# Cervical Cancer Screening Outcomes in a Refugee Population

**Sarah Pickle, M.D., Marc Altshuler, M.D., Kevin Scott, M.D., Christina Hillson, M.D., Patrick McManus, M.D., Mazvita Nyamukapa, Michael Walker**

Center for Refugee Health, Department of Family and Community Medicine, Thomas Jefferson University, Philadelphia, Pennsylvania

## Background

Cervical cancer is the second most common cause of female cancer mortality worldwide, accounting for approximately 274,000 deaths annually.[1,2] Of the estimated 500,000 new cases of cervical cancer diagnosed each year, 80% of these occur in developing countries, with the highest rates occurring in Africa, Asia, and Central and South America [1-5] (Figure 1). Human papillomavirus (HPV) has been detected in 99% of cervical cancer cases, and infection with HPV is a prerequisite to the development of invasive cervical cancer.[1-4,6] Seventy-percent of cervical cancers are due to high-risk (HR) HPV types 16 and 18, and global data suggests that the eight most common HPV genotypes (16, 18, 21, 33, 35, 45, and 52) contribute to over 90% of the cervical cancer in all world regions.[3,4,6] **Compared to U.S. women, foreign-born women are three times more likely to have never undergone cervical cancer screening**. [7] Within the population of foreign-born women in the U.S., refugee women comprise a smaller, but growing, cohort. Refugees are defined as individuals who have left their countries of nationality to escape persecution. [8] Since the U.S. Refugee Act of 1980, over 2.6 million refugees from 189 countries have been resettled in the United States. [8,9] **Prior to resettling in the U.S., only a small minority of refugee women have received cervical cancer screening, as most of these women are refugees from countries where cytologic screening and HPV testing are often limited or absent.** [2, 5, 10] While there is some data on cancer incidence and mortality in certain female immigrant populations in the U.S. and Canada, **little is known about cervical cancer incidence, cervical dysplasia, or HPV prevalence in refugee populations in the U.S**. [7, 11-18] The distinction between the immigrant and refugee populations is an important one, as the circumstances that motivate or necessitate these two populations to come to the U.S. are very different. [5, 8,10] **The purpose of our study was to determine the prevalence of abnormal Pap smears and high-risk HPV genotypes within our refugee population.**

**Figure 1. Cervical Cancer Incidence and Mortality in Selected Countries [20]**

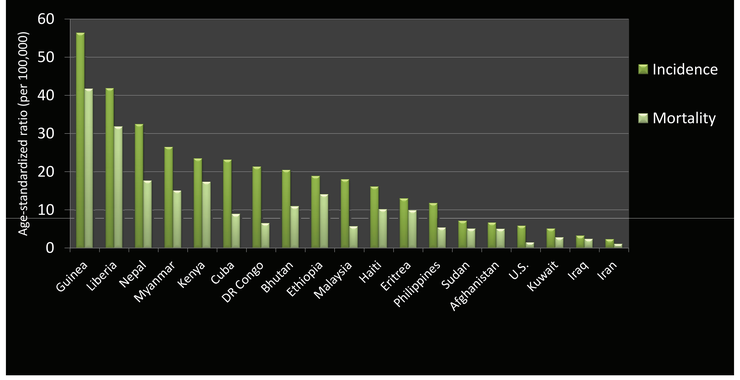



**Table 1. CRH Female Refugee Demographics**

| Country of Origin | # age 21-70 |
|---|---|
| Iraq | 55 |
| Bhutan | 44 |
| Myanmar | 34 |
| Eritrea | 5 |
| Congo | 5 |
| Cuba | 5 |
| Liberia | 4 |
| Ethiopia | 2 |
| Sudan | 2 |
| Guinea | 2 |
| Iran | 1 |
| Nepal | 1 |
| Kenya | 1 |
| Malaysia | 1 |
| Kuwait | 1 |
| Philippines | 1 |
| Afghanistan | 1 |
| Haiti | 1 |

## Methods:

We performed a retrospective analysis of existing medical records of all (n=166) refugee women age 21 to 70 years seen from January 2008 to August 2011 at Jefferson's Center for Refugee Health (CRH) in the Department of Family and Community Medicine at Thomas Jefferson University in Philadelphia. Approval for this study was granted by the Thomas Jefferson University Internal Review Board. Included in the analysis were refugee women from Iraq (n=55), Bhutan (n=44), Myanmar (n=34), and 15 other countries (Table 1). Results of all Papanicolaou (Pap) smears performed during these dates were reviewed for dysplasia (ASCUS, ASC-H, LSIL, HSIL, or AGUS) and for presence of high-risk HPV (total 13 serotypes, including 16 & 18) in women age 30 and older. For our purposes, abnormal pap smears were defined by either presence of dysplasia or high-risk HPV detection.

## Results:

Ninety-nine of the 166 refugee women (60%) had undergone cervical cancer screening with Pap smear between the dates of January 2008 and August 2011 (Figure 2). **Abnormal pap smears were seen among the refugee women from Iraq, Bhutan, and Myanmar** (Figure 3). In total, women from these 3 countries comprise the majority (80%) of the female refugee population at CRH. Of the women screened, 71% (n=70) were between the age of 30 and 70 years old and 79% (n=55) of these women had high-risk HPV genotyping done at the time of Pap smear. **The prevalence of abnormal Pap smears in the Iraqi, Bhutanese, and Burmese populations were 11% (3 of 28 women), 3% (1 of 30 women), and 14% (3 of 22 women), respectively** (Figure 3). Mean age at time of abnormal Pap smear was 37 years. The prevalence of high-risk HPV in the Iraqi, Bhutanese, and Burmese women was 4% (1 of 28 women), 0% (0 of 30 women) and 9% (2 of 22 women), respectively (Figure 3).

## Conclusions:

Cervical cancer screening rates in refugee women prior to resettlement is low. In one study of 283 refugee women from Cuba, Bosnia, and Vietnam living in Texas, only 24% of women had a Pap test performed in the previous 3 years prior to resettlement in the U.S.[10] This is in contrast to U.S. women age 21 to 65, 85% of whom have had cervical cancer screening based on 2008 guidelines.[11] **In our study, 60% of refugee women had undergone Pap smear testing during their first 3 years of resettlement in the U.S while receiving care at the Center for Refugee Health**. Compared to a relatively educationally matched U.S. cohort, women age 25 and over with no high school diploma or GED, there is no difference in Pap screening rates in our refugee population and this U.S. demographic [9] (Figure 1). However, given the fact that women in lower socioeconomic groups worldwide have a one-third higher incidence of cervical cancer and an 80% increased risk of cervical dysplasia compared to women of upper socioeconomic groups, **refugees are a vulnerable population who should be targeted for cervical cancer screening.** [2,16] Currently we are developing culturally appropriate, patient-centered education materials and cancer screening protocols at the Center for Refugee Health to meet the US Healthy People 2020 cervical cancer screening target rate of 93%.[19]

The mean age abnormal Pap smear our refugee population was 37 years. Our results indicate that our refugee women age 35 and older are at increased risk of cervical dysplasia, which is consistent with the known natural history of the HPV virus and global data suggesting that 80 to 90% of cervical cancer cases occur in women age 35 and older.[1] **Based on these findings, we propose that in refugee women, especially those ≥ 35 years of age, cervical cancer screening should be prioritized at the level of other early resettlement issues, such as infectious disease screening and treatment.**

The prevalence of abnormal Pap smears and high-risk HPV in our refugee population serves as baseline data for future research. Since limited data exists on this population, our data will allow further investigation into suggested differences that exist between the Iraqi, Bhutanese, and Burmese dysplasia and HPV prevalence rates. From this point, cervical dysplasia and HPV prevalence rates in the refugee population can be trended over time. **Observing the effects of acculturation over time will allow the establishment of appropriate cervical cancer screening guidelines for refugee women**.

**Figure 2. Comparison of Cervical Cancer Screening Rates**

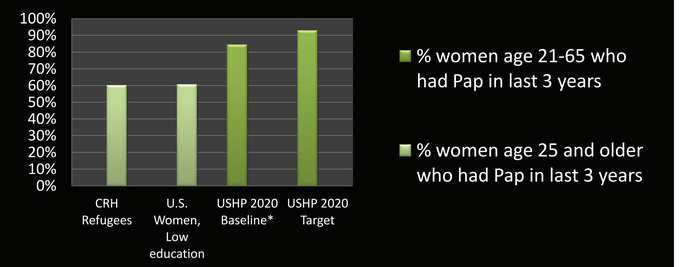
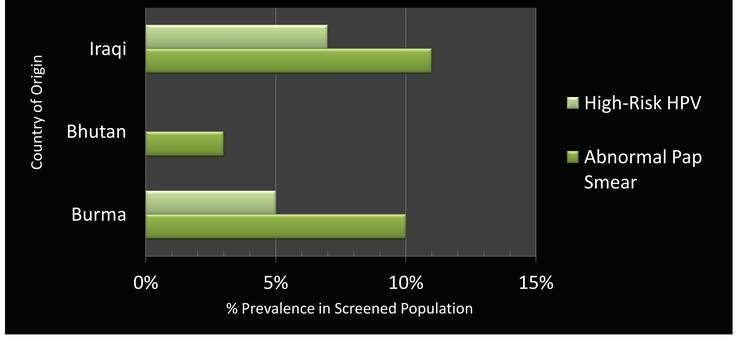



**Figure 3. Prevalence of Abnormal Pap Smears and High-Risk HPV in CRH Refugee Populations**

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