

**California Association
for
Medical Laboratory Technology

Distance Learning Program**

INFECTIOUS DISEASE: A GENDER BIAS

**by
Jane Bruner, Ph.D.
Associate Professor
Department of Biology
CSU Stanislaus, Turlock, CA**

Course Number: 056-965

1.0 CE/Contact Hour

Level of Difficulty: Basic

CAMLT is approved by the California Department of Health Services as a
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1895 Mowry Ave, Suite 112

Fremont, CA 94538-1700

Phone: 510-792-4441

FAX: 510-792-3045

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INFECTIOUS DISEASE: A GENDER BIAS

Objectives:

After completing the course, the participant will be able to:

1. discuss the importance of infectious disease in the world.
2. outline the factors that make women more susceptible to infectious disease than men.
3. list the big three among the infectious disease killers and relate the reasons why women are more vulnerable to them.
4. discuss how to reduce the health disparities in women.

Introduction:

Infectious diseases are estimated to cause as many as 17 million deaths per year worldwide. The so called “big three” in global infectious diseases are human immunodeficiency virus (HIV/AIDS), tuberculosis and malaria. They account for over 300 million illnesses each year.

Dr. Julie Gerberding, Director of the Centers for Disease Control and Prevention (CDC), states, “Infectious diseases pose an especially formidable threat to women. For many infectious diseases, women are at higher risk and have more severe course of illness than men for many reasons, including biologic differences, social inequities, and restrictive cultural norms. These are often the same factors responsible for the disproportionate disease incidence among vulnerable populations throughout the world. Efforts to recognize and reduce health disparities among women have particular relevance for global health.”

In February of 2004, the first International Conference on Women and Infectious Diseases was held in Atlanta, Georgia. The conference’s goal was to improve the prevention and control of infectious diseases among women world wide. The Office of Minority and Women’s Health of the National Center for Infectious Diseases, CDC, led the conference. Sponsors of the meeting included the World Health Organization (WHO), the Pan American Health Organization (PAHO), the Department of Health and Human Services (DHHS), and the American Society for Microbiology (ASM). The opening address at the conference stressed that women may be biologically and socially more susceptible to certain infections and suffer more severe complications from those infections. It is only in recent years that women have come to be considered a diagnostic unit that may need unique medical considerations. Indeed, the health hazards of being female are underestimated.

Discussion:

Some important facts about infectious diseases as reported by the World Health Organization and others are:

- Infectious diseases are the second leading cause of death in the world and are, by far, the leading cause of premature death and disability.
- Globalization has made the world smaller and more accessible and has opened the door for rapid spread of infectious disease on a world wide level as evidenced by the SARS outbreak.
- Three of the biggest killers, HIV, tuberculosis (TB) and malaria, account for nearly 40 percent of deaths caused by infectious diseases (5.6 million deaths in 2001).

- Diarrheal diseases and respiratory infections are equally deadly, accounting for 5.8 million deaths in 2001.
- Influenza accounts for 36,000 deaths and more than 200,000 hospitalizations in the United States and 250,000 to 500,000 deaths globally each year. A pandemic influenza outbreak could kill millions in the U.S. alone.
- “Neglected” infectious diseases that primarily affect the poorest populations living in remote areas of the world leave nearly 1 billion people with lifetimes of debilitating illnesses and deformities. These orphan diseases include lymphatic filariasis, intestinal nematode infections, leishmaniasis, schistosomiasis, sleeping sickness, onchocerciasis, dengue, Chagas disease, and leprosy.
- Infectious diseases account for over ninety percent of the global health burden.
- Less is spent on health care for females than males.
- The leading causes of death for women are HIV/AIDS, malaria, tuberculosis and complications of pregnancy and childbirth.

More than three dozen new infectious diseases identified since the 1970s have impacted the United States and more vulnerable countries. The list includes HIV/AIDS, severe acute respiratory syndrome (SARS), West Nile virus, Lyme disease, hepatitis C, a new form of cholera, waterborne disease due to *Cryptosporidium*, food borne disease caused by *E. coli* 0157:H7, and a plethora of neglected diseases that primarily affect people in the developing world.

Dr. Pamela Hartigan put the notion of gender differences to paper as part of the Global Health Equity Initiative in July of 1999. She made the following conclusions: “Part of the complexity that must be addressed involves the interaction between gender, race, social class and infectious disease. Gender is a comparative construct that refers neither to men nor women in isolation, but rather to the relations between them and how these are socially constructed. While the literature reveals that both poor men and women suffer greater ill health than their more well off counterparts, it also indicates that ill health and/or the illness of family members generally represent greater burdens for poor women in comparison to poor men.” She then said that there must be “gender sensitive interventions in communicable disease research, prevention and control.”

Women and infectious disease:

Tuberculosis, HIV/AIDS and malaria continue to disproportionately affect and further weaken the condition of women in many of the world’s poorest regions. Other sexually transmitted diseases and hepatitis are also significant, particularly in pregnant women in the United States as well as in other countries.

Tuberculosis

Tuberculosis (TB), caused by *Mycobacterium tuberculosis*, has greater incidence of active disease and fatality in the female population. TB is, in fact, in the running for being the largest infectious disease group associated with fatality in women. Another factor in the mix is that persons who are HIV positive seem to have a higher risk for infection by TB. Dr. Pamela Hartigan of WHO used this disease in her article “*Community Diseases, Gender and Equity in Health*” (July 1999) to illustrate gender bias. The following text is from that article:

“While contracting infectious diseases is a function of the interaction of the biological and the social, the experience of the illness/disease is more socially determined. For example, biology may interact with social influences to exacerbate the risk for TB for women at certain points in their life cycle. However, the experience of TB infection or disease is determined by a woman’s access to timely detection and care, her ability to control the resources needed for health-seeking behavior, her assessment as to whether her health merits investments of time and money, and a host of other gendered factors. In addition, the experience of TB may further exacerbate gender inequity and poverty, as when tuberculosis impedes a woman’s ability to perform gendered roles and responsibilities, heightening her risk of abandonment by a male partner in search of a healthier female companion, and worsening her health situation.”

Sexually transmitted diseases:

Women are at greater risk from sexually transmitted diseases (STD) and subsequent long term complications. Estimates put cases of STD at nearly 400 million worldwide. The majority of those are bacterial cases such as syphilis, gonorrhea and chlamydia. Viral causes include human immunodeficiency virus (HIV) and human papilloma virus (HPV).

Dr. Carol Bellamy of the United Nations Children’s Fund, states, “HIV/AIDS is holding firm as the worst communicable disease in history. The virus is now the leading cause of death in Africa and the fourth leading cause of death worldwide.” Life expectancy in many countries has dropped from an average 60-62 to age 37-40. HIV infections number nearly 40 million. More than half of those infected with adult HIV are estimated to be women. Women in sub-Saharan Africa are thirty percent more likely than men to be infected with HIV. Some countries in eastern Europe and Asia are also showing rapid increases in HIV/AIDS prevalence. Even the number of new HIV cases in women in the United States is increasing. While AIDS has been the focus of concern for about 25 years, it has only been in the last 10 years that scientists began to focus on women and why women constitute 40% or more of the new cases of HIV infections world-wide.

Dr. Bellamy continues, “The high death rate among women from HIV/AIDS can be devastating in many countries because of the role women play in child and family survival and community development. Loss of a mother in many parts of the developing world usually means that her young children will die as well, especially those less than 5 years of age. The HIV/AIDS pandemic has a woman’s face, and if women and girls are not empowered, especially in terms of their own sexuality, the pandemic will never end.”

UNICEF has three goals to combat the devastation of HIV/AIDS. 1) Reduce HIV infection among young people by ensuring that every young person has access to basic information on how to avoid infection. In some countries adolescent girls are six times more likely than boys to get infected – a consequence of gender inequality and sexual abuse; 2) expand care and support for orphans and other children made vulnerable by HIV; 3) reduce mother-to-child transmission by providing women with voluntary and confidential counseling and testing. If they are HIV positive they must be given access to antiretroviral drugs.

Human papilloma virus (HPV) has a consequence that is of more concern to women’s health than the virus alone. Various types of HPV have been implicated as causes of cervical

cancer. Cervical cancer is the most common cancer found in women in developing countries. There are about 500,000 new cases detected annually with about 300,000 deaths globally each year. An estimated 2 million or more women live with invasive cervical cancer. However, if detected early, cervical cancer is nearly always curable. HPV positive women most at risk for cervical cancer are those who are poor, have had sexual activity at an early age, multiple births or multiple sexual partners.

Malaria:

Malaria kills between 1.5 and nearly 3 million people annually. Malaria infects women more frequently than men. Pregnant women, in particular, suffer decreased immunity to malaria, doubling their chances of contracting and dying of the disease (approximately 10,000 deaths per year). Pregnant women with malaria have increased risk of severe anemia, with consequences to the fetus including low birth weight and death. Malaria can be prevented and treated by cost-effective interventions, including insecticide-treated nets that have been shown to decrease infections by 50%. During pregnancy malaria complications and deaths can be prevented by giving 2 doses of an anti-malarial drug during the first and second trimesters.

Hepatitis:

Hepatitis B and hepatitis C are other diseases that reflect a gender bias. They are significant public health issues in the United States. Each year in the United States about 20,000 infants are born to women infected with hepatitis B virus (HBV). Over one-third of these infants become chronically infected with HBV with the risk of chronic liver disease. Prenatal HBV prevention programs should screen pregnant women for HBV and follow up with vaccinations of newborns. About 25,000 new hepatitis C infections occur in the US each year and the total number of people infected is estimated at 2.7 million. There are 130 million people infected world wide. Intravenous drug use is the primary mode of transmission for hepatitis C in the US. While there are fewer female than male IV drug users, women are at higher risk of infection through sexual contact. Pregnancy may aggravate disease in the mother and mothers may pass the virus to the fetus, although the rate of infection appears lower than that of hepatitis B virus. Pregnant women at risk for infection should be screened for the virus.

Proposals for reducing gender associated risk for infectious diseases:

Dr. Carol Bellamy of the United Nations Children's Fund (UNICEF) contributed the following to the International Conference on Women and Infectious Diseases: "Women have an enhanced vulnerability to disease, especially if they are poor. Indeed, the health hazards of being female are widely underestimated. Economic and cultural factors can limit women's access to clinics and health workers." Dr. Bellamy then discussed the HIV/AIDS epidemic including the vast work that is underway with that pandemic and the need for controlling infectious diseases such as HIV and malaria. She closed her article with, "Globalization can have a positive impact on children and their families, and its negative effects can be minimized. The challenge is how to bring those benefits, such as new health technologies, to vulnerable groups, especially children, women, and marginalized populations, to prevent and control major infectious diseases such as malaria and HIV/AIDS."

The Millennium Development Goals, set by the United Nations in 2000, calls for reducing the under-5 childhood death rate by two-thirds from 1990 to 2015; reducing the

maternal death rate by three-quarters from 1990 to 2015; and reversing the spread and incidence rates of HIV/AIDS, malaria and other infectious diseases by 2015.

Dr. Julie Gerberding concludes that, “Seeking health care can be the first step to identifying and treating a host of illnesses affecting women and their families. Therefore, innovative ways to reach at-risk women, including developing new research agendas to identify and address gender differences in infectious disease, are especially needed. Reducing health disparities for women requires a multidisciplinary global effort to combat the root causes of the disparities – social, economic and educational inequities that fuel the spread of diseases and perpetuate poverty throughout the world.”

References:

1. Joint Hearing with Judiciary Committee: BioShield II: Responding to an Ever-Changing Threat. October 6, 2004, 10:00 am. John G. Bartlett, M.D. Johns Hopkins University School of Medicine, representing the Infectious Disease Society of America (IDSA) Chief, Division of Infectious Diseases.
2. Biotechnology and Sustainability: The Fight against Infectious Disease, Organisation for Economic Cooperation and Development (OECD), 2003.
3. International Conference on Women and Infectious Diseases, *Emerging Infectious Diseases*, Vol. 10, No. 11, November 2004.
4. www.cdc.gov
5. www.who.int

Review Questions Course #056-965 Choose the **one** best answer for each question
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1. Annually, world wide infectious disease causes approximately
 - a. 3 million deaths per year
 - b. 300 million deaths per year
 - c. 40 million deaths per year
 - d. 17 million deaths per year
2. About 40 percent of deaths resulting from infectious disease are caused by
 - a. HPV, hepatitis C and malaria
 - b. TB, HPV and malaria
 - c. HIV, TB and malaria
 - d. HIV, HPV and hepatitis C
3. The infectious disease group causing the most fatalities in women is probably
 - a. HIV
 - b. TB
 - c. influenza
 - d. malaria
4. Fetal demise in pregnant mothers infected with malaria is due to
 - a. severe anemia
 - b. secondary infection
 - c. fatigue
 - d. intravenous drug use
5. All of the following are bacterial causes of sexually transmitted diseases except
 - a. hepatitis
 - b. gonorrhea
 - c. syphilis
 - d. Chlamydia
6. Hepatitis C infections in women may be exacerbated by:
 - a. filariasis
 - b. globalization
 - c. pregnancy
 - d. psoriasis
7. Human papilloma virus may cause
 - a. acute hepatitis
 - b. cervical cancer
 - c. disease in the fetus
 - d. increased susceptibility to TB

8. The primary mode of transmission for hepatitis C in the U.S. is
 - a. contaminated water
 - b. transfusion
 - c. sexual contact
 - d. intravenous drug use

9. Which of the following is not an orphan disease
 - a. Chagas
 - b. dengue
 - c. tuberculosis
 - d. leprosy

10. Women are more vulnerable to disease because of
 - a. biological, economic and social factors
 - b. reduced body size
 - c. expanding roles in the workplace
 - d. new health technologies

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Course #965 INFECTIOUS DISEASE

Registration/Answersheet

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|----|---|---|---|---|----|---|---|---|---|
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| 2. | a | b | c | d | 7 | a | b | c | d |
| 3. | a | b | c | d | 8 | a | b | c | d |
| 4. | a | b | c | d | 9 | a | b | c | d |
| 5. | a | b | c | d | 10 | a | b | c | d |

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