per 1,000 patients, the number of additional health workers required remains a huge challenge, knowing that 199,000 people in Mozambique needed ART by the end of 2005 (http://www.africafocus.org/docs07/gf0705.php).

The increase of the health care workforce to address this shortage depends on an increase in the number of candidates, i.e. those who have graduated from secondary schools with good pre-university qualifications. But there is also a deficit in the supply of high school graduates. The number of students registered in the 12th grade in 2000 throughout the country, including repeaters, is only 4,161. If this figure were to remain constant, it would take 10 years to reach the current number of students at the University of Abidjan, or nearly twenty years before it reached the proportionate number of students at the University of Botswana. This clearly illustrates the effort needed. An enormous effort is required in order to adequately increase access to and graduation rates in, the secondary education system in order to meet the demands of the market, the training of teachers and health workers, and the expansion of higher education.

However, access to secondary education is difficult, especially for those living in the rural areas. At the moment, 75% of the secondary education available in Sofala province (central region) in rural areas is offered in the catholic secondary mission schools, which has an average one mission per district.

This situation leads to an inability to retain personnel in the rural areas in the health sector. The turn over is usually high with the staff asking to be moved to the cities where they can pursue secondary education or "specialized" courses in the health area to advance their professional careers. On the other hand, they claim that their technical skills are not updated because there is no continuing education program reaching them in the districts. As a consequence, staff feels often "forgotten" and demotivated. The government shows a bias towards the cities and statistics show that the Ministry of Health (MoH) understaffs the geographic area north of Zambezi river with a strong urban bias: 54% of the skilled workforce are posted to urban health facilities; 85% of university-level and 68% of mid-level cadres work in cities.

(http://www.who.int/hac/techguid/tools/disrupted_sectors/module_10/en/index21.html)

STRATEGY: Funding for HIV/AIDS Rural Education

Accessing funds for local civil society organizations in the developing world, either from bilateral or multilateral donors in-the-country is very hard. Therefore to accomplish the goal of training and retraining staff, we have to build these activities into all funded projects.

Using an initial grant through a USAID grant called "Partnership for Rural Health Education in Mozambique", the UCM Faculty of Medicine successfully collaborated with the WVU School of Medicine in laying out the framework for a rural education program among the medical students and others health care workers. This seed grant provided $100,000 and led to a larger NIH grant and collaborations with the University of Pittsburgh and other universities.

Due to the difficulty of funding, the main strategy was to apply for research grants, including in the grant, resources to build needed infrastructure, not only for care and research, but also for training.

From Sept 1 2003 until August 31 2005, the project designated **AWARE** (HIV/**A**IDS Control **W**ithin **A** **R**esearch **E**ndeavor) in a rural area (Mangunde Mission, District of Chibabava) was implemented by the Catholic University of Mozambique, in collaboration with the University of Pittsburgh, UCLA, West Virginia University and Fundação

Instituto Oswaldo Cruz (FIOCRUZ) from Brazil. The intention is to go beyond community awareness to strengthen the resolve of the community to face the problem of AIDS. The cornerstone of all the activities would be 1) rural health clinics and 2) at the community level, a vast network of volunteers to deliver prevention activities and provide home care to the patients. As result of these efforts, a pilot rural HIV clinic has been completed in Mangunde, a remote area of Sofala Province where there is no electricity or infrastructure. This is a huge undertaking as distances are enormous, the roads are poor and travel to these rural areas is difficult. At the time of establishment, this was the first and the only rural HIV clinic in Mozambique, and it was featured in an article in SLATE magazine (http://www.slate.com/id/2119853/).

The project had three major objectives: (1) long-term strategic planning for HIV care and research, (2) expanding the use of Geographic Information System (GIS) for HIV control and research, to become an important tool for understanding and tracking the HIV epidemic in Mozambique, (3) determination of HIV prevalence rates (and determination of HIV clades) in central Mozambique (Sofala Province).

Mangunde is 303 km away from the city of Beira, in a rural area around 4 ½ hours driving time over roads that are marginal in many sections. It may take up to 5 hours to reach Mangunde Mission during the rainy season. There is no running water or power supply from the grid. Falciparum malaria is endemic and tuberculosis is quite common. The rationale was to design and implement a pilot HIV treatment program meeting US National Institutes of Health (NIH) standards, so we could gain experience, systematize it and therefore make it easier to scale up, once the methodology was established. Being far away from other resources was also a contributing factor in selecting this site, because we wanted to determine how feasible it would be to perform laboratory monitoring in remote, poorly accessible sites, specifically with regard to transportation of blood samples and consequent issues such as hemolysis.

Because of the need for long-term treatment of HIV/AIDS and the constantly increasing size of a patient population with multiple needs, it became obvious that new, adequate space was vital. It was decided to build a dedicated structure for an HIV/AIDS clinic able to handle around 800 patients and cover all main programs: voluntary counseling and testing, youth friendly service, ARV therapy and MTCT program. It should also be able to deal with the lack of running water, no electricity from the grid, no phones, and being 303 km away from Beira city, where the molecular biology lab is located. This is the architect's rendition of the floor plan for the Mangunde Mission Day Hospital for HIV/AIDS patients (Fig.4A) and later photos of the Mangunde Hospital (Fig.4B). This project created basic infrastructure in a rural area to provide ART to about 800 patients, C&T, pMTCT and basic infrastructure for training new doctors and health workers. Also the foundation has been established for communication with the School of Medicine in Beira via the satellite dish that provides good interconnectivity (VSAT). Clean solar energy is able to run 2 servers and 5 computers. A borehole for water has been established. The requirements for a rural education/training program are in place. In other words this project has created a rural health clinic and a community outreach centre (COC) for health rural education/e-education. As funding is available, more adds-in will be done such as accommodation for permanent staff and permanent offices.

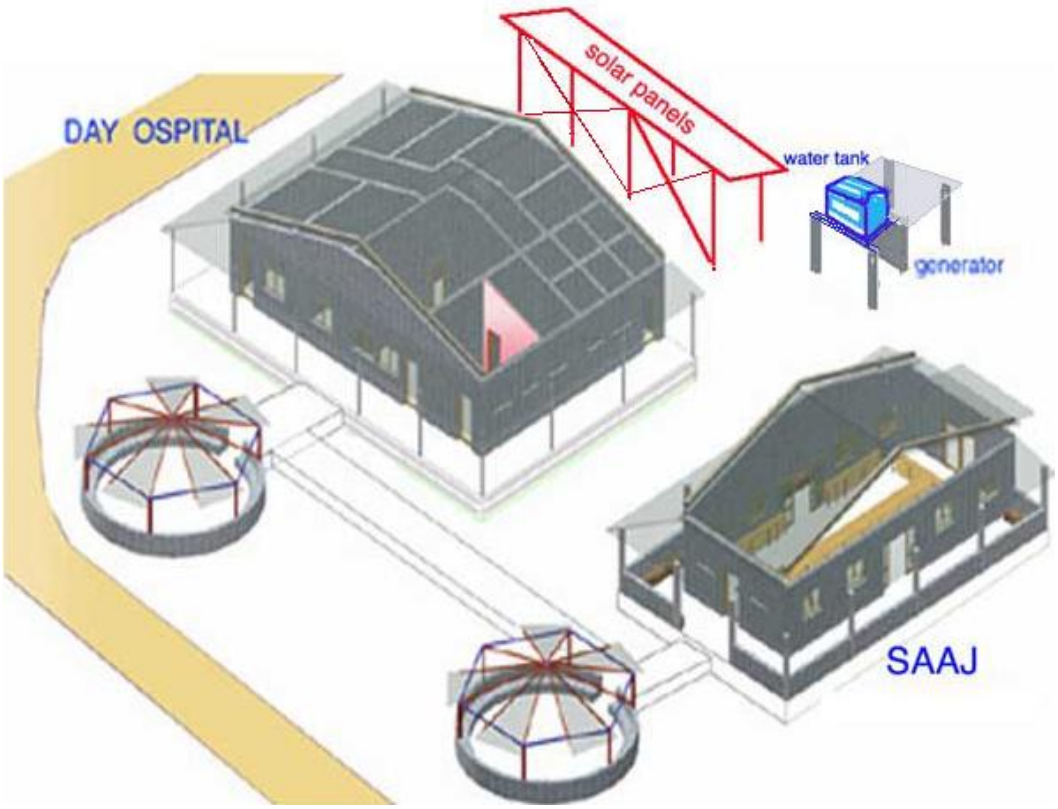

Figure 4A. Architect's sketch of Mangunde rural HIV clinic.

Figure 4B. Photos of Mangunde rural HIV clinic. Solar panels, a generator, water tanks, satellite dish have made it possible to establish the rural clinic in this remote area of Sofala Province.

This rural settings was followed by an urban setting, through the Twinning Partnership Center (from 2005-2007), funded by HRSA/CDC (US Health Resources and Services Administration/Center for Disease Control). The twinning partnership (http://www.twinningagainstaids.org/?module=potential_partners&section_i is funded by HRSA through an American NGO called AIHA (American International Health Alliance). It is done in collaboration with University of Pittsburgh With this funding, a similar structure for urban care and training for HIV/AIDS was recently completed as shown in Fig 5.

Although there is a small equipped outpatient clinic at the UCM Faculty of Medicine that enables the third /fourth years medical students to learn to take clinical histories and do physical examinations, recently, the on campus teaching capabilities increased enormously, with the renovation of a former washing house transformed into an HIV training centre/clinic. This extension includes multi-purpose conference room/ electronic classroom/ distance health education studio, health technology lab, and telemedicine centre. (Fig.5)

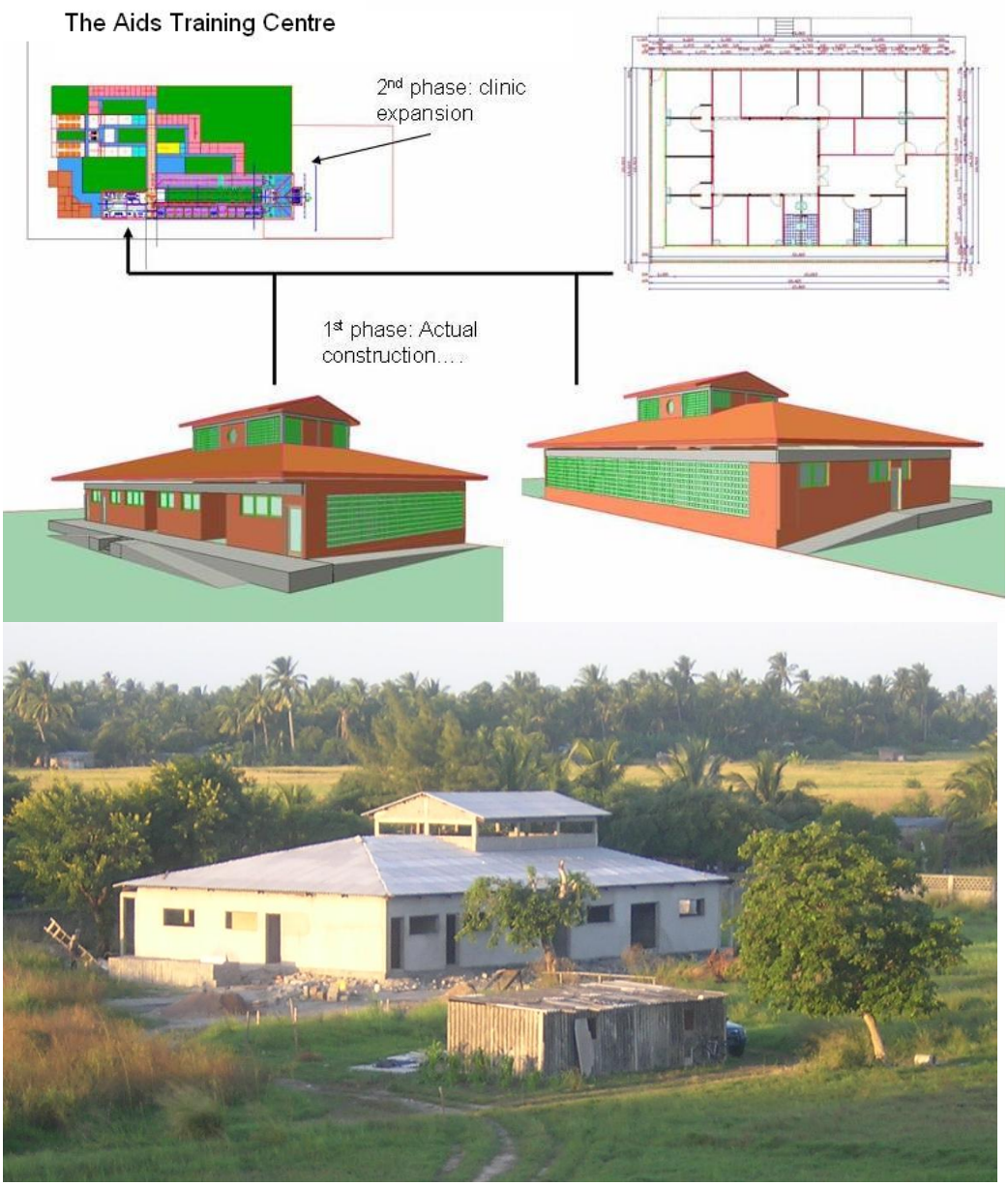

Figure 5. Architect's sketch of Aids training centre (top) and photo during construction (bottom), now completed, located on the UCM medical campus in Beira.

In building this infrastructure, the School of Medicine is not only providing care to the most disadvantaged, but also improving the quality of teaching. Students learn in protected, safe, adequate environment, and at the same time, the School of medicine serves as a launching pad to prepare the medical (and paramedical) students for delivering health care in rural areas.

THE FUTURE: Rural Physician Continuing Education Program

The first class of 16 physicians graduated from UCM School of Medicine on August 25th, 2007 and have started to practice, scattered in the country. UCM has a direct obligation to offer continuing education programs to all of those trained by UCM, and establish a distance medical education/ continuing medical education program for all health care workers, i.e., physicians, nurses and other health workers in the rural areas.

As more graduates are coming through the educational pipeline (next year 30 new graduates are expected), UCM doctors committed to the practice of family medicine in rural areas, will face harsh realities of life in rural Mozambique. These conditions may be more that they and their families are prepared to handle. In fact, besides addressing the continuing education requirements in a rural physician practice, often it is necessary to address a need for adequate living conditions: housing, water, telephone, computer and Internet connection. The overall goal is high doctor-retention rates at the rural hospitals and clinics.

A continuing education program for rural physicians faces a lot of challenges. First are the bad condition of roads, the inaccessibility especially during the rainy season, the sense of remoteness and the sense of incapacity that weighs on a rural physician in these circumstances. The strategy to implement the project will be setting up community outreach centres (COC) in the communities, probably one per mission (there are 16 existing mission sites (Fig.3) in the region). Extension work from these sites could serve around 1.5 million people. Education on HIV/AIDS will consist of a hands on clinical practice space (the “clinic”), based in each district, with full time, direct connect, two-way Satellite Internet capability, consisting of a satellite upload-download dish, transmit and receive modems, and router. This provides technological communications capabilities to run distance e-courses, exchange technical information and update the skills and knowledge of health workers and members of the community. This will facilitate for UCM, the establishment of a comprehensive continuing e-education program for UCM trained physicians and health workers in central and northern Mozambique.