

# EpidemicProportions

Johns Hopkins Undergraduate Public Health Journal  
Volume 5 Issue 1 Spring 2008



## Knowledge for a Healthier World

**RESEARCH** *Lindsay Brown*  
explores disparities in refugee  
cancer screening and knowledge.

**FEATURES** *Colleen Weeks*  
works to improve literacy in a  
*Brazilian Favela.*

**PERSPECTIVES** *R. Bradley Sack*  
shares lessons in the fight  
against cholera.

**EDITORIAL** *James Lee*  
explores the economics of  
tuberculosis control.

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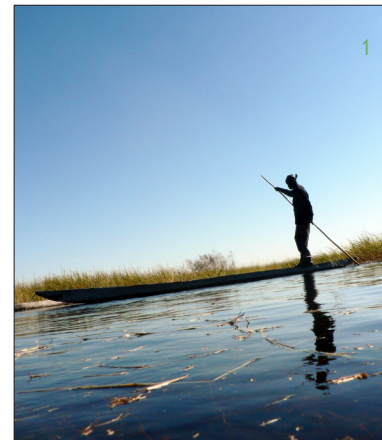
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Welcome to the Spring 2008 issue of *Epidemic Proportions*, The Johns Hopkins Undergraduate Public Health Journal. On behalf of the entire staff, we are proud to present an issue which presents a glimpse into the diverse experiences and endeavors embarked upon by Hopkins undergraduates in geographically and culturally diverse corners of the globe.

Four research pieces provide the cornerstone of this issue. In *Agents of Apocalypse*, Manuel Datiles IV explores the cholera outbreak of 1912 in the Philippines, particularly the way in which today's generation of public health practitioners can learn from the mistakes made in the chaos of the epidemic. Lindsay Brown probes contemporary gaps in refugee cancer screening rates and knowledge, a contributing factor to the subsequent gross disparities in cancer morbidity and mortality found among Vietnamese and Cambodian refugee and immigrant populations in the United States. Next, Felipe Jacome takes us to Brazil, presenting his research, *Violence Reduction in Rio de Janeiro*, which contemplates solutions to mitigating the violence, a severe public health crisis, among youth in Rio de Janeiro, Brazil. Finally, Atieh Novin et al. present *MDR-TB Risk Factors at the Masih Daneshvari Hospital in Tebran, Iran*, which delineates contributing factors to MDR-TB prevalence within a major referral hospital in Iran.

Each of the four research articles is accompanied by a set of editorials and faculty perspectives, which serve to further illuminate, probe, and debate important issues brought to light by the research of each of these students. In addition to this dialogue, we are delighted to present the tales of our peers who have immersed themselves in vital public health work: students who have, among other exploits, worked to improve access to health care among the indigenous in rural Costa Rica, taught in Tajikistan, volunteered at a clinic in Tanzania, worked to improve the literacy rate in a Brazilian shantytown, and to decrease the prevalence of tuberculosis among the homeless in Massachusetts.

Throughout the course of our work with the journal over the past four years, the findings, passion, and dedication of our peers has convinced us that the future of public health is not only promising, but bright—in part because of the proud tradition of public health research passed on to us through our mentors on this campus and the ones many of us have sought across the globe. They have trained us in scientific methods of inquiry and, most important, taught us to not lose sight of the people behind the numbers. We are grateful to have gained a unique, valuable skill set in the fields of population and environmental health, as well as the interplay between the two, a burgeoning discipline that Dr. Peter Winch highlights in his letter, tools which will serve us well in the fields and studies we choose to take on and commit ourselves to over the course of our lives.

Lastly, it is our hope that through our work with the journal and in the work we embark upon in the years and decades to come, we have and will continue to honor and contribute to the Hopkins mission: *Knowledge for the World*, perhaps with our own twist: *Knowledge for a Healthier World*.

Sincerely,



Lindsay Brown  
Editor-in-Chief



Rishi Mediratta  
Editor-in-Chief

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**EpidemicProportions** would like to thank the Public Health Studies Program, the Krieger School of Arts & Sciences, and the Johns Hopkins Bloomberg School of Public Health for making this journal possible. Producing this journal has been a true joy and a tribute to teamwork. Like any other student endeavor, it would not have been possible without the support of the Johns Hopkins community.

### We would especially like to acknowledge:

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Dr. James Goodyear and Dr. Kelly Gebo;  
and the faculty members and supporters of student research.



**Front Row:** Jasmine, Mehreen, Priyanka, Diana, Isabelle; **Second Row:** Hayley, Atieh, Jackie, Chandrani, Maneesha, Farha, Bea; **Third Row:** Rishi, Angela, Mary, Liana, Alyssa, Halshka, Lindsay; **Back row:** James, Akash, Annie, Nirosha, Su, Alex, Teddy **Not Pictured:** Morgan, Ajay

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# COVER LETTER

Peter Winch, MD, MPH  
Director, Social and Behavioral Interventions Program  
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Department of International Health  
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Global Health is sprouting up everywhere. Every day I encounter more organizations, programs, projects, and initiatives bearing the name. Until recently I thought I knew what it meant. But this year I have felt its meaning shift under my feet. I believe that this shift is real, and signals the need for us to critically examine what we mean by Global Health, and what is the nature of our commitment to it.

First and foremost, Global Health has been a commitment to the health of all persons, whoever they are and wherever they live. This construction arises out of concerns for justice and equity. Can we stand by while millions die of conditions that are easily preventable or treatable? For some, self-interest also enters in: if we don't address emerging health problems over there, eventually they will come here.

These meanings of Global Health are "the health of everybody on the globe," "everybody" meaning all human beings. It is an anthropocentric view of health. This Global Health is World Health in the original sense of *weorold* in Old English: the "age of man" or humankind. World Health emphasizes the human dimension: people helping people, and people exchanging ideas, experiences, knowledge, and skills with other people. World Health is about people.

This construction of Global Health as the health of humankind or World Health has long gone unchallenged. Now, however, an alternative interpretation of the term has entered the marketplace of ideas. So far, this alternative interpretation has been brought to my attention mostly by my students but seldom by fellow faculty, and I sense that the students are on to something: Global Health must also be the health of the earth or biosphere. While the world needs health care, so does the earth. While the Global Fund and the Presidential Malaria Initiative channel funding to projects to control fevers in the world, the earth or biosphere also has a fever that affects its ability to sustain life. The media are suddenly filled with stories about how to prevent or treat this febrile condition, which is only one of a series of symptoms exhibited by the earth. Others derive from unsustainable extraction of resources; contamination of soil, air and water; and accelerated conversion of life-sustaining biosphere to sterile technosphere. The biosphere, as we have known it, is threatened.

Do World Health professionals need to concern themselves with Earth Health? I believe they do.

Achieving Earth Health will require human behavior change on a massive scale. World Health professionals, by virtue of their credibility as experts and their positions in institutional hierarchies, have a key role to play in promoting this change. Furthermore, by addressing immediate needs related to disease, malnutrition, and poverty, World Health professionals can create the conditions necessary for people to work together to foster Earth Health. Improvements in quality of life set the stage for adoption of new, more earth-friendly behaviors.

Much of what is practiced in World Health is damaging to Earth Health. World Health activities tend to rely heavily on fossil fuels for transport (four-wheel drive vehicles, mobile clinics, flying doctors), electricity (air conditioning, lighting, refrigeration) and supplies (plastic gloves, plastic bags, syringes). World Health introduces intensive energy and water use and the concept of waste into societies whose ecological footprint previously had been limited. World Health shows little concern about these impacts; the imperatives of quality health care and infection control are thought to justify greatly increased consumption of resources and production of waste.

Could we do it another way? Can we reduce the ecological footprint of health systems in both high- and low-income countries? For example, could more health facilities be solar-powered? Is effective infection control possible without toxic chemicals? Could supplies be reusable or recyclable? We have just begun to ask these questions.

I don't want to introduce the terms World Health and Earth Health into everyday use. Instead, I call for Global Health professionals to commit themselves to both World Health and Earth Health, and to integrate these twin commitments into their understanding of Global Health. The road ahead is challenging. In many cases, environmentally sustainable alternatives to standard practices in the health sector do not yet exist. In the short term we will find it difficult to avoid energy-inefficient air conditioners, disposable supplies, and gas-guzzling vehicles in our work. But somehow we need to summon the strength to start, and to start immediately.

Photo courtesy of Will Kirk

# A Historical Perspective on Cholera

*Agents of Apocalypse Manuel J. Datiles IV*

*The Risks Associated with Water Treatment Alex Wald*

*Lessons from Cholera R. Bradley Sack*



# Agents of Apocalypse

## American interventionism, the Philippine-American war, and consequences for the Philippine cholera epidemic of 1902

Manuel J. Datiles IV, Public Health 2007

### Introduction

Advances in scientific and epidemiological knowledge have shaped public health responses to many threats, but nearly as important in implementation is knowledge of the culture in which the threat is occurring. Current and historical struggles illustrate this. One particularly clear example of what happens when cultural knowledge is absent or ignored in public health planning is what happened when cholera struck the Philippines after the United States claimed victory in the Philippine-American War in the early twentieth century.

With seven pandemics recorded between the early nineteenth and the late twentieth centuries, Asiatic cholera is acknowledged as the world's first global disease. The disease, caused by the ingestion of water or food contaminated by the bacterium *Vibrio cholerae*, spread from the first documented epidemic in Bengal and India between 1816 and 1820 to the Americas, Africa, Russia, and Europe by the end of the nineteenth century.

By 1854, when London experienced its second great cholera epidemic, physician John Snow had demonstrated the link between the disease and contaminated drinking water; by the 1880s, the bacterium that caused the disease was isolated. As industrialized countries implemented sanitation systems, the occurrence of epidemics declined, leaving cholera as a disease of mainly undeveloped and poor areas.

The Philippines in the early twentieth century was not only undeveloped, poor, and without sanitation, but also filled with turmoil following the Philippine-American War in 1902. When cholera appeared, the sixth epidemic the archipelago had experienced since the 1820s, the population was very fearful and untrusting of their new American occupiers.<sup>1</sup>

In theory, the availability of modern

After the Philippine-American War in 1902, a cholera epidemic encompassed the Philippine Islands. In an attempt to hamper the movement of the disease, the United States attempted to implement several modern public health measures. Unfortunately, due to a lack of cultural sensitivity and preconceived notions of local practices, the United States was unsuccessful in its endeavor to contain the cholera epidemic and, in the end, fueled its spread.

medicine and the presence of the American troops should have helped to prevent the spread and mortality of cholera. But the 1902 epidemic proved to be just as devastating as the preceding epidemics that had struck the islands. What caused a nearly complete American failure in preventing and controlling the epidemic?

This collapse of the US public health system in the Philippines can be attributed to the American policies for governing the islands—the war they had just concluded as well as the cultural insensitivities of the American anti-cholera efforts created the perfect conditions for disease diffusion and transmission: hunger and fear. Widespread resentment and terror among the native population, coupled with desperate starvation, led to mass movements of people to and from every point of the Philippines.

### Background

The Philippine Islands is composed of a chain of approximately 7,000 islands in Southeast Asia. Under the rule of the Spanish empire for four centuries, the native Filipinos gained their independence at the turn of the twentieth century with the help of an American army. However, after defeating the Spanish, the Americans turned on the Filipino guerrillas and abandoned their promises of an independent Philippines; negotiating with Spain, US President William McKinley annexed the Philippines without consulting any of the Filipino guerrilla leaders. Outraged, the Filipinos renewed their struggle for independence, this time against their former allies. The resulting Philippine-

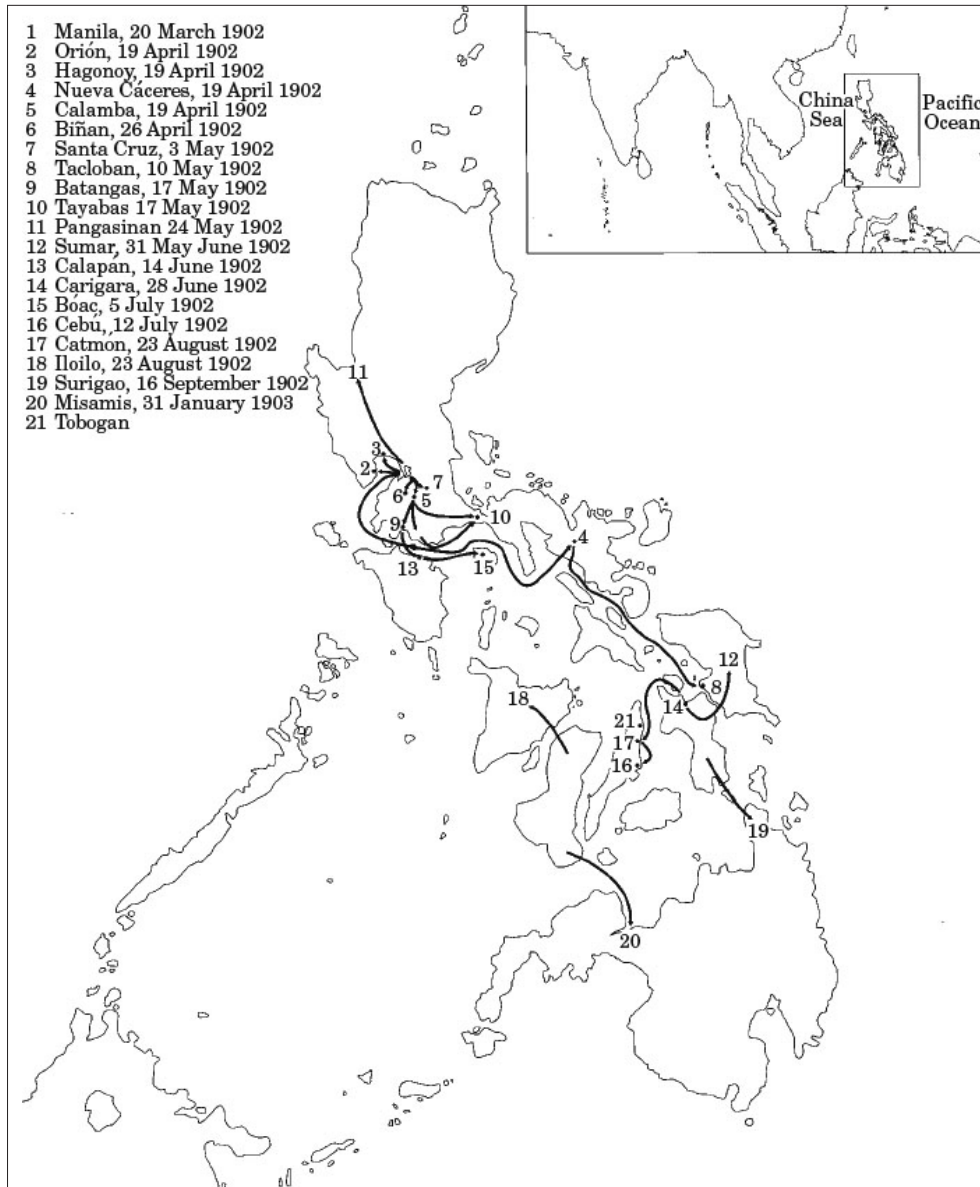
American War saw the invasion of the Philippines by 122,000 US soldiers and a three-year-long guerrilla war that led to the deaths of over 20,000 Filipino soldiers and the officially recorded deaths of 200,000 civilians from atrocities, starvation, and disease. There was a total of as many as 400,000 deaths if unofficial deaths are estimated and included.<sup>2</sup>

As the war ended in 1902, a cholera epidemic swept across the entire archipelago, killing tens of thousands of Filipinos in every part of the country. In 1900, the normal fatality rate of untreated cholera was 40-60%,<sup>1</sup> but in some areas of the Philippines the disease had a much higher fatality rate. For example, in the province of Binan, cholera had a fatality rate of 88.2% in 1902, with almost one fifth of the population dying from the disease that year.<sup>3</sup>

The high fatality of the epidemic in the Philippines can be attributed to the presence of the Americans and their impact on the population. Not only was the population already suffering due to the preceding three years of occupation and warfare with the American forces, but many of the public health policies implemented by the newly crowned victors were in direct conflict with Philippine culture and served to worsen the epidemic.

### Public Health vs. Culture

One of the main American medical principles for dealing with contagious disease is that infected patients should be physically separated in hospitals or camps to prevent transmission. However, the Filipinos were



**Diffusion of wave I of the cholera epidemic, Philippine Islands, March 1902–February 1903**

The reconstruction is based on the textual accounts of the Chief Quarantine Officer for the Philippine Islands. Vectors show the spatial links in the transmission of cholera; the date and time of appearance of cholera in various municipalities and provinces is indicated. *Adopted from Smallman-Raynor M, Cliff AD.*<sup>7</sup>

very much afraid of hospitals. During the Spanish era, entrance into a hospital signaled impending death for a patient. Thus, “confinement in hospitals for patients, and in detention camps for contacts, was almost as feared as the cholera itself.”<sup>4</sup> The American doctors found this aversion to medical institutions incomprehensible, and used soldiers to coerce the Filipinos into the camps and hospitals. This fueled further distrust toward the American doctors, and also led to numerous escape attempts, some successful, by the interned Filipinos, giving rise to further spread of the cholera bacterium.

Similarly, the common anti-cholera tactic of burning the houses and bamboo

nipa huts of the infected greatly frightened the Filipinos. For example, when the original cholera outbreak was discovered in the Farola district of Manila, the Philippine Commissioner and Interior Secretary Dean Worcester “immediately ordered the infected *barrio* [Filipino neighborhood] burned to the ground and the inmates taken to detention camps.”<sup>3</sup> This shocked and infuriated those affected, and the rest of the Filipinos “were terrified at the idea of going into a detention camp, and fled to all parts of the pueblo... taking the disease with them wherever they went.”<sup>3</sup> This frenzied movement of diseased people around the islands, leading to rapid spreading of the

disease, was, of course, precisely what the internment order was supposed to prevent from happening.

In general, the concept of isolating infected patients violated Filipino tradition, which was (and still is) intensely focused on loyalty to one’s family, relatives, and friends. The act of the American doctors forcibly isolating a patient from his or her family was seen as a grave offense. Therefore, many family members would force their way into the camps or hospitals and demand to see their relatives or friends. This rendered the attempted physical isolation of the patients absolutely useless, and frustrated the US doctors to no end.<sup>3</sup>



To avoid the burning of their homes and being placed in an internment camp, many Filipinos avoided letting the Americans know that a family member was infected. As an American teacher in Cebu explained, “many of the poor people see absolutely no way of replacing their house.... Better let father or brother die and say nothing about it.”<sup>4</sup> This fear of losing one’s house and of being taken into the rumored “death camps” led the Filipinos to hide corpses, dump corpses into streams, or to bury the dead in shallow graves – from which the bodies would emerge during the heavy tropical rains and infect the ground water with cholera.<sup>3</sup>

When the amount of dead and dying started to overwhelm the cemeteries and bodies started to pile up in the streets, the US medical officers decided to cremate the dead as a sanitary way to dispose of the bodies while destroying any cholera bacterium present. However, “no Filipino in his right mind approved of cremation [due to religious aversions to it]... The natives had such a horror of it that they would rather scoop out a trench under a house in which to bury the dead, or throw the body in the nearest swamp.”<sup>4</sup> This fervent horror of cremation and the subsequent concealment of diseased bodies prompted the American officials to quickly stop cremating bodies. Thus, it seems that every US intervention intended to reduce the transmission of cholera actually caused an increase in the spread of the epidemic.

### Lasting Effects of the War

The effectiveness of American attempts at epidemic control was also reduced by the legacy of the occupation and war.

In many areas, the US forces had resorted to the Spanish policy of “*reconcentrados*” —forcing the residents of a town into a specified zone and guarding the zone with soldiers.<sup>5</sup> The goal was to cut off all contact between the local population and the guerrillas and to curtail the guerrillas’ supply line. However, this reconcentration also forced people together in a very small area, thereby greatly enabling the rapid spread of disease among them and leading to increased rates of cholera among the reconcentrated villagers.<sup>3</sup>

Another tactic the US forces employed was to destroy local food crops, starve the guerrillas, and oblige the villagers to depend on the US forces for food. When the

cholera epidemic struck, the lack of food caused the deaths of thousands of Filipinos across the Philippines. Since “people were released from the zones too late for an adequate spring planting,”<sup>3</sup> many villages were dependent on the surplus foods from neighboring regions because they had not been able to grow their own crops. When the epidemic arrived, “the quarantine proscribed movement and trade between towns,”<sup>3</sup> and those living in a reconcentrated town found their situation desperate. Reynaldo Iletto, a Filipino historian, writes that in Calamba, for example, there had been:

Fierce battles... resulting in the destruction of the irrigation works. Thus, no rice had been planted...the town was rice-dependent on neighboring Cabuyao and Binan... and so rice had been allowed to enter from neighboring towns at regular market prices. This, however, was suddenly cut off by unexpected quarantine regulations made necessary by the appearance of cholera.<sup>4</sup>

Residents of the cut-off towns violated the US imposed quarantines, seeking food wherever they could find it and spreading the cholera further.

Indeed, quarantines seemed to generally fail. When cholera was first discovered in the capital city of Manila, the US authorities quarantined the city. However, terrified residents immediately fled across Manila Bay via canoes and small boats, and thus quickly spread the disease wherever they roamed. Chief Quarantine Officer J. C. Perry bemoaned the quarantine as “absolutely useless,” and revealed his annoyance at the “dim-witted Filipinos” when he professed his wishes that he were “dealing with intelligent Americans or Europeans instead.”<sup>4</sup>

His quotes reveal an underlying problem in the implementation of public health measures in the Philippines. The deep mistrust between the American officials and Philippine people, and a belief on the part of the former that the population as a whole was too uncivilized to care for itself were two main issues that affected the goals of the Americans.

Warwick Anderson, an authority on colonial medicine, explains that when Americans arrived in the Philippines they had in their minds two important assumptions. First, Americans are culturally superior to the Filipinos, and as an extension of that, the American has “a sanitary immunity,

due to a purer personal, domestic, and social life, and perhaps to circumstances and habits rendering admission of infection less easy.”<sup>6</sup> This assumption implied that the Americans had a duty to pass their culture and their hygienic practices on to the natives, in order to raise the Filipinos out of “dirt and disease.”<sup>6</sup>

The second assumption was that “most Americans in the Philippines believed that it would take many generations to replace the traditional customs and habits with a more hygienically ordered American way of life.”<sup>6</sup> Both of these assumptions infused the occupying Americans with a sense of superiority and a tendency to dismiss the Filipinos’ customs as irrelevant and unimportant.

### Case studies

Two interesting cases reveal what would have happened if there had been little or no American intervention in a Filipino town during the cholera epidemic; the first was the town of Pila, and the second was Balayan, in the province of Batangas. In Pila, there was no army surgeon or military medical officer. Instead there was a small American garrison. So, “the commanding officer simply instructed the mayor to divide up the town... under the headship of prominent citizens, many of whom had fought in the resistance. A former guerrilla hero, Col. Ruperto Relova, was put in charge of two barrios. All dealings with the people, such as explaining health measures, reporting cases, and arranging burials, were made through men like him.”<sup>6</sup> The result of allowing the Filipinos to take charge of their own public health was startling: “There was...no dependence on rice aid, no fuss was made about concealment of cases, because none were discovered.”<sup>6</sup>

The second example, Balayan, demonstrates what would have happened if the Americans had not intervened in the Philippines at all. The US commanding officer had too few men at his disposal to effectively enforce the isolation of patients and the disinfection of all the latrines, and so he did nothing at all—“no punitive measures were taken, no detection camps were erected, and there was no talk of burning houses.”<sup>3</sup> The results are again shocking; “the epidemic ran its course in a month [instead of the usual 2 – 3 months]...mortality in Balayan for all of 1902, both from all causes and from

cholera alone, was somewhat less than half of Binan's rate [the overall region]."<sup>3</sup>

## Conclusion

It seems clear that whenever the US medical officials attempted to curb the cholera epidemic with an intervention, their efforts ran afoul. Overall, it is also clear from the statistics that the US public health system in the Philippines in 1902 failed to prevent or control the epidemic in any way: the quarantine system broke down every time it was implemented, the disease traversed the entire country in a matter of weeks, and infection and mortality rates were similar to the previous two cholera epidemics. In fact, as shown, the Filipinos actually fared better in towns where the Americans let the natives manage their own public health, or where the Americans literally did nothing at all.

Why was the American failure so complete? It was not for lack of scientific knowledge, or innovative ideas to combat the epidemic. Rather, the two primary reasons for the failure were the interference caused by the Philippine-American War, and the flawed US perception of the Filipinos and refusal of the US medical officers to accept and adapt to the Filipino culture. The Philippine-American War was over by the time of the cholera epidemic, but suspicion and lingering hostility between the Americans and Filipinos led the Americans to sometimes use excessive force when dealing with the Filipinos.

For example, the US policies of the completely razing infected structures and forcing incarceration of the residents reveals more than a lingering hint of hostility toward the natives, who had just concluded fighting a bitter and vicious guerrilla war against the

Americans. Also, the anti-guerrilla policy of reconcentration rendered the displaced and clustered civilian population vulnerable to the spread of disease. The wartime policies of the Americans, such as the burning of food crops in the surrounding area, also played a major role causing the widespread hunger of the Filipinos. Thus, the legacy of the Philippine-American War tainted the American medical efforts during the epidemic.

But the more important reason for the failure was the mistaken American perception of the Filipinos and the refusal of the US medical officers to understand the Filipino culture. Since the Americans viewed the Filipinos as dim-witted and stubborn children, the Americans saw nothing wrong with ignoring the Filipinos' concerns and beliefs, and with dismissing their opinions. However, this led the Filipinos to violate US orders and inadvertently accelerate the spread of the cholera epidemic. With the burning of infected homes and the forced internment of the residents, the US forces spread fear and anger throughout the native population, and caused the concealment of dead bodies, which helped to further the epidemic. By repeatedly trying to rigidly enforce quarantines on entire villages which had no food, the US forces set themselves up for failure: for the starving people, "it was ultimately a choice of dying from hunger or dying from cholera."<sup>4</sup> Then, by forcing the isolation of infected persons, the Americans violated core Filipino beliefs about the unity of the family, with the result that the Filipinos forced their way into the isolation wards, so as to reunite with their family and friends—rendering the isolation pointless and allowing the transmission of the disease. By attempting to cremate the bodies of

the dead, the Americans again accidentally violated the Filipinos' beliefs; the Filipinos were horrified at the possibility of cremation, and would even dump the bodies of the dead in streams or shallow graves (thus infecting the groundwater) rather than cremate them. All of these thwarted interventions actually ended up causing more harm than good for the Filipinos.

This epidemic, then, can serve as an example of the catastrophic failure of a public health system which had actually been completely capable of preventing the disaster. The failure was not due to a lack of commitment, knowledge, or capability, but was instead primarily caused by a profound miscommunication between the Filipinos and the Americans: a clash of two cultures, with the Americans attempting to impose their superior hygiene on the Filipinos without listening to anything the Filipinos had to say. The Philippine-American War had also inculcated a deep mistrust between the Filipinos and Americans, which was hard to overcome. But even this war had been caused by overzealous American interventionist activity, springing again from the mistaken view of the Filipinos as child-like savages, needing benevolent guardians to hold their hands. It is sobering to realize that the actions of the Americans during the cholera epidemic of 1902 probably led to more Filipino deaths from cholera than would have died if the Americans had done nothing at all. In a way, the American forces acted as "agents of apocalypse," triggering a wave of epidemic disease by creating conditions of widespread fear and hunger, and then utterly failing to cooperate with the Filipinos in fighting the disease.

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# The Risks Associated with Water Treatment

## The cost of public health policy implementation

Alex Wald, Public Health Studies 2008

Every public health solution and policy implementation poses new and unique challenges. An illustrative example is the treatment of cholera in the United States and the subsequent introduction of chlorine and chlorine-related by-products into the environment. Cholera is an acute, diarrheal, water-borne illness caused by the infection of the intestine with the bacterium *Vibrio cholerae*.<sup>1</sup> The transmission of cholera occurs almost exclusively through contaminated water or food. Water contamination in homes may occur by means of poor storage or when inadequately washed hands come into contact with stored water. Bathing or washing of cooking utensils in contaminated water then becomes a route of cholera transmission.<sup>2</sup> In an epidemic, the source of contamination is usually the feces of an infected person. While *Vibrio cholerae* can live in certain aquatic environments for many years, it can also spread rapidly in areas with poor sewage and drinking-water treatment systems.<sup>2</sup>

Cholera was prevalent in the US in the 1800s, but has since been virtually eliminated due to modern innovations in water and sewage treatment. The Environmental Protection Agency (EPA) continues to work with water and sewage treatment operators to prevent the contamination of water with the cholera bacterium.<sup>1</sup> One of the most common techniques of sanitizing water, used by both municipal systems and in households, is the controlled application of chlorine disinfectants. In order to reach “drinkable” or “usable” water levels, household systems normally inject liquid chlorine bleach into the water via one of several types of pumps.<sup>3</sup> In fact, the Centers for Disease Control and Prevention (CDC) recommends only drinking water that has been boiled or treated with chlorine or iodine to reduce any risk of being infected by cholera.<sup>1</sup>

However, in addition to killing or inactivating pathogens in water, chlorine reacts with natural organic matter and/or the chemical compound bromide in water to produce various organic and inorganic by-products.<sup>4</sup> Some of these byproducts are known to have adverse effects on human health upon ingestion, dermal absorption or inhalation. Moreover, chlorine use in warfare as a choking (pulmonary) agent is well documented.<sup>5</sup> Many epidemiological studies indicate an association between the ingestion of chlorinated water and occurrences of bladder and rectal cancer. Some “disinfection by-products” are also known to cause nervous system problems, in addition to triggering kidney and liver problems. Chlorine by-products have also demonstrable adverse effects on the reproductive system. At least one study has found a positive correlation between exposure to water treatment by-products and spontaneous abortion in pregnant women.<sup>4</sup>

Trihalomethanes (THMs) refer to one class of disinfection by-products found in virtually all public sources of chlorinated water. Chloroform (trichloromethane), the most prevalent disinfection by-product, is a type of THM capable of producing undesired health effects in humans and has been shown to be carcinogenic in rats and mice. The Department of Health and Human Services has determined that chloroform may “reasonably be anticipated to be a carcinogen.”<sup>6</sup> Vectors for the exposure to chloroform include swimming pools, drinking water, food, showers, and workplace air. Prolonged exposure to high concentrations of chloroform can damage one’s liver and kidneys.

**“it is important to note that water chlorination is widely regarded one of history’s greatest public health advances ... this does not dismiss its implications.”**

Although current methods of water treatment exhibit inherent risks, as discussed above, it is important to note that water chlorination is widely regarded one of history’s greatest public health advances. However, this does not dismiss its implications. Water treatment processes in the United States, used in part to eliminate cholera, have resulted in the increased release of chlorine and, in turn, human exposure to chlorination by-products, suggesting that even the most successful and widely beneficial implementation of a public health policy can introduce new threats and problems. There is, therefore, no such thing as the perfect solution; close monitoring after policy execution is critical. This causal relationship between intended benefits and negative, often unforeseen, consequences can be regarded as an irony of public health.

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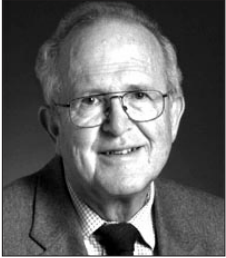
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# PERSPECTIVE

## Lessons from Cholera Evolution of treatment



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**C**holera became a major research interest of mine when I was a Fellow in the Division of Infectious Diseases at Johns Hopkins University School of Medicine, and has remained so for the past 45 years. In 1962, my family and I traveled to Calcutta along with Dr. Charles Carpenter (then another junior faculty member at Hopkins) and his family to begin two years of studying cholera, which was clearly recognized as a major public health problem in the city. Cholera, caused by *Vibrio cholerae*, a Gram-negative, enteric bacteria, is known as the most severe of all diarrheal diseases. The disease

**We found that, whereas the mortality rate was 25% in the infectious diseases hospital where we were working, the newly designed therapy reduced mortality to less than 1%.**

occurs primarily in developing countries where drinking water and adequate sanitation are not available. It is transmitted by the ingestion of fecally contaminated food or water. This bacterial infection of the small bowel causes diarrhea through the production of a potent enterotoxin which causes an increased secretion of electrolyte-rich fluids, resulting in large volumes of diarrheal stool. Untreated, cholera has a mortality rate of up to 60%; adults can lose up to one liter of stool per hour and can go into shock from dehydration within 12 hours of the onset of the disease.

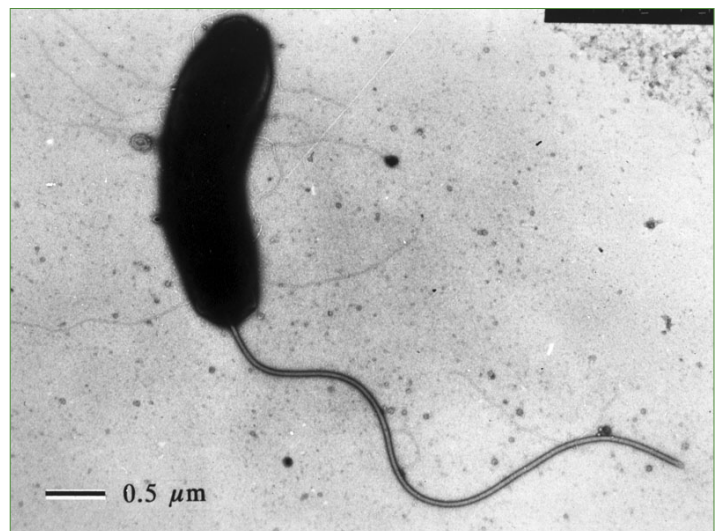
Our first studies involved measuring the volume and electrolyte content of the cholera stool, and designing an intravenous fluid therapy that would rapidly correct the dehydration and electrolytes lost in stool. We found that, whereas the mortality rate was 25% in the infectious diseases hospital where we were working, the newly designed therapy reduced mortality to less than 1%. We soon thereafter studied the use of an antibiotic, tetracycline, in the treatment of cholera, and found that the amount of stool was decreased by 50% in treated patients, thus greatly shortening the course of the disease. Thus, the correction of dehydration with physiologically appropriate intravenous fluid and the use of antibiotics soon became standard treatments for cholera throughout the world.

However, most patients with cholera did not have access to these forms of therapy, either because of location or cost. The need for so many people (mostly children) to receive adequate treatment resulted in the next major advance of cholera therapy: the development of an oral rehydration fluid that would correct dehydration and replace electrolyte loss. In 1968, my family and I returned to Calcutta, along with Dr. Nathaniel Pierce and family (also with Hopkins) for another

two years to study this new therapy. This fluid (oral rehydration solution or ORS) was based on physiologic studies in small animals done in the 1950's, which showed that sodium absorption in the small bowel could be enhanced by the addition of glucose. This very basic observation was used to develop ORS.

ORS was found to promote absorption of salt and water from the small bowel and was therefore found to be effective in decreasing the need for intravenous fluid. In all but the most severe patients, ORS alone could be successfully used for treatment. Once ORS was found to be extremely effective in cholera patients, it was then studied extensively in children and adults with diarrhea of all causes, and found to be a "universal" solution for treatment of any diarrhea in which loss of stool was a significant part. The therapy is extremely effective, inexpensive, widely available, and can be administered by untrained caretakers or family members. Since about 1980, ORS has become the mainstay of diarrhea therapy, used all over the world, promoted by all national and international health agencies.

At about the same time that ORS was being developed (1968), our laboratory described a "new" organism, enterotoxigenic *Escherichia coli* (ETEC), which produced a disease very similar to cholera. It is usually milder, but also causes considerable dehydration. ETEC have now been fully characterized and shown to produce two en-



Optical microscope view of *Vibrio cholerae*

Photo - R. Bradley

terotoxins, one of which is almost identical to the cholera enterotoxin. Once recognized, this group of organisms was shown to be the most common bacterial cause of diarrhea in children living in the developing world. Not surprisingly, ETEC have also been found to be the most common cause of "Travelers' Diarrhea" (also known by more colorful names; e.g., Delhi Belly, Montezuma's Revenge) and is primarily the reason why this diarrhea of travelers can be treated effectively with antibiotics.

*V. cholerae* is a normal inhabitant of brackish (mixed salt and fresh) water, found in estuaries around the world. However, only two of the approximately 200 serogroups of *V. cholerae* can cause epidemic cholera, serogroups O1 and O139. The latter serogroup evolved in 1991 in the Bay of Bengal, causing cholera outbreaks in India and Bangladesh. O139 is the first serogroup, other than O1, found to cause epidemic cholera, since the organism was recognized by Koch in 1884. Today both serogroups are found in India and Bangladesh. Since infection with one serogroup does not protect against the other, O139 now poses a threat to become the organism of another cholera pandemic.

Cholera is a pandemic disease; historically the world has had seven pandemics, the first being described in 1822. Cholera has caused disease in almost all the countries of the world at some time. During the present seventh pandemic, cholera invaded Africa in 1970, and South America in 1991. At present, outside of Asia, Africa is experiencing the most devastating outbreaks, and mortality rates are in the range of 4-5%, which indicates that access to effective treatment is less than optimal.

What causes cholera outbreaks? We are presently studying the epidemiology and ecology of both of these organisms in southern Bangladesh. Cholera is known to be seasonal, and we are trying to understand what "triggers" the onset of a new epidemic. At present we have found several

environmental factors that may serve this function. *Vibrios* are attached to plankton in these waters, and the population density of plankton depends on environmental variables, such as temperature, salinity, and water depth. With an increase of plankton density, the numbers of *vibrios* in the water increase, and the ingestion of a sufficient dose of these waters may result in the infection of humans. Once this occurs and diarrhea is produced, the organisms in stool can spread rapidly to others through fecally contaminated water and food, and thus begin a new epidemic. We are hoping to be able to recognize an oncoming cholera epidemic by modeling these environmental data.

Developing an effective, inexpensive cholera vaccine has been a top priority of cholera investigators, particularly during the last 40 years. The original injectable vaccine, consisting of killed cholera organisms, was used for almost 80 years. It was found in the 1970's to be of limited use and its use was discontinued. Newer vaccines have been oral, rather than injectable, and consist of either killed or live attenuated *vibrios*. Although two of these have shown effectiveness in volunteers, none has been highly protective in large field trials, and neither is cheap enough to be used by the populations in the developing world that need them. A new live attenuated cholera vaccine will be given a field trial within the next year or so in Bangladesh, and we hope that it may prove effective and inexpensive.

The control of cholera has improved drastically from the 1902 outbreaks in the Philippines, described in detail by Manuel J. Dattiles, IV in this issue. Previously a major cause for panic, for burning of houses and clothing, and for unwarranted enforced quarantines, cholera is now a disease that is well understood and easily treated. However, its mode of spread, contaminated water and food, is not easily controlled, and outbreaks of cholera continue to occur in the developing world.

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# Improving Refugee Health: A Holistic Approach

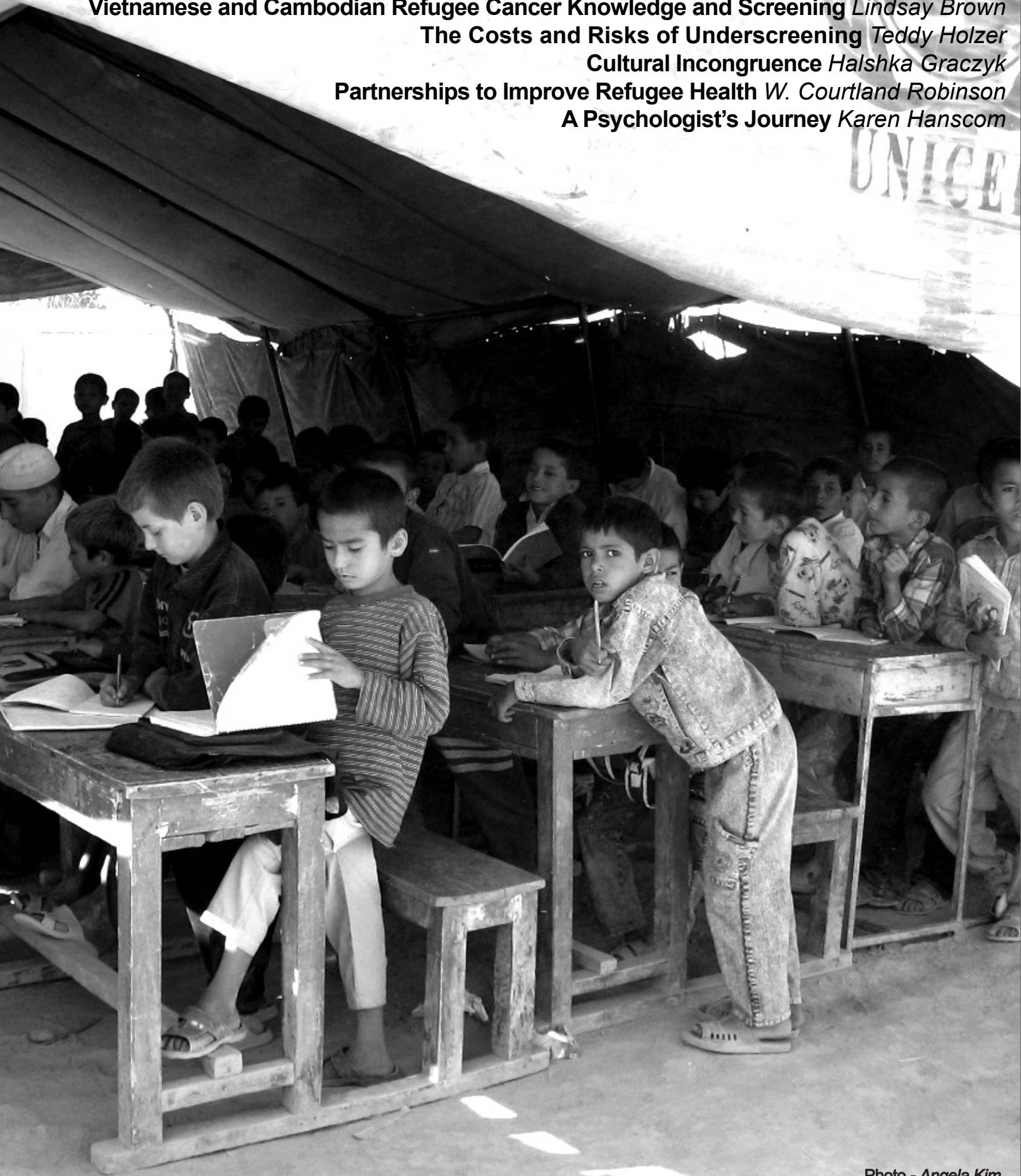
Vietnamese and Cambodian Refugee Cancer Knowledge and Screening *Lindsay Brown*

The Costs and Risks of Underscreening *Teddy Holzer*

Cultural Incongruence *Halshka Graczyk*

Partnerships to Improve Refugee Health *W. Courtland Robinson*

A Psychologist's Journey *Karen Hanscom*



# Vietnamese and Cambodian Refugee Cancer Knowledge and Screening

## Two case studies reflecting an overlooked health disparity in the US

Lindsay Brown, Public Health Studies 2008

The stark discrepancy in morbidity and mortality rates between racial minorities and non-Hispanic whites in the United States is a phenomenon that has been acknowledged by practically every governmental agency.<sup>1</sup> Many researchers have shown that minority patients in the United States, irrespective of the type of cancer from which they suffer, are more likely than Caucasians to be diagnosed with cancer at more advanced stages.<sup>2</sup> This alarming trend has taken great precedence among *Healthy People 2010*'s goals to eliminate health disparities among Americans.<sup>1,3</sup>

*Healthy People 2010* is a set of health objectives for Americans. One of its primary objectives is to reduce the number of new cancer cases as well as illness, disability, and death caused by cancer in the United States.<sup>3</sup> Specifically, the *Healthy People 2010* objectives aim to reduce the number of deaths from cancer within the United States from 202.4 deaths per year per 100,000 people to 159.9 deaths per year per 100,000 people.<sup>3</sup> This would result in a 21% improvement in the baseline mortality rate over the course of ten years. Cancer screening includes pap smears, mammography, breast self-examinations, clinician breast exams, physical examinations, stool blood samples, and rectal exams, all of which are performed in order to catch cancer in its early lesion stages. These screening practices have been shown to augment the likelihood of organ preservation surgery and to reduce the mortality rate from cancer-related disease.<sup>2</sup> Since preventive screening practices are currently the only widely available weapon against cancer, it is important that the scientific community gain as much knowledge as possible about any obstacle that an individual or group of individuals may face in engagement with any of these screening procedures.

With respect to the goals of *Healthy People 2010*, several publications have brought to light the fact that the health care system and

Research has shown that refugee populations in the United States are clearly disadvantaged in terms of health status. Migration to the developed world often creates a health risk to refugee populations in terms of increased susceptibility to chronic diseases endemic to the host country, such as cancer. The research presented in the case studies of Vietnamese and Cambodian refugee populations living in the United States demonstrates that these populations may be at an excess risk of presenting with cancer at more advanced stages due to lack of knowledge about cancer as well as barriers to access and engagement with cancer screening services. Asian Americans are the only ethnic group in the United States for whom cancer is the leading cause of death.

There is a need for refugee health care among these two subpopulations that includes education about risks, screening tests, and preventive medicine. To most optimally improve the health status of these groups, future research should be directed at discerning the level of knowledge and screening engagement with relation to the influence of cultural beliefs, longitudinal changes in health status over length of stay in the United States, insurance coverage, transportation, language barriers, health-seeking behavior, and other obstacles these individuals may face in gaining knowledge of and access to health care services.

health care providers may be missing a major opportunity to reduce illness and death from cancer within the US. Education campaigns and access to preventive services should be targeted to a specific subpopulation of individuals who are in great need of such services—refugees. Health maintenance for acute survival often takes precedence over long-term prevention of and screening for diseases such as cancer among refugee populations. The quality and small amount of information that does exist with respect to refugee cancer rates, knowledge, and screening practices is grossly insufficient. There is, however, enough information on two subpopulations of Southeast Asian refugees living in the United States to warrant alarm and the need for immediate action (Table 1). This paper will highlight evidence suggesting deficits in the knowledge of cancer and engagement with cancer screening practices among two specific ethnic groups, those of Vietnamese and Cambodian descent living in the United States, as well as suggest the need for targeted, culturally appropriate education programs and policy reform measures to help better ensure access to health care knowledge and services for these populations—as necessary

step in ultimately lessening their disproportionate mortality burden from cancer.

### Case Study 1: Vietnamese Refugees

In April of 1975, the government of the Republic of Vietnam, which was allied with the United States, collapsed under military pressure from communist North Vietnam. Over the course of the following months, 135,000 Vietnamese fled to America.<sup>4</sup> Conditions in the southern portion of the newly reunified country significantly deteriorated in the late 1970s and thousands more sought an escape. Exactly how many thousands of these individuals took to boats remains unknown today. While it is estimated that as many as half of these individuals perished at sea, the successful ones reached refugee camps in Thailand, Malaysia, Indonesia, the Philippines, and Hong Kong. From these refugee camps, many were admitted to the United States and other countries in the developed world. Reports about the high number of individuals dying en route provoked great concern in the late 1970s, and the United Nations High Commissioner for Refugees (UNHCR) was able to negotiate an accord

Table 1. Evidence Warranting the Need for Targeted Cancer Knowledge and Screening Programs Among Certain Vietnamese and Cambodian Asian-American Subpopulations <sup>2, 9, 17, 18</sup>

<p><b>Jenkins et al. 1990 (n=215 Vietnamese refugees/immigrants in the San Francisco Bay area)</b></p> <ul style="list-style-type: none"> <li>o For each of the five cancer screening tests designated by the researchers (pap test, breast exam, mammogram, rectal exam, and stool blood test), respondents were more likely than the general US population to report that they had never engaged in the procedure.</li> <li>o 32% had never had a Pap Smear (vs. 9% of US women)</li> <li>o 28% had never had a Clinician Breast Examination (vs. 16% of US women)</li> <li>o 83% had never had a mammogram (vs. 62% of US women)</li> <li>o More Vietnamese were overdue for each of the five procedures than their US counterparts</li> <li>o Nearly one third indicated the belief that cancer is contagious</li> </ul>
<p><b>Phipps et al. 1999 (n=38 Vietnamese and Cambodian refugees/immigrants in Philadelphia)</b></p> <ul style="list-style-type: none"> <li>o 71% did not know what cancer was</li> <li>o 76% did not know how someone gets cancer</li> <li>o 74% could not name a single cancer prevention strategy</li> </ul>
<p><b>Yi 1996 (Cambodian refugee women in Houston)</b></p> <ul style="list-style-type: none"> <li>o Only 13% had been screened for cervical cancer in the past year</li> </ul>
<p><b>Yi and Prows 1996 (n=216 Cambodian refugee/immigrant women in Houston)</b></p> <ul style="list-style-type: none"> <li>o This subpopulation of Cambodian women in the Houston area had the lowest breast cancer screening rates among all women living in the United States</li> </ul>

under which the government of Vietnam would allow “orderly departure” for some of its citizens who already had relatives abroad. Others, such as Vietnamese without relatives abroad, continued to escape by boat. By the mid-1980s, numerous disputes arose between participating countries over eligibility criteria, which reduced the rate of departures appreciably. However, the program resumed in 1987 and remained in place until 1994. In addition, US officials have re-screened thousands of Vietnamese who had been repatriated from Asian refugee camps in order to determine whether individuals among this cohort also qualify for US refugee status.<sup>4</sup>

According to the Southeast Asia Resource Action Center (SEARAC), people from the Southeast Asian countries of Cambodia, Laos, and Vietnam constitute the largest group of refugees ever to build new lives in the United States. The Vietnamese constitute the largest ethnic faction within this group. Today, these Vietnamese Americans and their American-born children number just under one million individuals living in the United States.<sup>5</sup>

Asian Americans are the only ethnic group in the US for whom cancer is the leading cause of death.<sup>6</sup> According to data from the California Cancer Registry, Vietnamese have higher age-adjusted incidence rates for lung, stomach, liver, and uterine cervical cancer than all other Asian-American ethnic groups (Table 2), and age-adjusted mortality rates for liver cancer, uterine cervical cancer, and female lung cancer among the Vietnam-

ese are the highest of any Asian ethnic groups (Table 3). Moreover, it has also been shown that Vietnamese women in the US have the highest age-adjusted incidence rate of cervical cancer compared to all ethnic groups in the United States.<sup>8</sup> The Vietnamese are the fastest-growing Asian minority in the United States, and although statistics have demonstrated startling rates of cancer prevalence, there is a scarcity of information on their health knowledge and practices, particularly regarding cancer prevention (Table 1).<sup>9</sup>

Jenkins et al. (1990) conducted one of the only studies aimed at specifically discerning this information. Their interest in investigating cancer knowledge and screening practices was sparked when researchers Schwartz and Thomas produced preliminary data presented at the American Public Health Conference in 1987 that suggested excess cancer mortality among Vietnamese refugees at certain sites in the San Francisco Bay Area.<sup>9</sup>

Jenkins et al. selected a random sample of 215 Vietnamese refugees living in the San Francisco Bay Area.<sup>9</sup> Knowledge of and engagement with the following five cancer screening tests were investigated: pap test, breast exam, mammogram, rectal exam, and stool blood test. For each of the five cancer screening tests designated by the researchers, respondents were more likely than the general US population to report that they had never engaged in the procedure. Findings indicate that 32% had never had a Pap smear (vs. 9% of the general population of

US women), 28% had never had a breast examination (vs. 16% of the general population), and 83% had never had a mammogram (vs. 62% of the general population). In addition, more Vietnamese were overdue for each of the five procedures than their US counterparts. Nearly one third of individuals surveyed were found to believe that cancer is contagious.<sup>9</sup>

Another study, conducted by Phipps et al. (1999), showed similarly disquieting results. For example, within the cohort of Vietnamese and Cambodian refugee and immigrant women living in Philadelphia, 71% said they did not know what cancer was and 74% were unable to identify a single cancer prevention strategy. Among the 29% that had heard of cancer, they frequently described the disease in fatalistic terms such as “a serious disease that means you will die soon,” “a painful disease,” and “you will be crying in pain.”<sup>22</sup>

**Case Study 2: Cambodian Refugees**

When American involvement in Southeast Asia collapsed in 1975, the Khmer Rouge, a communist force influenced by the teachings of Mao Tse Tung, seized the Cambodian government.<sup>10</sup> The goal of this new government was to restructure Cambodian society by destroying all of the features that characterized the culture’s way of life prior to their ascent to power. The Khmer Rouge instituted unspeakable brutality against the Cambodian population through starvation,



Table 2. Age-Adjusted Cancer Incidence & Mortality (per 100,000) for Vietnamese, Total Asian/Pacific Islander, and Non-Hispanic White Populations

All Sites	Vietnamese		Total Asian/Pacific Islander		Non-Hispanic White	
	Incidence	Mortality	Incidence	Mortality	Incidence	Mortality
Male	376.1	174.4	364.3	160.0	560.8	225.4
Female	274.8	105.1	294.6	108.1	446.1	167.7
<b>Breast (Female)</b>	55.5	9.0	89.9	14.6	152.9	27.4
<b>Prostate</b>	65.4	9.1	94.0	11.9	159.9	27.0
<b>Colon &amp; Rectum</b>						
Male	39.1	11.1	51.5	18.0	59.1	21.3
Female	33.0	7.1	38.2	11.6	42.8	15.7
<b>Lung</b>						
Male	72.8*	47.2	58.0	44.7	77.9	64.0
Female	37.8	23.3*	28.5	20.7	57.6	44.9
<b>Stomach</b>						
Male	28.1*	15.5	20.1	12.5	9.5	5.0
Female	14.5*	8.9	11.2	7.1	3.8	2.6
<b>Liver</b>						
Male	54.3*	35.5*	23.8	17.9	6.8	6.0
Female	15.8*	10.4*	8.8	07.4	2.5	2.7
<b>Uterine/Cervix</b>	14.0*	4.8*	8.8	2.7	7.3	2.0

\*Indicates the two highest rates for type of cancer among all Asian ethnic groups.

Source: California Cancer Registry

disease, and murder, killing between one and three million Cambodians over the course of the next four years. In 1978 and 1979, the Vietnamese invaded and captured the capital city of Phnom Penh, and guerilla warfare ensued. In the midst of the violence, confusion, and terror, hundreds of thousands of Cambodians fled across the border into Thailand. The following year, some 160,000 refugees had made a new home in refugee camps in Thailand, another 350,000 moved to Thailand but lived outside of the camps, and more than 100,000 fled to Vietnam, where the UNHCR provided assistance. A significant number of Cambodian refugees from these UNHCR camps were admitted to the United States and several other developed countries.<sup>10</sup>

The majority of these Cambodian Americans are comprised of those who were forced to flee their country during the late 1970s and the American-born children of these individuals.<sup>12</sup> Compared to the general population in the US and other Asian-American groups, Cambodians are economically disadvantaged and linguistically isolated; nearly 95% of Cambodians in America speak Khmer at home.<sup>13</sup> Because Cambodia is a largely agrarian society in which, during pre-Revolutionary times, western medicine was only available in urban settings and usually only under situations of extreme crisis, these refugee populations are often particularly un-

familiar with western culture and biomedical concepts of prevention.<sup>14, 15</sup>

Overall, there are insufficient data concerning cancer screening and prevention behavior of Cambodians living in America. Of the scarce data that exist regarding incidence and mortality rates, the California Cancer Registry indicates that Cambodians living in the United States have markedly elevated rates of invasive cervical cancer incidence and mortality, and the likewise scant data that do exist regarding knowledge of cancer and utilization of cancer screening services indicate huge gaps in knowledge among Cambodian Americans.<sup>16</sup> In terms of cervical cancer screening, researcher Jenny Yi (1996) conducted a study of Cambodian refugee women served by community organizations in Houston. Results indicate that only 13% had been screened in the previous year.<sup>17</sup> Researchers Yi and Prows (1996) later found that Cambodian women living in the Houston area had the lowest rates of breast cancer screening among all women in the United States.<sup>18</sup>

**Discussion**

Researchers have argued that the refugee and immigrant health policies in the United States have been strikingly consistent since the 18th century, focusing on limiting the burden of disease that refugees bring into the

host country upon arrival and resettlement.<sup>19</sup> Many are quick to point out that refugees often arrive in the United States from regions of the world with severe rates of tuberculosis, malaria, hepatitis, and HIV, thus adding to the burden of the host country.<sup>20</sup> Researchers Weinstein et al. reflect, “From a focus on quarantine of unhealthy foreigners to the practice of individual examinations, it has been the thrust of American policy to do all that is possible to protect the host population from disease-bearing immigrants.”<sup>19</sup> The interest in protecting a country’s host population is clearly both compelling and necessary.

However, migration to the developed world creates an increased health risk to refugee populations in terms of chronic diseases such as cancer. Other chronic diseases to which refugees become increasingly susceptible as they assimilate into a host culture in a developed country include diabetes, hypertension, coronary heart disease, and mental illness.<sup>20</sup> It is clear that sociodemographic disadvantages are an onerous set of variables which further confound and contribute to the lack of knowledge regarding cancer and cancer screening services found among these populations once settled in the United States (Table 3).

Preventing the development of the chronic diseases endemic in a host country needs to be seen as a necessary step in the “journey to wellness” for every refugee.<sup>20</sup> While

Table 3. Sociodemographic Characteristics of Cambodian and Vietnamese Americans

	Vietnamese	Cambodian
<b>Median Age</b>	30.5	23.8
<b>Poverty Rate (1999)</b>	16%	29.3%
<b>Citizenship</b>		
Native born	23.9%	34.2%
Foreign born, naturalized citizen	44.0%	30.0%
Foreign born, not citizen	32.1%	35.8%
<b>Household Size</b>	3.7	4.4
<b>English Use</b>		
Only English spoken in home	6.9%	8.4%
English spoken "very well," although not used at home	30.6%	38.1%
English spoken less than "very well," and not used at home	62.4%	53.5%
<b>Educational Attainment</b>		
Less than high school	38.1%	53.3%
High school graduate	19.1%	18.8%
Some college or associate's degree	23.4%	18.6%
Bachelor's degree	19.4%	9.2%

Source: US Census Bureau, 2000

the current focus of health policy concerning such populations is heavily concentrated on screening refugees for communicable disease, it fails to sufficiently address an equally necessary need—chronic disease screening and prevention among refugee populations.<sup>19</sup>

Refugees admitted to the United States undergo three assessments: an overseas medical examination conducted by physicians of the International Organization of Migration or local panels contracted by the Department of State; a port of entry inspection by quarantine officers from the Centers for Disease Control, consisting of a review of medical papers and a visual inspection of each refugee; and an optional health assessment in their initial resettlement area.<sup>19</sup> This current intake health assessment paradigm could provide an excellent opportunity to enhance the health and health-seeking behavior of these populations by incorporating screening measures as well as education regarding cancer and cancer screening (as well as other diseases endemic to the host country) at the point of entry to the United States as well as during follow-up measures in resettlement areas.<sup>19</sup>

**Limitations and Future Research**

The studies conducted among Vietnamese and Cambodian refugee populations in the United States questionably combine information about immigrants and refugees without distinguishing between the two groups. For

example, Jenkins et al. used dubious inclusion criteria for the cohort to have been defined as a strictly refugee population. Their criteria for inclusion in the sample were Vietnamese ethnicity (as defined by self-identification), residence in the San Francisco Bay Area, and the age of 21 years or older.<sup>9</sup> While many of these individuals may have come to the US as refugees, it is likely that immigrants and second- or third-generation individuals were included in the cohort as well. Barnes and Harrison (2004) assert that "future research is absolutely necessary regarding the difference between refugees and immigrants and between [individuals] from different countries before concluding that they are the same and can be combined into one population."<sup>21</sup> Because refugees and immigrants often move to the United States under very different circumstances, it is probable that statistics could vary between the two subgroups, yet none are reported.<sup>21</sup>

Length of time in the United States is another critically important element in distinguishing between the needs of different subgroups of refugee populations. Length of stay in the United States for individual refugees was not addressed in any of the studies. Vietnamese refugees have been arriving in the United States since the 1970s. It is possible that "[newer] refugees could be expected to have health problems that reflect their recent flight, trauma, and conditions in their country of origin, whereas refugees who

have resided in the United States for longer periods may mirror the US populations more closely."<sup>21</sup> Furthermore, future research discerning longitudinal changes in health status over time and the barriers individuals may face in gaining knowledge of and access to health care services over time are extremely important; these may include the influence of cultural beliefs, insurance coverage, transportation, and interpreter issues.<sup>21</sup> A deeper understanding of the relationship between psychosocial issues, health-seeking behavior, and community resources for refugee populations is also a necessary step in optimally improving the health status of these populations.<sup>21</sup> With research at the individual, community, and population health levels, refugee men and women will be more likely to receive adequate health care, and more closely approach the *Healthy People 2010* goals for health.<sup>21</sup>

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## EDITORIALS

# The Costs and Risks of Underscreening Detecting early cancer in underserved populations

Teddy Holzer, Post-Baccalaureate

The United States can do a better job of saving lives in both refugee and more established minority populations. The disparity between the health care received by rich and poor Americans is well documented. Over 15% of Americans are currently without health insurance, with a disproportionate number of these individuals coming from underserved minority populations.<sup>1</sup> The result is that many treatable conditions, such as heart disease, diabetes, and some cancers, cause increased mortality rates in these populations. In particular, relatively simple diagnostic tests for many cancers are widely available in the United States, yet these diagnostic tests are often out of reach of those who could most benefit from them.

This lack of access to cancer screening appears especially egregious when set against the background of excessive screening in better-served populations. Recently, spiral CT scans for lung cancer have dramatically increased our ability to detect smaller tumors. This technology, heralded as a lifesaver by powerful advocacy groups such as the Lung Cancer Alliance, was initially shown to improve the ten-year survival rates for lung cancer patients from 10% to 80%.<sup>2</sup> Yet a March 2007 study published in the *Journal of the American Medical Association* questioned the power of spiral CT scans to save lives.<sup>3</sup> Instead of focusing on survival rates, the study examined differences in mortality between a screened and a control group, and found no difference. Thus, while the technique can detect ten times as many tumors as chest X-rays, there is little appreciable benefit.

The failure to link increased detection to a decrease in cancer deaths presents an interesting paradox. As screening technologies improve, we are able to detect tumors that will likely never develop into symptomatic cancers. Intervening with potentially life-threatening surgeries (5% of lung cancer surgeries result in death<sup>3</sup>) or chemotherapy creates the potential to increase the mortality rate of a given cancer. The desire to utilize the latest and greatest technology may thus require moderation by a practical cost-benefit analysis.

Similar advances in the detection of breast cancer have recently led the American Cancer Society to recommend MRI screening for women with a high risk of developing the disease. This test, like the spiral CT scan for lung cancer, detects many suspicious growths that turn out not to be dangerous. In one study, 131 biopsies were ordered to detect a total of 30 tumors.<sup>4</sup> Because these biopsies carry significant risks of their own, the test is only recommended for women already diagnosed with breast cancer, or who are at higher risk due to family history or genetic makeup. The problem is that women tend to overestimate their risk factor, and will likely end up demanding tests that they don't need (which may result in unnecessary and risky procedures).

The increase in MRI screening recommended by the American Cancer Society is predicted to cost between \$1 billion and \$2 billion dollars per year. In fact, the test costs about ten times as much as the highly efficacious mammogram, which is still not available to women in many underserved communities.

While the new screening technologies described above are outpacing our ability to effectively treat these detected tumors, older (and cheaper) methods still have the capacity to improve outcomes. Indeed, mammograms, breast examinations, pap smears, and X-rays are time-tested ways to reduce deaths from breast, cervical, and lung cancer. Yet many in this country continue to go without access to these life-saving diagnostic tools. By expanding access to cheaper, effective screening methods to currently underserved populations, it should be possible to significantly reduce deaths from cancer at minimal cost to the American taxpayer.

**"This lack of access to cancer screening appears even more egregious when set against the background of excessive screening in better-served populations."**

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# Cultural Incongruence

## The mental health of refugees in America

Halshka Graczyk, International Relations and Public Health Studies 2010

On a cool summer morning in 1977, Khmer Rouge soldiers stormed through Theanvy Kuoch's village in the Cambodian countryside.<sup>1</sup> As part of their brutal occupation of her country, they forced the young woman, along with hundreds of her fellow villagers, to march for hours to a training camp. Her hands tied to the next victim's wrists, she walked with her people. The chant, "to keep you is no gain; to lose you is no loss," resounded in her ears as the guards threatened to kill whoever broke ranks. Her sister's baby, suddenly becoming ill, was thrown to the ground while Kuoch, attached by the rope, was forced to march on. Finally managing to dive into the thick bush of a Cambodian forest, she managed to escape over the mountains into Thailand. Starved, beaten, and alone, Kuoch made her way to a refugee camp where she spent the next three years waiting for a sponsor in the United States. When she finally arrived in Hartford, Connecticut, Kuoch was not only physically battered but psychologically damaged. Her hardships, however, were just beginning.

Like Kuoch, thousands of refugees enter the United States each year after escaping homelands plagued with civil war, genocide, or unremitting violence. Upon entering the United States, they are faced with an entirely foreign sociocultural atmosphere, and many develop unique psychological distress that is often compounded by pre-migration trauma. According to *Voices of Experience*, a documentary featuring Kuoch's survival story, Cambodian refugees have, on average, experienced 14 or 15 major "trauma events" in their lives, ranging from beatings or starvation to witnessing the rape or execution of a family member.<sup>1</sup> The responsibility to thrive in a new setting with physical ailments and haunting memories is an unparalleled struggle.

The World Health Organization (WHO), in its Declaration of Cooperation for the Mental Health of Refugees and Displaced Populations in Conflict and Post-Conflict Situations, has called upon all governments "to prevent and reduce mental disorders and mental health problems, to restore hope, dignity, mental and social well-being, and normality to the lives of refugees, displaced and other populations affected by conflict."<sup>2</sup> Therefore, it remains the duty of the United States government, as well as every American citizen, to create effective mental health initiatives for accepted refugees and asylum seekers. Still, the question remains: how can we appropriately and sensitively accommodate the cultural beliefs of refugees without having to reorganize the entire immigrant health care system?

Before being granted asylum in the United States, refugees must

pass a physical examination performed by a civil surgeon to identify infectious diseases and evaluate their overall medical history. The only psychological examination conducted concerns questions about substance abuse and broad mental health issues.<sup>3</sup> It is easy to imagine that many refugees, such as Kuoch, who have been struggling with the bureaucracy of asylum for years, are fully aware that admitting to any mental malaise would deter immediate entry. In this fragile time of ambiguous transition, the physical ailments of refugees would deem any psychological disturbance frivolous, and a threat to their harbourage.

**"Cambodian refugees have, on average, experienced 14 or 15 major "trauma events" ... ranging from beatings or starvation to witnessing the rape or execution of a family member"**

Furthermore, inherent communication barriers and culturally unique methods of self-expression naturally obstruct effective identification of mental health problems, leaving refugees without professional resources once they reside in the United States. The Mien language, spoken by Kuoch and other Southeast Asians, does not even contain words equivalent to the concept of 'mental health.'<sup>1</sup> This combination of factors results in many untreated mental health disorders that could potentially be helped by medications.

Effective implementation of the WHO's Declaration of Cooperation remains imperative due to the alarming levels of mental health problems within the refugee population. The psychological stress experienced upon arrival to the United States stems primarily from dissonance between the host country and traditional values through financial disadvantages, social isolation due to separation of family members, and loss of purpose in society. In addition, high levels of fear, panic, sadness, withdrawal, and guilt spiral into depressive disorders which include violent behavior and suicide attempts.<sup>4</sup> One study of Cambodian refugees in Boston found them to be ten to twenty times more likely to have severe depression than the general population,<sup>1</sup> while nationwide, 90% of the Cambodian refugee population suffers from posttraumatic stress disorder (PTSD) and/or depression.<sup>5</sup>

Perhaps the most alarming result of the lack of effective psychological screening and treatment can be seen in the children, who currently number over half of the world's refugee population.<sup>6</sup> Refugee children have been found to be 40% more likely to have PTSD, 21% more likely to have depression, and 10% more likely to suffer from

anxiety attacks than children who are not refugees.<sup>7</sup> Overall, more than a quarter of refugee children suffer from significant psychological disorders, and experience particular difficulties in emotional behavior.<sup>6</sup> Despite these shocking statistics, refugee parents remain reluctant to bring their children to mental health clinics due to stigma within the community. The increased influx of refugees since the 1990s, paired with the low number of psychology clinics trained in refugee treatment has dramatically increased the number of refugee children who privately suffer, further perpetuating the cycle of aggression and suicidal tendencies.<sup>4</sup>

Within the school system, refugee children have 20% of all the recorded mental retardation and cognitive disorders. This alarmingly high percentage reflects possible birth defects, the inaccessibility of appropriate health care, and malnutrition during development. Refugee children in America suffer from substantial educational disparities due to their years spent in refugee camps. As a result, many cannot read or write in their own language, let alone English; this makes academic work arduous and frustrating.

While it would be impossible to implement individual health systems for each ethnic refugee group, there is a clear need for targeted, culturally sensitive mental health care for these extremely vulnerable populations. For example, our high-tech, modern hospitals often produce feelings of mistrust and vulnerability, which exacerbates the problem of addressing mental health disorders in a distressed population. Believing that corporeal equilibrium is dictated by nature, Cambodians view invasive medical procedures as inherently harmful, and avoid hospitals entirely.<sup>8</sup> In addition, many traditional Cambodian beliefs such as the presence of evil spirits and the spiritual existence of a family member after death have been inappropriately diagnosed and treated as schizophrenia by western medicine.<sup>1</sup> This cultural incongruence clearly demonstrates the need for immediate integration of the cultural beliefs of refugees into the immigrant health care system.

Though it remains impossible to implement individual health systems for each ethnic minority represented in the refugee population, community-based health care initiatives which emphasize ethnic cohesiveness must be implemented within refugee populations to foster cultural empowerment and cultivate positive self-identity. Kuoch, now a director of a Cambodian-American health center, integrates the ideas of unity in the healing process, stating, "People who are

tortured as communities must be treated as communities."<sup>9</sup> Following a psychosocial model, the community center could provide child-focused learning interventions and support groups for war widows and orphans, in addition to primary care, mental health care, and public health campaigns. These federally sponsored community initiatives could employ professionals that cater directly to specific refugee populations by acknowledging mental illness in its own cultural context and providing traditional therapy.

Currently, the number of refugees in the world surpasses the number of people on the continent of Australia, accounting for 1% of the global population.<sup>10</sup> As long as human indignity persists in the form of genocide, civil war, and torture, global migration will continue to bring asylum seekers into America, making culturally sensitive mental health facilities a crucial component for their successful transition to a new society.

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# PERSPECTIVES

## Partnerships to Improve Refugee Health My commitment to Korea



W. Courtland Robinson, PhD  
Assistant Professor of International Health  
Johns Hopkins Bloomberg School of Public Health

**M**y first exposure to international health came when I was five years old. My parents took our family to South Korea. In 1960, only a few short years after the Korean War, the hills around the city were filled with refugee settlements. TB and other infectious diseases were rampant. My father was a doctor working at Severance Hospital, part of Yonsei University, helping to rebuild the health system, particularly reproductive health. I remember going with him to the hospital, first a small brick building in downtown Seoul and later a modern facility built on what was then the outskirts of the city, where paved roads ran past rice fields and thatch-roofed houses. South Korea is now a modern industrialized state and Seoul a teeming metropolis. The Korean War is only a distant memory to many but not to all, and certainly not to me, though I find its reminders not in Seoul but farther north along the China-North Korea border.

I'm not sure what it was about Asia that I found so compelling, but all my life I have been looking for ways to stay connected to it. I majored in Chinese studies in college, studying the language, literature, and history. After teaching English in Taiwan for a year, I came back to the United States, where I got involved with the resettlement of Indochinese refugees—Cambodians, Laotians, and Vietnamese—who were fleeing class conflict and, in the case of the Cambodians, genocide and continuing violence. The first paper that the director of the Indochina Refugee Action Center asked me to write was on “The Health and Mental Health Needs of Indochinese Refugees.” He initially gave me two weeks to finish, as that was the duration of our funding! It took me somewhat longer than two weeks because there was so much to discover and, at the time, so little written on the topic.

In 1982, I had an offer to go work in a refugee camp in Thailand, coordinating an educational program for Indochinese refugees who had been accepted for resettlement to prepare them for life in the United States. That contract was initially for five months—by that point I had come to realize that the field of refugee and humanitarian response was forced by funding cycles and short-term programmatic priorities to plan in days, weeks, and months, even though the work was carried out over years, even decades.

During my three years in Thailand, I met my wife, Ang, a Thai educator working in the same program. In all, I have spent more than seven years in Thailand and Southeast Asia, working for Save the Children, World Education, the US Committee for Refugees, and the Asian Re-

search Center for Migration, which is housed at Chulalongkorn University. It was at Chulalongkorn, where I was finishing a book,<sup>1</sup> that I decided to go back to school to get a degree in demography. That decision brought me back to the US to Johns Hopkins University and the Bloomberg School of Public Health.

As I was doing my course work in demography, biostatistics, epidemiology, and research methodology, I began to think about a topic for my dissertation. I had a wide range of ideas although I hoped I would be able to find a research project that would take me back to Asia to work with displaced populations. Then, in late 1997, I was approached by colleagues working for an American relief and development organization to help them assess the impact of sustained and serious famine on the health and mortality of the North Korean population. We agreed that the only way to do that was to interview North Korean refugees who were fleeing to China seeking food and survival aid, since the North Korean government is opposed (and remains so) to more than limited direct international access to the population for surveys and research.

In 1999 and 2000, we interviewed more than 3,000 North Korean refugees about their household situation in 1996 and 1997, the period when famine was believed to be at its peak. Out of this work, in addition to getting a doctoral degree and a faculty appointment at the Bloomberg School of Public Health, I have also developed continued projects to monitor displacement and health among vulnerable populations on both sides of the China-North Korea border.

We teach that public health is about “saving lives, millions at a time,” but it also builds on personal relations and commitments. It is very clear to me that the work I am doing today stems from witnessing the tragic aftermath of the Korean War 50 years ago, including population displacement and ongoing health impact. The public health perspective also teaches that the answers may be long in coming but that they are found in building systems of health care and governance that put basic human needs, and human rights, first.

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# A Psychologist's Journey

## Helping victims of trauma and torture



Karen Hanscom, PhD  
Executive Director  
Advocates for Survivors of Torture and Trauma

If I had been told when I was in my 20's and 30's that I would be working with individuals who had been tortured I would have been shocked and exclaimed "No way! Not me!" Looking back now that I'm soon to be 56, I can see that the path to working in the field of torture treatment and human rights was not as convoluted as it may have seemed to me then.

There were several disparate threads that pulled together to bring me to the work I do today: teaching, volunteering in a domestic violence program, studying psychology, and working in a hospital and private practice with individuals who had experienced severe trauma in the workplace.

While teaching elementary school and earning a master's degree in education, I believed that I had "arrived." I had studied psychological development of children. I enjoyed teaching young children. Soon, however, I was asked to be a volunteer counselor working with victims of domestic violence. As my interest in this began to grow, I took a job working with the parents of developmentally and physically disabled children, helping them to both understand the developmental growth of their child and to cope psychologically with their emotional challenges as parents. I again thought that I had "arrived" and completed a second masters degree in clinical counseling as I plunged into this work.

After returning to school to earn a PhD in psychology, a hospital in Baltimore offered me the job of being their first licensed psychologist. I had truly "arrived." I had a thriving private practice in addition to my work at the hospital. Soon, I began to develop a reputation for working with individuals who had survived severe trauma at the workplace: a woman who had an arm amputated by an outdated factory machine; a man who had been close to death after being caught in a fishing net that dragged him into the sea, and a traveling saleswoman caught under the tires of an 18-wheel truck.

The disparate threads started to pull together. Corinne Bowmaker, the a chance acquaintance, was gathering people to try to establish a center for the treatment of the 40,000 survivors of politically motivated torture living in the mid-Atlantic area. Too embarrassed to say what I thought ("Thank you very much—but no way!"), I smiled and agreed to meet with the group, which was soon to grow into Advocates for Survivors of Torture and Trauma (ASTT). That was 14 years ago. I have arrived.

All of the threads have pulled together. Experience with both domestic violence counseling and counseling the parents of physically and intellectually disabled children added to my training and experi-

ence as an educator and counselor. Working in a private practice with the survivors of severe workplace trauma added to my training in psychology and severe trauma. I began to combine my psychology training to work with torture survivors—individuals who have experienced the most severe trauma possible—and I used my background in education and developmental theory to develop means to teach other professionals and non-professionals to treat these survivors. To me, just amazing that this has all lead to ASTT.

### Advocates for Survivors of Torture and Trauma (ASTT)

I am currently proud to be part of the amazing staff at Advocates for Survivors of Torture and Trauma (ASTT) as the Executive Director. At ASTT, our mission is: to alleviate the suffering of those who have experienced the trauma of torture; to educate the local, national, and world community about the needs of torture survivors; and to advocate on their behalf.

At ASTT's main office in Baltimore, MD and a satellite office in Washington, DC, individuals who have experienced torture at the hands of another human being receive treatment. In over 150 countries in the world, politically motivated torture occurs. It is estimated that 400,000 torture survivors now live in the United States.

In addition to physical injury, pain, and scars, torture survivors hold great emotional pain, and scars. Case management at ASTT is focused on helping survivors to recognize their strengths and determine what they themselves believe that they need and how they want to proceed with their lives. Through the development of a "wellness plan," the survivor and the case manager work together to address client-driven goals for obtaining food, learning English, connecting with their religious group, and planning for their future. Individual and group psychological treatment focus on the emotional health of the individual, who may be suffering from posttraumatic stress disorder or depression as they heal from experiences too horrific to describe here. When appropriate, staff provides expert court testimony at deportation hearings. Training is provided to people from many professions and organization so that they can identify and assist torture survivors in our communities. Further, public education through newsletters, speaker-film series, and community presentations brings awareness to the community of the strong and courageous torture survivors who live among us. Volunteers in the community give their time as pro-bono counselors, office and research assistants, and fundraisers.

# FEATURES

Improving Health Care Access in Rural Costa Rica: The Importance of Empowerment  
*Ian May*

Teaching English in Tajikistan: Breaking the Cultural and Linguistic Barrier  
*Angela Kim*

Reflections of Arusha: A Three-month Clinical Experience in Tanzania  
*Leah Harvey*

Improving Literacy in a Brazilian *Favela*: A Difference Worth Making  
*Colleen Weeks*

Tuberculosis Among Homeless Populations in Boston, Massachusetts  
*Lelia Chaisson*



A 4<sup>th</sup> grade classroom in Costa Rica, it usually holds up to 20 students and the teacher for two sessions a day. Class was just dismissed.

Photo - Ian May



# Improving Health Care Access in Rural Costa Rica: The Importance of Empowerment

Ian May, Post Baccalaureate

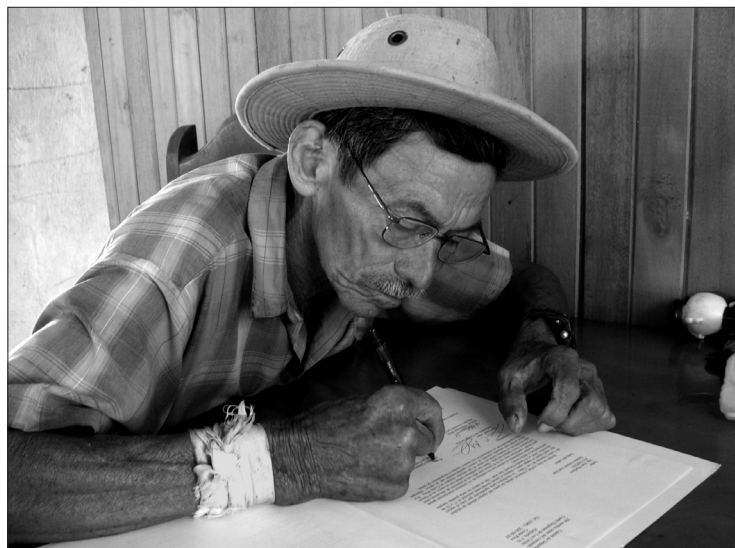
I was nervous on the day of the meeting with the Ministry of Health. I had only had mixed success with the previous town meetings that I had held prior to this one.

At some of these meetings, no one from town had shown up despite the people's expressed need and desire to learn about health care and first aid. At others, we had discussed what the people thought was needed, and they had decided that they wanted the Ministry of Health to come out and talk about disease prevention. With only two people in the schoolhouse, I worried that after cajoling the Ministry of Health to journey all the way out to see us and give a *charla* to a group of mostly Nicaraguans who many in the Ministry felt should not be served at all, the meeting would be sparsely attended. Then they would tell me what they had said initially; 'See, I told you so. You can't educate *Nicas* about health care, we're wasting our time.' To my relief, people began piling into the small elementary school classroom about 15 minutes after the meeting was supposed to start, and everyone eventually arrived.

Unfortunately, the *charla* turned out to be a series of Power Point slides reviewing the epidemiology of dengue fever. Dengue fever was a non-endemic disease to the region that had nothing to do with the purpose of the *charlas* that the Ministry and I had agreed upon. The only people who knew about dengue were a handful of men who had worked in banana plantations on the coast. The presenter droned on for 45 minutes as the attendees sat sweating quietly. When he finally asked for questions, no one had anything to say. Complete silence.

The presenter had talked for 45 minutes and never once stopped to listen to himself. He must not have realized that most of the town was illiterate and that 45 minutes of slides without pictures would put most students and professors asleep. The people who came to the *charla* were willing to learn, but also had arisen at four o'clock that morning, eaten some rice and beans if they were to be had, and then spent 8-9 hours in the fields on someone else's land before rushing home to shower and change before attending the meeting. They wanted to learn but they also needed to be taught in a way they could relate to and understand. The people needed someone to listen to them and hear their fears, concerns, and problems.

I joined the Peace Corps in 2004. They sent me to Costa Rica on a rural community development mission covering three main areas: organizational development, microbusiness development, and education. After three months of training in the capital of San José, I moved to Cuatro Esquinas de Los Chiles, a small farming town of roughly five hundred people located 1.5 kilometers south of the Nicaraguan border in Los Chiles County, Costa Rica. The five hundred inhabitants were segregated into Nicaraguans (*Nicas*) and Costa Ricans (*Ticos*). While *Nicas* lived in a shanty town called Barrio Managua on a hill to the east of the town center, most *Ticos* lived in the center of town in concrete houses with close access to water and electricity. When I arrived, there had initially been talk of trying to build a small community health clinic that could host physician visits once a month. Since then, I had not heard much about improving health care access.



Top: Women participate in a team-building exercise before a Ministry of Health meeting. These activities help to loosen the atmosphere and demonstrate each individual's importance to the success of the meeting.

Bottom: Don Kilin never learned how to read or write past being able to sign his name but later taught himself how to do both along with arithmetic. He signed off on one of the letters sent to Pfizer as part of the town initiative to build a small clinic.

Photos - Ian May

At the behest of the town council and other civic groups, I surveyed the town and tried to find out the most common diseases, health problems, and largest health concerns of the population. I discovered that the biggest issues were lack of access to medical and prenatal care, and that the services most in demand were the prevention of disease and childhood diarrhea and instruction in first aid. We set up some preparatory meetings among the townspeople, and I traveled to Los Chiles to talk with the Ministry of Health and the Costa Rican Red Cross. After some initial uneasi-

ness on the part of the Ministry, they agreed to come out and give a disease prevention *charla*.

Now, mid-way through the first one, I realized that poor planning on my part and on the part of the Ministry's (in terms of how they presented their message and what they presented) had potential to keep people away from future meetings. Luckily, after a little more prodding some members began to ask questions, and the Ministry doctors seemed to have a small epiphany about the content of their message and began speaking in more realistic terms about general disease prevention. This still did not address whether anyone had learned anything from the presentation, or that most townspeople did not have the money to buy functional mosquito nets for their families to prevent dengue or any other mosquito-borne disease. But at least the Ministry realized that they could work with the town and that work needed to be done.

"Tailoring messages" is one of the most important parts of health care delivery anywhere, but especially in the developing world. In Cuatro Esquinas, where economics, skin tone, education, and health divide the town into two distinct socioeconomic groups, "tailoring message" means being able to bridge two different cultures. It means walking in everyone's shoes for a day to get a feeling for not only what is important but how to present it most effectively. Presenting the material to show off your knowledge of a particular subject or field can be personally rewarding, as in the case of the Ministry officials, but for the people of the Cuatro Esquinas audience it was an unsustainable endeavor and only made the presenter look arrogant. His *charla* did not get the message across because it alienated him from his audience. The audience left without being empowered to go out and change anything. Instead they felt embarrassed for their own lack of knowledge, and may have decided not to return at all.

Peace Corps taught its Costa Rica volunteers to use the techniques of Paulo Freire, discussed in *The Pedagogy of the Oppressed*.<sup>1</sup> Freire argues that adults learn best by going through a cycle called "Non-Formal Education" (NFE). NFE focuses on presenting material, discussing it, physically acting it out, and then analyzing what was learned. In Cuatro Esquinas, the NFE cycle took shape during our second meeting — many of the mothers had asked if we could go over treatments for childhood diarrhea.

We began by discussing how mothers know their children have diarrhea and what they have done to treat it. I presented some material about dehydration, its signs and symptoms, and how it affects them. One technique involved pinching a child's stomach and seeing if the skin stays up or returns smooth immediately. Then we discussed it again. We tried it out on each other and the children who had come with their mothers. We talked about the Ministry of Health's electrolyte packets and ways to substitute electrolyte packets with different household items. To demonstrate, we made electrolyte solution out of coconut water and salt. To finish, we all tried each other's solutions and reviewed what we had done. The entire presentation took over two hours and only accomplished teaching two quick techniques, but it gave everyone a chance to share and educate one another.

Using the NFE cycle is by no means a guarantee for success. Some of our meetings ended up failing for reasons completely out of the control of everyone present. It is necessary, therefore, for every presenter to acknowledge his/her own limitations; the strength of NFE lies in getting different parts of the community to discuss



Jose (left) and Oscar (right) stand with coconuts that they had just knocked down with a metal pole. They both play on the local junior league baseball team and had traveled with the author to San José, the capital, to compete.

Photo - Ian May

and share ideas as they work to teach themselves and assimilate knowledge that preserves dignity without hierarchical discrimination. This method focuses on letting the participants decide their own fate, which increases their confidence in their ability to teach and to impart knowledge to others. The NFE cycle lets people empower each other.

A group of women and some men continued to meet for about four more months doing different *charlas*, including first aid, care for bleeding, and child health. In each meeting, whether we had visitors from the local government offices or were just working together, we tried to make the process follow the NFE guidelines as much as possible. In doing so, we found that we transformed education into a tool that empowers rather than something that shows off divisions. People who could not even sign their name learned how to diagnose and treat pediatric dehydration. Older women taught younger women how to *sobar*, a massaging technique of the lymph nodes in the arm that helps relieve fever and cold symptoms. Women learned that they could do something more than tend to the house.

Health care is a science that must constantly adapt to its surroundings. While the science of destroying pathogens and developing cures and vaccines is largely a quantitative process, it is intrinsically linked with the interface between care providers and patients, which is largely a qualitative relationship. Both must adapt to an ever-evolving set of variables. Provider-patient relationships

get more complicated when large socioeconomic differences exist, but that does not mean that care cannot be delivered on the same level or achieve the same results. Rather, it puts more of an impetus on the providers to develop new ways to impart the necessary information and to take the time to truly communicate with the people they treat. In setting up health modules for Cuatro Esquinas using the NFEs, I consider myself extremely lucky for having a patient set of collaborators who taught me far more than I was

able to teach them. They helped me to learn a great deal about the different facets of education and learning and how those can impact health care. And they taught me that the most important part of teaching any subject, especially health science, is listening.

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1. Freire, P. *Pedagogy of the Oppressed*. New York, NY: Continuum, 1993.



Celia and her daughter walk from Barrio Managua, on the Nicaraguan side of town, down towards the center where there are two general stores. It is rainy season and the street has turned into mud. The wooden houses in this part of town are stacked closely to one another and have dirt floors. In contrast, the Costa Rican side of town has stores, gravel roads, and most houses are made out of concrete.

Photo - Ian May

# Teaching English in Tajikistan: Breaking the Cultural and Linguistic Barrier

Angela Kim, Public Health Studies 2008

Most people have never heard of Tajikistan, or even know how to pronounce it. I was unaware that it existed until seven years ago, when I heard the news that my southern California church's mission center in Dushanbe, Tajikistan had been bombed. The bombing killed nine church members and wounded many more. The terrorist act had reportedly been instigated by an extreme Muslim leader who taught at a local Islamic institute. I was only in middle school when I heard about this horrible event, but it opened my eyes to the other side of the world.

Tajikistan is located in Central Asia, north of Afghanistan and west of China. It was part of the former Soviet Union until 1991, when it became an independent nation. It is the poorest country of the former USSR, with 60% of the total population of 7 million living in poverty. The population is 67% Tajik, 23% Uzbek, and 3.5% Russian. 90% of the country is Muslim.

I learned that this mission center, in the capital of Tajikistan, had been committed to providing shelter and food to the homeless locals; teaching a variety of skills such as English and computer usage and introducing arts such as taekwon-do and horticulture. In addition, the center had built schools in Afghanistan and sponsored Afghani children under the partnership of an international non-governmental organization (NGO).

At the end of my sophomore year in college, I decided to take the upcoming fall semester off to go to Tajikistan and teach English at the mission center, which was seeking an English-speaking teacher. English classes are expensive, thus inhibiting the Tajik youth's ability to be in successful English-speaking positions. I would teach free conversational English to the local Tajiks and Russians, of all ages, with the goal of instilling speaking skills and American culture, neither of which could be taught by their Tajik teachers at the school.

The biggest challenge was the language barrier—I spoke neither Russian nor Tajik, while most of the students spoke minimal or no English. However, I soon realized that this barrier actually benefited the students and me. My students and I had to find creative ways to communicate. As a result, I quickly picked up simple words and phrases necessary to teach with the help of my students, and the more advanced students helped their fellow students by translating for them. We all learned better together by teaching each other, and every class became an interactive one. At times it became confusing, with some students only speaking Russian or Tajik—three different languages would often be flying around. But, every class promoted participation and support, and I witnessed the rapid process of all of us overcoming this barrier.

I initially formed only two classes to be taught three times per week, but I was bombarded with eager students ready to learn from an American! I immediately started five more classes, dividing them up according to age and level. Every week I created my own lesson plan for each class, using a variety of resources such as my own childhood education, ESL guides, and videos. Every week, I created a theme that the lesson would revolve around—one week was “personal information” and another week was “time and date.” Through these different lessons, I mixed in simple verb tenses and new vocabulary. I made sure to repeat common phrases and words during the lessons, and to review them the following weeks. It was great to see the students start putting words together to form sentences as our conversations became more complex and comprehensible. I found the students to be very accommodating and soon forgot about the language barrier. I never had a problem communicating my most basic needs, and a joke was always understood. Laughter needs no translation, and I soon found that to be our common language.



Celebrating the month of December and Christmas in the classroom: students not only had the opportunity to learn about the different American holidays each month, but they were also able to celebrate them.  
Photo - Angela Kim

The product of all our hard work was the “Happy Happy Thanksgiving” program that the other English teachers and I organized for all the English students. It was a great opportunity to introduce an American holiday. The advanced group organized a skit to perform in English about giving, through the story of two brothers named Hassan and Hussein. We also made sandwiches, taught a song, shared what we were thankful for, and gave awards at the end to the most improved students. Although the Tajik culture does not celebrate the American “Thanksgiving,” I came to realize that their culture celebrated it every day in their natural giving and thankful manner.

I also had the opportunity to venture outside the mission center to see the work the center was doing for the community both locally and across the border. Twice I visited its orphanage outside Dushanbe with candy and gifts for Christmas. It was a pleasure to bring joy to these children. They lived in a non-insulated, small building that relied on a small rusty furnace for heat and often had no electricity once the sun went down. I saw the immense need for building repair and heating, but lack of resources and the location of the orphanage outside the city make it impossible to do improvements. However, the children have the opportunity to come to the mission center every Sunday to learn and to play. I saw the abundance of love among them, the older kids naturally looking out for the younger children.

I also traveled across the southern border into Afghanistan with a group from the mission center, including the head pastor and a visiting pediatrician from San Francisco, to bring supplies to two of the six schools which the mission center had built in various areas of northern Afghanistan. The first school we visited was in a town bustling with cars and shopkeepers. To my delight, I found that half of the students were girls, and that many of the teachers were women. However, I was disturbed by the school’s “water fountain,” which was a large jug with a metal sheet serving as the “lid.” The water clearly had not been filtered, nor did the lid adequately prevent dirt from getting into the jug. The physician and I looked at each other with the same thought—if only we had iodine packets to purify their drinking water.

I expected the next school to be in a similar town setting, but it was located far off the main road (Silk Road) in an oasis village where there were no cars or electricity. People were riding donkeys and camels, and there were only mud houses, except for the newly built cement school, which was brightly painted. It stood out from the nomadic setting, highlighting education for these children, who lived with no electricity or advanced medical care. School had already been let out for the day when we arrived, but many of the children came running up to us with curiosity. Although I was unable to communicate with them, I quickly bonded with the children, teaching the girls a hand game and giving the boys “high fives.” I was reluctant to leave after handing out supplies, and the pastor saw my expression. “You could always come back and teach English here,” he said to me. That initially caught me off guard, but I became excited by that prospect of teaching in this village, and doing medical missions in rural areas such as this one. I saw proof of the good work that this one mission center was doing, and I saw the great need for more individuals with the heart and dedication to serve.

Three months passed by in no time, and every day was a new story in this chapter of my life. I gained much perspective about



Every class was taught in English without a translator, which was the initial challenge. Because the students could not use their native language to communicate, they picked up the use of common English phrases quickly.

Photo - Angela Kim

my own future, and what I really want to do with my academic learning. I had found and just begun to set my mark on a place where I wanted to continue teaching English and utilizing my public health knowledge in the future. I made the bold and nearly unprecedented choice of coming to Tajikistan to teach English, but in doing so, many more from my church have also committed to coming and teaching. I initially feared the great possibility of not being an effective and encouraging teacher, but instead, I was able to help build a structured English teaching program as it flourished and grew. My glimpse of this other part of the world showed me that despite cultural and language differences, we are all the same, in need of love and basic necessities. I have all the resources and knowledge to take care of my health and choose a successful career; that privilege entails that I help those who do not have the same access to the same resources, both locally and internationally.

If there is one fundamental lesson that the classroom cannot teach us, it is this: anyone passionate and determined enough to make a difference can do it in the real world! I had to experience it for myself to realize the extent of my abilities to adapt to a new culture and effectively teach them something educationally essential. At the same time I remained culturally sensitive and open to learning myself. While the classroom provides the fundamental basis for stretching our minds and opening doors to new possibilities, it is up to us to take those new ideas and apply them to helping the world.

# Reflections of Arusha: A Three Month Clinical Experience in Tanzania

Leah Harvey, Public Health Studies 2008

I will never forget the pain and panic in her eyes. As she thrashed on the table, her long ebony fingers were laced through my own, clutching and squeezing with astonishing force. “*Safi sana, safi sana,*” I whispered in Swahili, neither of our mother tongues, attempting simultaneously to comfort her and to collect myself. I could not believe this was actually happening; I was beyond overwhelmed. I was twenty years old, still an undergrad, and barely trained to take blood, let alone deliver a child. Sure, I had watched a few deliveries, and I had even cut the umbilical cord once, but delivering a child on my own from a woman barely older than myself was entirely different. But, there was no time for questions — her cervix was dilated, her legs were shaking, and whether I was ready or not, this baby was coming.

Amazingly, the delivery was relatively brief and uncomplicated. I was tremendously proud to present the mother with a perfect baby boy. Ten fingers, ten toes, and a good, healthy cry. I was unable to fathom how fortunate I was that there were no complications, let alone how lucky the mother and child were; after the ordeal was over, I collapsed in a sweaty, shaking heap on the clinic floor.

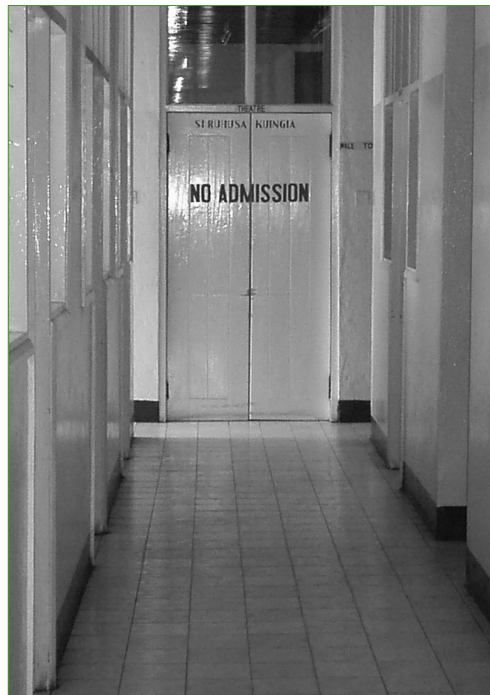
How was I qualified to deliver a child? The hospital was constantly understaffed, and the few nurses were wan and haggard from stress and lack of sleep. In their eyes, I had two free hands, I planned on studying medicine, and I was even wearing a white coat. Thus, when a woman stumbled through the clinic doors, clutching her abdomen as her water broke at her feet, with all of the other hospital staff occupied, I had to deliver the baby. So, sending up a prayer to any god that would hear me, I went for it. Hell of a summer vacation.

For eleven unbelievable weeks, I assisted Dr. Kiewe Makando at St. Thomas Hospital in Arusha, Tanzania. Donning one of his spare lab coats, I followed him on rounds, assisted in surgeries, and worked full time in the hospital's free clinic, immunizing children, distributing medications, performing minor external procedures, and occasionally delivering babies. Dr. Makando and I were old friends — we had met during his residency at Boston University Medical School, where I was a subject in one of his research studies, and we kept in touch afterward and upon his return to Tanzania, his native country. In January of 2006, he received a grant from the Tanzania Ministry of Health to refurbish one of the major hospitals in Arusha, and wanted an additional pair of hands. I leapt at the chance and was rewarded with an invaluable experience and total immersion into Tanzanian life. I boarded with a friend of his family, miles away from the city, and learned to appreciate electricity, running water, and the organization of the developed world.

St. Thomas Hospital serves nearly 1.3 million people, the combined populations of Arusha city and the surrounding communities, stretching west to the Ngorongoro Crater and east to Mt. Kilimanjaro. However, the hospital has only 30 inpatient beds, 2 resident doctors, and electric power only on alternate Tuesdays and Thursdays. Compared with the resources of any hospital in the developed world, regardless of the size of the community it serves, the discrepancy is staggering.

Although Tanzania has been a beacon of political stability in often tumultuous east Africa, it is economically poor and spends nearly a third of its gross domestic product repaying international debt.<sup>1</sup> Consequently, Tanzania has a very low health status and has been ravaged by infectious diseases, including the HIV/AIDS epidemic. Although Tanzania's HIV prevalence rate is lower than some of the hardest-hit countries in the sub-Saharan African region, it is still higher than the prevalence rate of the region overall (8.8% compared to 7.5%). Correspondingly, Tanzania is home to the fourth greatest number of people living with HIV/AIDS, 1.6 million, or about 10% of the population.<sup>2</sup>

The recent election of Jakaya Kikwete to national office is promising, however. Elected by an overwhelming margin, Kikwete has pledged to increase the standard of living for the desperately poor country, namely by taking advantage of Tanzania's priceless natural resources. He has also promised to improve relations with the island of Zanzibar, a paradisaical haven located off of the coast of Tanzania that brings in millions of Tanzanian shillings (TZS) in tourism revenue. Perhaps most important, Kikwete has a focused and realistic approach to dealing with Tanzania's health issues, including the HIV epidemic. The national policy on the epidemic is supported by the WHO — it advocates condom use, and also includes free antiretroviral treatment for all those in need. With any luck, Tanzania will be able to take advantage of its resources and use the additional revenue to address its extreme poverty and pressing health concerns. I feel so honored to have been given a chance to understand the true nature of a country and its people, and I look forward to returning to work in Arusha. And next time, I'll bring my own white coat.



The doors of the operating theater on the inpatient floor of St. Thomas' Hospital in Arusha, Tanzania.

Photo - Leah Harvey

1. CIA. The World Fact Book- Tanzania <<https://www.cia.gov/library/publications/the-world-factbook/geos/tz.html>>. Accessed August 31, 2007. CIA, Washington D.C., August 16, 2007.

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# Improving Literacy in a Brazilian *favela*: A Difference Worth Making

Colleen Weeks, Public Health Studies 2008

I had no expectations when I arrived in Brazil. With very modest Portuguese language skills and only snippets of information about the culture and demographics, the only thing I anticipated was intense culture shock as I prepared for six months of study abroad in the northeastern coastal city of Salvador da Bahia. My premonitions held true after the first several weeks spent exploring the crowded streets of Salvador, with the shuffle of vendors and pedestrians, horn-honking of cars and buses as they raced out of control around every corner, and the music and laughter of a people who know how to turn almost any situation into an excuse for singing and dancing.

Salvador, the third largest city in Brazil and capital of the state of Bahia, boasts a population of approximately 2.5 million people. Seventy-four percent of Salvador's families have a revenue equal to or less than the three lowest salaries of the city. Salvador's streets paint a portrait of a city plagued by extreme class divisions, lack of educational opportunities, and an unemployment crisis. The desperate pick-pocketing, muggings, and drug sales have become an all-too-common way of subsistence for many of Salvador's adults and children. As an outsider, however, one discovers that despite these hardships, natives of Salvador harbor an unrivaled zest for living.

After several months spent trying to learn the language, getting through many unforgiving nights of food-related illnesses, adapting to a new rhythm of life, and dodging reckless buses every time I crossed a street, I decided to volunteer some of my time at a children's school located in the heart of a nearby *favela*. A *favela* is essentially a Brazilian shantytown, generally located on the outskirts of a city. Thirty-two percent of the area of Salvador is occupied by shack-like houses constructed by squatters on public property, while sixty percent of the city's population lives in these areas where sanitation is a luxury and crime and violence are accepted facets of everyday life. Every week I found myself walking through the crooked and haphazard streets of the Engenho Velho *favela*, mesmerized by the warmth with which I was greeted by the community members, who were exceptionally grateful to outsiders who showed an interest in the welfare of their neighborhood. Each week, another American student and I met with a group of adults from the community, whose enthusiasm to learn English was boundless. Never had I imagined that our willingness to help would be taken as such a considerable effort by our energetic and dynamic group of students. Education is apparently a valuable commodity in a country where only 88.6% of adults are literate and 1.1 million children and adolescents are unable to read and write.

Each week, the same eight to ten students came to a small, cluttered classroom as we taught them the basics of the English language using an outdated dry-erase board and worksheets we had hand-written and photocopied at a local copy and fax store. Beginning with the alphabet and eventually moving on to complex verb structures, the students displayed an eagerness to improve their speaking and reading skills. At times, students would

show up to class with extra work they had done during their own free time for us to correct. The pupils, sitting eagerly with pen and paper in hand were always excited to learn about life in the United States, and spent many class periods asking questions about the differences between our two distinct cultures.

Although we came from what, at times, seemed like two different worlds differing vastly in opportunity, education, health care, and politics, our ability to connect with our new-found friends was enchanting. After expressing how much we would miss the exotic Brazilian fruits and *paçoquitas*—peanut candies sold by street vendors for the equivalent of about eight cents—each of our students brought us a bag of fruit and *paçoquitas* on our last day at school in the *favela* to express their gratitude. After exchanging e-mail addresses, one student told us not to forget them if we ever came back to Salvador. I doubt that she had any idea that only months later I would be writing about how I never will forget the dedication, passion, and sincerity of a group of people who made me realize that, as clichéd as it may sound, any effort, no matter how small it may seem, can truly make a difference.



Eight hours by bus from Salvador da Bahia is a small eco-friendly village located in the Vale do Capão, a basin area of the Chapada Diamantina mountain range. Once home to coffee plantations and a booming mining industry, it is now a protected national park with tourists from around the globe who come to behold enchanting waterfalls, luscious vegetation, and magnificent vistas.  
Photo - Colleen Weeks

# Tuberculosis Among Homeless Populations in Boston, Massachusetts

Lelia Chaisson, Public Health Studies 2009

Spread through airborne microscopic droplets containing the bacteria *Mycobacterium tuberculosis*, tuberculosis (TB) thrives in crowded, poorly ventilated living conditions.<sup>1,2</sup> Many people believe that TB is a problem of developing nations, but in actuality it affects peoples of all nations, including the United States. According to the National Institute for Allergy and Infectious Diseases, in 2005 TB was responsible for 9.6% of adult deaths aged 15-59 and 5% of deaths worldwide. When treated properly, tuberculosis can be cured in over 99% of cases.<sup>3</sup> However, 50% of infected patients will die if left untreated.<sup>3</sup>

The homeless are particularly susceptible to serious airborne illnesses such as tuberculosis due to poor nutrition, overcrowding in shelters, stress, HIV and, often, substance abuse.<sup>4</sup> Between 1984 and 1985, the incidence rate of TB among the homeless in Boston was 316.7 per 100,000 people while the incidence rate among the rest of the population of Boston was 19 per 100,000.<sup>4</sup> It is very important, therefore, to address the problem of tuberculosis in the homeless population.

The St. Francis House, located on Boylston Street in Boston, Massachusetts, addresses the problem of tuberculosis among the homeless. Next to the outpatient clinic at Boston Medical Center, this walk-in clinic is the second-most visited medical facility for the homeless.<sup>5</sup> It is run by Boston Health Care for the Homeless, which provides emergency and primary health care, testing for HIV and TB, and counseling to the homeless throughout the city.

Patients come in voluntarily and wait in line to register to see a staff member at St. Francis House. Patient information is put into a computer system that is connected with Massachusetts General Hospital and Boston Medical Center, and they are asked to give their name, date of birth, and social security number. This enables employees to track patients who do not return for follow-ups or treatment. Although helpful, this system is not always entirely effective; many patients often do not give out correct personal information. It is impossible to determine whether the information the patients give is accurate, as they are not required to bring proof in the form of identification cards. Many patients give false names or social security numbers for a variety of reasons that are sometimes unclear. Some of these patients have mental diseases that make it difficult to remember their real names and social security numbers. Others are embarrassed or simply wish to remain anonymous.

Employees at St. Francis House see approximately 35 to 40 people each day regarding tuberculosis. Patients are asked if they have recently experienced weight loss, night sweats, or coughing to determine whether they should be administered a TB test. The answers to these questions can be difficult to verify as well, because the patients are sometimes unsure of their conditions or how long they have persisted.<sup>6</sup>

If a clinician suspects that a patient has tuberculosis, he or she is administered a TB skin test. This test is performed by inject-

ing Purified Protein Derivative (PPD) into the arm. The patient must then return to St. Francis House in 48 to 72 hours to obtain results. Follow-up can be difficult to assure, as the homeless often do not keep accurate track of the time or fail to return at all. After the allocated time, if a red bump greater than 5 millimeters in diameter appears, the patient has tested positive for tuberculosis. At the time of testing, patients are asked to fill out a screening form that requires patients to disclose their name, current residence (if the patient is residing at a shelter), date of birth, age, social security number, screening site, and place of birth. They are also asked questions about previous TB screening. If patients have tested positive for TB exposure in the past, they will always test positive, so further testing is required to determine whether they have active tuberculosis.<sup>6</sup>

**“The homeless are particularly susceptible to serious airborne illnesses such as tuberculosis due to poor nutrition, overcrowding in shelters, stress, HIV and, often, substance abuse..”**

As St. Francis is strictly a primary care facility, patients are referred either to Boston Medical Center or Shattuck Hospital Correctional for further diagnosis and treatment if they test positive for TB. In the emergency room, patients are X-rayed to look for evidence of pneumonia or TB. If it is found, patients receive further tests, including cultures, and are isolated for two weeks from the time they are diagnosed. This is when the disease is most infectious, and this helps prevent its spread to others. Patients also begin medication at this time. Since most of the homeless individuals do not have health insurance, many are often eligible for free care from the hospital.

Once released from the hospital, it is up to the patients to continue medication and return to St. Francis House for a follow-up. St. Francis may or may not lose contact with patients, depending on whether or not the patients gave correct personal information.<sup>6</sup> If St. Francis loses track of a patient, there is not much to be done. The homeless are generally a transient population, and it is difficult to find a person who does not wish to return to the clinic. This is a significant problem, as failure to continue medication can lead to the development of multidrug-resistant strains of tuberculosis.

When patients refuse treatment for tuberculosis, St. Francis House employees contact the Health Department to intervene. By law, St. Francis House must report such cases, as tuberculosis is considered a significant public health problem.<sup>6</sup> The City Health Department can order patients to take treatment or be quarantined and if they violate these orders they may even be incarcerated.<sup>7</sup>

At least 90% of the patients at St. Francis House are men. The reasons for this are unclear; however, several hypotheses have been



suggested. Women are more susceptible to domestic violence, so they may be physically unable to come to the clinic. Women also have access to women's shelters, where they may be able to receive health care, testing, and counseling.<sup>6</sup>

Many of the people who come to St. Francis House do not speak English, and the facility employs a Spanish translator to assist in these situations. Spanish translation is needed the most, but cases have arisen with patients who only speak Creole, French, or Russian. For these cases St. Francis House uses a 1-800 phone number that connects them with translators. This service costs \$10 for 10 minutes of translating time. It is vital for patients to understand the gravity of their medical situation, so translation is imperative.<sup>6</sup>

St. Francis House does an excellent job of providing medical services for the homeless. With their available resources several aspects of the organization could theoretically be improved, however these areas are generally difficult to regulate due to the nature of homelessness. For example, St. Francis House is solely a primary care facility and they must refer patients to other hospitals for further diagnosis and treatment. As the clinic generally loses contact with its patients as soon as they leave it, clinicians can never ensure that patients are taking their medications correctly. When patients medicate incorrectly, or cease to take medications, the risk of developing multidrug-resistant TB increases greatly. This is a dangerous possibility that could be avoided if St. Francis House provided TB treatment. However, this is financially impossible. Boston Health Care for the Homeless has already cut back on many services due to lack of funding, and it would be unlikely that they could raise enough money to provide tuberculosis treatment at St. Francis House and their other centers. The City of Boston has the legal obligation to assure that these patients are treated, but organizations like St. Francis could be more effective in assisting the City if more funds were available.

Lack of funding also makes it impossible for St. Francis House to do any outreach or education programs relating to TB. With

the money they have available, the staff must tackle the most important issue they face: testing their patients for tuberculosis. It would be very beneficial if they could provide TB education, but St. Francis House has neither the staff nor the money for this project.

All in all, St. Francis House does an excellent job of providing tuberculosis screening for homeless people in the area. They have limited funding, which restricts their ability to provide treatment or education, but St. Francis House does the best it can with the money it receives. Tuberculosis among homeless populations is a significant problem, and it is vital that organizations like St. Francis House continue to provide screening and treatment. Working together with the city Health Department, St. Francis House is helping to control tuberculosis among the homeless of Boston, and is an excellent model for other clinics attempting to impact underserved communities with limited resources.

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# Violence and Public Health

Violence Reduction in Rio de Janeiro *Felipe Jacome*  
Domestic Violence among Latinos in the US *Annie Fehrenbacher*  
An Acceptable Fate or a Bestowed Punishment *Atieh Novin*  
Remembering Why We Count *James Goodyear*



# Violence Reduction in Rio de Janeiro

## Risk factors of violence and their prevention

Felipe Jacome, International Relations & Latin American Studies 2008

### Introduction

Latin America has increasingly come to realize the magnitude of the problem of violence and its importance as an obstacle to the development of the region. According to the World Health Organization's Report on Violence and Health, with more than 140,000 homicides per year, Latin America's homicide rate is twice the world's average, making it the second-most dangerous region in the world only after sub-Saharan Africa.<sup>1</sup>

Violence in Latin America is heterogeneous both throughout and within countries. Homicide rates (per 100,000 pop.) across the region show that countries such as Argentina (7.0), Costa Rica (6.2), and Mexico (11.1) have significantly lower levels than countries such as Brazil (31.0), Venezuela (32.4), and El Salvador (43.4).<sup>2</sup> Moreover, within a country like Brazil, which has come to be considered an emblematic case of violence, homicide rates in the state of Santa Catarina (12.9) are dwarfed by Rio de Janeiro's rate of 57.0.<sup>3</sup> The heterogeneity of violence can be explained by the fact that steep violence rates are most predominant in highly urbanized settings where disorderly urbanization process often results in the formation of crowded slums and the inability of the state to provide basic services and infrastructure such as electricity, flowing water, and public safety.<sup>4</sup> This paper will focus on the dynamics of violence and violence reduction in Rio de Janeiro, Brazil.

### Dynamics of Violence in Rio de Janeiro

Over the past few decades, news of brutal violence in Rio de Janeiro resulting from disputes between urban drug factions, police massacres, bus hijackings, and kidnappings has earned the city its reputation for one of the most violent metropolises in the world. Unfortunately, this depiction of Rio de Janeiro perpetuated through the media has by no means been the result of sensationalist exaggerations. Studies of violence in the state of Rio de Janeiro measured in firearm-related mortality rates show some of the highest levels in the world. In fact, an authoritative study

Violence in Latin America is heterogeneous both throughout and within countries. The heterogeneity of violence can be explained by the fact that steep violence rates are most predominant in highly urbanized settings where the disorderly urbanization process often results in the formation of crowded slums and the inability of the state to provide basic services and infrastructure such as electricity, flowing water, and public safety. The focus of this paper will be concentrate on the dynamics of violence and violence reduction in Rio de Janeiro, Brazil.

entitled *Children of the Drug Trade* reaches the stunning conclusion that there have been more firearm-related deaths in Rio de Janeiro during comparable time spans than in all but one of the deadliest modern conflicts around the world including Uganda, Sierra Leone, Yugoslavia, Afghanistan, Colombia, and the Israeli-Palestinian conflict, with the civil war in Angola being the only exception.<sup>5</sup>

While the severity and magnitude of the problem of violence might suggest a situation of widespread anarchy or a state of civil war, the degree of violence in Rio de Janeiro is not uniform throughout the city. Levels of violence are neighborhood-specific, with some areas of the city having firearm-related death rates comparable to Western cities, and other sectors comparable to intensive conflicts. This stark difference has a two-fold explanation. First, drug-related violence and territorial disputes are understood as a major causal factors in the almost 140% increase in arms-related deaths in the city between 1979 and 2000. Second, neighborhood-specific violence is clearly linked with the historical concentration and absolute domain of drug factions in the hundreds of *favelas* (slums) throughout the city.

### The Impact of Drug Traffic on *Favelas*

The skyrocketing levels of violence in Rio de Janeiro can be mainly traced to a crucial factor: the arrival of cocaine and the entrenchment of the drug-trafficking apparatus in the city's *favelas*. As early as the 1950s and 1960s, armed-robbers and marijuana dealers — referred to as *donos da boca* — had already assumed positions of power in *favelas* by freely distributing stolen goods to community members, providing basic services such

as food and medicine in times of hardship, and enforcing social order. However, the arrival of cocaine to the market in the late 1970s propelled a new generation of drug dealers into assuming the “*donos*” positions, which resulted in the restructuring of Rio's drug-trade in terms of its scale, organization, profitability, and the use of violence as an accepted method of advancing economic interests and upholding internal discipline.<sup>5</sup> Cocaine's substantially higher revenues allowed traffickers to consolidate their position in maintaining the social order within the communities, and to become more involved in providing economic stimulation as well as financing leisure activities. These services came in exchange for protection from the police through a code of silence, and a defendable base for drug sales.

The encroachment of drug-traffic throughout the city's *favelas* created a complex set of economic and political relationships between the communities, traffickers, and the state. It should be noted, however, that community acceptance of traffickers is by no means voluntary. Forceful involvement of the drug factions at all levels of the economic and political structures of the communities can be thought of as a “narco-dictatorship.”<sup>5</sup> Even though the services provided by factions are warranted by the lack of state presence and distrust of the police, this relationship is harshly upheld by traffickers through a violent punitive system for deviancy and non-collaboration. Community members are required to follow a set of unwritten rules or behavioral codes known as *leis do trafico*, “the laws of the traffic.” These rules are essential not only in maintaining the social order of the communities but also in keeping the police out of the *favelas*.

While the rules may vary slightly across different communities according to particularities of the drug faction, they often include: no stealing in the community, no physical fighting between residents, no raping of women, no sexual abuse of children, no wife beating, no speaking to the police, and no owning a gun without letting local traffickers know.

The severity of the punishments for breaking the rules might vary depending on the discretion of the local *dono* and the seriousness of the offense. Punishments may range from the expulsion from the community, forcibly shaving women's heads, being shot in the hands or feet, to brutal beatings or death.<sup>5</sup> As a general trend, however, the growing scale of the drug trade and the increasing levels of violence since the arrival of cocaine have weakened the factions' ties of respect to the community.

### Police Violence

The high levels of killings by police and corruption place the police institution at the root of violence in Rio de Janeiro. The most important factors for the cause of police violence are the perceived insecurity of police in *favelas*, the stigmatization of *favela* community members, perceived judicial inefficiency, institutional incentives for police violence, and police corruption.

The historical lack of state presence, increased militarization of drug factions, and the geographical advantages of *favelas* as defendable bases for drug sales have made policing the *favelas* extremely difficult operations. Permanent policing in *favelas* is hindered by their warrens of small alleyways and the heavy dominion of drug factions. Small police posts of four officers or fewer, known as DPOs, have been established only in a small number of *favelas*. However, police officers in DPOs are usually bought off by local traffickers for the officers' own safety as well as for monetary gains.

Policing practices in *favelas* are also affected by a strong stigma on their inhabitants. For several decades now, the word *favela* has become synonymous of drug trafficking and violence in the eyes of most Brazilians, causing discrimination in the work market and, more important, legitimizing police abuses. Cano's study on the lethality of police action in Rio de Janeiro between 1993 and 1996 found that the incidence of homicides was six times higher and the lethality index by police was more than double in *favela* areas

in comparison to non-*favela* areas.<sup>6</sup> Cano's report on the medical examination of police victims provides strong evidence of a regular practice of extra-judicial executions by police officers. Approximately half of police victims examined during the study had four or more gunshot wounds, the majority of which had at least one gunshot wound from behind or to the head. Furthermore, in 40 of the 697 cases investigated the victims were shot at point blank range, and two were found to have been shot more than 25 times.<sup>7</sup>

The widespread practice of extra-judicial police executions is the ultimate expression of violent repression. Albeit unjustifiable, police executions should be framed in a long history of judicial inefficiency and rampant impunity. On the one hand, police officers might execute a trafficker as the culmination of an armed combat or in revenge for other police members killed in the encounter. On the other, police officers might take it upon themselves to impart justice through executions as a result of the perceived widespread incapacity of the judicial branch to process criminals.

These corrupt police practices, which have increased dramatically since the 1970s, lie at the root of the problem of drug- and crime-related violence in Rio de Janeiro.<sup>5</sup>

### Toward Violence Reduction: The Experience of Viva Rio

As in many cities across the region, the increasing levels of violence in Rio de Janeiro have led to important responses from civil society organizations. Non-governmental organizations (NGOs) have played a crucial role in reaching a deeper understanding of the complexity of violence. There, the Viva Rio organization has undoubtedly been the most important civil society entity dedicated to reducing violence in the city.

Viva Rio was formed in December of 1993, a result of a widespread civil mobilization by a society outraged by the atrocious massacres committed between July and August of that year. Zuenir Ventura's book entitled *Cidade Partida* (Split City) vividly recounts the rise of Rio's civil society against violence.<sup>8</sup> At a time when a discourse proposing the radical removal of the *favelas* and the liquidation of the poor surged regularly within public opinion, a group of leaders of all sectors of society including NGOs, the media, industrial unions, and even activists from the Vigário Geral community came together to propose a "mobilizing action for the recuperation of Rio de Janeiro." At noon

on December 17, 1993, thousands of people dressed in white standing on Rio's beaches and millions throughout the city ceased their activities in a moment of silence.<sup>10</sup> The movement's manifesto entitled "*De um tempo pro Rio*" (Give Rio a break) was published by newspapers in the days preceding the action.

Since its foundation, Viva Rio has pioneered the research and design of specific solutions and projects that effectively deal with the complexity of the problem of urban violence. The organization's vast experience and long-standing violence prevention initiatives have allowed scholars and policy-makers to draw lessons and evaluate the cost-effectiveness of a number of different kinds of projects; most notably perhaps, Viva Rio's work on the national disarmament and arms collection campaign. In a sense, it is possible to say that Viva Rio's experience has influenced the literature on violence reduction as much as tendencies in the literature have influenced the organization's activities. Albeit the drug trade is considered to be the main determinant of violence in Rio de Janeiro, Viva Rio as a civil society organization has never been in a position to directly oppose violent drug factions. Rather, the organization has effectively maintained a large number of grassroots projects aimed at violence reduction and prevention.

Viva Rio acknowledges that violence is a tremendously complex phenomenon that goes beyond the drug trade and is rooted in a long history of social exclusion, lack of economic opportunities, state inefficiency, and corruption. Therefore, Viva Rio's mission aims to promote peace and development at the local level by creating the means and the conditions to overcome urban armed violence and social exclusion. The organization parts from the belief that although there is no simple causality linking poverty and social exclusion to urban armed violence, once violence starts, those three factors interact and reinforce each other in a vicious cycle. For this reason, Viva Rio believes that only by implementing holistic approaches to address the gaps between the complexity of the violence and traditional sector-specific solutions such as citizen security, social inclusion, and economic development, can violence be reduced and prevented.

As the levels of violence in Rio de Janeiro have reached epidemic proportions, Viva Rio has adopted a public health approach to combat the problem of violence.<sup>9</sup> This approach targets four key pillars of violence: Risk Group (Youth), Vectors (Small Arms



A girl training at the Fight for Peace Boxing Academy in the *Mare Favela*.

Photo - Felipe Jacome

and Light Weapons [SALW]), Critical Areas (*Favelas*), and Security Sector.

- Risk Group (Youth): As in the rest of Brazil and other countries of the region, youth in Rio de Janeiro are the main risk group for armed violence. This group is mainly composed of poor uneducated teenagers and young males between the ages of 15 and 24 that are forced to abandon school in order to contribute to the family income. Moreover, poor youth have little access to the formal labor market, as they suffer from a number of limitations including racial discrimination and social discrimination against *favela* residents, lack of education, and lack of self confidence outside their communities.<sup>10</sup> These factors make youth the group most disposed to veer toward criminality, becoming the principal perpetrators as well as the principal victims of armed violence.<sup>5</sup>

- Vectors (SALW): Small Arms and Light Weapons are the principal vectors of urban violence in the Americas and contribute to the high rate of gun-related death in Brazil.

- Critical Areas (*Favelas*): SALW-related violence in Brazil is mainly an urban problem strongly related with crime, drug trafficking, and social inequality in highly densely populated areas.<sup>11</sup> Aggravated by a chaotic urbanization process, the lack of provision of public services such as law enforcement, judicial and health access, water supply, and

adequate sewage contribute to precarious living standards and a pervasive environment of human insecurity. In addition, this lack of state presence has allowed for the encroachment of criminal and drug-trafficking enterprises in these areas.

- Security Sector: The high levels of corruption and violence perpetrated by the Rio de Janeiro police places this institution at the root of the problem of violence. Reforming the security sector is critical for reducing violence, promoting human rights, and achieving social integration.

Following this holistic approach, Viva Rio has developed a number of projects that combine modernization and democratization of the criminal justice system, adopt preventive strategies aimed at those groups most vulnerable to the dynamics of crime and violence, and limit the accessibility of SALW. These projects vary tremendously in focus and scope. The following case studies are just two of the most prominent projects aimed at preventing and reducing violence in Rio de Janeiro. My analysis is by no means exhaustive, nor do I present these as initiatives to be necessarily applied elsewhere.

#### Case Study 1—Fast Track Education

The low level of elementary education of the urban population in Brazil and other

Latin American countries is a key factors in the repetition of violence, poverty, and social marginalization. Studies conducted by Viva Rio and the Instituto de Estudos da Religião (ISER) have identified young males between the ages of 15 and 24 who have dropped out of school before finishing elementary education as the main risk group for urban armed violence. At the same time, basic education has increasingly become a condition for accessing the formal job market in Rio de Janeiro. While elementary education has come to be considered a sine qua non for entry in the formal labor market, high school levels of education and other skills are also often required.

The Fast-Track Education Project was conceived in 1996 with the purpose of providing accelerated education as a path for social inclusion and economic progress for young school drop-outs. The program consists of 11- and 12-month courses equivalent to elementary and high school degrees respectively. Classes are held at night within the *favelas*, allowing participants to work throughout the duration of the program and facilitating access for community residents. The dangers of entering and exiting the *favelas* at night make the location of the classrooms (in the communities) a determinant factor for the security and attendance of participants, and thus on the impact of the project.



Photo - Felipe Jacome

The Fast-Track Education Program has been largely successful in providing formation both at the primary and secondary level. Since 1996, 18,000 to 20,000 young adults have enrolled in the program; as of 2006, 8,000 students have successfully completed the primary program and 3,000 have completed the secondary program. Perhaps the greatest measurement of the programs' positive impact is the fact that about 10 percent of the students who completed the secondary level accelerated program have moved on to pursue university degrees.

In addition, the Fast-Track Education Program has had a positive impact in visibly boosting the self-esteem of the students and giving them a sense of advancement in their lives. Luis Cerdeira, coordinator of the project, highlighted the positive influence of the program, "it is amazing to see the changes in the aspirations and ambitions of some of the students. They first arrive with little or no aspirations of advancement in society and leave wanting to go to university and become doctors, lawyers, professionals."<sup>12</sup> In a context where *favela* residents are constant victims of racial and social discrimination when attempting to access the job market, young people often disbelieve their capacity to progress. It is this pervasive feeling of hopelessness concerning their future that leads young men to enter the drug traffic as a source of income.

The Fast-Track Education Project, however, has not been free of difficulties; the largest challenge has been the high rate of participant drop-out. In the 10 years of existence of the project, between 40 and 45 percent of the students enrolled have not been able to finish the programs, mostly due to work constraints. The lack of sustainable funding also affects the Fast-Track Education Project and the majority of Viva Rio projects, often resulting in the sudden closure of teaching locations. This has affected not only the potential impact of the projects, but also the progression of instruction and educational momentum of participants. Participants have expressed their frustration and disappointment with the sudden terminations of one of their few paths to advancement.

#### **Case Study 2—Preventing Youth from Joining the Drug Traffic—The Fight for Peace Project<sup>13</sup>**

As stated above, young children and adolescents are most at risk of becoming involved and victimized by the drug trade. In order to effectively treat the problem of children's involvement in the drug traffic, it is important to understand that the high levels of drug-related violence and involvement of children are a result of non-drug-related social factors

such as poverty, unemployment, low self-esteem, family involvement in the drug trade, and a lack of any sort of promising future.

Similar to the fact that trafficking will exist as long as there is a demand for illicit drugs, children and youth will continue to choose employment in the trade as long as they see it as the 'best alternative' among a number of bad alternatives in their lives. As stated in Luke Dowdney's *Children of the Drug Trade*, "for every child that leaves drug trafficking due to successful rehabilitation projects, there will be twenty to take his/her place, regardless of the prevention programs being instituted."<sup>5</sup>

Effective prevention strategies need to understand what drug trafficking offers children and therefore provide youth with the correct alternatives, support, and direction, so that joining a faction becomes the worst option. In a series of interviews, *favela* residents identified a number of components necessary for effective prevention strategies—these include working with young children, as traffickers are often exposed and begin 'hanging out' with faction members from an early age; providing cultural alternatives to balance out the strong drug subculture present in *favelas*; designing projects that instill self-esteem and self-worth in children who are discriminated against and stigmatized by society; encouraging and supporting children to stay in school; and providing job training that teach skills to be utilized in the formal work market.<sup>5</sup>

Founded in 2000, Fight for Peace is a social project that offers sporting and educational opportunities for children and youth of the Maré Complex in Rio de Janeiro, with the objective of creating an alternative lifestyle to that of violence and drugs for the inhabitants. Centered on sports training, the Fight for Peace project began as a boxing academy and has expanded to offer wrestling and Capoeira training. In addition, the project includes several components that emphasize a culture of peace and enhance the participant's possibilities for a better future. The methodology of the project stipulates five lines of action: sports training as a lifestyle, education, social activism, access to the work market, and building leadership.

The Fight for Peace project has had a tremendously positive impact on the lives of many young men and women in the Maré community. This project aims to give quality support to every participant by following up on their family situation and health, and providing legal counseling if necessary. Due to the nature of the support provided, how-



ever, the project can only help a small percentage of the youth living in the *favela*. The real impact of the Fight for Peace project is destined to be extremely limited if it is not accompanied by strong social investment in the community as a whole.

### Concluding Remarks

The increasing levels of violence in Latin American and the costs associated with them

have come to frame violence as an important obstacle for development. As a result, civil organizations have stepped up to play a crucial role in reaching a deeper understanding of the complexity of violence and implementing violence prevention and reduction strategies. In Rio de Janeiro, Viva Rio is a pioneer in researching the complexity of the problem of violence and designing specific initiatives to tackle it.

Using a public health approach, Viva Rio has pinpointed four risk factors of violence

in Rio de Janeiro, and the security sector as a vital actor and stake-holder in the problem. It has developed a number of projects that combine modernization and democratization of the criminal justice system, adopt preventive strategies aimed at those groups most vulnerable to the dynamics of crime and violence, and limit the accessibility of SALW as the vector that facilitates violence.

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## EDITORIALS

# Domestic Violence among Latinos in the US A border-crossing epidemic

Annie Fehrenbacher, Public Health Studies 2010

Paula was on the brink of suicide when she joined a support program at Adelante, a comprehensive domestic abuse agency for Latinos in Baltimore. At that time, Paula believed that killing her children and then herself was the only way to end the violence that had plagued her household for years. Although she is still married to her abuser, as is traditional in her culture, Paula has found a wealth of support in other survivors at Adelante, who remind her that she is not alone. More importantly, Adelante has helped Paula find the strength and empowerment to go on living.<sup>1</sup>

While the rate of domestic abuse victimization among Latinas in the United States is similar to that among other women—about one out of every four—the severity of the violence and its consequences are often worse for Latinas than for other groups. Like Paula, half of Latina abuse victims report suicidal thoughts or suicide attempts, as compared to 35% of other women, according to a study conducted in domestic abuse shelters in 2001.<sup>2</sup>

Domestic abuse among the Latino population as a whole is a major problem in the United States, but of even greater concern is the plight of Latina immigrant women, who experience much higher rates of abuse and are less likely to seek help due to fears associated with legal

status, cultural mores, and a lack of access to social services. According to a study published in 2000 in the Georgetown Journal on Poverty Law and Policy, Latina immigrants experience abuse at rates of 30-50 percent.<sup>3</sup> In addition, 48% of participants in the study reported that their partner's violence against them had increased since their arrival in the United States. Considering that 14 million Latinos in the US are immigrants (which is 40% of the Latino population according to the 2000 US census), these abuse statistics are staggering.<sup>4</sup> What accounts for these shockingly high rates of violence, and why do so many Latina women choose to stay with their abusive partners?

The phenomenon of living with or returning to an abuser may be better understood through an analysis of the Stockholm Syndrome, a psychological condition in which hostages show compassion for their captors. The name of the syndrome was coined after a 1973 bank robbery in Stockholm in which hostages, who were held for 131 hours, developed bonds with the gunmen and later expressed to media that they felt that the gunmen were actually protecting them from the police. Four conditions serve as the basis for Stockholm Syndrome in abusive relationships: the presence of a perceived threat and the belief that the abuser has the capability to carry out that threat, the recurrence of

perceived acts of kindness from the abuser to the victim, isolation from perspectives other than those of the abuser, and the perceived inability to escape.<sup>5</sup> Of the four conditions, isolation has the most profound effect on immigrant Latinas, since language and acculturation barriers make it extremely difficult to seek services. Furthermore, bilingual shelters or counseling centers may not be available.

Cultural factors also play a role in “keeping women in their place,” although it is difficult to quantify how much they contribute to domestic violence. Traditional Latino gender roles which tell women

**“It is important to recognize that factors contributing to a heightened prevalence of abuse ... are also the same factors that discourage these victims from seeking assistance.”**

Latina victims try to please and appease their abusers in order to prevent further violence and display their devotion to family unity. These behaviors may also be facilitated by religious beliefs, which prohibit divorce and instruct women to value loyalty above personal safety and health.<sup>6</sup> It is important to recognize that the factors contributing to a heightened prevalence of abuse against immigrant Latinas are also the same factors that discourage these victims from seeking assistance. This connection is particularly detrimental in the case of illegal immigrants, and even more so for married illegal immigrant women. Research suggests that abusive husbands of non-citizen women often use immigration status as a tool to control and manipulate their wives and children.<sup>6</sup> As a result, threats of detention or deportation effectively deter these women from seeking help or calling the police.

In an attempt to curb domestic violence in the United States, Congress passed the Violence Against Women Act (VAWA) in 1994, the first piece of federal legislation to provide protections for immigrant victims of domestic violence. VAWA included provisions to aid citizenship for battered spouses based on the findings that, “domestic battery problems can be terribly exacerbated in marriages where one spouse is not a citizen, and the non-citizen’s legal status depends on his or her marriage to the abuser.”<sup>7</sup> Before the enactment of VAWA, non-citizen victims were discouraged from taking action to protect themselves, such as filing a civil protection order or seeking emergency medical services. Taking into account that domestic violence is the number one cause of injury to women in the US, imagine how many millions of battered immigrant women did not seek the medical care that they crucially needed.

VAWA was reauthorized in 2000 and 2005, with revisions to provide funding critical for prevention programs.<sup>8</sup> Even with this new funding, prevention efforts still rest mainly in the hands of state governments and non-governmental organizations (NGOs) such as Adelante. The success of initiatives such as Adelante for immigrant Latino families is due to their culturally sensitive and linguistically

appropriate approach to prevention and intervention. Adelante’s comprehensive methodology combines victim support services, such as “Safe Nights” hotel vouchers with crisis intervention counseling and legal advocacy. In addition, Adelante facilitates a unique abuser intervention program called *Si Puedo* (Yes I Can), a 40-week course that teaches perpetrators how to resolve conflict without violence.<sup>1</sup>

Although it may be tempting for nativists to write off violence in immigrant Latino communities as an example of a violent, patriarchal culture transplanted into the egalitarian United States, this claim is simply unfounded. It is often assumed that violence against immigrant women is perpetrated by immigrant men. However, research shows that the vast majority of married immigrant women who report abuse are married to and abused by US citizens.<sup>7</sup> The data further suggest that US citizen men married to foreign-born women are three times more likely to abuse their wives than men in the general population of the United States.

Violence perpetrated against immigrant Latinas is a transnational epidemic that has policy implications for both Latin American sending countries and the United States. It is critical for legislators, immigration officials, and government agencies to understand the unique dynamics of immigration-related abuse. There is a need for more diversity training for police and health-care professionals, so that these officials are able to refer immigrant victims to suitable culturally based services. Considering all the obstacles and fears that immigrant women must overcome in order to utilize the US criminal justice and health systems, it is vital that these institutions respond promptly and appropriately to their needs.

Domestic abuse is a crime, and it is the duty of the state to protect the most vulnerable populations and expand education and prevention efforts for those at risk for becoming perpetrators. If we are truly dedicated to eradicating this epidemic, we must also work incessantly to change the cultural norms and structures that foster violence.

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# An Acceptable Fate or a Bestowed Punishment? Exploring the Different Faces of Violence in Latin America

Atieh Novin, Public Health Studies & Latin American Studies 2009

In Latin America, the issue of violence has promoted much research. Intervention, however, has been slow, with disputable results. Every day, news of radical, urban, structural, and many other forms of violence are reported. A glimpse of the daily headlines in Latin America portrays the gravity of this problem; abuse, harassment, and assault are some of the most alarming words commonly used in reports of violence as a global public health problem.

This problem has been documented not only through official channels, but also by other kinds of groups and through other outlets. An example is a photographic exhibition of images of youth violence in Latin America. The photographer called the exhibition “*Hijos del Destino*”—“Children of Destiny.”<sup>1</sup> This title is noteworthy in that it puts the weight of the violence portrayed in her photography on the fate of the children. The word “destiny” gives an impression of powerlessness to make changes, on both the part of the viewer as well as the youth portrayed in the images. Can destiny be changed?

The World Health Organization (WHO) defines violence in a broad manner in order to encompass any actions related to and pertaining to the act of violence. An understanding of the issue of intentionality can promote the recognition of the driving forces resulting in violence and thus offer solutions to this unfortunate public health issue. Furthermore, in an effort to comprehend the underlying driving forces that result in violent acts, one must distinguish the different categories of violence.

One must ask the question of how the issue of intentionality plays a role in the youth gang actions portrayed in the photographic exhibition and their so-called “destiny.” The WHO considers the issue of intentionality to be an important factor within violent transgressions. The *World Report on Violence and Health*, a report from 2002 about a comprehensive review of the problem of violence on a global scale, states that “A perpetrator may intentionally commit an act that... is judged to be dangerous... but the perpetrator may not perceive it as such.”<sup>2</sup> Jacome’s study of Rio de Janeiro, published in this issue of *Epidemic Proportions*, highlights three important trends in the study of urban violence: attempting to assess the nature of violence, identifying risk factors arising violence, and modifying current approaches to the prevention of violence. Understanding the issue of intentionality of the perpetrators is essential in implementing any of these three approaches. At first it may seem that uncovering the intentionality of a perpetrator is impossible as it is difficult to draw any definitive conclusions that are more than assumptions; however, recognition of this issue is sufficient in uncovering the underlying driving forces. By recognizing that the driving forces of intentionality often are unemployment, inequality, and limitations in education, perpetrators begin to be viewed as victims themselves. Categorization of the different types of violence significantly aids in determining intentionality.

In categorizing violence, the WHO organizes and structures different types of offenses. The broad existence of categories of violence allows for the immediate classification of these acts, yet limitations

remain. Categorization becomes problematic due to variations in geography and culture, and separating economic and political forms of violence can be challenging. For example, a civilian uprising in Buenos Aires, Argentina resulted in the destruction of shops. This might seem to be mainly due to economic instability, whereas the formation of a similar protest in Bogotá, Colombia might be due to action taken against police brutality and political instability, making the violence in Argentina economic and the one in Colombia political. There is no doubt that one can argue over categorizations. Although the issue of boundary is a common problem in categorization, the existence of well-defined boundaries might be more visible among other categories of violence. The need remains to refine the boundaries of the categorization in order for a clearer definition of violence and its different categorizations.

Another challenge to the specificity of the categories of violence is therefore the setting or geography in which the violent actions occur. Several case studies of the issue of locales and their corresponding cultures can be seen in the books *Infections and Inequalities* by Paul Farmer and *Death Without Weeping* by Nancy Scheper-Hughes.<sup>3,4</sup> The categorization of violence in these works arose from the ideas of structural violence and violence in everyday life as forms of categories of violence. Although Scheper-Hughes’s and Farmer’s works address

**“The ubiquitous but invisible presence of structural violence, “invisible” because of normalization of violent acts in perpetrators and victims’ everyday lives, results in progressively more destructive outcomes.**

poverty in different geographic locations—Brazil and Haiti—similarities are obvious among the various destitute communities. In particular, structural violence and physical violence appear to share a common ground. Both of these occur among disadvantaged communities that are historically prevented from advancement due to societal disparities. They are, in many ways, isolated from the progress and innovations that surround them due to more important preoccupations, mainly basic survival needs. Here, the perpetrators also take the role of victims. There is no surprise that physical violence results due to lack of resources. The ubiquitous but invisible presence of structural violence, “invisible” because of normalization of violent acts in perpetrators’ and victims’ everyday lives, results in progressively more destructive outcomes. The anguish of women infected with HIV such as sex workers, as mentioned in a case study in *Infections and Inequalities*, portrays an appropriate representation of the undisguised form of violence, or lack of opportunities, within a specific class and gender group.<sup>3</sup> Shall we call this the victims’ “destiny,” therefore freeing ourselves from the responsibility of making a change?

Jacome’s report, which assesses the approaches used by the Viva Rio Organization and their work in violence prevention, gives room to hope for change. Although organizations like Viva Rio and altruistic individuals such as Paul Farmer are choosing routes towards violence reduction and improvements in people’s quality of life, more intervention and involvement of government officials on both national and international levels is needed in order to eradicate the global public health issue of violence. In every example given in this

editorial, two important common issues remain. One is recognizing that the perpetrators are themselves victims. The other is realizing that the resulting forms of violence, with no emphasis on their categorization, are mainly due to a lack of political will to address and take actions against them. Whether destiny, fate, inopportune lives, or something else, the important thing is that making a change is not impossible and that we do have the power to do so.

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## PERSPECTIVE

# Remembering Why We Count

## The argument for a public health approach towards violence



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In the end, epidemiology comes down to morbidity and mortality. How many are sick and what's the source? How many are dead and what killed them? We talk about infectious and chronic diseases in terms of mortality rates, case-fatality rates, years of potential life lost. We do research; we gather data; we generate statistics that describe the data.

Why do we count? In practical terms the gathering of data aims to identify risk factors that predict for death or disease. This information serves as the basis for implementing public policies that can prevent or reduce ill health in the public at large. When a source of death and disease is identified; for example, smoking, air pollution, West Nile Fever then politics enters the picture.

We should approach death and injury by violence in the same direct way that we do when confronted by an *E. coli* outbreak. When someone dies by gunshot or is raped or is a victim of domestic abuse, we can count them just as well, if not better, than people who are infected with a disease such as HIV or die from AIDS.

Usually these data about violent incidents resulting in death or injury are collected by the police and called "crime." Deaths attributed to homicide are politically inconvenient information. Murder rates are seen as indicators as to how safe a city is, or how effective local government is at maintaining order. When the murder count rises, governments respond traditionally by hiring more police or changing policing tactics.

Perhaps because we can count them so easily, especially in urban landscapes hostage to forces of poverty, murders increasingly draw the attention of public health investigators. This isn't an attempt to explain away such violence simply as an example of community dysfunction, but to better understand the dynamics so that policies can be deployed to prevent or lessen the num-

ber of homicides in ways outside the traditional approaches of the police.

Similarly public health professionals in the US and abroad have begun to study various forms of violence, be they traumatic suffering or "sub-clinical" routinized daily life occurrences. Work in the realm of violence reduction will take public health to a new level of social intervention. Such activism will engage public health in the political arena in a much more profound way. For a profession that regularly includes social justice as part of its mission statement, this is how it should be.

### Overt Mass Violence

On a grand scale, death by violence is unnerving at best and profoundly tragic. Take the case of civilian body counts in time of war. In October 2006, Professor Gilbert Burnham<sup>1</sup> and his associates published their findings of probable "excess" mortality in Iraq since the American invasion of 2003. By their estimate the three years of warfare had produced in Iraq over 650,000 excess deaths, mostly caused by violence, gunshots in particular. So large was the number that authorities in Washington D.C. and London dismissed the study out of hand. By late spring 2007, only the Blair government was ready to accept the findings.

Here was a team of health professionals doing highly dangerous "shoe leather" epidemiology amidst wartime chaos. Proceeding according to standard cluster survey methodology they knocked on doors, interviewed residents, and reviewed death certificates in order to collect information about recent deaths of household/family members.

Compare the issue of rape, a usually non-lethal form of violence perpetrated against vulnerable populations. Several African and Eastern

European countries that have undergone periods of political instability during the last two decades have witnessed large-scale rape—sexual violence resulting in lasting physical and emotional scarring—often as part of an organized campaign. Now the International Criminal Court in The Hague is taking up an investigation into hundreds of rapes committed in the Central African Republic during 2002-03, especially who was responsible for ordering mass rape as an instrument of repression or ethnic cleansing.<sup>2</sup> The techniques these investigators use to establish agency and patterns of violence will involve identifying victims, times, places and conditions of their violations. Then working backward, the Court hopes to identify perpetrators and determine how they came to perform these acts and whose orders they were following.

A major difference between the Iraq study and the investigation in The Hague will be the issue of blame. Burnham's study does identify sources of violent death, hence the figure of 56% of all violent deaths caused by gunshots. But it doesn't go on to ascribe blame as such. The International Criminal Court will, of course, attempt to attribute blame to and indict the person or persons responsible for giving the orders. But the goals are similar: establishing an accurate understanding of the extent of mortality or morbidity, and then seeking to do something to redress these figures so that in the future, people's lives and welfare can be better protected.

### Overt Violence in the Community

While overt mass violence lies still mostly in the domain of the police, criminal courts, and the court of public opinion, the issue of "family violence" or "partner abuse" or "domestic abuse" has gotten much more traction from the public health community in recent decades. In particular, handgun violence enters the public discourse especially after an incident such as the shootings at Virginia Tech in spring 2007. Old debates about 'gun control' erupt anew with the constitutionalists who advocate the right to bear arms shouting down those who would regulate gun ownership in the name of the public's health.

Interpersonal violence in the community occurs most often between people—family members or peers—who know each other. So often are the victims women or girls that the term "gender-based violence" has become common. This is the preferred term in a 2003 analysis by the Pan American Health Organization (PAHO) entitled "Violence against Women."<sup>3</sup> This study builds on "World Report on Violence and Health" (2002)<sup>4</sup> an ambitious World Health Organization (WHO) attempt to establish a global baseline on morbidity and mortality resulting from all forms of violence. The analysis attempts to define, quantify, and assess the extent and varieties of violence in the world. It concludes with recommendations on how governments might proceed to reduce, if not eliminate, violence in the community.

An interesting aspect of the WHO and PAHO approaches to the question of violence is the attempt to maintain a neutral voice that casts little blame and points no fingers. They contextualize violence within an 'ecological model' involving society/community/interpersonal relationships and the individual perpetrator. As such, poverty is not weighted more heavily; it is just one aspect of the model, as are cultural and gender norms along with individual personal histories. But the overarching socioeconomic and political systems in which these models operate are left unchallenged.

### Structural Violence

Over the past twenty years, Dr. Paul Farmer, noted clinician, medical researcher, and cultural anthropologist has raised a powerful and strident voice to challenge systemic inequities that lead to shocking suffering

in so many countries across the globe. He utilizes the term "structural violence"<sup>5</sup> to characterize the dire impact that deeply rooted socioeconomic patterns or relationships have for the health of the world's have-nots. In this interpretation, structural violence is embedded in the 'normal' dynamics of everyday life that put at greatest risk of suffering those with the least political power, economic clout or social standing. These are health-risk groups and they include poor women, children, and people without agency for reasons of racial, ethnic or religious standing.

There is no doubt that the health status of people in poverty, much less dire poverty, is grim however one measures it. Farmer prefers to prove this point not so much with statistics but with poignant case histories of his patients. These are extended living-ailing-dying stories in which the patient, a human being with a unique history, informs us to the precipitating context for the medical condition.

In Farmer's narrative a young Haitian woman with HIV lives, falls ill and dies in a world where she and her family are disposable. To say simply that she contracted HIV because she had a liaison with a Haitian soldier, someone with an extensive sexual history and to leave it at that is to miss the driving forces. When she was growing up her family had been impoverished when the state flooded the Riviere Artibonite to build a reservoir. After losing their land and the means to feed themselves hunger became the constant in their lives. So the relationship with the soldier, who was already married with five children, was out of necessity and driven by poverty.<sup>6</sup>

We can accept that this young woman was a victim of circumstances: born to rural poverty, a situation made life-threatening by land expropriation, no real access to education, and trapped without other resources. Clearly unfair, but violent? Actually, yes. Living every day with uncertainty and ominous threats to her and her family's survival is a painful form of suffering. What killed her was AIDS, a virus which like a bullet, is value neutral. But what put her in the line of fire were forces that accentuated her powerlessness and made her prey to traumas of physical pain and mental anguish. Like a stray dog her daily routine was a wearing quest for food, shelter, and security. Hers was an everyday life, so aptly characterized centuries ago by Thomas Hobbs as "solitary, poor, nasty, brutish and short."<sup>6</sup>

The work of researchers like Burnham and Farmer—at two different ends of the research spectrum – point clearly to a need for WHO and PAHO to continue their efforts to illuminate the role of traumatic suffering throughout the world. The challenge is to understand the forces that perpetuate the everyday-ness of violence so that suffering can be addressed. Toward this end it is imperative that public health professionals, who do so much of the fact-gathering and analysis regarding infectious and chronic diseases, turn their gaze to a less clinical but no less lethal reality of human suffering.

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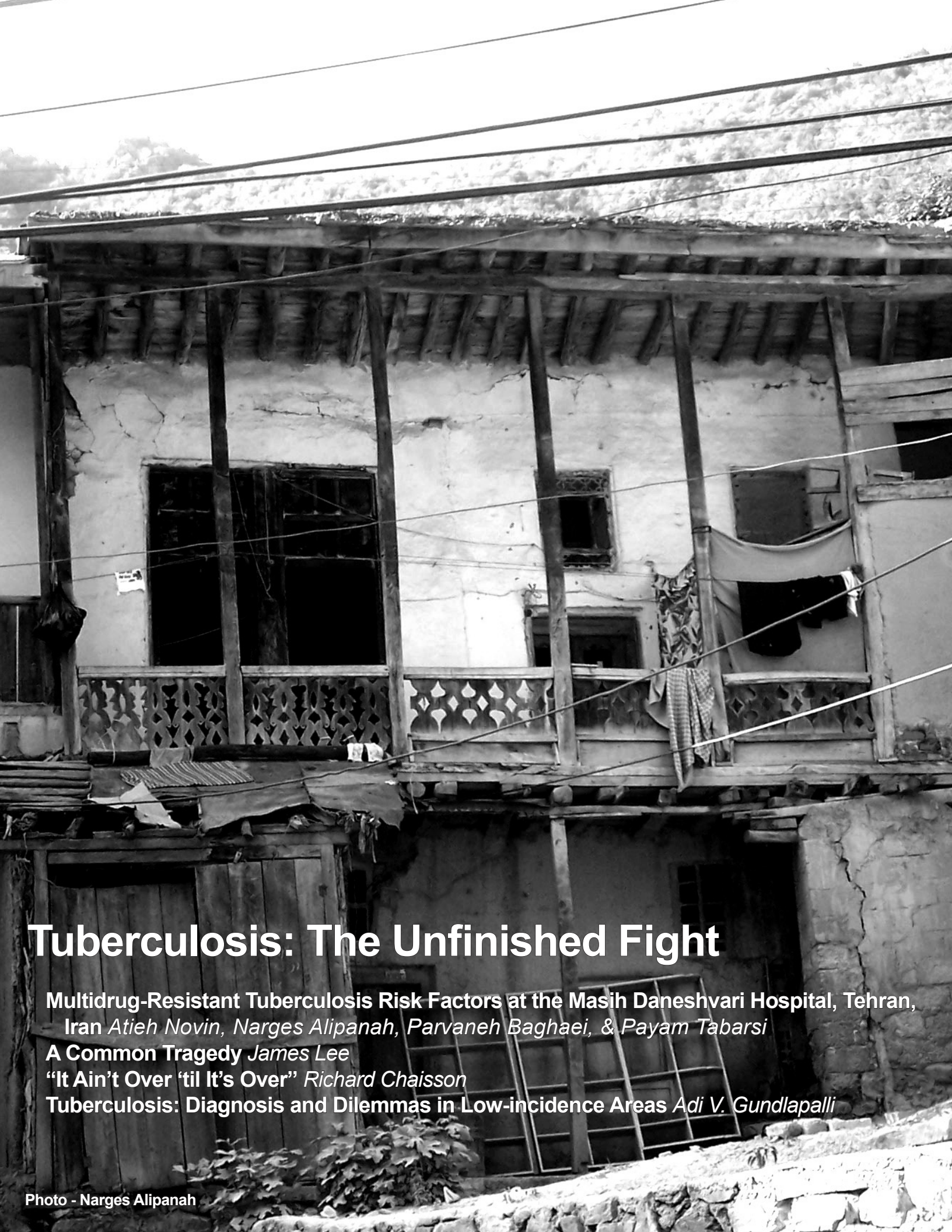
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# Tuberculosis: The Unfinished Fight

**Multidrug-Resistant Tuberculosis Risk Factors at the Masih Daneshvari Hospital, Tehran, Iran** *Atieh Novin, Narges Alipanah, Parvaneh Baghaei, & Payam Tabarsi*

**A Common Tragedy** *James Lee*

**"It Ain't Over 'til It's Over"** *Richard Chaisson*

**Tuberculosis: Diagnosis and Dilemmas in Low-incidence Areas** *Adi V. Gundlapalli*

# Multidrug-Resistant Tuberculosis Risk Factors at the Masih Daneshvari Hospital, Tehran, Iran

## An epidemiological perspective

Atieh Novin, Public Health & Latin American Studies 2009

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The 2005 World Health Organization (WHO) Report for Global Tuberculosis Control estimated the increase of the tuberculosis (TB) burden to be 8.8 million new cases worldwide in the year 2003.<sup>1</sup> In the same year, Iran reported 16,322 incidences.<sup>1</sup> Multidrug-resistant tuberculosis (MDR-TB) is a form of TB resistant to Isoniazid and Rifampin with or without resistance to other drugs.<sup>1</sup>

Erratic and infrequent consumption of TB antibiotics can cause resistance in an individual which can then be transmitted directly from one individual to another.<sup>2</sup> MDR-TB is considered a paramount threat to the control of TB worldwide because standardized short-course chemotherapy (SS-CC) and the more toxic second-line drugs are not as effective in these patients.<sup>3,4</sup> Moreover, the infectivity of MDR-TB is similar to pulmonary TB cases in terms of the second-line drugs but more resistant in terms of the first-line drugs.<sup>5,6</sup>

Many studies have reported that poverty, lack of appropriate knowledge, and crowded living conditions are among the factors that are responsible for the development of MDR-TB.<sup>7,8</sup> In studies conducted in the developed world, particularly in the United States, cases among recent immigrants comprised a growing percentage of TB patients.<sup>9-12</sup>

The Masih Daneshvari Hospital, the National Referral Center for Tuberculosis and Lung Diseases in Tehran, Iran, receives all MDR-TB cases nationwide. The number of MDR-TB patients who were diagnosed at the center between the years 2000 and 2005 was 52. Five patients were excluded from the study as their files had missing data. This study seeks to identify the risk factors responsible for the development of MDR-TB

The National Referral Institute for Tuberculosis and Lung Diseases in Tehran, Masih Daneshvari Hospital, receives all the multidrug-resistant tuberculosis (MDR-TB) cases across Iran. Forty-seven pulmonary MDR-TB patients who were referred to the center between 2000 and 2005 were included in the study. The objective of the research was to determine the risk factors attributed to the development of drug resistance among this cohort of pulmonary tuberculosis (TB) patients by comparative analysis of demographic and clinical variables to 234 pulmonary TB cases that did develop MDR-TB over the course of the study. A history of taking anti-TB medication and nationality were found to be the significant risk factors associated with developing MDR-TB.

among admitted pulmonary TB patients at this referral center.

## METHODS

**Setting:** This study was conducted at the Masih Daneshvari Hospital, which is the National Referral Center for Tuberculosis and Lung Diseases in Tehran, Iran.

**Inclusion Criteria:** All pulmonary TB patients who presented with or later developed MDR-TB at the hospital between the years 2000-2005. Based upon that criterion alone, 47 cases were included in this study. For the purpose of comparison, a control group of 234 patients—number statistically derived to demonstrate significance in results—diagnosed with solely pulmonary TB were selected randomly.

**Method:** The two groups included in the study, MDR-TB and TB, were compared based on 102 demographic and clinical variables. These variables include anti-TB medications, nationality, method of referral, type of clinical tests, close contact, drug use, bacille Calmette-Guérin (BCG) scar, and symptoms such as dyspnea, weight loss, diabetes, and fever. The necessary information was extracted from the patients' files at the hospital. All analysis was done using SPSS

version 11.5 for Windows and Pearson's chi square test.

## RESULTS

### Statistically Significant Variables

**Anti-TB Medication:** The history of anti-TB medication was one of the most significant variables ( $p$ -value < .001) in the comparison between the 47 MDR-TB cases and the 234 TB cases.

Almost 96% percent of the MDR-TB cases reported having had a history of anti-TB medication use, yet this number declined to 23.1% in the TB group. Both the cases and the control group were divided into three categories: (1) those which were newly occurring (2) those which were suspected of infection, and (3) those with a history of infection and treatment. New cases are defined to be those patients who did not have any knowledge of prior treatment and for whom the hospital did not find any history of treatment.

The category of cases which were suspected to be MDR-TB were considered "suspected" if they fell into the following subcategories: failure of standard treatment, failure of the CAT II regimen, and a number of irregular treatment periods. The results of the case definition analysis ( $p$ -value < .001) in MDR-

Table 1. Baseline Characteristics between MDR-TB and Pulmonary TB patients at Masih Daneshvari Hospital, 2000-2005

Characteristics	MDR-TB (n=47)	Pulmonary TB (n=234)	P-Value
<b>Anti-TB Medications</b>	45 (95.7%)	54 (23.1%)	≤ 0.001
<b>Nationality</b>			≤ 0.002
Afgan	22 (46.8%)	54 (23.1%)	
Iranian	24 (51.1%)	56 (23.9%)	
Bangladeshi	1 (2.1%)	1 (0.4%)	
<b>Method of Referral</b>			≤ 0.003
Direct	24 (51.1%)	132 (56.4%)	
Health Care Network	13 (27.7%)	21 (9.0%)	
Referral to Hospital	7 (14.9%)	44 (18.8%)	
Physician Clinics	3 (6.4%)	37 (15.8%)	
<b>Clinical Tests</b>			
Positive Smear	47 (100%)	46 (19.7%)	≤ 0.037
Positive Sputum	45 (95.7%)	190 (81.2%)	≤ 0.014
<b>Dyspnea</b>	40 (85.1%)	160 (68.4%)	≤ 0.021
<b>Weight Loss</b>	35 (75.4%)	208 (88.9%)	≤ 0.005
<b>Close Contact</b>	13 (27.7%)	41 (17.5%)	≤ 0.091
<b>Diabetes</b>	3 (6.4%)	21 (9.0%)	≤ 0.538
<b>Fever</b>	34 (72.3%)	176 (75.2%)	≤ 0.679
<b>Drug Use</b>	5 (10.6%)	31 (13.2%)	≤ 0.625
<b>BCG Scar</b>	24 (51.1%)	93 (39.7%)	≤ 0.355

TB and pulmonary TB cases, control group, demonstrated that 85.5% of the pulmonary TB cases were considered newly occurring, whereas only 8.5% of MDR-TB cases were thought to have been so. Ninety-one percent of the MDR-TB cases and 11.5% of pulmonary TB cases were suspected to have drug resistance upon referral to the center.

**Nationality:** Nationality of MDR-TB patients versus pulmonary TB patients was also found to be a significant variable (p-value < .002). Out of a total of 78 Afghan patients in the study, 22 of these (46.8% of total MDR-TB cases) composed the MDR-TB category whereas 56 (23.9% of total pulmonary TB cases) belonged to the pulmonary TB category. Among Iranians with a total number of 201 cases, the 177 pulmonary TB cases (75.6% of total pulmonary TB cases) were more common than the MDR-TB cases with 24 patients (51.1% of total MDR-TB cases). The remaining 2.1% of MDR-TB category is comprised of a case from Bangladesh.

**Method of Referral:** Another significant variable was the method of referral of patients in the MDR-TB and pulmonary TB groups (p-value < .003). Our study defined

four methods of referral: (1) patients who were directly referred to the National Referral Center ("Direct"), (2) patients who were referred to the National Referral Center through a health care network ("Health Care Network"), (3) patients who were referred to hospitals by their local providers ("Referral to Hospitals"), and (4) patients who were referred to physician's clinics and private practices ("Physician Clinics"). The Direct (51.5%) and Health Care Network (27.7%) methods of referral were most common in the MDR-TB group, followed by Referral to Hospitals (14.9%) and, lastly, Physician Clinics (6.4%). Among the pulmonary TB group, the Direct Method of Referral (56.4%) was also the most common referral method. The next most common method of referral among this group was Referral To Hospitals (18.8%) followed by Physician Clinics (15.8%) and Health Care Network (9.0%).

#### Statistically Insignificant Variables

**Clinical Tests:** Smear results between the MDR-TB and pulmonary TB groups were noteworthy but not statistically significant (p-value < .037). Smear tests are used to

investigate the presence or absence of TB bacteria in a patient's phlegm. All MDR-TB patients (100%) had positive smears and 19.7% of pulmonary TB patients had positive smears.

Another clinical test used to detect tuberculosis is the sputum test. Samples are collected in a sterile cup after patients cough deeply to extract mucus from their lungs. The presence or absence of bacteria in this sample is determined by different tests. Sputum results in MDR-TB and pulmonary TB cases were also found noteworthy but not statistically significant (p-value < 0.014) 95.7% of MDR-TB and 81.2% of the pulmonary TB cases tested positive.

**Dyspnea:** Dyspnea, commonly shortness of breath, was also found to be a statistically insignificant variable (p-value < .021). Among the MDR-TB and pulmonary TB groups, dyspnea was found to be more common in MDR-TB cases (85.1%) than in pulmonary TB cases (68.4%).

**Weight Loss:** When comparing weight loss in MDR-TB and pulmonary TB cases (p-value < .005), the data show that this variable is less commonly found in MDR-TB cases (74.5%) than pulmonary TB cases (88.9%).

**Close Contact:** Close contact is defined as a situation where a patient is exposed to the infection by caring for or living with someone who already has the infection. History of close contact (p-value < .091) was found to be more common in the MDR-TB group: 27.7% as compared with 17.5% in the pulmonary TB group.

**Diabetes:** Diabetes (p-value < .538) was more common in the pulmonary TB group (9.0%) than the MDR-TB group (6.4%).

**Miscellaneous:** Other variables which were deemed insignificant were fever as defined by a temperature over 38.0°C, drug use, and BCG scarring.

## DISCUSSION

This study is one of the few in Iran regarding the characterization of risk factors in the development of MDR-TB. The study revealed that a higher percentage of Afghans composed the MDR-TB group than the pulmonary TB group, and a large percentage of MDR-TB patients were Afghans.



A large fraction of the Afghani population in Iran consists of refugees who have moved to Iran.<sup>13</sup> The fact that most of these patients are refugees could be a possible risk factor for the development of resistance due to incomplete and irregular treatment of tuberculosis. Espinal's study on the global situation of MDR-TB demonstrated that in the developed countries where MDR-TB is not a major public health issue, the problem was still present in immigrants, refugees, and the homeless.<sup>14, 15</sup> In addition, a study done by Faustini et al. revealed that TB cases among recent immigrants from developing countries comprised a growing percentage of TB incidences. Faustini further demonstrated that many cases were reported to be drug-resistant and multidrug-resistant.<sup>2</sup>

It must be noted that the recent war in Afghanistan has crippled the nation's health system, which has come to depend on foreign aid and NGO support.<sup>16</sup> The influence of war can also be felt in the national monitoring and delivery programs that address infectious diseases and TB. The inadequate health system in the home country of these individuals, together with the itinerant status of Afghan refugees, can lead to the development of MDR-TB development among this population because of the risk that unreliable health services present to compliance to treatment regimens. Furthermore, the social pressures and stigma associated with being a

minority group can lead to interruptions in or aversions to receiving care.

History of anti-TB medication in MDR and pulmonary TB cases is the other significant variable that warrants discussion. The Global Project on Anti-Tuberculosis Drug Resistance Surveillance has shown that the median prevalence of MDR strains in new cases was only 1% in comparison to the 9.3% prevalence for the previously treated cases.<sup>17</sup>

The report states the need for separate data on MDR-TB by region. In this study we have demonstrated that 95.8% of MDR-TB cases had a history of anti-TB medication but only 23.1% of the pulmonary TB cases had the same history. A history of anti-TB medication is more common in MDR-TB rather than drug-sensitive TB. Faustini et al.'s study has shown that previous anti-TB treatment was the strongest determinant of MDR-TB in Europe.<sup>2</sup>

In a study done by Bashar et al. on the increased incidence of multidrug-resistant tuberculosis among diabetic patients, the proportion of cases of MDR-TB was significantly higher in patients with diabetes.<sup>18</sup> Consequently, the authors suggested that diabetes may be a risk factor for pulmonary TB cases and associated with MDR-TB cases. However, our study showed the association of diabetes with both pulmonary TB and MDR-TB cases to be insignificant. The findings underscore that diabetes is in fact not a risk factor in either of the two groups.

## Conclusion

It is possible that the limited sample size of our study has resulted in insignificant relationships between the development of drug resistance and many of the categories examined. Also, the fact that the study was conducted at the national TB referral center in the capital of Iran may suggest that MDR-TB patients that could not seek treatment would be excluded from the study, potentially limiting the significance of the results.

Based on the obtained data, it is feasible to conclude that immigrants or refugee status may be an important risk factor for TB and, of particular concern, may contribute to the burgeoning number of new MDR-TB cases annually in Iran. Refugees, in general, face challenges in seeking health care which could result in the spread and incomplete treatment of disease and drug resistance. The results highlight the need for more attention to be paid to the health care situation of refugees. Policies and efforts should be designed to address the health care needs of refugees by implementing interventions and preventive regimens among these populations.

History of anti-TB medication is also a very important determinant in the acquisition of MDR-TB. Most MDR-TB cases occur due to failure of standard regimen treatment, failure in CAT II treatment regimen, and incomplete treatment.

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## A Common Tragedy

### The case of tuberculosis, its drugs, and chronic under-investment

James Lee, Public Health Studies & Economics 2009

For a disease that has had a cure since 1946, tuberculosis is a strange concern for public health officials. Yet, 60 years after streptomycin, the number of new TB cases continues to climb, registering 8.8 million new cases and 1.6 million deaths in 2005 alone.<sup>1</sup> More recently, the disease has taken a markedly dangerous turn with the emergence of extensively drug-resistant (XDR) cases in 35 countries.<sup>1</sup>

The appearance of XDR-TB is a highly disturbing progression for a variety of reasons. By definition, it is resistant to the most effective first- and second-line drugs, making its treatment highly difficult and exceedingly expensive. XDR-TB, which frequently emerges in poor and immunocompromised individuals, is deadly; in the 2006 outbreak in KwaZulu-Natal, South Africa, 52 of 53 patients infected with XDR-TB died, most of them within a month after having their sputum collected, which is early procedure in diagnosing tuberculosis.<sup>2</sup>

Natural selection dictates that *Mycobacterium tuberculosis* will develop drug-resistant strains given enough time. However, this emergence of XDR-TB in the age of DOTS (directly observed treatment, short-course) and effective antiretrovirals is anything

but natural. Current standard treatment with multiple drugs is designed to combat drug resistance, as it is highly unlikely for any particular strain to develop simultaneous resistance to multiple drugs. Meanwhile, the high rates of

**“Under-funding of any element of a program can lead to inadequate treatment of patients, consequently furthering drug resistance”**

TB/HIV co-infection that fuel the multidrug-resistance (MDR) epidemic represents an even more fundamental problem in the state of global public health.

The emergence and spread of XDR-TB reflects a confluence of factors that epitomizes market failures in health care—lack of incentives in providing a public good; asymmetry of information leading to patient non-compliance; and imperfect pricing, making pharmaceuticals cost-prohibitive, to name three. While the biochemistry of drug resistance is subtle, the economics of it is obvious and will be the focus of this editorial.

#### Vicious Cycle of TB Pharmaceuticals

Of the many barriers to effective tuberculosis treatment, the cost of drugs remains prominent and daunting. Most recently, WHO reported a median cost of \$26 per patient for first-line drugs budgeted under national tuberculosis programs.<sup>1</sup> For patients without access to national DOTS programs, the cost is likely to be higher as private providers lack the market power and political leverage to secure lower prices. In the case of MDR-TB and TB/HIV co-infections, the cost for effective treatment skyrockets for the second-

line antibiotics and the alternative therapies required for concurrent HIV treatment.

This has led to knee-jerk accusations of pharmaceutical companies profiting from the sale of life-saving drugs. Following a similar line of reasoning, national governments and other purchasing consortia have marshaled a potent mix of ethical arguments and market power to persuade pharmaceutical companies to lower drug prices. When this fails, as has been seen in negotiations over antiretrovirals, some national governments have allowed generic production of patented drugs or compulsory licensing. In response, the companies and their home governments retaliate with international trade disputes.

The irony of this struggle is that neither party is completely at fault. On the one hand, pharmaceutical companies face shareholder pressures similar to other publicly traded companies, such as Coca-Cola.<sup>4</sup> In fact, companies may even suffer a loss when they cannot recover the research cost of the drug through patent-enforced margins—the estimated R&D cost for new drugs is around \$400-\$800 million, which cannot be recovered without patent-enforced royalties.<sup>5</sup> Unfortunately, the very nature of Merck and GlaxoSmith-Kline means that profits come from suffering patients rather than a teenager's craving for a fizzy drink. On the other hand, national governments are faced with the choice between profit margins of international corporations and the lives of its citizens.

The direct consequence of the conflict between patent revenue (for example, Ofloxacin, a second-line TB drug, costs eight times as much in countries under patent protection than in countries without)<sup>3</sup> and the need for low-cost drugs has been the lack of an effective tuberculosis drug for the past 40 years.

A similar market failure also occurs in the laboratory testing required to support clinical decision-making. The WHO reported that most developing countries still rely on sputum microscopy for testing tuberculosis.<sup>1</sup> Aside from its low sensitivity, sputum microscopy reveals no information about drug susceptibility (drug-resistant bacteria appear identical to non-resistant ones). Given the emergence of MDR and XDR strains, the lack of inexpensive and reliable testing is a cause for concern.

#### A Strong Dose of the Silver Bullets

While there is no magic bullet for fighting tuberculosis, one thing is central to resolving the market failures of TB treatment—more funding. Further spending most directly breaks the “cost-prohibitive” trap and “resource-poor” limitations in TB control strategies, paying for the laboratory services, pharmaceuticals, and personnel levels that are required for an adequate program. And while there have been encouraging signs in this direction (the combined budgets of many countries' national tuberculosis programs have grown from \$500 million to \$1.25 billion since 2002), much

work remains to be done. The WHO reports that an additional \$1.1 billion is needed in 2007 to implement its global TB regimen. Given the upward projection of AIDS-associated MDR-TB, funding in preventing TB and its associated infections must be increased to contain the spread. As stated earlier, under-funding of any element of a program can lead to inadequate treatment of patients, consequently furthering drug resistance.

The current under-investment in TB prevention and treatment becomes a deadly variation of the “tragedy of the commons”; infectious disease control is perhaps one of the most classic examples of a “public good” that is cited in economics textbooks. As such, governments have instituted various disease-control programs on the national and local levels. In today’s global economy, where diseases cross borders as easily as goods and services, it is necessary to recognize that treating tuberculosis is a “global public good.” In 2006, the Centers for Disease Control and Prevention (CDC) reported that more than half of the tuberculosis cases in the United States could be attributed to foreign-born persons.<sup>6</sup> The recent much-publicized case of the MDR-TB patient traveling internationally was a further demonstration of the potential movement and spread of a deadly strain.

Ultimately, the developed world bears both a humanitarian responsibility to act and a self-interested cause to do so. Studies have already demonstrated the significant potential monetary savings in investing in TB programs abroad.<sup>7</sup> Considered together with the greater savings in human lives, American or otherwise,

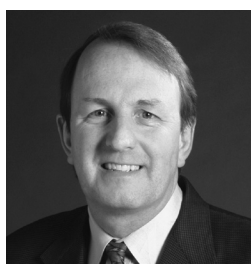
current health-related aid levels can only be described as “willfully ignorant” or “atrocious.” Perhaps when it comes to TB, the current American administration would do well in applying the mantra of “we’re fighting them there, so we won’t have to fight them here.” Only in this case, we can safely predict a positive balance in American dollars and American lives.

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## PERSPECTIVES

### “It Ain’t Over ‘til It’s Over”

#### The false victory against tuberculosis and how it haunts us



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Since 1882, when Robert Koch discovered the tubercle bacillus and proved that it was the cause of tuberculosis, enormous progress in understanding and combating tuberculosis has been made, resulting in three Nobel prizes and the expectation that the disease would soon be conquered. In addition to identifying the etiologic agent of tuberculosis, Koch also developed tuberculin, an extract of tubercle bacillus that he thought would be therapeutic (it wasn’t), but instead proved to be extremely useful for diagnosing tuberculosis infections. In the early 20th century, Calmette and Guérin at the Institut Pasteur developed a vaccine,

BCG (bacille Calmette-Guérin), that could dramatically reduce the risk of tuberculosis in those who were inoculated. Improvements in diagnostics, including X-rays, improved tuberculin preparations, and more accurate culture systems added to the arsenal of clinical tools for detecting the disease.

In 1943, the unprecedented miracle of tuberculosis chemotherapy was realized when Schatz and Waksman discovered streptomycin. In the following two and half decades, a raft of anti-tuberculosis drugs was developed, including isoniazid, ethambutol, pyrazinamide, and rifampin, taking tuberculosis from a highly

lethal illness to one that could be cured with just six months of oral medication.

By 1970, about everything that needed to be figured out about tuberculosis had been done, so perhaps it is no wonder that the biomedical establishment assumed that it was only a matter of time until the disease was eliminated through the use of the marvelous tools that science had delivered. The research community therefore turned away from tuberculosis toward other problems, funding for tuberculosis research evaporated, and for more than 25 years virtually no additional progress was made. Unfortunately, while science took a holiday from tuberculosis, the disease continued its deadly onslaught, killing more than 50 million people since 1970. Given the extraordinary contributions that the scientific community made to our ability to fight tuberculosis, why wasn’t the disease eradicated, or at least controlled, and why has the epidemic worsened in recent decades? What went wrong?

The conventional wisdom about our failure to conquer tuberculosis is that the public health authorities failed to use the amazing fruits of scientific inquiry to control the disease, and that poverty, weak health systems, population growth, and, more recently, the HIV epidemic have fueled an expansion of tuberculosis that could not have been imagined 30 years ago. In addition, the widespread use but inappropriate management of anti-tuberculosis drug therapy has resulted in the emergence of drug-resistant strains, which now threaten to reverse any progress that has been achieved. The conventional wisdom is to some extent true: the political will to control tuberculosis has been sorely lacking in those countries most affected by the epidemic, and these nations suffer from worsening poverty, bad health care infrastructure, and crushing population growth. In addition, the sweep of the global HIV/AIDS epidemic has clearly worsened tuberculosis control so dramatically that even strong health systems are unable to cope. And drug-resistant tuberculosis has become a problem of enormous proportions throughout the world—5% of all tuberculosis cases are now multidrug-resistant, and extensively drug-resistant (XDR) tuberculosis is reported in more than 70 countries. Another important lesson needs to be realized from this monumental failure of science and public health. In the case of tuberculosis, victory was declared too soon: the battle was interrupted before the fight was over, and the freight train of scientific progress was derailed as resources were devoted to other problems. Tuberculosis turned out to be far more intractable than many assumed, and the disease has never been controlled, even in the most developed nations.

There are two principal reasons why the declaration of victory in the battle against tuberculosis was premature and, ultimately, so terribly wrong. First, the scientific tools that were developed were truly wonderful and impressive, but they weren’t good enough. The diagnostic methods developed by Koch and a host of others after

him were in many ways revolutionary, but they were still woefully inadequate. Throughout the world today, clinicians and patients rely on crude tests like the sputum smear that has poor sensitivity, or on culture systems that entail long delays (1-2 months) before providing results that do not include drug resistance information. Here in the US, the technology is better, but still not satisfactory. The BCG vaccine developed in Paris was initially effective, but because it is a live, attenuated vaccine that must be serially grown in the laboratory, it appears to have evolved over time and lost its protective efficacy. And the magic bullets that transformed tuberculosis into a curable disease are not powerful enough—what is needed is a treatment regimen that can cure tuberculosis in days to weeks, not the six to nine months now required with current agents. Fortunately, the slumbering science of tuberculosis research has reawakened, and large investments in the study of new vaccines, diagnostics, and drugs for the disease have been made by the Bill and Melinda Gates Foundation and others.

The second failure of tuberculosis research in the last century was the lack of attention paid to public health strategies for controlling the disease. Biomedical tools are vitally important for public health, but without effective strategies for applying these tools to populations in which infectious diseases propagate, disease control will not be possible. Little attention was given to understanding the population dynamics of tuberculosis, and the tools

**“ In the case of tuberculosis, victory was declared too soon ... and the freight train of scientific progress was derailed as resources were devoted to other problems.”**

that were developed were not effectively deployed. By focusing solely on treating individuals with sputum smear-positive tuberculosis, for example, the global public health community completely ignored the seedbeds of the disease, those with latent tuberculosis. Understanding the epidemiology of a communicable disease is central to its control,

but this was not appreciated by many until recently. This lesson is obviously important for other infectious diseases as well. For example, in the case of HIV, how will the recent technological advance of male circumcision be applied to populations to control the epidemic? How are antiretroviral drugs contributing to, or worsening, the spread of infection? These kinds of issues are just as important as the scientific challenges of making drugs, vaccines, and other biomedical tools.

Tuberculosis will not be controlled until better drugs, diagnostic methods, and vaccines are discovered and made available, and then properly targeted to reduce the incidence of the disease to negligible levels. For those beginning careers in public health, there is abundant opportunity to contribute to disease control, not just for tuberculosis, but for HIV, malaria, leprosy, schistosomiasis, dengue, and so many other pathogens that plague the developing world. Until there are no more cases of a disease, research into better ways to combat it will remain essential. As Yogi Berra so famously said, “It ain’t over ‘til it’s over.”

# Tuberculosis: Diagnosis and Dilemmas in Low-incidence Areas



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**T**uberculosis (TB) is a major international concern today with roughly one third of the world's population (2 billion) having been exposed to the disease and many more at risk.<sup>1</sup> In terms of a single microorganism causing mortality, *Mycobacterium tuberculosis* ranks among the highest, responsible for 2 million deaths annually.<sup>2</sup> The HIV/AIDS epidemic and the resulting immunosuppression has led to a resurgence with TB now being the number-one killer among AIDS patients.<sup>3</sup> While medications are available to treat TB, of late, multidrug-resistant strains and more recently extended drug-resistant strains have put a damper on the control of TB around the world.<sup>4,5</sup>

While TB continues unchecked around the world, the US has seen a slow decline in the numbers of new cases reported each year.<sup>5</sup> In the US, there are several areas where fewer than 50 cases of active TB are seen every year. These "low-incidence" areas pose special challenges in terms of delays in diagnosis and treatment of TB by medical professionals who are not thinking of TB while examining a patient.<sup>6</sup> The problem is compounded when the presentation of TB is in a body part that is not the most common (lung). This is called extra-pulmonary TB and often poses challenge to diagnose and treat.<sup>7,8</sup> There is often confusion about infectivity to others, duration of treatment, and follow-up for the patient.

These issues are highlighted by three patient stories. The first patient was a 56-year-old male who had been experiencing various upper and lower gastrointestinal symptoms for the past year and was ultimately diagnosed to have a large mass at the junction of the terminal ileum and cecum in his intestines. The mass was thought to be cancer and the surgeon who performed surgery to attempt removal was concerned about its size and potential for complications. The patient was told to put his affairs in order as a cancer of this size was uniformly fatal in a short time frame. The cancer specialist who was asked to treat this patient quickly realized that the tissue samples from the mass did not show cancer. Rather, they were indicative of a slow inflammatory/infectious process that was reminiscent of TB! Though we never could obtain a specific diagnosis of TB from the pathology specimens, the mass literally melted away with a year's worth of TB treatment. In retrospect and with the luxury of hindsight, it was not a far-fetched diagnosis in this gentleman who had migrated to the US from a country where TB is very common. His TB in the intestines did not pose a risk to others and was not a public health issue.

The second patient was a 40-year-old male who was being evaluated for brain cancer as he had a mass lesion in his brain and a corresponding suspicious lesion in his chest. By the time we were asked to see him, he too had been declared to have cancer and was receiving therapy. The brain biopsy proved that he too had TB in the brain. His treatment lasted 18 months and led to a full recovery with no neurological problems. This

patient was from an ethnic minority here in the US and had significant exposures to TB while growing up. He did not have active pulmonary TB and thus did not pose a risk to others.

The third patient was a 45-year-old male who had been admitted for fever and cough and was being treated for community-acquired pneumonia. A detailed history revealed that he had been experiencing homelessness for the past year, had been incarcerated for prolonged periods during the past five years, and had a history of alcoholism. His chest X-ray and CT scan were suggestive of active pulmonary TB and the diagnosis was confirmed with appropriate microbiological testing. As TB was not suspected at the beginning of his hospital stay, there were several health care workers and patients exposed to his coughing before the patient was placed in respiratory isolation. He responded well to treatment and made a full recovery with prolonged treatment.

Medical professionals have a duty to keep abreast of the latest developments in their field and be prepared to diagnose and treat new conditions/diseases. This perspective reminds us to not forget the "old" diseases that have been with us for years. In the right setting and a good epidemiological history such as being foreign-born, incarcerated, or homeless, TB is still a disease of concern in the US. With decreasing numbers of cases and low incidence areas in the US, the concern is that the next generation of medical professionals will lack the skills to recognize the various manifestations of TB. Public health professionals face similar challenges in keeping TB on the radar screen when they too have not seen many cases. Acquiring and polishing the skills to manage TB and other diseases that you do not see often takes effort and consultation with experts. The consequences can be devastating when there is a delay in the diagnosis of TB and others have been exposed. So while we prepare for the next new disease, let us not forget the old ones that we are yet to conquer.

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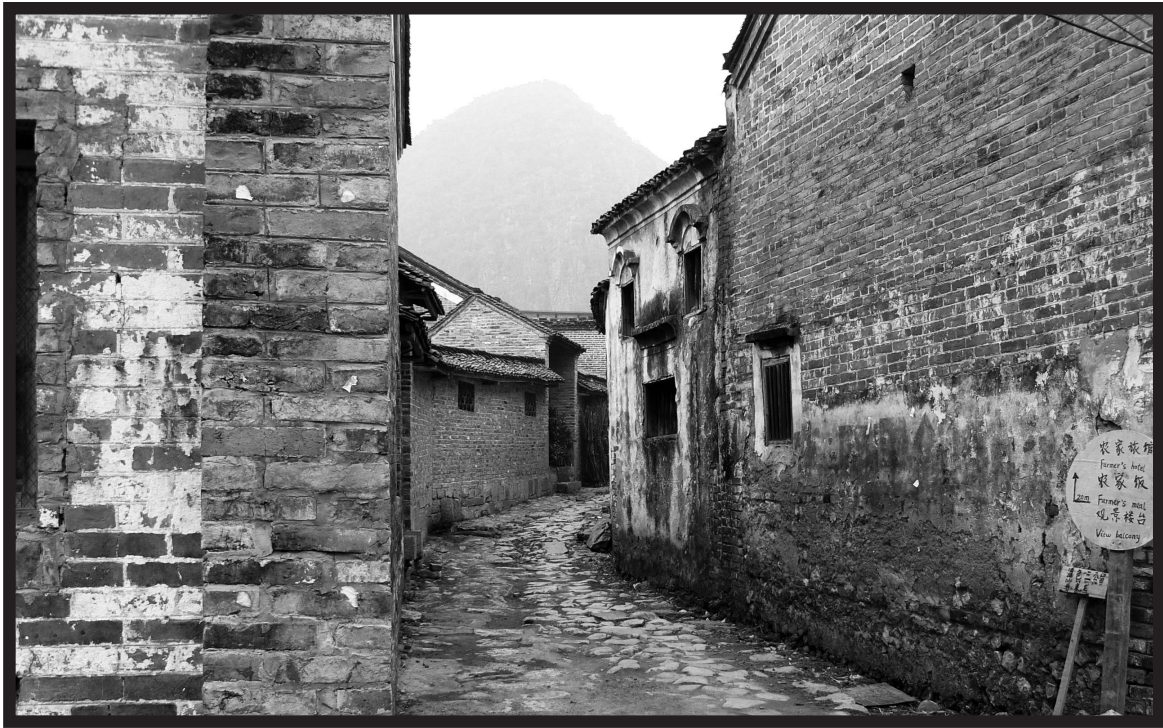
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Yang Shuo, China- 2007



Photo - Alex Wald

## **Sorghum** <sup>(above)</sup> **has been raised for ethanol for centuries,** but its strong brew may now have new destinations.

With the price of oil now approaching \$100 per barrel and global warming recognized in political circles, the business model for converting crops to fuel looks increasingly appealing. In 2007, some 85 million tonnes of corn found its way into the tanks of America's SUVs (or hybrid sedans).

However, this creates an unfortunate competition between the empty tanks of cars and the empty stomachs of humans for the farmland of the world. Overall food prices increased by 10.5 percent between January and August of 2007, with some crops such as wheat seeing a 50 percent increase from 2006. That's no pocket change for populations that spend 70% of their income on food.

The faults and merits of policy can be debated in the capitals of the world, but for workers and researchers in public health, policy impacts are not simply documented and studied. Rather, knowledge of the world around us must translate to forceful and timely interventions in order to

**protect the health of the most vulnerable.**

