

An Overview of Drinking Water Quality and Water and Sanitation-Related Disease

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The information for this article comes from presentations Jim VanDerslice made at recent MCN environmental health intensives and an outreach program that both authors developed and implemented along the US-Mexico Border.

A little more than a hundred years ago, diseases such as typhoid and diarrheas were the third major cause of death accounting for 10% of all deaths. Outbreaks were often attributed to water supplies contaminated by human waste. Few piped water systems had any treatment, and disinfection with chlorine was yet to be discovered. Similarly examining the water for bacterial indicators of contamination was not common until the late 19th century.

Despite advances in water supply and treatment, many farmworkers remain vulnerable to contaminated water supplies. Most of the water sources used to provide water to farmworkers in the fields or in the camps are private wells. These supplies are not regulated under the federal Safe Drinking Water Act of 1974 as this law applies only to systems serving 25 or more people for at least 60 days per year. Further, only a handful of states have regulations in place, which cover these smaller systems or systems specifically serving farmworkers. As a result a very small proportion of these wells are tested for microbiological or chemical contamination, and few are inspected to assure that the source waters are protected from contamination.

This is of particular concern in agricultural areas where rain and irrigation water can carry pesticides, fertilizers and human and animal wastes through the soil and into the underlying aquifer. It is these

aquifers that are tapped by the shallow domestic wells typically used to provide drinking water to farmworkers in the fields and at labor camps. A recent study by the US Geological Survey showed that nitrate, found in fertilizers and animal wastes, was the most commonly found contaminant of wells.

Historically, water and sanitation problems have had a significant impact on farmworker health. Studies dating back to the early 1980s have documented high levels of enteric disease and poor sanitary conditions (Ortiz, 1980). Arbab and colleagues (1986) found that migrants displayed a clinic utilization rate for diarrhea 20 times higher than that of urban poor. In a North Carolina study Ciesielski et. al. (1992) found a high prevalence of intestinal parasites, and an association between having parasites and poor sanitary conditions. Moreover, a 1988 EPA study conducted in Wisconsin found that sanitation problems increased during the summer months when more workers are in the region. Wells tested in May showed no signs of microbiological contamination, where as nearly 50% of the wells tested in July tested positive for microbiological contamination.

While more recent information from National Agricultural Worker's Survey and the California Worker Health Survey in 1999 indicates that there have been significant improvements in field sanitation,

there are still troubling reports that water and sanitation problems remain a concern. In a 1999 sanitary survey of wells serving temporary farmworkers and their families in the Washington State, 101 out of 179 wells showed problems and 23 of the wells obtained water from unacceptable sources. A recent series of focus groups conducted with farmworkers in Washington State found that water and sanitation continues to be problematic both in the field and at housing sites (Washington State Department of Health, 2002).

There are two important aspects for clinicians to understand regarding water and sanitation. 1) While pesticide and nitrate contamination of water is a problem, fecal contamination is a primary source of enteric disease. 2) Enteric disease is not only water-borne, but transmitted through fecal-oral routes of transmission. Figure 1 provides a simplified illustration of the various routes of fecal-oral transmission. This diagram shows that fecal contamination of water, hands, and the environment sets the stage for transmission of disease. The following are all methods for disease transmission:

- Water sources may be directly contaminated (i.e. a poorly maintained latrine or septic system can contaminate water wells).

An Overview of Drinking Water Quality and Water and Sanitation-Related Disease

continued from page 1

- Stored water can be contaminated through contact with contaminated hands or utensils.
- Contaminated water may be ingested directly or used to wash dishes and utensils or to prepare food.
- Contaminated hands may directly contact the mouth, drinking or cooking water, utensils, food etc.
- Vectors such as flies may also contribute to the transmission of disease as contact both feces and food. (Actions Speak, 1993).

Farmworkers and their families often live and work in settings where there are multiple routes of transmission as described above. Farmworkers may or may not be exposed to contaminated water via poorly maintained wells. Facilities for hand washing and properly maintained excreta disposal systems may or may be available

to farmworkers. Knowing that enteric infection may be an issue for farmworkers has several implications for clinicians, outreach workers, and health educators.

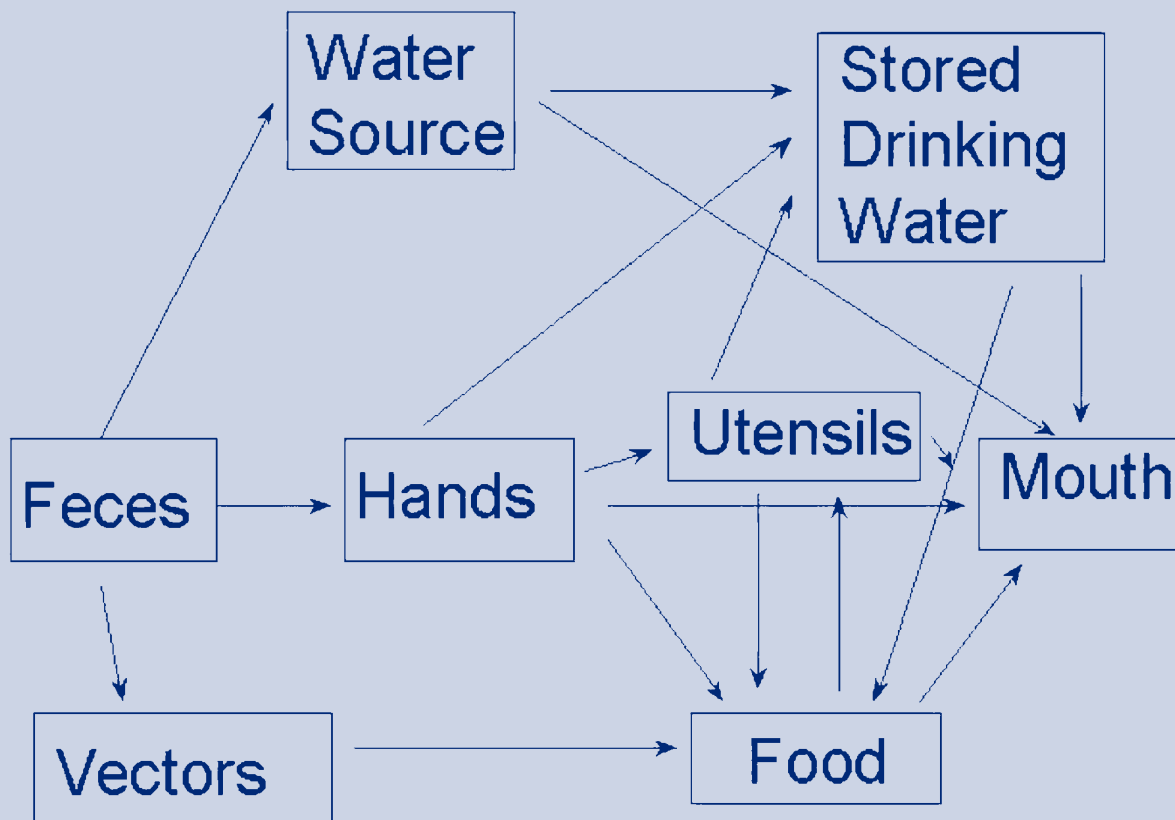
1. In evaluating farmworkers or their family members that present with symptoms of enteric infection, clinicians should keep in mind the research that suggest that many of these infections are due to parasites, particularly *giardia* and *cryptosporidium*, which could often persist if not treated accordingly.
2. For clinicians who want to know more about water-borne disease, Physicians for Social Responsibility has a clinical resource guide entitled *Drinking Water and Disease: What Health Care Providers Should Know*. This primer was developed specifically for the health care provider to serve as an introduction to this timely issue and to answer common questions about the impact of

health. While the primer does not specifically address water and disease issues as it relates to farmworkers, it does provide information that migrant clinicians may find useful. The American College of Preventative Medicine and PSR offer *Drinking Water and Disease: What Health Care Providers Should Know* as an on-line educational module for health care providers (www.psr.org). Physicians who view the conference can earn a maximum of 6.5 hours of Category I credit toward the AMA Physicians Recognition Award.

3. There are also preventive measures with a significant health impact, which are best initiated through an intensive outreach effort.
 - a. One such program is called *Agua Para Beber (Water to Drink)* a community-

continued on page 3

Figure 1: Fecal Oral Routes of Disease Transmission



Source: *Actions Speak*, 1993.

drinking water on

continued from page 2

based program for improving water quality and promoting safe hygiene practices started in areas along the US-Mexico border that lack potable water and sewerage services. The program combines outreach education with the distribution of low-cost

water receptacles and utilizes volunteer health promoters for implementation. Numerous resources are available from this program including *Agua Para Beber — A Training Guide in Hygiene Education and Water Purification for Community*

Volunteers/Agua Para Beber — Una Guía de Entrenamiento para Promotores Comunitarios de Salud sobre Educación en Higiene y Purificación del Agua (El Paso, TX: Center for Environmental Resource Management, 1995). This bilingual manual consists of five workshops to train community health promoters. It focuses on water purification techniques, safe hygiene practices, behavioral change and popular education. Included in the manuals are support materials for distribution to health promoters. For more information contact Jay Graham jgraham@utep.edu at the Center for Environmental Resource Management in El Paso, Texas.

b. Another excellent resource is *Agua que no Has de Tratar Mejor Dejale Correr* (1996), an educational comic book

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continued on page 6

NEWS FLASHES

ACCREDITATIONEASE: A Free List-Serve Ezine for Medical Centers Preparing for Accreditation

This free service provides a great deal of useful information for health centers that are about to begin or are going through the accreditation process. For more information about this free service contact the Scott Management Group:

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NURSING EDUCATION LOAN REPAYMENT PROGRAM: NEW OPPORTUNITIES FOR RN'S

HRSA's Nursing Education Loan Repayment Program (NELRP), managed by the Bureau of Health Professions' Division of Nursing, was appropriated \$10.2 million for FY 2002, reflecting an increase of approximately \$8 million over the last two years. The NELRP is designed to assist in the recruitment and retention of registered nurses dedicated to providing health care to underserved populations. The program provides substantial economic assistance to repay educational loans in exchange for service to the underserved in eligible health facilities. All NELRP participants must enter into a Contract agreeing to provide full-time employment in an approved eligible health facility for 2 or 3 years. In return, the NELRP will pay 60% of the participant's total qualifying loan balance for a 2-year commitment or 85% of the participant's total qualifying loan balance for a 3-year commitment.

Application kits are expected to be available on April 1, 2002.

For additional information on the Nursing Education Loan Repayment Program, please visit <http://bhpr.hrsa.gov/nursing> or call toll free 1-866-813-3753.

Medicare Support for Dilated Eye Exams

Thanks to a dedicated grassroots campaign by the Glaucoma Foundation, and other eye-care organizations, Medicare began covering preventative eye exams for high-risk beneficiaries in January 2002.

For more information on this Medicare benefit, please visit the "Focus On" section of the Glaucoma Foundation's website at: <http://www.glaucoma-foundation.org/features/medicare.htm>

Routine eye exams are crucial and can save sight. In many cases, blindness can be prevented through early detection and ongoing, effective treatment.

TB Education and Training Network and TB-Educate Listserv

“Bringing together TB education and training professionals”

Maria Fraire, MPH, CHES, Centers for Disease Control and Prevention

The Centers for Disease Control and Prevention (CDC), Division of TB Elimination formed the *TB Education and Training Network* (TB ETN) to bring TB education and training professionals together to network, share resources, and build education and training skills. The goals of TB ETN include furthering TB education and training by

- Building, strengthening, and maintaining collaboration
 - Providing a mechanism for sharing resources to avoid duplication
 - Developing, improving, and maintaining access to resources
 - Providing updated information about TB courses and training initiatives
 - Assisting members in skill building
- Membership is open to all persons who have an interest in TB education and training issues. There are no membership fees and new members may join at any time. There are two types of membership status (1) **active members** have a lead role in TB education and training in their agencies, and (2) **information only members** do not have a lead role in TB education and training in their agencies.

TB ETN conducts an annual conference that consists of business meetings and skill-building workshops. The business meetings provide an opportunity to discuss TB ETN-related issues, while the skill-building workshops focus on education and training issues selected by members. This year's conference will be held August 7-9 in Atlanta, GA. The workshop theme will be announced shortly.

TB-Educate, a general TB education and training electronic listserv, will be used to communicate with TB ETN members, as

well as any other subscribers. You may subscribe to the TB-Educate listserv by sending a blank e-mail message to: tb-educate-subscribe@cdcnpin.org or you may subscribe on-line at <http://lists.cdcnpin.org/mailman/listinfo/>

tb-educate. You do not need to be a member of TB ETN to join the TB-Educate listserv.

To join TB ETN, please send an e-mail requesting a registration form to tbtn@cdc.gov or call 404-639-5317.

No hay mal que por bien no venga Family Violence Prevention Project

Results are now available for a 3-year community-based research project funded by the Centers for Disease Control and Prevention, Family and Intimate Violence Prevention Team. The project was entitled *No hay mal que por bien no venga* (Every Cloud has a Silver Lining). MCN provided training workshops on domestic violence issues to over seventy migrant farmworker women in three Texas communities along the U.S./Mexico border. Those women who were interested then signed-up to survey other migrant farmworker women on the occurrence of physical or sexual abuse in their lives during the last year. In a two-year period, twenty-one migrant farmworker women (advocates) successfully surveyed 1,913 of their peers. The results of the survey indicated that 53% of the migrant women interviewed reported experiencing abuse in the year prior to the survey. The percentage of women who reported experiencing domestic violence was more than double that of a previous MCN survey. It was hypothesized that the increased reports of violence were a factor of different survey methods. An important outcome of the project was the expansion of the advocates' leadership roles as they provided domestic violence information

and resource referral to migrant women in need. To obtain a copy of the final results of this project, contact MCN.

MCN has begun a new domestic violence prevention effort in three counties in Texas along the U.S./Mexico border. The program is funded by Department of Health and Human Services, Office of Community Services, Family Violence Prevention and Services Program. Over 20 migrant farmworker men and women have received training to become domestic violence advocates and are conducting surveys on attitudes and beliefs about domestic violence with their peers. The nine-question survey uses icons and limited text to ask respondents to name what they believe are the causes of domestic violence, and to suggest methods through which domestic violence can be decreased in the community. The survey also asks respondents to name those domestic violence resources that are aware of in the community. The results of the survey will be used to adapt a peer-led domestic violence prevention curriculum. Advocates will have the opportunity to receive training to learn to lead the curriculum in their communities later this year.

Pizcando Sueños/Harvesting Dreams

The Voices of Mexican Migrant Women

"Salir adelante. Luchar por mis hijos, sobre todo mi niña. Y si mi esposo quiere seguir conmigo y si no al final del tiempo, pues apartarnos, apartame de él y luchar por mis hijos. Por que lo más importante para mi son mis hijos, tal vez por eso él esta frustrado o se siente un poquito bajo. Por que yo siempre he dicho y le digo a todo el mundo, que quiero a mis hijos, con él o sin él. Voy a salir adelante."

* * * * *

"To move forward. To struggle for my children, my daughter most of all. And if my husband wants to continue with me, or if not, in the end we separate, I will separate myself from him and struggle for my children. Because the most importante thing is my children, maybe that is why he is frustrated or feels inferior. Because I have always said to him and to the whole world, that I love my children, with him or without him. I am going to move forward."



Salir adelante, to move forward, is a "dream" voiced by the women of the *Pizcando Sueños* Project. The "dream" is the strength, faith and hope that has been the motivation for Mexican migrant women as they make the dangerous border crossing and in their daily life as they struggle to survive the reality of life hidden behind the "American Dream." But the question arises, is this the "Mexican Dream?"

Pizcando Sueños, developed by the Rural Women's Health Project, allows the Mexican farmworking women to express their dreams and share their hopes for their future as well as the future of their daughters. No longer will the Mexican migrant farmworking women have to carry their stories in solitude.

Pizcando Sueños: Women's Oral Histories...

The *Pizcando Sueños* project has documented twenty Mexican farmworking women's journey to Florida and their reality of forging towards a new set of dreams, in a new culture. *Pizcando Sueños* serves to preserve the women's deeply profound beliefs as well as giving voice to these women to share their struggle and to pass on their cultural legacy to future generations who are living within two cultures. These oral histories reflect how these women's values and beliefs are consistently challenged by such issues as migration, new roles and responsibilities, the challenging *comadre* systems and the

fast-paced and materialistic life in the United States. All of this is compounded by the difficult and rapid acculturation of their daughters.

Of the two key objectives of *Pizcando Sueños*, the mothers have embraced the celebration of the relationship of mother and daughter and how this project provides a mechanism for passing on their dreams. For the Mexican farmworking women, *Pizcando Sueños* means that their stories of life in Mexico and their immigration experiences will be preserved.

An Invitation to be Heard

Often, studies concerning Mexican immigration, migration and the effects of acculturation, have focused on the male experience. The methodology used in much of this research utilizes formal techniques that both collect and then disperse the results, often leaving the target community unaware of conclusions. In contrast, *Pizcando Sueños* relies completely on the stories of the women and will utilize fotonovelas as the medium to return the stories to the women's community, service providers and researchers. These oral histories will shed light beyond the perceived barriers of language, socio-economic status and religious affiliation. For fellow Mexicans at home, *Pizcando Sueños* will provide an insight to the journey and the reality of forging towards a new set of dreams, in a new culture.

Throughout this project, as the women

embraced the oral history process, they were clear that they would only share their stories if they would be heard by their sisters, so that it might make a difference in other women's lives.

Pizcando Sueños is an invitation made by the women themselves: to be heard, recognized and to be considered sisters and mothers.

"Pensé que íbamos a venir un año y íbamos a regresar al rancho, y así, pero no fue distinto, porque ya después nació mi'ja y pues yo dije tiene que ir a la escuela y tiene que irse superando, y mas por eso es que estamos detenidos aquí, por los hijos que uno quiere que sigan adelante."

* * * * *

"I thought that we would come for a year and then we would return to the *rancho*, like that, but no it was different. Because after my girl was born, I said that she has to go to school, she has to go to school to better herself, and for this we are here detained, because for the love of one's children, they have to move forward."

In the next five issues of *Streamline* excerpts of the voices of the women of the *Pizcando Sueños* project will be shared. Each issue will give voice to a different issue and a different step in the journey of the Mexican farmworker women.

Pizcando Sueños is a project of Fabiola del Castillo, Fran Ricardo and Robin Lewy of the Rural Women's Health Project

An Overview of Drinking Water Quality and Water and Sanitation-Related Disease

continued from page 3

that promotes safe hygiene and water disinfection techniques for families along the US-Mexico Border living without water and wastewater services. This colorful comic book was designed as an educational tool for families participating in the *Agua Para Beber* program. Its effectiveness may be limited if used without an accompanying educational intervention. For more information contact the Jay Graham jgraham@utep.edu. You can also download a **free PDF copy** of this comic book from MCN's website (<http://www.migrantclinician.org/services/environment>) The comic book

was developed and produced by the Center for Environmental Resource Management and is for educational use only.

- c. A third resource for community based prevention is *En tus manos está el problema y la solución* (El Paso: Paso del Norte Health Foundation, 2000), an educational comic book that overviews how illness can be prevented through hand washing, how to wash hands and how to wash hands when running water is not available. It is for educational use only. This is also available for free from MCN's website.



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C A L E N D A R

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The National Safety Council Annual Congress and Exposition

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