HIV in Cuba: Prevention of Mother-to-Child Transmission

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HIV in Cuba:
Prevention of Mother-to-Child Transmission
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EDITORIAL

Breaking the Chain of Mother-to-Child Transmission

Last year alone, 700,000 children under the age of 15 were newly infected with HIV.[1] That means that between every sunrise and sunset, nearly 1,800 children contracted HIV – the overwhelming majority in the Global South. That same day, and every single one since, 1,400 died of an AIDS-related illness.[2] As you read this, children continue to suffer and die.

This is not only reprehensible, it is also reversible.

The key link in this deadly chain is the mother: more women of childbearing age are now living with HIV than ever before,[3] and over 90% of all HIV+ children contract the virus through mother-to-child transmission (MTCT), either during pregnancy, labor, delivery or breastfeeding. Clearly, preventing infections among prospective mothers is the single simplest solution to halting MTCT and depends upon a variety of stakeholders including public health authorities, international funding agencies, educational institutions, spiritual leaders, families and the women themselves.

Access to education has proven an especially powerful weapon against HIV – what the World Bank refers to as the ‘window of hope.’ Indeed, that window is wide open, with ‘studies around the globe show[ing] that HIV infection rates are at least twice as high among young people who do not finish primary school as those that do.’[4] Providing universal primary education and eliminating gender disparity in primary and secondary education – two of the UN Millennium Development Goals – could have far reaching impact on global infection rates for young women and girls.

Nevertheless, perinatal and postpartum infections for the children of HIV+ women are not inevitable, as evidenced by low mother-to-child transmission rates in the industrialized world (of the 510,000 children under the age of 15 who died last year of AIDS-related illnesses, fewer than 300 were in high income countries, where MTCT only occurs in 1% to 2% of cases).[5] This has been achieved through early detection, indicating elective caesarean section delivery, highly active antiretroviral treatment (HAART) for mothers, prophylaxis for them and/or their babies and alternatives to breastfeeding.

Unfortunately, these strategies are not always practical in resource-scarce settings where public health systems may not have the infrastructure, human resources or technology required to lower MTCT rates. In these scenarios, viral load tests requiring specialized equipment are prohibitively expensive, proper surgery facilities for caesareans are often not available and breastfeeding substitutes - which often depend on clean drinking water – may not be feasible. Importantly, antiretrovirals (ARVs) are frequently scarce or are too costly; and rationing of these therapies has become the focus of global debate. Without any of these preventative measures, 15-50% of children born to seropositive mothers will contract HIV. Among HIV+ mothers that breastfeed, this percentage increases to 20-45%.[6]

Since 1986, Cuba has pursued a comprehensive national program to prevent and detect MTCT and treat its consequences in children (see Spotlight: National Program for Detecting & Treating Mother-to-Child Transmission of HIV and Professional Literature: Vertical Transmission in Cuba). The Cuban strategy, based on a multi-disciplinary and inter-sectorial approach that combines an emphasis on prevention and early detection with intervention, has kept infection rates low: since 1986 through October 2005, 12% of children born to seropositive mothers have been infected with HIV, the lowest rate in the Caribbean. Providing 100% HAART coverage to those requiring it using locally-manufactured ARVs has been integral to achieving this low rate.

And yet, as Dr. Jorge Pérez, Director of the Pedro Kourí Institute of Tropical Medicine Hospital so eloquently put it: if it’s your child that’s diagnosed with HIV it doesn’t matter how low the national rate is. For you it’s 100% (see Interview: Dr. Jorge Pérez). He has shared that pain with parents of seropositive children over two decades of working with people living with HIV/AIDS (PLWHA) in Cuba, and we are pleased to present for the first time in print an excerpt entitled The First Children from his forthcoming book Confesiones a un Médico.

Nevertheless, infection rates could be lower still. To achieve this requires nimble, innovative responses, particularly focused on education and prevention (see Interview: Mariela Castro and Headline: HIV/AIDS Education Across Cuba). To this end, in 2000, the National Center for Prevention of STIs and HIV/AIDS launched the Women’s AIDS Prevention Project, with the aim of targeting women - who are 20% of HIV+ Cubans. This includes training seropositive women as health promoters, bringing the message to where young women congregate (like in Project Beauty Salon, where hairdressers are trained as promoters of HIV prevention), and emphasizing gender-specific approaches (Professional Literature: Gender, Vulnerability and their Relation to HIV/AIDS).

Our coverage is especially robust on the international front this issue with a pair of articles resulting from our correspondent’s visit to Cuban hospitals in Pakistan, where over 2,300 Cuban medical professionals have been volunteering in quake-affected areas (Top Story: Cuban Doctors Offering Massive Relief in Pakistan and International Cooperation Report: Touring Cuban Field Hospitals in Post-Quake Pakistan).

In The Fight Against AIDS in Cuba and Haiti, Drs. Aracuhi Castro and Paul Farmer advance the argument against market-driven public health resource allocation that dooms so many HIV+ children in the Global South. We are reminded that until stakeholders find the will to make available comprehensive prevention and testing programs, universal primary education, potable drinking water, HAART and pediatric-appropriate medicines, 1,400 children a day will continue to perish. A loss neither their mothers nor the world should have to bear.

The Editors

Notes & References

3. In 2005, 17.5 million women between the ages of 15 and 49 were living with HIV (46% of the global total), a million more than two years prior (UNAIDS, AIDS Epidemic Update, December 2005). Disturbingly, HIV infection rates for women 15-24 years old is increasing in every region across the globe – in Sub-Saharan Africa and the Caribbean, 3 out of 4 in this HIV+ age group are women. (The Global Coalition on Women & AIDS, Educate Girls, Fight AIDS, 2005).
SPOTLIGHT

National Program for Detecting & Treating Mother-to-Child Transmission of HIV

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INTRODUCTION

Cuba’s health system provides free counseling and prevention coverage to all women diagnosed with HIV, one reason why so few infants have been infected by their mothers: since 1986 and through October 2005, 26 cases of such vertical transmission have been recorded out of 214 live births to HIV+ women (12%). Additionally, antiretroviral treatments are made available to both seropositive pregnant women and their babies, safe delivery practices are indicated, breastfeeding substitutes are advised along with meticulous follow-up and nutritional dietary supplements.

By comparison, 35% of women worldwide infect their children when no preventive measures are taken, with only 8.7% of HIV- mothers-to-be worldwide receiving prevention coverage, according to UNICEF (2004).

From HIV testing for all pregnant women to exact an antiretroviral dosages for HIV+ infants, the following outlines the guidelines offered by Cuba’s national program for preventing, detecting and treating mother-to-child transmission of the human immunodeficiency virus in Cuba, as well as the national follow-up program for children born to seropositive mothers.

VERTICAL TRANSMISSION

Disease-causing agents transmitted from mother to baby during pregnancy or the perinatal period (i.e. vertically-transmitted pathogens) account for a variety of infant health problems. This has prompted the establishment of health prevention and control programs worldwide, including vaccination campaigns, health education projects, and early detection of infections, congenital ones, as well during pregnancy. Additionally, Cuba has created a nationwide registry of cases, and performs routine serological screenings of pregnant women for the detection of antibodies and/or antigens of specific pathogens.

Major Vertically-Transmitted Infectious Agents

- **Human cytomegalovirus (CMV) and Toxoplasma gondii:** Fetal infection can occur during the acute phase of the mother’s primary infection, when the virus or the parasite is in her bloodstream. In the case of CMV, whose latency and recurrence mechanisms are only partially known, congenital and neonatal infection associated with recurrent infection is common. However, it seldom has an impact on neonate health.

- **Hepatitis B (HBV), Human Immunodeficiency Virus (HIV) and Treponema pallidum:** These persistent or chronic infections can pass from mother to fetus or newborn, through contact with the mother’s blood or bodily fluids.

- **Herpes simplex virus (HSV), in particular HSV type 2, HSV-2:** This virus causes a recurrent chronic infection of the sacral sensory nerve ganglia. It can pass from mother to baby during childbirth through contact with viruses present in the mother’s cervical and vaginal herpetic lesions, if a few days before labor the viruses lying dormant in the sensory nerve ganglia of the nearby nerves have been reactivated, causing a recurrent episode of herpes infection.

Each of these three modes of transmission calls for specific prevention strategies and serologic screening criteria.

Infections included in the first group above require identification of women susceptible to primary infection (women seronegative for specific antibodies) and for measures to prevent them from coming into contact with these infectious agents during pregnancy.

Infections in the second group require using specific serological markers to detect those women with persistent or chronic infections. The necessary measures to prevent transmission, or palliate the effects of newborn infection, are also specific to each infectious agent.

To prevent infections in the third group, women with recurrent infections presenting transmission risk must be identified, including the timing and location of lesions. In the case of HSV-2, it should be ascertained whether viruses are present in the cervix and vagina in the days prior to delivery since in this case, control cannot be carried out through serological studies.

In the case of CMV, it isn’t yet possible to define an effective prevention strategy. It is important to emphasize that the detection of antibodies against these viruses is of no use for the prevention of recurrent infections. Only the detection of specific antibodies against HSV-2 could help identify those women in whom an effective control of the viral discharge through their genitalia can be achieved. At present, the serologic techniques available do not allow this.

Serologic Screening Programs for Pregnant Women

The following infectious agents are recommended for inclusion in the serologic screening programs for all pregnant women (except for rubella which has been eradicated, these tests are standard in Cuba):

- Rubella virus
- Toxoplasma gondii
- HBV
- Treponema pallidum
- HIV
First Visit to the Obstetrician/Family Doctor

The patient’s physical examination and medical history should search for:

- Recent febrile disease or exanthema
- Acute or chronic hepatitis
- Genital herpes
- Multiple genital infections
- Recent close contact with people with exanthema
- Professional contact with children
- Previous rubella and hepatitis B vaccination
- Previous checks for antibodies against the rubella virus or Toxoplasma gondii
- High risk behavior for HIV infection

Ensure that there is no:

- Exanthema, with or without fever
- Adenopathy (in any region of the body)
- Genital herpes lesions
- Syphilitate lesions (any stage)

The following tests should be performed:

- Qualitative determination of IgG antibodies against the rubella virus and Toxoplasma gondii, to identify seronegative women.
- Qualitative determination of hepatitis B surface antigen (HbsAg).
- Qualitative determination of antibodies against non-treponemal antigens related to Treponema pallidum.
- Qualitative determination of antibodies against HIV where high risk behavior for HIV infection is known or suspected.

Reproductive Health Advice

A health care professional’s main responsibility to pregnant women found to have HIV is to offer emotional and medical support. These women have several options: they can continue their pregnancy without medication; continue their pregnancy with antiretroviral drugs such as zidovudine (AZT); or they can interrupt pregnancy even at labor. The treatment regime most commonly used is the ACTG 076 protocol.

Prevention of Mother-to-Child Transmission of HIV

Research shows several factors associated with a higher risk of mother-to-child transmission of HIV.

Maternal factors:

- High viral load
- Serum presence of the p24 antigen (a component of HIV)
- Some STI (herpes, syphilis, chancroid)
- Lack of access to antiretroviral drugs such as zidovudine (AZT)

Obstetric factors:

- Premature labor (before the 37th week of pregnancy)
- Premature membrane rupture, the risk being higher when the membrane has been ruptured for over four hours
- Inflammation of placental membranes
- Use of instruments during labor or at childbirth

Postpartum factors:

- Breastfeeding
- Duration of breastfeeding
- Breast disorders such as cracked, bleeding nipples

Antiretroviral Therapy

In women who have not taken antiretroviral drugs, treatment can be initiated at any time after the 14th week of pregnancy, even at labor. The treatment regime most commonly used is the ACTG 076 protocol.

Zidovudine (AZT) perinatal transmission prophylaxis regimen - ACTG 076 protocol:

- Treatment during pregnancy: treatment with AZT should be initiated after the 14th week of pregnancy and continued until labor. Three 100 mg capsules (300 mg) every 12 hours should be used.
- Treatment during labor: treatment should be started using a continuous IV infusion of AZT at an initial dose of 2 mg/kg diluted in 5% dextrose to be administered over one hour, followed by a maintenance dose of 1 mg/kg in a continuous infusion until delivery. IV AZT comes in 200-mg vials; therefore, 4-5 vials may be required.
- Newborn treatment: treatment should be initiated within eight to 12 hours after birth. AZT syrup orally, 2 mg/kg, administered every six hours through the first six weeks. Alternatively, IV AZT at 1.5 mg/kg every six hours can be used in those who cannot tolerate oral treatment.

HIV-infected pregnant women without prior antiretroviral therapy:

- HIV-positive pregnant women should be followed up for CD4+ count and viral load in the same way as any other adult.
- They must be provided all the information available regarding the benefits and risks of antiretroviral therapy. Treatment should be offered after the 14th week of pregnancy.
- If the status of the mother’s health requires she start combination antiretroviral therapy, this should be offered.
- Zidovudine should be one of the drugs in any combination used. The whole treatment regime must be completed, including treatment during labor and neonate treatment.
- For those whom antiretroviral treatment may be optional and/or who want to limit their exposure to these drugs, at least monotherapy with zidovudine should be offered. In these cases the risk of developing resistance to the drugs is counterbalanced by the resulting fall in the viral replication rate.
HIV-infected women already receiving antiretroviral therapy who become pregnant:

- Patients found to be pregnant after the first trimester should continue their antiretroviral therapy. They should be provided with information about the benefits and risks involved.
- If the patient is found to be pregnant before the 14th week, she should be informed of the potential teratogenic effects of the treatment - which have yet to be confirmed.
- If the patient decides to stop treatment, she should stop taking all antiretrovirals and restart treatment after the 14th week of pregnancy.

HIV-infected women in labor who have had no prior therapy:

- AZT should be given to the neonate for the first six weeks after birth.
- The status of the woman's immune system and viral load should be determined postpartum in order to discuss initiating treatment.

Infants born to mothers who have received no antiretroviral therapy during pregnancy or labor:

- Six weeks of AZT for the newborn child should be discussed with the mother and offered. Treatment should ideally start within 14 to 24 hours after birth.
- Treatment initiated more than 14 days after birth is very unlikely to be successful.

Mode of Delivery

This should be determined based on the woman's obstetric conditions and her viral load at the time of delivery. Various treatment regimes should be considered based on viral load results.

Emergency Caesarean Delivery: this is performed in response to an obstetric issue and has no protective effect. On the contrary, it increases the risk of vertical transmission (VT).

Elective Caesarean Delivery: this is performed without labor and with intact membranes. This should not be performed when the viral load is fewer than 1,000 copies, as it will have no beneficial effect on VT. When the viral load is higher than 1,000 copies, or unknown, an elective caesarean section should be scheduled for the 38th week of pregnancy. The risk of complications with this mode of delivery for HIV-negative women is at least twice as high as for normal delivery.

The final decision should be made based on the woman's obstetric conditions, her health status and viral load, and the risks involved in conducting this procedure. Furthermore, an elective caesarean section should always be performed under appropriate sanitary conditions so as to significantly reduce the risks of maternal and perinatal morbidity and mortality. The availability of the necessary equipment and conditions should be checked before scheduling the delivery. Mothers treated with AZT to prevent VT should not continue taking this drug postpartum, and should be referred to their local HIV/AIDS specialists for attention and follow up. Mothers who were on antiretroviral therapy before pregnancy should continue treatment as per their doctor's instructions.

Various studies are being conducted on the effects of vaginal washes on the prevention of the perinatal transmission of HIV. Cleansing the birth canal with Chlorhexidine at the time of delivery has shown good results in women with and without HIV.

A breast milk substitute should be recommended, avoiding breastfeeding as a possible source of VT.

FOLLOW-UP PROGRAM FOR CHILDREN OF HIV+ MOTHERS

Program Description

The program for prevention and control of VT and its measures (breastfeeding stopped since 1986; delivery by caesarean section since 1989; and AZT prophylaxis since 1997 for all HIV+ pregnant women) are part of the National HIV/AIDS Prevention and Control Program.

In Figure 1, the total number of children born to HIV/AIDS seropositive mothers is shown from January 1, 1986 until October 25, 2005, coupled with prophylactic measures applied in the National HIV/AIDS Prevention and Control Program. Since 1986 there has been a national reference laboratory (LISIDA, according to the acronym in Spanish), just outside Havana, centralizing the following tests for all children of HIV/AIDS seropositive mothers: PCR (HIV polymerase chain reaction) on filter paper 5 days after birth - performed with phenylketonuria test. If PCR is negative, ELISA (enzyme-linked immunosorbent assay), WB (Western-blot), PCR, P-24 ag and ab (antigen and antibodies) tests are carried out at three, nine and 12 months of age.

Figure 1: Number of children born to HIV/AIDS seropositive mothers and prophylactic measures applied by the HIV/AIDS Prevention and Control Program, January 1, 1986 to October 25, 2005

![Graph showing total number of births](Source: Pedro Kourí Institute of Tropical Medicine)
ELISA and WB tests are expected to be positive in a three-month old child, since maternal antibodies can pass through the placenta; but if PCR and P-24 ag are negative, this indicates that the virus did not pass the placental barrier, and the child is probably not infected. At nine months the tests are repeated, when it is frequently observed that the ELISA may be positive or weakly reactive and the WB undefined, because the child is eliminating the maternal antibodies that passed through the placenta. If PCR and P-24 ag are negative, this suggests that the child is not infected.

The ELISA and WB tests are repeated at 18 and 24 months of age to establish a definitive diagnosis. All WB bands should have disappeared and the ELISA should be negative. The child is considered healthy and discharged when two PCRs and two WBs show negative results. The child is then referred to their neighborhood family doctor for well-baby care, as is the case with other non-HIV infected children.

If the PCR performed 15 days after birth is positive, another PCR is rapidly carried out in whole blood. CD4 (T4 lymphocytes) and VL (viral load) are also determined to confirm diagnosis and classify the child according to the 1994 classification by the CDC (Center for Disease Control and Prevention) in Atlanta, which includes children up to 3 years of age. HAART (highly active antiretroviral treatment) is begun, independent of clinical and immunological state, to avoid early viral replication and so that the child’s immune system may develop.

A child may be detected late and show a CD4 count lower than 15% in immunological studies and be clinically asymptomatic, but with a severe opportunistic infection indicating AIDS. The child is reclassified and HAART is started, sometimes even before the results of the new tests are received, since he/she is considered a clinical AIDS case, and the aim is to prevent greater immunological impairment.

All HIV/AIDS children are checked every three months to observe their growth and development; their immunological and nutritional states; and to give them a special diet for life, enriched in proteins, fats and carbohydrates. New options for case management are evaluated according to their development, treatment results and laboratory tests. The algorithm for the follow-up of these children is shown in Appendix 1.

Appendix 1: Follow-up algorithm for children of HIV+ mothers.

Institute of Tropical Medicine pediatric visit

Screening to determine if the child is HIV-infected.

At 15 days PCR on filter paper with phenylketonuria test.
At 3, 9, 12, 18, 24 and 36 months of age: ELISA for HIV 1, WB, PCR, P-24 Ag.

HIV-infected child, asymptomatic. Local health providers notified.

Establish nutritional, clinical and immunological status.

15% CD4 count or less with no clinical symptoms.

Follow-up every 3 months.

SULFAPRIM treatment is begun for PCP prophylaxis. If there is allergy to sulfaprim, use Dapsone or Pentamidine.

CLASSIFICATION

CD4 count lower than 15% or clinical signs and symptoms.

Hospital admission, if required.

HAART treatment.

Non-HIV infected child: 2WBs and 2 PCRs.

Normal well-baby care by local family doctor and nurse.

REFERENCES


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All of the authors are associated with the Pedro Kourí Institute of Tropical Medicine, the national reference center for HIV/AIDS.
These passages are excerpted from the book SIDA: Confesiones a un Médico (AIDS: Confessions to a Doctor) by the physician who more Cuban HIV/AIDS patients call doctor and friend than any other in Cuba. His work as head of the island’s first AIDS sanatorium - where all patients were required to live before Cuba abandoned the policy for ambulatory care in 1993 - and later directing care for AIDS patients at the Pedro Kouri Institute of Tropical Medicine, has brought him in touch with most of the 6,682 who have lived with HIV/AIDS on the island. “I began a diary,” he recalls, “when I first started working with these patients. I finally showed it to some of them, and they encouraged me to go on, write more and eventually it became a book.” The book, edited by Jacqueline Teillagorry Criado, is forthcoming.

“I found they suffered tremendously,” Dr. Pérez told MEDICC Review, “and I had studied medicine to relieve suffering. But I had no idea at first the extent of that suffering or how vulnerable they were. The discrimination many suffered out of others’ ignorance, the fact that they had no cure, that their lives were turned upside down - I really knew very little of all the human conflict surrounding their illness. So I started to write for myself really, to educate myself.”

In Cuba, we have detected few HIV-positive children. It was late in 1985 when we detected the first case of HIV in the country, and began to suspect that there were others that had gone undiagnosed until then because they had remained asymptomatic. We thought we might find children among them.

Nevertheless, it wasn’t until 1989 that we discovered the first child in Cuba who was born seropositive - a little girl already three years old. And it was only then that we were able to study both the mother and the child, reinforcing the importance of epidemiological research in these cases, allowing us to adopt the kind of therapeutic actions that eventually saved her life. Yuniya is now a young woman, about to celebrate her 19th birthday. While she was infected first, hers was the second case to be detected.

From the start, the national HIV/AIDS program contemplated testing pregnant women, in order to take measures to avoid vertical transmission (from mother to child), perinatal transmission (during delivery), or during the first year of life (through breastfeeding). The screening was how we discovered the second child infected, but the first detected, Daimara.

Daimara’s Story

Beginning in 1986, as new seropositive patients were discovered, we began studying their sexual partners. In the middle of that year, we diagnosed Daniel, a young man from Guantánamo Province who had served in Angola. We then examined his wife, Milagros, who was pregnant at the time. Her first results were negative, but follow-up studies showed her to be HIV-positive. Milagros didn’t believe she could be infected: at the time, there were very few cases in general, and she was the only pregnant woman diagnosed with HIV.

At first, interruption of the pregnancy was an option. But later, this possibility was discarded, since she was quite far along, and also because she wanted to have the baby, and thus had decided against abortion.

Milagros, who had the open and honest approach to life shared by many people from the Cuban countryside, was by then living in anguish and desperation. Difficult as it was for her to accept her own diagnosis, she was terrified at the possibility that her baby could be born with the illness, and at the suffering that would await such a child. She prayed for her baby to be healthy; a baby she had always wanted; she cried herself to sleep; and tried to find consolation in everyone around her.

She had never imagined when her husband returned from Africa that such dangers would envelop her, threaten her family and her desire to be a mother; that she would spend her days thinking that her daughter would be born with a disease she had never known of but had learned was terrible, full of suffering. Physicians in Cuba at the time didn’t have enough experience to give her the confidence she needed, as she faced the fact that hers could be the first Cuban baby born with HIV.

In November, 1986, the moment for delivery arrived. Daimara was born at low birth weight. Since her parents were seropositive, and she was the first believed to be infected by vertical transmission, her case was carefully studied. As is well known, even now, detection of the infection in newborns is difficult, and so periodic follow-up was indicated. The literature notes that some children develop symptoms sooner than others, and thus their cases are suspected earlier. But in others, symptoms are not as apparent, and diagnosis can only be made later. Internationally, definitive diagnosis cannot usually be made before 18 months of age.

Nevertheless, from the moment of birth, Daimara began to have problems including anemia and retarded development, both in size and intellectual capabilities. Thus, she was hospitalized for quite a long time, making her relationships more difficult, as she began to be raised exclusively among adults without other children around her. She had learning difficulties, due both to her state of health and because of respiratory complications caused by continuous bacterial infections and her anemia.

Psychologists offered her a great deal of support and special care. Yet, her health deteriorated by the day, and her immune system weakened. Because she had been hospitalized so often, I remember that she would hold out her little arms automatically so we could find her vein. She endured that suffering as if it was something natural, and cooperated with us so that the catheters would last as long as possible.

She was surrounded by affection - from her parents and from all those who lived in the sanatorium who were moved by the tragedy of seeing this first child detected to have HIV/AIDS, and visited her often to cheer her up and just be by her side.
Blonde and very pretty, despite the pallor from her anemia, Daimara laughed easily and loved candy. But despite everything, the sanatorium staff and other patients realized that she wasn’t growing. What followed were four anguish-ridden years, with respiratory complications coming more frequently, her anemia becoming more severe, and then a final hospitalization. A few months before her fourth birthday, Daimara, the first child detected with HIV in Cuba, died. That was in February, 1990.

Her death was a terrible blow to Milagros and Daniel, and for all of us who knew her and lived with her - doctors, psychologists, other staff and patients. With her passing, the Santiago de las Vegas sanatorium lived through one of its saddest days.

Yunia’s Story

In April 1989, a patient is diagnosed who says that she had sexual contact with a truck driver whose route took him all over the island. That same month, in Santiago de Cuba, another female patient is interviewed and refers to a similar relationship with a truck driver.

In May 1989, in Ciego de Ávila Province, a pregnant woman is screened and diagnosed seropositive. When her husband is tested, he is HIV-positive as well. When he is interviewed, he says that he has a three-year-old child from his first marriage in Guantánamo Province, and in all, he mentions nine unprotected sexual contacts, of which five resulted HIV-positive and four negative. Jorge was a truck driver; and he had served in Africa, returning to Cuba in 1982. His ex-wife Nereida and his little girl Yunia were tested, and both resulted positive. Thus, Yunia was in reality the first child to be born infected by HIV.

Yunia had been born in Guantánamo on August 14, 1986, and was diagnosed in 1989. She lived in the same province until 1990, when she began having health problems and was transferred to Havana for hospitalization at the Juan Manuel Marqués Pediatric Hospital for anemia, retarded growth and respiratory disorders.

Since she had to remain near the hospital for treatment, when she arrived at the sanatorium, I was asked to accept her there on a permanent basis with her mother - where she has lived all these years. From the beginning, she captured our hearts. She was very thin, dark-haired, small and congenial, eager to play with anyone around. She grew up on the sanatorium grounds, went to grade school, junior high school and graduated as a technician from a nearby technical school.

In 1996, the Cuban government bought the first antiretroviral medications. Yunia was one of the first children to have access to the therapy; and improved considerably with treatment. We’ve watched her grow up, go to school, and develop healthy relations with other youngsters at her schools. I remember they would visit her at the sanatorium to study or play. We celebrated her 15th birthday with her school friends, her own family and her sanatorium family. She’s now the longest surviving child born with HIV, and soon will be 19.

On New Year’s Eve, 1995, I was visiting patients hospitalized at the Pedro Kouri Institute of Tropical Medicine (IPK), and had a bedside conversation with Yunia’s father, who was very sick at the time.

He told me that he felt he wouldn’t be alive much longer. ‘I feel death creeping up on me,’ he said. And he began to talk about the other daughter he lost from AIDS when she was only two.

Jorge was referring to his daughter born in 1989 to his wife in Ciego de Ávila Province. She was unfortunately born with HIV despite all the measures taken during pregnancy and delivery. At the time, there was no possibility of prophylaxis medications, and the delivery in Havana was by caesarean. Mother and child were transferred to Ciego de Ávila, where they lived, but the infant developed severe anemia from the start, as well as respiratory infections.

She was hospitalized in the province several times, and finally referred back to Havana where she was received already suffering from many infectious complications. A few days later, on August 30, 1991, she died at the age of two years. Jorge became severely depressed at the news, lost weight and began to suffer from his own complications, a prelude to his progressive immunological deterioration.

AIDS-related complications - opportunistic infections - ended Jorge’s life on April 21, 1996. This young man who had served overseas had been unaware of his diagnosis, and thus infected five women and in turn, two little girls, his only children. Perhaps this is why on that New Year’s Eve in 1995, he asked me to take care of his remaining daughter.

His eyes were dry. ‘Do whatever it takes to help her live,’ he said. ‘It’s too sad, too painful for me, to think that I’ve brought these children into the world without knowing I was sick. I would give my life so they could live.’ He begged me to do all I could to keep Yunia alive.

His words stay with me to this day. I would go often to visit Yunia and her mother Nereida at their house in the sanatorium; I took other visitors there; I would show up with any little gift and keep track of Yunia’s grades in school.

Now Yunia is 18, a teenager who shows the signs of her illness in her height - she’s a bit smaller than her peers. But her social development is quite normal; she’s well integrated in her group of friends and classmates; she visits Guantánamo to keep in touch with her mother’s side of the family; and chooses to continue living in the Santiago de las Vegas sanatorium.

It is important to recognize that Yunia has grown up and developed without her father in an environment that, although never without warmth and affection or the attention of her mother, has been an aggressive one. Her activities as a child and young woman have been limited by her sickness, by its occasional complications, and by the multitude of medications she still has to take. Nevertheless, you don’t see her depressed. She’s learned to live with her illness, and done a good job of overcoming all the adversities that have touched her life.

Yunia has plans for the future, she has fun, she goes to parties, and has had protected sexual relations, infecting no one. She has a great degree of sexual responsibility. She dreams of the day when a cure will be discovered for AIDS and no more children will have to go through what she has.

She dreams of living.
MR INTERVIEW

Mariela Castro, MS  
Director, National Center for Sex Education

By Gail A. Reed

Cuba’s National Center for Sex Education (CENESEX) brings together a multitude of professionals for academic courses through master’s level degrees, research, community work, social communication, counseling and sexual therapy. More broadly stated by its Director Mariela Castro, CENESEX’s mission is to contribute to “the development of a culture of sexuality that is full, pleasurable and responsible, as well as to promote the full exercise of sexual rights.” This is a tall order for any society, especially one with a history of machismo and prejudice against all but heterosexual orientation. MEDICC Review spoke with Mariela Castro about the experience of women and HIV infection in Cuba.

MR: Who are the women most at risk today in Cuba for HIV infection and why?

MC: First of course, women who have both vaginal and anal sex are more vulnerable as a whole than men because of these tissues’ greater absorbency. Interestingly, however, we are not finding that women in casual relationships or even prostitutes are the ones accounting for the most significant numbers among new cases. Rather, it’s among women in stable relationships whose husbands have had extramarital relations, either with other women or with men. This means we have to do more research on the model of partnership such couples adopt for their lives.

MR: That in itself raises a number of questions about sexuality and gender roles in Cuba...

MC: Yes, it does. And it’s also another indication of why education for safe sex must have a gender component, a gender approach.

Historically speaking, changing mentality is one of the most difficult things to do, one of the slowest processes in society. And, as in all societies, we have inherited gender stereotypes that bear serious critical analysis in order to change them. Even though we’ve made substantial political and legislative strides, we’re still bound by aspects of roles defined long ago. This subjectivity begins early, in the way children are raised, in how they’re taught to play. We have to learn to recognize which elements of the traditional masculinity or femininity are actually doing us damage. What parts of the picture actually take away from our freedom, fulfillment and dignity. We have to take a hard look at these things, or else we’ll keep passing them down from generation to generation.

MR: How are these manifested?

MC: In the family, for example, women are still the main ones responsible for domestic life and work, while men “own the street.” So when a child is born, we have women quite happy to take their maternity leave, but very few fathers taking advantage of their legal right to paternity leave. Women will stop working to take their maternity leave, but very few fathers taking advantage of these leaves for their loved ones. This is a fact of life that we have to deal with. So, for him to use a condom, he has to begin to construct a different frame of reference, of partnership, which includes the responsibility of both partners in a relationship.

MR: And so how does this come into play in promoting practices of safe sex?

MC: We have to include a gender perspective - promotion of new constructs of masculinity and femininity - and not just take an epidemiological approach. For example, an epidemiologist might simply say: prevent HIV, use a condom. But we have to take into consideration how condoms are viewed in the “macho” framework - as a barrier to full sexual enjoyment, to which the “macho” is entitled at all costs, in a relation in which he’s exerting his power. So, for him to use a condom, he has to begin to construct and define his masculinity in a different way, that doesn’t put a premium only on his own pleasure. In the end, this stereotype is very dangerous to his own health as well as his partner’s - and this can be true for homosexual as well as heterosexual couples, whenever a relationship defines that one partner has hegemony over the other.

So, you need to combine both an epidemiological and a gender approach to these very intimate issues. This is why, for example, our posters and other materials emphasize that protection of your partner against HIV and STIs in general is a sign of caring, and that means it’s a responsibility of both partners in a relationship.

MR: How does CENESEX work with health promoters? And who are these promoters?

MC: We work with groups who promote safe sex among their peers: men who have sex with men, transvestites, and transsexuals; adolescents and young people in general; and then more broadly with medical students. In each medical school, there’s a department of Sexology and Education for Sexuality.
MR: Since you have raised the issue of men having sex with men (MSM), that leads me to ask about respect for sexual orientation in Cuba today. How does this influence, for example, women’s vulnerability to HIV and other STIs?

MC: We see cases of men who have had a stable relationship over the years with a woman or with another man - and then he’ll have an affair perhaps with a younger man, for which the tendency is not to use protection. And so in that single moment, he’s exposed himself to the risk of infection, and of course, also exposed his stable partner. Regarding MSM and bisexuals as well, there have been positive changes - I say that empirically, since we are still studying this. But at our conferences and workshops that we hold with people from the whole country, it’s clear that participants are more able now than ten years ago to understand and respect another sexual orientation. I think the work that’s been done over the decade in health and by the Cuban Women’s Federation has helped bring about that change, and we’ve done it reaching out to people’s sensitivity as human beings.

In essence, our view is that any kind of prejudice or discrimination is damaging to health.

We need to do everything possible in Cuba to legitimize and ensure respect for sexual orientation because we’re confronting a traditional culture, like in many societies, with ingrained prejudice. How can we do this?

First, I think we have to work more and better in the schools. We’ve worked with the Ministry of Education, but I’m still not satisfied we’ve made enough progress, and so we need to deepen understanding among teachers and other school staff; we need to carry more on educational TV, and so on. And this also has to do with a gender focus, of course. In the 70s and 80s, we found a lot of fear and resistance to a national program for sex education with such a gender focus. The program was finally accepted in 1996, and now it’s taught throughout the country; since then it’s reduced school dropouts from early marriages and childbirth by one half.

The country now has policies that legitimize sexual orientations and also has brought laws in line with a gender perspective. But on the legislative front, there is still a lot to be done. For example, homosexuals now live within the law in consensual relationships, but gay marriage is not recognized, so you have many issues such as inheritance that aren’t fully resolved. We need changes in the family code itself related to these and other questions, including domestic violence. CENESEX has now presented two bills in Parliament before the education and children’s commissions that have to do with gender, and these have been well received.
So, we began to order HIV serology among the tests. And if the results were positive, then the woman was counseled, so that she would understand her situation, explaining that she had the right to decide to have a therapeutic abortion or to continue her pregnancy. If she decided to continue, then she was brought into a special program from that time forward, aimed to reduce the risk of infection for her baby. This included preparing her for delivery by caesarean section, and advising her against breastfeeding - which were the only things we could do at that time.

In addition, she was given special nutritional supplements - not told to go home and eat this or that if she didn’t have it available - but by actually putting the supplements in her hands.

Now, when prophylaxis with AZT (zidovudine, ZDV) was discovered to be effective, we began administering it to each seropositive woman beginning in her 14th week of pregnancy, 500mg per day. Later, other protocols and guidelines were established internationally depending on viral load and recommending anti-retroviral (ARV) chemoprophylaxis in such cases, in order to reduce the viral load to a minimum.

In essence, I think that our record of so few births of seropositive children is due to active testing from the start - the search for possible cases among pregnant women - in order to then follow up with the appropriate therapy. Over 200 women have gone through with their pregnancies, and just 26 of the children born were infected with HIV.

**MR:** Are there other things that Cuban health authorities have done differently from other countries?

**JP:** Yes, one important thing is that we didn’t just study the woman herself, but also her partner. In other countries, neither the woman nor her partner are necessarily tested.

Partly perhaps because in some countries, discrimination against HIV-positive women in the health system itself is a serious problem. But here, luckily we’re able to tell women that they have every right to have their babies, and to have the medical care they need. And so, women and their partners were able to understand the health reasons for testing, because they wanted to protect their unborn children. Later, of course, when seropositive women saw that the chemoprophylaxis was quite effective, they were even more encouraged.

**MR:** Could you elaborate on the program for seropositive women in pregnancy?

**JP:** The primary thing is that their pregnancy is followed more closely by their family doctor and obstetrician - instead of seeing the doctor once a month like other women, they’ll see the doctor every two weeks for at least the first two months. They are given chemoprophylaxis, their viral load is studied, CD4 count, so that each one knows her situation. And in the process, she’s further educated about HIV, how to handle her pregnancy, her delivery and care for her newborn to obtain the best possible results.

Finally, she’s hospitalized for a caesarean. And when the baby is born, she’s given formula to substitute breastfeeding. The care is free of charge, of course.

**MR:** What about discrimination against HIV + children themselves? Stigmatization in school and in their community?

**JP:** We live in this world, like everyone else. So, yes, some children may have been the victims of discrimination based on people’s ignorance, especially ignorance on the part of other parents. But we haven’t seen serious cases of this, and we have never had institutional discrimination. These children attend school, have friends, play.

But you have to realize how tough it is for them even so: you have to understand that these children are limited in many ways. First, because they are sick, and they get sick often. And second, because they may suffer polymorphism that distinguishes them from other children their age. And then they don’t grow like other youngsters, they don’t gain weight like others do. Despite all the treatments, the very lives of these children are fragile and constantly at risk.

**MR:** In terms of school, do the teachers know these children are HIV-positive?

**JP:** No. That’s the decision and responsibility of the parents, not ours. In some cases, the parents don’t want others to know. We even have cases where the parents have not told the child him- or herself. It’s hard for us to conceive of that, but it’s their decision and we have to respect it.

**MR:** The international literature refers not only to “AIDS orphans” but also to children who are especially vulnerable....

**JP:** Yes, they’re referring to street children, beggars. But as such, these are not social problems in Cuba. You might find a child who approaches a tourist to ask for money, for candy or gum, but that child has shoes and a meal at home. We’re poor in Cuba, no doubt about that, but it’s not the extreme, indecent poverty you see in some places.

Of course we have some people who live better than others, that’s true, and that’s why we have social workers and special programs to assist families in need, and to assist the children born into those families, who we might also call vulnerable. In those cases, then, the family is exempted from rent, they’re given additional food allotments, and so on. There may be some exceptions, but I would venture very few.

**MR:** What about medications for these children?

**JP:** For some time, we used to prepare their medications from the adult versions. But now we import special pediatric medications for them.

**MR:** The situation in the world concerning MTCT is alarming and tragic. What do you see as the most important steps health systems can take to protect newborns?

**JP:** One thing is that a woman should know her HIV status, and once she knows, she needs to be counseled and collaborated with to do everything possible so the child will not be infected; to make sure that there is good adherence to ARV therapy, and good laboratory follow-up. That’s on the medical side. On the human side, we should help to keep her from feeling discriminated against, from becoming discouraged or depressed, encouraging her so that she can assimilate all she needs to in order to protect her child.
Text and Photos by Conner Gorry

On October 8th, when a devastating earthquake ripped through northern Pakistan claiming upwards of 75,000 lives, leaving 100,000 injured and more than 3 million homeless, Cuba couldn’t count one Urdu speaker in its ranks. On that day - now historical for the scale of the disaster and the international relief response - Cuba had no embassy in Islamabad. Nevertheless, there are now over 2,300 Cuban doctors, nurses and medical technicians working throughout the earthquake-affected areas.

Cuba’s disaster response team, the Henry Reeve International Team of Medical Specialists in Disasters & Epidemics, was created last August in response to Hurricane Katrina (see MEDICC Review, Vol. VII, Nos. 8 & 9, 2005). Designed as a specialist team that could be moved into post-disaster situations to effectively treat survivors and prevent and control epidemics, it’s volunteers commit to go wherever in the world they’re needed. On that fateful Saturday in October, it became clear they were needed desperately in the Kashmir and North-West Frontier Province (NWFP) areas of Pakistan.

The Post-Quake Scenario

The post-disaster health and hygiene situation is made more complex for several reasons. First, 80% of health centers in the affected areas were destroyed, so even if those suffering from fractures, head trauma and other event-related injuries could get past the landslides and roadblocks in search of care, there were few places they could go in the direct aftermath. Many of the health centers demolished were public facilities, further placing the most vulnerable at risk.

Several towns near the epicenter including Balakot, Muzaffarabad and Garhi Habibullah were the hardest hit, with water and electricity services completely interrupted, making safe food and water virtually impossible to find. This was particularly dangerous for the 17,000 pregnant women in the affected areas due to give birth in December, an estimated 1,200 of whom would face major complications. Of these, some 400 would require surgery.[1]

As winter approached, food and water were key health issues which continue to present complicated logistical problems since mountainous areas above 5,000 feet have become increasingly inaccessible with each snowfall. Although relief agencies began airlifting food to those areas in mid-December, there is no guarantee it will prove sufficient for the tens of thousands of victims, particularly if the winter is especially harsh.[2] Add to this the aftershocks - some qualifying as strong earthquakes themselves (over 6.0 in magnitude) - that cause continual landslides and interrupt aid delivery.

Cuban Relief Mission – What it Looks Like

Into this scenario, scores of Cuban medical professionals of the Henry Reeve International Team began arriving in Pakistan on October 14th. Together these doctors, nurses and technicians came to Pakistan with an average of 10 years clinical experience, specialized training and medicines for treating epidemics and other post-disaster health threats; collectively they have served in over 40 countries. They also came with the understanding that if not designed correctly, disaster relief has the potential to do more harm than good.

“We knew this had to be a closed-loop relief effort,” says Dr. Juan Carlos Martín, Director of the Cuban field hospital in Muzaffarabad. “Not only did we have to bring the medicines and the doctors, we had to provide everything – the hospital, the electricity, the plumbing, the beds – to run that hospital.” Easier said than done when your aim is to equip, staff and run 30 field hospitals spread throughout a mountainous, earthquake-stricken region where the populace is in desperate need of primary and secondary care. Add to this cultural, language and climatic differences and the task looms large.

Each of those 30 field hospitals (in addition to another 14 locations throughout the affected regions where Cuban doctors are working, including refugee camps and Pakistani hospitals), has distinct conditions which come to bear on the delivery of health care. It
became evident during MEDICC Review’s visit to several different types of hospitals that the Cuban team has adapted to these particularities with grace, treating their Pakistani patients with a professional, human approach. “They treat patients like people, not just cases,” said Khalida Ahmad of UNICEF in Islamabad. “Everyone I spoke to from the affected areas was so grateful. They felt they could always go to the Cuban doctors to ask a question, despite language difficulties.”

Two of the field hospitals - Hospital 20 in Muzaffarabad and Hospital 26 in Abbottabad - were purchased by Cuba from Norway and Spain/South Korea respectively, costing around half a million US dollars each. These units are designed for extreme events and circumstances and come equipped with space enough for out-patient, operating, ICU, diagnostic and recovery services. But these are in no way ‘one size fits all,’ and the Cubans have had to customize these hospitals to fit local needs and provide the best care possible.

Moments after I arrived in Muzaffarabad for example, two accident victims were rushed into the emergency area, one with internal bleeding and the other with massive head trauma. As a team of specialists set to stabilizing them, it became clear that the present set-up was not sufficient for running several IVs concurrently, should multiple emergency patients arrive at once - not uncommon in Pakistan, where traffic accidents can instantly fill an ER. By the next morning, the two men were stable in the ICU, and a hook and line system for hanging multiple IVs was being set up.

Similarly, in the Abbottabad hospital, crowd control barriers had to be erected at the entrance to the out-patient tent to maintain an orderly procession of the 500 patients seen daily. Other adjustments made by the Cubans in these and other hospitals include securing X-ray developing areas, devising dividers to separate the male and female patients according to religious custom, and providing running water to operating rooms.

The Cubans have assembled other field hospitals from components purchased from Russia and elsewhere that function much like the pre-fabricated units in Muzaffarabad and Abbottabad.

However, not all are the same in terms of working conditions, as I learned upon visiting Hospital 5, located within the Data refugee camp. In addition to the ER, operating room, and laboratory and X-ray capabilities, doctors from the field hospital here mimic the Cuban family doctor system, going into the “community” of tents to provide evaluation, care and follow-up to the 350 or so living in the camp, remitting patients to the on-site hospital if necessary.

Every day, several pairs of doctors – always one male and one female – fan out among the 80 or so tents with a backpack of medicines and a good working knowledge of Urdu. I’m awestruck watching young Family Medicine specialist Yudelkis Noa Hernández of Havana asking an older gentleman about the location, tenor and duration of his pain in Urdu while she examines him. Moreover, the relationships the Cubans have with the Pakistani people here are apparent in the familiarity between doctor and patient - Dr. Noa is diverted several times during her rounds to say hello or provide some quick follow-up – and the fact that most men are not shy about being treated by women doctors. “I’ve lived here for a couple of months already,” she tells me when I compliment her on her Urdu skills. “It’s not easy, but I like it. It’s like camping and I’m a trooper!” she laughs.

The Director of the hospital, Dr. Barbara Haliberto, a general surgeon from Cuba’s Holguín Province says, “this field
hospital and camp hasn’t had the same support from the army as others. We’re relatively far away [from the affected areas] and there’s been some support, but limited, so resources and services are different." Still, the Data field hospital, with a staff of 55, is offering the same primary and secondary services as other hospitals including minor and major surgery, physical therapy, and rehabilitation to the increasing number of people who arrive daily at the camp.

**Pathologies & Challenges**

Although the Cuban hospitals initially treated their fair share of disaster-related injuries including fractures and infected wounds, the care now being delivered is largely of a different nature. "The most frequent pathologies we’re seeing now are acute respiratory infections, skin problems and other primary care conditions," says Dr. Haliberto of the Data field hospital. These include scabies, parasites, sepsis and gastroenteritis. Many times these cases are painfully advanced or chronic, like the child who had such a bad case of pyoderma she couldn’t walk, the little boy who had system-wide sepsis that had penetrated his bones, and entire families with scabies. Hepatitis, TB, tetanus and typhoid are also present.

There is also a high prevalence of burn victims, caused by accidents from heating elements in homes and refugee tents. With the 17,000 pregnant women delivering in December and 9,000 more each month thereafter, pre- and post-natal care including ultrasounds and caesarean sections are always in high demand. Meanwhile, routine surgical procedures include removal of tumors and hernias, appendectomies, and amputation of gangrenous lower extremities and other orthopedic procedures. Poorly knit post-earthquake fractures also see their share of OR time.

Over several weeks of treating 500 patients daily at the busiest hospitals, including those in Muzaffarabad and Abbottabad, patterns of pathologies emerged for which the Cuban team has customized their relief effort. Roughly a third of out-patient consultations were for scabies, for example, signaling the need for dermatologists and a continuous supply of benzyl benzoate. Likewise, the number of people requiring physical therapy and rehabilitation due to earth-quake-related trauma alerted Cuban officials that those specialists were needed. The number of pregnant women, coupled with the religious norm of female patients only seeing female doctors, meant female ob-gyns were in high demand. The Cubans have responded by sending dermatologists, physical therapists and female doctors of all specialties to better serve the local population.[3]

It hasn’t all been smooth sailing, however, and mounting and maintaining a relief effort of this magnitude has involved a precipitous learning curve. Gathering reliable statistics has proven a challenge for example - not surprising, given the thousands of daily consultations spread across 44 locations, plus the service in remote mountain villages, where mobile teams treat upwards of 100 people a day. The importance of accurate statistics was underscored in a December meeting in Islamabad that brought together directors of field hospitals, logistical coordinators and other Cuban decision makers to streamline statistical gathering mechanisms. This has resulted in statistics being gathered and analyzed more consistently (see box) which should translate to even more effective resource allocation.

**Statistics for Cuba’s Relief Effort in Pakistan as of January 24**

- Number of medical personnel: 2,378 (including doctors, nurses and other paramedical staff)
- Locations in which they serve: 44
- Number of field hospitals: 30
- Number of lives saved: 1,315
- Number of consultations: 601,369 (276,491 women)
- Number of surgeries: 5,925 (2,819 major)
- Births attended: 125
- Caesarean sections: 24

A whole host of other contextual factors specific to Pakistan are presenting difficulties for which no amount of training in
Cuba could prepare these medical practitioners. The cold weather - and snow in particular - are the enemy, both to the doctors and quake survivors. Cultural differences, from strict gender roles to religion and language, come into play in the doctor-patient relationship, the delivery of emergency care, and broader medical ethics concerns. Finally, a reliable blood supply – integral to the efficient functioning of any hospital – has proven another hurdle in post-disaster Pakistan.

The Silver Lining

The earthquake has sparked debate on the national level about structural fundamentals in Pakistani society that contributed to the magnitude of the destruction. The hope is that through adjustments, a repeat event might be averted. Poverty reduction, a greater investment in the public health system and a concerted effort to educate more female doctors have all been discussed by government officials in the aftermath. Increasing participation by women in Pakistani political and social life is another opportunity seen by local gender and development specialists represented at a Gender and Disaster Management seminar in Islamabad this December.

There are also great expectations for future collaboration between Cuba and Pakistan, including medical education. Indeed, many medical students, acting as translators for the Cuban doctors, expressed an interest in studying there. According to Cuba’s Vice Minister of Foreign Relations Bruno Rodríguez, Cuba is offering full scholarships to young Pakistanis to study at the Latin American Medical School in Havana.

Training new doctors committed to practicing medicine in underserved communities is key to any strategy for providing sustainable health care in Pakistan, where the “brain drain” of doctors to developed countries is particularly acute.[4] In the meantime, Cuba continues to look for ways to further extend health services to the people of the earthquake-affected areas. “Thirteen amputees have already completed their pre-prosthetic rehabilitation,” Vice Minister Rodríguez told MEDICC Review in an exclusive interview. “We are now preparing to transfer them to Cuba to be fitted for prosthetics.” Moreover, Cuba has pledged to donate their field hospitals to Pakistan once the disaster response team depart (date to be determined), provided they remain in the same locations and continue to function as public health facilities.

Notes & References

2. In the final days of December, for example, the World Food Programme had provisioned 68 tent warehouses with food enough for 45-60 days in regions above 5,000 feet. Furthermore, the new year dawned with heavy snowfall that isolated two Cuban field hospitals for a week and caused the collapse of two dozen tents, according to Cuban officials in Pakistan.
3. Fully 48% of Cuban medical personnel serving in Pakistan is female.

Update: Cuba’s Disaster Response Team in Bolivia

In late January, torrential rains in Bolivia caused landslides and flooding, severely affecting several regions, particularly in the east. Over 12,000 families lost their homes and entire towns were cut off due to collapsed and inundated roads as the rain continued unabated. The natural disaster triggered a call for international aid by President Evo Morales to which Cuba responded on February 2nd with a relief effort comprised of 15.7 tons of medicines, 20 field hospitals and 150 volunteers from the Henry Reeve International Team of Medical Specialists in Disasters & Epidemics.
Vertical Transmission in Cuba

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Vertical Transmission (VT) is the route by which more than 90% of children and adolescents under 5 years of age are infected by HIV worldwide; in developing countries the percentage is almost 100%. It is estimated that in 2003 around 630,000 nursing infants throughout the world acquired HIV, a great majority during the gestational period and delivery or due to breast feeding. Likewise, around 490,000 children died last year from AIDS-related causes.[1]

The mother-to-child HIV transmission rate in Cuba as of October 25, 2005 was 2.1% (26/24), a low rate when compared to other developing countries. Of the 26 infected children, 15 were girls and 11 boys. This includes all children of seropositive mothers, independent of whether they or their mothers received prophylactic treatment with AZT. To prevent transmission, AZT has been included in the National Vertical Transmission Prevention and Control Program since January 1, 1997.

Unlike Cuba, where 100% of HIV+ pregnant women receive antiretroviral (ARV) treatment, progress in most of the developing world towards increasing access to ARV treatments has been very slow, so that only 10% of pregnant women have access to antiretrovirals.[2] In Burkina Faso, Ethiopia, Malawi, Nigeria and South Africa, less than 1% of the women infected with HIV who gave birth in 2003 had access to VT-preventative treatment. In Cambodia, Myanmar and Vietnam coverage is below 3%.[3]

To reduce the effects of this problem, since 1999, UNICEF[4] has spearheaded the creation of international projects to reduce VT in low and middle-income countries. Between April 1999 and July 2002, projects supported by UNICEF and other associated organizations treated almost 600,000 pregnant women in prenatal care centers and provided ARV treatment to 12,000 seropositive women after counseling and HIV testing.

In low and middle income countries, the probability that an HIV+ breastfeeding mother will transmit the virus to her retrovirus negative child is at least 30%.[3] On the other hand, in industrialized countries, HIV transmission to nursing babies is rare thanks to ARV prophylaxis, delivery by caesarean section, and the use of breastfeeding alternatives.[4-6]

In Cuba up to October 25, 2005, 214 children (101 girls and 113 boys) have been screened at the Pedro Kourí Institute of Tropical Medicine (IPK, according to its acronym in Spanish).

This includes all children born to HIV+ mothers, whether they had ARV prophylactic treatment or not. Of these, 26 children were HIV+ and 17 of them developed AIDS (nine died, 13 receive HAART and four are asymptomatic). There were 121 children NOT INFECTED with HIV: 64 girls and 57 boys, while 67 are still being studied (22 girls and 45 boys). These results were achieved thanks to the application of the HIV/AIDS prevention and control program,[7] which includes the proscription of breastfeeding since 1986, caesarean section since 1989, and AZT prophylaxis since 1997 (Figure 1; Tables 1, 2, 3, 4, and 5).

Of the 26 infected children, nine have died (34.6%) as shown in Table 3; five of these were nursing infants, two of them were under 2 years of age, one was 3 years and 3 months old, and one was 8 years and 10 months old. However, since the use of ARV in children was approved by the FDA (Food and Drug Administration), Cuba, along with other countries, has adopted these guidelines as a model, dramatically changing the course of HIV infection, reducing viral replication, and extending life.[8]

According to the literature, at least one quarter of HIV-infected newborns die before their first birthday and 60% before their second. In general, the majority die before they are 5 years old.[9] In our experience however, 55.5% of the cases (5/9) died in their first year, 77% (7/9) before reaching their second birthday, and in general, 88.8% (8/9) before they reached five.

The nine patients who died developed the first pattern of evolution and showed severe opportunistic infections, leading to their death. They started with early clinical symptoms and severe disease, such as PCP (Pneumocystis carinii or Pneumocystis jirovecii pneumonia), currently known as AIDS markers. Only the life of one child could be extended to 8 years and 10 months because of the antiretroviral therapy he was given.
Prospective studies have demonstrated that mean survival is 96 months,[10-13] with evidence of early immunological impairment.[14-16] Since the application of HAART in Cuba after July 2002, the survival dynamic has changed for HIV/AIDS-infected children. The life of 47% (8/7) of the children has been extended to over 5 years. Of these children, two girls are over 15, and two girls and four boys are between 5 and 14. This is associated with the follow-up, control, and treatment established by the program (Table 2).

HIV diagnosis must be done as soon as possible on any newborn child of an HIV+ mother, and treatment started early to avoid an increase in viral replication and subsequent immunological impairment.[17]

With the success of HAART and media coverage about different methods to diminish VT (ARV treatment, caesarean section, treatment of newborns, etc), the interest of HIV-infected people in having children has grown, both in couples where both people are infected and in couples with only one seropositive individual.[18]

At the beginning of the epidemic in Cuba, from one to three children were born annually to HIV+ mothers. Since 1993, the number of births has been growing due to the increase in the number of infected women of childbearing age. In 1997, when the use of AZT in pregnant HIV+ women was included in the National Program for AIDS Prevention and Control, births...
decreased. In 1998 only three children were born to HIV+ mothers. In spite of education and prophylactic treatment to decrease VT, some HIV+ women refused the medication and others preferred to voluntarily interrupt their pregnancy.

Since 1999, perception of the problem has changed due to beneficial results from the national program and the number of births started increasing from 11 to 20 births per year. In 2004, 36 children were born, and as of October 2005, 32 children have been born. This increase was also influenced by the higher incidence of pregnancies that reach term with the use of AZT treatment in women of reproductive age, and more recently, by the use of HAART for preventing VT in pregnant women with AIDS (Figure 2). Also, the greatest number of births in the country takes place in the capital, where the most seropositive people are found (Figure 3).

The program has also identified some difficulties that constitute predisposing factors for VT such as: late inclusion of pregnant women in the program, delays in test results and delivery of HIV serology of pregnant women to family doctors, and non-adherence of pregnant women to treatment.

The fact that the Cuban health system guarantees HIV+ parents free medical care and treatment in addition to social and economic support, increases the life expectancy of HIV+ mothers and in a certain way diminishes orphanhood. Of the 26 HIV+ children, six that are alive and receiving HAART treatment were breastfed by their mothers because they were detected late; among them, one girl is motherless and another, fatherless. None of the nine children who died were breastfed by their mothers. At the time of death, only one child was motherless (Tables 6, 7, & 8).

According to Dr. Peter Piot,[19] Executive Director of UNAIDS, speaking at the 4th International AIDS Conference in Barcelona, Spain on July 7-2, 2002, “AIDS has created an orphan crisis.” At that time there were 13.4 million children under 15 that had lost their father or mother or both because of HIV. In the same way, Carol Bellamy,[19] Executive Director of UNICEF, describes this “as the biggest problem posed by the HIV epidemic and the most long lasting. Even if the cure for HIV is found tomorrow, the number of orphans would continue to increase for a decade,” she added.

National sensitivity towards people at risk, including mothers and children through the Maternal-Child Health Program, enables Cuba to have excellent social and health indicators. Child mortality ranges from 6 to 6.5 per 1000 live births.[20]

REFERENCES
THE AUTHORS

Ida González Núñez MD, PhD, is Full Professor, 2nd Degree Specialist in Pediatrics, and Junior Researcher.  
Manuel Díaz Jidy MD, is Professor and Researcher, 2nd Degree Specialist in Internal Medicine.  
Jorge Pérez Ávila MD, MS, is Professor and Researcher and Master in Clinical Pharmacology.  

All work at the Pedro Kourí Institute of Tropical Medicine.

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**Table 1:** Cuban HIV/AIDS Seropositive Children, January 1, 1986 to October 25, 2005  
Vertical Transmission

<table>
<thead>
<tr>
<th>Age</th>
<th>Female</th>
<th>Male</th>
<th>Total</th>
<th>%</th>
</tr>
</thead>
<tbody>
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</tr>
<tr>
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<td>34.6</td>
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<td>2</td>
<td>-</td>
<td>2</td>
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<tr>
<td><strong>TOTAL</strong></td>
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<td>26</td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

Source: Pedro Kourí Institute of Tropical Medicine

**Table 2:** Living Cuban Children Infected with HIV/AIDS, January 1, 1986 to October 25, 2005  
Vertical Transmission

<table>
<thead>
<tr>
<th>Age</th>
<th>Female</th>
<th>Male</th>
<th>Total</th>
<th>%</th>
</tr>
</thead>
<tbody>
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<td>3</td>
<td>-</td>
<td>3</td>
<td>15.8</td>
</tr>
<tr>
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<td>5</td>
<td>19</td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

Source: Pedro Kourí Institute of Tropical Medicine

**Table 3:** HIV/AIDS Mortality in Cuban Children, January 1, 1986 to October 25, 2005  
Vertical Transmission

<table>
<thead>
<tr>
<th>Age</th>
<th>Female</th>
<th>Male</th>
<th>Total</th>
<th>%</th>
</tr>
</thead>
<tbody>
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<td>12-23 months</td>
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<td>1</td>
<td>2</td>
<td>22.2</td>
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<tr>
<td>2-4 years</td>
<td>1</td>
<td>-</td>
<td>1</td>
<td>11.1</td>
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<td>5-14 years</td>
<td>-</td>
<td>1</td>
<td>1</td>
<td>11.1</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>5</td>
<td>4</td>
<td>9</td>
<td><strong>100</strong></td>
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Source: Pedro Kourí Institute of Tropical Medicine

**Table 4:** HIV/AIDS Negative Children of HIV/AIDS Seropositive Mothers, January 1, 1986 to October 25, 2005

<table>
<thead>
<tr>
<th>Age</th>
<th>Female</th>
<th>Male</th>
<th>Total</th>
<th>%</th>
</tr>
</thead>
<tbody>
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<td>23 months</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>1.7</td>
</tr>
<tr>
<td>2-4 years</td>
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<td>57</td>
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</tr>
</tbody>
</table>

Source: Pedro Kourí Institute of Tropical Medicine

**Table 4:** HIV/AIDS Negative Children of HIV/AIDS Seropositive Mothers, January 1, 1986 to October 25, 2005

**Table 5:** Children of HIV/AIDS Seropositive Mothers Under Study, January 1, 1986 to October 25, 2005

<table>
<thead>
<tr>
<th>Age</th>
<th>Female</th>
<th>Male</th>
<th>Total</th>
<th>%</th>
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</thead>
<tbody>
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<td>&lt; 12 months</td>
<td>3</td>
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<td>16</td>
<td>25</td>
<td>37.3</td>
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<td>1.5</td>
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<tr>
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<td>45</td>
<td>67</td>
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</table>

Source: Pedro Kourí Institute of Tropical Medicine

**Table 6:** Double Orphans, January 1, 1986 to October 25, 2005

<table>
<thead>
<tr>
<th>Age</th>
<th>Female</th>
<th>Male</th>
<th>Total</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>5-14 years</td>
<td>5</td>
<td>1</td>
<td>6</td>
<td>100</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
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<td>6</td>
<td><strong>100</strong></td>
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</tbody>
</table>

Source: Pedro Kourí Institute of Tropical Medicine

**Table 7:** Motherless Children, January 1, 1986 to October 25, 2005

<table>
<thead>
<tr>
<th>Age</th>
<th>Female</th>
<th>Male</th>
<th>Total</th>
<th>%</th>
</tr>
</thead>
<tbody>
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<td>12-23 months</td>
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<td>5.3</td>
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<tr>
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<td>5-14 years</td>
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<td>12</td>
<td>63.1</td>
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<td>15-18 years</td>
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<td>-</td>
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</tr>
<tr>
<td><strong>TOTAL</strong></td>
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<td>5</td>
<td>19</td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

Source: Pedro Kourí Institute of Tropical Medicine

**Table 8:** Fatherless Children, January 1, 1986 to October 25, 2005

<table>
<thead>
<tr>
<th>Age</th>
<th>Female</th>
<th>Male</th>
<th>Total</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 12 months</td>
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<td>-</td>
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<td>8.7</td>
</tr>
<tr>
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<td>5-14 years</td>
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<tr>
<td>15-18 years</td>
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<tr>
<td><strong>TOTAL</strong></td>
<td>16</td>
<td>7</td>
<td>23</td>
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</tr>
</tbody>
</table>

Source: Pedro Kourí Institute of Tropical Medicine
Gender, Vulnerability and their Relation to HIV/AIDS

The following is a chapter excerpted from Manual para Promotoras de Salud (Manual for Health Promoters), published by Cuba’s National Center for Prevention of STIs and HIV/AIDS. It is used in the Center’s training course for HIV/AIDS prevention workers as part of the Women’s AIDS Prevention Project, launched in 2000.

To understand our role as women in confronting this pandemic, the difference between gender and sex must be established.

Gender is a social science category enabling us to see that discrimination against women is the result of social constructions, not biology. Rather, society emits value judgments that assign particular roles and relationships to women and men.

Historically, these relationships have been presented so that whatever is masculine is considered to be superior and whatever is feminine, subordinate. Traditionally, this is how discrimination against women has been structured.

This position of inferiority is presented as natural, restricting women’s main role to the rearing and education of children and caring for the home, family and the elderly.

Even in our own society, where a strategy to facilitate women’s full integration into economic, political, cultural and social life on the basis of equal rights and opportunities has been in place for 45 years, many of these concepts still survive and are manifested to some degree. Because the weight of tradition is so strong, sometimes these ideas are disguised and not entirely clear. And women’s traditional roles coexist with new attitudes.

Thus, the concept of gender is integral in helping us to understand that men and women have been educated in different ways to play certain roles in society and that different value judgments are applied to judging women and men in similar situations. As we carry out our work, then, this enables us to better understand specific situations in which women find themselves, and better prepares us to design plans of action that will help bring about change.

In short, gender refers to the socio-historical and cultural conditioning that assigns men and women certain roles they are expected to play.

This conditioning implies learning certain behavioral norms that inform people what is obligatory, prohibited and permitted; norms that are of course, different for men and women.

Economic inequalities, ethnicity, inclusion of women in the labor market, age and formal education are factors to be considered when pursuing a gender analysis: women are diverse and varied, not a single category.

Sex is defined as the group of characteristics describing the genital organs and their function that differentiate individuals of the same species. In humans, this refers to men and women, who exhibit these characteristics through various biological definitions of sex. Thus, the chromosome pair defining female is XX, while XY defines male; estrogen is the female sex hormone and testosterone the male sex hormone.

Gonadal sex in woman is represented by the ovaries and in men, by the testicles. Lastly, genital sex in women is represented by the vagina and in men, by the penis. In addition, psychological sex - considering sexual orientation and sexual identity - is key to a person’s integral development.

It is safe to say then that biological sex determines certain roles in the reproduction of the human species. But there is also social sex - gender - that relies on these biological differences to structure inequalities, which are then presented as natural.

In biological terms, motherhood includes pregnancy, delivery and breastfeeding. However, bathing, caring for and teaching a baby are not natural activities, but rather activities socially assigned to women. Men’s arms are biologically the same as women’s for cradling, changing diapers and playing with a newborn.

Thus, it is important that biological differences not be used as a pretext for discrimination or establishing subordinate relationships.

It is essential to consider the particular vulnerability of women to HIV/AIDS infection, taking into consideration not only their biological condition, but also their social condition and relationships, particularly with reference to men.

Women’s Vulnerability to HIV/AIDS

Women are particularly vulnerable to sexually transmitted infections due to biological and social factors.

Biological Factors:

- Semen contains more HIV than vaginal fluids.

Because HIV requires live cells for transmission, and since semen has a higher cell content than vaginal fluids, it is more infectious.

- Semen remains in the vaginal and rectal tracts for longer than vaginal fluids on the penis.
Thus, in unprotected heterosexual relations, women are exposed to HIV for a longer period.

- In adolescent and post-menopausal women, the vaginal mucous is more permeable to HIV.

This is because the vaginal mucous of adolescents has not acquired sufficient maturity and thickness to act as an effective barrier; while in postmenopausal women it once again becomes thinner and weaker.

- Tearing and hemorrhaging during sexual relations.

The risks of HIV infection are multiplied for women for various reasons: traumatic coitus, rape, menstruation or microscopic fissures. Women everywhere run the same risks with unprotected anal sex, which is sometimes preferred since it preserves virginity and avoids pregnancy.

- Women are asymptomatic for many STIs.

Between one half and four fifths of STIs in women go unnoticed since there are no lesions or other signs; these are also hard to see due to the internal configuration of their genital system.

Social Factors

- Machismo reduces women’s knowledge of and control over their bodies and their sexual and economic life.

Machista conceptions still present in our society assign women the responsibility for family planning and use of contraceptives. In sexual life, they also confer on men an active role, relegating women to a passive one.

- Lack of communication between partners about sexuality.

There is a culture of limited communication about sexuality between partners. In addition, some women simply assume their husbands are faithful, while others do not know their husband’s sexual habits or feel inhibited raising the subject.

- Male resistance to condom use.

This happens more frequently in men’s stable sexual relationships (to control the sexuality and faithfulness of his partner), since condom use is associated with casual or occasional sex. Another factor is the machista idea that “manhood” is associated with risk taking, if one is to be “a real man.” On the other hand, sometimes women refuse to use condoms, associating them with casual sex or prostitution.

- Subordination of women.

Some women, although they may be aware of their vulnerability, are not sufficiently empowered in their interpersonal relationship to negotiate with their partner. They are afraid of losing the relationship, losing economic support, or of provoking violence.

- Sexist education.

Girls and boys are educated differently, assigning them stereotypical roles that will shape the way they manifest their sexuality throughout their lives, and influencing their interpersonal and couple relationships as well as their social and professional development.

- Teen pregnancy.

Teen pregnancy increases the risk of contracting HIV, since there is more biological and social vulnerability associated with it (dropping out of school, single motherhood and economic dependence, among other factors).

- Another aspect of vulnerability is violence.

Violence against women is a serious global problem which has been kept hidden for many, many years. Women victims of violence are found among all races the world over, both in developed and developing countries, in lay and religious societies, in well-to-do and in poor communities alike.

Family and domestic violence in Cuba - particularly violence against women - is manifested in different ways, not only in physical abuse, which is the most widely known expression, but also in psychological abuse. Frequently a couple’s problems and crises are solved by violence on both sides, with shouting and occasionally, mutual blows.

Challenging and changing stereotypes and prejudices is a complex process as Cuban women are well aware. But we also know such change is possible if there is sufficient political will to promote women’s participation and development on both the social and personal levels and to redefine the meaning of masculinity and femininity. This process, which has shown advances, backsliding and contradictions, is taking place in the midst of the contradiction between old and new ways of thinking. This is why we still find instances of individual and social discrimination in our own society.

This is the reason for the Federation of Cuban Women’s particular work, in close collaboration with governmental agencies and non-governmental organizations, as well as other social actors. One result is a pamphlet like this one used as a guide for HIV/AIDS prevention work, providing knowledge about the specific conditions of women in Cuba as we face the international pandemic.

This is particularly important since up to now, international literature concerning women and AIDS has been inclined to focus on prostitution, reducing discussion to HIV testing for “sex workers” and considering their clients “victims.”

A broader approach to prevention is based on working with men or women in their social contexts, taking into account that they have been educated differently, and pursue and assume sexuality in a different manner. In the case of women, it is oftentimes necessary to start from prejudices that subordinate them and increase their vulnerability to HIV/AIDS.

Learning about sexuality in general and HIV/AIDS in particular, places women in a better position to protect themselves, to help other women and the community, and to establish safe and responsible sexual relations.
HEADLINES IN CUBAN HEALTH - TOP STORY

Cuban Doctors Offering Massive Relief in Pakistan

Text and Photos by Conner Gorry

Islamabad, Pakistan - A week after the October 8th earthquake leveled large swaths of northern Pakistan, the dead were still being pulled from collapsed houses, hospitals and schools. In the small town of Balakot - 110 miles from Islamabad and very near the epicenter of the 7.6 quake - rubble and ubiquitous dust mingled with the odor of death and the shocked air common to post-disaster scenarios. These were the conditions encountered by the first of Cuba's medical relief specialists as they arrived in towns throughout Pakistan's North-West Frontier Territory and the Azad Jammu and Kashmir areas.

Part of the Henry Reeve International Team of Medical Specialists in Disasters & Epidemics, the initial group of medical professionals and coordinators traveled halfway around the world days after the quake to offer medical relief to the more than 100,000 injured and 3 million left homeless by the natural disaster. The Henry Reeve Contingent, as it's known, was formally constituted in a ceremony on September 19th in Havana and was pressed immediately into action – first in Guatemala following Hurricane Stan and now in Pakistan and Bolivia (see MEDICC Review, Vol. VII, Nos. 8 & 9, 2005).

While the team in Guatemala returned to Cuba in early December, the contingent in Pakistan has grown to over 2,000 and includes all manner of specialists – gynecologists, cardiologists, dermatologists, physical therapists, etc. The Pakistan mission has proven a minefield of challenges due to the scale of the destruction, religious, cultural and language differences, the pre-earthquake health picture and above all, climate.

“Everything was totally chaotic when we arrived on October 4th,” says Dr. Gerardo García, an anesthesiologist from Matanzas and member of the first group to arrive in Pakistan. “We had to circle for 45 minutes before landing at the airport and when we did, there wasn’t even a stairway for us to descend from the plane; the pilot had to shout from the open door to the authorities on the ground below.” Since then, Pakistani and Cuban officials have worked together to streamline the process so by mid-January, Cuba had 2,378 medical personnel (doctors, nurses and other paramedical staff) working in 44 locations throughout the earthquake-affected areas.

In December, MEDICC Review had the opportunity to witness in action these health care workers who have been voluntarily helping hundreds of thousands of Pakistanis since the earthquake. (For further details, see International Cooperation Report: Touring Cuban Field Hospitals in Post-Quake Pakistan).

Establishing Hospitals & Treating Survivors

Imagine you’re dropped in a cold, mountain town where half the population has perished in a natural disaster and the other half – many without food, water, heat or shelter – are suffering from broken bones, fractured skulls, respiratory infections, and festering wounds. You don’t speak the language, can’t drink the parasite-infested water and have no experience with Islamic custom, which requires you to cover your head (if you’re a woman) or refrain from talking to strangers of the fairer sex (if you’re a man). It’s the middle of Ramadan, so 96% of the population is fasting from sunrise to sunset, making it hard to find food. Disturbingly, aftershocks shake the ground daily, causing landslides and roadblocks and injecting an element of fear into your mission: staff a field hospital receiving masses of quake victims.

This 14-year old boy received an 11,000 volt electric shock, fell 30’ and suffered a brain hemorrhage. He was in stable condition at the Muzaffarabad hospital ICU after six days on a ventilator.

This 14-year old boy received an 11,000 volt electric shock, fell 30’ and suffered a brain hemorrhage. He was in stable condition at the Muzaffarabad hospital ICU after six days on a ventilator.

This 14-year old boy received an 11,000 volt electric shock, fell 30’ and suffered a brain hemorrhage. He was in stable condition at the Muzaffarabad hospital ICU after six days on a ventilator.

Purchased from Norway, the Cuban Hospital at Muzaffarabad is one of the busiest, seeing some 600 patients a day.

This approximates the scenario in many locations, including Hattian Bala, a picturesque, riverside site in Pakistan-administered Kashmir where a team of Cuban doctors arrived on October 24th. A field hospital with an operating room, post-ward, consultation areas and pharmacy had already been established by the local Bilal Hospital, to which the Cubans added 10 specialists, plus equipment and medicine. In those first weeks they were treating mostly compound fractures, infected wounds and women giving birth in a region where more than 90% of all housing was destroyed. Since then, the number of Cuban doctors at the hospital has swollen to 26 and, except for expectant mothers (of which there are no shortage in this country where scant reproductive health services and birth control combine with religion to raise birth rates), the pathologies have changed.[1]
“At first we were concerned with saving lives. Now it’s different. Now we’re treating pre-existing conditions,” Dr. Carlos Herrera, Director of the Hattian Bala hospital told me in December. The most common among these are acute respiratory infections, scabies, polidermitis, parasites and gastrointestinal illnesses. “This is a working hospital and even though we don’t have all the equipment of a regular hospital, we keep on working hard,” he said. This includes an average of three major surgeries a day, a vaccination campaign that had inoculated 1,898 people by mid-December and hundreds of daily out-patient visits.

One indication of the importance of the Cuban presence is the nearly complete responsibility for primary and secondary care these doctors have assumed in affected areas like Hattian Bala. This field hospital and surgical unit, for example, is now the referral hospital for the region. On the afternoon MEDICC Review visited, the Cuban doctors had just received, treated and evacuated several victims of a major traffic accident in which 40 people died at the scene. Also that day, a child was born and the first EKG ever in Hattian Bala was performed by the Cuban team managing the hospital.

### Treating Remote Communities

Equitable, compassionate health care is a pillar of the Cuban medical philosophy that has been translated as coherently as possible to the Pakistan relief effort. In the aftermath of the quake, attending remote communities – especially those located above 5,000 feet – has proven problematic. Cold, inhospitable locations make it hard to establish hospitals at higher elevations, which combines with an unwillingness of many homeless quake victims to descend to the cities and valleys in search of care.[2]

The solution the Cuban team applied was one they brought from experience in their own mountains: if people can’t reach the health services, then doctors go to them. To this end, each hospital dispatches daily teams of four or five doctors (or more depending on need), to attend to people that can’t get to one of the 30 field hospitals. Sometimes they set out on foot, carrying medicine and equipment in a backpack or in a Jeep, loaded down with a pharmaceutical cornucopia so complete they’re essentially arriving in these rural villages with a portable doctor’s office. The latter is the strategy employed by the mobile team based at the Garhi Habibullah field hospital in Pakistan-administered Kashmir.

The hospital at Garhi Habibullah had treated over 23,000 patients by late December and was the first field hospital established entirely by the Cubans. Easier said than done: the doctors arrived on October 22nd to find little more than a dusty open plain abutting a ribbon of river in the middle of nowhere. Squaring off a large corner, they set to erecting their camp, bathrooms, water and light services, plus all the necessary consultation rooms, sterilization facilities and operating theaters needed to treat the local population. Here, as elsewhere, the Cubans have counted on major logistical support from the Pakistani armed forces.

This, and many other of the practical details of how the Cuban doctors successfully help so many people in such difficult circumstances became clear on the mobile team visit to Tori. This cluster of mud houses and a few tents is in that part of the Pakistani mountains still disputed by politicians and cartographers alike, about 20 miles from the Garhi Habibullah base hospital.

The mobile team is comprised of four doctors, all Family Medicine specialists, with the team evenly split along gender lines to accommodate Pakistani religious-cultural norms that female patients can only be seen by female doctors. The white-knuckle ride along a ribbon of cliff-hugging road; the big rifle carried by our guard/translator; and the gorgeous mountain scenery that makes the area a summer vacation hot spot were all taken in stride by these doctors who head into the farthest mountain reaches around Garhi Habibullah six days a week to treat hard-to-reach patients.

After about an hour of the hair-raising ride, we could proceed no further. Escorting by a town elder, we walked the last five minutes to the village, our knees buckling under the weight of the medicines. In a small clearing, a table and chairs were set up to see patients. A couple of charpoys, typical rope beds, appeared and were pressed into service as the pharmacy, with antibiotics, pain relievers, cough syrup, topical ointments, gauze, gloves, syringes, and alcohol lined up for use. Surgical masks were passed out. “You better use this,” Dr. Alexis Rodríguez from Bayamo told me. “There’s a lot of tuberculosis here; we’ve already seen many cases.”

Two nearby tents - one for men and one for women - were commandeered for shots and more thorough examinations. Slowly but surely, the townspeople started drifting out of their homes and relief agency tents to be attended by the Cuban
doctors; this was their first visit to Tori and probably the first time some of these people had ever seen a doctor.

The same pathologies seen in field hospitals everywhere in the affected areas were here too: scabies, pyoderma, acute respiratory infections (ARIs), gastritis and gastroenteritis, hypertension and parasites mostly. But there were also other conditions in Tori: adolescent girls with anemia eating dirt for the iron, a young woman suffering from hyperthyroidism and an elderly woman with a grotesquely swollen ankle. “Here’s something we don’t see in Cuba: leishmaniasis,” explained Dr. Rolando Carballo, a family doctor and resident in cardiovascular surgery from Havana.

At the end of the day, the doctors had examined and treated 103 patients, making a point of distributing Urdu-language flyers describing health measures for pregnant women and the importance of treating drinking water. Nutrition and basic hygiene are two of the most pervasive challenges for the post-disaster Pakistani health picture.

Though the doctors valiantly wielded basic Urdu vocabulary and sign language to make diagnoses and prescribe medicine, and the army-provided translator scooted between out-patient stations, language barriers remain one of the major difficulties for the Cuban doctors here, as well as for other outside relief workers.

There are about two dozen languages (with more than 300 dialects) spoken in Pakistan and although an Urdu-Spanish-English guide to medical terms was compiled through Cuban and Pakistani collaboration and has been distributed to all the hospitals, this is of little help when the patient is a Pashto or Shina speaker. What’s more, conservative religious and cultural codes prevent women from discussing certain matters (e.g. gynecological problems) with men outside their families - like translators.

Contextual Challenges

The Cuban contingent in Pakistan is a healthy mix of recent graduates who had never before been out of the country and sage old hands with many international missions under their belt. All of the four doctors with whom I visited Tori had previous international experience in places as varied as Honduras and Ethiopia, but when asked how this one compared, said in unison “it’s harder.” In every field hospital I visited, there was consensus on this point, whether the people had previously served in the Venezuelan Amazon or the villages of Mali.

Even anesthesiologist Tomás Romero who braved sand storms and blistering heat in the western Saharan territory of the Saharawi Arab Democratic Republic and treated war-wounded in Angola says “the conditions here are the most difficult of all the places I’ve been.” Why? The weather, say the Cubans, each of whom received close to 40 pounds of winter weather gear - from socks and long underwear to sleeping bags and coats. “Of all the times I’ve served abroad, this is the hardest because of the cold,” said Idarmis Sánchez, an oncological nurse from Havana who has worked in Haiti and Angola. “It’s very cold and it gets into these old bones,” said the 56-year old who will celebrate her next birthday in Pakistan.

The mental toll on the Pakistani people is incalculable and, in some sense, beyond reach of any doctor. The women and children instantly made widows and orphans when over 75,000 died, the destruction of home and hearth, and the interminable aftershocks requires a healing process that will extend long beyond the projected spring departure of Cuba’s Henry Reeve International Team.

Still, in the quake’s aftermath, Pakistanis see possibilities: “Disaster recovery presents opportunities for restructuring,” according to Dr. Farzana Bari, chairwoman of a Gender & Disaster Management workshop held in Islamabad recently. “We have the chance to increase participation and restructure social life so it presents more opportunities like property rights for women and greater employment.” Even with so much destruction and the harsh winter upon them, hope springs eternal in Pakistan.

Notes & References

1. Pakistan has a total fertility rate of 4.3 births per woman, compared to 3.2 for the South Asian region and 2.9 for developing countries overall. The contraceptive prevalence rate in Pakistan is 28% and only 23% of births are attended by skilled health personnel (UNDP Human Development Report, 2005).

2. Land deeds are largely non-existent in Pakistan, meaning people who lost homes in the quake are reticent to leave plots unattended for fear they’ll return to a battle over land rights. Indeed, unofficial estimates indicate most of Balakot has already been occupied by squatters after half of that town’s 25,000 people perished and survivors fled to safer areas. -"l
HIV/AIDS Education Across Cuba

By Mike Fuller

Cuba fulfilled the 2005 World AIDS Day’s promise to fight AIDS with a week of educational activities organized by the national team for the management and fight against HIV/AIDS. This multidisciplinary team - GOPELS according to its Spanish acronym - comprises major ministries, media and civil groups.

The main thrust for December 2005 was to “educate, educate and educate,” said Dr. Rosaida Ochoa, Director of Cuba’s National Center for Prevention of STIs and HIV/AIDS. “We are trying to work on the relationship between individuals and their communities,” explained Ochoa, a designer of the prevention strategy contributing to Cuba’s low prevalence rate, which is rising but is still less than 10% of the Caribbean rate of 1.6% as cited by UNAIDS (2005).

Dr. José Juanes, member of GOPELS, explained in an organizational meeting for World AIDS Day, that Cuba has screened for the disease since 1986, testing all blood donors, pregnant women and those requesting anonymous HIV tests. Dr. Juanes also cited the importance of universal free access to antiretroviral therapy here for those needing it. He said that to date in Cuba there have been 6,682 cases of HIV, with 2,784 developing into AIDS and a total of 1,34 deaths. Males are still the predominant carriers of the disease here, at 80.4 percent of cases; of those, 85% are men who have sex with men.

Community Education

On the eve of World AIDS Day the agenda was packed, with some street work highlighting prevention in downtown Havana carried out by young health promoters, which was boosted to a full-fledged campaign all over the country the next day. Trained youth sat at information tables or stood with boxes of condoms and leaflets, educating passersby about the most effective ways to prevent the disease.

These volunteers had participated in workshops on sensitivity training, group dynamics, face-to-face consulting and telephone techniques for their 24-hour AIDS hotline, in place all over the country. Promoter Zulima Fis, involved with the project for two years said, “all our community prevention tours in the AIDS van have been well received, and I hope people use the condoms.” In Cuba, when they’re not being given out free like today, condoms only cost five cents apiece.

International and Homegrown Initiatives

World AIDS Day has been celebrated in Cuba since 1988 when the World Health Organization first declared it in London, and international cooperation has been decisive at various moments in Cuban AIDS history. Current and past collaborators include UNDP, UNESCO and UNAIDS, as well as NGO’s like Doctors Without Borders, Hivos and Population Services International. Nevertheless, many initiatives are homegrown now, with Cuba producing generic antiretrovirals since 2001, and HIV/AIDS prevention centers and related offices, hotlines, promoters and events all over the country.

A couple of days later, the Hope Awards for prevention, mutual support and solidarity were given at Cuba’s National Theater, with performances by visual artists, musicians, dancers and actors. Lianett Rodriguez and Mardelis Martinez, a duo from the internationally renowned troupe Danza Contemporanea, told MEDICC Review their choreography was designed to help “raise consciousness and support self esteem.” They explained how both are particularly important to people with HIV, who “suffer from rejection by uninformed people,” and that their mission is to “give AIDS a face.”

Daniel Vila, Coordinator of the Amigos del Este HIV/AIDS support group, told MEDICC Review that he had unprotected sex with a woman one night eight years ago and contracted the HIV virus. When his test came out positive he said he felt the world was falling apart and was thankful a psychologist was there to help him learn how to cope.

“It took me a long time to assimilate,” he said, “and at first I ran around trying to finish as many things as possible.” That is what is called the “elaboration of grief,” he explained, now well-versed in the language of catharsis and an international speaker on the Cuban experience. There are 31 self-help groups in Havana and 79 in Cuba, and he said there is a palpable commitment from the government to actively fight and inform about AIDS.

“Without that, words fade off into inaction,” he said, “everyone has a particular situation but at least national policy supports us, and we all have our meds.” As Daniel walked off the risers at Havana’s National Theater, MEDICC Review asked when was his best moment during almost a decade of HIV infection. Without skipping a beat the award winner said: “Today.”
HEADLINES IN CUBAN HEALTH

Cuba & Bolivia Sign Cooperation Accords in Health

By Anna Kovac

Bolivian President Evo Morales’ first foreign visit after winning a majority vote in December was to Cuba, where he signed important cooperation accords in health, education and sports. Among these was an agreement between the two countries to establish a non-profit organization to provide poor Bolivians ophthalmological treatment to cure or prevent loss of eyesight.

Cuba has already provided the National Ophthalmological Institute in La Paz with modern equipment and specialized personnel who, along with Bolivian doctors and recent graduates from the Latin American Medical School (ELAM), have treated over 1,500 patients free of cost.

The new accords stipulate for the opening of two additional centers, in Cochabamba and Santa Cruz, which will each treat 50 patients a day; in La Paz, doctors will be able to attend to 100 a day. As a result, Bolivia will have the capacity to operate on a minimum of 50,000 people annually.

Additionally, Cuba offered 5,000 more full scholarships to educate doctors and specialists as well as other health personnel at ELAM. At present, there are some 500 young Bolivians studying at the school and another 2,000 have started the pre-med bridging course. The six-year education is provided free for low-income students committing to practice medicine in underserved communities upon graduation.

During the ELAM’s first graduation last August, Venezuelan President Hugo Chávez announced that his country will establish a second Latin American Medical School, so that jointly with Cuba, the two countries will be able to provide free medical training to at least 100,000 physicians for Third World countries over the next 10 years. See MEDICC Review Vol. VII, No. 8, 2005.

The Cuba-Bolivia Cooperation Accord also offers aid for the new President’s literacy program (slated to start in July), with the aim of teaching all Bolivians to read and write in 30 months. Cuba will provide didactic material and technical means, as well as experience to the program. Venezuela just ended a two-year literacy campaign using the Cuban method known as “Yes, I Can,” during which over 1.4 million people learned to read and write. Presently Cuba is helping Brazil, Mexico and other countries with similar literacy programs. The accords also include sports, cultural and scientific exchanges.

In January, President Morales visited Caracas where Bolivia also signed cooperation accords with Venezuela, which together with the Cuban accords, fit into a bigger regional integration plan called the Bolivarian Alternative for the Americas or ALBA, as it’s known.

By Conner Gorry

Known as the ‘first independent state of the millennium,’ the island nation of East Timor will celebrate four years of independence on May 20th. Since 2004 – nearly half the young country’s life – Cuba has had a medical cooperation program with East Timor that was recently expanded to include a greater presence of Cuban doctors in-country and additional medical scholarships for East Timorese students.

Providing education and training for human resources for health is a top priority in a country that was left with only 35 physicians after violent clashes in August 1999 displaced 75% of the population.[1] In response, Cuba offered over 800 full scholarships for young East Timorese to study at Havana’s Latin American Medical School (ELAM). The first phase of the scholarship program is well under way, with 361 students from East Timor already matriculating in the medical school.[2] The balance began arriving this January to begin the pre-med bridging course, the preparatory course to the standard six-year curriculum (see Spotlight, MEDICC Review Vol. VII, No.8, 2005).

“There are so few doctors in my country and I want to help” said arriving student Délio da Silva about why he decided to apply for an ELAM scholarship. Prospective students are chosen from the 13 districts throughout East Timor, to promote more equitable distribution of the future MDs. The hope is that these students will return to their country to help alleviate the human resources for health crisis there, since ELAM students commit to practicing medicine in underserved communities upon graduation.

Creating a sustainable health system where East Timorese provide health services for their own is the long-term strategy, says Dr. Francisco Medina, head of Cuba’s Comprehensive Health Program (CHP) in the small island nation. There are currently 182 Cuban professionals and technicians working in East Timor under the medical cooperation project.

“We’re the first to get rid of the desk separating doctors from their patients, and many times the first to see them not just as cases, but as human beings,” Dr. Medina told MEDICC Review. This humanist approach is the philosophy underscoring medical education in Cuba and is the foundation for East Timor’s future doctors.

Notes & References


2. The students are distributed as follows: 27 in 1st year, 15 in 2nd year; and 319 in 3rd year.
INTERNATIONAL VOICES

International Public Health Pitfalls and Economic Arguments: The Fight Against AIDS in Cuba and Haiti

Arachu Castro, PhD, MPH and Paul Farmer, MD, PhD*


We use the lens of AIDS trajectories in Haiti and Cuba to challenge currently predominant ideologies in international public health, including over-emphasis on cost-effectiveness, as criteria to allocate resources. In Haiti, where AIDS is the number one cause of all adult deaths, the prevalence of HIV is the highest in the Americas; in Cuba, with the lowest prevalence in the Americas, the government provides comprehensive care for all AIDS patients despite a deepening economic crisis. The two distinct stories mirror the nations’ divergent paths to economic development. Instead of focusing on standard economic measures, the health of the poor should be considered the most telling public policy and international public health outcome.

A dramatic redefinition of health priorities now holds increasing sway in Latin America, where assessing public health has become a tricky exercise. This is not because it is impossible to evaluate the state of the region’s health, nor is it because the admittedly enormous variation, both across and within nations, leads to analytic impasse. To assess the health of a nation is treacherous because of the ideological minefields one now has to traverse when commenting on public health in Latin America. In the past, such assessments may have been easier, and not because public health was then a more robust undertaking. Rather, there was previously a consensus that the health of the poor was a cardinal indicator of how well the stewards of the public’s well-being were doing their job. At this point, however, it is unclear even who the stewards of public health really are. Rudolph Virchow has been called the father of social medicine, and it was he who dubbed doctors “the natural attorneys of the poor.” Doctors were supposed to defend the poor because of the impact of their social condition—poverty was embodied as preventable or treatable sickness. Virchow also quantified this position in quite graphic modern-day epidemiological terms: “Medical statistics will be our standard of measurement; we will weigh life for life and see where the dead lie thicker, among the workers or among the privileged” (quoted in Rosen 1974:182, from Virchow’s Medicinische Reform; see also Eisenberg 1984).

A critical examination must also be made of an even more troubling quantification - the increasing weight assigned to economic arguments in assessing approaches to the AIDS pandemic - and the unhealthy outcomes that these arguments engender in poor countries. The impact of contrasting economic arguments and the impending need for challenging some of the current predominant ideologies in international public health are undeniably exposed through the exploration of the respective AIDS trajectories in Haiti and Cuba.

Cost-Effectiveness and the Health of the Poor

As public health has become a larger enterprise, it has defined a turf of its own; as nation-states have come into being in Latin America, they have defined national public-health agendas, increasingly with the assistance of experts from international institutions. The “welfare state” that we think of as having been progressively built up, from the 1930s to the beginning of its decay in the 1980s, barely got a start in Latin America before debt and the agenda setting of First World economic advisers attempted to terminate the welfare state as a public responsibility. The health of the poor is now deemed less important than the cost containment of public health services, and governments too often push to minimize the healthcare drain on national budgets increasingly dedicated to the supposedly higher goals of debt service and privatization (see Kim, Millen, Irwin, and Gershman 2000). Several recent years have noted the deadly consequences of the shift in priorities from the epidemiology of disease to economic arguments that promote the nonprovision of services termed “not cost-effective” without necessarily offering alternatives for those who need those services but are too poor to afford them (see Kim, Shakow, Castro, Vanderwerker, and Farmer 2003).

Those struggling to promote the health of the poor are now in the defensive position of having to show that proposed interventions are both effective and inexpensive, regardless of the gravity of the health problem in question. Aside from local ministries of health, the largest financiers of public health in Latin America, except for Cuba, include the international financial institutions, such as the World Bank and, less directly, the International Monetary Fund. In some regards, this makes sense, given the undeniable association between economics and health. But there is a dark side to the new accounting: such sources place funding for public health within a framework developed by economists working within a paradigm in which market forces alone are expected to solve health and social problems - a paradigm which is one of the ideological minefields. As efforts are made to determine whether or not an intervention is “cost-effective,” the destitute sick are often left out altogether.

In attempting to address the AIDS pandemic, the region of Latin America and the Caribbean now faces a formidable challenge (Castro et al. 2003). At the present time, 1.5 million people in Central and South America and at least 429,000 in the Caribbean are already living with HIV/AIDS (UNAIDS 2002a). The Caribbean, with an adult HIV prevalence of 2.2 percent (UNAIDS 2001), has the second highest rate of HIV infection in the world (UNAIDS 2002a), second only to sub-Saharan Africa. Prevalence rates vary from country to country; in Haiti, adult prevalence of HIV exceeds 6 percent; in the Dominican Republic it is 2.5 percent; in Jamaica it is 1.2 percent; while in Cuba the prevalence is less than 0.05 percent (UNAIDS 2002b).

To date, the response of the affluent countries and their institutions to this crisis - from aid agencies, nongovernmental organizations (NGOs), and the pharmaceutical industry - has been insufficient. The death toll and increasing HIV incidence in countries highly dependent on foreign aid provide the most eloquent rebuke to economically driven assessments. Until the first disbursements were made by the Global Fund to Fight AIDS, Tuberculosis, and Malaria in 2003, the quasi-totality of AIDS assistance to the heavily burdened countries had consisted of the promotion of education and condom distribution to prevent HIV transmission. Yet, many of those at greatest risk already know that HIV is a sexually transmitted...
pathogen and that condoms could prevent transmission. In Haiti, over 97 percent of the population knows of the existence of AIDS, and 62 percent of women and 81 percent of men know at least one way to prevent infection (Cayemittes, Placide, Barrère, Mariko, and Sévère 2001). Their risk stems less from ignorance and more from the structural violence that millions of people endure in Latin America as a result of historic, political, and economic processes (see Farmer 1999, 2000a; Castro 2000).

Aid agencies have increasingly relied on economic evaluation analyses to allocate resources. Current economic evaluation approaches to public health include cost-benefit and cost-effectiveness analyses, both of which rely more on projections of the outcomes derived from investments in specific health interventions than on empirical data. Still, they inform budgeting and financial planning, help assess the affordability of interventions, and help identify areas for improving efficiency of delivery of services and cost savings (Gold et al. 1996; Murray and Lopez 1996; Holtgrave 1998).

With its many inherent underlying assumptions, the usefulness of economic analysis as a tool for policy makers and funders has been grossly overstated - creating another ideological minefield (see Moatti et al. 2003). By uncritically accepting that resources are limited - one of the fundamental assumptions of economics - and by advocating the use of decision tools designed to measure specific interventions rather than a comprehensive assessment of an entire health program, these approaches have curtailed potential investment in timely AIDS prevention and care in Haiti. Very few economic evaluations have sought to move beyond a narrow definition of outcomes or to reformulate the mathematical equations to include other outcomes such as lower risk of transmission (Blower and Farmer 2003) or the social benefits derived from providing appropriate treatment to people living with HIV/AIDS, as it happens in Cuba. Such social benefits have an impact at the household, community, and national level by helping patients resume work and take care of children and relatives.

The omission of these social variables should not be overlooked given the threat the AIDS pandemic poses to economic development. In addition to the grave effects on the down-spiraling GDPs of the most hardest hit countries, AIDS in the Americas could result in the creation of a “missing generation,” as has already occurred in parts of sub-Saharan Africa; in these areas, much of the middle- or working-age population has died or will die from the disease, leaving children (often orphans) and the elderly as survivors. If social variables are taken into account in the cost-effectiveness analysis of health interventions, providing comprehensive AIDS treatment would be more “cost-effective” than current medical and public health literature suggests.

Health in the Pearls of the Antilles

Neighboring islands Cuba and Haiti both claim to be “the Pearl of the Antilles,” owing to the wealth they procured, under colonial rule, to Spain and France respectively. Yet, as Cuba’s José Martí noted over a century ago, “Haiti is a land as peculiar as notable, and in its roots and constitution so different from Cuba, that only pure ignorance can find between them a reason for comparison, or argue with one with respect to the other” (1894:51). It is with fascination and a bit of dread that we turned to comparing public health and AIDS in these two countries, and the impact of the logic of cost-effectiveness in such diverse settings.

Haiti has the highest maternal and infant mortality rate in the Americas; Cuba, the lowest. The leading killers of young adults in Haiti are AIDS and tuberculosis; Cuba has the lowest prevalence of HIV in the Americas and remarkably little tuberculosis (PAHO 2002a). The Human Development Index 2003 ranked Haiti 150 out of 175 countries; Cuba ranked 52 (UNDP 2003). Haiti is by all conventional criteria the poorest country in the Americas and one of the poorest in the world: per capita gross domestic product was US$460 in 2001 (UNDP 2003); 67 percent of the population lives in poverty (PAHO 2003), unemployment exceeds 70 percent, and fewer than one in 50 Haitians have regular employment (World Bank 1997). Political violence, among other afflictions of poverty, is endemic. Around 40 percent of the Haitian population has no access to health care; approximately 20 percent of the population uses the public sector; 20 percent the mixed public-private sector; and 20 percent the private sector (based on PAHO 2002a). In Cuba, in contrast, GDP per capita in 2000 was estimated at US$1,475 (PAHO 2002a:198), unemployment in 1998 at 7 percent (UNDP 2000), and access to public health care at 100 percent (PAHO 2002a).

Health conditions in Haiti are among the worst in the world. All of Haiti’s public health indices are poor, and it is not coincidental that Haiti has the highest incidence of HIV in the Americas. As elsewhere in the world, infant mortality rates in Haiti fell slowly but steadily over the course of the past few decades. More recently some of these trends have been reversed and infant mortality now stands at 80.3 per 1,000 live births. Infant mortality in Haiti has actually risen since 1996, when it was 73.8 per 1,000 live births; PAHO attributes this rise to increasing poverty, the deterioration of the health system, and AIDS (PAHO 2002a:338). Maternal mortality rates are appalling. Even the low-end estimates (523 per 100,000 live births) are the worst in Latin America (PAHO 2002a), and the only community-based survey, conducted around the town of Jacmel in southern Haiti in the 1980s, pegged the figure at 1,400 per 100,000 live births (Jean-Louis 1989). As for food and water, according to the United Nations Food and Agriculture Organization (FAO), Haiti is the third hungriest country in the world (FAO 2000). The water story is even worse: in a recently developed “water poverty index,” Haiti was ranked in 147th place out of 147 countries surveyed (Sullivan, Meigh, and Fediw 2002).

AIDS is a serious problem in Haiti. With an estimated 250,000 people living with HIV/AIDS (Global Fund 2002b), Haiti is perhaps the only country in the Americas in which AIDS stands as the number-one cause of all adult deaths (PAHO 2002a). Haiti was the first country after the United States to report AIDS cases. Amid a great deal of controversy over the origin of HIV in the Americas, researchers now believe that HIV spread to Haiti through contact with North Americans, and not vice versa. Male commercial sex workers, catering to a largely North American clientele, played a large role in the spread of HIV within Haiti and the rest of the Caribbean region (Farmer 1999). The Haitian AIDS epidemic has been described as “generalized” since it affects women as much as or more than men (Pape 2000), is not confined to any clearly bounded groups, and has spread from urban areas to the farthest reaches of rural Haiti. HIV kills 30,000 Haitians each year, with an estimated cumulative number of 196,000 deaths and 200,000 orphans (UNAIDS 2002b; Global Fund 2002a). HIV has also aggravated an already severe tuberculosis epidemic. In Haiti, between 15 to 45 percent of hospitalized patients in urban areas are infected with HIV; in TB sanatoria, the proportion is more than 50 percent (Pape 2000). It is estimated that around 2,000 people with AIDS in Haiti are on HAART, both in rural Central Plateau and in Port-au-Prince; the number is expected to increase (Global Fund 2004b).

In 1989, soon after AIDS was declared a priority disease in Haiti, the National Commission to Fight AIDS was appointed, while the AIDS National Bureau was created with full-time personnel from the Ministry of Health (Global Fund 2002a). This bureau was operational until the coup d’etat of 1991, when all foreign aid stopped (Pape 2000). While in 1991 the allocation of the Ministry of Health was US$6 million, after the resumption of foreign aid between
the two embargoes the budget increased considerably, going up to US$57 million in 1999 - which represents about 10.5 percent of the public budget and between 0.8 and 1 percent of the GDP. The majority of the budget of the Ministry of Health - 69 percent in 1996–1997 depended largely on foreign aid (PAHO 2002a).

In 1998, the Haitian Ministry of Health recognized health as a fundamental human right, while acknowledging the difficulties with meeting that goal due to scarce human and financial resources (PAHO 2002a). Notwithstanding these constraints, the AIDS National Bureau was reorganized in 2001, when the president of Haiti launched the five-year National Strategic Plan exercise (Global Fund 2002a). One year earlier, the Bank of Haiti had estimated that the country produced the same amount of goods and services as it had in 1980, while the population had increased by 75 percent over the same period (Banque de la République d’Haïti 2000). With such a devolving economy, an international aid embargo, and the majority of international public health experts denying that comprehensive AIDS care was unsustainable and not cost-effective in resource-poor settings, what was the government of Haiti left to do? Was the existing political will enough to woo external resources to fight AIDS?

One could not find a starker contrast within Latin America as that between Haiti and its second-closest neighbor, Cuba. Like Haiti, Cuba has known major economic disruption in the past decade. In 1991, after losing 85 percent of its foreign trade as a result of the dismantling of the former Soviet Union (Economic Commission for Latin America and the Caribbean [ECLAC] 1997 [2000], 2001), Cuba entered an economic crisis, officially named the Special Period in the Time of Peace. The dependency on the Soviet Union had provided Cuba with a buffer against the U.S. economic blockade of the island that began in 1961. Although Cuba benefited greatly from its economic ties with the Soviet Union, this dependency proved disastrous starting in 1989; no longer able to import petroleum products, foodstuffs, or medicines and distribute them at heavily subsidized prices, Cuba's economy spiraled into crisis. In addition, in 1992, the U.S. Congress passed the Cuban Democracy Act, which restricts the sale of food, medicines, raw materials, and medical equipment to Cuba, and penalizes third countries that deliver drugs and other goods to this Caribbean island. These newly imposed restrictions and the loss of foreign currency resulted in significant shortages of drugs and medical equipment (Castro, Toqores, and Barberia 2003). This contraction was as severe as that faced by any Latin American economy.

So what about the impact of such seismic rumblings on the health of the Cuban poor? Although much is made of the harm done by the U.S. embargo to Cuban medicine, the Cuban people remain healthy. This is due in large part to the structure of Cuba's economic, social, and public health systems (see Feinsilver 1993; Chomsky 2000; Barberia and Castro 2003). In addition, state control of the economy helped distribute the impact of the crisis far more equitably, preventing it from striking hardest at the poor - something that would have been impossible in what others would consider a “model,” and therefore capitalist, developing country economy.

Indicators such as infant mortality have actually continued to decline: in 1985 infant mortality was 15 per 1,000 live births, in 1990 it was 10.7, in 1995 it was 9.4, and in 2000 it was 7.2 (Ministerio de Salud Pública [MINSAP] 2001). World Bank data records Cuba’s infant mortality as 6 per 1,000 live births, far below the 27 per 1,000 live births registered for Latin America and the Caribbean (World Bank 2003b). In fact, there was little impact on overall morbidity and mortality trends during the Special Period, except for a rise in infectious diseases that had been deemed under control, such as tuberculosis (Marrero, Caminero, Rodriguez, and Billo 2000). One reason for such minimal effects - and there are no doubt several - is that health spending was increased during the economic crisis in order to shield the vulnerable from adverse health outcomes. Between 1990 and 1997, health spending rose in local currency in both absolute and relative terms, growing from 6.6 to 10.9 percent of federal outlays (Ministerio de Finanzas y Precios 1998).

Despite high prevalence rates of HIV in the Caribbean, as of the end of 2002, Cuba had registered 4,517 HIV-positive cases since the beginning of the pandemic - of the 3,413 alive, 928 had been diagnosed with AIDS at that date (Pérez-Avila 2003) - and continues to boast an HIV-prevalence rate below 0.05 percent (UNAIDS 2002a). In 1983, although the etiology of the newly emerged disease was still unknown, Cuba created a National AIDS Commission, which recommended the costly destruction of its imported blood products and prohibited importation of new products. The National AIDS Commission, building on the already well-developed primary health care system, created an epidemiological surveillance system in each hospital to detect clinical manifestations of AIDS (Pérez-Avila, Peña-Torres, Joanes-Fiol, Lantero-Abreu, and Arazoza-Rodriguez 1996). At the end of 1985, the first Cuban HIV-positive case was diagnosed at the Institute of Tropical Medicine (IPK) in Havana. The patient had served as an internacionalista (international aid worker) in Mozambique until 1977; his wife also tested positive. When the IPK reported these first two cases to the vice minister of epidemiology, the Cuban government assigned US$2 million to import 34 ELISA kits that would allow them to conduct 750,000 HIV tests - an average of 400,000 blood donations per year (Pérez-Avila 2003, personal communication). The imported ELISA kits were distributed throughout all the blood banks and centers for hygiene and epidemiology of the country; by 1986, all blood donations were screened for HIV.

In 1986, the sexual contacts of people diagnosed with HIV were enrolled in the Partner Notification Program and tested for HIV every three months for a period of one year after the last sexual contact with the HIV-positive patient (Hishe, Chen, Lee, and de Arazoza 2001). While from 1986 until 1993 Cuba relied on controversial HIV sanatoria to contain the epidemic, this strategy has shifted to a combination of in-patient and ambulatory care (Castro, Farner, and Barberia 2002). Cuba is one of the few developing countries to guarantee comprehensive health care and treatment for all people living with HIV/AIDS. Since 1997, pregnant women who have HIV receive AZT and breastmilk substitutes to prevent mother-to-child transmission of the virus (González-Núñez, Díaz-Jidy, and Pérez-Avila 2000). Since 2001, all Cuban HIV-positive patients who meet certain clinical criteria are eligible for HAART, and, as of June 2004, there are 1,533 AIDS patients enrolled (Pérez-Avila 2004, personal communication). Their treatment consists of three domestically produced generic antiretrovirals, which include several reverse transcriptase inhibitors and one protease inhibitor. Since 2001, there has been a decrease in the number of deaths from AIDS and in the incidence of opportunistic infections related to HIV/AIDS. The number of patients hospitalized at the IPK has dropped - from 90 per month in 2000 to 12 per month in 2001 - even though HIV incidence has increased (Pérez-Avila 2002, personal communication).

Life and Death and the Logic of Cost-Effectiveness

What conclusions can be drawn from these comparisons? Which countries, other than Cuba, would have invested US$2 million to contain the spread of HIV when only two cases had been diagnosed? The Cuban experience with AIDS is a rebuke to those who place overarching emphasis on cost-effectiveness in setting public health priorities. It also supports the compelling argument...
that comprehensive AIDS care is “sustainable” in the hardest-hit communities and demonstrates that care is “cost-effective” and a “ranking priority” in the face of other competing demands. Some health economists suggest that a life-saving intervention that costs between two to three times the gross national product (GNP) per year-of-life saved represents a reasonable expenditure (Garber 2000). Even by this crude calculus (see Moatti et al. 2003:254–255 for its critique), a three-drug HAART regimen at generic prices would prove a sound investment by any criteria, even in Haiti, as long as drugs are used correctly. Still, when Partners In Health sought funding for expansion of a pilot project in rural Haiti (Farron, Leandre, Mukherjee, Claude, et al. 2001) from a number of international agencies charged with responding to AIDS, all declined to support this effort on the grounds that the drug costs were too high to meet so-called sustainability criteria, given the profound poverty of Haiti. Pharmaceutical companies were approached for contributions or concessional prices, but they referred Partners In Health back to the same international agencies that had already termed the project unsustainable. Ironically, a survey conducted by the Pan American Health Organization in 2001 showed that some antiretrovirals were more expensive in Haiti than in the United States (PAHO 2002b).

It is, in fact, not the treatment of the destitute sick that is unsustainable, but rather the ever-widening global outcome gap that prohibits the fruits of science from reaching those most in need of them. The destitute sick remind us that sacrosanct market mechanisms will not serve the interests of global health equity. It is difficult to support the assertion, widespread in international financial institutions, that the neoliberal economic policies now in favor will ever serve the interests of those living with HIV. If the goal is to heal or to ease the suffering of the poor, there are enormous obstacles erected in the way of financing what was once believed to be a public good (see Smith, Beaghole, Woodward, and Drager 2003).

Although the ideological underpinnings of the various approaches to public health are the subject of medical anthropological inquiry, actual outcomes such as morbidity and mortality rates need to remain at the core of these analyses. Of course, the major debate in health and social policy is over which outcomes are most vital. For economists, such measures as GNP and external debt are key indices (which are ideologically freighted subjects in and of themselves). For education experts, literacy rates is a key measure. The human rights community, interestingly, almost always narrows its focus to privilege rights of expression and representation while excluding social and economic rights - an omission that should trouble physicians, who need supplies of tangible goods, the very tools of their trade, before they can go to work (Farmer 2003a). Unless the Latin American poor are accorded some right to health care, water, food, and education, their rights will be violated in precisely the ways manifest in Haiti: their lives will be short, desperate, and unfree.

And so we return, as always, to the health of the poor as the most telling social-policy outcome. Because we believe that assessing the health of the poor is the best way to assess public health in Latin America, it is wise to avoid confident claims regarding “cost-effectiveness” and “appropriate technology.” Cuba has introduced sophisticated assays of viral load costing a small fraction of what tests cost in the United States; it has manufactured many antiretrovirals locally. “It is no accident that the country that disproves the assumptions behind the argument, Cuba, is virtually always left out of mainstream analyses that attempt to defend neoliberal reforms” (Chomsky 2000:332). Actually, Cuba’s experience leads us to reconsider the economics of intervention in slowing the spread of HIV and reducing the death toll. In Haiti, where AIDS is the reason for plummeting life expectancies and for increasing numbers of orphans, we discern fairly overt obstructionism to the use of HAART. Leaving aside all moral arguments, any economic logic that justifies as acceptable the orphaning of children is unlikely to be sound, since the long term cost to society, though difficult to tabulate, is far higher than the cost of prolonging parents’ lives so that they can raise their own children. Furthermore, AIDS treatment causes a dramatic drop not only in mortality (Marins et al. 2003) but also in the number of opportunistic infections and the consequent number of hospital admissions (Gebo, Chaisson, Folkmer, Bartlett, and Moore 1999). HAART has already been declared cost-effective in Europe, North America, and even Brazil, where HIV has become, for many, a chronic infection (Freedberg et al. 2000).

We keep hearing that we live in “a time of limited resources.” But how often do anthropologists, physicians, or public health specialists challenge this slogan? The wealth of the world has not dried up; it has simply become unavailable to those who need it most. By questioning these unfounded economic assumptions, medical anthropologists can contribute to rethinking the long-standing public health paradigms that curtail access to health care for the poor. In this time of record profits for many industries - especially the research-based pharmaceutical industry - and dazzling individual fortunes, is it unthinkable that we should spread the wealth? If the health of the poor is the yardstick by which our public health efforts in Latin America are judged, we will have a lot of explaining to do when history sits to consider our case.

References


Economic Commission for Latin America and the Caribbean
MEDICC Review - HIV in Cuba: Prevention of Mother-to-Child Transmission


GLOBAL VOICES OF SCIENCE: Deciphering Dengue: The Cuban Experience

Maria G. Guzmán, Cuba

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Maria G. Guzmán, head of the virology department at the Tropical Medicine Institute Pedro Kourí (IPK), in Havana, Cuba, has more than 20 years of experience working on virology. With her husband and a group of distinguished collaborators, her work on dengue viruses in Cuba and abroad has contributed to knowledge of the pathogenesis, diagnosis, epidemiology, and clinical progression of this disease. She is a member of the Cuban Academy of Science, a Fellow of the Academy of Sciences for the Developing World (TWAS), and director of the PAHO/WHO Collaborating Center for Viral Diseases. More recently, she has taken over the helm of the PAHO/WHO Collaborating Center for the Study of Dengue and Its Control and became a member of the Foundation Council of the Global Forum for Health Research. She is a member of several expert committees at the Pan American Health Organization (PAHO), World Health Organization (WHO), and the Special Programme for Research and Training in Tropical Diseases (TDR).

By the 1960s, vaccines and antibiotics had so reduced the incidence of such deadly diseases as smallpox, poliomyelitis, and acute rheumatic fever that the public health community was basking in a “comfort zone.” This comfort was shattered beginning in the 1980s with the emergence of new infectious diseases, among them HIV/AIDS, severe acute respiratory syndrome (SARS), and avian flu, and the reemergence of diseases once considered scourges of the past, including West Nile fever and dengue, a devastating disease to which I have devoted much of my professional life.

Factors involved in the emergence of infectious diseases are complex and interrelated. Epidemiological evidence shows that social and economic factors such as poverty, social exclusion, health systems, environments, food security, water and sanitation, and education are of utmost importance.[1,2] Public health infrastructure, including disease surveillance, disease prevention, communication, and financial support, are crucial for facing threats posed by emerging infectious disease.

Almost 50 years ago, a small Caribbean country, the Republic of Cuba, embarked on a plan to accelerate development of its education, public health, and science sectors, a policy that has prepared the country for the new global context of emerging and returning diseases. At the end of the 1950s, Cuba had approximately 10 million inhabitants and no more than 3000 physicians. Now a population of about 11 million is served by a health system that includes more than 70,000 medical doctors.

This buildup has been serving the population well. Poliomyelitis and malaria were eradicated in 1962 and 1967, respectively. In the 1970s, tetanus neonatorum (which afflicts newborns) and diphtheria became a worry of the past for Cubans. A national regimen of 13 vaccines led, in the mid-1990s, to the elimination of measles, rubella, and mumps and to the control of tetanus, meningococcal disease, hepatitis B, leptospirosis, and other diseases. The rates of contracting meningococcal disease and dying from it diminished by 93% and 98%, respectively, and the rate of hepatitis B infection has been cut by 97% in children younger than 15 years of age. Although the incidence of tuberculosis is increasing worldwide, with some countries having reported rates in recent years well above 100 cases per 100,000 inhabitants, Cuba has a low rate of 6.6 cases per 100,000 inhabitants, and the cases that we do see are treatable. Deaths due to diarrhea were reduced by more than 95%.

In general, mortality from infectious and parasitic diseases in Cuba is only 6.5%, with most of the deaths due to influenza and pneumonia. According to the World Health Organization’s World Health Report, 1998, infectious and parasitic diseases caused one-third of all deaths in the world in 1997 and 43% of deaths in the developing world. The low rate in Cuba is possible because of the high educational and health levels of the country.

The steady improvement of Cuba’s health system over the past half-century has been complemented by a buildup of the country’s scientific strength, particularly in the biomedical sciences. At the beginning of the 1960s, there were only four experimental stations (all of them dedicated to the study and improvement of sugar cane) and three universities, and illiteracy was widespread. Today, there are more than 700,000 graduates at 60 universities, which are host to 220 science and technology centers. In 2003, these institutions employed nearly 78,000 Cubans, almost two-thirds of them scientists and technicians and 52% of them women.

A Scientist Grows in Havana

As a little girl, I found myself within this improving health system and educational infrastructure, and I grew up with the idea that I could become a scientist. Early on, I dreamed about studying astronomy. I was impressed by the planets that I could see in the sky, as well as the other worlds I couldn’t see. However, I was caught up in the rapid changes of Cuban society, particularly those related to the development of biomedicine. As a result, I shifted my studies toward medicine.

After I received my medical degree from Havana University in 1975, I started working as an investigator at the virology laboratory of the Centro Nacional de Investigaciones Científicas (CNIC) in Havana. This scientific institution was founded in 1965 and it has been crucial for the development of Cuban science ever since. Many of the scientific leaders of the country’s main research centers— including the Centro de Ingeniería Genética y Biotecnología (CIGB), Instituto Finlay (for vaccine development), Centro de Imunoensayos (for the development of diagnosis technology), and Instituto de Medicina Tropical “Pedro Kouri” (IPK) (for the surveillance, research, and control of infectious and parasitic diseases)—were trained at CNIC.

At CNIC, I honed my skills in research and analytic thinking and in 1980 I moved to the virology laboratory at IPK. There was no better place for a person who wanted to devote her efforts to fighting infectious diseases.

In May 1981, my country was befallen with a public health crisis, one that would decide my professional future. The first epidemic of dengue hemorrhagic fever/dengue shock syndrome (DHF/DSS) anywhere in the Americas took hold in Cuba. DHF/
DSS is the most lethal form of disease resulting from infection with the dengue virus, a member of the viral family Flaviviridae that is transmitted from person to person via mosquitoes, mostly in the Tropics where these vectors thrive. Most people who get infected develop a fever and a rash, but recover in about 5 days. About 1 in 20 of those who develop a hemorrhagic form of the fever die, and of those who develop dengue shock syndrome, 40% die.[3]

Previously, only 60 DHF/DSS cases had been observed in the Americas. In the 1981 epidemic in Cuba, more than 344,000 cases were reported, of which 10,000 were deemed severe and very severe. There were 158 fatalities. All but 57 of these were children, a chilling factor that only added to the national dread elicited by this epidemic. Once the first cases were detected, I found myself—despite my youth and inexperience—playing a crucial national role in the diagnosis of a severe viral disease that had been relatively unknown in Cuba or the region before. (Although a milder dengue epidemic had been reported in Cuba in 1977-1978, I was not involved in the country’s scientific and medical response at that time.)

Our serological and virological examinations quickly revealed that the 1981 outbreak was due to the dengue 2 virus, one of the four serotypes known. In addition to studying the severe cases during the epidemic, we developed protocols for diagnosing the disease, which can be confused with other infections, and we established disease surveillance methods.

Even as Cuban health care workers were succeeding in checking the spread of the virus, using mosquito eradication and other techniques, a new phase in my scientific career was just beginning. Rather than leaving the dengue virus behind, I devoted my research to it. After all, this outbreak that I had just witnessed represented a globally significant turning point in the disease’s history.

### The Whole Dengue

Among my first tasks were to clinically describe DHF/DSS in the adults who contracted the disease, define and confirm some risk factors for progressing to the more severe form of the disease, and conduct a genetic study of the dengue 2 strain. I would later find this work to be helpful, during DHF/DSS epidemics in Cuba in 1997 (dengue 2) and 2001-2002 (dengue 3). Dengue disease is considered one of the best contemporary examples of the emergence or reemergence of a viral infectious disease. First described in 1780 by the Philadelphia physician Benjamin Rush during an epidemic in his city at that time, many epidemics have been reported since then. Currently, the distribution of dengue is worldwide. Caused by any of the four dengue serotypes and mainly transmitted by the Aedes aegypti mosquito, the disease is observed in two main clinical forms: the mild disease called dengue fever (DF) and the severe syndrome, DHF/DSS.

In the last 30 years, the incidence of the disease has been increasing. The first cases of DHF/DSS were reported in Southeast Asia and the Western Pacific (during the 1950s and the 1960s) and then later in the American region. Factors such as substandard housing, poor water supplies, and the spread of dengue viruses between populations have directly contributed to the reemergence of the disease.

Soon after the clinical recognition of DHF/DSS, Scott. B. Halstead, then at the University of Hawai’i’s School of Medicine, and others argued that those most at risk for developing this severe form of dengue disease are those who already had been infected by one dengue serotype and then subsequently become infected with a different serotype. Others proposed that viral virulence is the key risk factor.[4,5]

Following the 1981 outbreak in Cuba, I, along with Gustavo Kouri, my collaborator and husband (and son of the founder of IPK), and a group of distinguished scientists, including Susana Vasquez, dedicated our work to uncovering risk factors for DHF/DSS. Our epidemiological, virological, and clinical investigations have led to important new observations. For one thing, in studies of three well-defined DHF/DSS epidemics in Cuba—in 1981, 1997, and 2001-2002—we confirmed that secondary infection was a significant factor in more than 97% of the severe cases. We made two other particularly important epidemiological observations that support the role of the secondary infection. One of them was that no severe and fatal DHF/DSS cases were observed among 1- to 2-year-olds during the 1981 epidemic. Because they were not born until after the first epidemic of DF caused by the dengue 1 virus in 1977, they could only have experienced a primary infection during the 1981 epidemic. We also found that no cases of DHF/DSS were observed among children during the 1997 and 2001-2002 epidemics. These children were born in a period free of dengue transmission (1982-1996) and so also were only at risk of a primary dengue infection.

Another relevant finding, which our group reported in 2000, is the influence of the interval between dengue infections. In contrast with early epidemiological studies that predicted that DHF/DSS would ensue only if the primary and secondary infections occurred within an interval of 5 years, our studies have demonstrated a marked increase in severity with longer intervals between an initial dengue 1 and a secondary dengue 2 infection. Supporting this result is our recent demonstration that certain lymphocytes, a type of immune cell, can retain a “memory” of a dengue infection that occurred 20 years earlier. These observations suggest that once an individual is infected by dengue 1 virus, that person could be susceptible to developing the severe disease for decades. The message to vaccine developers is clear: A dengue vaccine needs to elicit long-lasting protection against the four dengue serotypes, or else the vaccine itself could sensitize individuals who are subsequently infected to mount a severe immune response.

In some of our other research into risk factors for severe dengue, we have found that individuals with chronic diseases such as bronchial asthma, diabetes mellitus, and sickle cell anemia have a higher likelihood of developing DHF/DSS. Age too is a risk factor. We have demonstrated a much higher risk of developing the severe disease during a secondary infection...
in infants and children as compared with adults. For children aged 3 to 14 years with secondary infections, the death rate was 14.5-fold higher than in young adults aged 15 to 39 years (see the figure).

Not many researchers have looked into how ethnicity and genetics relate to the risk of developing DHF/DSS. Our investigations into these issues have suggested that whites are at particular risk as compared with blacks. In my country’s three epidemics since the late 1970s, DHF/DSS was predominantly observed in whites. Currently, Beatriz Sierra and Gissel Garcia, two of our immunologists, are studying the genes that may predispose individuals to the development of DF and DHF/DSS.

Meanwhile, others in our group are working on biological and genetic characterizations of the viruses that have been isolated in the Cuban dengue epidemics. With the help of Delfina Rosario and Rosmari Rodriquez Roche, we have demonstrated that viruses linked to DHF epidemics belong to an Asian genotype. In a more detailed study of genetic changes in the dengue 2 virus during the 1997 epidemic, we documented a pattern of sequence evolution in some genes, and a remarkable conservation both of genes coding for structural proteins, as well as of the noncoding regions in the genome. We are currently trying to decipher the implications of these findings.

In addition to the human and viral genes important in dengue infections, we are looking into the role of the humoral and cellular immune response in the development of DHF/DSS. With the collaboration of Ana B. Perez and Mayling Alvarez, two young researchers in our group, we have obtained preliminary data on the influence of heterotypic neutralization—in which antibodies elicited against one dengue serotype can react also with another serotype—to mitigate the severity of the severe form of the disease. Our results suggest that heterotypic dengue antibodies decline over time, a phenomenon that could explain why secondary infections often appear worse as more time passes since the primary infections. Also, we demonstrated the association of increased levels of interleukin-10 in dengue patients with a secondary infection, suggesting an important role of this cytokine in the pathogenesis of dengue. This observation provided the first “in vivo” evidence of a direct relationship between secondary dengue infection and the development of a noninflammatory immune response, opening yet another new avenue of research.

We have made several attempts to synthesize what is known about dengue pathogenesis into testable hypotheses about why some outbreaks lead to DHF/DSS epidemics. In one of these, published in 1987, my husband and I integrated epidemiological factors (high vector density, high virus circulation, and a susceptible population at risk of a secondary dengue infection), host factors (age, gender, ethnicity, chronic diseases, preexistence of dengue antibodies, interval between infections, and genetics), and viral factors (serotype, strains, and genotypes) into one multifactorial analysis to facilitate the evaluation of the risk of a given population.

More recently, I, my husband, and Scott Halstead—now working for the South Korea-based Pediatric Dengue Vaccine Initiative—published a hypothesis in an attempt to explain the significant monthly increases in severity during the Cuban dengue epidemics. Specifically, a significant increase in the proportion of DHF/DSS cases and in fatality rates for both DF and DHF/DSS was observed during the 1981 and 1997 epidemics. In our “escape mutant” hypothesis, we conjecture that the occurrence of heterotypic dengue neutralizing antibodies after a primary dengue 1 infection later serves, during a subsequent infection with dengue 2 virus, as a selection mechanism that favors “neutralizing-escape mutants” of the dengue 2 virus. This can bring on more severe sickness.

Dengue to Come

The world needs a dengue vaccine. Our group is now collaborating with CIGB on a project whose goal is to obtain a recombinant vaccine candidate to dengue viruses. With the collaboration of Mayra Mune, a molecular immunologist, for the first time we have evaluated in monkeys the usefulness of a recombinant protein expressed in yeast Pichia pastoris. We observed a rise both in neutralizing antibodies against dengue and partial protection to challenges with the wild-type virus. Also, our preliminary evaluations of a dengue protein fragment are showing promise in eliciting protective immune responses in animals.

Although dengue has dominated my research portfolio, I have been able to collaborate with my colleagues in the study of a number of the most medically important infectious diseases. As the national reference center for viral diseases, our virology department at IPK is charged with the diagnosis and surveillance of, and research into, hepatitis, measles, rubella, and mumps, as well as respiratory, enteroviral, and sexually transmitted diseases, among others. Current international events have obliged us to include in our portfolio new viral infections, such as West Nile fever, SARS, and avian flu, among others.

Founded in 1937 by Pedro Kouri, the famous Cuban parasitologist, IPK now gathers in one place the main disciplines involved in the study of infectious and parasitic diseases. In this setting that combines high scientific quality and collegiality, we have been able to assemble a multidisciplinary group for dengue research that has recently been recognized as a new PAHO/WHO Collaborating Center for the Study of Dengue and Its Control. It is gratifying to be able to share our insights and discoveries with others in what is becoming a global fight against this disease.

References and Notes


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Cardiovascular Disease and Associated Risk Factors in Cuba: Prospects for Prevention and Control

By Richard S. Cooper, MD; Pedro Orduñez, MD; Marcos D. Iraola Ferrer, MD; Jose Luis Bernal Munoz, PhD; and Alfredo Espinosa-Brito, MD


Objectives. An adequate description of the trends in cardiovascular disease (CVD) is not available for most of the developing world. Cuba provides an important exception, and we sought to use available data to offer insights into the changing patterns of CVD there.

Methods. We reviewed Cuban public health statistics, surveys, and reports of health services.

Results. CVD has been the leading cause of death since 1970. A 45% reduction in heart disease deaths was observed from 1970 to 2002; the decline in stroke was more limited. There are moderate prevalences of all major risk factors.

Conclusions. The Cuban medical care system has responded vigorously to the challenge of CVD; levels of control of hypertension are the highest in the world. Nonindustrialized countries can decisively control CVD.

Cardiovascular disease (CVD) is now recognized as an important public health problem for many nonindustrialized countries.[1–4] Increasing death rates and prevalences of risk factors have been observed in Asia, Africa, and South America, leading to dire predictions about the size of the coming epidemic.[1,3,4] In most industrialized countries, on the other hand, the rapid declines in CVD continue,[5–8] demonstrating the effectiveness of current strategies for prevention and control. Whether any of these strategies can be applied with equal success in nonindustrialized countries is not known. The process of adaptation will clearly face many difficult challenges, including the need to strike a balance between primary prevention and reliance on medical care to treat affected patients.

As in any area of public health, surveillance systems are essential for helping countries define the scope of the CVD epidemic and develop appropriate local strategies.[9,10] Unfortunately, almost without exception, the epidemiological data that are required for an accurate description of the trends in mortality and causal risk factors at a national level are not available in poor countries. Within the general framework of the ongoing global health transition, whereby infectious diseases and malnutrition are replaced by chronic CVD and cancer,[11] it is still unclear whether most developing countries will simply recapitulate the epidemiology of CVD observed in North America and Europe or whether the transition will display distinct new varieties shaped by regional culture and geography; or even by the economic models that have been adopted. Tropical island countries and indigenous peoples in the Americas, for example, have typically been confronted with severe epidemics of diabetes at the onset of the health transition, rather than coronary heart disease (CHD), as was the case in the United States and Europe.[12] Other countries, such as India, struggle with persistently high rates of infection and undernutrition along with CVD.[1–3,13]

Cuba occupies an unusual position in the nonindustrialized world. The political and economic path of development is based on the ideology of revolutionary socialism.[14,15] As part of the state’s commitment to collective welfare, a sophisticated and comprehensive public health sector has eliminated epidemic infectious diseases and reduced infant mortality to 6.3 per 1000.[16,17] With the extension of life expectancy to 76 years and the rapid growth of the population aged older than 65, the potential for a large disease burden from CVD and other chronic diseases has likewise increased. A further essential condition for a high prevalence of atherosclerosis is the transition of the majority of the population into a lifestyle made possible only by industrial technology. The productive capacity of Cuban society as a whole is very modest, however—average annual income is variously estimated as $1000 to $5000 per year, and access to consumer goods is limited.[15] Whereas Cuba’s cultural orientation over the last century has been primarily toward Spain and the United States,[18] in terms of personal consumption patterns—ranging from the reliance on convenience meals to the availability of private cars—a wide gap currently persists between material conditions on the island and those found in North America and Europe. No precedents exist on which to predict the burden of CVD that would emerge from such a mixture of factors. Whereas CVD among the elite in many developing countries is well recognized, the dispersion of the disease throughout the general population has not yet been described. Because the Cuban health system produces complete and accurate statistical data on both vital events and health services, it should be possible to describe the process there in substantial detail.

Our review was undertaken with several purposes in mind. First, we set out to determine whether the data resources available from Cuba would actually make possible a comprehensive description of the current state of the CVD epidemic and a characterization of the secular trends in a nonindustrialized country. Second, we wanted to assess the response of the public health and medical care systems to the emergence of CVD as the most common cause of death. Finally, we hoped to place the Cuban situation in the context of its closest geographic neighbors, the other Caribbean countries, and to compare the situation in Cuba with that in North America and Europe through use of available data from the latter 2 regions. Results of these analyses should make it possible to assess the unique strengths and weaknesses of the Cuban experience, the extent to which this experience can be attributed to the model of economic development that was adopted, and its implications for other nonindustrialized countries.

METHODS AND MATERIALS

Cuba, the largest of the Caribbean islands, was estimated to have a population of 11,250,979 in July 2002.[19] The fertility rate as of 2002 was 1.6 children per woman and the average annual growth rate of the population was 0.14%. Within the unified public and medical care system, there are 31,059 family physicians supported by local polyclinics and regional hospitals.

For this study, information on vital events, spanning the period 1970 to 2002, was obtained from the annual statistical reports of the Ministry of Public Health in Havana.[16] Vital records are essentially complete, and in at least some regional hospitals there is a high rate of postmortem examination (about 85%), thus assuring that assignment of cause of death is accurate.[20] During our study period, mortality was coded to International Classification of
Diseases, Eighth Revision (ICD-8),[21] ICD-9,[22] and ICD-10.[23] with appropriate adjustments. The ICD-10 codes are as follows: heart disease, I05 to I52; coronary heart disease, I20 to I25; hypertensive heart disease, I10 to I15; stroke refers, I60 to I69. Secular trends were analyzed through use of data adjusted by the direct method to the population structure of Cuba in 1981. Age-specific data for trends in CHD were available only for persons aged 45 to 79. The statistical significance of the trends in mortality was tested through linear regression modeling.

Data on incidence and survival are limited to hospitalized cases, and, like the health services data, were available primarily from the province of Cienfuegos. Cienfuegos is located on the south coast of the island, approximately 125 miles southeast of Havana. The provincial capital was founded in 1819 by settlers from French Louisiana. Historically, the flat lands of the surrounding region have been used for the production of sugar.

One of the smallest of Cuba's provinces, with a population of 399,000 in 2002, its demographic structure approximates that of the island as a whole. Heart disease death rates in Cienfuegos were also similar to the national average in 2002 (178 per 100,000 and 170 per 100,000, respectively). In-patient medical care is provided by a single institution, Hospital Universitario “Dr. Gustavo Aldereguia Lima,” which also serves as the teaching hospital for the provincial medical school. Basic indicators are abstracted from medical records and entered into a system that includes comprehensive data for the whole province. Hospitalized cases were used to approximate incidence rates for cardiovascular conditions requiring in-patient care. One of the authors (M.D.I.F.) supervised the abstraction of data on cardiovascular cases from clinical records in the emergency room and the intensive care units. A diagnosis of acute myocardial infarction was made on the basis of clinical history and characteristic electrocardiographic findings; diagnosis of stroke was based on clinical findings, with increasing use of computed tomography scanning over the last decade.

Individual-level risk factor data were obtained from sample surveys. A comprehensive literature search was conducted in the Cuban and external literature. Sources were chosen for presentation if they included an appropriately large sample size, were population based, and reported enough information on methodology to allow evaluation of the quality of the data collection process. Risk factor surveys repeated over time that used standardized, comparable methods were not available. Two comprehensive national risk factor surveys have been completed in Cuba in the last decade; unfortunately, however, only preliminary results are available, and they are not appropriate for this report.

RESULTS

Mortality

The distribution of the leading causes of death in Cuba in 2002, the most recent year for which final statistics are available, is summarized in Table 1. Of the 74,000 deaths recorded in that year, 19,000 were coded to heart disease (26%). Total CVD (in which we include heart disease, stroke, and other unspecified diseases of the arteries and veins) accounted for 41% of all deaths. The male-to-female ratio of deaths from CVD was 1.1 to 1.0.

CHD accounted for 73% of reported cases of heart disease. Hypertensive heart disease represented the second most common diagnostic category. Rheumatic fever had virtually disappeared, and the number of deaths from chronic rheumatic valvular disease was extremely low. Heart disease was 40% higher in urban areas than in rural areas, with the highest rates observed in the city of Havana. In 2000, it was estimated that 11 potential years of life per 1000 persons were lost as a result of CVD, ranking second behind cancer.[16]

Heart disease has been the leading cause of death in Cuba since at least 1970, when the current time series of age-adjusted data begins. The secular trend in heart disease mortality since 1970 has followed an uneven downward course (Figure 1). Rates declined moderately over the period 1970 to 1980 (1.5% per year), declined slightly over the following decade (0.2% per year), and entered a more rapid phase of decline in the 1990s, particularly in the latter half of the decade (2.0% per year). The age-adjusted mortality from heart disease in 2002 was 45% lower than in 1970. As the dominant cause of death from heart disease, CHD has been responsible for the observed trends (data not available for 2001 and 2002). From the 1980s to the 1990s, among persons aged 45 to 79, age-specific death rates from heart disease declined by approximately the same percentage in each age (data not shown).

Contrary to the trend for heart disease, mortality from stroke declined very slowly until the most recent 3-year period (Figure 1). Given these patterns, stroke now accounts for a slightly increased proportion of all deaths from CVD (25% in 1980 and 28% in 2001).

To determine rates of change, regression models were constructed for each of the mortality categories over 2 time periods: 1980 to 1991 and 1992 to 2002. For heart disease, CHD, and stroke, the rate of decline in the first period was not significantly different from zero; however, for each of the categories the decline was highly significant in the period after 1992 (P<.01).

Incidence and Survival

Incidence and survival data are available from a single defined catchment area, Cienfuegos Province, which is served by Hospital Universitario “Dr. Gustavo Aldereguia Lima” in Cienfuegos. The number of admissions for both acute myocardial infarction and stroke doubled over the period 1990 to 2003 (Figure 2), reflecting in part the increasing average age of the population. It is not possible, however, to determine whether the rising incidence reflects a greater number of new events or increased access to hospital care, although an aggressive program was conducted to increase awareness of signs and symptoms. Over this same period, the case fatality rates declined 40% to 50%. This rapid decline suggests that

| Table 1—Ten Leading Causes of Death (Age Adjusted, per 100 000): Cuba, 2002 |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|                | Men             | Women           | Total           | %               |                 |                 |                 |                 |                 |
| 1. Diseases of the heart | 195             | 174             | 185             | 26              |                 |                 |                 |                 |                 |
| 2. Cancer       | 168             | 131             | 150             | 21              |                 |                 |                 |                 |                 |
| 3. Stroke       | 71              | 73              | 72              | 10              |                 |                 |                 |                 |                 |
| 4. Influenza/pneumonia | 66              | 58              | 62              | 9               |                 |                 |                 |                 |                 |
| 5. Accidents    | 53              | 34              | 43              | 6               |                 |                 |                 |                 |                 |
| 6. Diseases of arteries, veins | 37              | 36              | 36              | 5               |                 |                 |                 |                 |                 |
| 7. Chronic obstructive pulmonary disease | 27              | 22              | 25              | 4               |                 |                 |                 |                 |                 |
| 8. Suicide      | 22              | 8               | 15              | 2               |                 |                 |                 |                 |                 |
| 9. Diabetes mellitus | 9               | 18              | 14              | 2               |                 |                 |                 |                 |                 |
| 10. Cirrhosis, liver disease | 12              | 6               | 9               | 1               |                 |                 |                 |                 |                 |
| **Total**       | **388**         | **300**         | **688**         | **88**          |                 |                 |                 |                 |                 |
less severe cases were being admitted, although the quality of care was also improving, leading to better survival. Over this period, for example, thrombolytic therapy became widely available and prehospital treatment units were created.

Circulatory disorders make heavy demands on the health system. In 2002, they represented the third most common reason for hospitalization, being coded as the principal diagnosis on 8.7% of all admissions.

Risk Factors

Hypertension. The number of cases of hypertension is difficult to estimate given the requirement that measurement procedures be highly standardized.[10] The opportunities for surveillance have been greatly enhanced in recent years, however, with improvements in survey technique. A survey from Cienfuegos completed in the period 2001–2002 provides results of sufficient quality for external comparisons.[24] The survey used a population-based sampling scheme, by which 1,667 persons aged 5 to 74 were enrolled. The crude prevalence of hypertension—defined as either systolic blood pressure greater than 140, diastolic blood pressure greater than 90, or treatment—was 25% (95% confidence interval [CI]=22%, 27%; men=27%, women=23%). Mean systolic/diastolic blood pressure was 119/74 mm Hg. As in a similar previous study of hypertension in Cuba,[25,26] smaller differences were observed between Blacks and Whites in this survey than in the United States. Mean blood pressure levels in the Cienfuegos survey are virtually identical with results from the US National Health and Nutrition Examination Survey III (1988–1994).[27] A recent review of national surveys in North America and a sample of European countries yielded the following comparison of hypertension prevalence for the population aged 35 to 64: for Cuba, men = 36%, women = 32%, total = 34%; for the United States/Canada, men=30%, women=25%, total=28%; for Europe, men=50%, women=38%, total=44%.[28] These results indicate that levels of treatment and control in Cuba are the highest that have been achieved anywhere in the world, comparing favorably with rates in the United States (29%), Canada (17%), and Europe (≤10%).[29]

Smoking. Among CVD risk factors, cigarette smoking represents the most urgent challenge for Cuba. The cultivation of tobacco is an important chapter in Cuba’s history, and cigars are still a source of export earnings. Within the country, however, cigarettes are used by 95% of regular smokers. Current rates of daily tobacco use are 40% among men, peaking at 60% in middle age.[24] At younger ages, women have rates similar to those of men; however, there is little increase with age, and the average prevalence is around 25%. There is some evidence of a decline in the last decade—in Cienfuegos, the rates in 1992 were 44% for men and 33% for women.[30] A study of the elderly provides comparable survey data for Cuba and other Latin American and Caribbean countries. Whereas 32% of Cubans older than 60 were current smokers, the rates in other countries were substantially lower: Barbados, 6%; Argentina, 14%; Mexico, 18%; Brazil, 16%; Chile, 13%; Uruguay, 16%.[31]

Hypercholesterolemia. Relatively limited survey data are available on serum lipids from population studies in Cuba. In a population survey in the early 1990s, mean levels of total cholesterol in a sample of 1,660 persons aged 15 to 74 were 160 mg/dL in men and 170 mg/dL in women.[30] Elevated serum cholesterol (>200 mg/dL) was present in 12% of men and 14% of women. These data were collected during the so-called “special period,” however, when food shortages were widespread, and may not be typical of the current situation.

Obesity. Obesity occurs less frequently in Cuba than in many other countries. The mean body mass index among adults in the Cienfuegos survey was 25 (SD=4), and the prevalence of obesity (body mass index>30) was 14% for men, 8% for women, 8% for men, and 11% in the total population.[24] Current rates of obesity are 20% in the United States and 15% in Canada. No differences in obesity were found by educational level or between Blacks and Whites.[25]

Diabetes. Over the last 20 years, 2 community surveys using oral glucose
tolerance testing have been conducted in Cuba. In Santiago in 1987, a total of 500 people (>15 years) were enrolled in a study that yielded a diabetes rate of 4.6 per 100.[31,32] In Havana, a crude rate of 14.8 per 100 was recorded in 1998 among 250 people older than 65.[33] Case definitions for both studies were based on 1985 World Health Organization criteria (i.e., fasting glucose >140 mg/dL). In age-adjusted comparisons of the Havana data with data from other Latin American and Caribbean countries, rates in the latter grouping were generally higher (Barbados, 16%; Mexico, 10%–15%; Jamaica, 13%).[34]

Data are also available from a multinational survey of Latin American and Caribbean countries of persons aged older than 60. The prevalence of self-reported diabetes in Havana was 15 per 100, compared with 22 per 100 in Barbados and Mexico and 12 and 13 per 100 in Argentina and Chile, respectively.[31]

Physical inactivity. For much of the Cuban population, physical activity is enforced by limitations on mass transportation or lack of mechanized equipment. Among respondents to the Cienfuegos survey, 93% reported engaging in moderate activity during several days of the week and 30% reported vigorous physical activity.[35] A small study employing stable isotopes to measure levels of nonresting energy expenditure (i.e., physical activity) documented high levels of physical activity (1.8 times resting metabolic rate) among children in a rural mountain area.[35]

Diet. Formal nutrition epidemiology studies focused on CVD were not identified. Traditionally, Cubans have derived a large proportion of their calories from rice and beans, with a preference for pork and beef when available. The downturn in the economy in the 1990s was associated with serious food shortages. From 1991 to 1994, mean caloric intake was reduced approximately 20%.[36] The virtual disappearance of animal protein and fresh vegetables led to severe deficiencies of micronutrients and the occurrence of an associated neurological disorder.[37] As a result, national programs to increase local gardening were initiated, and availability has improved markedly in recent years.

Consumption of vegetables is still low, however; in a recent survey, daily intake was reported by only 5% of respondents and weekly intake by 47%.[25] On the other hand, fruits were eaten at least daily by a third of the population and at least weekly by 50%. No data are available on levels of salt intake.

CVD in Cuba in an International Context

Comparisons of death rates within the Caribbean are constrained by the limitations of available data. The Pan American Health Organization serves as a data repository and provides age-adjusted rates for most countries[38,39]; however, a review of published data from the English-speaking islands reveals many deficiencies. Vital statistics from the largest of them (Jamaica and Trinidad) are incomplete or inconsistent; the smaller islands, on the other hand, have too few deaths to produce stable rates.

Nonetheless, on the basis of available data, Cuba has lower rates of total CVD than the other Caribbean countries, particularly for stroke and diabetes (Table 2). Stroke is the most frequent cause of death in Jamaica and Barbados, as well as in the English-speaking Caribbean as a whole. CHD is the leading cause of death only in Trinidad.[38] Perhaps most striking, diabetes is reported as a cause of death much more frequently in other parts of the Caribbean than in Cuba, and it exceeds CHD as a cause of death in Jamaica and Barbados. Of course, death certificate data are not generally a useful measure of the burden of diabetes, and some important variation in coding practices must exist. Nonetheless, these trends are supported by the survey data on the population prevalence of diabetes.[34] Reliable trend data on CVD from the English-speaking Caribbean are not available.

In contrast to the wide variation seen between Cuba and the rest of the Caribbean, both the overall mortality structure and the pattern of CVD in Cuba resemble those in Canada and the United States to a remarkable degree (Table 2).[40–43] On a variety of measures—including the levels of both stroke and CHD, the urban-to-rural pattern of prevalence, the rising incidence and decreasing case fatality of acute myocardial infarction, and the predominance of smoking as the key risk factor—Cuba mimics exactly the picture seen in the United States in the late 1960s, at the beginning of 3 decades of rapid decline in mortality from CVD.[42]

DISCUSSION

CVD in Cuba

The CVD epidemic has reached full maturity in Cuba, where it accounts for 40% of deaths. Heart disease, the predominant component, is the underlying cause of two thirds of CVD deaths. At present, considerable progress is being made to reduce the mortality burden. Over the last decade, death rates from heart disease declined at a rate of 1% to 2% per year, which is close to the maximum rate practically achievable for most countries. The recent onset of the decline in death rates for stroke suggests that the impact of high levels of treatment and control of high blood pressure is just now being felt. True incidence data for acute myocardial infarction and stroke are not available, although hospitalization rates, as a proxy measure, continued to increase over the last decade. This latter trend probably reflects a combination of the increasing average age of the population, improvements in ascertainment and referral of cases, and declining case fatality leading to longer survival.

By contrast, in the English-speaking Caribbean, stroke is the most commonly reported cause of death, although in at least one country CHD has risen to first place. Insufficient data were available to characterize the secular trends in CVD anywhere in the Caribbean. The pattern of CVD in Cuba deviates little from the trend seen in Europe and North America, where CHD is also falling at a rate of 1% to 3% per year.[5,8,40–45] After a long period of precipitous decline, stroke rates have leveled off in several industrialized countries, including the United States and Japan, although this has occurred only after the rates reached considerably lower levels than are currently observed in Cuba.[43,44,46] If one assumes comparable coding methods, the absolute levels of CHD and stroke in Cuba at this time are very close to what is currently observed in Europe, and are higher than in the United States and Canada.

The Cuban diet, which tends to lack variety, does not include a large percentage of calories from animal products or atherogenic

### Table 2—Death Rates (Age Adjusted, per 100,000) for Cardiovascular Disease and Diabetes: Cuba and Selected Countries, Late 1990s

<table>
<thead>
<tr>
<th>Country</th>
<th>Stroke</th>
<th>CHD</th>
<th>HHD</th>
<th>Total</th>
<th>Diabetes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cuba</td>
<td>48</td>
<td>101</td>
<td>8</td>
<td>161</td>
<td>15</td>
</tr>
<tr>
<td>Argentina</td>
<td>48</td>
<td>44</td>
<td>9</td>
<td>102</td>
<td>16</td>
</tr>
<tr>
<td>Barbados</td>
<td>52</td>
<td>56</td>
<td>12</td>
<td>149</td>
<td>67</td>
</tr>
<tr>
<td>Jamaica</td>
<td>121</td>
<td>72</td>
<td>45</td>
<td>237</td>
<td>84</td>
</tr>
<tr>
<td>Trinidad</td>
<td>95</td>
<td>151</td>
<td>37</td>
<td>282</td>
<td>108</td>
</tr>
<tr>
<td>USA</td>
<td>27</td>
<td>88</td>
<td>6</td>
<td>121</td>
<td>14</td>
</tr>
<tr>
<td>Canada</td>
<td>24</td>
<td>78</td>
<td>2</td>
<td>104</td>
<td>19</td>
</tr>
</tbody>
</table>

Note: CHD = coronary heart disease; HHD = hypertensive heart disease.

Source: Pan American Health Organization.[38]
fats. Consequently, the reported serum cholesterol levels in the general population are below those observed in most industrialized societies. As noted, blood pressure levels and prevalence of hypertension are virtually identical to those of the United States, and with very high levels of treatment, few persons have severe untreated elevations in blood pressure. Cuba manufactures most of the important classes of drugs used in the treatment of hypertension, and provides them at minimal cost to the patient. Given restrictions on patents and sales, statins are not available for the treatment of hypercholesterolemia; however, other classes of drugs are being developed and used. Of paramount concern, Cuba has continued its “special historical relationship to tobacco” and suffers from relatively high smoking rates, although they are well below rates in Asia. The population attributable risk from smoking for all causes is currently around 20%, and it is substantially higher for CVD. Although the description of diabetes is incomplete, its prevalence is clearly lower than in other Caribbean countries, in keeping with Cuba’s higher levels of physical activity and only moderate levels of obesity.

Prospects for Control

Atherosclerosis of the coronary arteries, now the predominant form of CVD, is a highly preventable disorder. On the basis of accumulated knowledge of preventive and therapeutic interventions, the potential exists to eliminate CVD as a common illness (i.e., reduce the burden to less than 2%–5% of deaths). A comprehensive description of the causal sequence leading to CVD is available, providing firm guidance for policy. It is now estimated that 80% of CVD deaths are occurring in developing countries,[3] signaling a fundamental shift in the global priorities for control. Given their resource base and the character of their risk profile, these countries must tailor their response to take best advantage of opportunities for preventing the development of risk factors, treating individuals who have already developed risk factors, and prolonging life among symptomatic patients.

In Cuba, the public health system combines without distinction communitywide activities, such as sanitation and vaccination, and medical care delivered to individuals. This approach has both strengths and weaknesses. So called “intersectoral approaches” are easier to organize when barriers are eliminated between large-scale prevention and curative medicine, not to mention those separating the public and private systems. On the other hand, it may be hard to strike the appropriate balance between sectors, and there is always the risk that technology-based solutions will crowd out less sophisticated prevention campaigns.

Cuba has had remarkable success in controlling infectious diseases—it was the first country in the world to eliminate polo and measles (using the strategy that subsequently became the basis for the worldwide campaign), it maintains the most effective dengue control program in the Americas, and it has very low rates of HIV/AIDS.[48–50] The principle ingredient of these successes has been the strategy of community mobilization. On the other hand, there has been a tendency to “medicalize” the approach to chronic adult illnesses, principally CVD and cancer.[51] Paradoxically, the successes in reducing infant mortality and lengthening life are themselves often attributed to advances in medical care, when the provision of the basic necessities of life to the entire population must have played a crucial, if not predominant, role. The pursuit of equity and inclusiveness should therefore be seen as the basis for Cuba’s success in many areas of human development, including health.

Access to high-quality health care for the entire population has been one of the most important political goals of the Cuban state; for CVD, in particular, it appears to have dominated the public health approach at the expense of health promotion through control of tobacco and improvement of the diet. The combination of the highest rates of pharmacological control of hypertension in the world and continued high rates of smoking is clear evidence of this imbalance. This is not to say that health promotion aimed at chronic disease is absent, simply that the campaigns lack the enthusiasm and vigor that has made other health interventions so successful. For example, prohibition of smoking in public places is widely ignored.

Cuba has achieved a great deal with an annual health budget of less than US$200 per capita; nonetheless, it will clearly be impossible to meet all the economic demands imposed by contemporary technology-based medical care. Fortunately, CVD prevention is both highly effective and cost-effective, particularly in a society with centralized controls and an absence of powerful private interests. The unique strengths of the Cuban system clearly lie with the “upstream” interventions that affect the whole population. Complementary efforts at secondary prevention, including widespread use of hypolipidemic drugs, would be very effective as well, given universal access to the primary care system. Whereas tertiary care for CVD has substantial value, it will always be the least cost-effective choice; in the end, that reality must override other considerations in a resource-poor setting.

Social Origins of the Current Status of CVD in Cuba

Exploration of the social determinants of disease has been a major preoccupation of public health.[52–55] In most instances, however, the inquiry has been focused on the impact of socioeconomic disadvantage or harsh material living conditions. Recent scholarship on the association between health and community level social structure has added important new dimensions to this field, focusing, for example, on income inequality and “social capital.”[56,57] Only infrequently, however, has the organizational structure of society as a whole—what was once termed the mode of production—been considered a potential causal force in its own right. Virchow’s famous dictum—“mass disease means society is out of joint”—stands as one of the few theoretical statements of the role of structural elements in molding the disease patterns of populations.[58]

Virchow’s contention was that humans are well adapted to the natural environment of this planet, and if a disease afflicts large segments of the population it must be the result of the breakdown of normal social processes. Alexander Semasko, the Soviet commissar of health in the early years after the Bolshevik Revolution, extended Virchow’s basic idea with the corollary assertion that the role of the state was to protect the health of the population, not sacrifice it to the demands of the economy.[59] In recent years, however, the social production of disease has most often been conceptualized as a marginal process, one that results from the unintended consequences of useful economic activity or simply poorly regulated industries, not a central mechanism in the causal process.

The social and political history of Cuba places it in a category of its own and therefore allows a consideration of how the productive forces might shape the pattern of disease. Before 1959, Cuba was simply one among many dependent nations in the Caribbean, although by no means the poorest, and its disease pattern manifested all the characteristic features of undernutrition, high infant mortality, and rampant infectious diseases.[14] For the last 4 and a half decades, Cuba has constructed a society using a model of centralized economic planning. The nearly half century of the US economic blockade and the more recent dissolution of the Soviet Union have greatly retarded the process of economic development in Cuba. Despite this unique historical course, Cuba has entered the
21st century with a mortality structure virtually indistinguishable from what is observed in North America and Europe.

Should one be surprised that different historical trajectories of development have converged on a single public health outcome? In its broadest outlines, the emergence of epidemic CVD, the most characteristic feature of the epidemiological transition, could be viewed as an inevitable consequence of industrialization.

Stroke, which is a “residual disease” of preindustrialized societies, has generally emerged at the outset of this transition as the major cause of death in the elderly. Much of this apparent increase is likely to be the effect of removing other competing causes. Atherosclerotic CHD emerged as a mass phenomenon later in the epidemiological tradition, when agricultural productivity reached a high enough level that large segments of the population consumed animal products on a regular basis. In economically advanced countries, diabetes has occurred in the late, “postindustrial” phase, presumably driven by continued declines in physical activity and the hyperconsumption of manufactured food.

The postindustrial lifestyle has not yet transformed Cuban culture, nor have the consequences of free trade and globalization been felt to any substantial degree. Nonetheless, it appears that complete integration into the global economy is not necessary to lay the conditions for a full-scale CVD epidemic. The historical momentum of dietary change, by which animal products are replaced with complex carbohydrate, a high intake of salt is maintained, and tobacco is introduced, has been sufficient to fuel the epidemic, once competing causes are eliminated. This transition is generally thought to have been shaped in large part by economic incentives within the agricultural and food-processing industries, and it is reasonable to assume that similar incentives operated within socialist systems as well.

As is well recognized, the emergence of a CVD epidemic was even more dramatic in the Soviet Union and Eastern Europe.[60–65] Thus, despite their different approach to the organization of the economy and the distribution of goods and services, socialist countries must also develop new ways of thinking about chronic disease prevention and implement practical interventions to offset the consequences of industrialization on vascular disease. On the basis of its past and ongoing successes with infectious diseases, the socialist system in Cuba has demonstrated a capacity to develop and implement highly effective populationwide interventions. Such an approach could dramatically advance the efforts to control chronic disease as well.[66] However, that opportunity has not yet been seized.

CONCLUSIONS

Whereas the social and political structure of societies can undergo rapid and dramatic change, such cultural norms as food, music, and religion are sometimes more resilient. The goal of socialist revolutions in poor underdeveloped countries has been first and foremost to catch up with the industrial economies of the world. In public health, this has meant almost exclusively the elimination of infectious diseases and the assurance of low death rates in childhood.[67] Cuba stands as the prime example of the unequaled success of the socialist project in achieving that goal. Within that tradition, however, the need to aggressively intervene against engrained cultural patterns, particularly those related to consumption, was something of a foreign idea. A fundamental rethinking of this strategy will be required to take full advantage of the new knowledge in prevention science that could now make an important contribution to the future health of the Cuban people. The improvements in quality and duration of life in Cuba over the last 50 years have been astounding and set the standard for poor countries around the world. These achievements—for example, eliminating polio in 1962, two decades ahead of the United States—are evidence of the remarkable goals Cuba is capable of achieving. Similar leadership in CVD prevention could make enormously valuable contributions to the worldwide campaign to control what has already become the most severe epidemic ever faced by humanity. The Cuban experience thus demonstrates that control of CVD in nonindustrialized countries is by no means impossible, and it highlights the critical importance of population-based prevention strategies.

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R. S. Cooper developed the framework of the study and wrote the article. P. Ordúñez and A. Espinosa-Brito provided descriptions of the organizational structure and functioning of the Cuban health system and critical insight into the data. M. D. Iraola Ferrer collected and analyzed the data from the Province of Cienfuegos. J. L. B. Muñoz assisted in the collection and analysis of the vital statistics data.

Human Participant Protection

Ethical approval was obtained from the review board of the Hospital Universitario “Dr. Gustavo Aldereguía Lima.”

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