Abnormal Papanicolaou Smears And Colposcopic Follow-up Among American Indian And Alaska Native Women In The Pacific Northwest

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Background: **Mortality that is due to cervical cancer among American Indian and Alaska Native women in the Pacific Northwest exceeds that among women of other races. Nevertheless, little information is available regarding the prevalence and follow-up of abnormal Papanicolaou smears among American Indian and Alaska Native women in the region.**

Methods: **We conducted a retrospective review of medical records of American Indian and Alaska Native women seen at 12 Indian Health Service and tribally operated clinics in Washington, Oregon, and Idaho who had an abnormal Papanicolaou smear in 1992.**

Results: **Of 4547 Papanicolaou smear results reviewed, 280 (6.2 percent) had an abnormal result (dysplasia or carcinoma in situ). Of the recommended colposcopies, 167 of 224 (75 percent) were completed. Women with high-grade squamous intraepithelial lesions were more likely to obtain recommended colposcopy than were women with low-grade squamous intraepithelial lesions. Women treated at clinics that referred patients to outside providers for colposcopy were more likely to have colposcopy than were those who were offered the procedure on site.**

Conclusions: **The proportion of Pacific Northwest American Indian and Alaska Native women in Indian Health Service and tribal clinics with abnormal Papanicolaou smears and the proportion who receive colposcopy are similar to those in other populations. The higher rate of cervical cancer mortality among American Indian and Alaska Native women could be due to failure to screen high-risk women. Cytologic screening rates, methods to improve adherence to colposcopy recommendations, and the contribution of other factors to the cause of cervical cancer mortality need to be characterized in this population. (J Am Board Fam Pract 1995; 8:183-8.)**

The incidence of and mortality from cancer of the cervix are major public health concerns among many American Indian and Alaska Native populations. Although tribal-specific cancer incidence rates are not known for many American Indian and Alaska Native populations in the Pacific Northwest, from 1974 to 1983 American Indian and Alaska Native women in western Washington were reported to suffer from a relative excess of cancer of the cervix compared with white women (age-standardized incidence ratio=1.6, proportional incidence ratio=2.1).[1] The age-adjusted cervical cancer mortality rate for American Indian and Alaska Natives was twice that of all US races from 1984 through 1988 (7.6 versus 3.1 per 100,000); for American Indian and Alaska Natives in Washington, Oregon, and Idaho, the rate was 7.5 per 100,000.[2]

Understanding factors associated with the high incidence and mortality rates is important for family physicians who care for American Indian and Alaska Native women. It is well documented that early detection and treatment of cervical cancer and its precursor, cervical intraepithelial neoplasia (CIN), can reduce mortality.[3] Early detection can be accomplished by assuring a high proportion of women receive regular Papanicolaou smears, particularly in high-risk populations, and by pro-

Submitted, revised, 1 November 1995.

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The opinions expressed in this paper are those of the authors and do not necessarily reflect the views of the Indian Health Service.

This study was funded in part by the Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Division of Cancer Prevention and Control, through a Memorandum of Agreement with the Indian Health Service.

viding timely diagnostic follow-up and treatment when abnormalities are discovered. A colposcopic examination to assess the extent of cervical lesions and to obtain directed cervical biopsies is an integral component in the follow-up and care of women with abnormal Papanicolaou smears. Although the definitions of abnormal Papanicolaou smears and of compliance to follow-up recommendations have varied among studies, reports of compliance with referral for follow-up or treatment have ranged from 20 to 74 percent.[4-13]

Little information is available regarding the participation rate of American Indian and Alaska Native women in the Pacific Northwest in cytologic screening programs or the prevalence of abnormal Papanicolaou smears. Furthermore, it is not known whether follow-up of abnormal Papanicolaou smears is adequate or whether compliance with colposcopic follow-up is improved by providing the procedure at the facility as opposed to referring women to outside providers. We conducted a retrospective study of Indian Health Service (IHS) and tribal clinics in the Pacific Northwest to (1) determine the proportion of abnormal Papanicolaou smears among American Indian and Alaska Native women, (2) examine the extent to which colposcopic follow-up is received as recommended by their physicians, and (3) assess successful colposcopy completion among clinics that provide colposcopy on-site versus clinics who refer patients elsewhere.

Methods

We reviewed the medical records of American Indian and Alaska Native women who had an abnormal Papanicolaou smear result during calendar year 1992 at 12 IHS or tribally operated clinics in Washington, Oregon, and Idaho. The records were reviewed in July and August 1993. Most of the clinics were located in rural areas and were staffed primarily by family physicians. Approximately one-half the number of persons in the region who reported themselves to be American Indian in the 1990 Census were registered with the IHS.

An abnormal Papanicolaou smear was defined as having any grade of cervical intraepithelial neoplasia (CIN 1, 2, or 3) or as being possibly dysplastic. Papanicolaou smear reading was done by a single pathology laboratory. Papanicolaou smears classified as atypical squamous cells of undetermined significance were not classified as abnormal, in part because colposcopy was generally not recommended for their follow-up. Information was abstracted from the medical record regarding age, tribal affiliation, Papanicolaou smear result, recommended follow-up course (i.e., colposcopy versus repeat Papanicolaou smear), colposcopy date and results, and treatment disposition. A patient's payment eligibility status was routinely noted in the medical record and was recorded. Direct care indicates eligibility for care directly provided by the IHS or tribal clinics; CHS (Contract Health Service)-eligible indicates that IHS funds can be used to pay for services (including colposcopy) at non-IHS facilities. Direct care patients who are not CHS-eligible must rely on self-paying arrangements or other third-party payers, such as Medicaid, to seek care at non-IHS facilities.

Papanicolaou smear results were classified using the CIN nomenclature: CIN 1, 2, and 3 refer to mild, moderate, and severe dysplasia or carcinoma in situ, respectively. To compare our results with those from other studies, we also categorized Papanicolaou smear results according to the Bethesda System, in which low-grade squamous intraepithelial lesions include possible dysplasia and CIN 1, and high-grade squamous intraepithelial lesions include CIN 2, CIN 3, and carcinoma in situ (CIS).[14] Both methods were used on the individual Papanicolaou smear results reported by the pathology laboratory. During the study period all clinics offered routine cytologic screening; however, only two offered on-site colposcopy and were coded as such for this analysis. The remaining 10 clinics referred patients to physicians outside the IHS system for colposcopy and are termed referral clinics throughout this report.

To assess whether there was a difference in the proportion of women who successfully completed colposcopic examinations between on-site and referral clinics, we used the chi-square statistic. The chi-square test was also used to determine whether direct care versus CHS-eligible method of payment made a difference in the successful completion of colposcopy. The differences in the delay times between the date of the abnormal Papanicolaou smear and the colposcopy date between on-site and referral clinics and between low-grade squamous intraepithelial lesions and high-grade squamous intraepithelial lesions were assessed using the Kruskal-Wallis test, as parametric assumptions were not met.

Results

During the study period, 4547 Papanicolaou smears were performed among women from 44 different tribes. Two hundred eighty (6.2 percent) were abnormal, not including glandular cell abnormalities. The distribution of Papanicolaou smear results and the mean age (±SD) of the women in each category are presented in Table 1; the 10 Papanicolaou smears with glandular cell abnormalities were excluded from further analyses. As expected, the majority of abnormal Papanicolaou smears (n=213, 76.1 percent) were grade CIN 1, 60 of which were also noted to have cytologic evidence consistent with human papillomavirus (HPV) infection (28.2 percent of CIN 1 findings or 21 percent of all abnormal Papanicolaou smears). A flowchart depicting Papanicolaou smear grade, recommended course of management, and compliance with colposcopy is shown in Figure 1.

Colposcopic follow-up was recommended for 224 women. One hundred sixty-seven (75 percent) women were documented to have received colposcopy; medical records included no evidence of colposcopy for 25 percent. Of the 172 women with CIN 1 who were scheduled for colposcopy, IHS or tribal records confirmed that 123 (72 percent) received the procedure. For the 49 women who failed to receive colposcopy, missed appointments or nonresponse to follow-up efforts (n=15) and competing health problems (n=9) were the most common reasons indicated in the medical record for not receiving colposcopy, and there was insufficient documentation to assess the status of 21 patients. Of the 41 patients with CIN 1 for whom colposcopy was not recommended, 30 were to be seen for repeat Papanicolaou smears. Ten out of these 30 patients were pregnant at the time of the initial Papanicolaou smear, and the other 20 reflected an opinion among some providers that colposcopy is not indicated after an initial CIN 1 Papanicolaou smear result. Of the remaining 11 women for whom colposcopy was not recommended, 6 moved from the area or chose to go to another provider, and insufficient documentation was available regarding the management of the remaining 5 women.

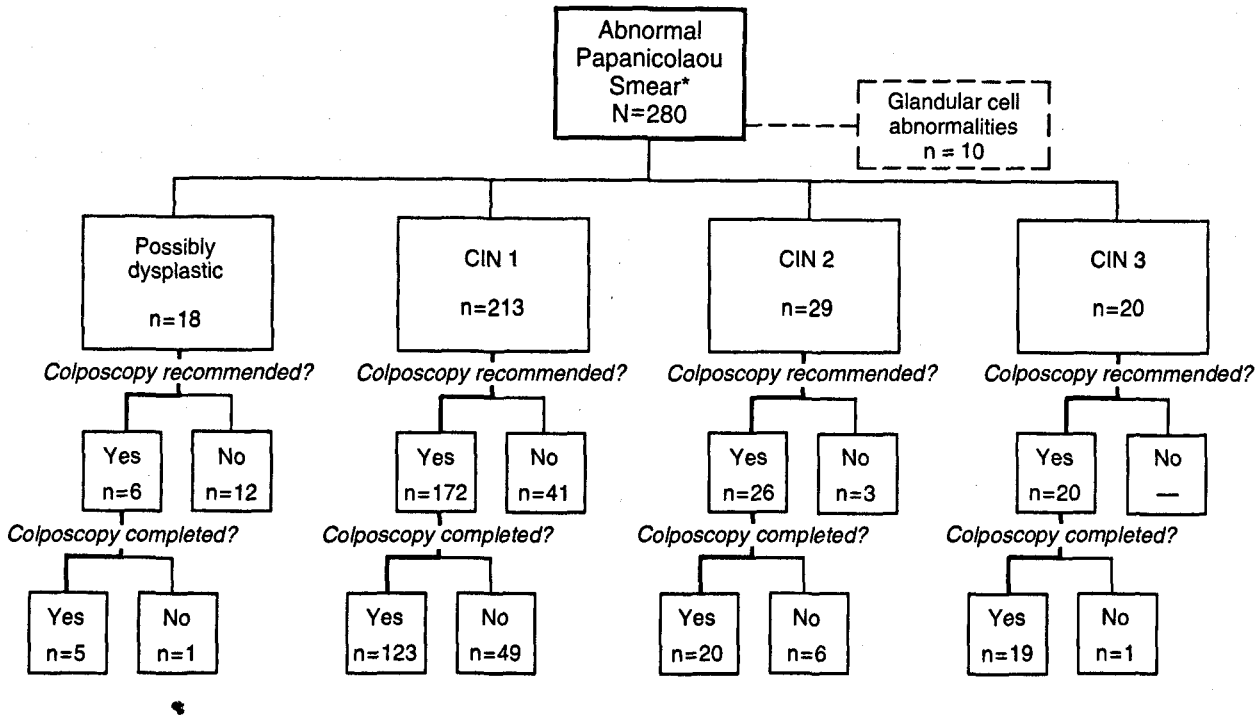
Table 1. Distribution of Abnormal Papanicolaou Smear Grades and Mean Age by Grade.

Grade	No. (%)	Mean Age ±SD
CIN 1*	213 (76.1)	28±10
CIN 2	29 (10.4)	29±10
CIN 3	20 (7.1)	34±6
Possibly dysplastic	18 (6.4)	36±6
Total abnormal Papanicolaou smears	280	29±12
Total Papanicolaou smears	4,547	—

CIN=cervical intraepithelial neoplasia.
*28% of CIN 1 indicated cytologic evidence consistent with human papillomavirus infection.

Among women with CIN 2 (n=29), colposcopy was recommended for 26 and received by 20 (77 percent). Of the 6 women who did not receive colposcopy, 2 moved from the area, 1 changed providers, and 3 were lost to follow-up. Of the 3 women for whom colposcopy was not recommended, 1 patient was pregnant, and 2 patients were known to have moved from the area immediately after the Papanicolaou smear result was known. Colposcopy was recommended for all women with CIN 3 (n=20), and all but 1 (no documentation) received it.

When all Papanicolaou smears were divided into on-site and referral clinics, a significantly greater proportion of women received colposcopy among the referral clinics (74 versus 52 percent, $P=0.01$). There was no difference in the proportion of women who received colposcopy between those with or without cytologic evidence of HPV infection. When women were divided by direct-care versus CHS-eligible, a smaller proportion of women who were eligible for direct-care only received colposcopy than those who were eligible for both direct-care and contract health service (60 versus 77 percent, $P=0.01$). While no difference was noted in the time between abnormal Papanicolaou smear date and the colposcopy date when comparing on-site (median=53 days) with referral clinics (median=51 days) ($P=0.93$), a significant difference was noted when comparing those having high-grade squamous intraepithelial lesion Papanicolaou smears (median=39 days, range: 6–273) with those having low-grade squamous intraepithelial lesion Papanicolaou smears (median=56 days, range: 6–478) ($P=0.003$). Twenty-five percent of women with high-grade squamous intraepithelial lesions and low-grade squamous intraepithelial lesions had delays of greater than 2 months and 3 months, respectively.



CIN = Cervical Intraepithelial Neoplasia
*N = 280 does not include glandular cell abnormalities.

Figure 1. Colposcopic follow-up of American Indian and Alaska Native women with abnormal Papanicolaou smears in 12 Indian Health Service and tribal clinics, Pacific Northwest, 1992.

Discussion

Despite the high incidence and mortality from cervical cancer among American Indian and Alaska Native women in the Pacific Northwest, rates and follow-up of abnormal Papanicolaou smears were similar in many respects to those described for other populations. The proportion of abnormal Papanicolaou smears in our study (6.2 percent) is similar to findings reported for other populations that do not include results classified as atypical squamous cells of undetermined importance.[15] Richart and Wright[16] noted that the prevalence of abnormal Papanicolaou smear findings varies significantly (4 to 15 percent), as a result in part to the variability of morphologic criteria used by cytologic laboratories. They further suggested that the proportion of abnormal Papanicolaou smears should generally be no more than 5 percent for women of reproductive age. When women older than 45 years were considered in the present study, abnormal Papanicolaou smears accounted for 5.7 percent of the total. Thus, high abnormal Papanicolaou smear rates among women who are screened do not fully explain the high cervical cancer incidence and mortality among Northwest American Indian and Alaska Native women.

It is possible that Pacific Northwest American Indian and Alaska Native women at highest risk for cervical cancer are not screened. Unfortunately, there are no population-based data to evaluate this possibility directly. Among American Indian and Alaska Native women aged 18 to 65 years who visited seven tribally operated clinics in the Puget Sound, Washington, area in 1990, however, 61 percent had a recorded Papanicolaou smear within the preceding 24 months.[17] Among a sample of patients from eight IHS clinics included in the present study, 68.5 percent of eligible women had had Papanicolaou smears within the previous 24 months (unpublished report, Portland Area Indian Health Service). Neither of these studies included women who did not visit the clinic during the study period or who were not enrolled with the IHS. In a study of cervical cancer survival among American Indian and Alaska Native women in western Washington, women registered with the IHS survived longer than those not enrolled with IHS.[18] American Indian and Alaska Native women who are not regularly cared for in IHS and tribal clinics could represent a high-risk group. Previous studies have found low participation rates in Papanicolaou smear screening pro-

grams among other American Indian populations,[19,20] including one study among Native Indian women in British Columbia.[21] Current efforts to increase the proportion of American Indian and Alaska Native women who receive Papanicolaou screening could have an impact on future cancer incidence and mortality rates.

Another potential cause for high cervical cancer mortality is delayed treatment of women who are found to have early lesions. Twenty-five percent of the women for whom colposcopy was recommended did not receive it, a figure similar to that reported in a large clinical trial (29 percent overall loss to screening follow-up) involving more than 2000 women.[13] In our study, although referral clinics had a greater proportion of women who completed colposcopy compared with clinics who offered colposcopy on-site, the number of on-site clinics was small, and several potential reasons for this discrepancy should be considered. We do not know, for example, the effects that provider sex, distance to clinics, and the influence of cultural beliefs have on the rate of successful colposcopy completion among American Indian and Alaska Native women.

Franks and Clancy[22] reported that women with female physicians as their usual provider were less likely to be deficient in receiving Papanicolaou smear tests compared with women with male providers. In our study, the logistics involved in compliance to colposcopy appointments could also be influential, as appointments with referral physicians can be as much as a 3 hours' drive from where usual care is provided. These and other factors that could confound the association of completion of colposcopy between on-site and referral clinics should be further examined by clinics considering providing colposcopy.

Few studies have reported the delay time between receiving an abnormal Papanicolaou smear result and when colposcopy is completed. Mitchell and Medley[23] reported a median time interval of 4.9 weeks (34.3 days) for CIS, 6.2 weeks (43.4 days) for microinvasive cancer, and 0.75 weeks (4.9 days) for invasive cancer. Although the delay time was less for high-grade squamous intraepithelial lesions than for low-grade squamous intraepithelial lesions, the range was wide for both. The effect of delay in histologic confirmation is not well understood with regard to treatment or cervical cancer mortality.

A higher proportion of women who were eligible for payment by IHS of bills incurred at non-IHS providers completed colposcopy than women who were not eligible for such payment. A recent examination of data from the 1992 National Health Interview Survey indicated that having health insurance coverage was strongly associated with the use of Papanicolaou smear and mammography services.[24] It could be that financial barriers reduce the likelihood that American Indian and Alaska Native women complete necessary diagnostic and treatment courses after abnormal Papanicolaou smear results.

Several limitations to the present study should be considered in interpreting results. First, because of the retrospective design based on chart review, we were unable to evaluate completely factors that would influence the likelihood of a woman being scheduled for a colposcopy appointment and possibly more aggressive follow-up. For example, the number of previous abnormal Papanicolaou smear results or the infrequency of Papanicolaou smear screening visits might influence a provider's decision to recommend colposcopic follow-up. Also, although we intended to record data regarding oral contraceptive use, cigarette smoking, and history of sexually transmitted diseases, the completeness of this information in the medical records varied substantially by clinic.

A second related limitation is inherent in studies based on review of medical records. For the present study, we reviewed records in 12 different clinics in three states, in which many providers contributed to patient care. It is possible that records of completed colposcopic examinations performed elsewhere were not reflected in the medical records at referral sites. Furthermore, although we utilized records maintained by the clinics, as well as records from the pathology laboratory, to ascertain abnormal Papanicolaou smear results, it is possible that some abnormal results were not picked up. It is unlikely, however, that oversights occurred in any systematic way that would effect our results. Third, it is not clear how representative women seen at the clinics in our study are of the American Indian and Alaska Native women in general. That is, we have no information regarding women who might be receiving services outside the IHS system.

Summary

We noted similarities in the prevalence of abnormal Papanicolaou smears and noncompliance to colposcopic follow-up between American Indian and Alaska Native women in the Pacific Northwest seen at IHS or tribal clinics and other populations. The higher rate of cervical cancer mortality could be due in part to inadequate Papanicolaou smear screening rates, particularly among high-risk women. To determine reasons for the increased cervical cancer mortality among American Indian and Alaska Native women, more information regarding Papanicolaou smear screening rates, barriers to compliance to colposcopic follow-up, and the prevalence of known risk factors for cervical cancer need to be characterized for this population. Until then, more aggressive tracking and follow-up to improve compliance to colposcopy are warranted by the higher cervical cancer mortality rate.

We thank the providers and support staff at each of the clinics and Thomas M. Becker, MD, PhD, for his careful review of the manuscript.

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